CHAPTER V
PATRONAGE FORECASTING METHODOLOGY AND RESULTS

A. Background

The patronage forecasts for the US 15-501 Major Investment Study (MIS) Phase II, to the greatest extent possible, were made using the *existing and currently available* (at the beginning of Phase II) Triangle Regional Model (TRM, Version 5). This chapter contains the following subsections:

- Patronage forecasting methodology;
- Rail service forecasts; and
- Bus service forecasts.

B. Patronage Forecasting Methodology

The elements or stages of a travel demand model are commonly called "steps." Most models have four steps.

In the first step, called " trip generation," the trips likely to originate and terminate in each zone are calculated.

In the second model step, called "trip distribution," trip productions and trip attractions are matched to produce a matrix of trips for the region. Travel between zones are represented as a function of trips produced in the origin zone, trips attracted to the destination zone, an approximate measure of the "cost" of travel between zones and the relative "attractiveness" of competing zones.

In the third model step, called "modal split," travel volumes are "split" among the available modes of travel (i.e., highway and transit). The "choice" of a travel mode is based on the costs of travel (e.g., cost of fuel, bus fare) and travel time (e.g., actual travel time plus time spent parking a car or waiting for a bus).

In the fourth step, called "trip assignment," mode-specific trips are assigned to paths in their respective infrastructure networks. Highway trips are assigned using an equilibrium assignment algorithm and transit trips to representative peak and off-peak networks.

Travel demand forecasting models attempt to answer the following question: Given the projected levels of travel activity for the region, where should additional infrastructure capacity be placed? To answer this question, model results can be summarized in a number of ways, including:

- Total Trips (zone to zone)

- Highway assignments

- Transit assignments
  - total unlinked transit trips
  - by trip purpose/time period
  - by route
  - by boarding/alighting station and mode of access

- Evaluation criteria
  - highway vehicle-miles
  - passenger-miles
  - travel time savings

The Triangle Regional Model generally follows the common "four step" procedure (trip generation, trip distribution, modal split, and assignment) described above. Important modifications include composite impedance and congestion feedback loops for the home-based work (HBW) trip purpose. Inputs for the base (1995) and horizon (2025) years were provided. The process utilizes the TRANPLAN transportation planning software package and special programs developed for the TRM. The Triangle Regional Model is discussed in detail in other documentation, including the *Triangle Regional Model User's Manual* (NCDOT, September 2000).

C. Rail Service Alternatives

Rail service alternatives for Phase II of the US 15-501 MIS extend the proposed TTA Phase I rail line from Durham southwest to Chapel Hill. The two rail technologies being modeled are LRT and DMU. The alternatives further vary in the alignment segment and the transfer point between the TTA Phase 1 service and the proposed rail lines.

1. Description of Rail Service Alternatives

The following rail service alternatives were simulated:

- *DMU Alternative 1A:* DMU Alternative 1A extends the Phase I rail line beyond the 9th Street Station to the UNC Hospitals Station, with stops at Phase II stations in the "Western" alignment. Both the Phase I and Phase II DMU lines operate at 15 minutes headways during the peak period and 30 minute headways in the off-peak period.

- *LRT Alternative 1:* In LRT Alternative 1, the Phase I rail extends on the "coal spur" to its termination at the Duke Medical Center Station. The LRT alignment begins at 9th Street and follows the Erwin Rd. alignment that includes the Morreene Rd. and Pickett Rd. Stations. The Phase I rail operates at 15-minute and 30-minute headways in the peak and off-peak period, respectively. The LRT operates at 7.5-minute headways in the peak and 15-minute headways in the off-

peak. Several bus routes that operate in Chapel Hill and Durham are diverted in order to connect to rail stations and parts and/or entire routes that duplicate the LRT service are removed.

- *LRT Alternative 2:* LRT Alternative 2 is essentially identical to LRT Alternative 1 except that the Phase I rail ends at the 9th Street Station.

- *LRT Alternative 3:* In LRT Alternative 3, the Phase I rail extends to the Hillsborough Rd. Station. The LRT line runs between Hillsborough Rd. Station and UNC Hospitals Station along the western alignment. The headways for all rail is the same as in LRT Alternatives 1 and 2.

2. Rail System Forecast Summary

The forecasts can be summarized in a number of ways, including modal choice results and transit assignment results. Table V-II shows 2025 average weekday person trips produced by the TRM modal choice model. For each alternative, auto and transit trips are listed by purpose (home-based-work, home-based-other, and non-home-based) and mode of travel. The transit person trips output by the modal choice model are *linked* trips. A linked trip is defined as a trip from the origin zone to the destination zone, regardless of the number of modes used. The difference in person trips between No-Build and TSM and the build alternative is shown as an increase in transit trips (and the corresponding decrease in auto trips). This is the number of *new* transit riders the alternative generates.

Unlinked trips, or boardings, were reported in Table V-I for the rail services and in Table V-III by operating company. Peak trips are the home-based-work (HBW) trips while off-peak trips include home-based-other (HBO) and non-home-based (NHB) trips. Please note that a decrease in boardings relative to another is not necessarily a sign of poor performance. The "new riders" measure in Table V-II is a more accurate measure of the alternative's ability to attract riders.

In addition, boardings at the station level are summarized and presented in Tables V-IV through V-VII. These are reported as one half the average daily number of passengers boarding and alighting the train at each stop. The number of daily trips is halved to avoid "double counting" since transit trips are assigned in *production-attraction* format. This daily boarding summary is presented as Table V-IV for the alternatives and is stratified by mode of access or egress (i.e. walk/bus or drive). Please note that the Triangle Regional Model allows for drive access "drop-off" or "kiss-and-ride" trips at stations with no parking provisions. In addition, the totals in Tables V-IV through V-VII will not equal the total fixed guideway boardings because transfers between routes of the same mode are not reported.

Tables V-V and V-VI show additional measures of performance for each of the rail alternatives**.** Table V-V shows the vehicle-kilometers and vehicle-hours traveled by automobiles in each of the rail service alternatives. These measures can compare the

amount of auto usage between the alternatives. Table V-VI shows the average weekday passenger-kilometers for each rail service alternative broken down by company.

The population served by transit, shown in Table V-VII was computed by multiplying the population in a TAZ by the percentage of the population in 1/2 mile of a transit line (the "long walk" percentage in the model). Transit service coverage does not change by alternative (rail or bus) since the corridor is in area with transit coverage that is already established.

Table V-I. Rail System Boardings
Year 2025 Average Weekday Boardings (Unlinked Trips)

Alternative	**No Build**			**TSM**			**DMU Alternative 1A**		
	Peak	*Off-Peak*	*Total*	*Peak*	*Off-Peak*	*Total*	*Peak*	*Off-Peak*	*Total*
TTA Phase 1 (1)	18,380	10,490	28,870	18,150	10,490	28,640	24,110	12,790	**36,900**

(1) Includes New Service in Alternative 1

Alternative	**LRT Alternative 1**			**LRT Alternative 2**			**LRT Alternative 3**		
	Peak	*Off-Peak*	*Total*	*Peak*	*Off-Peak*	*Total*	*Peak*	*Off-Peak*	*Total*
TTA Phase 1 (1)	17,830	10,260	28,090	17,400	10,200	27,600	17,770	10,420	28,190
New Service	10,740	5,210	**15,950**	10,800	6,110	**16,910**	10,440	5,390	**15,830**

