TECHNICAL MEMORANDUM 3

Date: June 24, 2019

Subject: Shuttle Alternatives and Costs

Salem
Still making history.

NELSON
NYGAARD

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Introduction

RECOMMENDATION

This study identified three potential service recommendations based on market demands, community needs, and previous studies conducted by Salem. Each of these potential recommendations were assessed to determine which alternative was most appropriate for Salem. The assessment included a detailed look at the benefits and challenges of the service type, total service cost, capital demands, and implementation feasibility.

The result was a node based service alternative also called microrotransit. This option provided the greatest service benefits, within reasonable cost, had low capital demands, and is quickly implementable. Additionally, this option is designed to be scalable into the future. Nodes may be moved with relatively low effort, new nodes may be added based on overall demand – service may be modified over time to a traditional fixed route.

Recommended Alternative

NODE BASED MICROTRANSIT

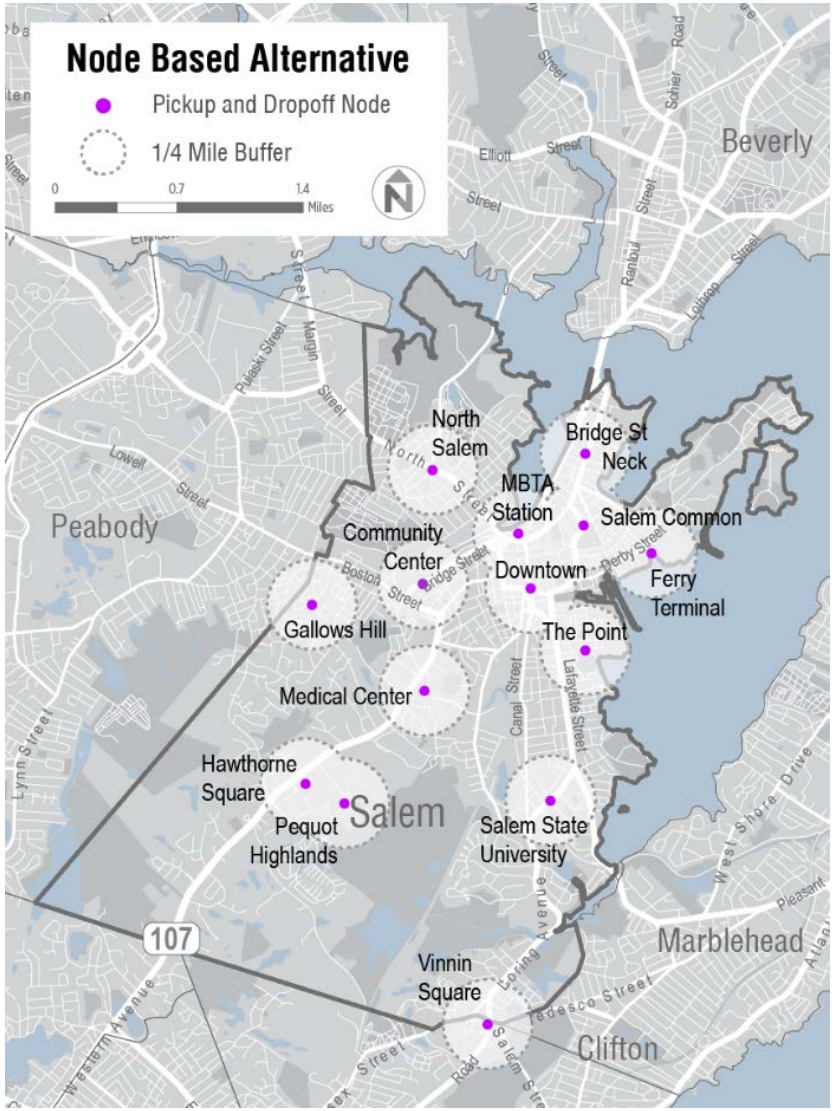
Overview

This microtransit service operates as a shared shuttle which serves customers via designated pick-up and drop-off locations, or nodes that are not served on a fixed schedule. Trips are provided at request, which can be made over the phone, by way of the internet, or via a smartphone application.

Microtransit is highly adaptable because the service responds to customer demand in real time, only serving nodes with requested pick-ups or drop-offs, ensuring that service is always operating where the demand is. Microtransit service works best in markets where customers utilize public transportation daily for consistent purposes, such as work trips. However, unlike fixed-route or traditional demand-response services, microtransit responds actively to market demand: for example, providing access to jobs during peak commute times and then adjusting to provide access to shopping in the evenings, as customer travel patterns shift throughout the day. Additionally, since the service utilizes software algorithms to optimize customer pick-us and drop-offs. These same algorithms also warn operators of traffic delays and reroute vehicles to minimize travel times.

Microtransit is often introduced as a precursor or test for fixed-route transportation. Providers monitor ridership activity over time to assess when and where demand is consistent. This information is then used to deploy traditional fixed-route service.

Figure 1 | Node Based Microtransit



Node Locations

Nodes serve as the sole locations for customer boardings and alightings. Nodes located throughout Salem provide centralized points for pick-ups and drop-offs. Sites have been selected to provide residential neighborhood coverage as well as serve popular origins and destinations. Some of the nodes may be co-located with existing MBTA bus stops (*or private shelters) to make transfers between systems seamless and to maximize cost efficiency/utilize existing infrastructure.

