

## COUNCIL – AGENDA REPORT

**Meeting Date:** 7 March 2022

**Subject:** Transit Service Productivity Targets Review

**Boards Routed Through:** Community Services Advisory Board

**Date:** 14 February 2022

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### Issue:

Council is being provided with recommended changes to local services following an evaluation of service focused on ridership trends in relation to the service productivity targets in the Transit Master Plan (TMP) and opportunities to improve service offerings.

### Background:

Throughout the pandemic Administration have worked closely with Council to refine levels of service for various municipal services, including public transit. This is the sixth Transit report to Council since March 2020 that specifically reviews levels of service based on an evidence-based approach. This report follows a similar format to previous reports with a focus on how public transit services can evolve to prosper during the post-pandemic recovery.

### Evaluation of Services

Council's endorsed Transit Master Plan establishes clear criteria regarding service productivity and performance measures to guide changes in levels of service based on ridership data. As a refresher, section 5.3.3 in the TMP, Service Productivity, states:

*Figure 1: Daily Service Productivity Targets, Boardings per Revenue Vehicle Hour*

Route	Route Minimum		
	Weekday Peaks	Weekday Off-Peaks	Weekends
Regional Services	20	15	12
Local Fixed Routes	10	6	6
Demand-Responsive	5	3	3
Access Airdrie	4	3	3

These performance measures outline the service targets for each service area. For example, the daily regional service (Route 900) would be considered a regional service and thus during weekday peak times (between 7:00 A.M. and 10:00 A.M. and again between 2:00 P.M. and 6:00 P.M.) the service would be expected to average 20 customers per vehicle hour.

Administration evaluates the performance of all services in relation to these minimum service productivity targets. The criteria used to review service additions or reductions is as follows:

1. Consider frequency improvements when passenger loads (Comfort standard) are exceeded on a consistent basis (four weeks or greater).
2. Consider service levels enhancements when boardings per revenue vehicle hour, over a period of four weeks or greater, exceeds 25 percent of the minimum productivity target.
3. Consider service level enhancements for earlier start times or later finish times, provided the service enhancements achieve and maintain the minimum productivity targets after one year of operation.
4. Consider service level reductions or restructuring when boardings per revenue vehicle hours in the time period in question is less than the minimum target on a consistent basis (two weeks or greater).

Service areas that consistently (over a period of four weeks or greater) exceed the service productivity target by 25% or more should be monitored and reviewed for potential improved/expanded service levels. The same logic applies for service areas that consistently do not meet the prescribed minimum service productivity targets. If a service area is underperforming in relation to the not achieving the minimum service productivity target; then service modifications are to be recommended. This approach has been applied with Council over the past 22 months with changes in levels of service based on service productivity targets.

### **Current Levels of Service**

The following section will provide a review of the current levels of service and current ridership trends for all service areas. Levels of service have been adjusted numerous times over the past 22 months to reflect changes in public health orders and demand from the community for specific services.

### **Access Airdrie Paratransit**

The Access Airdrie service has been operating uninterrupted since the onset of the pandemic. This is a critical service for vulnerable residents who cannot use conventional transit services due to mobility or cognitive restrictions.

Access Airdrie service within Airdrie is delivered via a dedicated vehicle operating between 8 A.M. and 6 P.M. Monday to Friday. At this time there are no Access Airdrie services offered during evenings or weekends.