Table V-II. Modal Choice Summary for Rail Alternatives

Year 2025 Average Weekday Linked Trips

Alternative	No Build				TSM				DMU Alternative 1A			
	HBW	*HBO*	*NHB*	*Total*	*HBW*	*HBO*	*NHB*	*Total*	*HBW*	*HBO*	*NHB*	*Total*
DA	1,242,680	1,166,170	1,237,140	3,645,990	1,242,790	1,166,120	1,237,110	3,646,020	1,241,680	1,166,340	1,237,170	3,645,190
SH-2	107,550	1,505,500	857,070	2,470,120	107,500	1,505,570	857,050	2,470,120	107,480	1,506,210	856,880	2,470,570
SH-3+	22,230	0	0	22,230	22,220	0	0	22,220	22,220	0	0	22,220
Total Auto	1,372,460	2,671,670	2,094,210	6,138,340	1,372,510	2,671,690	2,094,160	6,138,360	1,371,380	2,672,550	2,094,050	6,137,980
DRIVE	13,350	6,530	4,160	24,040	13,270	6,310	4,120	23,700	14,320	6,820	4,550	25,690
WLK-LOC	37,270	25,940	9,690	72,900	37,600	26,360	9,810	73,770	34,880	24,910	9,200	68,990
WLK-PRM	11,620	4,840	2,060	18,520	11,330	4,620	2,020	17,970	14,160	4,700	2,320	21,180
Total Transit	62,240	37,310	15,910	115,460	62,200	37,290	15,950	115,440	63,360	36,430	16,070	115,860
New Riders **Delta No Build**					(40)	(20)	40	(20)	1,120	(880)	160	**400**
	LRT Alternative 1				**LRT Alternative 2**				**LRT Alternative 3**			
	HBW	*HBO*	*NHB*	*Total*	*HBW*	*HBO*	*NHB*	*Total*	*HBW*	*HBO*	*NHB*	*Total*
DA	1,241,100	1,166,310	1,237,140	3,644,550	1,241,090	1,166,340	1,237,120	3,644,550	1,241,120	1,166,310	1,237,090	3,644,520
SH-2	107,160	1,506,510	856,910	2,470,580	107,270	1,506,630	856,600	2,470,500	107,180	1,506,080	856,430	2,469,690
SH-3+	22,120	0	0	22,120	22,120	0	0	22,120	22,110	0	0	22,110
Total Auto	1,370,380	2,672,820	2,094,050	6,137,250	1,370,480	2,672,970	2,093,720	6,137,170	1,370,410	2,672,390	2,093,520	6,136,320
DRIVE	14,190	6,340	4,250	24,780	14,320	6,310	4,450	25,080	14,130	6,330	4,310	24,770
WLK-LOC	32,830	23,950	8,610	65,390	32,940	23,610	8,520	65,070	33,400	24,230	9,040	66,670
WLK-PRM	17,450	5,880	3,210	26,540	16,980	6,100	3,440	26,520	16,850	6,030	3,260	26,140
Total Transit	64,470	36,170	16,070	116,710	64,240	36,020	16,410	116,670	64,380	36,590	16,610	117,580
New Riders **Delta No Build**	2,230	(1,140)	160	**1,250**	2,000	(1,290)	500	**1,210**	2,140	(720)	700	**2,120**

Table V-III Boarding Summary by Company for Rail Alternatives

Year 2025 Average Weekday Boardings

	Alternative	No Build			TSM			DMU Alternative 1A			LRT Alternative 1			LRT Alternative 2			LRT Alternative 3		
	Company	*Peak*	*Off-Peak*	*Total*	*Peak*	*Off-Peak*	*Total*	*Peak*	*Off-Peak*	*Total*	*Peak*	*Off-Peak*	*Total*	*Peak*	*Off-Peak*	*Total*	*Peak*	*Off-Peak*	*Total*
1	TTA Bus	5,210	5,880	11,090	7,130	5,780	12,910	2,940	2,780	5,720	3,020	2,730	5,750	3,160	2,680	5,840	3,040	2,700	5,740
2	CAT	15,860	13,880	29,740	15,850	13,860	29,710	15,990	13,870	29,860	15,920	13,910	29,830	15,900	13,940	29,840	15,890	13,880	29,770
3	CHT	14,610	17,130	31,740	13,440	17,150	30,590	13,760	16,620	30,380	13,660	15,450	29,110	13,590	15,170	28,760	13,560	15,600	29,160
4	DATA	23,870	19,400	43,270	22,720	19,610	42,330	22,050	18,430	40,480	19,520	17,750	37,270	19,730	17,630	37,360	20,170	18,330	38,500
5	NCSU	2,950	4,230	7,180	2,960	4,240	7,200	2,940	4,260	7,200	2,980	4,250	7,230	2,980	4,250	7,230	3,060	4,250	7,310
6	Duke	12,750	9,240	21,990	12,920	9,260	22,180	12,480	4,750	17,230	13,030	8,400	21,430	12,960	8,600	21,560	13,050	5,660	18,710
7	NCCU	660	240	900	660	230	890	600	270	870	540	280	820	520	250	770	560	270	830
8	OPT	80	510	590	150	520	670	150	450	600	150	520	670	70	530	600	150	510	660
9	TTA Rail	18,370	10,490	28,860	18,150	10,490	28,640	24,110	12,790	36,900	28,570	15,470	44,040	28,200	16,310	44,510	28,210	15,810	44,020
10	Cary	3,180	3,270	6,450	3,160	3,270	6,430	3,110	3,220	6,330	3,160	3,270	6,430	3,040	3,250	6,290	3,020	3,230	6,250
	Total	97,540	84,270	181,810	97,140	84,410	181,550	98,130	77,440	175,570	100,550	82,030	182,580	100,150	82,610	182,760	100,710	80,240	180,950

Table VI-IV. DMU Alternative 1A Boarding Summary by Rail Station
Year 2025 Average Weekday Boardings

DMU Alternative 1A							
Station Location	**Peak**			**Off-Peak**			**Total Daily**
	Walk/ Bus	Drive	Total	Walk/ Bus	Drive	Total	
Spring Forest	440	100	540	150	50	200	740
Millbrook	390	670	1,060	160	210	370	1,430
Six Forks/Highlands	280	700	980	140	160	300	1,280
State Government Ctr	330	460	790	300	380	680	1,470
Dtn Raleigh	930	750	1,680	970	520	1,490	3,170
NCSU	2,040	2,070	4,110	1,570	1,230	2,800	6,910
State Fairgrounds	280	290	570	130	180	310	880
West Raleigh	40	590	630	50	270	320	950
Cary Depot	280	300	580	130	130	260	840
Morrisville	230	80	310	120	130	250	560
South Park	180	190	370	110	150	260	630
North Park	320	230	550	240	240	480	1,030
Alston Ave	1,410	760	2,170	580	300	880	3,050
Dtn Durham	710	480	1,190	260	130	390	1,580
9th Street	1,880	800	2,680	800	510	1,310	3,990
Hillsborough Rd	380	50	430	120	20	140	570
Cameron Blvd	1,180	340	1,520	350	300	650	2,170
South Square Mall	600	420	1,020	140	250	390	1,410
Mt. Moriah Rd	20	10	30	80	20	100	130
Gateway	240	370	610	60	220	280	890
Ephesus Church	70	50	120	10	80	90	210
Friday Center	70	150	220	10	70	80	300
UNC Hospital	1,670	290	1,960	420	350	770	2,730
Total	13,970	10,150	24,120	6,900	5,900	12,800	**36,920**

Table VI-V. LRT Alternative 1 Boarding Summary by Rail Station
Year 2025 Average Weekday Boardings

