

Route SL2

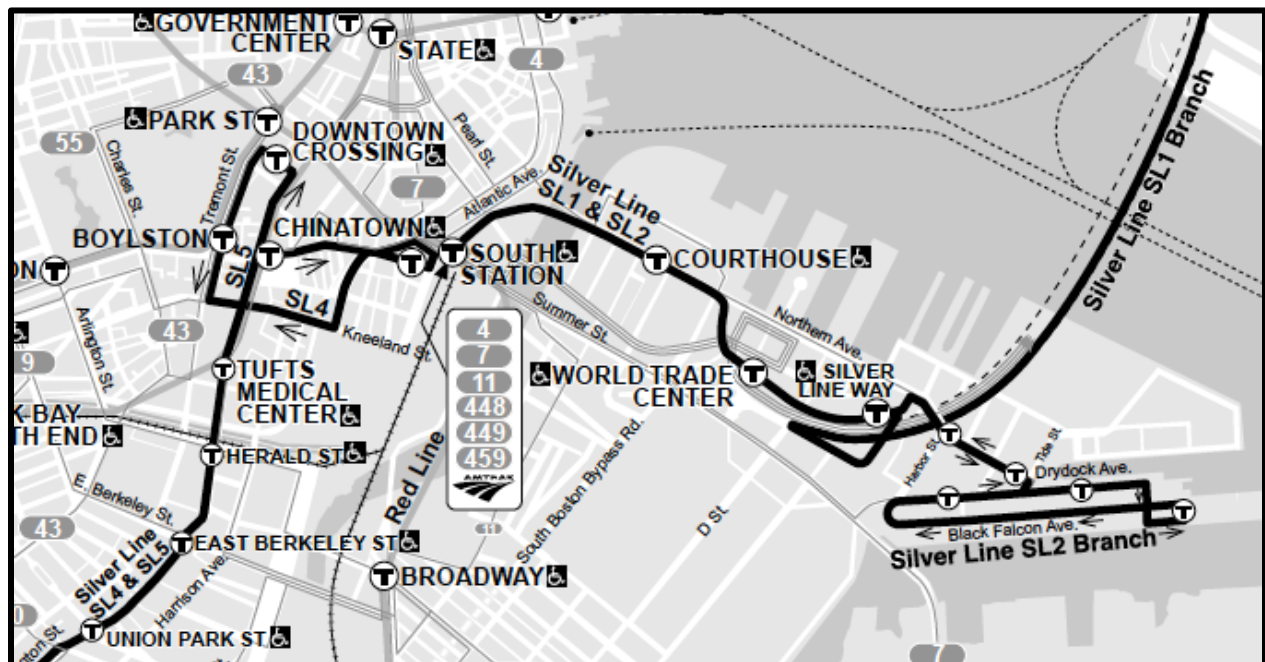
Design Center – South Station

Route Overview

Route SL2 Design Center – South Station is a Silver Line Bus Rapid Transit (BRT) route that operates between the Design Center in South Boston and South Station (see Figure 1). It operates using a combination of the Silver Line transit tunnel and local roads beyond the end of the tunnel.

Route SL2 is one of three routes that operate in the Silver Line transit tunnel. The others are Route SL1 Logan Airport-South Station and Route SL3 Chelsea Station-South Station. All three share the same alignment between South Station and Silver Line Way. In addition, supplemental service is provided between South Station and Silver Line Way that is simply designated “Silver Line Way.”

Figure 1 | Service Map

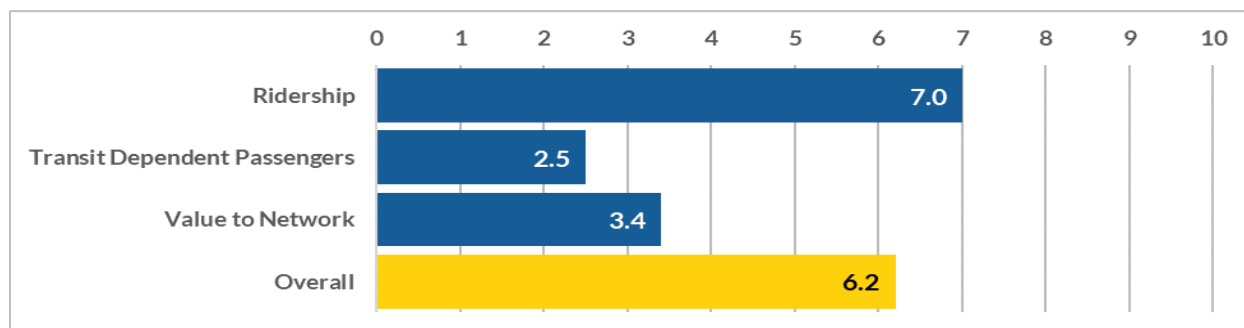


Network Importance

Route SL2 is moderately important route for the overall MBTA bus network with an overall score of 6.2, which is driven by the high ridership through the Seaport District (see Figure 2). Route SL2 scores lower in terms of both transit dependent ridership (2.5) and its value to the network (3.4). The final score reflects the fact that the MBTA weighs

ridership at 70% and the other two measures at 15% each. The overall rating, and in particular the network value rating, is depressed to a certain degree because the route shares most of its alignment through the Seaport District with Route SL1 and Route SL3.

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



Service Overview

Schedule

On weekdays, Route SL1 operates between 5:45 AM and 1:00 AM with service every four to 15 minutes throughout the day, and with peak period service every five minutes or less (see Table 1). (In addition, during peak periods, additional service operates between South Station and Silver Line Way. This service is described in the Silver Line Way route profile.)

Table 1 | Schedule Statistics

SERVICE DAY	SPAN OF SERVICE	FREQUENCY (RANGE)	FREQUENCY (AVERAGE)	DAILY TRIPS (INBOUND/OUTBOUND)
Monday-Friday	5:45 AM to 1:00 AM			132/137
Sunrise	5:45 AM – 6:00 AM	2 – 14	9	-/3
Early AM	6:00 AM to 6:59 AM	2– 14	7	8/9
AM Peak	7:00 AM to 8:59 AM	4 – 10	5	24/26
Midday Base	9:00 AM to 1:29 PM	5 – 16	12	23/22
Midday School	1:30 PM to 3:59 PM	8 – 11	10	15/15
PM Peak	4:00 PM to 6:29 PM	4 – 11	5	29/28
Evening	6:30 PM to 9:59 PM	5 – 18	9	22/23
Late Evening	10:00 PM to 11:59 PM	15	15	8/8
Night	12:00 AM to 1:00 AM	15 – 21	16	3/3
Saturday	5:50 AM to 12:59 AM	10 – 30	15	74/75
Sunday	6:35 AM to 12:58 AM	14 – 25	15	70/72

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

On Saturdays, service operates from 5:50 AM to 12:59 AM, with service operating every 15 minutes throughout the day except for a gap of 30 minutes between the second to last and last trips of the day. On Sundays, service operates from 6:35 AM to 12:58 AM, with

service every 15 minutes from the start of service until approximately 11:30 PM, when trips are spaced 24 to 25 minutes apart.

