



SAINT JOHN

Report

# Saint John Transit Long Term Vision

---



Prepared for the City of Saint John  
by IBI Group  
February 8, 2018

# Table of Contents

---

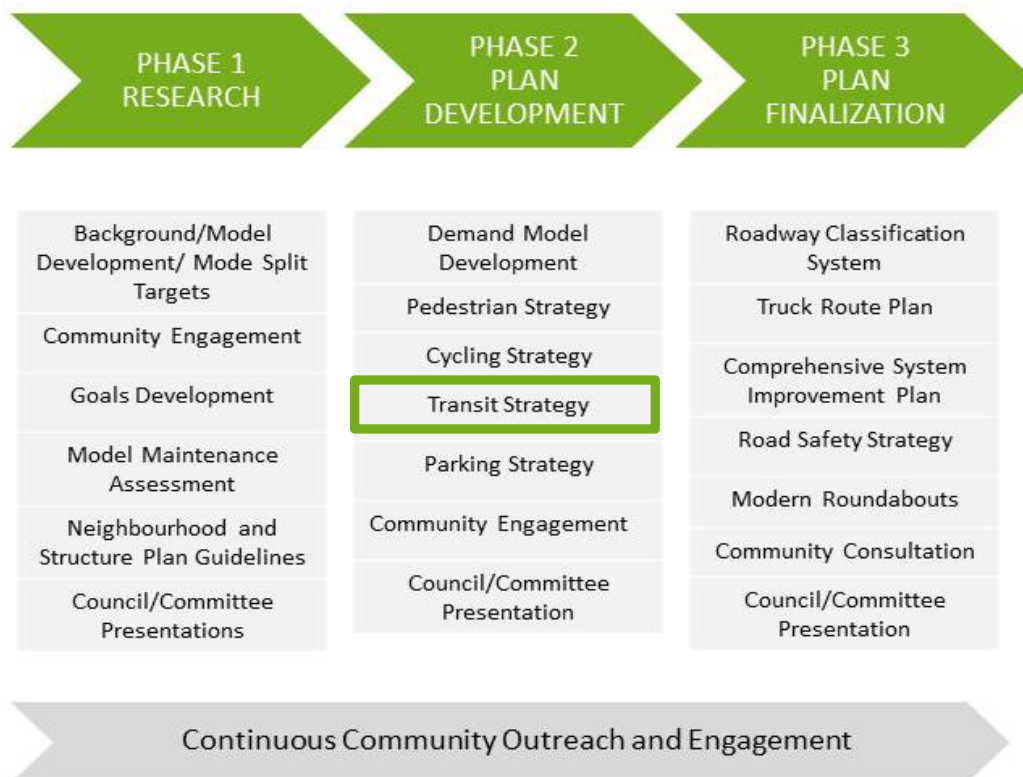
<b>1</b>	<b>Introduction .....</b>	<b>1</b>
1.1	Background .....	1
1.2	Purpose .....	1
1.3	Report Structure .....	2
<b>2</b>	<b>Strategic Framework .....</b>	<b>3</b>
2.1	Context .....	3
2.2	Vision .....	3
2.3	Goals .....	4
<b>3</b>	<b>Service Strategy .....</b>	<b>5</b>
3.1	Hierarchy of Service .....	5
3.2	Future Service Hours .....	7
<b>4</b>	<b>Supporting Strategies .....</b>	<b>10</b>
4.1	Service Guidelines .....	10
4.2	Performance Monitoring and Evaluation .....	12
4.3	Organizational Collaboration .....	14
4.4	Transit Supportive Development .....	15
<b>5</b>	<b>Implementation Plan .....</b>	<b>16</b>
5.1	Short Term Focus Areas .....	16
5.2	Service Directions .....	18
5.3	Resource Requirements .....	19

# 1 Introduction

## 1.1 Background

The City of Saint John is preparing a strategic plan for its transportation system. Known as *MoveSJ*, the plan is examining all facets of transportation in Saint John with the aim of developing strategic, long-term recommendations for multi-modal mobility over a 25-year period. As illustrated in Exhibit 1.1 below, the study is being conducted in three phases: Research, Plan Development, and Plan Finalization. This report, part of the *MoveSJ*'s second phase, forms the second part of the Transit Strategy, which is establishing a vision for the provision of future transit service in Saint John.

**Exhibit 1.1: MoveSJ Planning Process**



## 1.2 Purpose

The transit strategy for *MoveSJ* is comprised of two parts: a system review and the long term vision. The transit system review examined the current state of transit in Saint John and identified strengths and opportunities to improve the system in the short-term.

This report builds on the findings of the system review to provide a long term vision for Saint John Transit. It also outlines a long term service strategy for the system to achieve the vision. While the vision considers the system as a whole, the service strategy identifies components of the system and recommends actions to improve them and achieve the vision. The service strategy is the foundation for rebuilding the system after the challenging funding outlook in the short term.

## 1.3 Report Structure

This report is structured in four sections to provide long term direction for the system. :

- **Section 2** provides a long term vision and goals, which forms the strategic framework for this report;
- **Section 3** presents a service strategy for the system, identifying a hierarchy of services and a future investment allocation that can be used to achieve the long term vision;
- **Section 4** describes supporting guidelines for the service strategy, and supporting strategies for the system as a whole, including performance monitoring; and
- **Section 5** outlines an implementation plan with a focus on the actions to prioritize in the short term, and resources required over the long term.

## 2 Strategic Framework

### 2.1 Context

#### **Challenging Geography**

The city's development over time has resulted in various outlying low-density and rural settlement areas within the municipal boundaries. As a result, Saint John Transit has routes connecting small, sparsely populated rural communities to trip generators in and around the city centre. In addition, the growth of suburbs in Kings County (including Hampton, Quispamsis and Rothesay) has resulted in high travel demand between these areas and Saint John. Since 2007, Saint John Transit has been providing peak period service on three routes to connect suburban residents to Uptown Saint John. The system's outward expansion limits its ability to improve services both in the core and outlying areas.

