



TO: FINANCE AND CORPORATE SERVICES COMMITTEE

SUBJECT: TRANSIT SERVICE GUIDELINES

WARD: ALL

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CHIEF ADMINISTRATIVE OFFICER APPROVAL: M. PROWSE, CHIEF ADMINISTRATIVE OFFICER

DATE: JANUARY 25, 2022

RECOMMENDED MOTION

1. That the Transit Service Guidelines attached as Appendix "A" to the Report to Finance and Corporate Services Committee dated January 25, 2022 entitled "Transit Service Guidelines" for conventional transit service delivery, be approved.

PURPOSE & BACKGROUND

2. Staff have initiated a transit network review project referred to as 'Barrie's Transit Vision'. Barrie's Transit Vision will assess the current and future transit planning conditions to create a future transit network that fits Barrie today while preparing for growth. The recommended transit network will be implemented in line with the Allandale Mobility Hub occupation with consideration for a growing Barrie towards the ultimate project horizon year of 2031.
3. The project will also consider impactful variables to a growing Barrie such as Barrie's new urban growth areas (Secondary Lands), developing intensification corridors (2020 Official Plan), the City of Barrie Transportation Master Plan recommendations, and new transit service models (e.g. Transit On-Demand, Express Routes, and Frequent Transit Routes).
4. Per motion 12-G-012 Council endorsed Project Principles for Barrie's Transit Vision which are provided in **Figure 1**. To summarize:
 - a) **The Foundation** recognizes that a transit service must think broadly about the riders demands for the service and how those demands are accommodated,
 - b) **The Pillars** speak to the transit network design guidance, and
 - c) **The Service Promises** refer to the longevity, financial feasibility, and rider experience of the transit network.

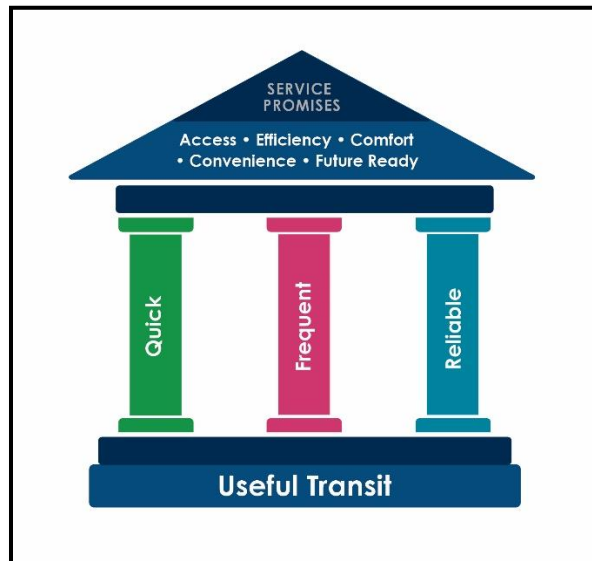


Figure 1: Barrie's Transit Vision - Project Principles

5. Since the last council update in January 2021, staff have conducted initial public consultation, data compilation, procured an Advisory Consultant, and developed transit service guidelines. A summary of the above tasks are as follows:
- a) **Public Consultation:** Held in March 2021 with a total of 216 survey and write-in respondents. The purpose of this consultation was to introduce Barrie's Transit Vision, gather feedback on the current transit network, the project principles, and ask residents how they would like their transit network to grow. A notable highlight, 90% of survey responses desire a new network with quick and frequent routes. A more detailed feedback summary is provided within **Appendix "B"** of the Report to Finance and Corporate Services dated January 25, 2022 and on buildingbarrie.ca within Barrie's Transit Vision project page.
 - b) **Data Compilation:** To create a network design which accommodates existing riders while being future ready, staff have compiled an assortment of data maps including population/employment densities, ridership, significant land uses, existing travel trends, income levels, and carless households.
 - c) **Advisory Consultant:** Staff have procured Dillon Consulting as the technical working group's Advisory Consultant. The Advisory Consultant has been working as a project team member and provides a wealth of experience from multiple transit network review projects throughout Canada. This allows transit staff to gain valued experience from a senior consultant while keeping costs down by conducting the technical work in-house.
 - d) **Transit Service Guidelines:** These guidelines regulate the delivery of conventional transit in Barrie and align back to the Project Principles. These guidelines identify service design principles (e.g. hours of operation, frequency, and stop spacing) and performance measures (e.g. minimum transit service coverage, ridership levels, and financial performance). Further details on the recommended transit service guidelines are provided in the Analysis section of this report. Historically, staff have used the Guidelines in **Appendix C** to inform transit service levels.
 - e) **Next Steps:** Following council endorsement of the Transit Service Guidelines, Staff will bring forward a draft recommended route network for further public engagement.