LRT Alternative 1							
Station Location	**Peak**			**Off-Peak**			**Total Daily**
	Walk/ Bus	Drive	Total	Walk/ Bus	Drive	Total	
Spring Forest	440	100	540	160	50	210	750
Millbrook	400	710	1,110	160	200	360	1,470
Six Forks/Highlands	290	700	990	140	170	310	1,300
State Government Ctr	330	460	790	290	380	670	1,460
Dtn Raleigh	920	740	1,660	970	510	1,480	3,140
NCSU	2,030	2,070	4,100	1,570	1,230	2,800	6,900
State Fairgrounds	270	280	550	130	170	300	850
West Raleigh	30	600	630	40	270	310	940
Cary Depot	290	320	610	130	130	260	870
Morrisville	220	80	300	130	140	270	570
South Park	160	160	320	110	130	240	560
North Park	320	220	540	230	230	460	1,000
Alston Ave	1,320	590	1,910	630	200	830	2,740
Dtn Durham	600	360	960	190	120	310	1,270
9th Street	2,100	610	2,710	950	390	1,340	4,050
Duke Med Ctr	670	80	750	250	40	290	1,040
Morreene Road	2,210	600	2,810	740	320	1,060	3,870
Pickett Road	170	230	400	160	70	230	630
South Square Mall	510	90	600	10	60	70	670
University Drive	320	60	380	350	60	410	790
Garrett Rd	500	160	660	120	140	260	920
Mt. Moriah Rd	20	10	30	160	30	190	220
Gateway	450	470	920	180	170	350	1,270
Ephesus Church	150	50	200	50	80	130	330
Meadowmont	40	0	40	110	0	110	150
Friday Center	130	130	260	70	60	130	390
UNC Hospital	2,220	400	2,620	1,030	470	1,500	4,120
Total	17,110	10,280	27,390	9,060	5,820	14,880	**42,270**

Table VI-VI. LRT Alternative 2 Boarding Summary by Rail Station
Year 2025 Average Weekday Boardings

LRT Alternative 2							
Station Location	**Peak**			**Off-Peak**			**Total Daily**
	Walk/ Bus	Drive	Total	Walk/ Bus	Drive	Total	
Spring Forest	430	90	520	160	50	210	730
Millbrook	400	690	1,090	170	210	380	1,470
Six Forks/Highlands	280	690	970	140	160	300	1,270
State Government Ctr	330	480	810	280	380	660	1,470
Dtn Raleigh	910	740	1,650	980	520	1,500	3,150
NCSU	2,000	2,110	4,110	1,560	1,230	2,790	6,900
State Fairgrounds	290	290	580	130	170	300	880
West Raleigh	30	590	620	40	270	310	930
Cary Depot	270	300	570	130	130	260	830
Morrisville	210	200	410	130	140	270	680
South Park	170	170	340	120	140	260	600
North Park	290	240	530	230	240	470	1,000
Alston Ave	1,280	570	1,850	610	210	820	2,670
Dtn Durham	500	380	880	170	120	290	1,170
9th Street	2,050	620	2,670	960	420	1,380	4,050
Duke Med Ctr	400	50	450	190	30	220	670
Morreene Road	2,210	590	2,800	870	360	1,230	4,030
Pickett Road	170	230	400	190	90	280	680
South Square Mall	520	80	600	10	80	90	690
University Blvd	320	70	390	440	80	520	910
Garrett Blvd	500	120	620	140	130	270	890
Mt. Moriah Rd	20	10	30	180	60	240	270
Gateway	450	470	920	230	160	390	1,310
Ephesus Church	160	30	190	50	40	90	280
Meadowmont	40	0	40	130	10	140	180
Friday Center	130	150	280	110	90	200	480
UNC Hospital	2,210	380	2,590	1,210	510	1,720	4,310
Total	16,570	10,340	26,910	9,560	6,030	15,590	**42,500**

Table VI-VII. LRT Alternative 3 Boarding Summary by Rail Station
Year 2025 Average Weekday Boardings

LRT Alternative 3							
Station Location	**Peak**			**Off-Peak**			**Total Daily**
	Walk/ Bus	Drive	Total	Walk/ Bus	Drive	Total	
Spring Forest	440	110	550	150	50	200	750
Millbrook	390	700	1,090	150	210	360	1,450
Six Forks/Highlands	280	700	980	140	160	300	1,280
State Government Ctr	330	470	800	290	390	680	1,480
Dtn Raleigh	920	750	1,670	970	500	1,470	3,140
NCSU	2,040	2,130	4,170	1,560	1,220	2,780	6,950
State Fairgrounds	300	270	570	130	170	300	870
West Raleigh	30	580	610	40	260	300	910
Cary Depot	260	300	560	130	130	260	820
Morrisville	210	200	410	130	130	260	670
South Park	170	180	350	110	140	250	600
North Park	290	220	510	240	240	480	990
Alston Ave	1,320	490	1,810	610	170	780	2,590
Dtn Durham	610	340	950	280	100	380	1,330
9th Street	2,180	550	2,730	1,060	450	1,510	4,240
Hillsborough Rd	710	270	980	320	200	520	1,500
Cameron Blvd	2,010	550	2,560	840	260	1,100	3,660
Pickett Road	160	230	390	160	70	230	620
South Square Mall	470	100	570	100	60	160	730
University Drive	310	70	380	280	70	350	730
Garrett Rd	490	120	610	120	120	240	850
Mt. Moriah Rd	20	10	30	150	50	200	230
Gateway	430	480	910	180	130	310	1,220
Ephesus Church	140	30	170	50	30	80	250
Meadowmont	40	0	40	110	0	110	150
Friday Center	120	150	270	70	70	140	410
UNC Hospital	2,170	390	2,560	1,010	440	1,450	4,010
Total	16,840	10,390	27,230	9,380	5,820	15,200	**42,430**

Table V-VIII. Highway Assignment Summary for Rail Alternatives
Year 2025 Average Weekday

Alternative	No Build	TSM	DMU Alternative 1A	LRT Alternative 1	LRT Alternative 2	LRT Alternative 3
Vehicle-Miles	60,580,466	60,663,730	60,669,682	60,660,567	60,626,498	60,624,876
Delta No Build		83,264	89,216	80,101	46,037	44,409
Vehicle-Hours	1,825,340	1,831,250	1,846,200	1,828,670	1,838,890	1,826,600
Delta No Build		5,910	20,860	3,320	13,550	1,260