#### **Worsening Performance**

Since 2010, ridership has declined 21%, while the amount of service has decreased by 18%. Inflation-adjusted operating costs have dropped by 13% over this time, meaning that the hourly cost to operate the service has increased. These trends reflect a transit system in need of a renewed vision and substantial restructuring.

#### **An Information Vacuum**

There is presently minimal quantitative information about the performance of specific routes, or even the transit system as a whole. This, in turn, makes it very difficult to monitor and improve service provision. Improvements will only be possible in an environment in which senior management is aware of performance trends to ensure service provision matches customer needs.

#### **Funding Uncertainty**

Saint John is facing a budget shortfall that will require transit to make budget cuts over the next three years. This document provides a framework to invest in the system's core services while exploring innovative options to ameliorate the impact of the cuts. This should put the system in a position to rebuild services in the long term.

### 2.2 Vision

In 2011, the City of Saint John completed a comprehensive study to develop a new Municipal Plan that will provide direction for the growth and development of Saint John forward to 2040. The Municipal Plan, known as *PlanSJ*, was undertaken with considerable community engagement and captures the aspirations of citizens for the City's future. The *PlanSJ* Vision is to achieve a more urban focused City by prioritizing the transformation of key neighbourhoods through new investment, population and growth. In support of that Vision, *PlanSJ* aspires to develop and maintain a balanced transportation system that meets the needs of all community members.

Providing guidance towards achieving this strategic direction is the primary purpose of *MoveSJ*, which provides long term recommendations for multi-modal mobility. The implementation of both plans would result in a more walkable and transit-oriented Saint John, where residents can enjoy the amenities of their city without having to rely on personal vehicles. Being cognizant of the role of transit in achieving this vision, Council identified "accessible, reliable and cost effective public and active transportation" as one of its 2016 – 2020 priorities.

Despite the commitment to achieving these goals for Saint John's land use and transportation systems, the city faces various challenges in their implementation. As the city's population shifts towards the surrounding suburbs and becomes more dispersed within the municipal boundaries, the outcome is a decline in the tax base and higher costs to the municipality for the provision and maintenance of services. This leaves the City of Saint John with few options to maintain its municipal budget. For Saint John Transit, which relies on the City for a significant portion of its operating and capital costs, this presents a significant challenge. The system previously faced budgetary constraints that led to service cuts in 2011 and 2012, and has yet to recover from the ensuing ridership decline.

Nevertheless, transit continues to play a significant role in improving quality of life by providing access to opportunity. Given the challenges faced by Saint John Transit, the long term vision is to **stabilize core services and provide mobility and choice for residents with an efficient and cost-effective transit system.**

## 2.3 Goals

To achieve the vision, four main goals have been identified. These goals will guide the service strategy and inform the performance monitoring framework. The goals for the transit system are:

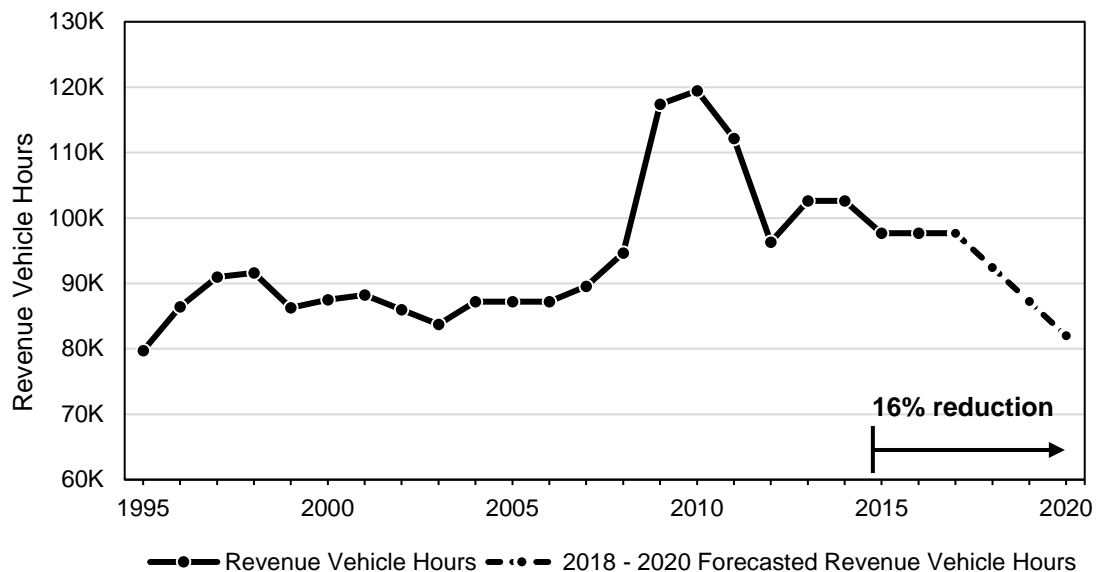
- **Stabilize Core Services:** Given the uncertainty in short term funding, Saint John Transit will focus on stabilizing its core services, ensuring that an effective level of service forms the foundation for the system's rebuilding efforts in the long term.
- **Mobility and Choice:** Saint John Transit will provide access to opportunities for residents who choose not to drive, or are unable to drive. Transit will provide an alternative to driving for residents of the city to encourage a shift towards a more sustainable community and improve the quality of life of residents.
- **Efficient:** Saint John Transit will create a hierarchy of services that allows for performance standards and targets that are suited to the type of service. It will provide more direct services to connect major trip generators, and explore innovative options to provide a base level of mobility connecting neighbourhoods to services.
- **Cost-Effective:** Saint John Transit will monitor the performance of existing services and establish guidelines to inform investment into the system. The service guidelines will be used to prioritize between competing demands for service provision.

These goals support the overarching vision for the City of Saint John established in *PlanSJ*, to renew and stabilize the urban core, while recognizing the needs of strategic improvements in the suburban and rural developments. They pave the way for a service strategy that focuses on improvements to core services and explores innovative options to serve outlying areas prevalent in the City of Saint John.