Activity Centers Served

- MBTA CR Station
- Salem Common
- Ferry Terminal
- Community Life Center
- Library
- Peabody Essex Museum
- Riley Plaza
- Shetland Park
- North Shore Medical Center
- Salem State University, N campus
- Hawthorne Square
- Vinnin Square

Table 1 | Node Stop Locations

Node Locations					
Node Name	On Street	At Street	Co-locate	Has Bench	Needs Shelter
North Salem	North St	Symonds St	Yes	Future	-
MBTA CR Station	Salem Station Busway	-	Yes	Yes	-
Salem Common	N. Washington Sq.	Winter St	Yes	-	Yes
Ferry Terminal	Blaney St	-	-	-	Yes
Downtown	Washington St	New Derby St	Yes	Yes	-
The Point	Leavitt St	Congress St	Yes	Future	-
Community Center	Bridge St	-	-	-	Yes
Gallows Hill	Ord St	Maple St	-	-	Yes
Medical Center	Surgicenter	Highland Ave	Yes*	-	Yes
SSU	Loring Ave	Rainbow Terr	Yes	Future	-
Vinnin Square	Paradise Rd	Vinnin St	Yes	-	Yes
Hawthorne Square	Market Basket	Highland Ave	-	-	-
Pequot Highlands	First St	Farrell Court	-	-	Yes
Bridge Street Neck	Bridge St	Skerry St	Yes	-	Yes

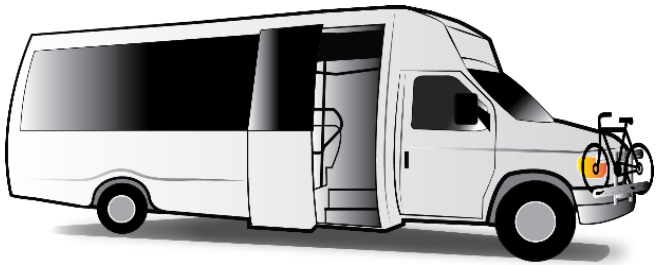
Capital Needs

Microtransit requires several capital investments for implementation. These investments include vehicles and node shelters.

Vehicles

Microtransit utilizes cutaway vehicles to provide service. These vehicles utilize a van chassis and body construction as a base platform, which can be fitted with a passenger compartment capable of seating 8 to 30 customers. The vehicle's size makes them ideal for navigating through neighborhoods and parking lots, where larger transit vehicles cannot maneuver. The size also provides some fuel efficiencies over larger buses. Cutaways may be equipped with bike racks, fareboxes, and wheelchair access. Traditionally cutaways have utilized rear wheelchair lifts for accessibility, however recent improvements have placed wheelchair ramps in the front of the vehicle as shown in Figure 2.

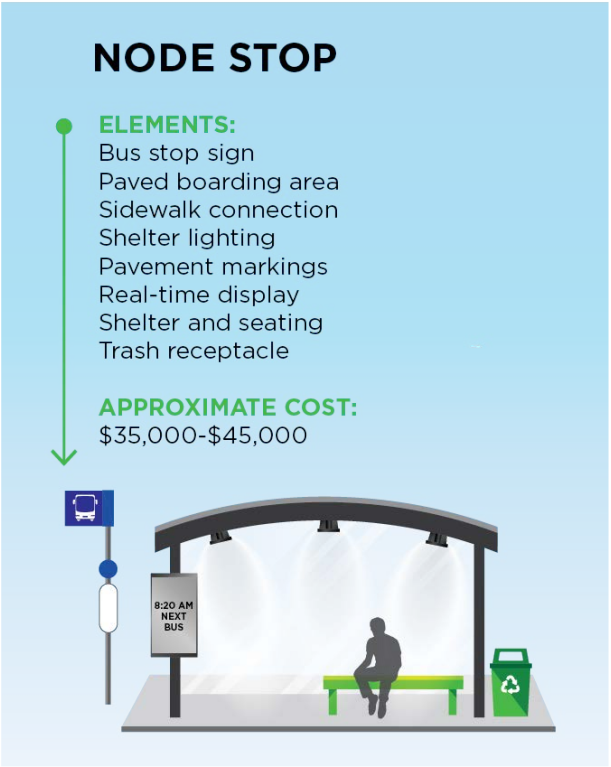
Figure 2 | Cutaway with Side Ramp



Node Shelters

The node-based alternative has a limited number of stops as compared to traditional fixed-route service. With few stops, it is possible to provide more passenger amenities. Providers often install enhanced waiting areas, which are more element-rich than a simple bus stop sign. These node stops are often outfitted with a concrete waiting pad, bench, shelter, lighting, trash receptacle, and real-time sign. Figure 3 shows an example of a node stop with customer amenities.

Figure 3 | Node Stop



Service Characteristics

Service will operate from 7 a.m. to 7 p.m. on weekdays, Saturdays, and Sundays. Expected wait times would vary throughout the day based on demand and traffic. Customers could expect to wait between 10 to 30 minutes on average. Significant demand or traffic delays could result in wait times up to 60 minutes on rare occasions.

Table 2 | Service Statistics

Route	Span	Frequency			Vehicles		
	Revenue Hours	AM	Midday	PM	AM	Midday	PM
Weekday	7 am – 7 pm	N/A	N/A	N/A	1	1	1
Saturday	7 am – 7 pm	N/A	N/A	N/A	1	1	1
Sunday	7 am – 7 pm	N/A	N/A	N/A	1	1	1

Cost

The cost of microtransit service includes both operating and capital cost. Operating cost are determined by the total hours of service. Based on an estimated operating cost of $85 per hour, total operating cost are $369,000 annually (see Table 3).