Route SL2 meets the MBTA’s service span standards on all days. However, it falls slightly short of the frequency standards on Saturday and Sunday nights, when the last trips operate 25 to 30 minutes apart versus the Key Bus route standard of every 20 minutes.

Service Patterns

Route SL2 operates with three service patterns that make service very complex at the Design Center end (and that are not well described on the public timetable) (see Table 2):

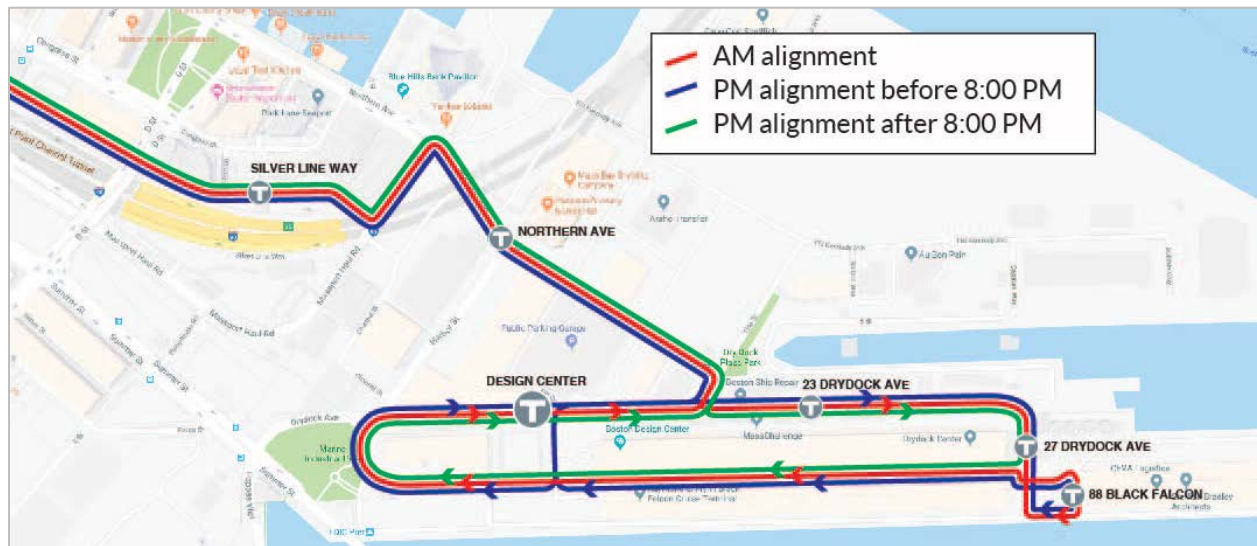
Table 2 | Service Patterns

PATTERN	ORIGIN	DESTINATION	UNIQUE FEATURE	TRIPS per WKD	TRIPS per SAT	TRIPS per SUN
INBOUND				132	74	70
SL2.0	Drydock Ave @ Design Center	South Station	Via eastern two-thirds of main loop	66	32	54
SL2.1	Drydock Ave @ Design Center	South Station	Direct to Tide Street without serving entire loop	48	25	-
SL2.3	Drydock Ave @ Design Center	South Station	Via main loop but not 88 Black Falcon Ave loop	18	17	16
OUTBOUND				137	75	72
SL2.0	South Station	Drydock Ave @ Design Center	Via eastern two-thirds of main loop and 88 Black Falcon Ave loop	65	32	54
SL2.1	South Station	Drydock Ave @ Design Center	Via main loop and 88 Black Falcon Ave loop	52	25	-
SL2.3	South Station	Drydock Ave @ Design Center	Via western third of main loop	20	18	18

- On weekdays and Saturdays before noon, service operates clockwise around the Design Center with an extra loop at the southeastern end of the main loop to 88 Black Falcon Avenue. This is illustrated with the red line in Figure 3. Outbound service ends and inbound service begins at the Design Center stop.
- On weekdays and Saturdays between noon and 8:00 PM, service operates around the loop in two parts. From Tide Street, where service enters the loop, buses travel west along Dry Dock Avenue to south on Design Center Place, and then clockwise along Black Falcon Avenue, Harbor Street, and Dry Dock Avenue to the end of outbound service at the Design Center Stop. This is illustrated with the blue line in Figure 3. Inbound service then operates clockwise around the loop via 88 Black Falcon Avenue to Design Center Place. It then operates north on Design Center Place to east on Dry Dock Avenue back to Tide Street.

- On weekdays and Saturdays after 8:00 PM and all day on Sundays, service operates in the same manner as service before noon, but without the extra loop to 88 Black Falcon Place. This service is illustrated with the green line in Figure 3.

Figure 3 | Route SL3 Service around Design Center



Ridership

Route SL2 serves 6,420 passengers per weekday, 1,830 per Saturday, and 930 per Sunday. Relative to weekday ridership, Route SL2's weekend ridership is lower than on most other bus routes.

Ridership by Stop

Nearly all Route SL2 passengers travel to and from South Station. On weekday outbound trips:

- Over 2,810 passengers board at South Station.
- Boardings at stations in the Silver Line Tunnel and Silver Line Way are much lower and range from a low of 33 at Silver Line Way to a high of 125 at Courthouse Station. However, a total of 1,790 passengers alight at these stops, or 64% of all passengers who board at South Station.
- A total of 1,080 passengers alight at the stops beyond Silver Line Way, or 35% of all passengers who board at South Station, in the tunnel, or at Silver Line Way:
 - 160 alight on Northern Avenue at Harbor Street
 - 400 alight on Northern Avenue at Tide Street
 - 350 alight at 25 Dry Dock Avenue, which is the first Design Center stop.

- 220 alight at 27 Dry Dock Avenue, which is at the east end of the Design Center.
- 110 alight at 88 Black Falcon Avenue, which is close after 27 Dry Dock Avenue.
- 190 alight at Design Center Place at the west end of the Design Center.

