



CITY PROCEDURE

POLICY NUMBER: C539a

AUTHORITY: City Manager

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TITLE: **Transit Service Standards Procedures**

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DEFINITIONS

Bus Service Types define the different types of bus service ETS provides. These include:

Frequent Bus Services:

On-street bus services that operate primarily within central Edmonton on major corridors throughout the day on all days of the week providing minimum frequencies of at least 15 minutes.

Rapid Bus Services:

On-street bus services that provide non-stop or limited-stop connections to major employment, post-secondary and shopping/mixed use destinations and Transit Centres from locations in outer Edmonton not served by Light Rail Transit (LRT).

Crosstown Services:

On-street bus services that provide connections between major suburban destinations and connect with routes that travel into the downtown core.

Local Services:

On-street bus services that serve individual residential and industrial neighbourhoods. Local Routes may have a variety of service levels depending on demand and include both regular local routes and Community Bus Routes.

Community Bus Services:

On-street bus services that are primarily designed to serve seniors-specific transportation needs, with service hours generally focused on the midday period.

OWL Service:

A late night on-street bus service operated along LRT corridors and major routes connecting city quadrants between the end of regular service and the start of regular service on the succeeding day.

Cycle Time

The round trip time it takes for a bus to travel from its origin to its destination and back to its origin, while stopping to pick up passengers along the route.

Frequent Transit Network

A network of high frequency transit services in major corridors that operate throughout the day on all days of the week. The Frequent Transit Network consists of the Light Rail Transit Network and Frequent Bus Services.

Recovery Time

Time built into a scheduled trip to improve service reliability by providing for potential delays on the route and for operator convenience.

Schedule Types

Schedules produced for different days of the week.

- Weekdays
- Saturdays
- Sundays
- Statutory Holidays

Service Intervals

Refers to how often a bus for a specific route arrives at an individual stop along that route. Also commonly referred to as frequencies.

Service Reliability

Service reliability or punctuality refers to a bus arriving and leaving on schedule and is also commonly referred to as on-time performance or schedule adherence.

Span of Service

Period of time between the start of transit service and the end of transit service on any service type.

Time Periods

Spans of time that are used to define service levels, within each schedule type, as per the table below:

Time Periods	Time of Day	Service Starts/Ends
Weekdays	Early AM	Start-06:00
	AM Peak	06:00-08:30
	Midday	08:30-15:30
	PM Peak	15:30-18:00
	Early Evening	18:00-22:00
	Late Evening	22:00-24:00
	OWL	24:00-30:00
Saturdays	Early AM	06:00-08:00
	Midday	08:00-19:00
	Early Evening	19:00-22:00
	Late Evening	22:00-24:00
	OWL	24:00-30:00
Sundays	Early AM	06:00-10:00
	Midday	10:00-19:00
	Early Evening	19:00-22:00
	Late Evening	22:00-24:00
	OWL	24:00-30:00

1. **PROCEDURES**

1.1. **City Manager** is responsible to:

- 1.1.1. Recommend to the Executive Committee of City Council approval of the Transit Service Policy and amendments thereto.
- 1.1.2. Approve the Transit Service Standards Procedures.

1.2. **Deputy City Manager of City Operations** is responsible to:

- 1.2.1. Oversee the application of the Transit Service Policy and Procedures to ensure it operates as intended and drives towards policy outcomes.
- 1.2.2. Ensure that Departments are aware of the intent and guidance provided by the Transit Services Policy and Procedures.
- 1.2.3. Request the necessary resources and provide the direction that may be required to meet the obligations of the Transit Service Policy and Procedures. Develop and recommend an appropriate budget for the administration and implementation of the policy and procedure.

1.3. **ETS Branch Manager** is responsible to:

- 1.3.1. Prepare and Authorize such instruction or action necessary to properly implement the requirements of the policy.
- 1.3.2. Prepare an Annual Service Plan that is guided by the Procedures.
- 1.3.3. Oversee development of transit service signups in accordance with the Policy and Procedures.
- 1.3.4. Direct updates to the Transit Service Policy and Procedure on a periodic basis.

