

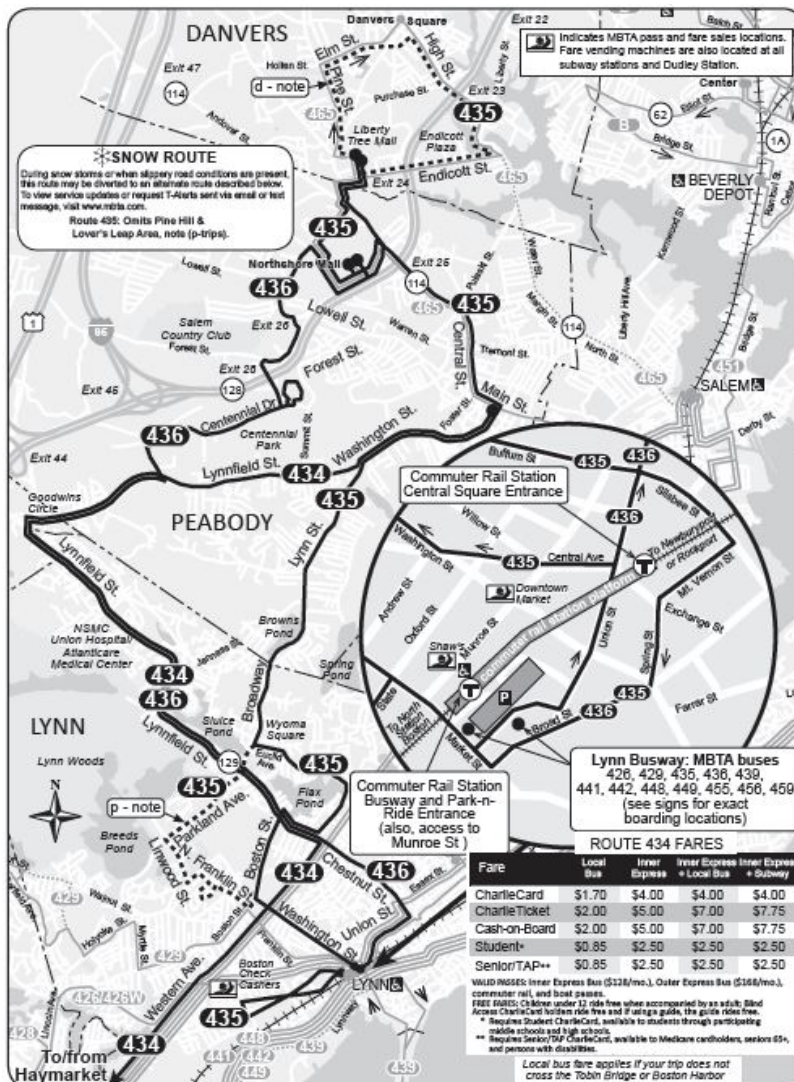
Route 435

Liberty Tree Mall – Central Square, Lynn or Neptune Towers via Peabody Square

Route Overview

Route 435 Liberty Tree Mall – Central Square, Lynn or Neptune Towers via Peabody Square is a Local route that operates from the Liberty Tree Mall to Central Square, Lynn via Peabody and Lynn. The route serves the Northshore Mall in Peabody and Central Square, Lynn.

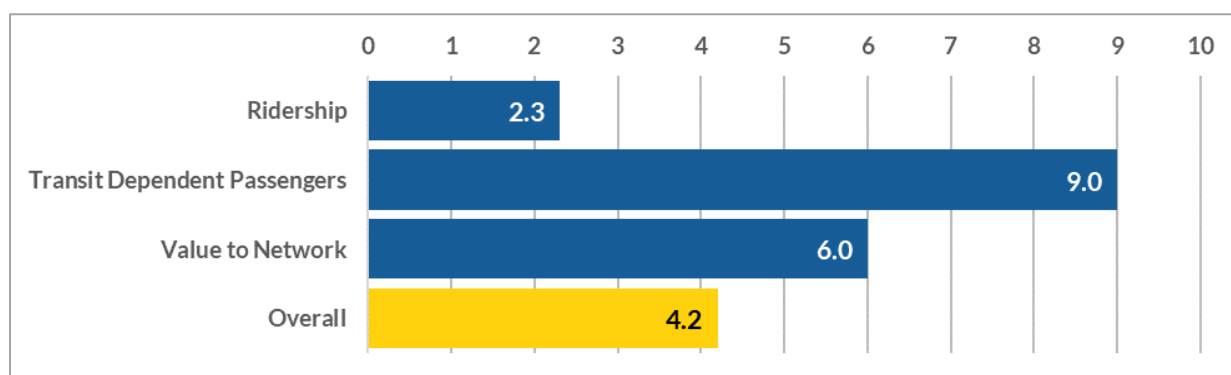
Figure 1 | Service Map



Network Importance

Route 435 is a moderately important route within the MBTA network (see Figure 2). On a relative scale of 0 to 10, the route rates 2.3 in terms of ridership, 9.0 in terms of transit dependent ridership, and 6.0 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% weight to overall ridership and a 15% weight to both other measures, is 4.2.

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



Service Patterns

Schedule

Route 435 operates seven days a week. On weekdays, service is provided from 6:05 AM until 10:45 PM with infrequent service. Throughout the service day:

- Service generally operates hourly during the early AM and AM peak periods, although headways range from 35 to 65 minutes.
- During the midday, frequencies range between 55 and 80 minutes, but generally every 65 minutes.
- During the PM peak, service generally operates every 53 minutes.
- After 6:30 PM, service is generally hourly, with headways ranging from 55 to 100 minutes.