ANALYSIS




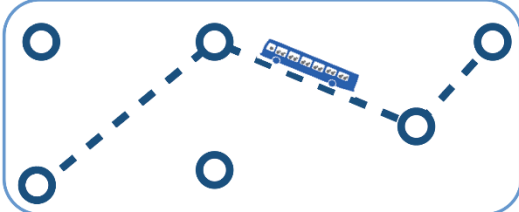
Transit Service Guidelines Introduction:

6. The Transit Service Guidelines bring clarity and consistency to the process of adjusting transit services to meet changing rider needs by providing clear expectations in an accountable, transparent, equitable, and efficient manner. They also provide a tool to implement/monitor the council endorsed Project Principles (**Figure 1**) for Barrie's Transit Vision.
7. The Transit Service Guidelines were sourced from a variety of peer reference agencies including Guelph, Sudbury, London, Durham Region Transit, York Region Transit, Halifax, Translink (Vancouver), TTC (Toronto), & BC Transit. Adjustments were applied where applicable to accommodate new transit Service Types (On-Demand, Express Transit Network, and the Frequent Transit Network), changing trends and priorities, Barrie specific conditions, and other transit operations best practices.
8. The guidelines typically define minimum thresholds, which are often exceeded when applied to actual service.

Service Types

9. Barrie Transit’s Service Types are evolving with the addition of the Frequent Transit Network, Express Transit Network, and On-Demand zones. A summary of the different Service Types, and their mobility objectives, is provided below in **Table 1**.

Table 1: Barrie Transit Service Type

Service Type	Mobility Objectives	Route Example	Target Communities
The Frequent Transit Network (FTN)	Riders can expect frequent, reliable, direct, and quick services. Typically, a bus arriving every 15-minutes or better during peak times.		Higher-density, pedestrian oriented corridors that connect key destinations in the City and have the potential to attract high ridership demand. <i>Current Example: Route 100 (with improved frequency).</i>
The Local Transit Network (LTN)	Riders can expect enhanced coverage connecting residents to local retail/education and employment clusters and/or to higher order routes like an FTN or ETN route.		Lower-density communities with local destinations such as neighbourhood retail, employment, or schools. <i>Current Example: Most Barrie Transit Routes.</i>
Express Transit Network (ETN)	Riders can expect a quick and direct trip between major destinations with limited stops between. Ideal for cross-city trips.		Between significant origin and destinations. <i>Current Example: No current routes.</i>
Transit On-Demand Zones	Riders can expect the ability to request a shared On-Demand trip within a pre-defined zone in neighbourhoods or periods of the day where Local Transit routes do not operate due to low ridership demand. Riders can use On-Demand to travel within the zone or connect to another transit route.		Barrie’s lowest density communities and employment areas. The service allows for more service coverage due to its cost effectiveness in low transit demand areas/times. <i>Current Example: South Barrie On Demand Zone.</i>

Guidelines – By Service Type

10. The service guidelines provide minimum parameters associated with the mobility objective of each Service Type. For example, the Express Transit Network encourages lower travel times wherein the Local Transit Network encourages enhanced coverage. These guidelines are introduced below and summarized in **Appendix “A”** of the Report of the Finance and Corporate Services dated January 25, 2022..