1.4. **Principles**

The following principles will guide the application of these standards.

Consistent

- The application of service warrants, network design, service quality guidelines and service productivity standards will be undertaken by Administration through a consistent approach and applied equitably across the city.

- Proposed service changes and updates will be undertaken with a holistic lens, balancing the needs of transit riders and the transit system.

Efficient

- Application of Service Standards will strive to make the transit system more efficient, by optimizing the use of limited transit resources.

Integrated

- Changes and updates to the transit network must be integrated early and proactively in the city planning process in order to shape great neighbourhoods and design engaging places.
- Contribute to sustainable transportation choice through effective integration with other transportation modes such as walking and cycling, as well as new, emerging ways of getting around - such as ridesourcing, carsharing, bike-sharing and on-demand service.
- Through the design of the transit network, collaborate and support city-building initiatives in support of ConnectEdmonton and the City Plan.

Customer Focused

- The transit system will focus on customer service that is safe, fast, convenient and reliable.
- What this means to customers:
 - Safer experience for the whole customer journey while riding transit and in and around transit facilities.
 - Clear, timely and accessible customer information.
 - Service is delivered according to the advertised maps and schedules.
 - Easier to navigate the system.

Data-Driven/Evidence Based

- Employ data to support evidence-based decision-making in the development and application of service standards.
- Apply an integrated approach to data definition, data management, and data access across technology applications to support business intelligence and decision-support systems.

1.5 Overview

The Transit Service Standards bring clarity and consistency to the process of how service is planned within a fixed route conventional context. The Standards are structured on the following:

Service Warrants to guide the introduction or extensions of service, expansion of service hours, and route deviations;
Network Design Guidelines to guide the detailed development of the transit network and provide more precise parameters for network design;
Service Quality Guidelines to guide the adjustment of service levels on routes to ensure safe, reliable and comfortable service; and
Service Productivity Guidelines to guide the assessment of route performance.

1.6 Service Warrants

The introduction of new service is determined through the Annual Service Plan and in consideration of available capital and operating resources. In preparation of the Annual Service Plan, the potential to introduce new service is assessed and prioritized alongside other service adjustments, such as increasing frequencies.

This section explains the factors taken into consideration as a guideline for introducing service into new areas to increase the success of the new service's performance. In order to introduce transit service into new communities, a certain level of occupied dwellings or population is required to sustain even the lowest levels of service. In addition, the safety requirements of operating buses within those communities needs to be considered.

This section includes warrants for the:

- Introduction of a new or an extended route for each of the major service types;
- Introduction of route deviations; and
- Expansion of a route's hours of service.

General Guidelines

Edmonton Transit will consider the following factors as a guideline for introducing new service:

- Serve dense, walkable areas and connect major destinations with high ridership.
- Consider the number of currently occupied dwellings within the development and the eventual population at full buildout.
- Consider the population and/or employment density: number of people or jobs per hectare within the service area.
- Proximity of existing transit services.

- Undertake a detailed analysis of the surrounding land use and road network. pattern and recommend a service design based on experience in similar markets.
- Using productivity guidelines, establish a business case for the introduction of service and how it will be monitored for success.

Regardless of whether transit service is introduced via an expansion of an existing route or a creation of a new route, the warrant criteria remains the same.

Phased Introduction of Service

Initial Introduction of Peak Hour Service

In residential areas, fixed route services will initially be introduced during weekday peak periods only to accommodate work and school trips.

- If a route services seniors, it could be introduced and designed for the midday period time of travel.
- In employment areas, consider opportunities to accommodate the shift times of employees and/or class times to the greatest extent possible.