### 3 Service Strategy

The City of Saint John is currently experiencing a budget shortfall and, as a result, Saint John Transit is faced with cutting \$500,000 from its budget annually over the next three years. The magnitude of these cuts means that service will have to be reduced—likely by a substantial margin. If it is assumed that all savings are derived from service cuts, applying Transit's current average hourly operating cost of \$95.65 yields an annual service reduction of 5,200 revenue vehicle hours until 2020. Exhibit 3.1 shows the revenue vehicle hours between 2005 and 2017, as well as the projected revenue vehicle hours considering these proposed service cuts. By 2020, the system will have faced a 16% reduction in service hours, down to approximately 82,000 revenue vehicle hours.

Exhibit 3.1 Revenue Vehicle Hours: 3-Year Forecast



The effect on service and ridership as a result of the cuts is expected to be significant. This service strategy is therefore designed to stabilize core services in order to ensure that the system is in a position to rebuild its services following the period of funding cuts.

To achieve this, the service strategy takes a two-pronged approach:

- **Maintain existing service levels in core areas** with some rationalization and enhancement where land uses and travel patterns are supportive of transit; and
- **Explore new options** to provide basic mobility to sparsely populated and outlying areas.

By taking into account the constrained resources of the system, travel needs, and demographic trends, the service strategy provides a basis for future investment into the system.

#### 3.1 Hierarchy of Service

In densely populated areas with many destinations, frequent service that directly connects major trip generators can be cost-effective, efficient and more competitive with other modes of transportation. In sparsely populated areas, there is still a need for basic mobility but frequent, direct routing and adequate coverage cannot be achieved without substantial cost implications. To provide mobility and choice, Saint John Transit should aim to establish a hierarchy of efficient and complementary services with distinct standards and performance targets unique to the services tiers.

A hierarchy of service is proposed to help facilitate service planning. Routes can be classified into tiers based on level of service and service area. The link between land use and transportation is a strong determinant in the effectiveness of transit, influencing the community structure, route alignment and in turn, ridership. By creating a service hierarchy that appreciates this relationship, the long term transit vision can be achieved.

The service tiers identified in Exhibit 3.2 are designed to support the land uses and functions of their service coverage areas. They are also designed to be complementary, such that users can benefit from any combination of the services to meet their travel needs. Their accompanying service guidelines, identified in Section 4.1, are useful for performance monitoring and can be a tool to manage public expectations for the system.

**Exhibit 3.2: Proposed Service Hierarchy**

Tier	Description
<b>Frequent Transit Network</b>	<ul style="list-style-type: none"> <li>• Trunk-lines connecting to major trip generators</li> <li>• Operating in the core areas of the City which have many trip generators, and higher densities.</li> <li>• Routes should be direct and frequent</li> <li>• Minimum 15-minute headways</li> </ul>
<b>Local Services</b>	<ul style="list-style-type: none"> <li>• Feeder routes primarily connecting residential areas to major trunk lines or local trip generators (institutions, commercial areas)</li> <li>• Routes focus on increased coverage to residential areas over frequency to increase ridership</li> <li>• Headways can range between 30 minutes and an hour, depending on demand</li> </ul>
<b>Targeted Services</b>	<ul style="list-style-type: none"> <li>• Flexible/demand responsive transit options to connect people in very low density areas to main trunk lines</li> </ul>

### Frequent Transit Network

The frequent transit network will build on some of the existing high performance routes, increasing frequency to make connections to local feeder services more predictable. It will provide frequent service to major trip generators including Uptown Saint John, UNB, and the Regional Hospital. The frequent transit network can be served by standard buses, and articulated buses when warranted by capacity (e.g. at peak).

### Local Services

The local services will primarily connect residential areas to the frequent transit network and to local trip generators, including neighbourhood institutions and local commercial areas. Local services will provide coverage to residential areas that may not have densities that are supportive of frequent service, but are still likely to experience some transit demand. Local services can be served by standard or light duty buses where demand is lower.

### Targeted Services

Serving low density areas with fixed routes means the costs of operating each run is often unsustainably high, particularly given the limited opportunities to increase ridership. Despite these challenges, a base level of mobility is needed for these communities to ensure equity, access to opportunities and choice for residents. The Targeted Services category is proposed to serve these areas with alternative forms of public transportation other than fixed route service. These services can generally be characterized as either fully **demand-responsive transit** services or hybrid **flexible transit** services, as described below:



- **Demand-Responsive Transit:** Also known as dial-a-ride service, this operating model responds directly to passenger requests for transportation. These services are typically used to provide a base level of mobility in sparsely populated areas, or can supplement conventional transit by providing first and last mile service for fixed route transit. This service is typically provided by small vans or contracted taxis in well-delineated areas for the same fare as the fixed-route network. Passengers must pre-arrange their trip, which is then scheduled by a dispatcher. Vehicles are typically dispatched such that rides are shared between passengers.
- **Flexible Transit:** This is a hybrid service model that are not fully demand responsive or fixed route. Flexible transit routes enable lower service coverage in low-density, low-demand areas—particularly those that lie between areas of higher demand. These services are characterized by one or more of the following<sup>1</sup>:
  - Route and point deviation: Regularly scheduled routes that deviate from their path to serve demand within a defined zone;
  - Demand-responsive connector: Vehicles that operate on a demand-response basis within a certain zone with defined connection points to the fixed-route network;
  - Request stops: Regularly scheduled routes that serve a limited numbers of undefined stops along the route;
  - Flexible zones and route segments: Regularly-scheduled routes that operate in demand-responsive mode along certain segments or in pre-defined zones.

Technology is playing an increasingly important role in the provision of demand-responsive and flexible transit service. Traditionally, these services have been arranged through telephone calls to a dispatcher who schedules the trip manually or with the aid of scheduling software. As a result of this interaction, travellers are typically required to provide substantial advance notice when booking their trips. However, the emergence of Transportation Network Companies (Uber, Lyft, etc.) and other similar service providers has drastically improved the efficiency of the dispatching process. Vehicles are routed in real-time in response to passenger requests without a dispatcher, increasing convenience to the rider and reducing costs to the transit service provider.

The application of this type of technology to public transportation is still very new, with limited examples currently in operation within Canada. The most prominent example is Innisfil, Ontario, which has been in partnership with Uber to provide subsidized transit service since May 2017. It has been found to be a less costly alternative to fixed route transit, with a \$5.70 subsidy per ride according to initial estimates. Service is provided 24 hours/day, 7 days/week with an average wait time of 10 minutes from trip request to pick up.