Inbound patterns are generally the reverse of outbound patterns.

Weekends patterns are similar to weekday ridership patterns, but with lower volumes. In addition, nearly all boardings at the Design Center end are at Design Center Place.

Ridership by Trip

On weekdays, ridership on Route SL2 is very heavily oriented toward outbound travel in the AM peak and inbound travel in the PM peak (see Figure 5 and Figure 6). Between the start of service and approximately 9:30 AM, most outbound trips carry more than 50 passengers and the same is true on inbound trips between approximately 3:00 PM and 6:00 PM.

At other times, ridership per trip is much lower than on other Silver Line routes. After 9:30 AM, outbound ridership per trip declines rapidly to 20 or fewer passengers between 11:00 AM and 7:00 PM, and then 10 or few passengers per trip through the end of service. On inbound trips, ridership per trip averages less than 10 passengers per trip through 11:00 AM, and then gradually increases to over 30 passengers per trip through 3:00 PM. After 7:00 PM, inbound ridership averages less than 20 passengers per trip.

On weekends, ridership is low and averages only 12 passengers on both days (see Figure 7 through Figure 10).

Figure 4 | Weekday Ridership by Stop: Outbound

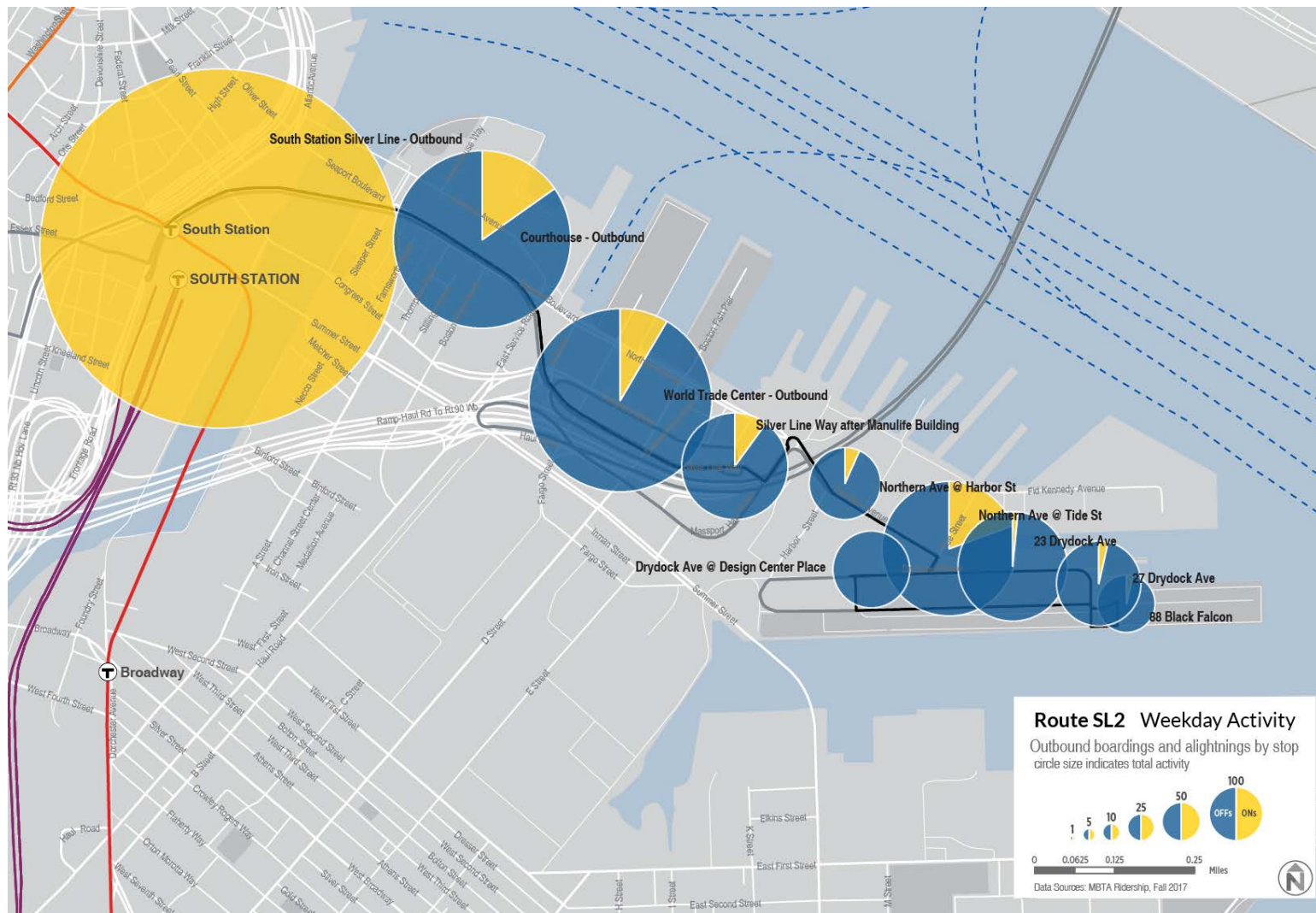


Figure 5 | Weekday Ridership by Trip: Inbound

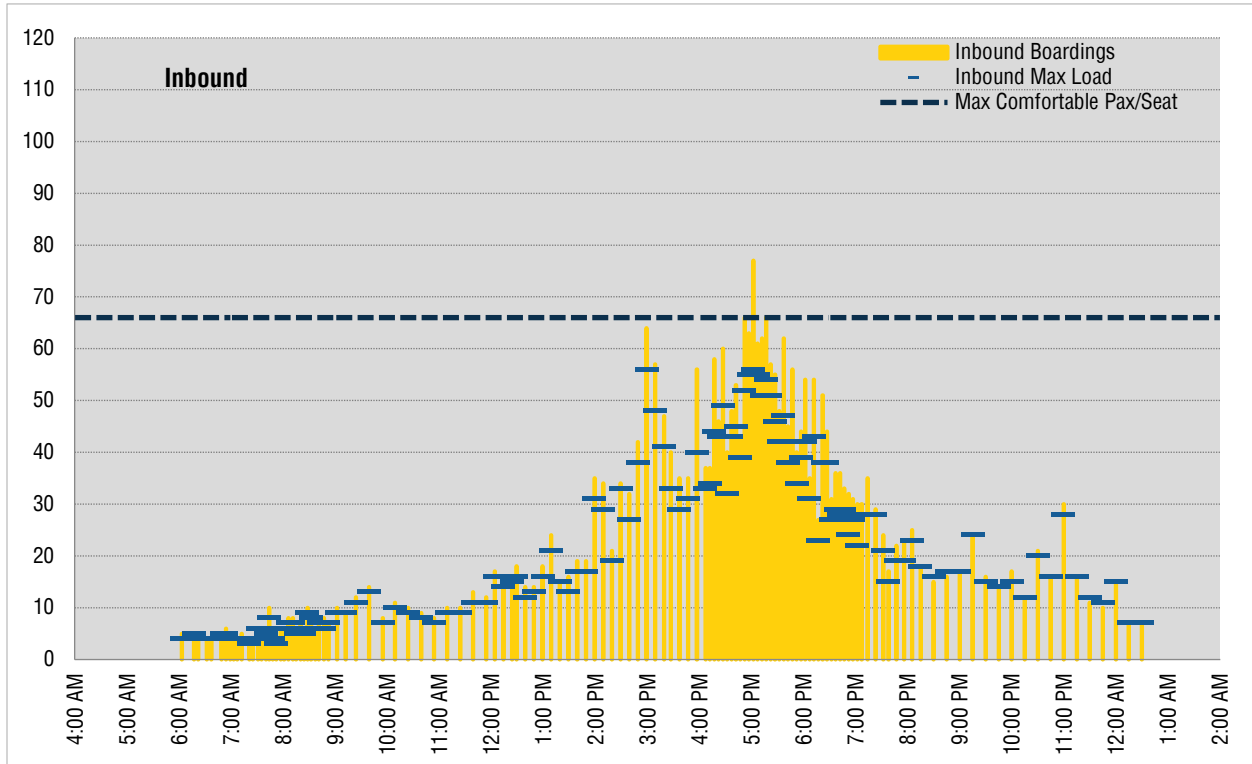


Figure 6 | Weekday Ridership by Trip: Outbound

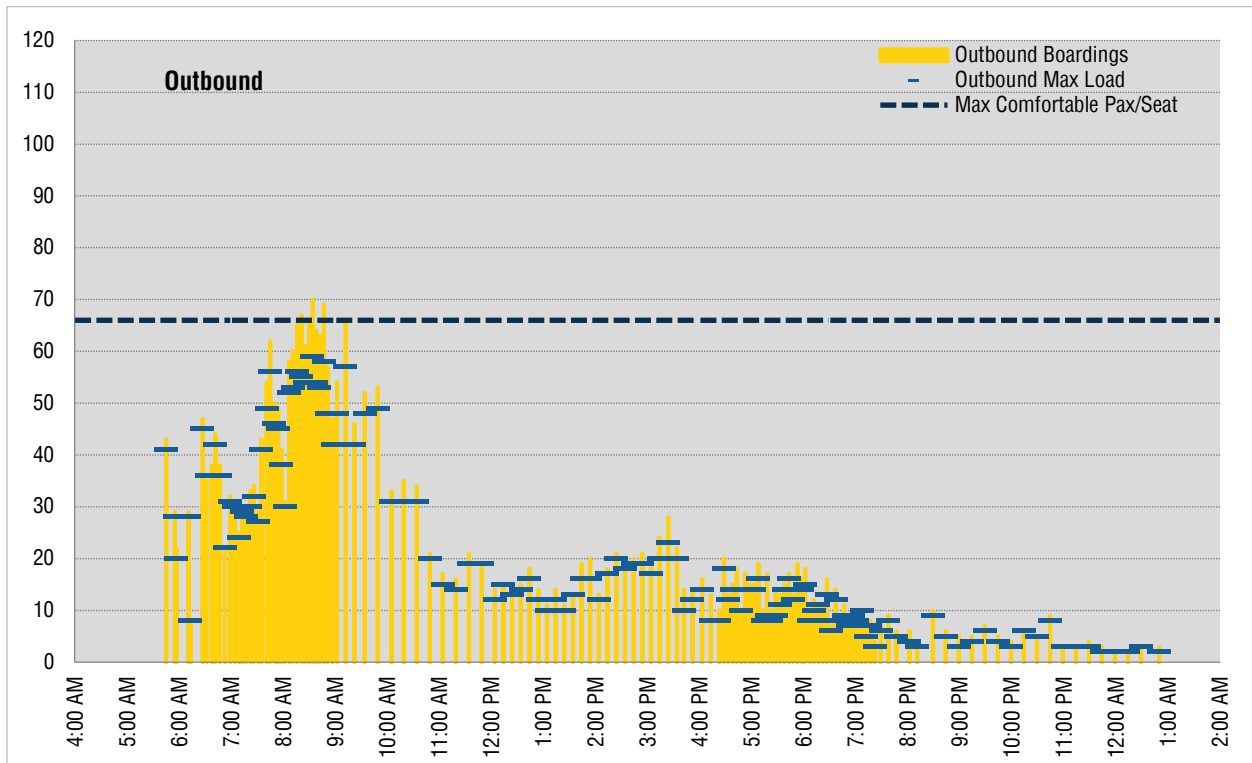


Figure 7 | Saturday Ridership by Trip: Inbound

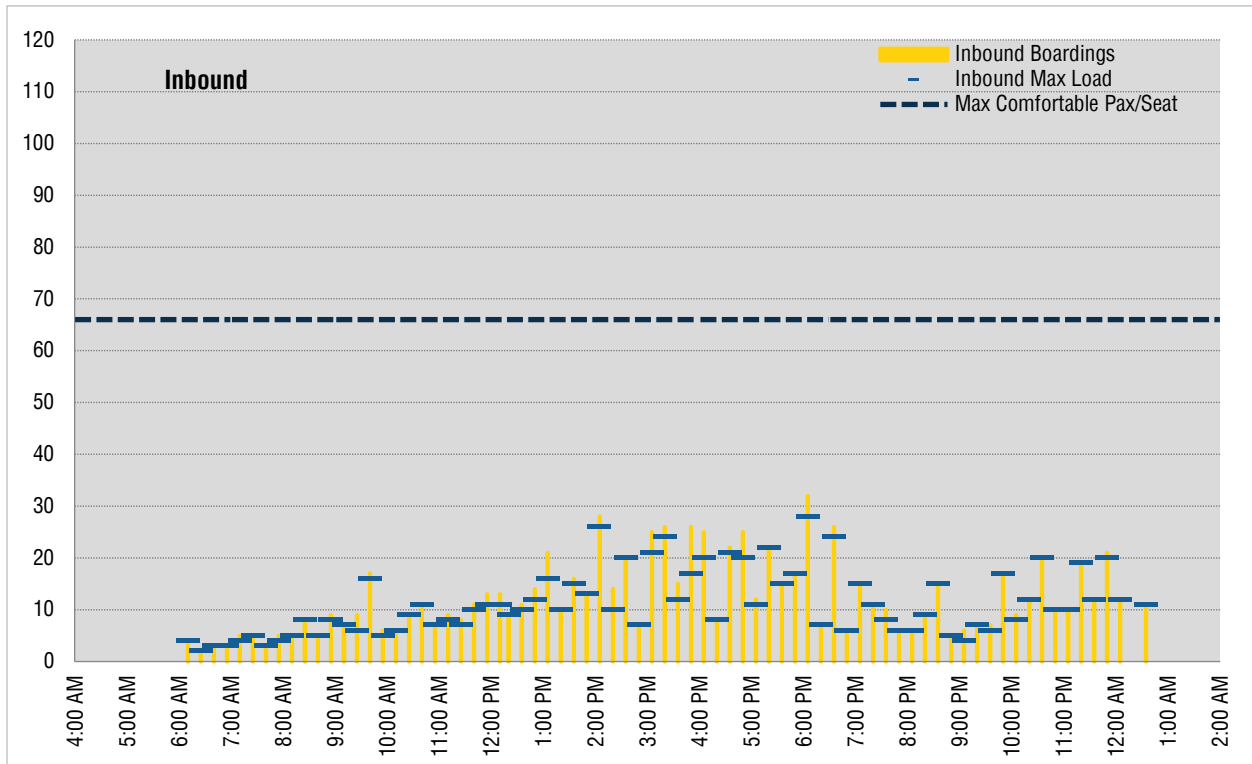