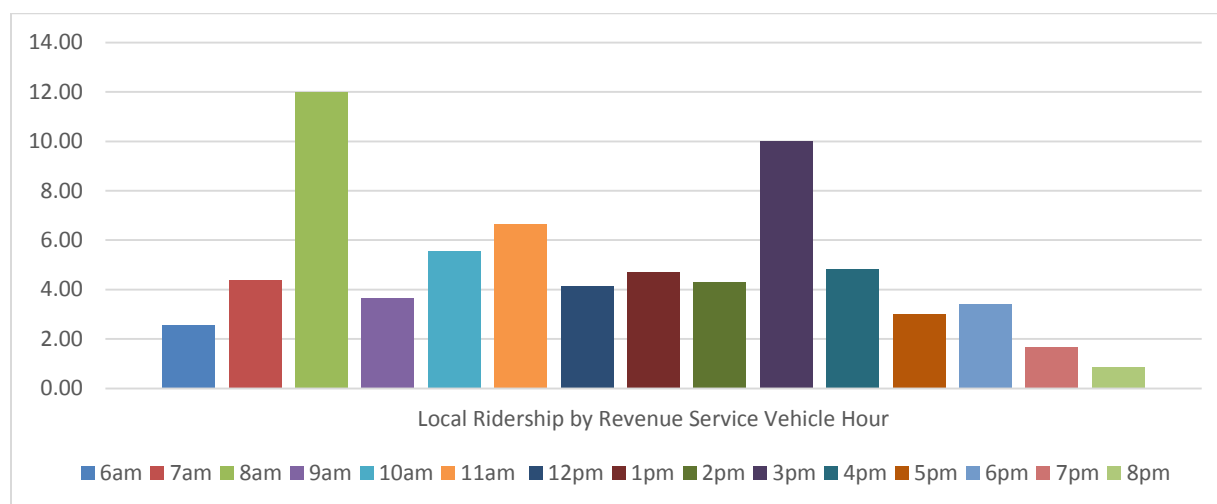
Access Airdrie continues to meet the needs of residents who have a need to access specialized medical trips to and from Calgary.

## Local Service

The current local route services have been operating under a consistent route schedule since August 1. This consists of four buses operating every 30 minutes from approximately 6:30 A.M. to 10 A.M. and again from approximately 1:30 P.M. to 6 P.M. During the midday (10 A.M. to 2 P.M.) and in the evening (6 P.M. to 9 P.M.) the local fixed route service operates every 60 minutes requiring two buses.

Ridership on local routes is greatly influenced by demand from students attending various schools in the community. Student transportation has the ability to generate over 30 customers per trip at specific times of the day. Figure 2 below is a representation of the demand for local fixed routes with the highest demand between 8 A.M. and 9 A.M. and again between 3 P.M. and 4 P.M.

*Figure 2: Local Fixed Route Ridership by Revenue Service Vehicle Hour*



The surge in demand aids overall ridership. However, these spikes at specific times of the day have an ability to skew the data. The raw data would suggest local fixed routes are performing at a relatively high level. Figure 3 further analyzes this data in terms of segments of the day and in relation to the City's service productivity targets.

*Figure 3: Local Transit Service Productivity Targets (November 4 to January 28)*

Route	Route Minimum			
	Weekday Peaks (6am to 10am & 2pm to 6pm)	Afternoon Weekday Off-Peaks (10am to 2pm)	Evening Off-Peaks (6pm to 9pm)	Weekends
TMP: Local Fixed Routes	10	6	6	6
Route 1	7.5	7.0	1.9	2.1
Route 3	6.0	5.9	2.1	2.0

Weekday evenings and Saturdays are well below achieving the minimum service productivity targets. In addition to not achieving these targets, there has been little evidence to indicate that

ridership will recover at these times of the day to achieve these minimum targets. Options to change the service and improve service productivity are explored later in this report.

## Regional Services

The City operates two regional services. First, the downtown commuter service (Routes 901 and 902) that operate at peak hours Monday to Friday to and from downtown Calgary. Second, a daily regional service (Route 900) that travels between Airdrie, CrossIron Mills Mall and northeast Calgary.

Downtown commuter services are offered via two morning and two afternoon trips. Ridership for the downtown commuter service has started to show slow recovery since mid-January and is anticipated to increase as public health orders are lifted in early March 2022.

The daily regional service operated via Route 900 has been operating at pre-pandemic levels of service since August (two buses operating every 60 minutes). This service has experienced the most robust and consistent recovery in ridership compared to all other services.

The regional service productivity targets give insight into the performance of each service area. While the long-term implications of the pandemic are an unknown, the demand for service has been altered since March 2020. The downtown commuter service, once known for its high ridership and performance, is in a recovery phase. The daily regional service presents more opportunities for a more rapid recovery; however, this service is also operating below standards. Figure 4 provides the current snapshot of service productivity.

*Figure 4: Regional Services Service Productivity Targets (Nov 4 to Jan 28)*

Route	Route Minimum		
	Weekday Peaks (6am to 10am & 2pm to 6pm)	Afternoon Weekday Off-Peaks (10am to 2pm and 6pm to 11pm)	Weekends
Regional Services	20	15	12
Downtown Commuter	7.81	n/a	n/a
Daily Regional	12.7	10.1	11.6

Regional services were showing signs of a positive recovery in early September. Unfortunately, public health orders announced in September reduced demand for service, particularly for the downtown commuter service.