Route 435 operates on Saturdays from 8:30 AM until 11:00 PM with hourly service on average. Sunday service operates from 9:30 AM to 7:40 PM, with average headways of 74 minutes.

The route does not meet the MBTA's span of service standards on Saturdays, as service begins 30 minutes later than defined by the Service Delivery Policy. The route also fails to meet the frequency standards, with headways of over 30 minutes during peak periods and over 60 minutes for much of the day on weekdays and on Sundays.

Table 1 | Schedule Statistics

SERVICE DAY	SPAN OF SERVICE	FREQUENCY (RANGE)	FREQUENCY (AVERAGE)	DAILY TRIPS (INBOUND/OUTBOUND)
Monday-Friday	6:05 AM to 10:45 PM			16/16
Sunrise	-	-	-	-
Early AM	6:05 AM to 6:59 AM	1 trip	-	1/1
AM Peak	7:00 AM to 8:59 AM	35 – 66	60	2/2
Midday Base	9:00 AM to 1:29 PM	62 – 70	69	4/4
Midday School	1:30 PM to 3:59 PM	55 – 80	66	2/2
PM Peak	4:00 PM to 6:29 PM	35 – 100	65	3/3
Evening	6:30 PM to 9:59 PM	55 – 100	58	3/4
Late Evening	10:00 PM to 10:45 PM	1 trip	-	1/0
Night	-	-	-	-
Saturday	8:30 AM to 11:00 PM	30 – 70	58	14/14
Sunday	9:30 AM to 7:40 PM	37 – 100	74	7/7

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

Service Patterns

Route 435 primarily operates from the Liberty Tree Mall and travels through Peabody and Lynn, terminating at Neptune Boulevard, near the Lynn Vocational Technical Institute (Pattern 435.6). In addition to this primary service pattern:

- On weekdays, seven inbound and eight outbound trips per weekday operate between the Liberty Tree Mall and Central Square, near Central Square, Lynn (Patterns 435.0 and 435.4).
 - The last four outbound trip extends north of the Liberty Tree Mall and provide local circulation through Danvers Square after Route 465 has ended service (Pattern 435.4).
- One weekday morning inbound trip (9:10 AM) and one weekday outbound trip in the afternoon (2:52 PM) serve Pine Hill rather than the community around Flax Pond. Pine Hill is a community in Lynn southwest of Broadway. These trips terminate/originate near the Lynn Vocational Technical Institute at Neptune Boulevard (Pattern 435.1).
- One inbound morning trip (6:40 AM) travels between Washington Street at Main Street and Central Square, Lynn. This pattern skips the malls, which are not open at that time (Pattern 435.2).
- One inbound trip (7:15 AM) and one outbound trip (5:45 AM) on weekdays operate between Washington Street at Main Street and Central Square, Lynn and serve Pine Hill (Pattern 435.3).

- The first outbound trip extends north of the Liberty Tree Mall and serves Danvers Square (Pattern 435.5).

Table 2 | Service Patterns

PATTERN	ORIGIN	DESTINATION	UNIQUE FEATURE	TRIPS PER WKD	TRIPS PER SAT	TRIPS PER SUN
INBOUND				16	4	7
435.6	Liberty Tree Mall at Best Buy	Neptune Boulevard at Blossom Street	Primary pattern	6	7	4
435.4	Liberty Tree Mall at Best Buy	Central Square, Lynn	Terminates at Central Square, Lynn	4	-	-
435.0	Liberty Tree Mall at Best Buy	Central Square, Lynn	Terminates as Central Square, Lynn	3	7	3
435.1	Liberty Tree Mall at Best Buy	Neptune Boulevard at Blossom Street	Via Pine Hill	1	-	-
435.2	Washington Street at Main Street	Central Square, Lynn	Short Turn	1	-	-
435.3	Washington Street at Main Street	Central Square, Lynn	Short Turn, Via Pine Hill	1	-	-
OUTBOUND				16	14	7
435.6	Neptune Boulevard at Blossom Street	Liberty Tree Mall at Best Buy	Primary pattern	6	7	5
435.4	Central Square, Lynn	Liberty Tree Mall at Best Buy	Serves Danvers Square and Terminates at Central Square, Lynn	4	-	-
435.0	Central Square, Lynn	Liberty Tree Mall at Best Buy	Terminates at Central Square, Lynn	3	7	2
435.1	Neptune Boulevard at Blossom Street	Liberty Tree Mall at Best Buy	Via Pine Hill	1	-	-
435.3	Central Square, Lynn	Washington Street at Main Street	Short Turn, Via Pine Hill	1	-	-
435.5	Central Square, Lynn	Liberty Tree Mall at Best Buy	Serves Danvers Square	1	-	-

Ridership

Route 435 serves 709 daily passengers on weekdays, 608 passengers on Saturdays, and 340 passengers on Sundays.

Ridership by Stop

Route 435 generates relatively low ridership along its entire alignment, with notable exceptions at the Liberty Tree Mall, the Northshore Mall, the Lynn Stop & Shop, and Central Square, Lynn (see Figure 3). Weekday inbound trips experience the following ridership patterns:

- 68 passengers board at the Liberty Tree Mall.
- 28 passengers board and two alight between the Liberty Tree Mall and the Northshore Mall.
- At the Northshore Mall, 89 passengers board and four alight.
- 19 passengers board and nine alight at Wilson Square.
- 35 passengers board and nine alight at Washington Street at Main Street.
- 49 passengers board and 24 alight along the four-mile segment of Washington Street and Broadway.
- Four passengers board and one alights along the Pine Hill detour from Broadway at Conomo Avenue to North Franklin Street at Boston Street.
- 17 passengers board and 35 passengers alight at the 13 stops between Euclid Avenue at Clairmont Street and Boston Street opposite Stetson Street.
- Six passengers board and 43 alight at the Stop & Shop at Washington Street at Western Avenue.
- Three passengers board and 39 alight along Washington Street through Lynn.
- Two passengers board and 46 alight at Silsbee Street at Union Street in the business district.
- 47 passengers alight at Central Square, Lynn.
- Five passengers board and 49 passengers alight at the five stops from Market Street at Central Square, Lynn to Neptune Boulevard at Blossom Street.

