2055 Metropolitan Transportation Plan (MTP)

– Preferred Option

Triangle West Transportation Planning Organization
(TW TPO)

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Creating the Preferred Option

The typical approach to developing a Preferred Option in the Metropolitan Transportation Plan (MTP) process involves selecting and refining elements from the Alternative scenarios, based on the results of the Alternatives Analysis in relation to the MTP goals and objectives of Triangle West Transportation Planning Organization (TW TPO).

Alternatives Analysis: Three Original Scenarios

Alternative scenarios are a combination of a transportation network and services, and land use assumptions, which are created for public discussion. The transit Alternatives use the short-range transit plans of the transit agencies and the county transit plans. Both the Durham County Transit Plan and Orange County Transit Plan are to 2040 and were being updated and refined as the 2055 MTP process identified the Alternatives.

Plans and Trends

Also known as business-as-usual, this alternative distributes 2055 population and employment based on current land use plans and policies. It creates an improved transportation system based on the current MTP plus more roadway projects.

Shared Leadership

This scenario could be called the “we-can-do-better” scenario. It emphasizes increased land use intensity and mixed-use development at major mobility hubs and along key travel corridors. It also assumes expanded transit facilities and services, along with the removal of certain roadway projects.

All Together

This scenario increases the intensity and mix of land uses at major employment hubs and travel corridors, and works to link minority, low-income, and zero-car households to jobs. This scenario focuses on bicycling and walking facility investment, provides and prioritizes transit services in major commuting corridors, often instead of simply increased roadway capacity.

The scenario assumes that additional funds are available for bus transit, BRT, rail transit, and bicycle and pedestrian facilities while keeping the roadway projects at the same level as that of the Shared Leadership scenario.

The Preferred Option

The TPO staff developed a draft Preferred Option by selecting and refining elements from the three Alternative scenarios, based on the results of the Alternatives Analysis in relation to the MTP goals and objectives at the beginning. Then Feedback was subsequently obtained from the Technical Committee (TC), the TPO Board, and staff of the member agencies. Based on the suggestions and comments, the TPO staff revised and finalized the Preferred Option by performing the model runs and comparing results. The Preferred Option consists of the following types of transportation projects from all modes:

Roadway and Technology:

- Funded highway projects in the first four years of the State Transportation Improvement Program (STIP).
- Highway modernization projects, which improve the operation, safety and multimodal features and intersection capacity of highway facilities, but do not add a general-purpose lane of vehicle traffic.
- Grid projects that provide a grid network to support bicycle and pedestrian and transit trips and reduce vehicle miles traveled by providing more direct routes. Grid projects are mostly developer-built and may also improve safety.
- Projects of local or regional interest that do not meet the above criteria.

Transit: Transit projects are selected and refined from the All Together Alternative. Transit investments include enhanced bus service, such as frequency and coverage, bus rapid transit throughout the region, and transit center.

Bicycle and Pedestrian: Specific bicycle and pedestrian projects are not usually identified in the MTP. The level of bicycle and pedestrian facility investment is based on a compilation of the TPO's local government plans, including:

- 175 miles of sidewalks per decade;
- 70 miles of shared use paths per decade;
- 80 miles of protected bike lanes per decade; and,
- 20 miles of bicycle boulevards per decade.

Land Use (Socioeconomic Data)

The land use of the Preferred Option increases the intensity and mix of land uses at major employment hubs and travel corridors, and links minority, low-income, and zero-car households to jobs. These land use characteristics help reduce the growth of vehicle miles traveled and greenhouse gases, and support the TPO's goals concerning equity and connectivity.

Guide Totals

The TPO establishes the 2055 county-level population and employment to calculate the growth from 2020 to 2055 which will be allocated to the parcels by the Community Visualization (CommViz) land use model. The 2055 population is based on the projection from the N.C. Office of State Budget and Management, and the employment is based on the projection from a private service called Woods-and-Poole Economics. The current employment estimate is based on employer data from InfoUSA that is verified and updated by local planners. The following table provides the county-level guide totals:

Population				
County	**2020**	**2055**	**2020-2055**	% change
Chatham*	51,616	99,178	47,562	92%
Durham	310,609	461,765	151,156	49%
Orange	137,348	186,631	49,283	36%
Total	499,573	747,574	248,001	50%
Employment				
County	**2020**	**2055**	**2020-2055**	% change
Chatham*	12,272	25,964	13,692	112%
Durham	235,002	447,009	212,007	90%
Orange	74,721	123,501	48,780	65%
Total	321,995	596,474	274,479	85%

* Only includes portion of Chatham County in the Triangle Region model (TRM) area.