### 3.2 Future Service Hours

Given the funding outlook in the next three years, a key element of the service strategy will be rebuilding services to achieve the long term vision of the system and match the anticipated population growth of the service area. To assist in the rebuilding process, service planning needs to be predictable over time, which requires setting a longer-term target for investment to 2031. The target should take into account anticipated changes in population, as well as the vision and goals of the system. Three options are described below that can be used to facilitate the service planning process.

- **Option A** maintains the 2020 level of investment, leaving the revenue vehicle hours the same even as population changes. This option will likely not yield any significant increase in ridership, and will not meet the goals of the transit system to provide

---

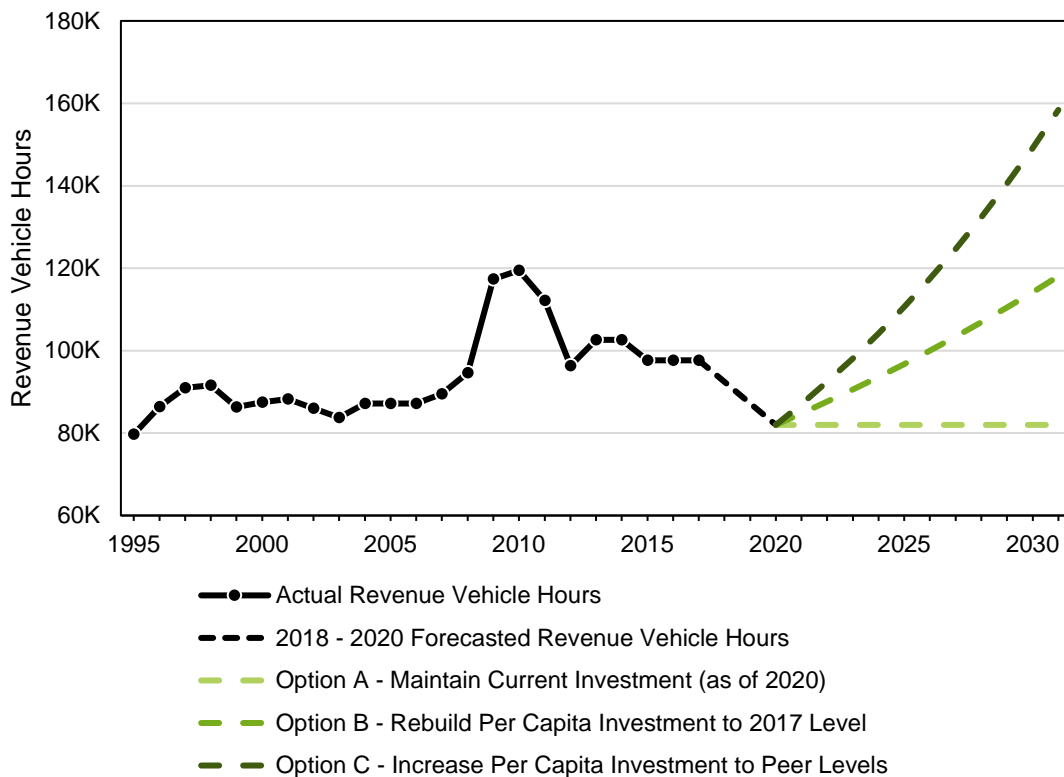
<sup>1</sup> Transit Cooperative Research Program Report 140: A Guide for Planning and Operating Flexible Public Transportation Services

mobility and choice. This scenario targets approximately 82,000 service hours in 2031.

- **Option B** ties investment in revenue vehicle hours to changes in population, with per capita investment reverting to 2017 levels. This scenario focuses on rebuilding the service following the 3-year period of budget cuts, and represents a 3% annual increase in revenue vehicle hours into 2031. With this level of investment, the frequent transit network as well as improvements to local services can be developed, and targeted services can be expanded. This scenario targets approximately 118,000 service hours in 2031.
- **Option C** increases investment in revenue vehicle hours to match the per capita investment of peer systems. While the current investment in revenue vehicle hours is fairly low, after the forecasted cuts, the system will have a significant funding gap in comparison to peer systems. To reach a similar level of per capita improvements, a 7% increase annual increase in revenue vehicle hours into 2031 will be required. This level of investment will allow for expansion in the frequent transit network and local services. If warranted by demand, additional routes for each service tier and more service areas for flexible services can be explored. This scenario targets approximately 158,000 service hours in 2031.

Exhibit 3.3 illustrates the three funding options in terms of additional revenue vehicle hours into 2031. It also shows historic investment in the system, dating back to 2005, and the forecasted revenue vehicle hours over the next three years of service cuts.

**Exhibit 3.3 Future Service Investment Options**



**Option B** is the recommended target service hours for various reasons. *PlanSJ* forecasts a decrease in the city's population until 2016, followed by a 17% increase by 2031. A majority of the decline to date has been experienced in the urban core, while residential growth is dispersed in rural settlement areas and suburban communities outside the

municipal boundaries. Option B provides a more moderate approach to increasing service by matching growth to population. This prevents a scenario where the system's growth significantly outpaces demand. Given the vision of the transit strategy, investment in the system will need to be strategic, maintaining and enhancing services to the core which has the highest employment base, while anticipating the impact the aging population and shift toward more rural and suburban settlement patterns will have on travel demand. Strong transit services in the urban core also improve the quality of life there, and may allow more people to age in place, or attract new residents.

## 4 Supporting Strategies

The following strategies should be implemented to work toward achieving the goals of the vision. They have been selected because they:

- Outline measures to evaluate the performance of the system to ensure stable core services;
- Provide guidelines for coverage and access, improving mobility and choice;
- Establish targets to match service to demand ensuring efficient operations; and
- Identify performance metrics which are the basis for a cost-effective prioritization of investments.