Phased Introduction of Off-Peak Service

Off-peak service is introduced in a phased approach in order increase service levels with growing demand, as follows:

- If peak hour service ridership exceeds 35 boardings per hour, off-peak 1 (or a portion thereof) is considered for implementation.
- Once implemented, if that off-peak service exceeds 20 boardings per hour, off-peak 2 is considered for implementation. If the 20 boardings per hour threshold isn't met, the route may still be considered for off-peak 2 service based on the following considerations:
 - Ability to improve network connectivity
 - Isolation of the community in respect to its proximity to the rest of the city
 - Demographics in the catchment area, such as the proportion of seniors and low income households

Off-peak 1 extends service into the Weekday Midday and Early Evening, Saturday Midday, and Sunday Midday time periods.

Off-peak 2 includes Weekday, Saturday, and Sunday early and late evening service; and weekend Early Morning service.

Local Service Introduction To New Areas

Residential Areas

A new or extended local service is typically considered for introduction into a new residential development when the following conditions are met:

- Residential areas that are contiguous with areas with existing transit service are prioritized over those that require more travel time.

- At least 80% of the development's dwelling units are located more than 600 metres walking distance to the nearest bus stop of existing transit service;
- At least 200 of the developments's dwelling units must be occupied at the time transit service is introduced with a build out comprised of at least 600 dwelling units;
- The streets on which the proposed local service is to operate are in operational condition without any obstructions in order to support local transit operations;
- Required infrastructure for transit operations such as curbs, sidewalks, paths, street lighting, bus stop platforms and turnaround loops are in place;
- Construction activity is sufficiently advanced to safely operate transit vehicles into the development; and

Employment/Post-Secondary Areas Service Introduction

A new or extended local service is introduced into a new employment area or a post-secondary site when the following conditions are met:

- There is a minimum of 500 employees in the employment area or a minimum of 500 students at the post-secondary site;
- Employment/post-secondary areas that are contiguous with areas with existing transit service area prioritized over those that require more travel time; and
- At least 80% of employees or students in the employment/post-secondary area are located more than 800 metres walking distance from existing transit service.

The type of local service that is introduced depends on the locations, shift times, and class times of employees/students.

Evaluation Period for New Local Service

The trial period for the introduction of new service is 24 months. This allows sufficient time for the service to become established and allows for the collection of relevant ridership data and patterns before any service adjustments would be recommended.

After 24 months, service will be evaluated against the Service Productivity Standards. At that time, if boardings per hour meet or exceed the productivity guidelines, the service quality guidelines are reviewed to determine if a service adjustment should be considered.

Introduction of Rapid Bus and Crosstown Service

Rapid Bus Service Introduction

The purpose of Rapid Bus service is to shorten the travel time to the core area destinations either by creating a fairly direct, non-stop or limited-stop route or an overlay to an existing route with non-stop or limited stop service. Most Rapid Bus

services travel to the downtown core to accommodate work-related or post secondary institution demand. The following conditions must be met for the introduction of these services:

- No LRT services operate in or near the proposed rapid bus corridor;
- The introduction of the service would result in at least a 15% reduction in origin to destination running time (travel time required between origin of route to final destination) from that of a parallel local fixed-route service; and
- Anticipated ridership on the service would be sufficient to attain the minimum productivity threshold outlined in the Service Productivity Guidelines during the time periods of operation.

Depending on the demand, Rapid Bus Service can be introduced during the peaks only or all day if warranted.

Crosstown Service Introduction

The purpose of Crosstown service is to connect major employment sites, educational institutions, and shopping/mixed use destinations outside of the downtown core. The following conditions must be met for the introduction of these services:

- No LRT service is in the travel corridor in which the crosstown service is proposed to operate;
- The introduction of the service would result in significant travel time reduction for passengers and/or a reduction in the number of transfers required for suburban travel to the destinations served by the route; and
- Anticipated ridership from the destinations along the route would be sufficient to attain the minimum productivity levels outlined in the Service Productivity Guidelines during the time periods of operation.