Table 3 | Operating Cost

Route	Weekday		Saturday		Sunday		Total
	Revenue Hours	Daily Cost	Revenue Hours	Daily Cost	Revenue Hours	Daily Cost	Annual Cost
Node	12	$1,020	12	$1,020	12	$1,020	$369,000

Capital cost are determined by the number of vehicles required to operate the service and spares for redundancy and the number of new node stops and upgraded existing stops. Total capital cost are estimated at $790,000 (see Table 4).

Table 4 | Capital Cost

	Units	Unit Cost	Total Cost
Vehicle	2 (1 in service +1 spare)	$150,000	$300,000
Stops	10	$45,000	$450,000
Upgrade existing stops	4	$10,000	$40,000
Total			$790,000

Benefits and challenges

Benefits	Challenges
▪ **Adaptability:** Service shifts with travel demands through the day ▪ **Convenience:** New technology is convenient and user friendly, and most systems aim to guarantee fast response times ▪ **Geographic Coverage:** Provides service in areas that are not conducive to fixed-route service	▪ **Cost per Rider:** Potentially higher cost per rider due to longer distances traveled by customers to varying destinations ▪ **Operating Cost:** Need adequate number of vehicles in service to guarantee fast response times

Rejected Alternatives

RIDERSHIP BASED FIXED ROUTE

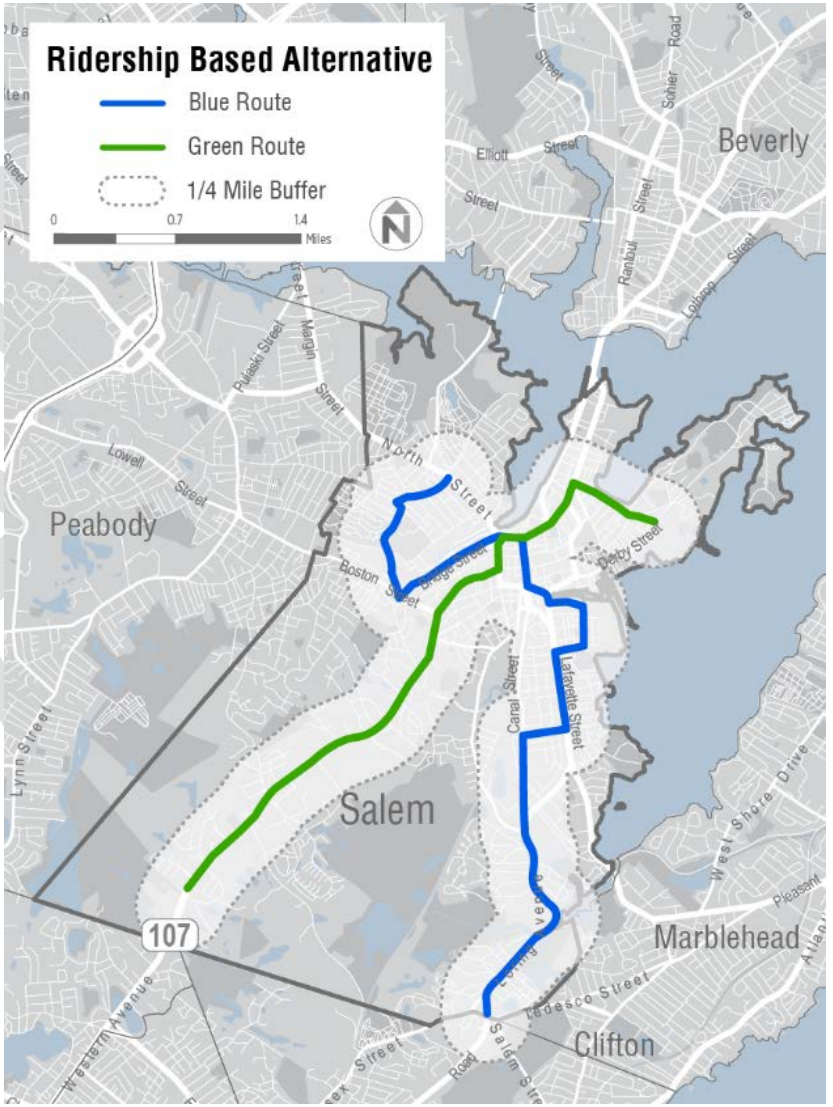
Overview

Fixed-route public transportation service operates along a fixed path with a set schedule. It is a high capacity service that serves important corridors and links common destinations such as employment centers, high population areas, and activity centers.

This service type is most familiar to potential riders, with relatively equal stop spacing along a fixed alignment. Fixed stops can be co-located with other transportation services such as train stations, Ferry terminals, or other bus systems to create intermodal hubs that increase regional mobility for riders. Fixed-route service works best in markets where customers utilize public transportation daily for consistent purposes, such as work trips. While the service provides opportunities for discretionary trips, it is most successful when focused on a specific market with a consistent customer base to ensure efficiency.

The ridership based fixed-route alignment focuses on serving areas which will generate the most consistent customer activity, but do not service neighborhoods or provide front door access to employment at commercial destinations. The alignment largely mirrors that of the existing MBTA service, serving the areas of highest ridership demand in Salem. The proposed Blue Route serves many of the same destinations as MBTA Route #455/459, while the proposed Green Route serves the same destinations as MBTA Route #450/456.

Figure 4 | Ridership Based Fixed Route Map



By serving popular destinations in the community which are shared with MBTA bus routes, this alternative increases the frequency of transit service along busy corridors while adding new connections. Some bus stops can be co-located with MBTA stops.

Turn List

Both proposed fixed routes provide bidirectional service and add key east and west connections, not currently served by existing transit options. Tables 5 and 6 illustrate the proposed alignments for both routes.