### 4.1 Service Guidelines

Service guidelines have been developed based on the service hierarchy identified in the service strategy, in alignment with the transit vision and direction of *PlanSJ* to support a shift towards more efficient transit. It should be noted that these guidelines represent targets against which to design future services rather than strict rules. Complete adherence to these guidelines may not be possible within the funding environment available currently or in the future.

#### 4.1.1 Service Coverage and Access

Transit coverage and access is largely determined by land use and the built form. The service strategy is designed to provide a base level of mobility for all residents; however, coverage will vary by service tier. 85% of households and employment should be within a 500m distance of the frequent transit network and the local services, or within a defined catchment area of the targeted services. The catchment area of the targeted services will be determined by their design. An additional measure of access for the targeted services can include minimizing average wait time between trip requests and pick up.

Stop spacing for the fixed route services is determined by these coverage guidelines, however it should also aim to balance access for passengers with operational needs.

- Bus stops along the **frequent transit network** should be spaced sufficiently far apart to maintain operational efficiency while providing access to major trip generators. A consistent stop spacing regime, with stops about 300 to 400 metres apart on average should be employed. Some exceptions to this spacing might be considered where there are limited trip generators.
- Route alignment and stop spacing for **local services** will aim to maximize coverage and access to bus stops along the pedestrian network. The stop spacing along these routes will be less regular than along the frequent transit network as it will be primarily dictated by the street network itself. The average stop spacing should be in the range of 250 to 300 metres.
- Depending on the design of the **targeted services**, bus stop infrastructure would be minimal. It would likely be limited to major pick up or drop off areas, as service would primarily be door-to-door. Trips within the catchment area could be door-to-door, and trips outside the catchment area could be completed by transferring to the frequent transit network or the local network at major terminals, where stops or drop off areas would be required.

Exhibit 4.1 summarizes the proposed coverage and accessibility guidelines by service tier.

**Exhibit 4.1 Service Coverage and Access Guidelines**

	Frequent Transit Network	Local Services	Target Services
	Along Primary/Commercial Corridors <sup>1</sup>	Residential Areas in the Primary Development Area <sup>1</sup>	Rural Areas <sup>1</sup>
% of Households	85%		
Walking Distance to Service	1,250m	500m	Within Defined Catchment Area
Stop Spacing	300 – 400 metres	250 – 300 metres	Only provide fixed stops at terminals

<sup>1</sup>As identified in Schedule A of *PlanSJ*

These service coverage and access guidelines can also be used to inform whether service to new developments is warranted. If new developments occur within existing fixed route coverage areas, stop spacing should be reviewed to ensure that the service coverage and access guidelines are met. If developments occur outside of existing fixed route service areas, and defined catchment areas for targeted services, they should be reviewed for inclusion in a target service catchment before reviewing whether to expand fixed route services.

#### 4.1.2 Levels of Service

Level of service for a transit route is reflected by the service span, frequency of the route, and standard vehicle load. In keeping with the service strategy identified in Section 3.1, the long term goal for level of service can be distinct for each service tier as identified below.

##### ***Span of Service***

- The **Frequent Transit Network** should operate for 18 hours a day, starting at 6:00 a.m. on weekdays; 16 hours a day, starting at 7:00 a.m. on Saturdays, and 12 hours a day starting at 7:00 a.m. on Sundays and statutory holidays.
- The **Local Services** should operate for 16 hours a day, starting at 6:00 a.m. on weekdays; 15 hours a day, starting at 7:00 a.m. on Saturdays, and 12 hours a day starting at 7:00 a.m. on Sundays and statutory holidays.
- The span of **Targeted Services**, although designed to be flexible in nature, will vary by design and availability of vehicles. At a minimum, however, services should be available over the same span as that offered for Local Services.

These service spans are consistent with the peer systems and most small- to mid-sized systems in Canada. However, they can be reviewed based on demand and resources to consider late evening service on Sundays and statutory holidays, and late night service on Fridays and Saturdays.

##### ***Frequency of Service***

- The **Frequent Transit Network** should operate every 15 minutes on weekdays, and 30 minutes on weekends; if demand warrants it and resources are available, 15 minute headways on weekends can be explored in the long run.
- The **Local Services** frequency can vary by time of day and day of week. At peak periods on weekdays, the goal should be to provide half hour headways for the high performing routes. Headways should be hour-long otherwise, unless warranted by demand. On weekends and statutory holiday buses can operate hourly unless demand warrants it.

- **Targeted Services** are designed to be responsive to demand, and as such will not have any specific frequencies. Rather than use frequency as a measure of level of service, the aim should be to minimize wait times between trip requests and pick up.

These frequencies are similar to current frequencies, with the exception of those on the frequent transit network. The main routes currently have effective 15 minute service on weekdays until 5:00 or 6:00 p.m. where their routes overlap with routes 5, 6, 7, 8 – so there is an opportunity for rationalization when implementation is considered.

#### ***Vehicle Standard Load***

It is recommended that the maximum passenger load per bus should not exceed the following guidelines:

- Weekday peak periods – on average, not exceeding 130% of the seated capacity or 50 passengers on a 12 metre bus
- All other times – on average, not exceeding 100% of the seated capacity or 37 passengers on a 12 metre bus

On average, the maximum load on a bus should not repeatedly exceed 130% of the rated seating capacity of the bus regardless of time period. When the vehicle loading repeatedly reaches the above levels, consideration should be given to reduce the headways, add extra buses, or introduce limited-service routes to supplement the main service.

## **4.2 Performance Monitoring and Evaluation**

This section identifies performance metrics to measure the effectiveness of the service. It also identifies the technology, data needs, and collection strategies needed to evaluate the performance metrics. Finally, it outlines management reporting requirements and periodic monitoring of the system to ensure the system is on its way to meet the goals and long term vision.

### **4.2.1 Performance Metrics**

Performance metrics ensure that service guidelines are met, and that the system meets the needs of its users as well and its long term vision and goals. The performance metrics selected balance the needs of the users and operators of the system, as well as the community as a whole. The metrics defined below for each service tier can be used to identify when corrective action may be required.