Bus Stop Spacing

11. Stop spacing has an impact on the speed and reliability of a service, as well as on a rider’s ability to access a service. Too many stops make travel slow and transit less useful and convenient. Too few stops mean less opportunity to access a service, even if it travels close by. The need for quick and reliable transit service is balanced with providing convenient access to the system when considering where stops should be placed. Bus stop spacing for each route may differ from the typical range depending on the land use, ridership, route connections, topography, and the street network.

Guideline Link to Principles		
Principle	Level	Discussion
Quick	Pillar	Balancing quick service with accessing the service.
Reliable	Pillar	Stop organization leads to more typical stopping patterns allowing for improved transit scheduling.
Efficiency	Service Promise	Quicker trips reducing travel times of routes and thus less resourcing to maintain frequencies.

Span of Service

12. Span of service is the hours of operation for each Service Type, from the time of departure of the first trip of the day, to the time of departure of the last trip of the day. Span of service, like frequency, is influenced by demand and travel patterns along a route. The service guideline identifies the minimum recommended service span, excluding statutory holidays, for each Service Type. These represents minimums, and service can be operated longer if demand warrants.

Guideline Link to Principles		
Principle	Level	Discussion
Convenience	Service Promise	Ensuring the transit service is provided when needed
Efficiency	Service Promise	Providing an accepted baseline for transit service levels based upon hierarchy of route

Service Frequency

13. Service frequency is how often a transit vehicle picks up and drops off passengers at a stop. Higher frequency leads to less need for connection coordination between routes, less waiting time at stops, and improved reliability of each trip. Barrie Transit balances needs for frequency across the network and allocates resources to provide the most efficient service to the most riders. The service guidelines represent the minimum frequency of each Service Type.

Guideline Link to Principles		
Principle	Level	Discussion
Frequency	Pillar	Providing a minimum frequency guide.
Reliable	Pillar	Frequency leading to improved reliability due to the decreased reliance on each route vehicle.
<i>Access</i>	Service Promise	Accessing additional people and jobs from improved frequency leading to reduced bus stop waiting times.
<i>Efficiency</i>	Service Promise	Allocating fleet and service hours based upon route hierarchy.

Service Productivity

14. Defines the minimum viable ridership for a route. Routes under, or near, the minimum ridership threshold should be assessed for an alternative Service Type to maintain service efficiency. Service delivery should be re-assessed if the On-Demand minimum productivity guidelines are unachievable.

Guideline Link to Principles		
Principle	Level	Discussion
<i>Efficiency</i>	Service Promise	Allocating resourcing based upon transit demand.

Crowding Guidelines

15. Routes experiencing high vehicle crowding should be assessed for more trip(s) at or near the time of crowding. A high passenger occupancy can contribute to a negative riding experience, such as standing for an uncomfortable amount of time, struggling to get on or off the vehicle, or being unable to board the bus, which can lead to riders being late or missing an important connection. A 'full' bus occurs when 50-55 riders are on one bus at one time per trip.
16. Additional trip(s) will be considered when the Crowding guidelines are exceeded during a two-hour service period. Single trips will be provided, as needed, where riders are consistently unable to board the bus due to capacity/crowding constraints.

Guideline Link to Principles		
Principle	Level	Discussion
<i>Quick</i>	Pillar	Reducing slow boarding and deboarding due to full buses
<i>Efficiency</i>	Service Promise	Ensuring everyone gets a ride preventing negative ridership implications
<i>Comfort</i>	Service Promise	Keeping bus demand and capacity within comfortable levels.

Guidelines – For Overall Transit Network

17. The following guidelines provide parameters generally associated with the transit network, including all Service Types. These guidelines are introduced below and summarized in **Appendix “A” of the Report to Finance and Corporate Services dated January 25, 2022..**

Barrie Transit Coverage

18. The service coverage guidelines define the maximum walking distance to a bus stop within Barrie’s city boundaries from all Service Types. This guidelines links to the Convenience and Access Service Promise as it guides the amount of Barrie covered by a transit service

Frequency Improvement

19. This guidelines links to the Frequency Pillar and Efficiency Service Promise as it guides the amount of service hours and fleet allocated to each route based upon ridership demand, determined by ridership and crowding thresholds. Note that other factors, such as imminent development or area specific ridership growth strategies, may trigger frequency improvements without the below thresholds being met.
20. Low frequency is 31 minutes or longer between buses. Medium frequency is from 16 minutes to 30 minutes between buses. High frequency is 15 minutes or sooner between buses.
21. Frequency improvements will be considered when the Frequency Improvement guidelines are exceeded during a two-hour service period.

