

Route SL1

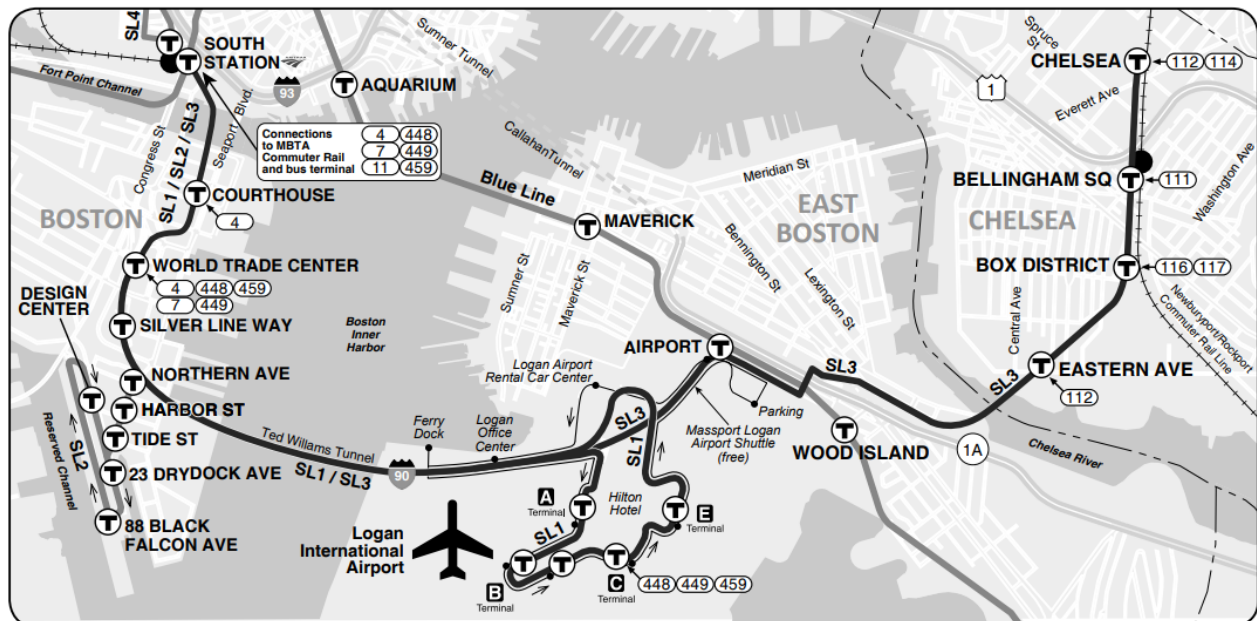
Logan Airport – South Station

Route Overview

Route SL1 Logan Airport – South Station is one of the MBTA Silver Line bus routes that connect South Station and the South Boston Waterfront. The other two Silver Line routes include SL2 Design Center - South Station, which serves the South Boston Waterfront and SL3 Chelsea Station – South Station, which connects with Chelsea Commuter Rail Station via Airport Station.

Route SL1 connects South Station with Logan Airport (Figure 1). It is the only SL route that brings passengers directly to passenger terminals. Route SL1 also serves a separate market of employees and shoppers traveling between South Station and the World Trade Center.

Figure 1 | Service Map

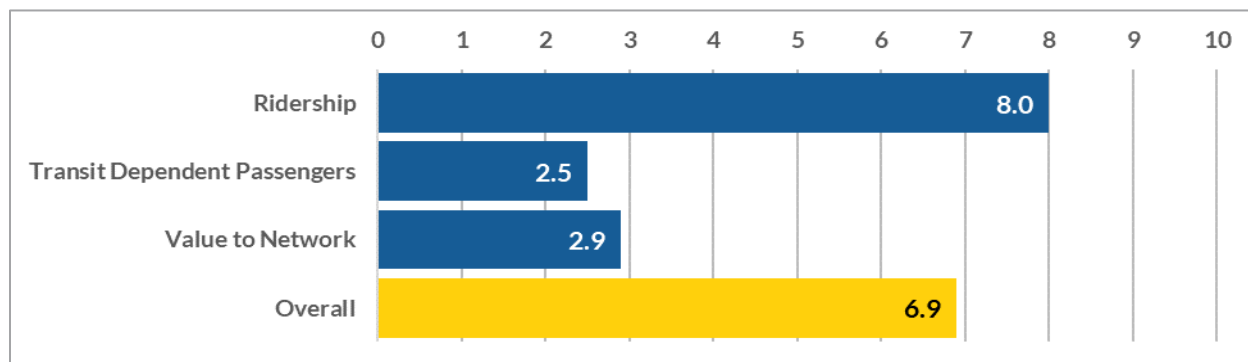


Network Importance

Route SL1 is a moderately important route for the overall MBTA bus network, driven by the high ridership (see Figure 2). On a relative scale of 0 to 10, the route rates 8.0 in terms of ridership, 2.5 in terms of transit dependent ridership, and 2.9 in terms of its value to the network (which reflects the number of people who are uniquely served, the number of

jobs and other important destinations, and the number of transferring passengers). Its overall score, which gives a 70% weighting to overall ridership and a 15% weight to both other measure, is 6.9.