Evaluation Period for Rapid Bus and Crosstown Service

The trial period for the introduction of Rapid Bus and Crosstown service is 24 months. This allows sufficient time for the service to become established and allows for the collection of relevant ridership data and patterns before any service adjustments would be recommended. After 24 months, service will be evaluated against the Service Productivity Standards. At that time, if boardings per hour meet or exceed the productivity guidelines, the service quality guidelines are reviewed to determine if a service adjustment should be considered.

Introduction of Frequent Bus Service

The Frequent Bus Network was designed considering broader city-building objectives and guiding documents, such as the City Plan. As such, it is expected that this network will change infrequently. Should changes be considered to introduce new frequent bus routes or convert frequent bus routes to a different service type (such as crosstown service), this should involve an assessment of

current route performance, consultation with relevant business areas and consideration of city-building initiatives.

Introduction of Community Bus Service

If the target market for the route are seniors, and is less likely to be a competitive service during the weekday peak periods, a route designed to service only the midday time periods may be considered.

Introduction of School Special Service

- A school trip could be considered if the regular service is overcrowded when the overcrowding standard is applied for that bus type and time period.
- If the overload is confirmed, ETS will determine the appropriate approach, either additional service on the regular route or creation of a new school special route.
- In order to be considered a viable service, any school trip to the school must have a minimum of 80% of the seated bus load, (at least 30 passengers on a regular bus) for the vehicle type on that trip.
- School trips will be flagged for service reduction or consolidation if they do not achieve the above standards.

New services are expected to reach the minimum productivity level, as outlined in the *Service Productivity Guidelines*, by the 24 month period.

1.7 Network Design Guidelines

Network Design Guidelines guide the detailed development of the transit network and provide more precise guidelines for network design. The following topics are addressed:

- Route coverage (i.e. maximum walking distances) disaggregated by service type
- Guidelines for deviating routes to serve new customers
- Maximum number of transfers to complete transit trips to/from major destinations
- Minimum stop spacing by service type
- Span of service by service type
- Minimum service frequencies by service type

Span of Service

The **Frequent Bus Network (LRT and Frequent Bus)** services are to operate throughout the day on all days of the week such that:

Criterion	Weekday	Saturday	Sunday /Holiday
Latest arrival time downtown	06:00	06:00	07:00
Earliest departure from downtown in each direction	24:00	24:00	24:00

Rapid Bus services, **Crosstown** services, and **Local** services are to operate during those time periods when there is sufficient passenger demand to achieve the minimum productivity levels for the service type, as outlined in the Service Productivity Guidelines.

Bus Stop Locations/Spacing

Bus stop locations are dependent on the safety of the location, availability of infrastructure such as sidewalks, lighting accessibility where possible and network connectivity. Once the location is chosen, the stop infrastructure is designed to conform to the approved design elements of the bus stop design standards.

Bus stops are to be located anywhere from 250 metres to 2000 metres apart to achieve maximum efficiency and customer expectations as noted in the spacing table below. Locating bus stops within a lesser distance apart is acceptable if it means providing a safer location in low accessibility areas and to accommodate more passengers in high ridership areas.

Maximum Stop Spacing

Service Type	Stop Spacing
LRT Service	500-2000 metres
Rapid Bus Services (Express Portion)	Minimum of 500 metres and at major transfer points
Local, Crosstown and Frequent Services	250 to 500 metres

Route Coverage Guidelines

Route alignments are to be planned to meet the following maximum walking distances to stops/stations using safe on-street infrastructure, to the greatest extent possible. The alignment of routes within each service type are to be planned to minimize overlap and maximize the directness of routes, while maintaining these route coverage guidelines:

Service Type	Walking Distances
LRT Service	Up to 800 metres
Frequent Bus, Rapid Bus, Local Bus and Crosstown Bus Services, Crosstown routes, Local Services	Up to 600 metres
Community Bus Routes	Up to 300 metres

Maximum Service Intervals

Service intervals (aka frequencies) should be designed to to balance the objectives of achieving comfortable passenger loads, providing an attractive level of service and ensuring productive service. Some routes may not operate in all time periods. Service intervals on statutory holidays follow either a Saturday, Sunday or custom service interval depending on the anticipated transportation needs of the specific holiday.