New Service Areas Implementation

22. Decisions regarding the introduction of transit services into expansion areas follow a clear framework to ensure that services are warranted and implemented in an efficient and fair manner.
23. This guidelines links to the Convenience, Efficiency, and Access Service Promise as it guides the implementation of service to new areas only once a certain threshold of development is reached.

New Service Hours Implementation

24. Decisions regarding the introduction of transit services to new times are dependent on the Span of Service guideline and the projected ridership. Projected ridership may be estimated based upon the soonest active trip ridership. For example, relatively high ridership on the last trip of the day may indicate latent demand for implementing later trips.
25. Recognizing changing travel patterns of residents takes time, service productivity will be used when monitoring new service areas over the course of time.

Service Types Transition Process

26. The flexibility of the On-Demand service from a scheduling and routing perspective allows staff to transition an areas service coverage from On-Demand to a Local Transit route, or from a Local Transit route to an On-Demand service, based on observed ridership trends and Service Productivity guidelines. The following is a summary of the Guideline triggers for assessing a route transition within the Service Type classification.

Transit On-Demand Zone to Local Transit Route

27. The transition from an On-Demand zone to a Local Transit route is typically implemented when ridership is sufficiently high that service levels (waiting time, travel time or trips accommodated) is degraded relative to a Local Transit route service. Generally, this occurs when a Local Transit route can provide more cost-effective service, at a reasonable frequency, than an On-Demand service and achieve a minimum productivity of 8 boards per revenue service hour. The transition will be completed with council notification and appropriate public notice/informational materials on the transition to Local Transit routes.

Local Transit Route to Transit On-Demand Zone

28. The transition from a Local Transit Network to an On-Demand zone is typically implemented when the Local Transit route is not meeting minimum productivity targets of 8 boards per revenue service hour and an On-Demand service zone can be implemented in a more cost-effective way while maintaining or improving level of service. The transition will be completed with council notification and appropriate public notice/informational materials on the transition to On-Demand services.

ALTERNATIVES

29. There is one (1) alternative available for consideration by Finance and Corporate Services Committee:

Alternative #1

Finance and Corporate Services Committee could decide to not endorse the Transit Planning Guidelines.

This alternative is not recommended as the Transit Planning Guidelines are a key tool towards the implementation of the council endorsed Project Principles.

FINANCIAL

30. There are no financial implications for The Corporation resulting from the proposed recommendation



LINKAGE TO 2018-2022 STRATEGIC PLAN

31. The recommendation(s) included in this Staff Report support the following goals identified in the 2018-2022 Strategic Plan:
- Improving the Ability to Get Around Barrie

Appendix "A" - Proposed Transit Service Guidelines Summary

SERVICE TYPE GUIDELINES								
	Frequent Transit Network (FTN)		Local Transit Network (LTN)		Express Transit Network (ETN)		On Demand Zone	
Bus Stop Spacing	Bus stop spacing should typically be between 400-500m		Bus stop spacing should typically be between 300-400m		Optimized based on local site conditions for quick travel times		Optimized based on local site conditions for high service coverage	
Span of Service	Weekday: 6:00a.m. - 10:30p.m. Saturday: 7:00a.m. - 10:30p.m. Sunday: 9:00a.m. - 10:00p.m.		Weekday: 7:00a.m. - 6:00p.m.		As demand warrants		As demand warrants	
Service Frequency	Weekday Peak 7:00a.m. - 9:00a.m. & 3:00p.m. - 6:00p.m.	15 minutes	Weekday Peak 7:00a.m. - 9:00a.m. & 3:00p.m. - 6:00p.m.	45 minutes	Weekday/Weekend	As demand warrants	Weekday/Weekend	Wait time: Under 20 minutes
	Weekday Off Peak	30 minutes	Weekday Off Peak	60 minutes				
	Saturday	30 minutes	Saturday	60 minutes*				
	Sunday	30 minutes	Sunday	60 minutes*				
Service Productivity	Minimum: 15 riders boardings per bus service hour		Minimum: 8 riders boardings per bus service hour		Minimum: 30 riders boardings per bus service hour		Minimum: 4 riders boardings per bus service hour	
Crowding Guidelines	No more than 50% of trips are full during a two-hour service period		No more than 10% of trips are full during a two-hour service period		No more than 50% of trips are full during a two-hour service period		No more than 10% of trips are full during a two-hour service period	