Figure 2 | Relative Importance within MBTA Bus Network (on a scale of 0 to 10)



Service Patterns

Schedule

On weekdays, Route SL1 operates between 5:38 AM and 1:07 AM with frequent headways throughout the day. For most of the day (from 7:00 AM to 10:00 PM) the average service frequency is ten minutes or less. Before 7:00 AM and after 10:0 PM, the average frequency ranges between 13 and 15 minutes. (Table 1)

Route SL1 runs with a similar span of service on both Saturdays and Sundays. Saturday frequencies are slightly shorter, averaging every 12 minutes, and Sunday frequencies return to every nine minutes throughout the day.

Route SL1 exceeds the Key Bus Route span of service and frequency standards on every service day.

Table 1 | Schedule Statistics

| SERVICE DAY | SPAN OF SERVICE | FREQUENCY (RANGE) | FREQUENCY (AVERAGE) | DAILY TRIPS (INBOUND/OUTBOUND) |
|----------------------|---------------------------|-------------------|---------------------|--------------------------------|
| Monday-Friday | 5:38 AM to 1:07 AM | | | 128/127 |
| Sunrise | 5:38 AM to 5:59 AM | 10 – 16 | 13 | 2/2 |
| Early AM | 6:00 AM to 6:59 AM | 10 – 15 | 14 | 4/4 |
| AM Peak | 7:00 AM to 8:59 AM | 8 – 15 | 8 | 15/15 |
| Midday Base | 9:00 AM to 1:29 PM | 8 – 9 | 8 | 33/34 |
| Midday School | 1:30 PM to 3:59 PM | 8 – 10 | 8 | 18/18 |
| PM Peak | 4:00 PM to 6:29 PM | 7 – 10 | 9 | 16/16 |
| Evening | 6:30 PM to 9:59 PM | 7 – 12 | 8 | 26/25 |
| Late Evening | 10:00 PM to 11:59 PM | 8 – 12 | 12 | 10/10 |

| SERVICE DAY | SPAN OF SERVICE | FREQUENCY (RANGE) | FREQUENCY (AVERAGE) | DAILY TRIPS (INBOUND/OUTBOUND) |
|-----------------|---------------------------|-------------------|---------------------|--------------------------------|
| Night | 12:00 AM to 1:07 AM | 12 – 15 | 14 | 4/3 |
| Saturday | 5:33 AM to 1:07 AM | 10 – 17 | 12 | 96/95 |
| Sunday | 5:50 AM to 1:10 AM | 8 – 15 | 9 | 126/123 |

Note: Span of service reflects the time the first bus begins service until the time the last bus finishes service.

Service Patterns

Route SL1 has one primary service pattern and one secondary service pattern (Table 2):

- SL1.0 is the dominant pattern and travels between the South Station Silver Line tunnel to Terminal A in Logan Airport via Silver Line Way, the Ted Williams Tunnel, and Airport Road.
- SL1.2 is operated for one trip, the last inbound trip of the day. This trip operates on Summer Street between the World Trade Center stop and South Station, terminating at Summer Street and Dorchester Street without making intermediary stops at Silver Line Tunnel stations.
- Note that since this document was developed, later evening service was added to the SL1.

Table 2 | Service Patterns

| PATTERN | ORIGIN | DESTINATION | UNIQUE FEATURE | TRIPS per WKD | TRIPS per SAT | TRIPS per SUN |
|-----------------|---------------|------------------------------------|---------------------|---------------|---------------|---------------|
| INBOUND | | | | 128 | 96 | 126 |
| SL1.0 | Terminal A | South Station | Via bus tunnel | 127 | 95 | 125 |
| SL1.2 | Terminal A | Summer Street at Dorchester Avenue | Via surface streets | 1 | 1 | 1 |
| OUTBOUND | | | | 127 | 95 | 123 |
| SL1.0 | South Station | Terminal A | Via bus tunnel | 127 | 95 | 123 |

Ridership

On weekdays, Route SL1 carries 8,134 passengers each day. Saturday ridership is 5,584 and on Sundays, Route SL1 carries 5,982 riders.

Ridership by Stop

Route SL1 serves a handful of stops, the vast majority of which are heavily used (Figure 3). Stops at each of the Logan Airport terminals, plus stops at Congress Street and the World Trade Center, the Seaport District, the Courthouse and South Station is used by at least

350 passengers on weekdays. The only remaining stop, at the Manulife Building, is not well used.

South Station is the highest ridership stop. On weekdays traveling inbound, while boardings are evening distributed, 67% of all alighting passengers get off the bus at South Station. The reverse pattern occurs in the afternoon traveling outbound – alightings are evenly distributed but nearly 90% of all boardings occur at South Station.

Ridership by Trip

Route SL1 ridership is strong throughout the day. Most trips average more than 30 total boardings and between 30 and 40 passengers at the maximum load.