Table V-VIX. Transit System Performance Summary for Rail Alternatives

Year 2025 Average Weekday Passenger-Miles

Alternative	No Build			TSM			DMU Alternative 1A			LRT Alternative 1			LRT Alternative 2			LRT Alternative 3		
Company	*Peak*	*Off-Peak*	*Total*	*Peak*	*Off-Peak*	*Total*	*Peak*	*Off-Peak*	*Total*	*Peak*	*Off-Peak*	*Total*	*Peak*	*Off-Peak*	*Total*	*Peak*	*Off-Peak*	*Total*
1 TTA Bus	33,728	46,957	80,679	44,465	46,267	90,733	16,765	19,853	36,624	17,492	19,685	37,183	17,759	19,039	36,210	17,970	19,393	37,363
2 CAT	41,856	37,152	79,007	41,756	3,678	78,740	41,936	37,028	78,964	42,129	37,264	79,393	41,936	37,382	79,312	41,992	37,264	79,256
3 CHT	36,425	46,118	82,543	33,287	45,876	79,169	34,033	45,640	79,672	32,728	40,377	73,104	32,622	39,283	71,905	32,752	40,793	73,545
4 DATA	52,208	45,614	97,822	48,057	46,385	94,436	48,063	44,503	92,566	42,340	42,583	84,923	42,943	42,098	85,041	45,310	45,149	90,459
5 NCSU	3,722	5,610	9,333	3,709	5,629	9,339	3,685	5,636	9,321	3,716	5,648	9,358	3,716	5,642	9,358	3,790	5,636	9,420
6 Duke	16,199	12,452	28,645	15,652	12,384	28,036	16,734	8,389	25,122	14,664	9,880	24,544	14,565	10,035	24,600	18,504	10,079	28,577
7 NCCU	982	292	1,274	976	280	1,255	870	336	1,205	795	323	11,123	746	305	1,044	820	311	1,131
8 OPT	478	3,877	4,356	864	4,064	4,934	833	4,033	4,865	851	5,580	6,437	423	5,717	6,139	839	5,449	6,288
9 TTA Rail	135,316	63,671	198,987	135,559	63,410	198,963	219,586	97,356	316,937	225,831	108,175	334,006	222,358	114,481	336,833	237,451	116,855	6,288
10 Cary	8,289	9,594	17,883	8,103	9,606	17,709	8,016	9,513	17,529	8,115	9,557	17,666	7,891	9,613	17,510	7,804	9,463	17,268
Total	329,190	271,347	600,537	332,421	270,887	603,308	390,519	272,285	662,804	388,655	279,070	667,725	384,946	283,594	668,533	407,228	290,385	697,613
Delta No Build				*3237*	*460)*	*2,778*	*61,329*	*938*	*62,268*	*59,465*	*7,730*	*67,195*	*55,756*	*12,247*	*68,003*	*78,038*	*19,045*	*97,083*

Table V-X. Population Served by Transit
Year 2025 Projected Population

Total Population:	1,798,000
Population Served by Transit (estimated from transit walk percents):	836,275
Percentage Served by Transit:	47%
Note: transit service coverage does not vary by alternative	

3. DMU Sensitivity Test

For a more direct comparison between the DMU alternative and the three LRT alternatives, additional 15 minute peak/30 minute off-peak DMU service between UNC Hospital and 9th Street for DMU Alternative 1 was added; DMU Alternative 1B. This produced an effective 7.5 minute peak/15 minute off-peak rail headway consistent with the LRT alternatives for the US 15-501 Corridor. Tables X-I through V-XIV show the results of the new service with fixed guideway system boardings, mode choice summary, boardings by company, and boardings by company, respectively.

Table V-XI. DMU Alternative 1B Fixed Guideway System Boardings
Year 2025 Average Weekday Boardings (Unlinked Trips)

Alternative	No Build			TSM			DMU Alternative 1B		
	Peak	*Off-Peak*	*Total*	*Peak*	*Off-Peak*	*Total*	*Peak*	*Off-Peak*	*Total*
TTA Phase 1	18,380	10,490	28,870	18,150	10,490	28,640	21,880	11,880	33,760
New Service	0	0	0	0	0	0	3,920	1,720	**5,640**

Table V-XII. DMU Alternative 1B Modal Choice Summary
Year 2025 Average Weekday Linked Trips

Alternative	No Build				TSM				DMU Alternative 1B			
	HBW	*HBO*	*NHB*	*Total*	*HBW*	*HBO*	*NHB*	*Total*	*HBW*	*HBO*	*NHB*	*Total*
DA	1,242,680	1,166,170	1,237,140	3,645,990	1,242,790	1,166,120	1,237,110	3,646,020	1,241,720	1,166,420	1,237,190	3,645,330
SH-2	107,550	1,505,500	857,070	2,470,120	107,500	1,505,570	857,050	2,470,120	107,310	1,506,630	856,920	2,470,860
SH-3+	22,230	0	0	22,230	22,220	0	0	22,220	22,130	0	0	22,130
Total Auto	1,372,460	2,671,670	2,094,210	6,138,340	1,372,510	2,671,690	2,094,160	6,138,360	1,371,160	2,673,050	2,094,110	6,138,320
DRIVE	13,350	6,530	4,160	24,040	13,270	6,310	4,120	23,700	14,710	6,490	4,610	25,810
WLK-LOC	37,270	25,940	9,690	72,900	37,600	26,360	9,810	73,770	33,650	24,580	9,000	67,230
WLK-PRM	11,620	4,840	2,060	18,520	11,330	4,620	2,020	17,970	15,470	4,860	2,400	22,730
Total Transit	62,240	37,310	15,910	115,460	62,200	37,290	15,950	115,440	63,830	35,930	16,010	115,770
New Riders **delta No Build**					(40)	(20)	40	(20)	1,590	(1,380)	100	**310**

Table V-XIII. DMU Alternative 1B Boarding Summary by Company
Year 2025 Average Weekday Boardings

Alternative	No Build			TSM			DMU Alternative 1B		
Company	*Peak*	*Off-Peak*	*Total*	*Peak*	*Off-Peak*	*Total*	*Peak*	*Off-Peak*	*Total*
1 TTA Bus	5,210	5,880	11,090	7,130	5,780	12,910	2,900	2,720	5,620
2 CAT	15,860	13,880	29,740	15,850	13,860	29,710	16,050	13,810	29,860
3 CHT	14,610	17,130	31,740	13,440	17,150	30,590	13,390	15,430	28,820
4 DATA	23,870	19,400	43,270	22,720	19,610	42,330	20,950	18,220	39,170
5 NCSU	2,950	4,230	7,180	2,960	4,240	7,200	2,840	4,250	7,090
6 Duke	12,750	9,240	21,990	12,920	9,260	22,180	12,940	4,820	17,760
7 NCCU	660	240	900	660	230	890	610	280	890
8 OPT	80	510	590	150	520	670	150	430	580
9 TTA Rail	18,370	10,490	28,860	18,150	10,490	28,640	25,800	13,600	39,400
10 Cary	3,180	3,270	6,450	3,160	3,270	6,430	3,130	3,240	6,370
Total	97,540	84,270	181,810	97,140	84,410	181,550	98,760	76,800	175,560

Table V-XIV. DMU Alternative 1B Fixed Guideway System Boardings
Year 2025 Average Weekday Boardings

DMU Alternative 1B							
Station Location	Peak			Off-Peak			Total Daily
	Walk/ Bus	Drive	Total	Walk/ Bus	Drive	Total	
Spring Forest	440	120	560	150	50	200	760
Millbrook	390	670	1,060	160	200	360	1,420
Six Forks/Highlands	270	680	950	140	150	290	1,240
State Government Ctr	320	430	750	290	380	670	1,420
Dtn Raleigh	940	720	1,660	960	510	1,470	3,130
NCSU	2,030	2,010	4,040	1,570	1,240	2,810	6,850
State Fairgrounds	290	280	570	130	170	300	870
West Raleigh	30	620	650	40	260	300	950
Cary Depot	280	330	610	130	130	260	870
Morrisville	220	90	310	130	130	260	570
South Park	170	180	350	110	150	260	610
North Park	320	230	550	230	250	480	1,030
Alston Ave	1,360	630	1,990	600	190	790	2,780
Dtn Durham	630	460	1,090	250	140	390	1,480
9th Street	3,290	730	4,020	830	460	1,290	5,310
Hillsborough Rd	490	60	550	130	20	150	700
Cameron Blvd	240	600	840	390	400	790	1,630
South Square Mall	810	560	1,370	200	390	590	1,960
Mt. Moriah Rd	20	10	30	120	40	160	190
Gateway	330	610	940	120	290	410	1,350
Ephesus Church	100	70	170	30	150	180	350
Friday Center	130	230	360	30	90	120	480
UNC Hospital	1,970	440	2,410	540	530	1,070	3,480
Total	15,070	10,760	25,830	7,280	6,320	13,600	**39,430**

D. Bus Service Alternatives

There are two primary bus service types being considered for Phase II. The first is the development of an exclusive busway. The second is a busway / mixed traffic (BMT) scenario with designated bus lanes and limited sections of exclusive busway. Similar to the rail alternatives, these alternatives vary in alignment in the Durham segment.