Table 5 | Green Route Turn List

Green Route – 3.98 miles		
From	Turn	To
South Terminus (Walmart)	Left	Highland Ave
Highland Ave	Straight	Essex St
Essex St	Left	North St
North St	Right	Bridge St
Bridge St	Right	Bridge St
Bridge St	Right	Webb St
Webb St	Straight	North Terminus

Table 6 | Blue Route Turn List

Blue Route – 5.24 miles		
From	Turn	To
South Terminus	Straight	Paradise Rd
Paradise Rd	Right	Loring Ave
Loring Ave	Left	Canal St
Canal St	Right	Ocean Ave
Ocean Ave	Left	Lafayette St
Lafayette St	Right	Leavitt St
Leavitt St	Left	Congress St
Congress St	Left	Ward St
Ward St	Right	Lafayette St
Lafayette St	Left	New Derby St
New Derby St	Right	Washington St
Washington St	Left	Bridge St
Bridge St	Right	Goodhue St
Goodhue St	Straight	Grove St
Grove St	Left	Tremont St
Tremont St	Right	School St
School St	Straight	North Terminus

Activity Centers Served

- MBTA CR Station
- Salem Common
- Ferry Terminal
- Waterfront
- Community Life Center
- Library
- Peabody Essex Museum
- Riley Plaza
- Shetland Park
- North Shore Medical Center
- High School
- Salem State University, N and S campuses
- Hawthorne Square
- Vinnin Square
- Walmart

Capital Needs

Fixed-route transit requires several capital investments for implementation. These investments include vehicles and bus stops.

Vehicles

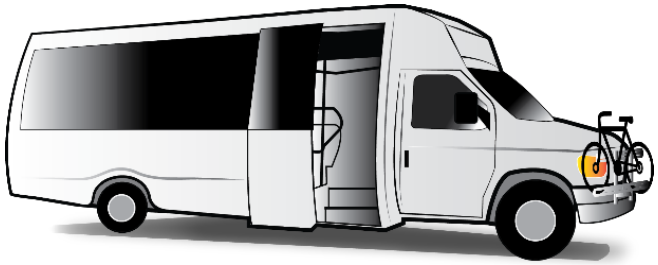
Fixed-route transit can operate with a variety of vehicles depending on demand. Services are often operated with transit buses like those in Figure 5. These buses are most often 30' or 40' long and can seat between 20 and 40 passengers. Even in environments where this level of capacity is not needed transit buses are often used due to their superior comfort and durability, as fixed-route service is often more demanding due to operating conditions. Transit buses can be equipped with bike racks, fareboxes, and wheelchair ramps.

Figure 5 | Transit Bus

Alternatively, fixed-route services may be operated with a cutaway vehicle. These vehicles utilize a van chassis and body construction as a base platform, which can be fitted with a passenger compartment capable of seating 8 to 30 customers, which can accommodate demand on lower productivity route. The size also provides some fuel efficiencies over larger buses. Cutaways may be equipped with bike racks, fareboxes, and wheelchair access. Traditionally cutaways have utilized rear wheelchair lifts for accessibility, however recent improvements have placed wheelchair ramps in the front of the vehicle as shown in Figure 6.

For the ridership based fixed-route alternative a 30' transit bus is recommended due to its superior comfort and durability.

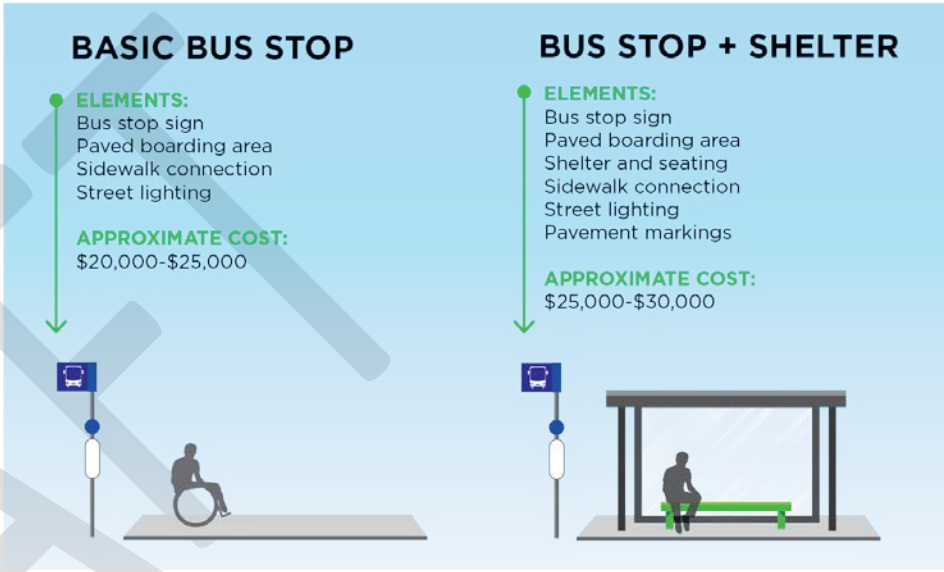
Figure 6 | Cutaway with Side Ramp



Bus Stops

Fixed-route service requires equal stop spacing, with 4 to 6 stops per mile. Fixed-route service also requires an inbound and outbound stop at each location. The proposed ridership based fixed-route services would require an estimated 85 bus stops. As such, most bus stops would require simple stop designs with essential elements in order to be cost effective. At limited high ridership locations, a bench and shelter would be provided for additional customer comfort. Figure 7 shows an example of a basic bus stop and a stop with a bench and shelter.