Weekday demand has a reverse peak directional pattern with higher ridership in the morning traveling outbound (towards Logan Airport) and stronger in the afternoon traveling inbound (to South Station). A handful of trips during these peak periods, traveling in the reverse peak direction are very crowded and meet or exceed the MBTA crowding threshold. (see Figure 4 and Figure 5)

On Saturdays, ridership is consistent and strong throughout the day and in both directions of travel. Most trips have boardings between 20 and 40 passengers and maximum loads close to 30 in both directions. In addition, there are a handful of inbound trips after 3:30 PM and one outbound trip at 7:49 PM that are overcrowded. (see Figure 6 and Figure 7)

Ridership is also strong on Sundays with most trips carrying between 20 and 40 riders. Demand is stronger traveling inbound as compared with outbound. One inbound trip at 6:47 PM is overcrowded. (see Figure 8 and Figure 9)

Figure 3 | Weekday Inbound Ridership by Stop Map

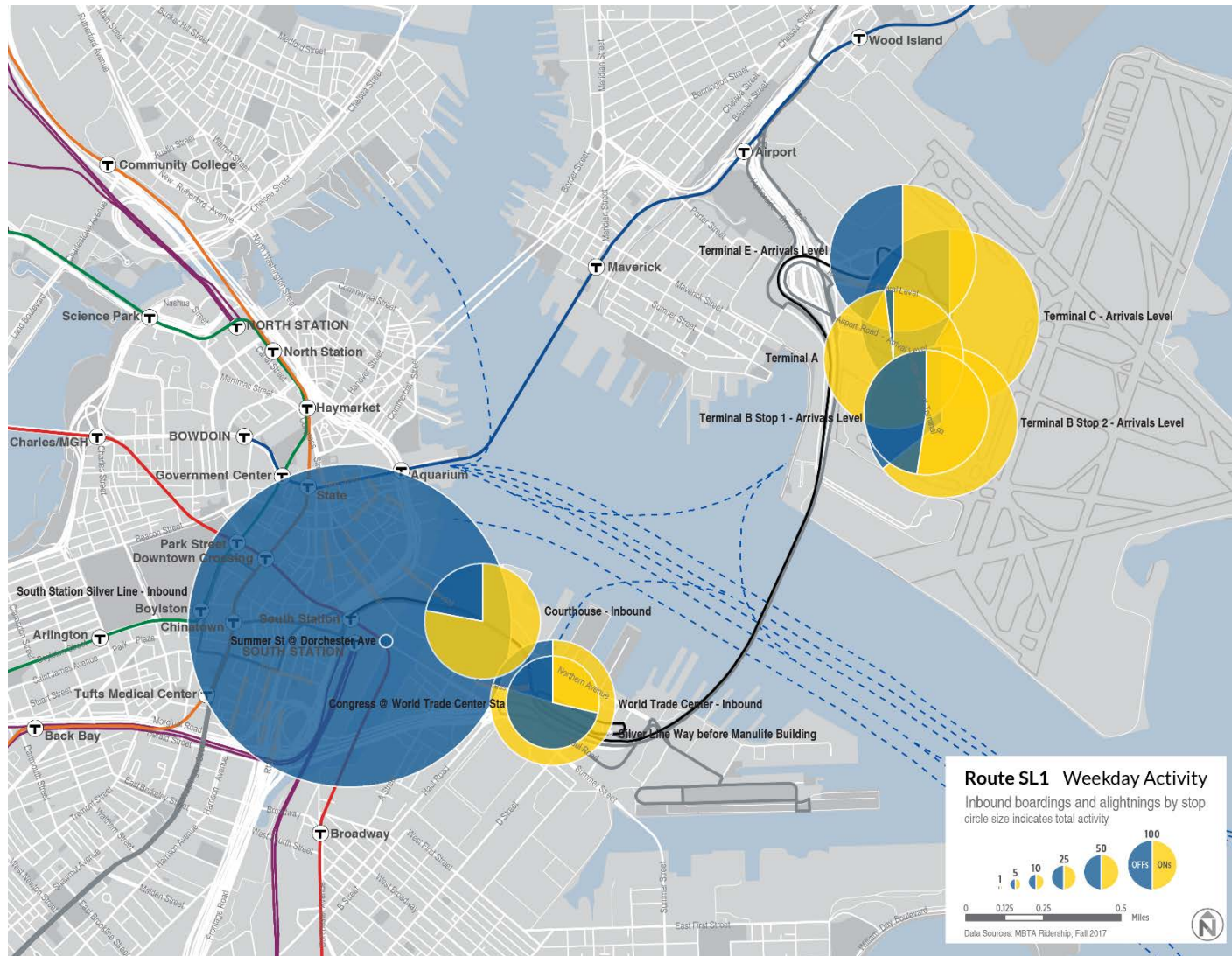


Figure 4 | Weekday Ridership by Trip: Inbound

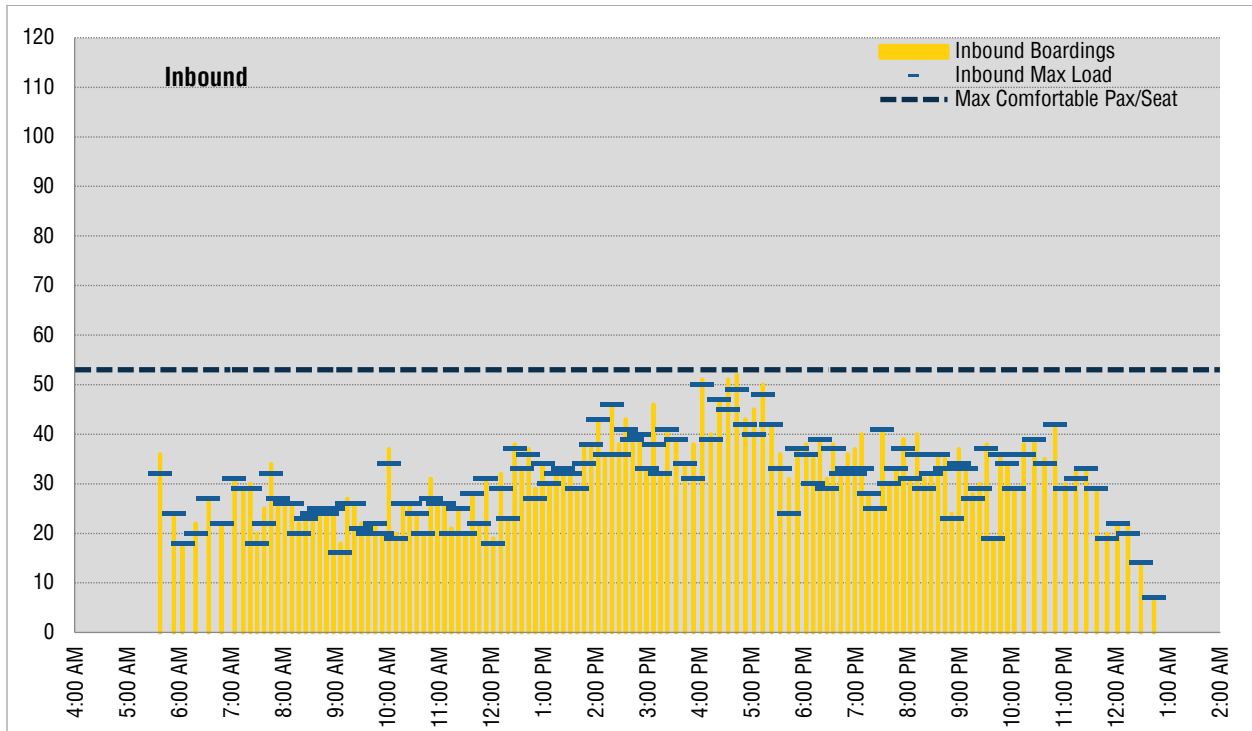