The following are the recommended minimum service intervals for each time period and type of service (in minutes):

Day of Week	Time Period	LRT	Frequent	Rapid	Crosstown	Local	Community
Weekday	AM Peak	15	15	30	30	30	60
	Midday	15	15	30	30	30	60
	PM Peak	15	15	30	30	30	60
	Early Evening	15	15	30	30	30	-
	Late Evening	15	20	n/a	60	60	-
	Owl	n/a	30	n/a	n/a	n/a	-
Saturday	Morning	15	20	n/a	60	60	-
	Midday	15	15	30	30	30	60
	Early Evening	15	20	n/a	60	60	-
	Late Evening	15	20	n/a	60	60	-
	Owl	n/a	30	n/a	n/a	n/a	-
Sunday	Morning	15	20	n/a	60	60	-
	Midday	15	20	30	30	30	60
	Early Evening	15	20	n/a	60	60	-
	Late Evening	15	20	n/a	60	60	-
	Owl	n/a	30	n/a	n/a	n/a	-

Network Connectivity Guidelines

A connected bus network that is based on more frequent, direct and reliable service should be viewed with a holistic picture on how passengers can move around the city. Routes should be built with connections to other routes in mind to facilitate the ease of travel.

In general, customers should be able to travel to a major destination from anywhere in the city with a maximum of two transfers. Recognizing that a maximum of two transfers between all origins and each a major destination may not always be possible, planning will strive to minimize the number of multiple transfers required to the greatest extent possible.

In order to facilitate transfers, on the limited stop portion of a Rapid Bus Service stops should be located at major destinations and connection points with other routes where passenger transfer volumes are anticipated to be significant and at major destinations.

Route Design Principles

General Guidelines

As routes are designed to pick up passengers within 600 metres of the bus stops, it is important to design routes that are reliable and provide a quick trip to a transit centre or destination.

Routes should be designed to take the following factors into account:

- Align routes on streets that can be easily accessed by pedestrians through a network of sidewalks, pathways and stops/station platforms;
- Align routes centrally through developments, not on the peripheries; and
- Use simple, easily-comprehended route alignments:
 - Provide two-way service whenever possible;
 - Avoid open loops. Where open loops are necessary, minimize their length;
 - Avoid route circuitousness and duplication of route coverage; and
 - Minimize routing variations during peak hours when the ridership demand is the highest and could reduce route directedness and reliability.

Designing Routes for Maximum Efficiency to Attract Riders

Routes should be designed for maximum efficiency and versatility by meeting the following guidelines:

- Design routes that serve multiple purposes to reduce duplication;
- End routes at terminus points that are major activity centres and create a service design that allows for the frequencies to be the same in both directions for two-way passenger flow. As the city grows and becomes

- more congested, two-way passenger flows utilizing the same frequencies can become more efficient than deadheading single direction trips;
- Design routes in close proximity to high density development, major activity centres, educational institutions and seniors housing whenever possible;
 - Where required, transfers should be made at the same stop/station or at the same intersection; and
 - Timed transfers, when required, should be focussed on connections from high frequency services to low frequency services;

For the Downtown Core

- Align routes in close proximity to major destinations;
- Align routes to operate through the downtown, not just the periphery of downtown;
- Focus routes on a few streets in order to improve network comprehension, transfer convenience, and public safety and to increase the feasibility of transit priority measures and high quality waiting areas;
- Use the same routing path within downtown for routes destined to the same suburban area of the city;
- Link downtown-terminating routes into through-downtown routes, where possible; and
- Focus the route terminus in transit centres in order to maximize interlining opportunities.