Outbound ridership generally mirrors inbound ridership with some important differences:

- Some outbound trips travel into Danvers. The 16 stops from Pine Street at Sylvan Street to Endicott Street at Route 128 serve two boardings and six alightings.
- 32 passengers board and 40 passengers alight at the 15 stops between Euclid Avenue at Broadway and Boston Street at Stetson Street.

- 164 boardings and five alightings at Central Square, Lynn.

On Saturdays, the number of boardings increases to 110 at the Liberty Tree Mall and 123 at the Northshore Mall, indicating an increase in shopping trips.

On Sunday, ridership is primarily generated at the Liberty Tree Mall and Northshore Mall, accounting for 118 boardings of the 153 total inbound boardings.

Ridership by Trip

On weekday inbound trips (see Figure 4):

- Trips carry 13 to 21 passengers between 6:40 AM and 1:45 PM.
- Ridership spikes between 3:00 PM and 5:15 PM. Trips made during this period serve 31 to 37 passengers, with ridership highest on the 3:05 PM trip.
- Ridership increases from 17 to 21 passengers from 6:10 PM to 8:45 PM.
- Ridership spikes again on the 9:45 PM trip with 29 passengers.
- Ridership declines to 12 passengers on the 10:45 PM trip.

On weekday outbound trips (see Figure 5):

- The 6:05 AM trip carries 29 passengers.
- Ridership is highest on the 7:11 AM trip with 37 passengers, then declines to 32 passengers on the 8:15 AM trip.
- Ridership ranges between 23 and 27 passengers from 9:00 AM to 2:00 PM.
- Ridership spikes at 2:52 PM with 35 passengers.
- The 4:05 PM trip carries 28 passengers.
- The 5:10 PM and 6:45 PM trips carry 20 and 18 passengers, respectively. Between these two trips, the 5:45 PM trip carries six passengers.
- The 7:40 PM and 8:40 PM trips each carry 12 passengers.
- The last trip of the day at 9:40 PM carries 19 passengers.

Saturday inbound ridership is highest between 3:00 PM and 6:00 PM, when trips carry over 30 riders (Figure 6). Ridership peaks again at 9:00 PM and 10:00 PM with 28 riders.

Outbound trips generally have around 30 riders before 3:00 PM, and ridership peaks at 10:42 AM with 47 riders (see Figure 7). After 3:00 PM, most trips have fewer than 10 riders.

Sunday inbound ridership peaks at 6:20 PM with 48 passengers (see Figure 8). Other inbound trips carry 23 people or less. Outbound ridership peaks on the 11:57 AM trip with 49 riders (see Figure 9). Over 30 people are served during outbound trips made before 2:00 PM and 13 people or fewer are served by trips made after 2:00 PM.