Figure 5 | Weekday Ridership by Trip: Outbound

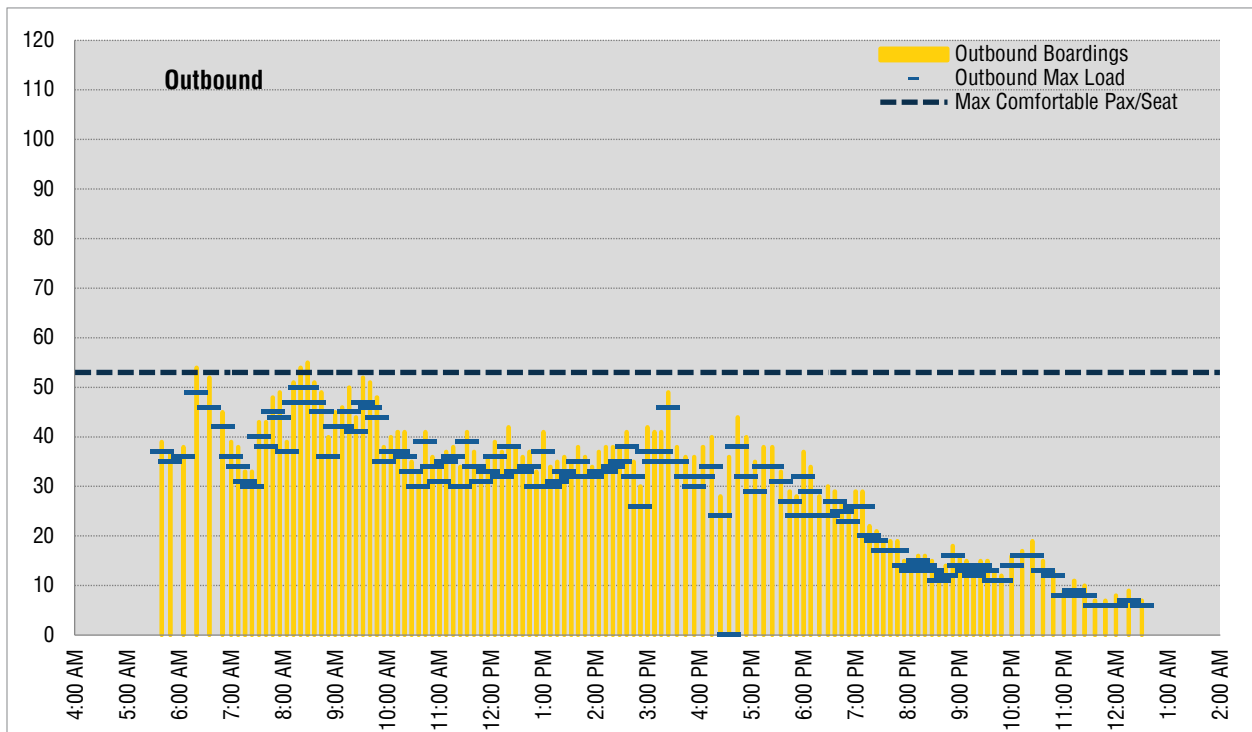


Figure 6 | Saturday Ridership by Trip: Inbound

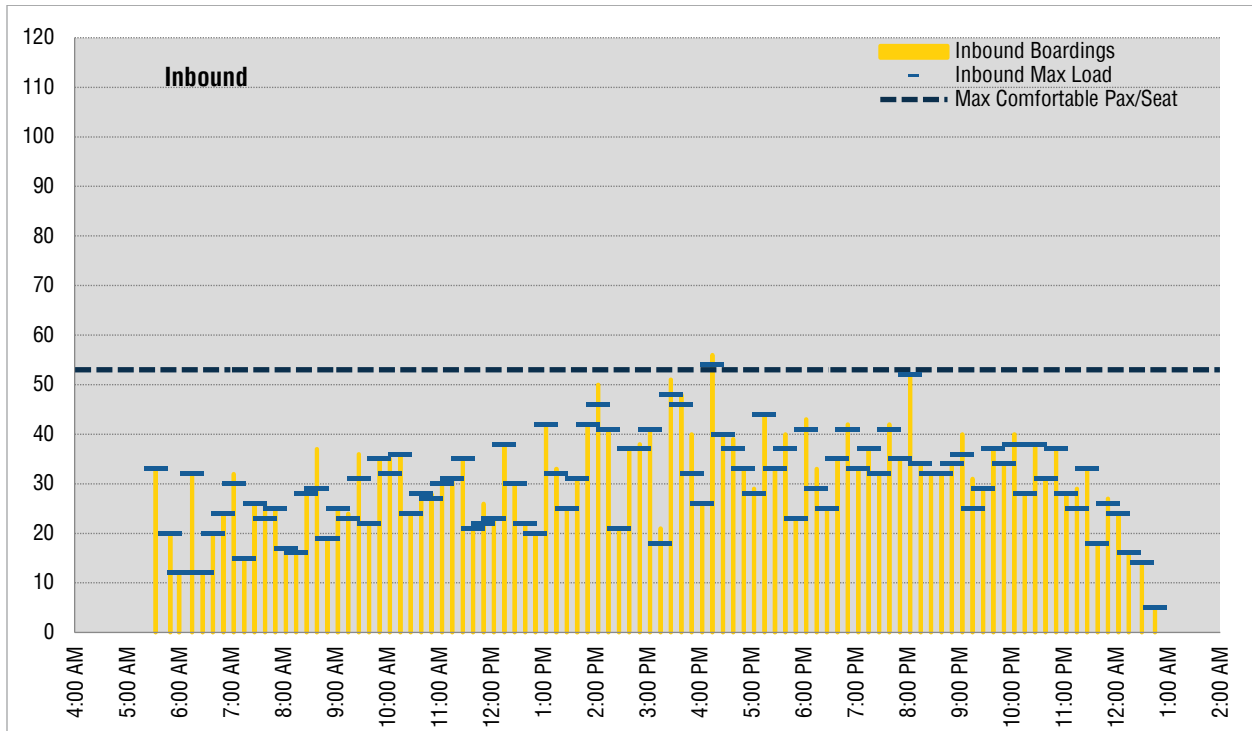


Figure 7 | Saturday Ridership by Trip: Outbound

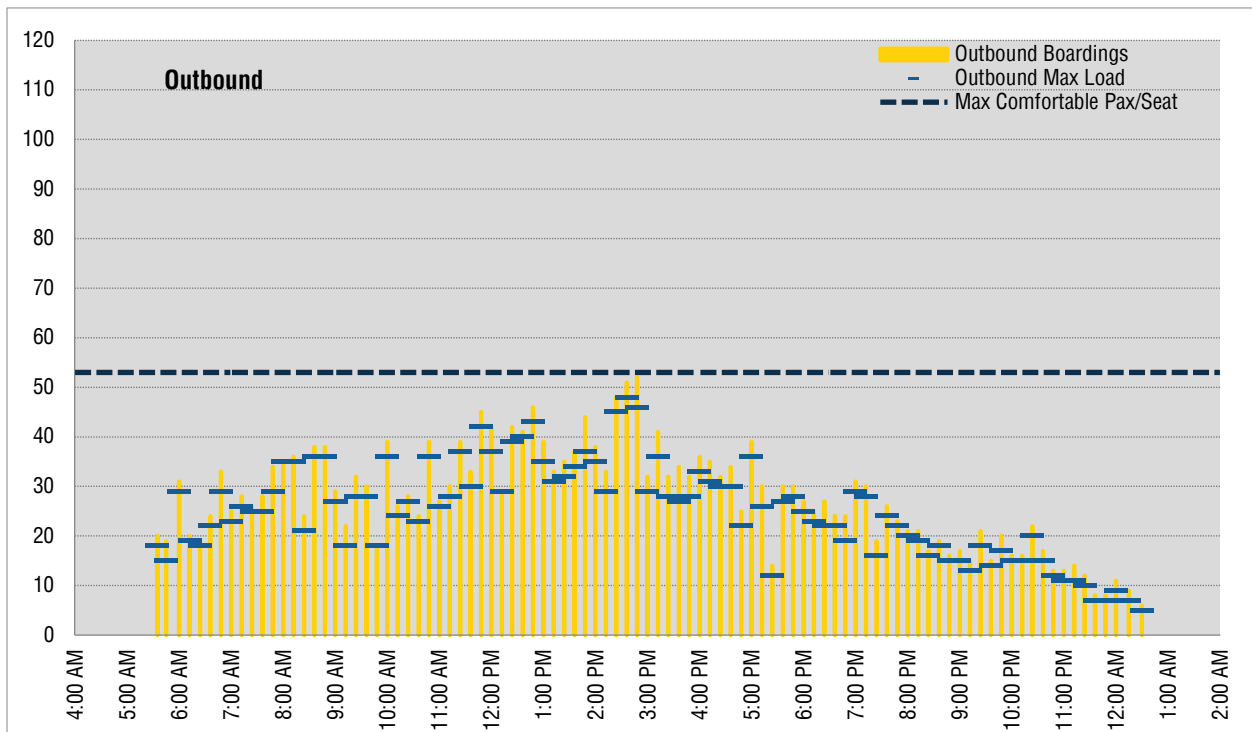


Figure 8 | Sunday Ridership by Trip: Inbound

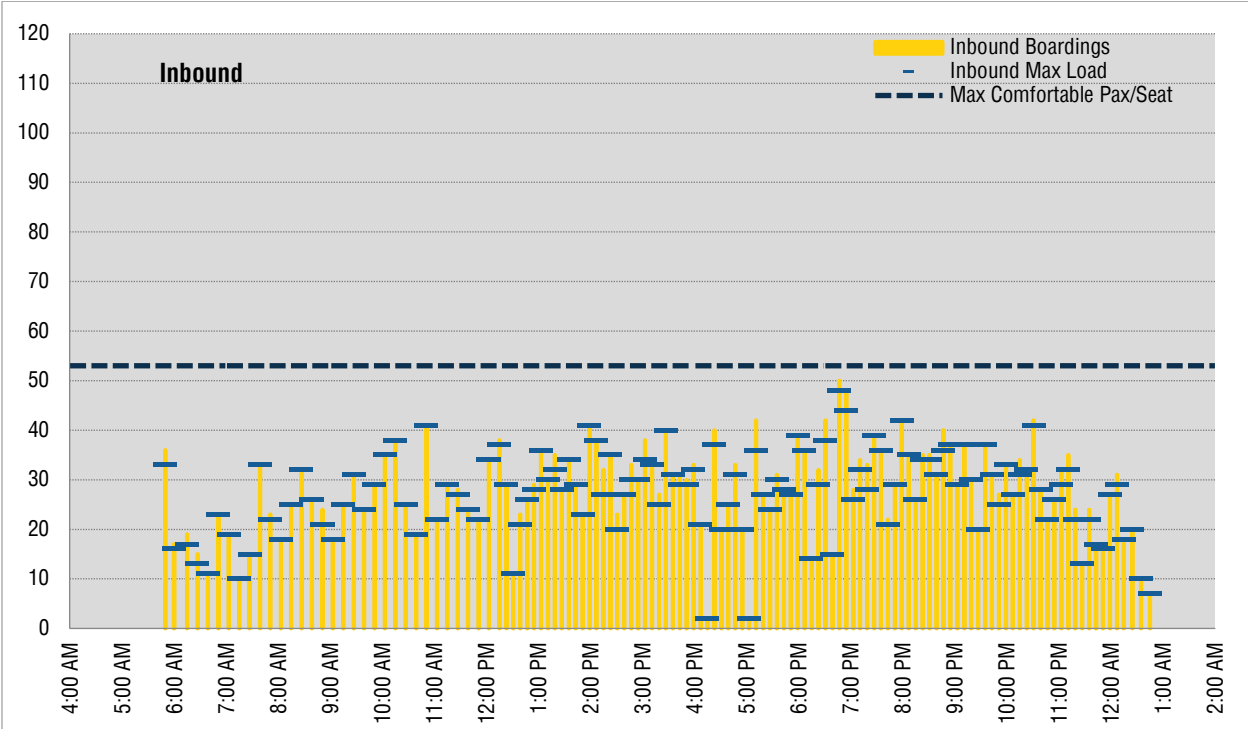
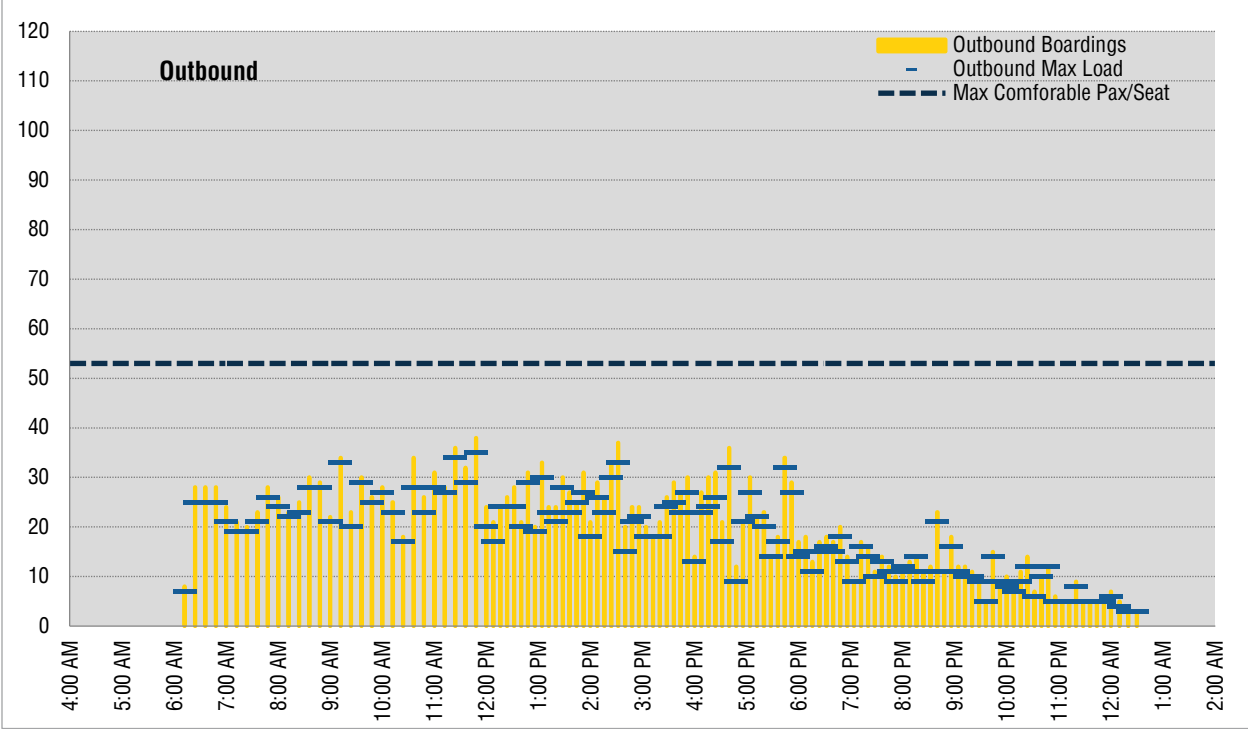