- *Busway Alternative 1:* In Busway Alternative 1, the busway begins at the 9th Street Station. The Phase I rail extends along the coal spur to Duke Medical Center. The exclusive busway follows the Erwin Road alignment. Five busway routes are created to utilize this busway, with headways ranging from 10-30 minutes in the peak period and 15-30 minutes in the off-peak.

- *Busway Alternative 2:* Busway Alternative 2 follows the same alignment as Busway Alternative 1 with one exception. From UNC Hospital Station to the intersection of Fordham Boulevard and Manning Drive, the bus uses diamond lanes and then enters the exclusive busway at the intersection of Fordham Boulevard and Manning Drive. The remainder of the bus service patterns remains the same as in Busway Alternative 1.

- *BMT Alternative 1:* BMT Alternative 1 utilizes an exclusive busway segment between Friday Center and the intersection of Fordham Boulevard and Manning Drive. On Chapel Hill Road, SW Durham Drive and Manning Drive, the buses travel in one of two designated bus lanes. In BMT Alternative 1, the locations of South Square, University Drive, Garrett Road and Mt. Moriah Stations are shifted, compared to the other alternatives, to locate the stations closer to the bus route alignments. The headways for the busway buses range from 10-30 minutes in the peak period and 15-30 minutes in the off-peak period.

- *Busway Alternative 3:* Busway Alternative 3 has bus routes following the exclusive busway on the western alignment between Hillsborough Road (the end of the Phase I rail line) and UNC Hospitals Station as well as buses extending beyond Hillsborough Rd. to the Duke University Campus. In addition, some of the Chapel Hill local buses operate parts of their routes on the exclusive busway. The headways on the busway range from 15-30 minutes during both the peak and off-peak periods.

- *Busway Alternative 4:* Busway Alternative 4 is almost identical to Busway Alternative 3 except that from the intersection of Fordham Boulevard and Manning Drive to UNC Hospitals Station, the buses travel in diamond lanes on Manning Drive, as in Busway Alternative 2.

- *BMT Alternative 2:* BMT Alternative 2 has three segments of exclusive busway on which the five busway routes travel. The first segment begins near the intersection of Cornwallis Road and ends at the South Square Station. The second segment begins on University Drive near Snowcrest Terrace and ends at Southwest Durham Drive.

The final segment begins at Friday Center and ends at the intersection of Fordham Boulevard and Manning Drive. In addition to the segments of exclusive busway, there are also designated bus lanes on Erwin Road, Southwest Durham Drive, and Manning Drive. The buses operate with the same headways as in BMT Alternative 1.

1. Forecasts for Bus Service Alternatives

As with the rail service alternative, there are several ways to summarize the ridership forecasts. Table V-XVI shows 2025 average weekday person trips produced by the TRM modal choice model, listed by purpose (HBW, HBO, NHB) and mode of travel for both auto and transit modes. As in the results tables for the rail service alternatives, the transit person trips output by the modal choice model are *linked* trips, which is defined as a trip from the origin zone to the destination zone, regardless of the number of modes used. The difference in person trips between No Build and TSM and the build alternative is shown as an increase in transit trips (and the corresponding decrease in auto trips). This is the number of *new* transit riders the alternative generates.

Unlinked trips, or boardings, were reported in Table V-XV for the fixed guideway services and Table V-XVII by operating company. Peak trips are the HBW trips while off-peak trips include HBO and NHB trips. Please note that a decrease in boardings relative to another is not necessarily a sign of poor performance. In the bus service alternatives, fewer boardings can actually mean more "one seat rides" since there may be fewer transfers because of the bus circulating on local streets as the production or attraction end of the trip. The "new riders" measure in Table V-XIII is a more accurate measure of the alternative's ability to attract riders.

In addition, boardings at the station level are summarized and presented in Tables V-XVIII through V-XXIII. Stations are included in this summary if they are on a busway route. These are reported as one half the average daily number of passengers boarding and alighting the train at each stop. The number of daily trips is halved to avoid "double counting" since transit trips are assigned in *production-attraction* format. This daily boarding summary is presented as Tables V-XVIII through V-XXIII for the alternatives and is stratified by mode of access or egress (i.e. walk/bus or drive). Please note that the Triangle Regional Model allows for drive access "drop off" or "kiss and ride" trips at stations with no parking provisions. In addition, the total in Table V-XV will not equal the total busway boardings because transfers between routes of the same mode are not reported.

Tables V-XXIV and V-XXV show additional measures of performance for each of the bus service alternatives. Table V-XXIV shows the vehicle-kilometers and vehicle-hours traveled by automobiles in each of the rail service alternatives. These measures can compare the amount of auto usage between the alternatives. Table X-XV shows the average weekday passenger-kilometers for each rail service alternative broken down by company.

Since, transit service coverage does not change by alternative (rail or bus) since the corridor is in area with transit coverage that is already established; the population served by transit can be found in Table V-X in the previous section.

Table V-XV. Busway System Boardings
Year 2025 Average Weekday Boardings

Alternative	No Build			TSM			Busway Alternative 1			Busway Alternative 2		
	Peak	Off-Peak	Total	Peak	Off-Peak	Total	Peak	Off-Peak	Total	Peak	Off-Peak	Total
TTA Phase 1	18,380	10,490	28,870	18,150	10,490	28,640	17,500	10,250	27,750	17,530	10,170	27,700
New Service	0	0	0	0	0	0	6,650	3,680	**10,330**	5,970	3,450	**9,420**

Alternative	BMT Alternative 1			Busway Alternative 3			Busway Alternative 4			BMT Alternative 2		
	Peak	Off-Peak	Total	Peak	Off-Peak	Total	Peak	Off-Peak	Total	Peak	Off-Peak	Total
TTA Phase 1	17,910	10,080	27,990	17,250	10,360	27,610	17,190	10,310	27,500	17,550	10,140	27,690
New Service	4,460	2,990	**7,450**	6,130	3,390	**9,520**	5,790	3,240	**9,030**	7,460	3,750	**11,210**