## Current Ridership vs. Pre-pandemic Ridership

A comparison of current ridership versus ridership achieved prior to the pandemic highlights the challenges in forecasting future demand and planning for future levels of service. For the purpose of this comparison the data is represented in the form of an average daily usage by service area.

*Figure 5: Ridership Comparison Current vs. Past (pre-pandemic)*

Access		Local Fixed Routes		Downtown Commuter		Daily Regional	
Current	Past	Current	Past	Current	Past	Current	Past
14	30	240	415	60	549	270	535

Ridership ranges from 10% (downtown commuter) to approximately 60% (local fixed routes) of pre-pandemic ridership. Administration is forecasting that local and daily regional services will continue to recover at a faster pace than paratransit or downtown commuter services.

### **Service Options Applying a Gender Based Analysis Plus**

Administration is presenting service options using an analytical process that provides a method for assessing systematic inequalities as well as a means to access to diverse groups of Airdrie residents may experience public transit services. These perspectives include the experience of gender, age, ability, ethnicity and income. This is an emerging field for planning public transit services in communities and is seen as an opportunity to include diversity and inclusion as key planning principles. This approach also aligns with the four principles to promote community wellbeing as identified in the City's Social Planning Policy.

For example, the current planning model for public transit places an emphasis on frequency in more densely populated areas or mixed-use developments. This model requires customers access these stops which can be a barrier in terms of the first-mile or last-mile. Using the GBA+ lens identifies how accessibility, personal safety or ease of use may be of a concern to diverse groups. Traveling, by foot, for over ten minutes in all-conditions, in poor lighting may be a barrier of use for groups. Service options presented below remove/reduce those barriers from accessing services.

This is an evolving approach to service planning. Transit can appreciate that CSAB may require further details for a true appreciation and understanding of how GBA+ can influence policies and services. While this may not be an area of Transit's expertise, this approach is quickly becoming part of industry best practice for transit service planning to ensure there is a higher degree of inclusivity for service.

### **Service Options by Service Area**

This section will review service options by service area. The options being presented are reflective of current demand for service and predictions for the future. These service options are intended to achieve guiding principle #3 of the TMP which states, "Transit will balance the need for system growth with affordability and efficient operations" and, where possible, align with the service recommendations in the TMP.

#### **Access Airdrie**

Demand and usage of the Access Airdrie service is operating at approximately 50% of pre-pandemic levels. There is significant capacity with this service area to handle future demand. Community demand for Access Airdrie services is anticipated to grow when regular programs and services in the community resume such as the Airdrie Adult Day Program (resumption of this program remains to be determined).

There is also an opportunity to increase access to barrier-free, accessible public transportation for residents through an innovative co-mingling (shared-ride service for registered paratransit

customers with general public transit customers) of services model. This will be further discussed in the next section on Local Fixed Routes.

### **Local Fixed Route Services**

At times of the day, local fixed route services operate at a high level of efficiency and performance. This phenomenon is limited to specific times of the day and only during school days. Students traveling to various schools in Airdrie help support this surge in demand/ridership and greatly influences the service productivity of the fixed route service. For example, local ridership can fluctuate between 88 (January 5) and 278 (February 4). This is influenced by demand for student transportation (there was no school on January 5).

These variables present an opportunity to review the levels of service provided within Airdrie to create a more balanced and equitable network in alignment with Guiding Principle #3. The section below will provide a high-level assessment of delivery models to achieve Council's desired outcomes for local services.

#### ***Option 1: Peak Hour Fixed Route with Dynamic Transit***

Since late 2019, Administration have monitored patterns in customer travel which has shaped our ridership. This includes the use of the current fixed routes for student transportation during peak times. This intelligence provides an opportunity to better define services to be efficient, effective and sustainable.

The current ridership patterns can be used to re-imagine the service delivery model and transit operations. For example, shifting from a network of fixed route services to dynamic transit services during periods of lower demand would increase accessibility and convenience for other residents. To achieve this, fixed route service would be provided on school days only and at select times of the day. This would convert the current fixed route network to a network operating peak service during school hours when demand is at its highest levels. The service would be available to all public, not just to students.