- **Service Utilization** measures the rate of trips per revenue service hour. Service utilization gives an indication of whether the system is meeting capacity. Automatic Passenger Counters (APC) or traditional ride counts are required to collect the boarding and alighting activity.
- **Schedule Adherence** can be measured by the **on-time performance** of the system – i.e. how closely arrival and departure times conform to the published schedules. This is particularly important for transfer-heavy system such as Saint John, as the on-time performance affects ability to make transfers for users, and system reliability for operators. Current industry standard defines early arrival as more than 1-5 minutes before the scheduled time, and late arrival as more than 3-5 minutes after the scheduled time. Early departure is defined as 1 minute or more before the scheduled departure time, and late departure is defined as more than 5 minutes after the departure time. Saint John should aim for the industry standard in schedule adherence, or better, due to the system's heavy transfer activity.

Because of the demand responsive nature of the targeted services, the service utilization measure should be used in conjunction with a measure of the rides per capita in the defined catchment area to more accurately evaluate the effectiveness. Ridership for the targeted services can be measured manually.

- Cost Recovery:** The revenue/cost (R/C) ratio indicates the percentage of operating costs which are recovered from revenues (farebox revenues plus revenue from advertising, charters, etc.). In 2016, Saint John Transit's R/C ratio was 47%--well above its peer group average of 37%. A higher R/C ratio discourages transit use through higher fares and/or reduced service levels, which hinders the attractiveness of transit. A lower R/C ratio would permit service levels to be improved which could encourage more transit use. Although service expansion would require increased municipal investment on transit, these impacts could be minimized through careful planning and efficient operations and increased ridership. It is proposed that Saint John Transit strive to achieve a cost recovery ratio consistent with its peers (37%).

Exhibit 4.2 shows the targets by service tier for the performance metrics identified above. These targets should be refined during service plan reviews and re-evaluated with any changes to the system.

**Exhibit 4.2 Performance Targets by Service Tier**

	Frequent Transit Network	Local Services	Target Services
<b>Service Utilization</b>			
Productivity (Rides per Service Hour)			
Peak Service	30	20	3
Offpeak/Evening Service	20	10	
<b>Schedule Adherence</b>			
(Target % of buses meeting the on-time performance standard)	95%		
<b>Cost Recovery</b>			
Operating revenues / Operating costs	37%		

\*Service Utilization measures for targeted transit will vary by the design of the system and vehicle types. Performance should be reviewed in conjunction with the rides per capita of the defined service area.

## 4.2.2 Technology

In order to measure the performance of the system based on the performance metrics identified, Saint John Transit will need to identify data collection strategies best suited to the system, as well as invest in technology. Data will be needed to measure schedule adherence and service utilization. Automatic Passenger Counters (APC) are the industry standard for collecting ridership data. APCs provide route ridership data, which gives the average boarding, alighting, and passenger load information for each run. Passenger boarding and alighting information can also be collected by stop, and travel time for each route segment is available.

Saint John Transit currently has 10 buses with passenger counters, representing about a quarter of its fleet. Until the whole fleet is equipped with passenger counters, it is recommended that these buses should travel along every part of every route repeatedly to collect base level data on route performance. Additionally, manual ride counts should be undertaken to validate the accuracy of the APC counts. In some instances—particularly on low-ridership routes—APCs are known to over-estimate ridership because of incorrect counting of strollers, wheelchairs, or operators entering/exiting vehicles at terminal

locations. However, these inaccuracies can be accounted for by comparing APC statistics to manual counts and adjusting reported APC counts going forward.

In addition to APCs, Automated Vehicle Location (AVL) systems can be considered to provide accurate vehicle tracking for on-road monitoring of buses. Collecting this type of data can have immediate impacts on system performance, in addition to the benefits for the performance monitoring process: it provides on-road supervisors with real-time information to identify issues.

#### **4.2.3 Management Reporting**

In addition to the performance metrics identified in Section 4.2.1, which provide different targets for each service tier, the performance of the system as a whole should also be monitored and evaluated for management reporting purposes. The system-wide data can be reviewed over time to understand system trends, and as a benchmarking tool for comparison to the performance of peer systems. These measures are already currently collected for CUTA reporting purposes and include:

- Cost Recovery (Revenue/Cost Ratio)
- Revenue Vehicle Hours per Capita
- Annual Ridership, which can also be provided by route and by fare type
- Service Utilization – including fleet utilization

The measures outlined above, as well as those in Section 4.2.1, should be easily accessible by decision makers. To inform decision makers, it may be useful to provide monthly reports outlining unscheduled maintenance and revenue information by fare type. Information such as on-time performance and ridership by route can be provided over longer intervals to better identify trends.

#### **4.2.4 Service Plan Reviews**

Regular service plan reviews of a transit system are important to ensuring that the system meets the needs of residents and aligns with the city's growth patterns. In addition, they present an opportunity for independent appraisal of the system to review performance. Service plan reviews differ from annual service plans, which are informed by service guidelines and are a tool to implement the recommendations of the service plan reviews by allocating budgets and revenue service hours on an annual basis.

Service plan reviews are typically conducted at 5 year intervals in order to provide medium-term, tactical direction. If the service plan recommends changes, a 5-year interval is an appropriate amount of time to allow them to take effect before evaluating them. Service plan reviews are also a good opportunity to outline capital plans and projects, as well as review fares and other revenue streams.

The service plan review process is an opportunity to check in with the long term goals of the system to ensure that the system is moving in the right direction. As the community served changes, the process is an opportunity to re-examine service and performance guidelines to ensure they're still relevant.

### **4.3 Organizational Collaboration**

Transit operations are supported by various City functions, and as such, collaboration is necessary to ensure efficient service delivery. Some city processes that can improve the transit operations and access for users include:

1. Working with City roadway maintenance services to:



- Prioritize snow removal on transit routes; and
  - Create a process for communication anticipated road closures, construction, and other potential disruptions to transit operations.
2. Collaboration with City GIS Division to develop a new system map, in addition to the existing individual route maps, to improve access for passengers.
  3. Improving bus stop facilities by:
    - Working with City community planning service to create processes for the provision of passenger amenities at bus stops, including lighting, shelters, and benches through the development process;
    - Developing a program to improve bus stop accessibility as well as sidewalk connections to stops; and
    - Working with City sidewalk maintenance services to prioritize maintenance and snow removal on pedestrian links connecting to bus stops, and at bus stops.
  4. Working with City by-law and traffic enforcement to ensure regulations are being followed (e.g. no stopping or parking in bus stop zones, Yield to Bus laws etc.) to ensure ease of transit operations.
  5. Working with City growth and community development services to explore opportunities for transit priority measures (e.g. HOV/bus lanes, signal priority etc.) in Primary Corridors to improve schedule adherence.