Table V-XVI. Modal Choice Summary for Bus Alternatives

Year 2025 Average Weekday Linked Trips

Alternative	No Build				TSM				Busway Alternative 1				Busway Alternative 2			
	HBW	*HBO*	*NHB*	*Total*	*HBW*	*HBO*	*NHB*	*Total*	*HBW*	*HBO*	*NHB*	*Total*	*HBW*	*HBO*	*NHB*	*Total*
DA	1,242,680	1,166,170	1,237,140	3,645,990	1,242,790	1,166,120	1,237,110	3,646,020	1,240,710	1,166,350	1,237,080	3,644,140	1,240,790	1,166,310	1,237,060	3,644,160
SH-2	107,550	1,505,500	857,070	2,470,120	107,500	1,505,570	857,050	2,470,120	106,930	1,506,650	856,370	2,469,950	107,030	1,506,330	856,220	2,469,580
SH-3+	22,230	0	0	22,230	22,220	0	0	22,220	22,030	0	0	22,030	22,040	0	0	22,040
Total Auto	1,372,460	2,671,670	2,094,210	6,138,340	1,372,510	2,671,690	2,094,160	6,138,360	1,369,670	2,673,000	2,093,450	6,136,120	1,369,860	2,672,640	2,093,280	6,135,780
DRIVE	13,350	6,530	4,160	24,040	13,270	6,310	4,120	23,700	14,350	6,330	4,390	25,070	14,250	6,360	4,410	25,020
WLK-LOC	37,270	25,940	9,690	72,900	37,600	26,360	9,810	73,770	32,100	23,510	8,350	63,960	32,200	23,830	8,700	64,730
WLK-PRM	11,620	4,840	2,060	18,520	11,330	4,620	2,020	17,970	18,700	6,140	3,930	28,770	18,520	6,160	3,730	28,410
Total Transit	62,240	37,310	15,910	115,460	62,200	37,290	15,950	115,440	65,150	35,980	16,670	117,800	64,970	36,350	16,840	118,160
New Riders																
Delta No Build					(40)	(20)	40	(20)	2,910	(1,330)	760	**2,340**	2,730	(960)	930	**2,700**
Alternative	**BMT Alternative 1**				**Busway Alternative 3**				**Busway Alternative 4**				**BMT Alternative 2**			
	HBW	*HBO*	*NHB*	*Total*	*HBW*	*HBO*	*NHB*	*Total*	*HBW*	*HBO*	*NHB*	*Total*	*HBW*	*HBO*	*NHB*	*Total*
DA	1,242,190	1,166,210	1,237,110	3,645,510	1,241,020	1,166,380	1,237,060	3,644,460	1,241,010	1,166,340	1,237,050	3,644,400	1,240,950	1,166,250	1,237,050	3,644,250
SH-2	107,380	1,506,200	856,750	2,470,330	107,110	1,506,450	856,160	2,469,720	107,180	1,506,170	856,000	2,469,350	107,260	1,506,220	856,400	2,469,880
SH-3+	22,130	0	0	22,130	22,080	0	0	22,080	22,120	0	0	22,120	22,150	0	0	22,150
Total Auto	1,371,700	2,672,410	2,093,860	6,137,970	1,370,210	2,672,830	2,093,220	6,136,260	1,370,310	2,672,510	2,093,050	6,135,870	1,370,360	2,672,470	2,093,450	6,136,280
DRIVE	13,950	6,370	4,220	24,540	13,520	6,250	4,230	24,000	13,550	6,290	4,240	24,080	14,470	6,380	4,330	25,180
WLK-LOC	34,540	24,540	8,960	68,040	32,970	23,340	8,560	64,870	33,250	23,740	8,910	65,900	33,080	24,220	8,780	66,080
WLK-PRM	14,690	5,670	3,090	23,450	18,140	6,560	4,120	28,820	17,610	6,450	3,920	27,980	16,820	5,920	3,580	26,320
Total Transit	63,180	36,580	16,270	116,030	64,630	36,150	16,910	117,690	64,410	36,480	17,070	117,960	64,370	36,520	16,690	117,580
New Riders																
Delta No Build	940	(730)	360	**570**	2,390	(1,160)	1,000	**2,230**	2,170	(830)	1,160	**2,500**	2,130	(790)	780	**2,120**

Table V-XVII. Boarding Summary by Company for Bus Alternatives

Year 2025 Average Weekday Boardings

Alternative		No Build			TSM			Busway Alternative 1			Busway Alternative 2		
	Company	Peak	Off-Peak	Total	Peak	Off-Peak	Total	Peak	Off-Peak	Total	Peak	Off-Peak	Total
1	TTA Bus	5,210	5,880	11,090	7,130	5,780	12,910	16,630	9,590	26,220	15,880	9,290	25,170
2	CAT	15,860	13,880	29,740	15,850	13,860	29,710	15,920	13,880	29,800	15,970	13,890	29,860
3	CHT	14,610	17,130	31,740	13,440	17,150	30,590	13,110	15,040	28,150	13,850	16,250	30,100
4	DATA	23,870	19,400	43,270	22,720	19,610	42,330	18,020	16,630	34,650	17,980	16,630	34,610
5	NCSU	2,950	4,230	7,180	2,960	4,240	7,200	2,980	4,290	7,270	2,980	4,260	7,240
6	Duke	12,750	9,240	21,990	12,920	9,260	22,180	7,330	6,400	13,730	7,350	6,410	13,760
7	NCCU	660	240	900	660	230	890	520	250	770	510	250	760
8	OPT	80	510	590	150	520	670	150	540	690	150	540	690
9	TTA Rail	18,370	10,490	28,860	18,150	10,490	28,640	17,500	10,250	27,750	17,530	10,170	27,700
10	Cary	3,180	3,270	6,450	3,160	3,270	6,430	3,050	3,250	6,300	3,140	3,240	6,380
	Total	97,540	84,270	181,810	97,140	84,410	181,550	95,210	80,120	175,330	95,340	80,930	176,270
Alternative		**BMT Alternative 1**			**Busway Alternative 3**			**Busway Alternative 4**			**BMT Alternative 2**		
	Company	Peak	Off-Peak	Total	Peak	Off-Peak	Total	Peak	Off-Peak	Total	Peak	Off-Peak	Total
1	TTA Bus	9,150	7,440	16,590	15,970	10,080	26,050	15,390	9,800	25,190	13,430	8,570	22,000
2	CAT	15,920	13,840	29,760	15,880	13,910	29,790	15,980	13,810	29,790	16,000	13,900	29,900
3	CHT	14,420	17,710	32,130	13,140	15,000	28,140	13,690	16,120	29,810	13,790	16,800	30,590
4	DATA	21,240	16,780	38,020	19,000	16,620	35,620	19,030	16,640	35,670	19,540	16,890	36,430
5	NCSU	3,050	4,250	7,300	2,990	4,220	7,210	2,950	4,260	7,210	2,910	4,250	7,160
6	Duke	12,410	8,060	20,470	8,520	4,230	12,750	8,700	4,230	12,930	12,590	7,820	20,410
7	NCCU	640	280	920	530	240	770	530	230	760	590	290	880
8	OPT	150	510	660	160	560	720	140	530	670	160	520	680
9	TTA Rail	17,910	10,080	27,990	17,250	10,360	27,610	17,190	10,310	27,500	17,550	10,140	27,690
10	Cary	3,120	3,210	6,330	3,210	3,210	6,420	3,050	3,250	6,300	3,130	3,250	6,380
	Total	98,010	82,160	180,170	96,650	78,430	175,080	96,650	79,180	175,830	99,690	82,430	182,120

Table V-XVIII. Busway Alternative 1 Boarding Summary by Rail Station
Year 2025 Average Weekday Boardings

Busway Alternative 1							
Station Location	**Peak**			**Off-Peak**			**Total Daily**
	Walk/ Bus	Drive	Total	Walk/ Bus	Drive	Total	
Spring Forest	430	110	540	150	50	200	740
Millbrook	390	730	1,120	160	200	360	1,480
Six Forks/Highlands	280	690	970	140	170	310	1,280
State Government Ctr	330	470	800	290	380	670	1,470
Dtn Raleigh	910	700	1,610	970	510	1,480	3,090
NCSU	2,030	2,080	4,110	1,570	1,230	2,800	6,910
State Fairgrounds	290	290	580	140	170	310	890
West Raleigh	30	610	640	40	270	310	950
Cary Depot	270	270	540	140	140	280	820
Morrisville	210	190	400	120	130	250	650
South Park	160	180	340	120	140	260	600
North Park	310	230	540	230	250	480	1,020
Alston Ave	1,290	430	1,720	610	200	810	2,530
Dtn Durham	590	370	960	180	110	290	1,250
9th Street	2,050	520	2,570	990	470	1,460	4,030
Duke Med Ctr	510	80	590	160	30	190	780
Morreene Road	260	50	310	110	20	130	440
Pickett Road	120	80	200	110	30	140	340
South Square Mall	230	50	280	0	30	30	310
University Drive	160	50	210	160	30	190	400
Garrett Rd	190	60	250	60	50	110	360
Mt. Moriah Rd	20	10	30	80	30	110	140
Gateway	260	210	470	120	70	190	660
Ephesus Church	60	20	80	20	10	30	110
Meadowmont	20	0	20	40	10	50	70
Friday Center	70	70	140	60	30	90	230
UNC Hospital	530	180	710	330	190	520	1,230
Total	12,000	8,730	20,730	7,100	4,950	12,050	**32,780**