*When service is provided



NETWORK GUIDELINES			
Service Coverage	85% of residential and employment uses are served by a Barrie Transit Service within 400m from a bus stop during the span of services identified		
Frequency Improvement	Low Frequency to Medium Frequency	15 rider boardings per bus service hour, and/or Vehicle Crowding guidelines exceeded	
	Medium Frequency to High Frequency	30 riders boardings per bus service hour, and/or Vehicle Crowding guidelines exceeded	
New Service Areas Implementation	Entry Service Levels	500 residents/employees and/or 200 residential units while greater than 500m from existing transit bus stop.	Service Days: Monday to Saturday
			Service Hours: Morning to Evening
New Service Areas Implementation	Regular Service Levels	1000 residents/employees and/or 400 units while greater than 500m from existing transit bus stop.	Service Days: Monday to Sunday
			Service Hours: Guided by local conditions
New Service Areas Monitoring	New Service Implemented in a new area or new time.	<ul style="list-style-type: none"> • 50% of Service Productivity minimums within 6 months. • 100% of Service Productivity minimums within 1 year. 	

Appendix “B” - Public Consultation Summary

Barrie’s Transit Vision Summary Report

This report provides a data summary from the online survey on Barrie’s Transit Vision, from February 9 to March 1 at buildingbarrie.ca/TransitVision, as well as key takeaways and actions.

The below information has been paraphrased and does not represent the survey data verbatim

Existing Transit Service

What We Asked

Based on your experience, rate your satisfaction with Barrie Transit.

What We Heard

Legend*

Unsatisfied

Neutral

Satisfied

*Unsatisfied groups definitely disagree and disagree, neutral represents neither agree or disagree, and satisfied groups somewhat agree and definitely agree

Coverage

15%
 4%
 81%

Travel Time

43%
 17%
 40%

Reliability

36%
 16%
 48%

Frequency

54%
 17%
 29%

How We Can Improve

What We Asked

Rank the following transit aspects on how important they are to you from 1 (Very important) to 6 (Not at all important)

Comfort
Convenience
Efficiency

Frequency
Quick Travel Time
Reliability

What We Heard

Top 3

- 1 Reliability
- 2 Quick Travel Time
- 3 Frequency

Our Call To Action

What We Asked

How do you want our future network to look?

What We Heard

90%

Want a new network with some quick and frequent routes.

10%

Want to keep the same network we have today.

A transit network that is quick, frequent, & reliable while maintaining coverage levels

buildingbarrie.ca/TransitVision

Appendix "C" - Historical Guidelines

Guideline	Core Route		Supporting Route	
Bus Stop Spacing	400m			
Span of Service	Weekday: 6:00a.m. - 10:30p.m. Saturday: 7:00a.m. - 10:30p.m. Sunday: 9:00a.m. - 10:00p.m.		Weekday Peak 7:00a.m. - 9:00a.m. & 3:00p.m. - 6:00p.m.	
Service Frequency	Weekday Peak 7:00a.m. - 9:00a.m. & 3:00p.m. - 6:00p.m.	30 minutes	Weekday Peak 7:00a.m. - 9:00a.m. & 3:00p.m. - 6:00p.m.	40 minutes
	Off Peak & Weekends	60 minutes	Off Peak & Weekends	60 minutes
Service Productivity	8-10 boardings per hour.			
Service Coverage	At least 90% of all non-industrial land uses should be served by a Barrie Transit service within a 400m walking distance.			