Figure 8 | Saturday Ridership by Trip: Outbound

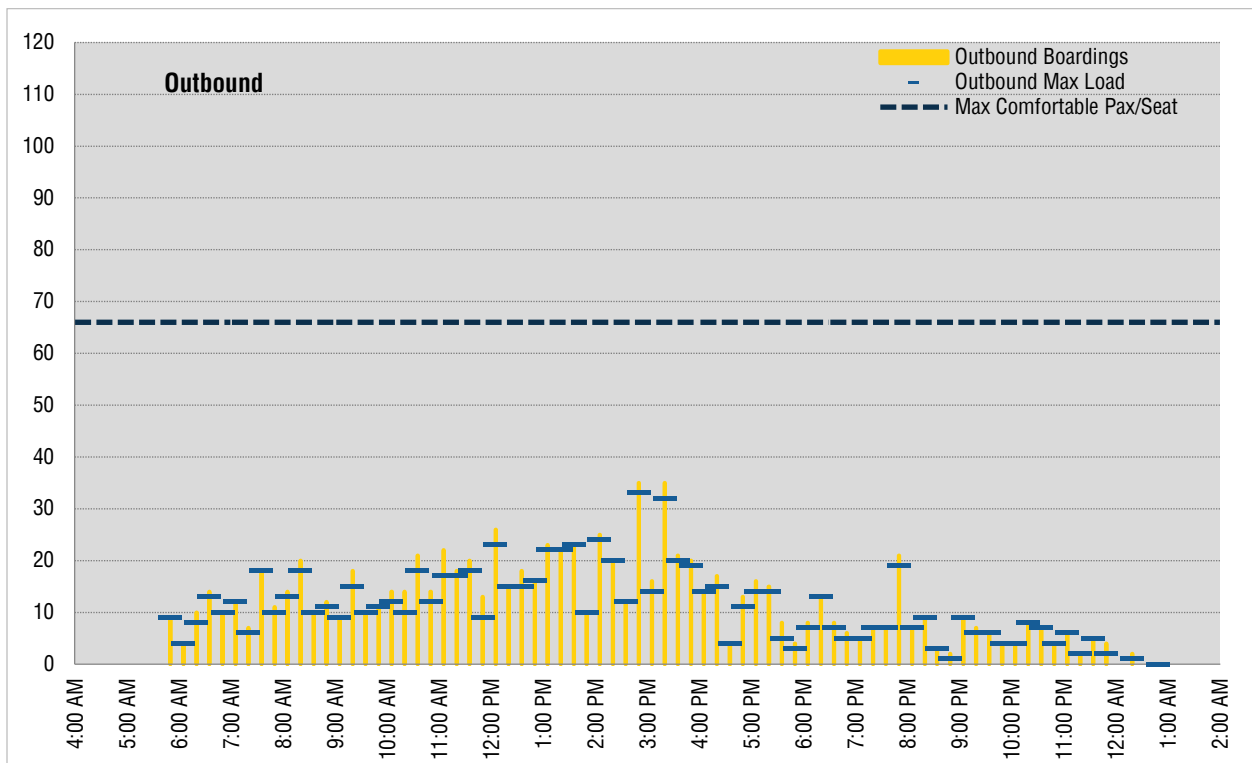


Figure 9 | Sunday Ridership by Trip: Inbound

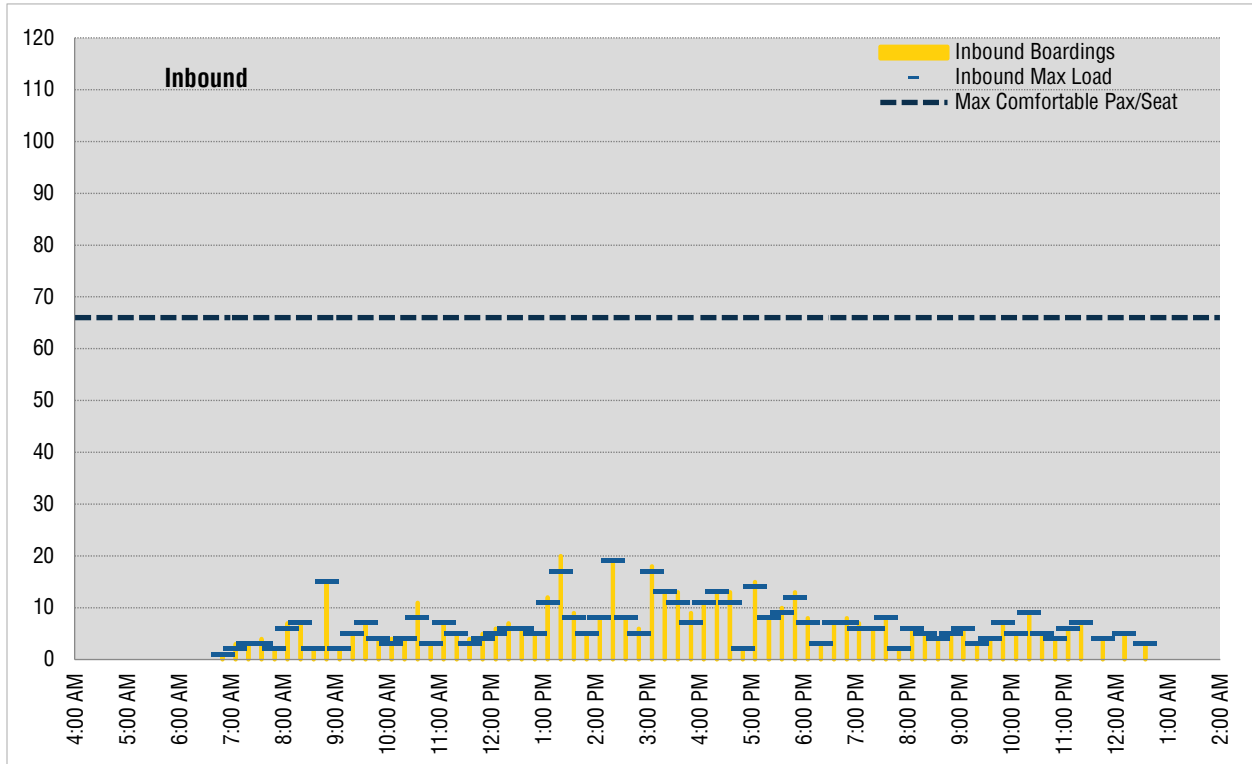
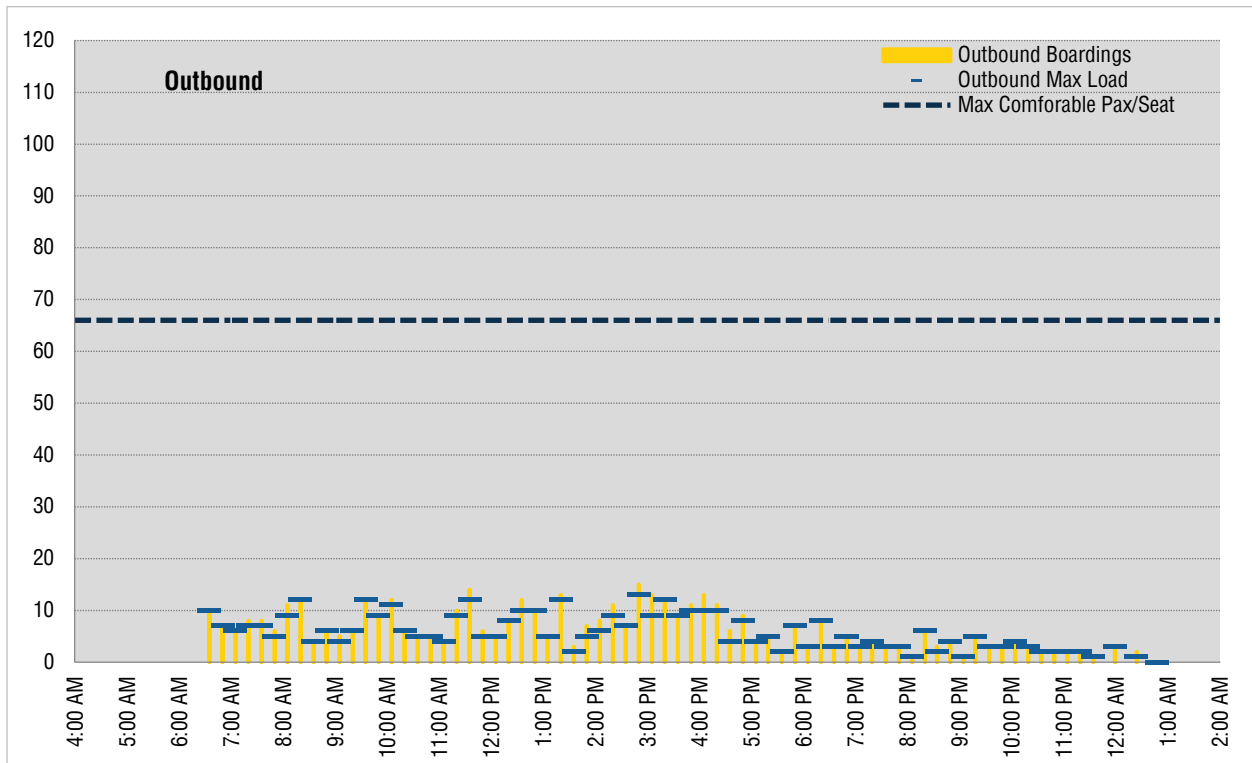


Figure 10 | Sunday Ridership by Trip: Outbound



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.

The MBTA estimates comfort levels using farebox data, which indicates how many passengers board at each stop and when. Because Route SL2 serves stations where fares are collected at faregates, comfort data is not available.

Reliability and Speed

Reliability

The MBTA measures on-time performance on high frequency routes such as Route SL2 based on the spacing of buses and arrival times at destination. Buses are considered to be on-time if the interval since the last bus is within three minutes of the scheduled interval and the overall travel time is no longer than 120% of the scheduled travel time.

Route SL2's overall on-time performance is much better than most MBTA routes, at 82% on weekdays, 83% on Saturdays, and 86% on Sundays (see Table 3). All of these figures are well above the MBTA's target of 80%.

Table 3 | Reliability

SERVICE DAY	ORIGIN/MID-ROUTE ON-TIME PERFORMANCE	DESTINATION ON-TIME PERFORMANCE	OVERALL RELIABILITY	DROPPED TRIPS
Monday-Friday	84%	89%	85%	0.9%
Saturday	85%	88%	86%	-
Sunday	83%	83%	83%	-

Running Times

Throughout the day, actual running times are shorter than scheduled operating times (see Figure 11 through Figure 12). In the afternoon and PM peak, actual times are shorter than scheduled times by up to four minutes.