## 4.4 Transit Supportive Development

The key benefit of transit supportive development is that it helps transit to function efficiently. When transit is efficient, it can be competitive with driving and support growth while alleviating congestion. *PlanSJ* includes various transit supportive development policies aimed at making the provision of transit in Saint John efficient. It does so by being cognizant of the impact land use decisions and the built form have on the effectiveness of transit. It encourages growth to be directed at neighbourhood intensification areas in both urban and suburban areas to ensure appropriate densities and mixed land uses – both of which are supportive of transit. It also designates Primary Corridors where the adjacent land uses are supportive of improving transit ridership, and the corridors are designed with transit needs in mind. Transit supportive street design features may include HOV or bus lanes, turn restrictions, and parking and stopping restrictions along routes. In addition, pedestrian friendly features such as wide sidewalks, benches, and pedestrian level lighting should be encouraged to connect to bus stops.

*PlanSJ* also encourages street layouts that facilitate effective transit operations for new developments, as well as connectivity for pedestrians and active transportation between adjoining neighbourhoods.

## 5 Implementation Plan

This section outlines service directions for the short, medium and long term to develop the hierarchy of service. It also identifies the resources and investment required for each service tier to meet mode share targets and a timeline for investment.

### 5.1 Short Term Focus Areas

Due to forecast budgets reduction over the next three years, short term recommendations focus on maintaining core services and finding opportunities to implement flexible transit. The work done in the service review and the service guidelines identified in Section 4.1 help to establish which services are part of the core of the system, and which can be candidates for flexible transit options. Exhibit 5.1 outlines the changes recommended in the service review at a route level, while Exhibit 5.2 highlights areas of Saint John for potential service expansion and service reduction.

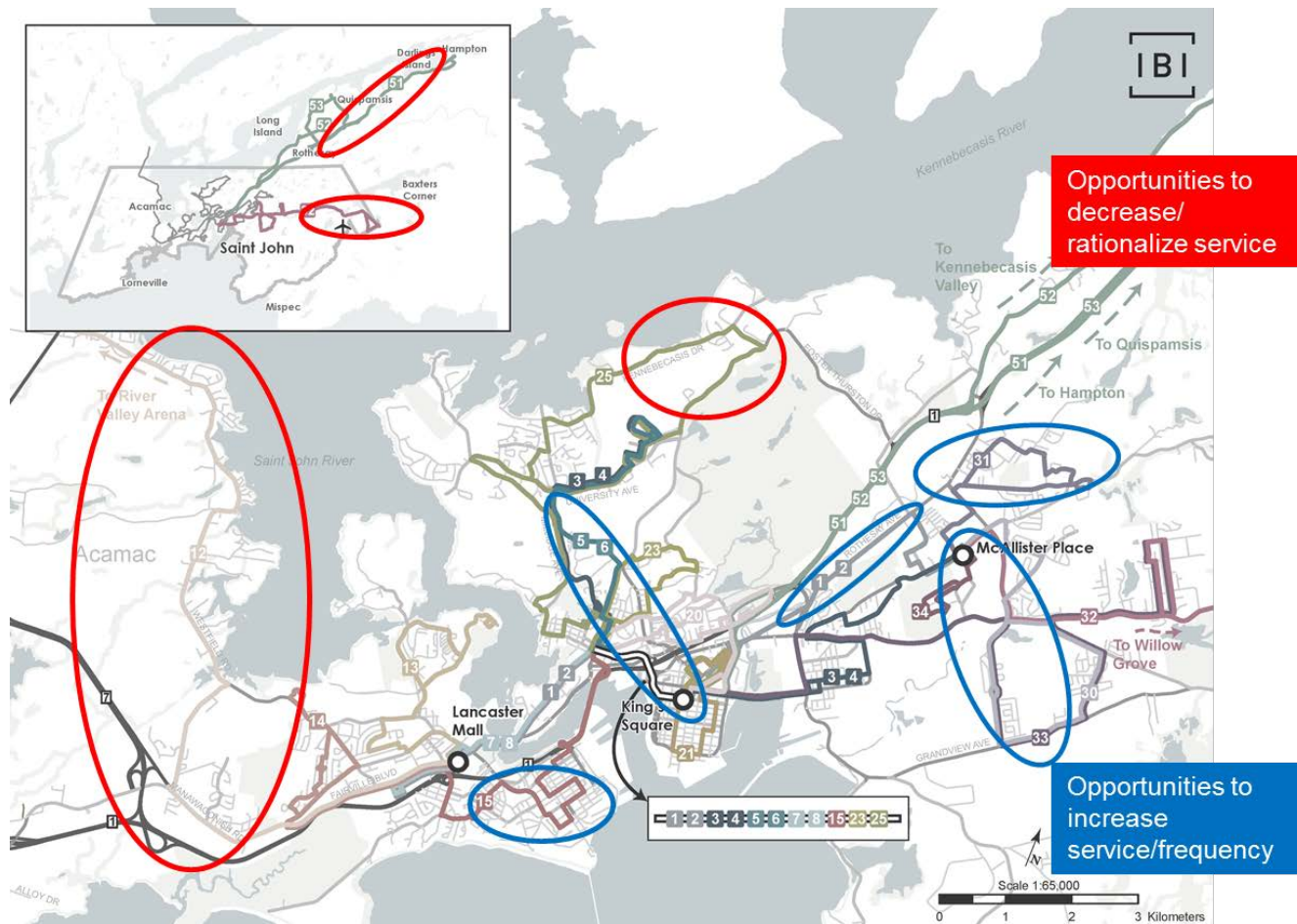
The opportunities for improvements outlined in Exhibit 5.1 can be explored through annual service plans and the service plan review process. As noted in the Transit Strategy's first phase report, dedicated planning staff and software for scheduling work will facilitate these processes.

