

Route 88

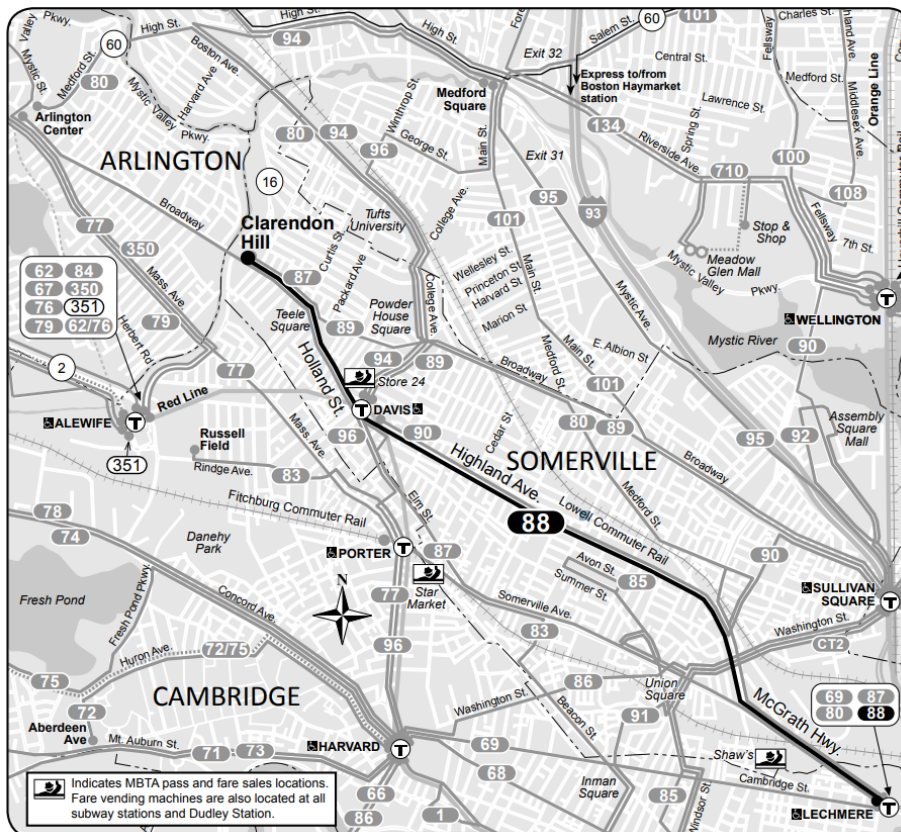
Clarendon Hill – Lechmere Station

Route Overview

Route 88 Clarendon Hill – Lechmere Station is a Local route that operates between Clarendon Hill and Lechmere Station via Davis Square and Highland Avenue. Other routes operate along all Route 88’s alignment. The most significant overlap includes:

- Between Clarendon Hill and Davis Square, which is also served by Route 87 Arlington Center-Lechmere. Route 87 also continues to Lechmere Station, but via Elm Street and Somerville Avenue.
- Between Davis Square and Highland Avenue at Cross Street (just north of Union Square), which is also served by Route 90 Davis Square-Wellington Station. Route 90, which provides very infrequent service, turns north to Sullivan Station and then on to Wellington Station. Combined the two routes provide additional service to Davis Square.

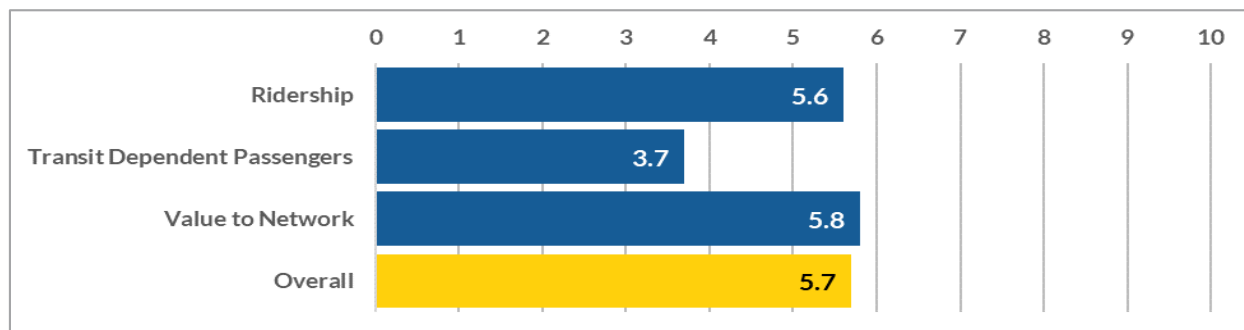
Figure 1 | Service Map



Network Importance

Route 88 is moderately important to the MBTA bus network (see Figure 2). On a relative scale of 0 to 10, the route rates 5.6 in terms of ridership, 3.7 in terms of transit dependent ridership, and 5.8 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 measures, is 5.7. Route 88's scores are depressed to a certain extent by the duplication with Route 87 and Route 90.

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



Service Overview

Schedule

Route 88 provides moderately frequent service on weekdays and infrequent service on weekends (see Table 1). On weekdays, service operates from 5:15 AM to 1:00 AM every:

- 16 to 26 minutes from the start of service through the end of the AM peak, with average frequencies of 21 to 23 minutes.
- Two to 17 minutes in the AM peak. Before 7:00 AM, full length trips between Clarendon Hill and Lechmere Station operate every 21 to 26 minutes, and then after that time operate every 16 to 18 minutes. The shorter headways indicated in Table 1 include short-turns between Clarendon Hill and Davis Square.
- 15 to 25 minutes during the midday base period, but predominantly every 25 minutes.
- 20 minutes during the midday school period.
- Every 15 to 25 minutes during the PM peak, but predominately every 20 minutes.
- Every 20 to 30 minutes in the evening, late evening, and night periods, predominantly every 20 minutes before 8:00 PM and every 30 minutes after that time.