Figure 7 | Bus Stops



Service Characteristics

Service would operate from 7 a.m. to 7 p.m. on weekdays, Saturdays, and Sundays at a frequency of every 60 minutes.

Table 7 | Service Statistics

Route	Span	Frequency			Vehicles		
	Revenue Hours	AM	Midday	PM	AM	Midday	PM
Weekday	7 am – 7 pm	60	60	60	2	2	2
Saturday	7 am – 7 pm	60	60	60	2	2	2
Sunday	7 am – 7 pm	60	60	60	2	2	2

Cost

The cost of fixed-route service includes both operating and capital cost. Operating cost are determined by the total hours of service. Based on an estimated operating cost of $85 per hour, total operating cost would be $737,000 annually (see Table 8).

Table 8 | Operating Cost

Route	Weekday		Saturday		Sunday		Total
	Revenue Hours	Daily Cost	Revenue Hours	Daily Cost	Revenue Hours	Daily Cost	Annual Cost
Blue	12	$1,020	12	$1,020	12	$1,020	$737,000
Green	12	$1,020	12	$1,020	12	$1,020	

Capital cost are determined by the number of vehicles required to operate the service and spares for redundancy, and the number of bus stops and upgraded existing stops. Total capital cost are estimated at $2,780,000 (see Table 9).

Table 9 | Capital Cost

	Units	Unit Cost	Total Cost
Vehicle	3 (2 in service +1 spare)	$350,000	$1,500,000
Basic Bus Stop	20	$25,000	$500,000
Bus Stop + Shelter	6	$30,000	$180,000
Upgrade existing stops	60	$10,000	$600,000
Total			$2,780,000

Benefits and challenges

Benefits	Challenges
▪ **Cost per Rider:** Lower cost per rider due to higher utilization per trip ▪ **Predictability:** Consistent routes and schedules make service easy to understand ▪ **Speed and Directness:** Typically operates along the most direct path possible, providing fast and attractive service	▪ **Paratransit:** Requires complementary paratransit service, which would require additional coordination with MBTA's The Ride ▪ **Service Area:** Limited geographic coverage, with service focused in higher density / demand areas and corridors

COVERAGE BASED FIXED ROUTE

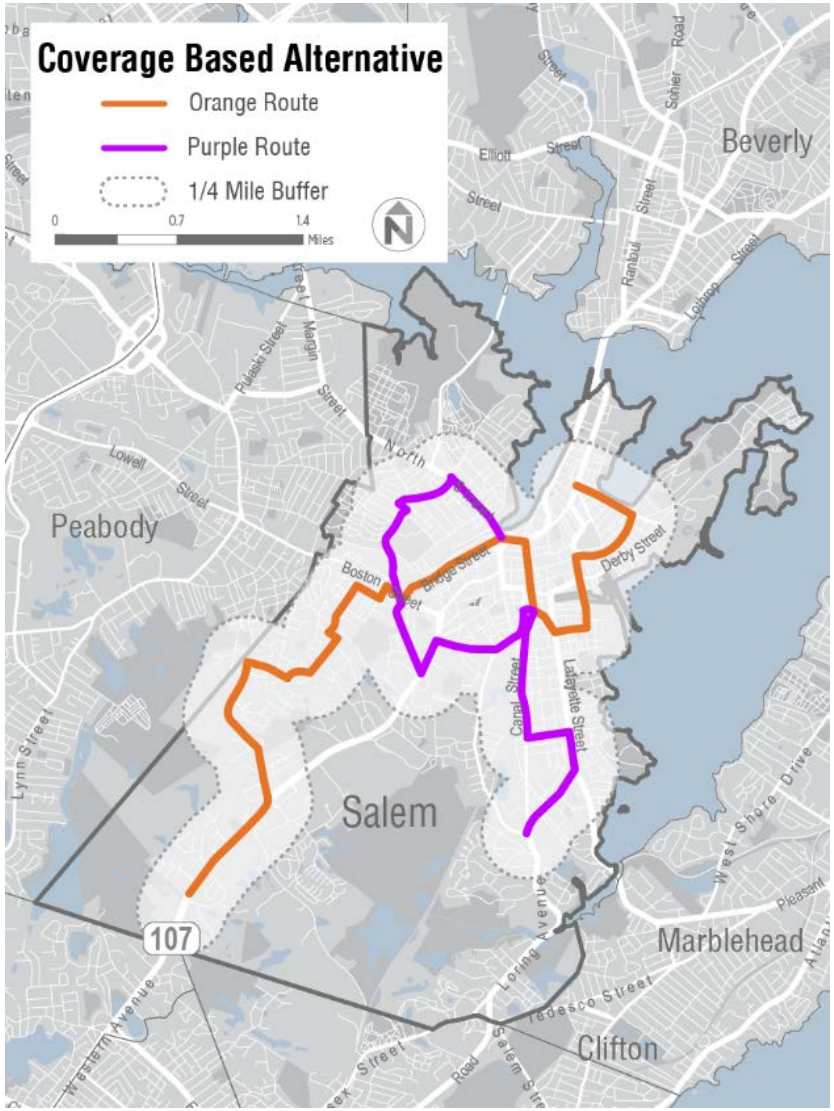
Overview

Fixed-route public transportation service operates along a fixed path with a set schedule. It is a high capacity service that serves important corridors and links common destinations such as employment centers, high population areas, and activity centers.

This service type is most familiar to potential riders, with relativity equal stop spacing along a fixed alignment. Fixed stops can be co-located with other transportation services such as train stations, Ferry terminals, or other bus systems to create intermodal hubs that increase regional mobility for riders. Fixed-route service works best in markets where customers utilize public transportation daily for consistent purposes, such as work trips. While the service provides opportunities for discretionary trips, it is most successful when focused on a specific market with a consistent customer base to ensure efficiency.