Route Deviations

Route deviations refer to permanent changes in a route path that deviate from a more direct path in order to pick up additional passengers in an area not served by transit. Deviations can sometimes be avoided by creating branches, which create variations in the route path that are operated cyclically throughout the time period. Branches are possible when the additional time to make the deviation is equal to the time it takes to keep the route straight between the start and end of the route deviation. In order to branch a route, higher frequencies are also needed in order to continue to provide a minimum frequency on each branch.

If the frequencies do not allow for branching, then a route deviation may be appropriate. A deviation to the routing of a fixed route service will be considered if the aggregate reduction in walking time for passengers anticipated to use the stops on the route deviation is greater than the sum of:

- The aggregate additional time on board for through passengers, and
- The aggregate additional walking time to/from current bus stops for passengers using any portion of the current routing eliminated by the route deviation

1.8 Service Quality Guidelines

Service Quality Guidelines are used to guide the adjustment of service levels on routes. These typically include:

- Maximum occupancy standards (e.g. loading standards) by service type to identify crowding thresholds at which service adjustments are considered; and
- Service reliability standards (e.g. on-time performance) to identify thresholds at which running time adjustments, frequency adjustments, or transit priority measures are required

Maximum Occupancy Guidelines

Service adjustments such as changes to trip times, assignment of higher capacity vehicles such as articulated buses, insertion of new trips or the redesign of service levels are considered when the crowding thresholds in passenger loads are consistently observed:

- Over the busiest one hour during the peak period; and
- During the busiest one hour over all other time periods.

Load Standards

Load Standards are used to determine the efficiency of a route by comparing the capacity of a bus to actual demand. For example, if the desired load standard is 45 passengers per bus, ETS would design a route based on that standard over the busiest peak hour. So if the service design needs to accommodate 225 passengers over the busiest one hour, it would require a frequency of 5 trips per hour or buses running every 12 minutes, as shown below:

$225 \text{ passengers per hour} / 45 \text{ passengers per bus} = 5 \text{ buses per hour}$
 $60 \text{ minutes} / 5 \text{ buses per hour} = 12 \text{ minute frequency}$

Service adjustments are considered when the following crowding thresholds in passenger loads are consistently observed over the entirety of a sign-up when automatic passenger count data is available.

Load Standard

Time Periods	Service Type	Vehicle Type	Vehicle Seated Capacity	Crowding Threshold per Peak Hour
AM peak & PM peak	LRT	high floor	60	150
		low floor	78	225
	Frequent Bus	standard	37	50
		articulated	50	75
	Rapid	standard	37	45
		articulated	50	65
	Crosstown	standard	37	45
		articulated	50	65
	Local	small	24	25
		standard	37	50
		articulated	50	75
	School Route	standard	37	Per trip only (minimum 80% seated load)
	Off-Peak; Saturday & Sunday (all time periods)	LRT	high floor	60
low floor			78	225
Frequent Bus		standard	37	40
		articulated	50	55
Rapid		standard	37	40
		articulated	50	55
Crosstown		standard	37	40
		articulated	50	55
Local		small	24	24

		standard	37	40
		articulated	50	65

Service Reliability Guidelines

Providing a reliable service requires delivering service at the locations, times and frequencies as advertised. Service reliability is influenced by many factors that can not be directly controlled, such as traffic delays and weather conditions. Many aspects of service reliability are, however, directly influenced by application of sound planning principles and service management.

Service frequency regularity is defined as consistent time interval between buses along the route. This means that a passenger waiting along the route where a bus is scheduled every 10 minutes will experience service regularity that is reliable and predictable for the most part. This would entail having accurate travel times between the origin and destination of the route, as well as timing points along the route to let the operator know where they need to be at specific times.

Cycle Time

Proper determination of cycle time increases the likelihood of on time performance and as a result, service reliability.