Table 1 | Schedule Statistics

SERVICE DAY	SPAN OF SERVICE	FREQUENCY (RANGE)	FREQUENCY (AVERAGE)	DAILY TRIPS (INBOUND/OUTBOUND)
Monday-Friday	5:15 AM to 1:00 AM			59/54
Sunrise	5:15 AM to 5:59 AM	21 – 25	23	2/1
Early AM	6:00 AM to 6:59 AM	16 – 26	21	3/3
AM Peak	7:00 AM to 8:59 AM	2 – 17	10	12/6
Midday Base	9:00 AM to 1:29 PM	15 – 25	22	12/11
Midday School	1:30 PM to 3:59 PM	20	20	8/11
PM Peak	4:00 PM to 6:29 PM	15 – 25	20	8/7
Evening	6:30 PM to 9:59 PM	20 – 30	24	8/8
Late Evening	10:00 PM to 11:59 PM	30 – 30	30	4/4
Night	12:00 AM to 1:00 AM	30 – 30	30	2/3
Saturday	5:30 AM to 1:00 AM	20 – 40	25	45/44
Sunday	6:40 AM to 1:00 AM	30 – 60	38	28/28

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 5:15 AM to 1:00 AM. Service operates every 20 to 40 minutes, every 30 minutes before 11:00 AM, every 20 minutes between 11:00 AM and 8:00 PM, and then every 40 minutes. On Sundays, service operates from 6:40 AM to 1:00 AM, every 30 to 60 minutes. Service generally operates every 60 minutes before 9:00 AM, and then every 40 minutes.

Route 88 meets the MBTA’s span of service and frequency standards for Local routes during all service days and periods.

Service Patterns

Pattern 88.0 makes up the majority of Route 88 trips, and operates the full length of the route from Clarendon Hill to Lechmere Station as shown in Figure 1. In addition, and as summarized in Table 2:

- Pattern 88.3 makes up five weekday AM peak period inbound trips that are short-turns that operate only between Clarendon Hill and Davis Square
- Pattern 88.1 makes up three weekday outbound trips at 2:35 PM, 2:40 PM, and 2:50 PM that are school trips that operate between Somerville High School and Clarendon Hill.

Table 2 | Service Patterns

PATTERN	ORIGIN	DESTINATION	UNIQUE FEATURE	TRIPS PER WKD	TRIPS PER SAT	TRIPS PER SUN
INBOUND				59	45	28
88.0	Clarendon Hill Busway	Lechmere Station	Primary pattern	54	45	28
88.3	Clarendon Hill Busway	Davis Square Busway	AM short-turns	5	-	-
OUTBOUND				54	44	28
88.0	Lechmere Station	Clarendon Hill Busway	Primary pattern	51	44	28
88.1	Somerville High School	Clarendon Hill Busway	PM school trips	3	-	-

Ridership

Route 88 serves 3,970 riders on weekdays, 2,242 riders on Saturdays, and 1,426 riders on Sundays. This route ranks 32nd out of all MBTA bus routes for total weekday ridership, 25th on Saturdays, and 28th on Sundays.

Ridership by Stop

Route 88 serves three primary markets:

- People traveling from Clarendon Hill who connect with the Red Line at Davis Station or are traveling to Davis Square.
- People from Davis Square and locations along Highland Avenue who are traveling to Lechmere Station.
- People traveling to intermediate locations along Highland Avenue, the majority of which are between Somerville Hospital and McGrath/O'Brien Highway.

On weekday inbound trips (see Figure 3):

- 470 passengers board at the Clarendon Hill Busway, which is the first stop.
- 120 board at the next stop on Broadway at Garrison Avenue.
- A total 220 board and 10 alight at the next five stops before Davis Square.
- 380 passengers board and 470 alight at Holland Street at Dover Street, which is the stop closest to Davis Station. The alightings represent 59% of all passengers who boarded before that point.
- 180 passengers board and 20 alight on Elm Street at Chester Street, which is the second stop in Davis Square.

- Ridership is then moderate between there and Highland Avenue at Conwell Street, with a total of 140 boardings and 40 alightings at five stops.
- Beginning at Highland Avenue at Tower Street (close to Somerville Hospital) activity increases and alightings begin to outnumber boardings. In total, 400 passengers board and 600 alight at the eight stops on Highland Avenue between Tower Street and Medford Street. A total of 170 of the boardings and 240 of the alightings are at Somerville High School.
- Ridership is lower at the six stops along Medford Street and McGrath/O'Brien Highway, totaling 110 boardings and 200 alightings.
- 670 passengers alight at Lechmere Station, or 43% of all inbound ridership.

Outbound ridership is roughly the reverse of inbound ridership on weekdays. Weekend ridership patterns are similar, but with lower volumes.

Ridership by Trip

On weekdays, Route 88 has high ridership per trip throughout most of the day, and in particular on peak period peak direction trips. On weekday inbound trips (see Figure 4):

- Ridership before 6:30 AM increases steadily from 13 on the first trip at 5:16 AM to 38 on the 6:28 AM trip.