The coverage based fixed-route alignment focuses on providing neighborhood-based service where there is no or limited existing transit. This alternative complements the MBTA bus routes currently serving Salem, allowing for transfers between systems to cover more potential riders in the community.

Figure 8 | Coverage Based Fixed Route Map



Turn List

Both proposed fixed routes provide bidirectional service and add key east and west connections, not currently served by existing transit options. Table 9 and 6 illustrate the proposed alignments for both routes.

Figure 9 | Purple Route Turn List

Purple Route – 4.37 miles		
From	Turn	To
South Terminus	Straight	Loring Ave
Loring Ave	Left	Lafayette St
Lafayette St	Left	Ocean Ave
Ocean Ave	Right	Canal St
Canal St	Left	Mill St
Mill St	Left	Margin St
Margin St	Right	Jefferson Ave
Jefferson Ave	Right	Jackson St
Jackson St	Left	Highland Ave
Highland Ave	Right	Proctor St
Proctor St	Left	Goodhue St
Goodhue St	Straight	Grove St
Grove St	Left	Tremont St
Tremont St	Right	School St
School St	Right	North St
North St	Right	Bridge St

Figure 10 | Orange Route Turn List

Orange Route – 5.73 miles		
From	Turn	To
South Terminus (Walmart)	Left	Highland Ave
Highland Ave	Left	Marlborough Rd
Marlborough Rd	Right	Rockdale Ave
Rockdale Ave	Left	Circle Hill Rd
Circle Hill Rd	Left	Gallows Hill Rd
Gallows Hill Rd	Left	Witch Way
Witch Way	Right	Summit St
Summit St	Right	Butler St
Butler St	Left	Hanson St
Hanson St	Right	Boston St
Boston St	Left	Bridge St
Bridge St	Right	Washington St
Washington St	Left	Washington St
Washington St	Left	Dow St
Dow St	Left	Congress St
Congress St	Straight	Hawthorne Blvd
Hawthorne Blvd	Right	Essex St
Essex St	Left	Webb St
Webb St	Straight	North Terminus
Bridge St	Left	North Terminus (Salem Station Busway)

Activity Centers Served

- MBTA CR Station
- Salem Common
- Ferry Terminal
- Waterfront
- Community Life Center
- Stop & Shop
- Library
- Peabody Essex Museum
- Riley Plaza
- Shetland Park
- North Shore Medical Center
- Salem State University, N campus
- Hawthorne Square
- Walmart

Capital Needs

Fixed-route transit requires several capital investments for implementation. These investments include vehicles and bus stops.

Vehicles

Fixed-route transit can operate with a variety of vehicles depending on demand. Services are often operated with transit buses like those in Figure 11. These buses are most often 30' or 40' long and can seat between 20 and 40 passengers. Even in environments where this level of capacity is not needed transit buses are often used due to their superior comfort and durability, as fixed-route service is often more demanding due to operating conditions.

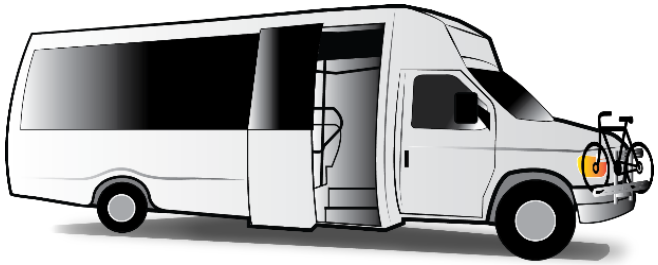
Transit buses can be equipped with bike racks, fareboxes, and wheelchair ramps.

Figure 11 | Transit Bus

Alternatively, fixed-route services may be operated with a cutaway vehicle. These vehicles utilize a van chassis and body construction as a base platform, which can be fitted with a passenger compartment capable of seating 8 to 30 customers, which can accommodate demand on lower productivity route. The size also provides some fuel efficiencies over larger buses. Cutaways may be equipped with bike racks, fareboxes, and wheelchair access. Traditionally cutaways have utilized rear wheelchair lifts for accessibility, however recent improvements have placed wheelchair ramps in the front of the vehicle as shown in Figure 12.

For the coverage based fixed-route alternative a cutaway bus is recommended due to its superior comfort and durability.