Figure 11 | Scheduled & Median Travel Time by Trip: Pattern SL2.1 Inbound

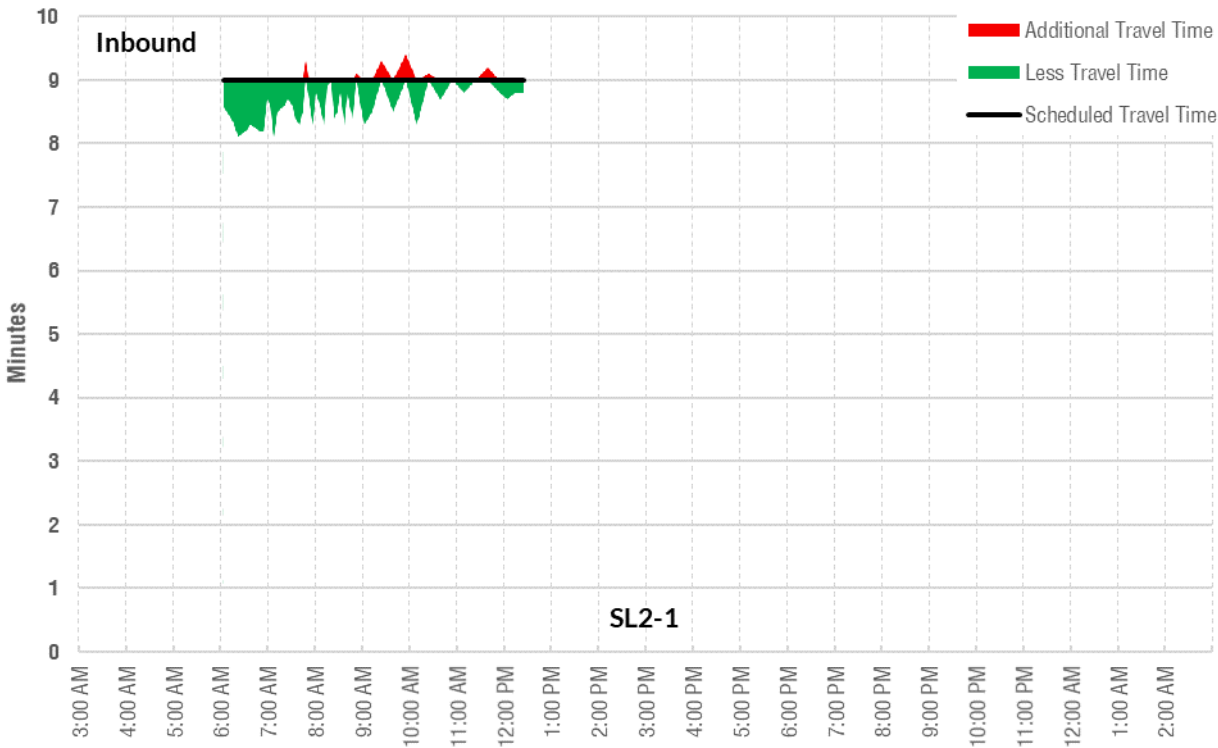


Figure 12 | Scheduled & Median Travel Time by Trip: Pattern SL2.0 Inbound

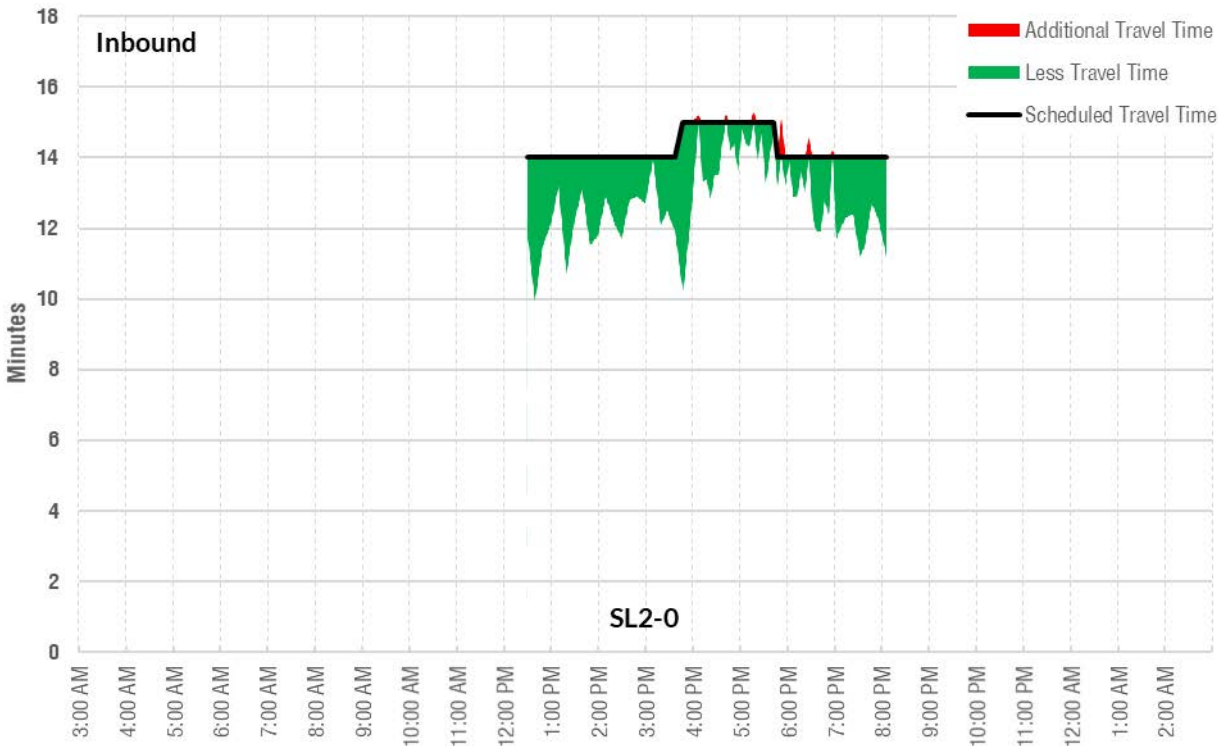


Figure 13 | Scheduled & Median Travel Time by Trip: Pattern SL2.1 Outbound

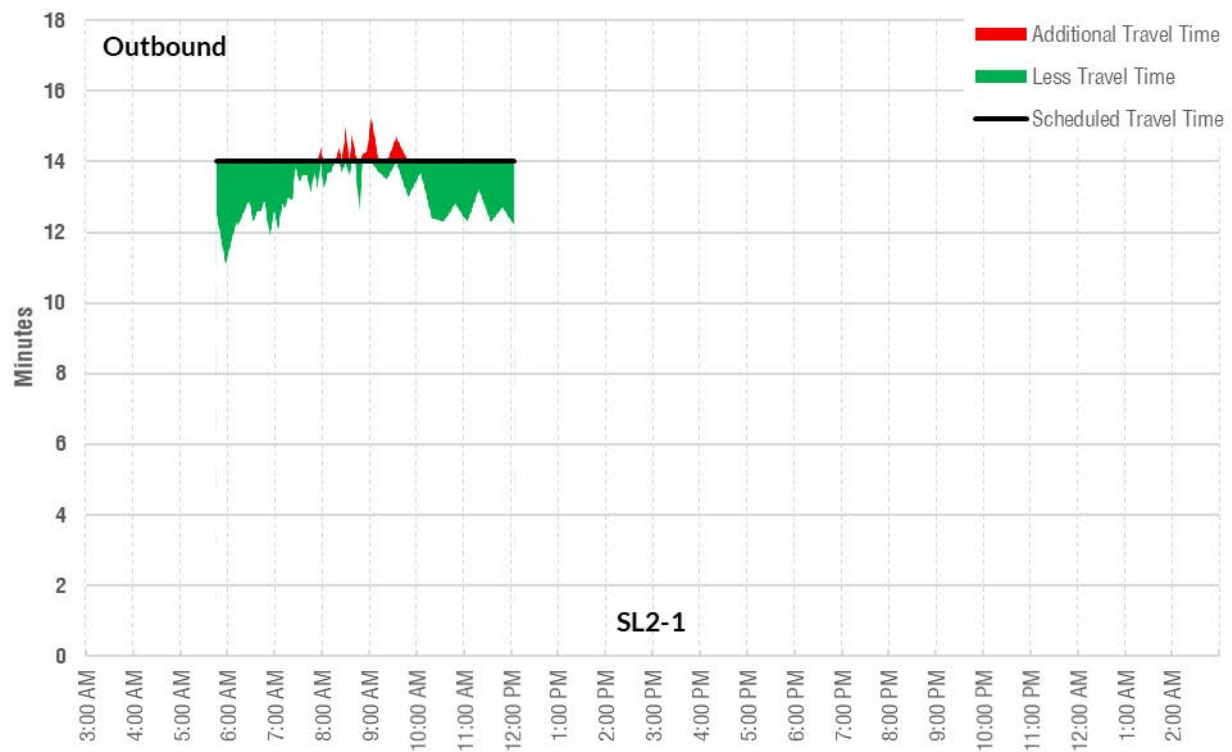
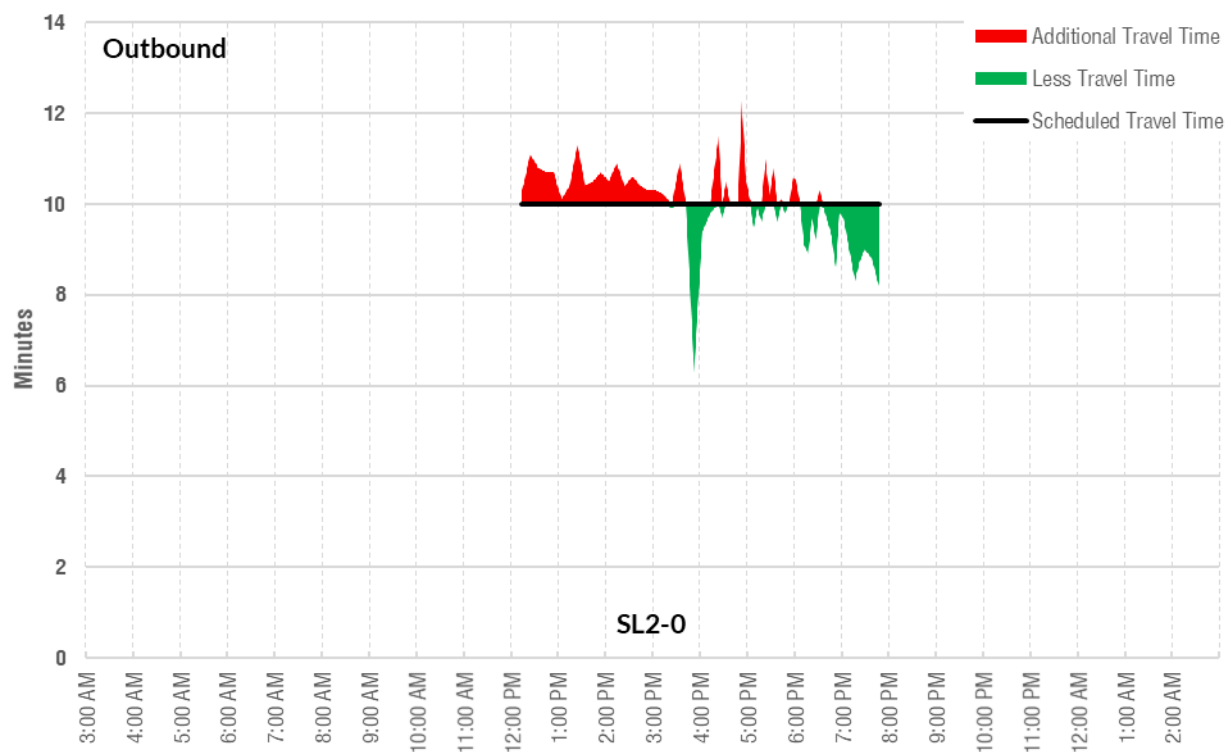


Figure 14 | Scheduled & Median Travel Time by Trip: Pattern SL2.0 Outbound



Stop Spacing

Route SL2 has appropriate stop spacing along most of the route in both directions. The one major exception is the stop at 88 Black Falcon Avenue. This stop is a two minute walk from the previous stop at 27 Dry Dock Avenue and requires buses to navigate an extra loop (as shown above in Figure 3).

Summary

Route SL2 is effective in that it provides direct service between South Station and the Design Center and supplements service in the Silver Line tunnel. However, it also has three significant weaknesses:

- Significantly more service is provided than warranted by demand. Ridership is heavy outbound between the start of service and 9:30 AM and inbound between 3:00 PM and 6:00 PM. At other times, ridership is relatively light, and much lower than on other Silver Line routes.
- The route's operating patterns are complex for what should be a very simple route, with three different patterns and two outer loops. This complexity is compounded by incomplete information on public timetables on how the route operates.
- The added loop to 88 Black Falcon Avenue adds up to two minutes of bus running time to save some passengers a two minute walk.