Figure 3 | Weekday Inbound Ridership by Stop Map

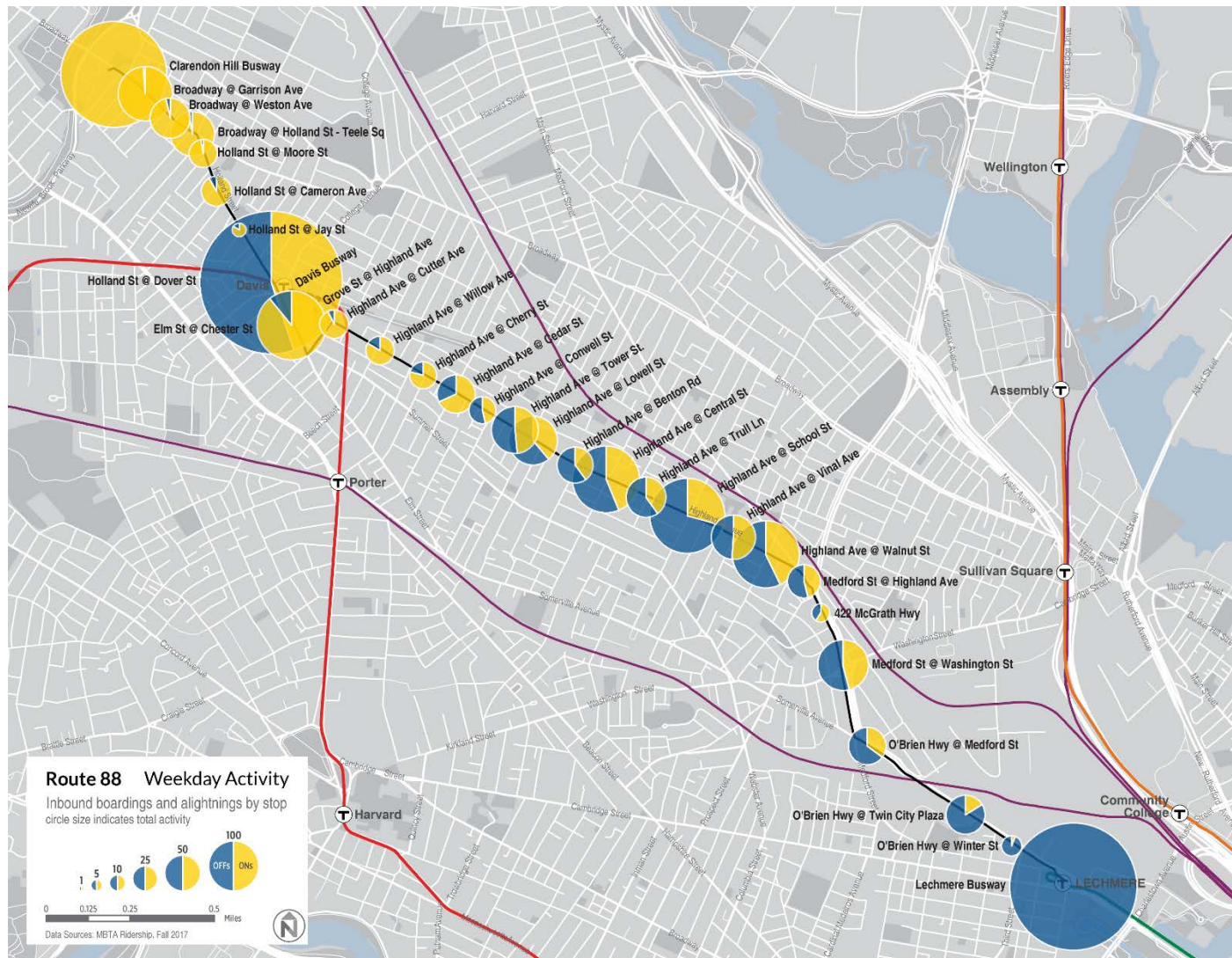
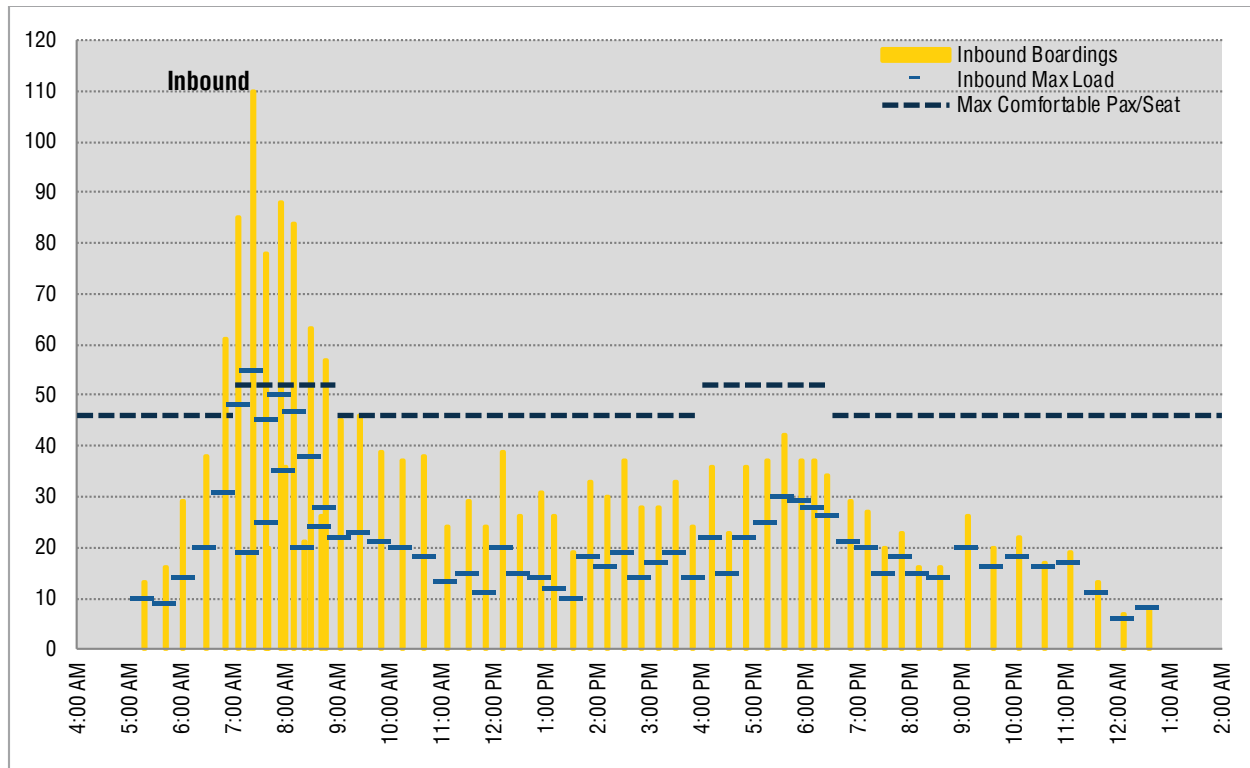