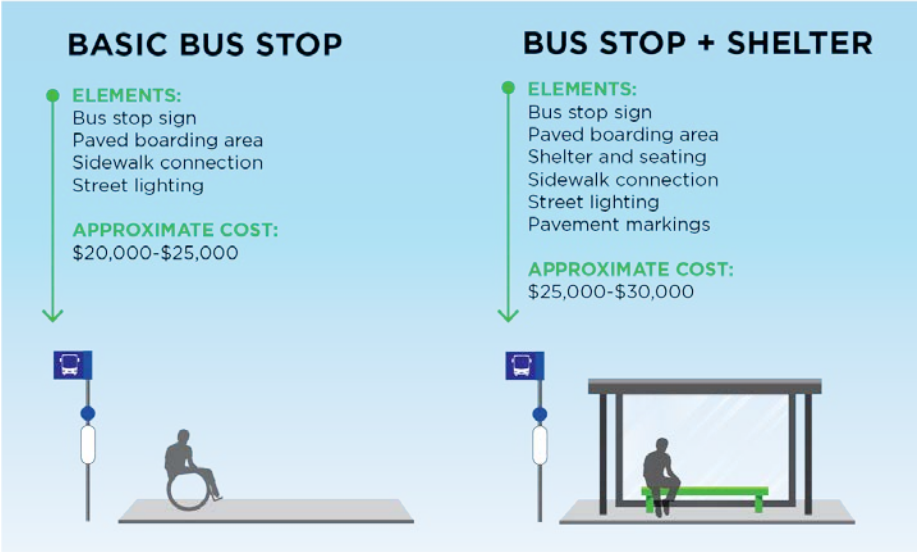
Figure 12 | Cutaway with Side Ramp



Bus Stops

Fixed-route service requires equal stop spacing, with 4 to 6 stops per mile. Fixed-route service also requires an inbound and outbound stop at each location. The proposed ridership based fixed-route services would require an estimated 85 bus stops. As such, most bus stops would require simple stop designs with essential elements in order to be cost effective. At limited high ridership locations, a bench and shelter would be provided for additional customer comfort. Figure 13 shows an example of a basic bus stop and a stop with a bench and shelter.

Figure 13 | Bus Stops



Service Characteristics

Service would operate from 7 a.m. to 7 p.m. on weekdays, Saturdays, and Sundays at a frequency of every 60 minutes.

Table 10 | Service Statistics

Route	Span	Frequency			Vehicles		
	Revenue Hours	AM	Midday	PM	AM	Midday	PM
Weekday	7 am – 7 pm	60	60	60	2	2	2
Saturday	7 am – 7 pm	60	60	60	2	2	2
Sunday	7 am – 7 pm	60	60	60	2	2	2

Cost

The cost of fixed-route service includes both operating and capital cost. Operating cost are determined by the total hours of service. Based on an estimated operating cost of $85 per hour, total operating cost would be $737,000 annually (see Table 11).

Table 11 | Operating Cost

Route	Weekday		Saturday		Sunday		Total
	Revenue Hours	Daily Cost	Revenue Hours	Daily Cost	Revenue Hours	Daily Cost	Annual Cost
Orange	12	$1,020	12	$1,020	12	$1,020	$737,000
Purple	12	$1,020	12	$1,020	12	$1,020	

Capital cost are determined by the number of vehicles required to operate the service and spares for redundancy, and the number of bus stops and upgraded existing stops. Total capital cost are estimated at $2,300,000 (see Table 12).

Table 12 | Capital Cost

	Units	Unit Cost	Total Cost
Vehicle	3 (2 in service +1 spare)	$150,000	$450,000
Basic Bus Stop	60	$25,000	$1,500,000
Bus Stop + Shelter	5	$30,000	$150,000
Upgrade existing stops	20	$10,000	$200,000
Total			$2,300,000

Benefits and challenges

Benefits	Challenges
▪ **Cost per Rider:** Lower cost per rider due to higher utilization per trip ▪ **Predictability:** Consistent routes and schedules make service easy to understand ▪ **Speed and Directness:** Typically operates along the most direct path possible, providing fast and attractive service	▪ **Paratransit:** Requires complementary paratransit service, which would require additional coordination with MBTA's The Ride ▪ **Service Area:** Limited geographic coverage, with service focused in higher density/demand areas and corridors

Transit Fares

FARE FREE RECOMMENDATION

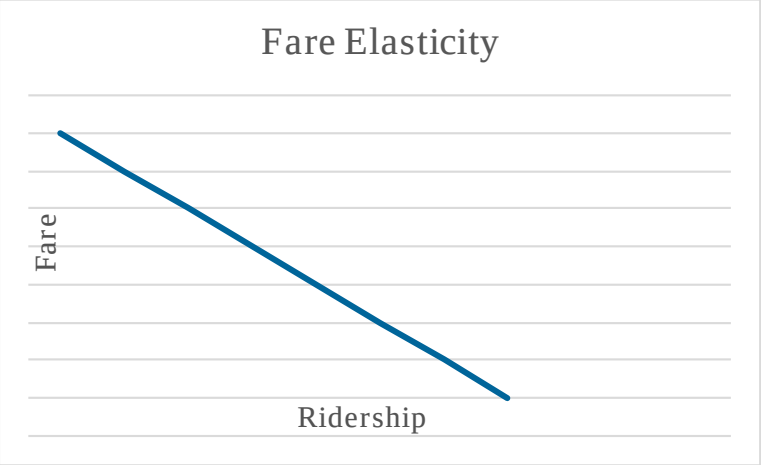
It is recommended that any public transportation service impended by Salem be fare free. After initial service patterns are established fares may be reassess if demand is high enough to warrant fares to control excess demand.

Nearly all public transportation is subsidized in the United States. On average fares only cover around 15% of the service cost on the most productive systems in the country and only around 5% on small city and rural services. It is important to understand that when discussing fares in almost all cases the revenue only accounts for a mere fraction of the total operating revenue.

Making the decision to charge a fare for transit service has significant impacts on potential ridership, operating costs, and administrative complexity. Because ridership is inversely correlated with fare price, the highest potential ridership comes from operating a fare-free service. Any price above fare free limits the ridership potential based on a standard elasticity measure.

Within the transit industry, this fare elasticity is considered on average to be a ratio of .03:1. For every 10% increase in fare there is a 3% decrease in ridership[1] (Figure 14).

Figure 14 | Fare Elasticity



Competition

Competition in the transportation market is also a key consideration when evaluating potential fare structures. In Salem, there are numerous transportation options, including personal vehicles, bike share, MBTA service, local transit shuttles, private transit shuttles, and Transportation Network Companies (TNCs). Fares for these services can range from an estimated $0 – $15. These services are also convenient and thus to be competitive in the market, any provided public transit option must either be more convenient or more affordable than the existing market competition.