Figure 3 | Weekday Inbound Ridership by Stop Map

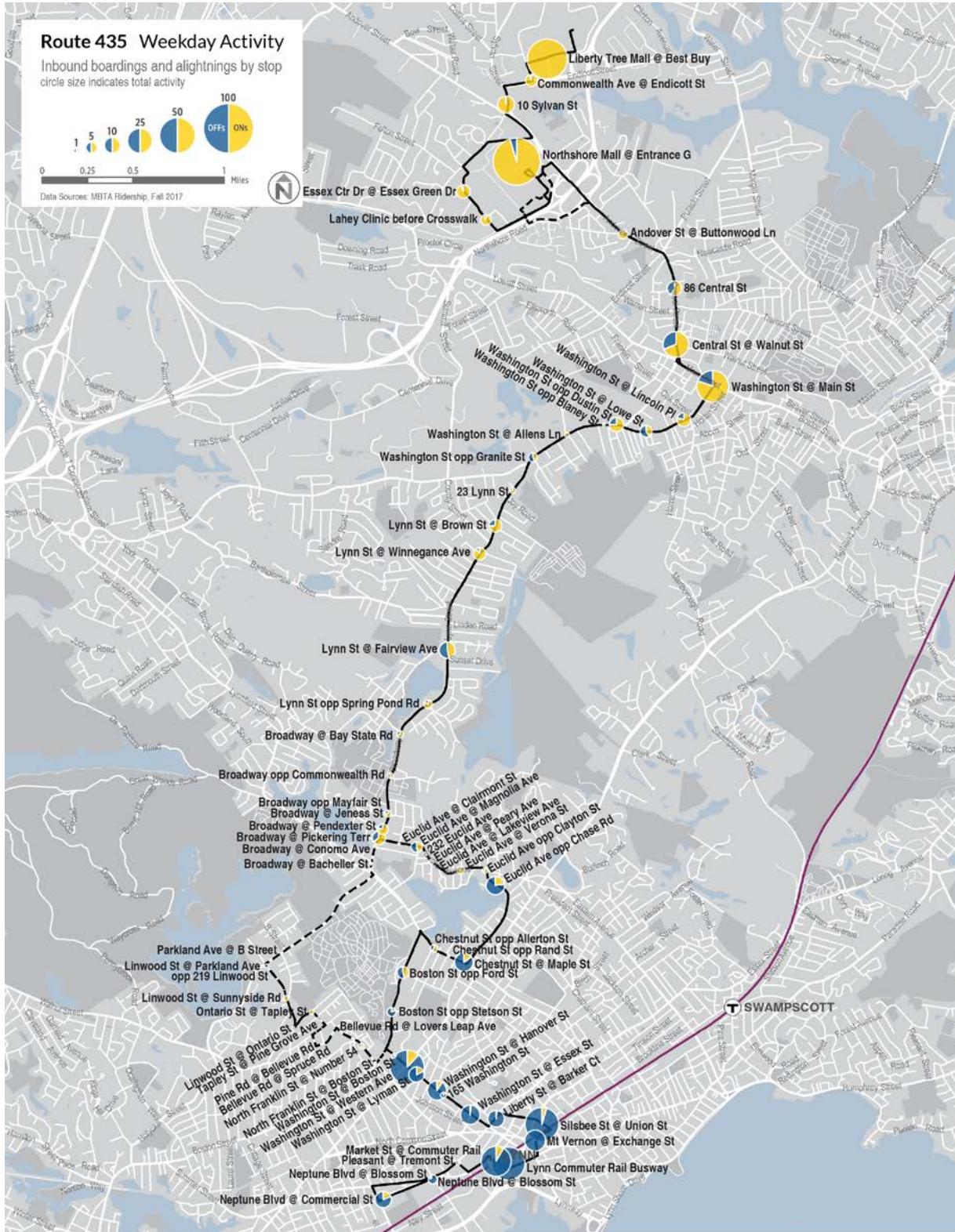


Figure 4 | Weekday Ridership by Trip: Inbound

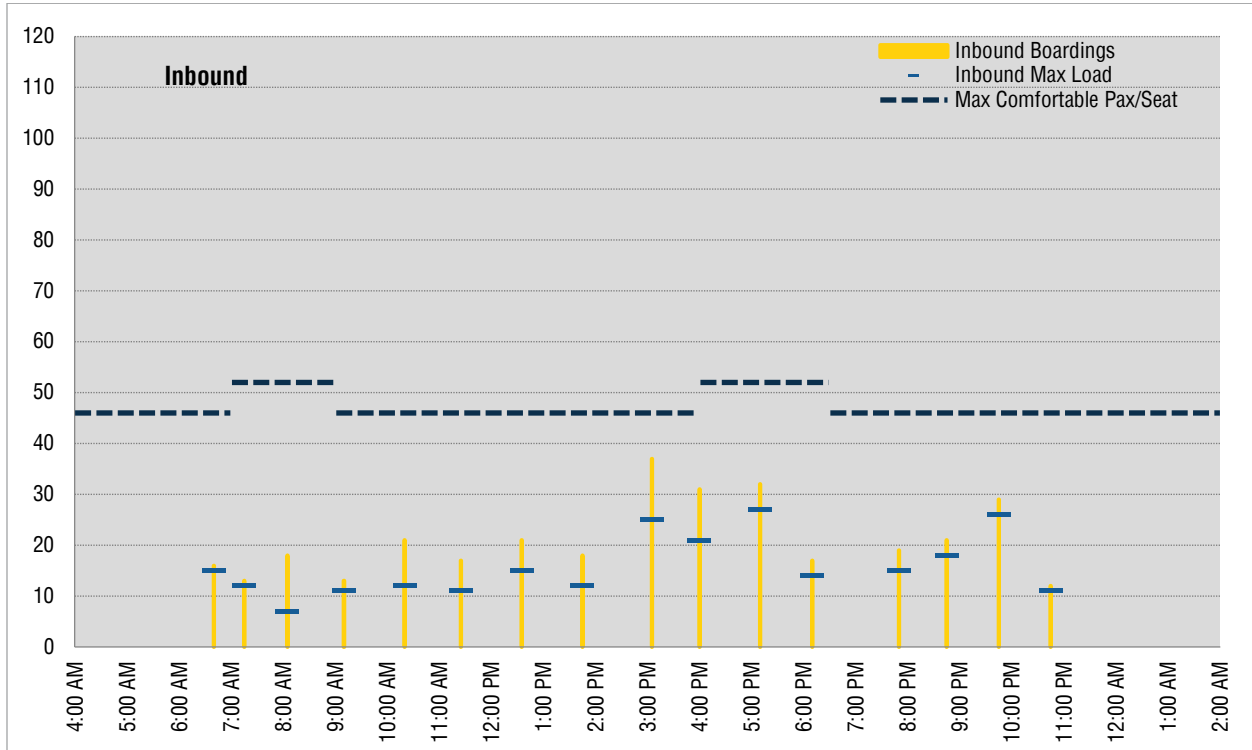


Figure 5 | Weekday Ridership by Trip: Outbound

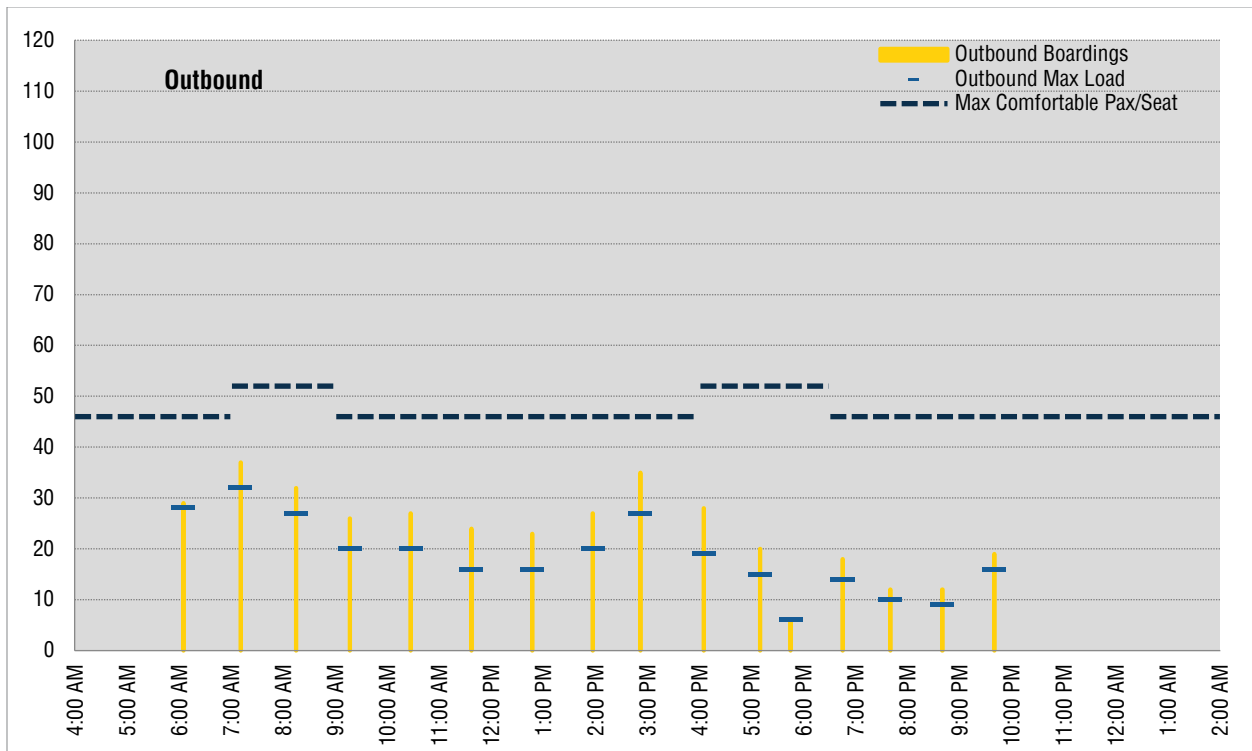


Figure 6 | Saturday Ridership by Trip: Inbound

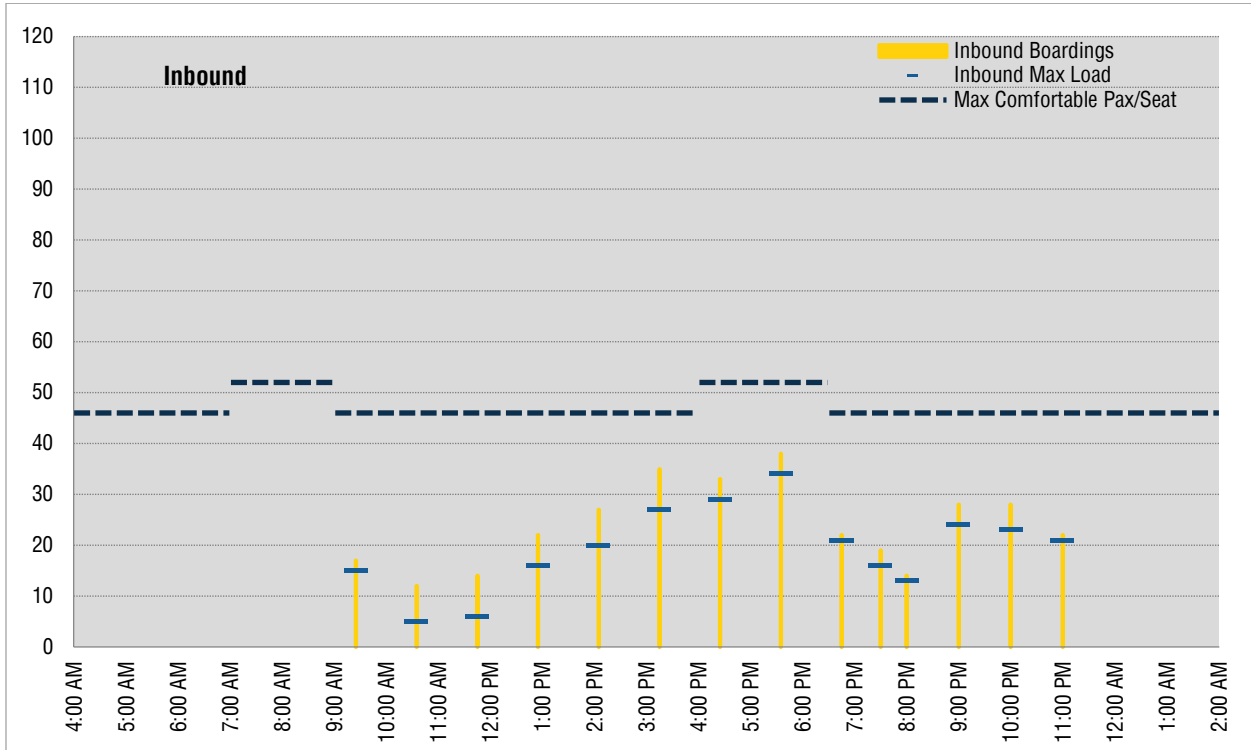


Figure 7 | Saturday Ridership by Trip: Outbound