Figure 4 | Weekday Ridership by Trip: Inbound



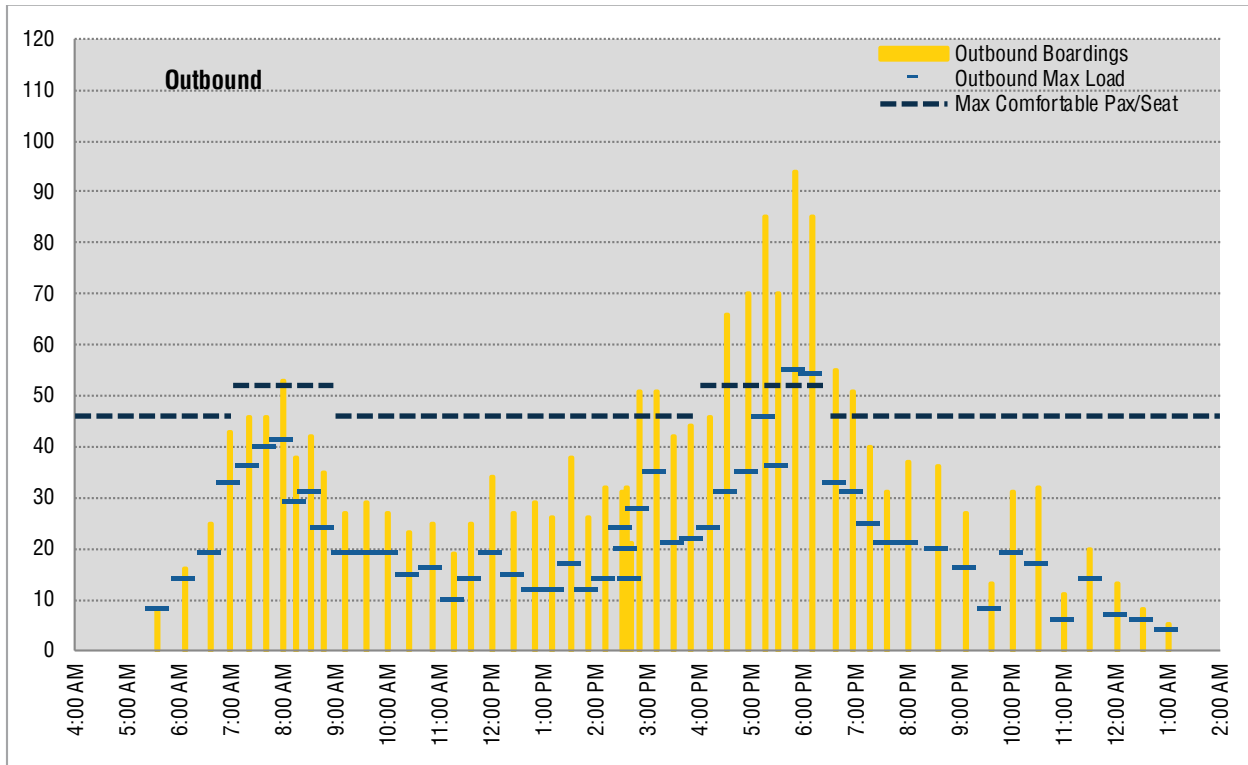
- Ridership then increases significantly from 60 to 110 passengers on full-length trips between 6:30 AM and 9:00 AM. Most trips operate with maximum loads that are near or above the MBTA’s maximum load standard and one has loads that exceeds it. However, ridership on the short-turns is much lower, at 19 passengers on the 7:17 AM trip, 20 on the 7:40 AM trip, 36 on the 8:00 AM trip, and 21 on the 8:20 AM trip.
- From 8:30 AM to 6:30 PM, ridership per trip is generally between 20 and 40 passengers.
- After 6:30 PM, ridership per trip declines unevenly from 30 passengers per trip to 20, and then to eight on the last trip at 12:35 AM.

On weekday outbound trips (see Figure 5):

- Ridership per trip begins low and then builds to over 40 passengers at 7:00 AM. It then stays at over 40 passengers until 8:30 AM.
- It is then generally 20 to 30 passengers per trip until about 2:30 PM, when it jumps to over 40 through 4:30 PM.