Figure 9 | Sunday Ridership by Trip: Outbound



Passenger Comfort

The MBTA desires that passengers travel in relatively comfortable conditions. At the same time, the MBTA's definition of comfort reflects the very high volume environment in which the MBTA operates, and that some passengers may have to stand for a portion of their trip. More specifically, at least 92% of passengers' travel times should be in comfortable conditions, and ideally, at least 96% of travel times should be in comfortable conditions. Comfortable conditions are considered to be 140% or less of seated capacity during high volume periods and 125% or less during other periods.

On Route SL1, trips throughout the day attract at least 30 passengers per trip. Route SL1 includes a high number of passengers with luggage heading to the airport, exacerbating crowding conditions even if the maximum number of passengers per bus is not reached. Because Route SL1 serves stations where fares are collected at faregates, comfort data is not available.

Table 3 | Passenger Time Spent Traveling in Comfortable Conditions

| | WEEKDAYS | SATURDAYS | SUNDAYS |
|-------------------------|----------|-----------|---------|
| Minimum Standard | 92% | 92% | 92% |
| Target | 96% | 96% | 96% |
| Actual | - | - | - |

Reliability and Speed

Reliability

Passengers using high frequency services like Route SL1 expect buses to arrive on a regular basis, and typically do not rely on published schedules. For these services, the MBTA measures reliability based on actual service frequency and the travel time for a given trip. Trips must depart their origin and serve points along the route within three minutes of the scheduled frequency.

On weekdays, SL1 trips reach only an 82% overall reliability because the dedicated right of way through the Silver Line Tunnel does not extend through the Ted Williams Tunnel. The limited number of dropped trips (only 0.1%) helps keep 81% of trips leave on time. On weekends, reliability improves to 83% of trips on Saturdays and 86% of trips on Sundays matching their scheduled timetables. (see Table 5)

Table 4 | Reliability

| SERVICE DAY | ORIGIN/MID-ROUTE ON-TIME PERFORMANCE | DESTINATION ON-TIME PERFORMANCE | OVERALL RELIABILITY | DROPPED TRIPS |
|---------------|--------------------------------------|---------------------------------|---------------------|---------------|
| Monday-Friday | 81% | 90% | 82% | 0.1% |
| Saturday | 85% | 95% | 83% | - |
| Sunday | 85% | 94% | 86% | - |

Running Times

Even though only 81% of trips leave on time on weekdays, 90% of trips arrive on time. Trips outside of the AM and PM peak can run up to six minutes shorter than scheduled. Between 6:00 AM and 10:00 AM, trips can take an extra 15 minutes of travel time as inbound buses mix with general vehicle traffic in the Ted Williams Tunnel. There are also travel delays in the evening peak periods and these delays, while less consistent, can be as long as ten minutes. (see Figure 10 and Figure 11)