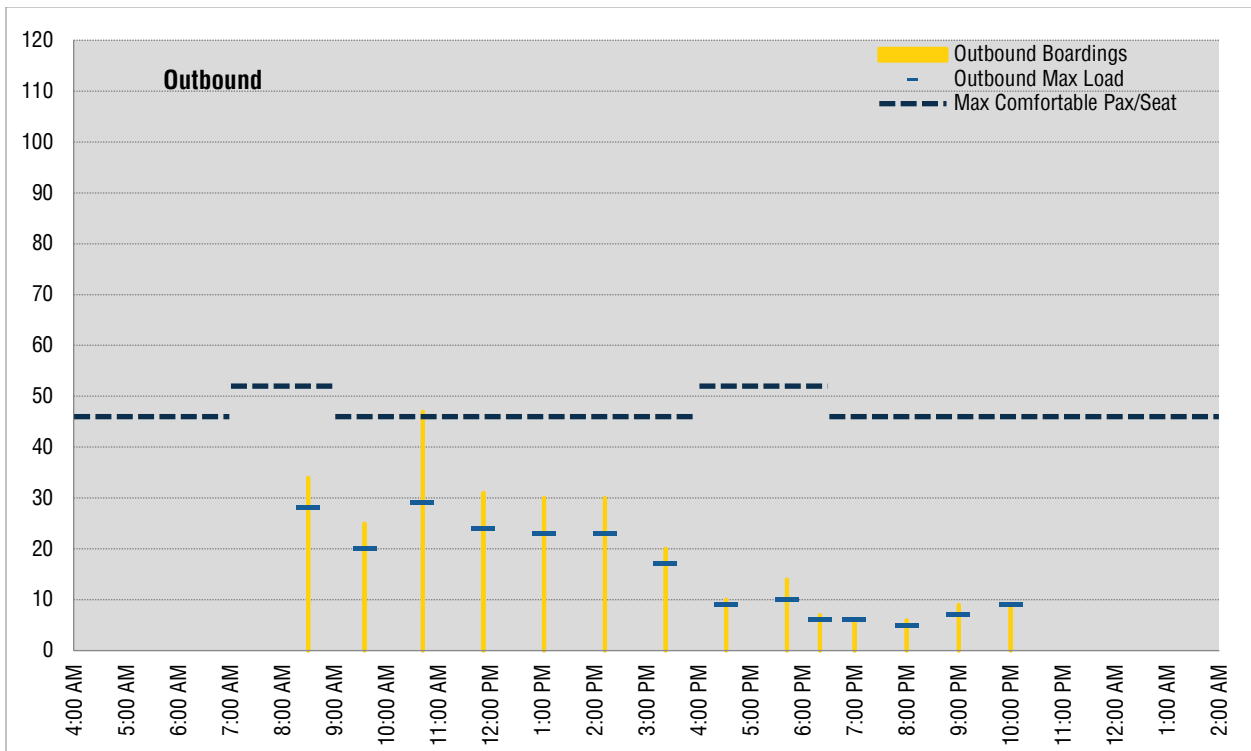


Figure 8 | Sunday Ridership by Trip: Inbound

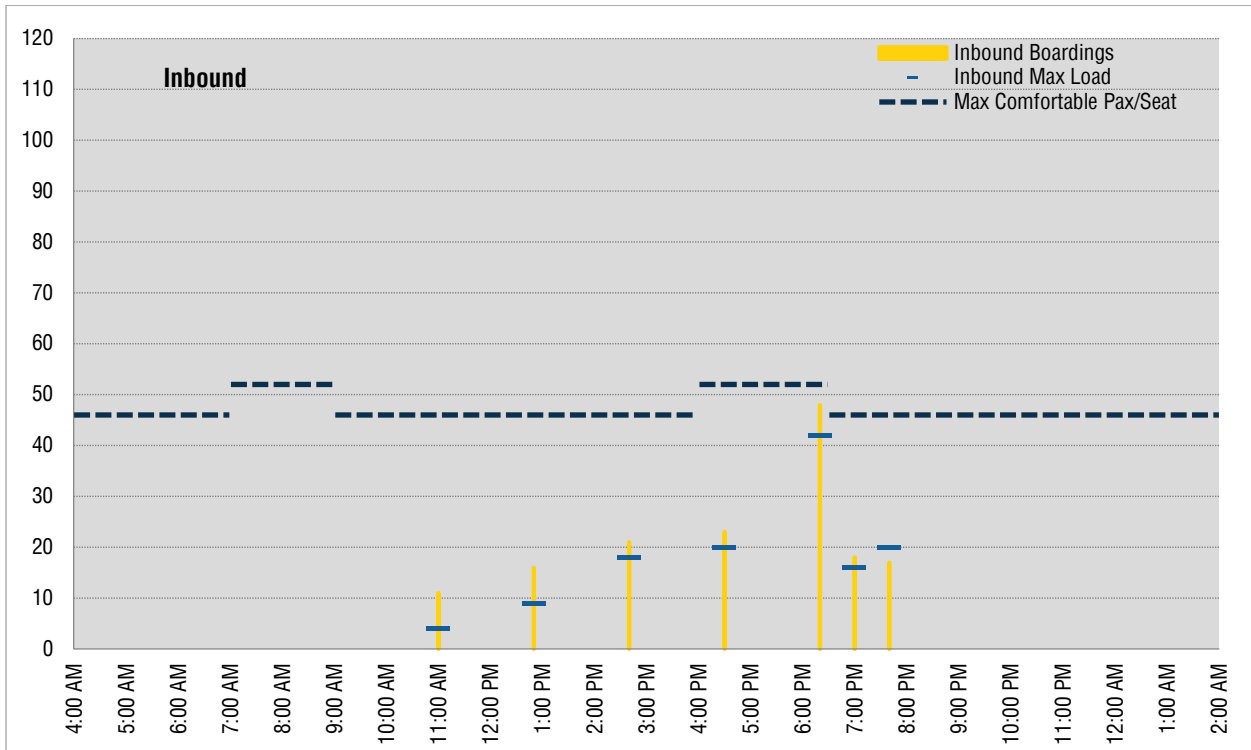
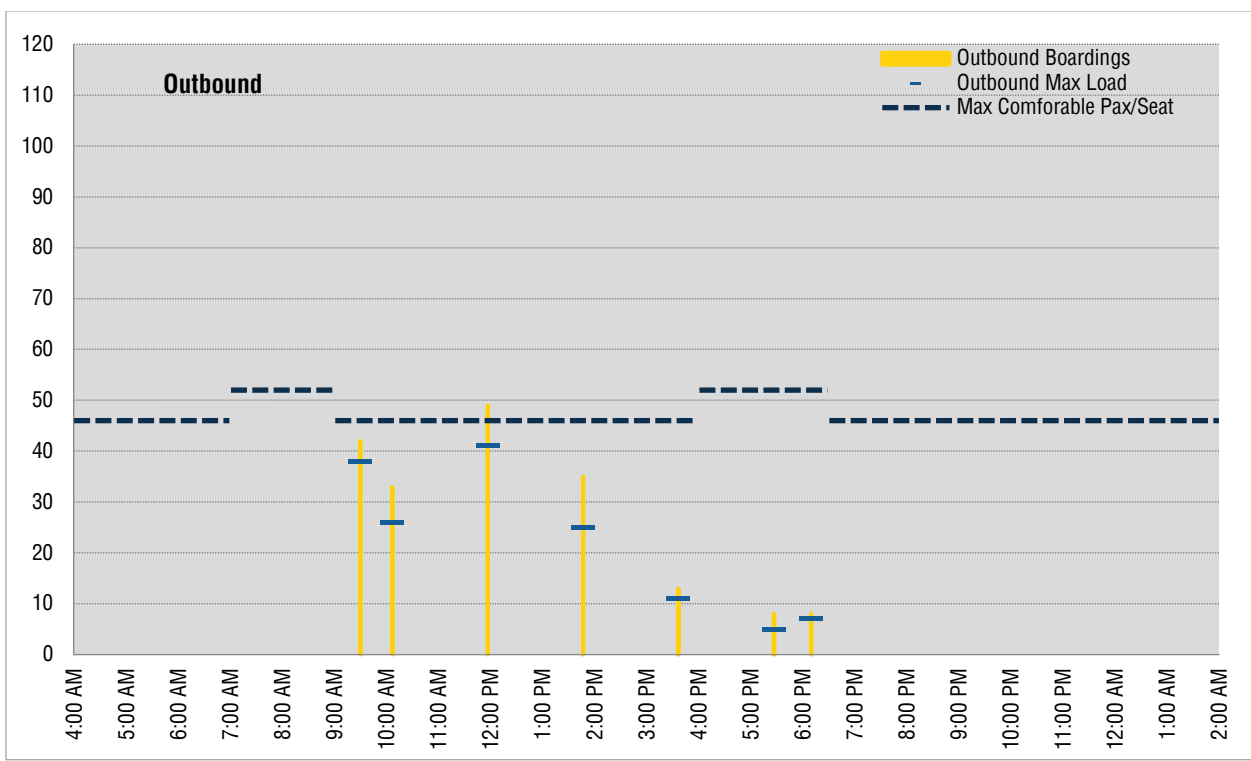


Figure 9 | Sunday Ridership by Trip: Outbound



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 435, 99% of passenger minutes are in comfortable conditions, which meets the target (see Table 4).

Table 3 | Passenger Time Spent Traveling in Comfortable Conditions

	WEEKDAYS	SATURDAYS	SUNDAYS
Minimum Standard	92%	92%	92%
Target	96%	96%	96%
Actual	99%	100%	99%

Reliability and Speed

Reliability

Route 435 is generally unreliable. Overall reliability is 55% on weekdays, 61% on Saturdays, and 50% on Sundays. Dropped trips are not an issue on this route (see Table 5).

Table 4 | Reliability

SERVICE DAY	ORIGIN/MID-ROUTE ON-TIME PERFORMANCE	DESTINATION ON-TIME PERFORMANCE	OVERALL RELIABILITY	DROPPED TRIPS
Monday-Friday	57%	46%	55%	0.1%
Saturday	62%	59%	61%	-
Sunday	52%	37%	50%	-

Running Times

Actual running times exceed scheduled running times throughout the day, contributing to the route's poor reliability. On inbound midday trips, actual travel time exceed scheduled travel time by more than 20 minutes (see Figure 10 and Figure 11).