- Ridership on the three outbound school trips is 32, 21, and 51 total passengers, and maximum loads are 20, 14, and 28 passengers (because not all of the passengers on these trips are students).

Figure 5 | Weekday Ridership by Trip: Outbound



- From 4:30 PM to 6:30 PM, ridership per trip ranges from over 60 to over 90 passengers per trip. Most trips run with below capacity loads, but two run over capacity (at 5:50 PM and 6:10 PM).
- Ridership then tails off from 55 passengers at 6:35 PM to less than five on the last trip at 1:00 AM.

On Saturdays, inbound ridership is highest between 7:30 AM and 8:00 PM, when most trips carry 20 to over 40 passengers (see Figure 6). Outbound ridership is relatively high for most of the day, but highest between 1:00 PM and 8:00 PM, when most trips carry over 30 passengers and some carry over 50 passengers (see Figure 7).

On Sundays, inbound ridership is highest from 10:30 AM and 6:30 PM, when most trips carry 30 to nearly 50 passengers (see Figure 8). Outbound ridership is highest between 10:30 AM and 6:30 PM, when most trips also carry 30 to over 50 passengers (see Figure 9). These numbers are very high considering that service is infrequent (generally every 40 minutes). This indicates potential demand for more frequent service.

Figure 6 | Saturday Ridership by Trip: Inbound

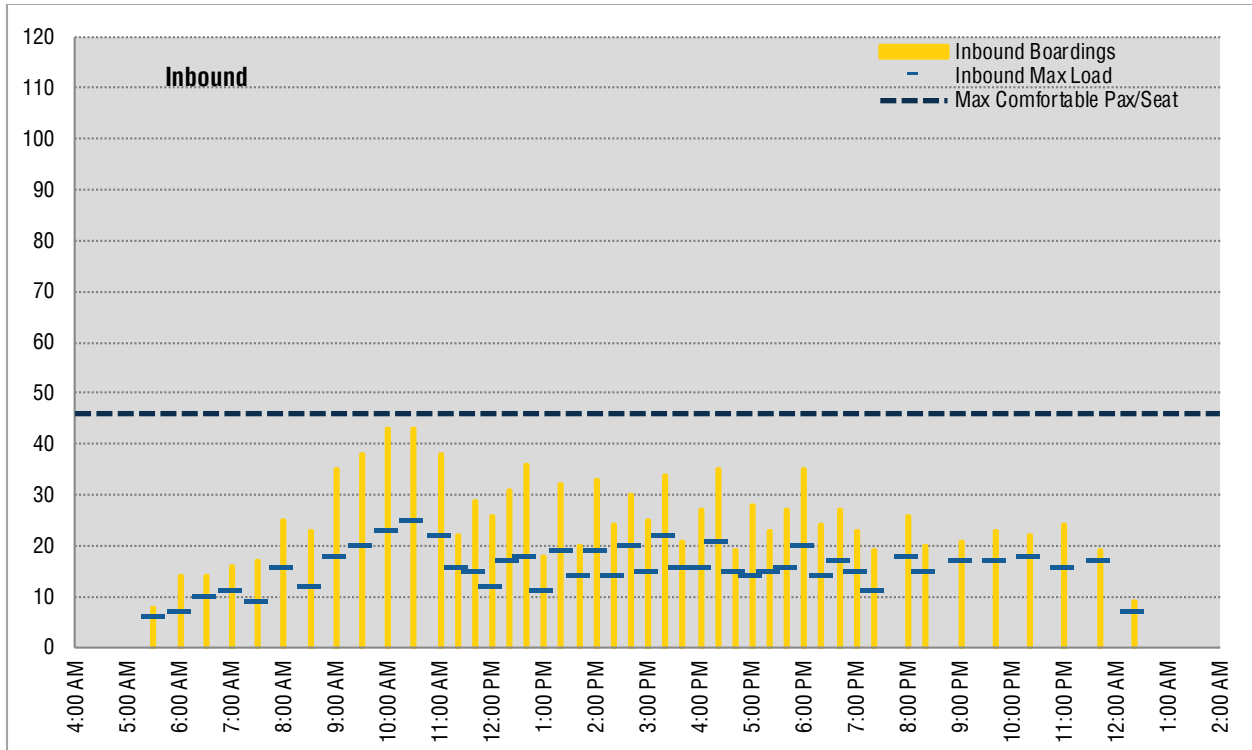


Figure 7 | Saturday Ridership by Trip: Outbound

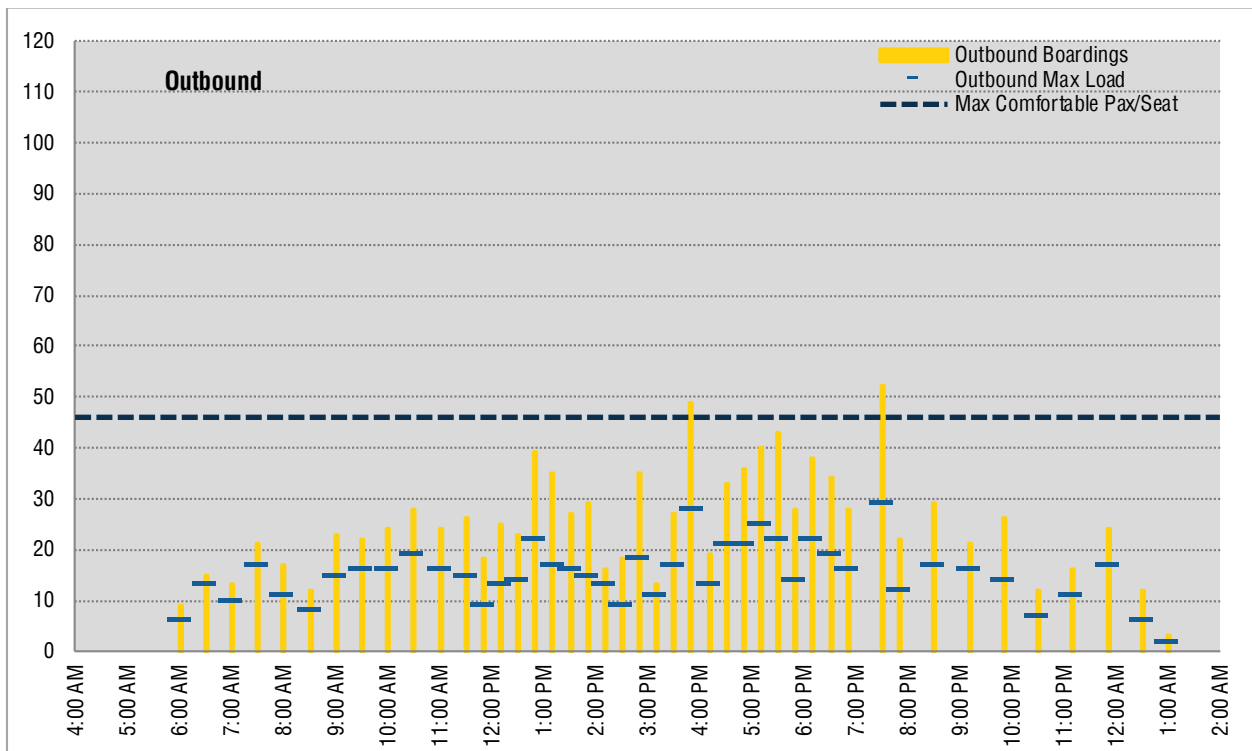


Figure 8 | Sunday Ridership by Trip: Inbound

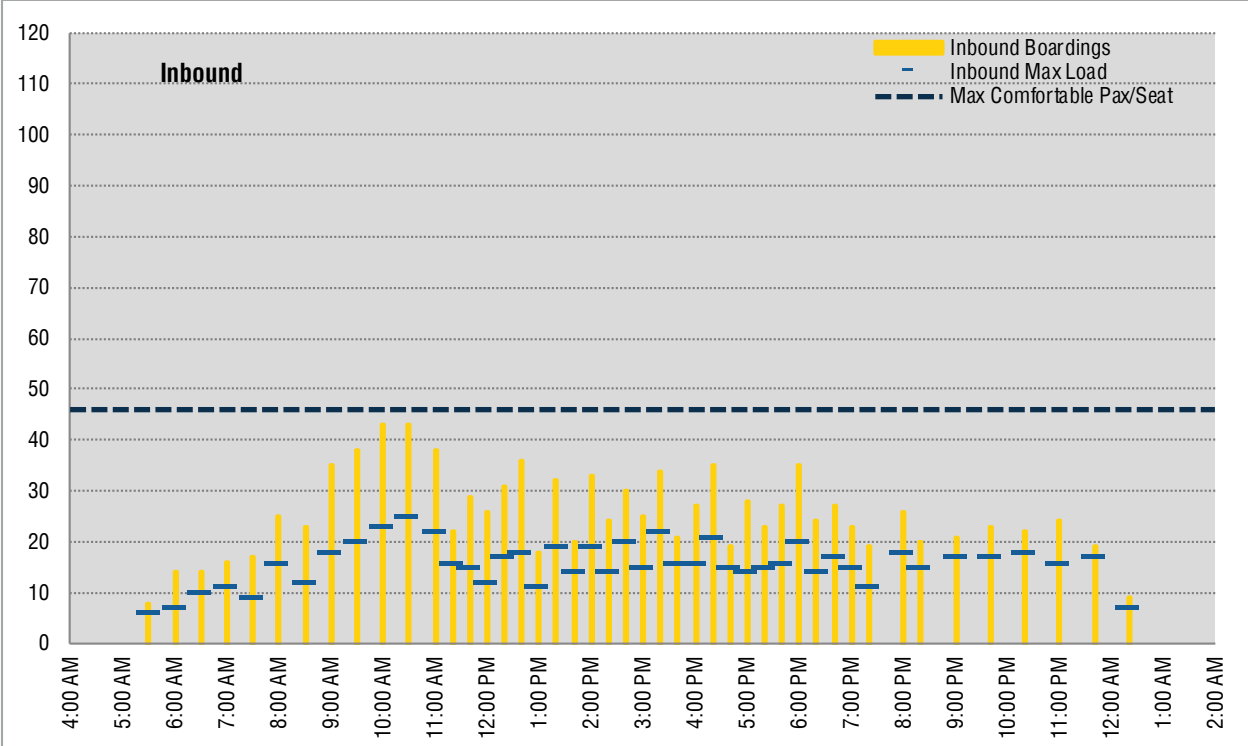
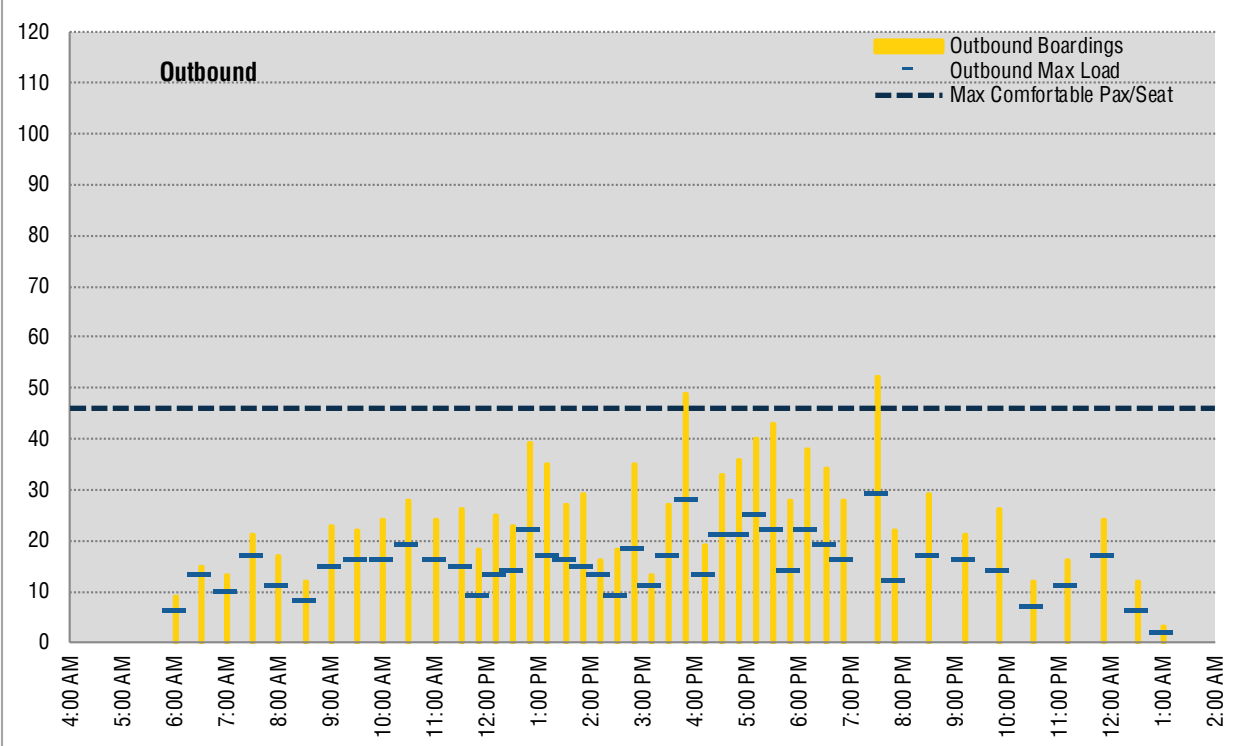