**Exhibit 5.1 Service Review Key Route by Route Findings**

Route	Opportunity	Future Role in the Hierarchy
1/2	Review route alignment to make more direct and reduce travel time; decrease run time	Frequent Transit Network
3/4	Address inconsistencies in cycle time; review route alignment	Frequent Transit Network
5/6	Some platooning occurs hourly with routes 3/4; opportunity to rationalize service or provide better coverage elsewhere	Local Services
7/8	Low ridership off peak, duplicates routes 1/2 service; opportunity to rationalize service with development of Frequent Transit Network	---
15A/B	Review route alignment to make more direct and reduce operating speed	Frequent Transit Network
21	Low average speed, can be interlined with 20 for better service to the hospital, or to provide better coverage	Local Services
23	Low average speed, opportunity to increase coverage; some service duplication between routes 20 and 23	Local Services
12, 25, 32	Very long routes with large service areas, few trip generators, and limited opportunity for ridership growth or efficient expansion	Candidates for Targeted Service

The candidate routes for Targeted Services (12, 25, 32) are selected based on their reported performance and by the rides per capita in each traffic zone according to the 2015 Household Travel Survey and 2011 Census. These routes represent approximately 6% of annual service hours and may be eligible for rationalization. However, due to the absence of up to date performance information, they should be further studied by staff to examine the feasibility of replacing them with flexible transit.

Exhibit 5.2: Short-Term Focus Areas for Transit Expansion and Rationalization



## 5.2 Service Directions

### Frequent Transit Network

#### **Short Term Goal:**

- Service should be maintained for the routes comprising the frequent transit network, and alignment can be reviewed to ensure the routes are direct while meeting recommended coverage guidelines.

#### **Long Term Goals:**

- To achieve minimum 15 minute headways and provide timed transfers to local services at major terminals.
- Improvements to bus stops should be considered to limit dwell times at high demand stops (e.g. level and all-door boarding).
- To operate on corridors with transit supportive features (e.g. HOV/transit lanes, transit signal priority)

### Local Services

#### **Short Term Goal:**

- Current services should be maintained on high-performing local routes, and opportunities to increase coverage or rationalize redundant service in low ridership areas should be explored

#### **Long Term Goals:**

- To provide more coverage than the frequent transit network, which focuses on direct routing.
- To provide 30 to 60 minute headways with timed transfers that are easy to understand to and from the frequent transit network.
- Bus stops should be easily accessible along the pedestrian network and passenger amenities (shelters, lighting, benches etc.) should be provided at stops to make transit more attractive.

### Targeted Services

#### **Short Term Goal:**

- Saint John Transit can explore the option of flexible transit on a pilot basis to serve some of their low performing fixed routes – particularly those serving outlying areas. The service can be designed to partner with local taxis, or Saint John Transit can operate it with smaller community buses.

#### **Long Term Goals:**

- Serve low density outlying areas with flexible services that connect to fixed-route services.
- Minimize wait times between trip requests and pick up, and minimize travel time.
- Use flexible services to explore expansion into new service areas.

## 5.3 Resource Requirements

The preferred investment scenario identified in Section 3, Option B, recommends rebuilding services to the 2017 per capita spending levels. In 2020, after the budget cuts, the system will be operating with approximately 82,000 annual service hours. The Option B target is approximately 118,000 hours, an increase of 36,000 by 2031. This represents an additional 3,300 hours to the system annually.

Exhibit 5.3 is a summary of the conceptual operating characteristics of the 2031 network on weekdays and weekends. This summary does not include the Comex routes, which require approximately 4,500 service hours annually. This scenario requires approximately 98,500 annual service hours, with 68,500 annual hours for the frequent transit network, and 30,000 annual hours for the local services. The remaining 20,000 service hours (i.e. approximately \$200,000) can be used toward providing targeted services.

With this allocation, the frequent transit network can be comprised of 5 routes with 30 to 40 minute cycle times, 15 minute headways on weekdays, and 30 minute headways on weekends and statutory holidays. The Local services can be comprised of 7 routes with 30 to 60 minute cycle times. 3 of the 7 routes can have 30 minute headways at peak on weekdays. This also allows Saint John Transit to maintain route 33 as an express service operating during peak periods. On weekends and statutory holidays, the local services can operate with hour long headways. This allocation allows some route realignment, to streamline the frequent transit network routes and to increase coverage on the local service routes. A review of route alignments should be conducted to ensure coverage and access guidelines are met.

The number of 40-foot buses required to operate the 2031 system is reduced, due to the reduction in fixed routes. This scenario requires 21 buses for peak period services, plus a 20-25% spare ratio, for a total of 27 buses. While this is fewer than the system currently operates, Saint John Transit may opt to operate their target services and will need to acquire the appropriate fleet for that purpose.

**Exhibit 5.3 2031 Conceptual Network Operating Characteristics Summary**

Route	Headway (mins) peak/offpeak	Cycle Time (mins) minimum/m aximum	Buses Required peak/offpeak	Daily RVH	Annual RVH
<b>Weekday</b>					
Frequent Transit Network	15	30/40	13.0	228	59,508
Local Services	30/60	30/60	8 / 6	90	23,490
Target Services				53	13,929
<b>Subtotal (Weekdays)</b>			<b>21 / 19</b>	<b>318</b>	<b>96,928</b>
<b>Saturday</b>					
Frequent Transit Network	30	30/40	7.0	101	4,848
Local Services	60	30/60	5.0	68	3,264
Target Services				53	2,561
<b>Subtotal (Saturday)</b>			<b>12.0</b>	<b>169</b>	<b>10,665</b>
<b>Sundays and Statutory Holidays</b>					
Frequent Transit Network	30	30/40	7.0	76	4,332
Local Services	60	30/60	5.0	54	3,078
Target Services				53	3,042
<b>Subtotal (Sundays and Statutory Holidays)</b>			<b>12.0</b>	<b>130.0</b>	<b>10,452</b>
				<b>Total</b>	<b>118,046</b>