Table V-XIX. Busway Alternative 2 Boarding Summary by Rail Station
Year 2025 Average Weekday Boardings

Busway Alternative 2							
Station Location	**Peak**			**Off-Peak**			**Total Daily**
	Walk/ Bus	Drive	Total	Walk/ Bus	Drive	Total	
Spring Forest	440	100	540	160	50	210	750
Millbrook	390	720	1,110	160	200	360	1,470
Six Forks/Highlands	280	690	970	140	160	300	1,270
State Government Ctr	330	470	800	290	390	680	1,480
Dtn Raleigh	920	760	1,680	970	510	1,480	3,160
NCSU	2,080	2,070	4,150	1,570	1,220	2,790	6,940
State Fairgrounds	290	300	590	130	170	300	890
West Raleigh	30	590	620	50	270	320	940
Cary Depot	280	310	590	120	140	260	850
Morrisville	230	80	310	130	130	260	570
South Park	160	180	340	120	130	250	590
North Park	320	230	550	230	240	470	1,020
Alston Ave	1,300	440	1,740	610	200	810	2,550
Dtn Durham	580	360	940	180	110	290	1,230
9th Street	2,040	550	2,590	1,000	490	1,490	4,080
Duke Med Ctr	440	70	510	140	20	160	670
Morreene Road	210	30	240	110	20	130	370
Pickett Road	110	70	180	90	20	110	290
South Square Mall	200	50	250	0	10	10	260
University Drive	120	40	160	110	30	140	300
Garrett Rd	160	30	190	30	20	50	240
Mt. Moriah Rd	20	10	30	60	10	70	100
Gateway	220	220	440	70	50	120	560
Ephesus Church	50	10	60	10	10	20	80
Meadowmont	20	0	20	10	0	10	30
Friday Center	30	90	120	20	30	50	170
Total	11,250	8,470	19,720	6,510	4,630	11,140	**30,860**

Table V-XX. BMT Alternative 1 Boarding Summary by Rail Station
Year 2025 Average Weekday Boardings

BMT Alternative 1							
Station Location	**Peak**			**Off-Peak**			**Total Daily**
	Walk/ Bus	Drive	Total	Walk/ Bus	Drive	Total	
Spring Forest	440	110	550	150	60	210	760
Millbrook	380	730	1,110	160	200	360	1,470
Six Forks/Highlands	280	700	980	140	170	310	1,290
State Government Ctr	320	480	800	290	380	670	1,470
Dtn Raleigh	930	750	1,680	970	510	1,480	3,160
NCSU	2,080	2,110	4,190	1,560	1,230	2,790	6,980
State Fairgrounds	300	290	590	120	170	290	880
West Raleigh	40	630	670	50	270	320	990
Cary Depot	270	270	540	130	130	260	800
Morrisville	220	90	310	130	130	260	570
South Park	200	210	410	110	200	310	720
North Park	290	230	520	230	230	460	980
Alston Ave	1,430	750	2,180	600	210	810	2,990
Dtn Durham	390	310	700	160	100	260	960
9th Street	1,640	720	2,360	850	390	1,240	3,600
Duke Med Ctr	280	50	330	90	20	110	440
South Square Mall	10	30	40	30	20	50	90
University Drive	10	10	20	20	10	30	50
Garrett Rd	0	0	0	0	10	10	10
Friday Center	10	30	40	10	10	20	60
Total	9,520	8,500	18,020	5,800	4,450	10,250	**28,270**

Table V-XXI. Busway Alternative 3 Boarding Summary by Rail Station
Year 2025 Average Weekday Boardings

Busway Alternative 3							
Station Location	**Peak**			**Off-Peak**			**Total Daily**
	Walk/ Bus	Drive	Total	Walk/ Bus	Drive	Total	
Spring Forest	440	100	540	160	50	210	750
Millbrook	390	720	1,110	160	210	370	1,480
Six Forks/Highlands	280	660	940	140	160	300	1,240
State Government Ctr	330	430	760	290	390	680	1,440
Dtn Raleigh	930	720	1,650	960	510	1,470	3,120
NCSU	2,090	2,060	4,150	1,570	1,220	2,790	6,940
State Fairgrounds	310	280	590	130	180	310	900
West Raleigh	30	650	680	50	270	320	1,000
Cary Depot	270	320	590	120	140	260	850
Morrisville	230	80	310	130	120	250	560
South Park	150	170	320	120	130	250	570
North Park	310	220	530	240	240	480	1,010
Alston Ave	1,290	380	1,670	610	170	780	2,450
Dtn Durham	620	310	930	290	100	390	1,320
9th Street	1,380	300	1,680	700	300	1,000	2,680
Hillsborough Rd	530	190	720	330	120	450	1,170
Cameron Blvd	140	490	630	150	220	370	1,000
Pickett Road	80	230	310	80	90	170	480
South Square Mall	240	70	310	110	40	150	460
University Drive	110	50	160	110	40	150	310
Garrett Rd	120	80	200	40	60	100	300
Mt. Moriah Rd	20	10	30	60	40	100	130
Gateway	330	440	770	90	110	200	970
Ephesus Church	30	20	50	20	10	30	80
Meadowmont	20	0	20	40	10	50	70
Friday Center	50	70	120	50	30	80	200
UNC Hospital	320	180	500	300	180	480	980
Total	11,040	9,230	20,270	7,050	5,140	12,190	**32,460**

Table V-XXII. Busway Alternative 4 Boarding Summary by Rail Station
Year 2025 Average Weekday Boardings

Busway Alternative 4							
Station Location	**Peak**			**Off-Peak**			**Total Daily**
	Walk/ Bus	Drive	Total	Walk/ Bus	Drive	Total	
Spring Forest	430	100	530	150	50	200	730
Millbrook	390	670	1,060	160	210	370	1,430
Six Forks/Highlands	280	700	980	140	160	300	1,280
State Government Ctr	320	470	790	280	380	660	1,450
Dtn Raleigh	920	710	1,630	970	510	1,480	3,110
NCSU	2,050	2,050	4,100	1,570	1,230	2,800	6,900
State Fairgrounds	300	280	580	130	170	300	880
West Raleigh	40	590	630	40	260	300	930
Cary Depot	270	310	580	130	140	270	850
Morrisville	210	180	390	130	120	250	640
South Park	160	170	330	110	130	240	570
North Park	310	220	530	230	250	480	1,010
Alston Ave	1,290	420	1,710	600	180	780	2,490
Dtn Durham	600	320	920	290	100	390	1,310
9th Street	1,390	330	1,720	690	290	980	2,700
Hillsborough Rd	520	190	710	370	140	510	1,220
Cameron Blvd	120	500	620	150	210	360	980
Pickett Road	70	20	90	70	10	80	170
South Square Mall	230	210	440	100	90	190	630
University Drive	70	40	110	60	30	90	200
Garrett Rd	90	30	120	20	30	50	170
Mt. Moriah Rd	20	10	30	40	30	70	100
Gateway	350	500	850	60	100	160	1,010
Ephesus Church	30	0	30	10	10	20	50
Meadowmont	10	0	10	10	0	10	20
Friday Center	20	70	90	20	20	40	130
Total	10,490	9,090	19,580	6,530	4,850	11,380	**30,960**