Figure 9 | Sunday Ridership by Trip: Outbound



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 88, 91.5% of passenger minutes are in comfortable conditions (see Table 4). This is slightly below the minimum standard of 92% and attributable to overcrowding on some peak period trips and dropped trips.

Table 3 | Passenger Time Spent Traveling in Comfortable Conditions

	WEEKDAYS	SATURDAYS	SUNDAYS
Minimum Standard	92%	92%	92%
Target	96%	96%	96%
Actual	91.5%	99.7%	99.9%

Reliability and Speed

Reliability

Route 88's overall reliability is 74% on weekdays, 68% on Saturdays, and 68% on Sundays (see Table 5). Weekday service exceeds the minimum standard of 70% for local bus routes, but is below the target of 75%. Saturday and Sunday reliability are below the minimum standard. Dropped trips are a moderate issue, with 2.2% of trips dropped in the Fall of 2017. Most dropped trips occur on the Route 88-3 short pattern (Clarendon Hill-Davis). This is one of the higher rates for local routes.

Table 4 | Reliability

SERVICE DAY	ORIGIN/MID-ROUTE ON-TIME PERFORMANCE	DESTINATION ON-TIME PERFORMANCE	OVERALL RELIABILITY	DROPPED TRIPS
Monday-Friday	75%	71%	74%	2.2%
Saturday	68%	68%	68%	-
Sunday	69%	66%	68%	-

Running Times

Many of the issues with route reliability are due to differences between actual running times and scheduled running times, which are up to seven minutes longer than scheduled for much of the day, except for the midmorning (see Figure 10 and Figure 11).