Cycle time is calculated by:

- Looking at the speed limit;
- Determining the average speed of a bus which takes into account stopping to pick up passengers;
- Acceleration and deceleration;
- Road patterns;
- Number of riders determines how often the bus stops; and
- If express service, boardings and alightings at specific stops

Recovery Time

To further increase the likelihood of on time performance and service reliability, recovery time at the end of a scheduled trip is included to allow for potential delays along the route caused by traffic delays and poor weather conditions, and for operator convenience (such as bathroom breaks).

On-time Performance Standard

On time performance will be measured by a bus leaving between 0-5 minutes late as scheduled.

If data indicates that a scheduled trip departure is late or early on a regular basis the causes should be investigated by route supervision. If several other trips are late as well, then an increase in running time should be considered which may

require additional resources or a wider service interval to make up for the additional travel time. If a wider frequency results in overcrowding, then additional resources may be required.

1.9 Route Productivity Guidelines

Route Productivity Guidelines are used in the assessment of route performance. The primary productivity guidelines tracked by ETS are route utilization standards by service type and time period. ETS routinely tracks the following route utilization metrics:

- Boardings/Service Hour
- Boardings/Service KM
- Boardings/Bus Trip (one-way)
- Capacity utilization rate: average max load over busiest peak hour divided by capacity

Productivity guidelines related to ridership, such as boardings/service hour, can be applied and reported on at the six month mark, one year mark or two year evaluation period. To analyze data, routes are ranked within each category of service type, schedule time, and time period. Routes that significantly exceed average values for that category are flagged for further investigation.

Use of Productivity Measures

The use of productivity guidelines will flag high and low performing routes based on boardings per service hour. This process will identify possible service adjustments which will lead to further investigation and the application of the service quality guidelines.

If several trips within a specific time period are underperforming, they will be retained so long as the collective performance of all trips in the specific time period is achieving the ridership guidelines outlined above.

If it is determined that service will not attain the target outlined above in a particular time period, the service span could be reduced for that route in that time period. Underperforming trips, in isolation, will not be removed as this makes for irregular, unpredictable service. However, should the first or last trips of the day underperform continually and cause the service to fall below the guidelines above, those individual trips could be considered for removal and a new service design would be required to reflect the demand.

Even if a route is flagged as being overachieving according to the boardings per hour, the load factors would be examined to determine if the buses are over-crowded. Boardings per revenue hour alone cannot determine overcrowding. For example, a trip may have high boardings per hour but never be overloaded because the route is very busy with passengers getting off and on

the bus regularly. This means the current service design is performing well and does not need adjustment.

Process Steps

A transparent and effective process to assessing service changes and proposing within the context of an Annual Service Plan reflects industry best practice.

The following steps are following in assessing route performance:

- Analyze most up to date ridership data and calculate boardings per revenue hour;
- Flag high performing routes by time period;
- Analyze the loads versus capacity by dividing the total passengers carried over the busiest peak hour by desired load of 45 passengers per bus and see if the loads meet overcrowding standards;
- If a change is required, calculate a new service design to meet the demand; and
- Calculate the cost of the new service design; and
- Consider proposing the change in the next Annual Service Plan.

Minimum Route Productivity Targets

Minimum route productivity sets a minimum boardings per revenue hour standard to measure a route’s performance. This metric uses revenue hours rather than platform hours, as the latter would include time that is unrelated to the route performance but is necessary for the design of schedules and shifts (i.e. recovery, deadhead and pull-time). The following table summarizes the **minimum** ridership expectations for service provided by ETS.

Targets for Passenger Boardings Per Hour

Time Period	Frequent Routes	Local & Crosstown Routes	Community Routes	Rapid & School Routes
Weekday Peaks	30	25	12	25
Weekday Midday	20	15	12	20
Weekday Early Evening	20	15	12	20
Weekday Late Evening	15	12	12	15
Sat Morning	15	12	12	15
Sat Midday	20	15	12	20

Sat Evening	15	12	12	15
Sun Morning	15	12	12	15
Sun Midday	20	15	12	20
Sun Evening	15	12	12	15