Figure 10 | Scheduled & Median Travel Time by Trip: Route SL1 Inbound

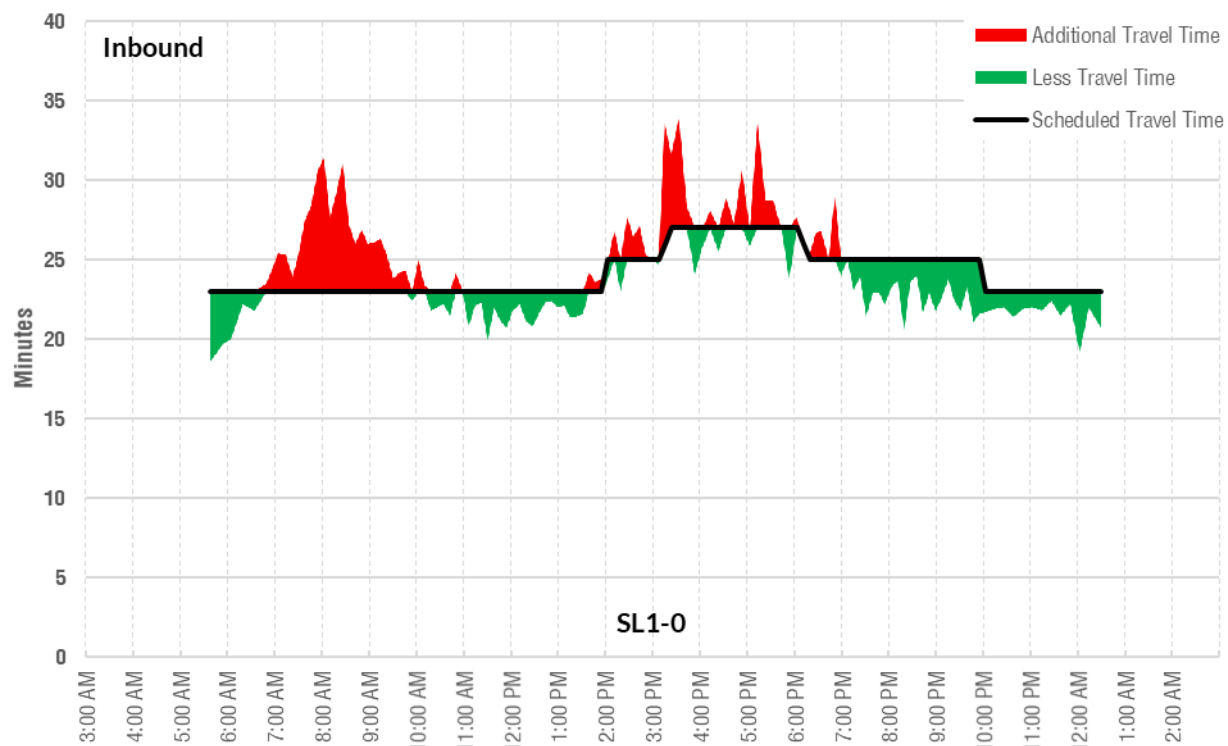
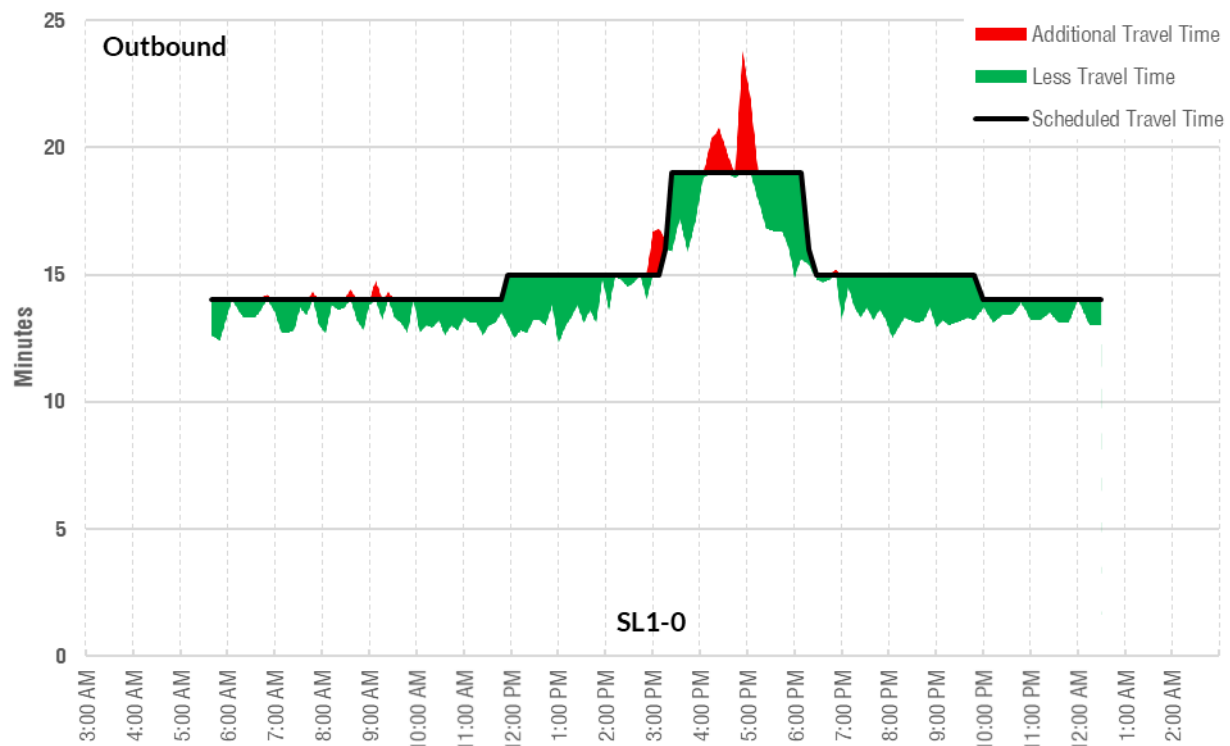


Figure 11 | Scheduled & Median Travel Time by Trip: Route SL1 Outbound



Stop Spacing

Route SL1 has appropriate stop spacing along most of the route in both directions. Where stops are placed more closely together, at each terminal of Logan Airport, passengers benefit.

Summary

Route SL1 Silver Line bus route performs well. It has a simple and clear service pattern traveling directly between South Station to Logan Airport and is the only route that brings passengers directly to Logan Airport terminals. Route SL1 also serves a separate market of employees and shoppers traveling between South Station and the World Trade Center.

Route SL1's challenges reflect overcrowding and speed and reliability issues caused by traffic congestion in the Ted Williams Tunnel. Most of these challenges occur during peak periods.