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

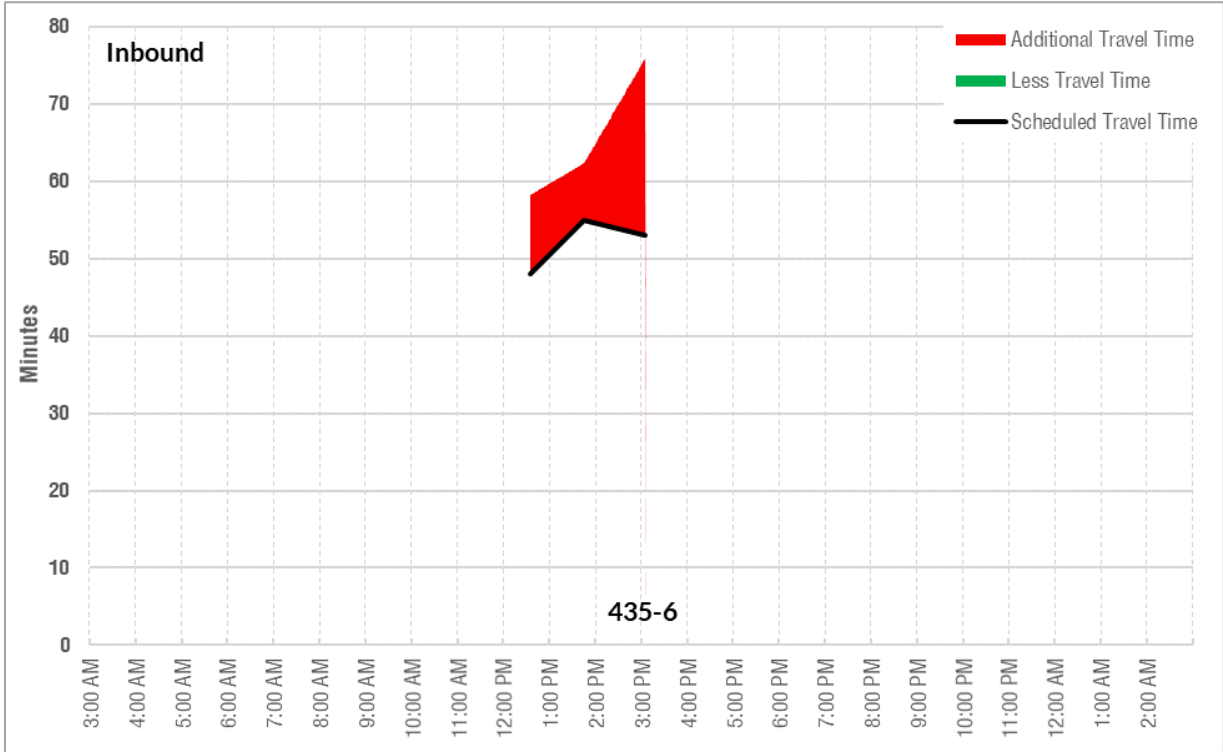
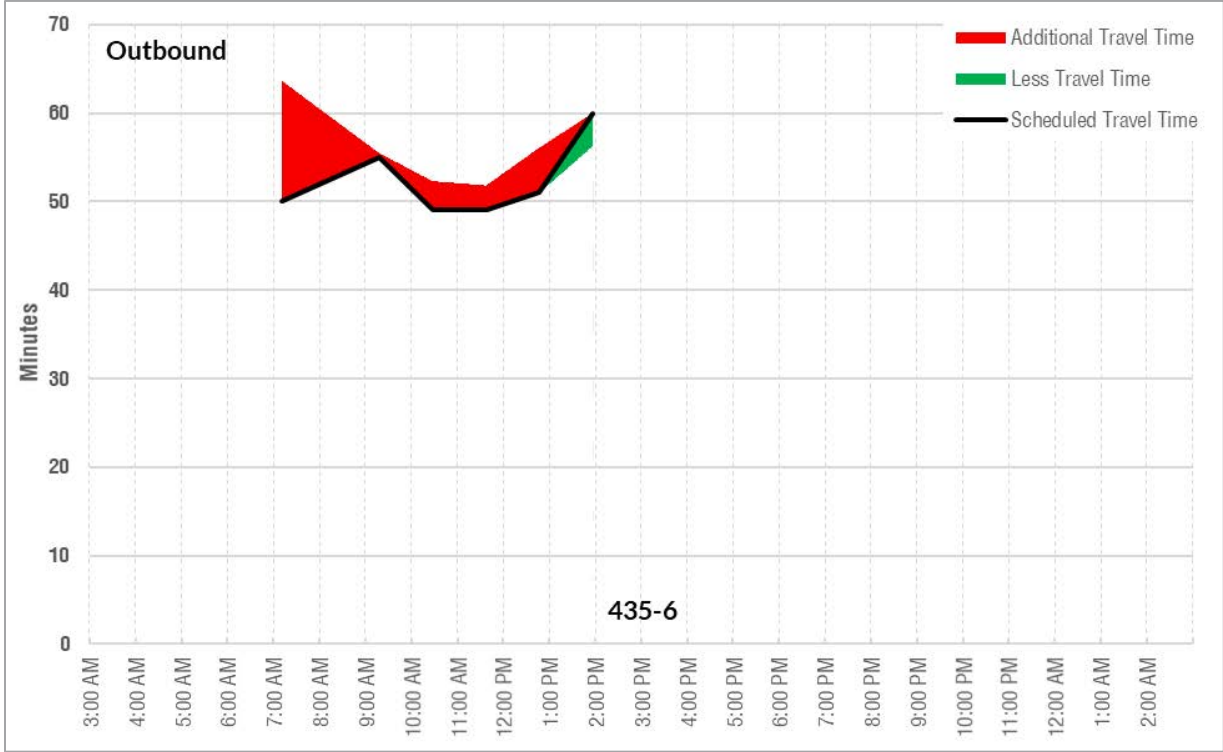


Figure 11 | Scheduled & Median Travel Time by Trip: Outbound



Stop Spacing

Route 435 has approximately four stops per mile, with most stops about 560 feet to 950 feet apart. Some segments with particularly close stop spacing are located along Broadway, Euclid Avenue, Chestnut Street, and Washington Street (in Lynn). For example, there are 230 feet between Washington Street at Hanover Street and 165 Washington Street.

Summary

Route 435 connects the Liberty Tree Mall in Danvers and the Northshore Mall in Peabody with downtown Lynn and Central Square, Lynn. The route serves a strong market and creates connections between major destinations in the North Shore.

Route 435 struggles to attract strong ridership. It also has poor service reliability and longer than scheduled running times. Ridership and operation challenges stem in part from a complicated route alignment that has six service patterns. Headways are also inconsistent, further complicating service.