As with any change, there are benefits and value adds as well as implications to implementing a dynamic transit service model. The intent being to minimize the implication to existing customers while maximizing the benefits and value add to both current and potentially new customers. Figure 6 identifies the opportunities/challenges of a dynamic transit program.

*Figure 6: Opportunities/Challenges of Dynamic Transit Services*

<b>Opportunities</b>	<b>Challenges</b>
Provide service to all areas of the City (including those not serviced today)	Replaces scheduled service for existing customers (potential disruption in travel behaviour)
Extends service to Access Airdrie clients beyond weekdays and 6:00 P.M.	Relies on technology provided by service provider (PWT) which will review extensive review
Opportunity to provide more convenient and flexible services for residents	Generally, serves up to 5 customer per hour. Beyond this another vehicle is required to conversion to fixed route service
Right-sizes the equipment/costs to deliver the service based on customer demand	Set-up fee and ongoing cost (\$12,000 one-time system set-up fee; \$1,200 per month)

The service hours from fixed routes no longer operating during non-peak hours could be re-invested in a dynamic transit service providing full coverage to the community. This includes the introduction of local service on Sundays which was a recommendation identified in the Transit Master Plan.

The service would offer a higher degree of flexibility with the potential to increase/decrease the level of service based on demand. The service would be scalable to meet the demand of the community with additional vehicles only added when service productivity targets were consistently achieved. This model also provides the opportunity to integrate with the existing Access Airdrie service by co-mingling trip requests. This would further reduce the vehicles required to meet service demand.

Shifting to this model would be transformative for the community and current transit customers. The approach to shift from local fixed route services to a dynamic transit network was implemented by the City of Leduc in mid-2020. Leduc's OnDemand service offers a higher degree of convenience and flexibility via virtual and existing bus stops as compared to their previous fixed route service. Since launch, there have been minor alternations to the service delivery model and the changes have improved customer satisfaction and ridership. In speaking with Administration from Leduc the OnDemand service is exceeding performance expectations and is meeting the needs of their community.

*Figure 7: Peak Hour Fixed Route with Dynamic Transit Levels of Service*

Day	Times	Level of Service
Monday – Friday	6:30 – 9:30 A.M.	2 fixed route buses 1 dynamic transit vehicle
Monday – Friday	9:30 A.M. – 1:30 P.M.	2 dynamic transit vehicles
Monday – Friday	1:30 – 6:00 P.M.	2 fixed route buses 1 dynamic transit vehicle
Monday – Friday	6:00 P.M. – 10:00 P.M.	1 dynamic transit vehicle
Saturday	7:00 A.M. – 10:00 P.M.	1 dynamic transit vehicle
Sunday	8:00 A.M. – 6:00 P.M.	1 dynamic transit vehicle

The revised model would operate two fixed route buses (one on Route 1 and one on Route 3) operating every 60 minutes at times of highest demand from September to July. Service would be amended for the months of July and August to operate via dynamic transit only. The Access Airdrie service would continue to operate during these times increasing the service capacity to include an additional vehicle for co-mingling of Access Airdrie and public trips.

*Figure 8: Service Comparison of Current Model and Proposed Peak Hour/Dynamic Transit*

Variable	Current Fixed Route	Option 1
Annual Service Hours	12,300	Fixed Route: 4,020 Dynamic: 6,070 Total = 10,090
Estimated Cost	\$1,369,860	\$1,230,000

The shift from the current levels of service to a peak hour and dynamic transit model is anticipated to save approximately 2,300 annual service hours or \$140,000 per year.

This model requires the City to partner with the existing transit service provider to implement a technology solution to support the dynamic transit model. The transit service provider has a

pre-existing relationship with a vendor to deploy this technology in a similar capacity for services they operate in the City of Calgary, City of Leduc, Town of Cochrane and the Town of Okotoks. It is estimated there would be a one-time set-up fee of \$12,000 (which was approved in the 2022 operating budget) and ongoing operational costs of \$1,200 per month to support the technology solution.

### ***Option 2: Hybrid Model of Fixed Routes and Dynamic Transit***

An assessment of the local fixed route service productivity targets identifies times when the service is both exceeding and not achieving minimum service expectations. More specifically, over the past three months local services have underperformed during evening and weekend hours.