[1] TCRP REPORT 95 Transit Pricing and fares
http://onlinepubs.trb.org/onlinepubs/tcrp/tcrp_rpt_95c12.pdf

Charging Fare

Benefits

- Increasing revenue to help close a funding gap or backfill loss of funding
- Reducing reliance on other funding sources
- Helping reduce or prevent service reductions through increased revenues
- Potentially increasing service, if increased revenues are substantial
- Supporting the perception that the public helps pay for public services (addressing the question: why should transit riders get a "free ride"?)
- Addressing potential problems with individuals who may ride the bus seeking shelter or for other non-transportation reasons

Challenges

- Fares suppress ridership and transit services are most commonly evaluated on how my customers ride, no or low fares maximizes ridership (addressing the question: what return are we getting on our investment?)
- Investment in hardware and physical space necessary to collect fares, including;
  - Fareboxes on buses
  - Secure space for accounting, auditing, and fare reconciliation
  - Vault for secure money storage
  - Ticket vending machines (TVMs)
- Increase in staff resources
  - Accounting, auditing, fare reconciliation
  - Additional marketing and customer service responsibilities to convey and educate passengers and drivers alike about the fare structure and policies
  - Point of sale administration
  - New and increased responsibilities for drivers in operating the farebox and conducting enforcement
  - Resources needed to conduct public outreach around introductions of fares and future increases in fares
  - Additional responsibility for maintenance/administrative staff to "empty" fareboxes and count fares
  - Maintain fareboxes and ticket vending machines

Potential Sources of Funding

Salem has access to several funding sources to support public transportation cost. These funding sources were identified in the 2018 *Shuttle Bus Feasibility Study and a Qualitative Evaluation of Current Transit Service*. Those relevant that identified funding sources, as well as additional local options, are listed here.

CONGESTION MITIGATION AND AIR QUALITY (CMAQ)

As part of the State Transportation Improvement Program (STIP), the Boston Region Metropolitan Planning Organization has allocated $800,000 in Fiscal Year 2020 and 2021 that may be used to fund locally developed transit service that supports first-mile/last-mile connections.

NORTH SHORE TRANSPORTATION MANAGEMENT ASSOCIATION (NSTMA)

The NSTMA worked with Beverly to obtain a $125,300 grant from MAPC for the development of the Wave shuttle. Salem can work with the TMA to leverage similar funds if available.

COMMONWEALTH TRANSPORTATION INFRASTRUCTURE ENHANCEMENT FUND

MAPC administers a statewide program to support transportation-related cost. The funds are formula funds based on the number of TNC rides that originate in a municipality. This equates to about $30,000 annual for Salem.

COMMUNITY TRANSIT GRANT

MassDOT administers Federal Section 5310 funds for the purchase of capital assets or support of operational cost that focus transit service on seniors and individuals with disabilities. Partnering with the Salem Council on Aging may provide an opportunity to leverage these funds. Awards are competitive and vary by project.

FOUNDATIONS

Local foundation and other philanthropic organizations often make competitive grants available, which Salem may pursue. These sources of funding are often unreliable.

ADVERTISING

Transit providers often sell advertising in shelters and on the inside and outside of transit vehicles. Revenues vary, but are reliable.

PARKING BENEFITS DISTRICT

As a City in Massachusetts, Salem has the authority to create special areas where parking revenues may be collected for the purpose of transportation-related improvements, including transit.

TRANSPORTATION ENHANCEMENT FUND

The Transportation Enhancement Fund was established to provide funding to implement transportation initiatives within Salem to equitably transport people and to reduce congestion. The program is funded through 1) annual ride-share allocations from the State, 2) traffic mitigation contributions from new development, and 3) through host agreements with the marijuana dispensaries (1% of total sales will be allocated to the fund).

Service Delivery Models

Effective public transportation operates much like a normal business. Like businesses, transit providers have a board of directors, an administrative team, and a frontline service team. The primary goal of these structures is to ensure that transit providers have the right balance of policy oversight and the capability to provide day-to-day service to customers.

Public transportation service is delivered in four primary ways in the United States. These service delivery methods range from complete ownership to fully contracted service. To the customer, the service functions in much the same way and the delivery method is of little consequence. To the municipality or transit provider, these service delivery methods have a significant impact on cost and general oversight requirements.

IN-HOUSE OPERATION

The City acts as the sole entity responsible for all aspects of public transportation operations, employing every position and managing all compliance and oversight requirements.

TURNKEY CONTRACT

The City contracts with a private transportation provider for the day-to-day management of the public transportation service and only remains responsible for the administration of the contractor and the assurance of all compliance and oversight requirements.

TRANSPORTATION NETWORK COMPANY CONTRACT

The City contracts with a TNC for the day-to-day management of the public transportation service and only remains responsible for the administration of the contractor and the assurance of all compliance and oversight requirements.

PARTNER WITH EXISTING SERVICE PROVIDER

The City contracts with an existing transportation provider to provide day-to-day management of the public transportation service and oversight of all compliance and oversight requirements. Existing providers include MBTA, CATA, and the North Shore TMA.

Implementation

The final recommendation here ultimately seeks to meet the transit needs of Salem. Through a comprehensive assessment of market demands, service opportunities, and community needs – these recommendations provide immediate improvements and establish a transit recommendation to support future improvements.

Annual Operating Costs **$369,000**

$

Annual Service Hours **4,200**

Stops **$490,000**

Vehicles **$300,000**

Figure 15| Node Based Microtransit