Table V-XXIII. BMT Alternative 2 Boarding Summary by Rail Station
Year 2025 Average Weekday Boardings

BMT Alternative 2							
Station Location	**Peak**			**Off-Peak**			**Total Daily**
	Walk/ Bus	Drive	Total	Walk/ Bus	Drive	Total	
Spring Forest	440	110	550	160	50	210	760
Millbrook	390	710	1,100	160	200	360	1,460
Six Forks/Highlands	280	700	980	150	160	310	1,290
State Government Ctr	320	460	780	290	380	670	1,450
Dtn Raleigh	920	710	1,630	970	500	1,470	3,100
NCSU	2,070	2,020	4,090	1,580	1,220	2,800	6,890
State Fairgrounds	290	290	580	130	170	300	880
West Raleigh	40	620	660	50	260	310	970
Cary Depot	290	320	610	120	130	250	860
Morrisville	220	70	290	130	130	260	550
South Park	170	170	340	100	130	230	570
North Park	310	220	530	230	230	460	990
Alston Ave	1,350	550	1,900	620	200	820	2,720
Dtn Durham	550	340	890	180	100	280	1,170
9th Street	1,890	660	2,550	940	490	1,430	3,980
Duke Med Ctr	30	0	30	10	0	10	40
Hillsborough Rd	240	20	260	70	10	80	340
South Square Mall	150	90	240	70	50	120	360
Garrett Rd	80	30	110	20	10	30	140
Mt. Moriah Rd	10	10	20	30	10	40	60
Gateway	130	120	250	50	40	90	340
Ephesus Church	30	10	40	10	0	10	50
Friday Center	20	40	60	10	20	30	90
Total	10,220	8,270	18,490	6,080	4,490	10,570	**29,060**

Table V-XXIV. Highway Assignment Summary for Bus Alternatives
Year 2025 Average Weekday

Alternative	No Build	TSM	Busway Alternative 1	Busway Alternative 2	BMT Alternative 1	Busway Alternative 3	Busway Alternative 4	BMT Alternative 2
Vehicle-Km	97,494,810	97,628,810	97,572,740	97,449,690	97,580,120	97,470,870	97,530,990	97,499,290
delta No Build		134,000	77,930	(45,120)	85,320	(23,930)	36,180	4,490
Vehicle-Hours	1,825,340	1,831,250	1,827,710	1,822,730	1,829,680	1,824,840	1,825,780	1,835,890
delta No Build		5,910	2,360	(2,610)	4,340	(500)	440	10,550

Table V-XXV. Transit System Performance Summary for Bus Alternatives

Year 2025 Average Weekday Passenger-Miles

Alternative	**No Build**			**TSM**			**Busway Alternative 1**			**Busway Alternative 2**		
Company	*Peak*	*Off-Peak*	*Total*	*Peak*	*Off-Peak*	*Total*	*Peak*	*Off-Peak*	*Total*	*Peak*	*Off-Peak*	*Total*
1 TTA Bus	33,728	46,957	80,679	44,465	46,267	90,733	130,799	72,868	203,667	129,369	75,689	205,059
2 CAT	41,856	37,152	79,007	41,756	36,984	78,740	41,862	37,313	79,181	42,172	37,245	79,417
3 CHT	36,425	46,118	82,543	33,287	45,876	79,169	31,118	38,948	70,060	32,554	40,700	73,247
4 DATA	52,208	45,615	97,822	48,057	46,385	94,436	39,333	40,078	79,411	39,227	40,383	79,610
5 NCSU	3,722	5,611	9,333	3,710	5,630	9,339	3,728	5,679	9,408	3,710	5,648	9,358
6 Duke	16,199	12,452	28,645	15,652	12,384	28,036	9,737	8,351	18,088	9,805	8,370	18,175
7 NCCU	982	292	1,274	976	280	1,255	746	292	1,038	733	286	1,019
8 OPT	478	3,877	4,356	864	4,064	4,934	913	5,797	6,711	876	5,735	6,611
9 TTA Rail	135,316	63,672	198,988	135,558	63,411	198,963	134,850	66,014	200,864	134,390	65,120	199,504
10 Cary	8,289	9,594	17,883	8,103	9,606	17,709	7,898	9,544	17,442	8,022	9,488	17,504
Total	329,190	271,347	600,537	332,421	270,887	603,308	400,989	284,886	685,876	400,847	288,664	68,761
Delta No Build				*3,237*	*(460)*	*2,778*	*71,799*	*13,540*	*85,339*	*71,657*	*17,318*	*88,974*
Alternative	**BMT Alternative 1**			**Busway Alternative 3**			**Busway Alternative 4**			**BMT Alternative 2**		
Company	*Peak*	*Off-Peak*	*Total*	*Peak*	*Off-Peak*	*Total*	*Peak*	*Off-Peak*	*Total*	*Peak*	*Off-Peak*	*Total*
1 TTA Bus	63,237	61,870	125,107	119,682	73,247	192,929	115,295	73,086	188,381	100,817	69,500	170,317
2 CAT	42,073	37,003	79,076	41,551	37,326	78,877	42,247	37,195	79,442	42,297	37,195	79,492
3 CHT	36,878	46,684	83,562	31,292	38,848	70,140	32,299	40,016	72,315	32,989	43,384	76,373
4 DATA	48,647	41,427	90,074	43,266	41,402	84,668	43,397	41,607	85,004	42,583	41,905	84,488
5 NCSU	3,790	5,654	9,445	3,734	5,636	9,364	3,703	5,654	9,357	3,679	5,648	9,327
6 Duke	15,429	9,805	25,234	10,681	7,463	18,150	10,980	7,469	18,449	14,403	9,495	23,898
7 NCCU	951	336	1,280	771	261	1,031	789	255	1,044	857	336	1,193
8 OPT	895	4,418	5,313	920	5,909	6,829	833	5,592	6,425	901	5,350	6,251
9 TTA Rail	133,346	63,125	196,471	133,538	66,710	200,249	133,763	66,623	200,386	132,166	64,716	196,882
10 Cary	7,972	9,439	17,411	8,258	9,476	17,734	7,835	9,519	17,354	8,084	9,575	17,659
Total	353,225	279,754	632,978	393,695	286,278	679,966	391,128	287,018	678,146	378,775	287,490	666,265
Delta No Build	*24,035*	*8,407*	*32,442*	*64,505*	*14,932*	*79,436*	*61,938*	*15,677*	*77,615*	*378,775*	*161,149*	*65,734*

E. Summary of Findings

A number of observations can be made about the US 15-501 MIS (Phase II) alternative forecasts:

- Busway Alternatives 1-4 attract the most new riders, each attracting over 2,200 average weekday linked trips, compared to the No-Build alternative. LRT Alternative 3 and BMT Alternative 2 both attract 2,120 new riders compared to the No Build Alternative. The other two LRT Alternatives gain approximately 1,200 riders. BMT Alternative 1 and DMU Alternative 1 both gain fewer than 600 new riders.

- The total number of linked trips is more indicative of the total number of person trips. Busway Alternative 2 had the highest number of average weekday linked trips with 118,160. It is followed closely by the other three busway alternatives.

- The three LRT Alternatives have the highest number of boardings for the new service with over 15,000 average weekday boardings. As stated previously, the four busway alternatives are expected to have fewer boardings because of the possibility of more "one seat rides." For the busway alternatives, average weekday boardings range from 9,000 to 10,300.