The proposed hybrid model would combine a fixed route network at times when demand has met or is close to achieving the service productivity targets with a dynamic transit service. This model would see a continuance of fixed route services Monday to Friday from approximately 6:30 A.M. to 6 P.M. including peak level service (service operating every 30 minutes) at designed times of the day. A dynamic transit service delivery model would be implemented to address underperforming times of the day and Saturdays.

The current level of service exceeds demand for service and a shift in the service delivery model provides an opportunity to adjust the level of service. This hybrid model would see the following changes in levels of service.

*Figure 9: Hybrid Levels of Service*

Day	Times	Level of Service
Monday – Friday	6:30 – 9:30 A.M.	4 fixed route buses
Monday – Friday	9:30 A.M. – 1:30 P.M.	2 fixed route buses
Monday – Friday	1:30 – 6:00 P.M.	4 fixed route buses
Monday – Friday	6:00 P.M. – 9:00 P.M.	1 dynamic transit vehicle
Saturday	7:00 A.M. – 9:00 P.M.	1 dynamic transit vehicle
Sunday	8:00 A.M. – 6:00 P.M.	1 dynamic transit vehicle

The change from fixed route to dynamic transit services on weekday evenings and weekends would provide opportunities for Access Airdrie clients to book these services. Currently, Access Airdrie service operates Monday to Friday from 8:00 A.M. to 6:00 P.M. with no extended services during evenings or weekends.

The changes in levels of service would have an impact on the cost to deliver the service. Figure 8 below provides an estimated cost to convert fixed route service to a dynamic transit service:

*Figure 10: Service Comparison between Current Fixed Route Service and Hybrid Model*

Current Fixed Route Evenings	Potential Dynamic Transit Evening Service	Current Fixed Route Saturday Service	Potential Dynamic Transit Service Weekends (Saturday and Sunday)
6 service hours \$105.00/hr	3 service hours \$120.00/hr	28 service hours \$105.00/hr	24 service hours \$120.00/hr



Total Cost \$630.00	Total Cost \$360.00	Total Cost \$2,950	Total Cost \$2,880
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Based on these calculations, the shift from a fixed route service to a hybrid service could result in a savings of \$70,000 a year while providing enhanced service coverage to the entirety of the community and additional service offerings to registered Access Airdrie customers.

Similar to Option 1 identified above, this option requires the use of a transit booking software via the contracted transit service provider at a one-time set-up fee of \$12,000 (approved in the 2022 operating budget) and ongoing operational costs of \$1,200 per month to support the technology solution.

### **Downtown Commuter**

Since the start of the new year Administrative have monitored slow and steady growth in ridership on both downtown routes. While the current level of ridership does not achieve the service productivity targets set out in the TMP, the growth does suggest a level of ridership recovery. Administration believe it is in the best interest of the current and prospective customers to maintain two downtown commuter routes as-is at this time. This recommendation is based on the evidence that ridership has and continues to grow in 2022.

### **Daily Regional**

The service productivity targets for the daily regional service are encouraging. Service targets are being achieved on weekends as well as off-peak times. Pre-pandemic these targets were consistently exceeded for both weekends and off-peak times. The weekday peaks times are somewhat below target. That said, this service provides the greatest opportunity to attract new customers and form new partnerships to increase ridership and potentially generate new revenues streams.

Administration is recommending no changes to the daily regional service.

### **Alignment with South Saskatchewan Regional Plan and AirdrieONE:**

**AirdrieONE Sustainability Plan:** Sustainable transportation is defined as an integrated, efficient and affordable transportation system that provides a range of mobility options for people of all ages and abilities. Transit has continued to strive to deliver efficient and affordable services for all ages and abilities.

**Transportation Master Plan:** The Transportation Master Plan identifies a need to increase modal-split from single vehicle trips to alternative modes such as active transportation and public transit to ensure a sustainable and functional transportation network. High quality and convenient public transit has the ability to attract customers who may otherwise depend on private vehicle trips and place additional demand on a finite road network.

**Social Policy:** Transit has strong connections to the four social well-being principles as outlined within Council's endorsed Social Policy. This includes diversity and inclusion (public transit embodies this principle as a service for all residents throughout the region), connectedness (public transit provides a means of mobility to access employment, education, recreation and culture throughout the region), equitable access to quality services (Transit is an active participant in the Airdrie Participant Support Program to ensure financial barriers are removed for residents to access public transit service) and

proactivity (investment in public transit is a form of proactivity as residents have access to safe, affordable and efficient public service).