Figure 10 | Scheduled & Median Travel Time by Trip: Route 88 Inbound

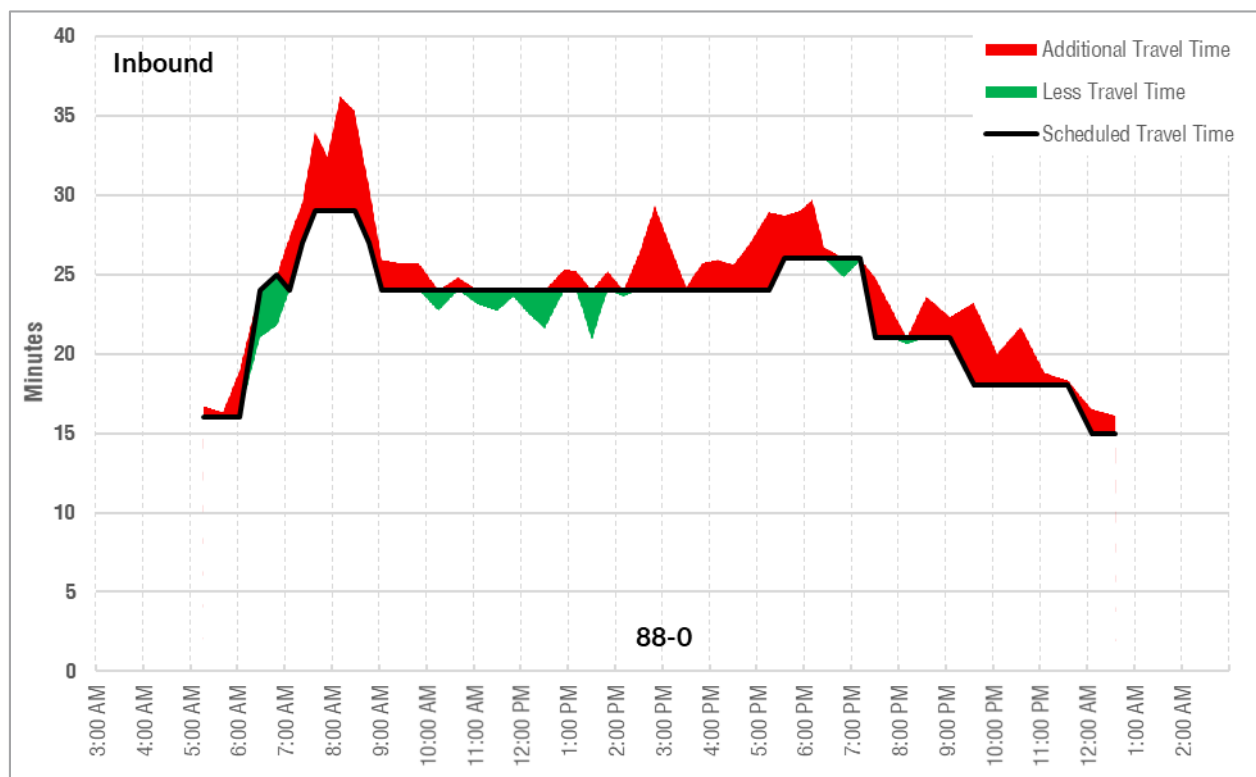
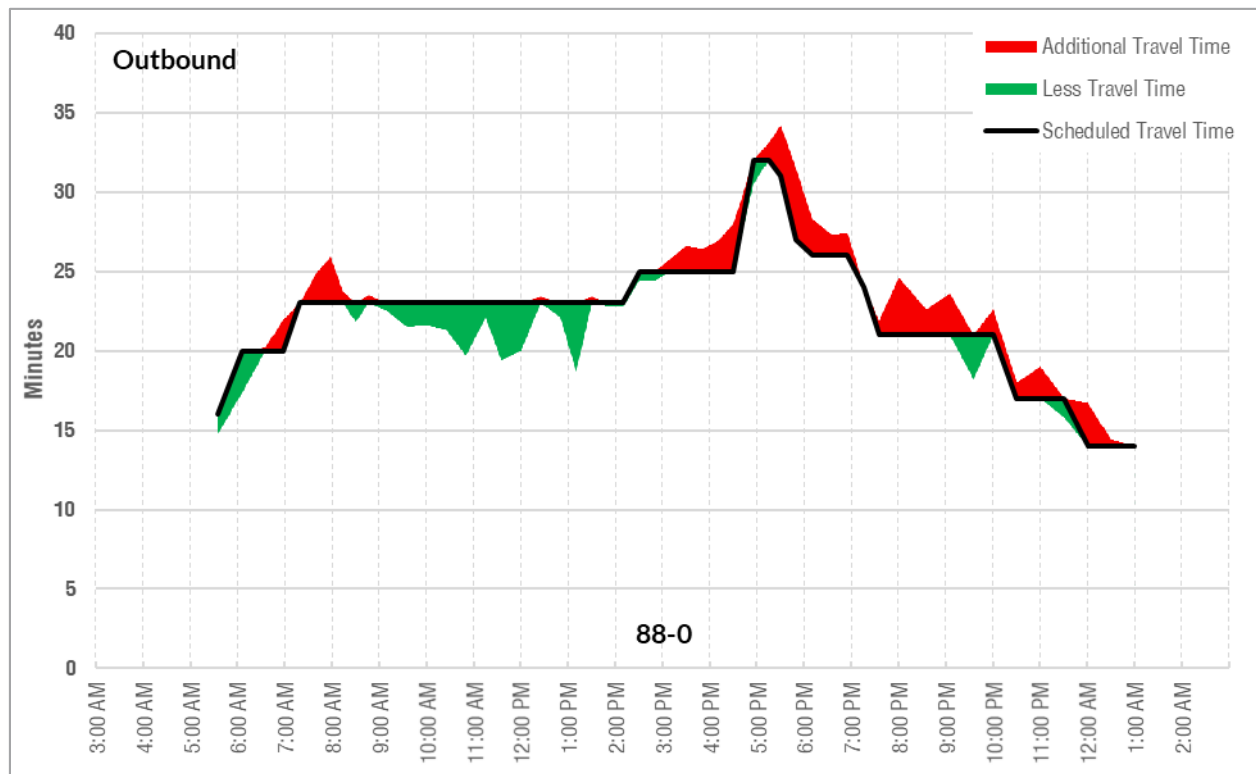


Figure 11 | Scheduled & Median Travel Time by Trip: Route 88 Outbound



Stop Spacing

Route 88 has approximately eight stops per mile, in excess of the four to seven stops per mile recommended for urban areas under MBTA guidelines. The very short stop spacing slows service and contributes to the route’s poor reliability. Stop consolidation could improve service while still providing convenient walk times to stops.

Summary

Route 88 is a high ridership local route that provides key connections between Somerville and the Red and Green Lines. Major issues are below target on-time performance, overcrowding on peak period trips, and relatively infrequent off-peak and weekend service.