**Economic Development Strategy:** Transit is identified within the Connected Community objective of the City's Economic Development Strategy as a means to ensure ease of mobility of people. Efficient and integrated public transit provides opportunities to achieve this objective and this works continues to be a focus area for planning and service implementation within the city and via our regional partners.

### **Boards Routed Through:**

This report was presented to the Community Services Advisory Board (CSAB) at the regular meeting of February 14, 2022. The Board was presented with three alternatives with two alternatives targeted to improve local transit services via changes to service delivery and as well as an alternative to maintain the existing services.

The Board showed interest in learning more about the dynamic transit service delivery model. Board members asked questions related to the capabilities of the technology, potential impact on the taxi industry, feedback related to the deployment of dynamic transit in other municipalities and co-mingling of Access Airdrie and public transit customers. The Board were comfortable with the responses shared by Administration and made a motion on the report.

The CSAB unanimously endorsed Administration's recommendation of Alternative #1 to implement peak hour service and dynamic transit for local services for Council's approval.

### **Alternatives/Implications:**

#### **Alternative #1: Implement Peak Hour Service and Dynamic Transit for Local Service (endorsed by the Community Services Advisory Board)**

This alternative would include replacing all non-peak fixed route services with a dynamic transit service. This includes weekday mid-day service, evenings and Saturdays. Fixed routes would operate every 60 minutes Monday to Friday between 6:30 A.M. and 9:30 A.M. and between 1:30 P.M. and 6:00 P.M.

Administration is also recommending that with the implementation of a dynamic transit service that service be extended to Sundays. This would provide more options for residents and shift potential demand for Saturday to Sundays and address concerns identified by residents in relation to the lack of service availability within Airdrie on Sundays.

This option would have a one-time system set-up fee of \$12,000 (which was approved as part of the 2022 operating budget). This would be paid to the transit service provider to set-up Airdrie in their existing dynamic transit software and acquire the necessary equipment (tablets, mounts) for the vehicles. In addition, there would be ongoing operational costs of \$1,200 a month.

Such change will require a six-week transition period to provide our contracted service provider sufficient time to manage the resource requirements as well as to communicate the changes to existing and future customers. Administration would target implementation of these changes in June/July 2022.

The changes to local service are anticipated to provide an annual savings of approximately \$140,000 (which includes the ongoing \$1,200 fee for the technology and data).

### **Alternative #2: Implement Hybrid Local Service**

This would include shifting from fixed route local service to dynamic transit services during lower demand times (weekday evenings and Saturdays). Administration is also recommending that with the implementation of a dynamic transit service that service be extended to Sundays. This would provide more options for residents and shift potential demand for Saturday to Sundays and address concerns identified by residents in relation to the lack of service availability within Airdrie on Sundays.

This option would have a one-time system set-up fee of \$12,000 (which was approved as part of the 2022 operating budget). This would be paid to the transit service provider to set-up Airdrie in their existing dynamic transit software and acquire the necessary equipment (tablets, mounts) for the vehicles. In addition, there would be ongoing operational costs of \$1,200 a month.

Such change will require a six-week transition period to provide our contracted service provider sufficient time to manage the resource requirements as well as to communicate the changes to existing and future customers. Administration would target implementation of these changes in June/July 2022.

There would be a measure of financial savings through these service changes. Local service is anticipated to provide an annual savings of \$70,000 (which includes the ongoing \$1,200 fee for the technology and data).

### **Alternative #3: Status Quo**

Council could choose to maintain existing services with no changes to delivery models or levels of service.

### **Communications Plan:**

A communications plan will be developed in collaboration with Corporate Communications. The tactics of the communications plan will be dependent on the final recommendation of Council.

### **Recommendation:**

That Council endorses the recommendation of the Community Services Advisory Board to:

1. implement a revised service model of peak hour fixed route and dynamic transit by no later than July 15, 2022;
2. introduce dynamic transit on Sundays by no later than July 15, 2022; and
3. implement the technology necessary to support the dynamic transit at a one-time set-up cost of \$12,000 approved in the 2022 operating budget.

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Chris MacIsaac  
Team Leader, Transit

Presenter:	Chris MacIsaac
Department:	Transit
Reviewed by:	Michelle Lock
Attachments:	N/A
Appointment:	N/A