Growth Allocation

Socioeconomic (SE) data—such as dwelling units, population, and employment—are forecasted through the year 2055 and serve as key inputs into the region's travel demand model called the Triangle Regional Model (TRM). The forecasting process begins with the 2055 guide totals, which are county-level projections of population and employment. It then calculates growth from 2020 to 2055 and uses the CommViz land use model to allocate this growth to specific parcels, based on land availability and development suitability.

The following TPO Web map link provide more detailed information:

- Map of population and employment distribution by Transportation Analysis Zones (TAZs).

Roadway and Technology Projects

Intelligent Transportation Systems (ITS) and Technology Projects

Intelligent Transportation Systems (ITS) and Technology Projects have been newly added to the 2055 MTP. These projects can reduce traffic congestion, improve corridor operational efficiency and safety, and enhance sustainability in areas where widening is not feasible. Their effectiveness is particularly notable when alternative transportation modes and parallel routes are available. The proposed Integrated Corridor Management (ICM) and Managed Freeway projects are listed below:

- Multi-Modal Integrated Corridor Management (ICM) Projects
  - NC147 & I-885 from Briggs Ave via EEC to I-40
  - US 15-501 North from US 15 Business Road/South Square via Patterson Place, Eastgate and Raleigh Rd/NC 54 to S Columbia St
  - NC 54/Raleigh Rd from US15-501

- Managed Freeway Project
  - I-40 East from I-540 to US 15-501. It may include ramp meter, dynamic shoulder & so on (but no general-purpose lane addition).

Changes to the 2050 MTP Roadway Projects

After the roadway project list of Preferred Option is developed, it is compared to the 2050 MTP project list. The changes/differences to the roadway project list of the 2050 MTP are listed in the following tables. The first table shows the new roadway projects added to the preferred project list that are not in the 2050 MTP.

New Roadway Project	From	To	Existing Lanes	Proposed Lanes	Improvement Type	Length (miles)
I-885 HOV Lane	EEC	I-40	0	2	HOV/MGT* Lane Addtion	1
NC 147 HOV lane	Briggs Ave	EEC	0	2	HOV/MGT Lane Addtion	4.8
US 70 East	Lynn Rd	S Miami Blvd	4	4	Boulevard Conversion w/ Parallel collector roads	1.6
US 70 East	S Miami Blvd	TPO Boundary	4	4	Boulevard Conversion w/ Parallel collector roads	2.5
US 70 West	Durham/Orange Co Line	West TPO Border line	2	4	Widening & Multi-Modal Improvement	11.6
I-85 North	I-885	Red Mills Rd	4	6	Widening	8.2
MT. Willing Rd	I-40/I85	US-70	2	4	Widening	0.7
I-40 HOV/MGT Lanes	NC 54	US 15-501	0	2	HOV/MGT Lane Addtion	2.9
I-40 HOV/MGT Lanes	I-885	NC 54	0	2	HOV/MGT Lane Addtion	6.4
I-40 HOV/MGT Lanes	Wake County Line	NC 147	0	2	HOV/MGT Lane Addtion	3.4

* HOV/MGT Lane: High Occupancy/Managed Lane

The second table displays the removal roadway projects which are in the 2050 MTP Project List.

Removal Roadway Project	From	To	Existing Lanes	Proposed Lanes	Improvement Type	Length (miles)	Reason For Removal
East End Connector (EEC)	NC 147	north of NC 98 in Durham	0	4	New Location	3.2	Built (2021-2025)
Fayetteville Rd	Barbee Rd	Cornwallis Rd	2	4	Widening	1.0	Built (2021-2025)
Lynn Rd/Pleasant Dr Connector	Lynn Rd	Pleasant Dr	0	2	New Location	0.6	Built (2021-2025)
NC 55 (Alston Ave)	Main St	NC 98	2	2	Modernization	0.5	Built (2021-2025)
Hopson Rd	Davis Dr	S Miami Blvd	2	4	Widening	0.7	Built (2021-2025)
S Elliot Rd Extension	Fordham Blvd	Ephesus Church Rd	0	2	New Location	0.3	Built (2021-2025)
NC 147 (modernization)	Future I-885	I-40	4	4	Modernization	3.9	Replaced by a new project
Yates Store Rd Extension	Yates Store Rd	Wake Rd	0	2	New Location	1.4	Outside the new TPO Boundary
I-40 modernization	I-540	NC 54	6, 8	6, 8	Ramp Improvement & auxiliary lane addition where it applies		Replaced by new projects
US 70 East	Lynn Rd	S Miami Blvd	4	4	Boulevard Conversion	1.6	Replaced by a new project
US 70 East	S Miami Blvd	MPO Boundary	4	4	Boulevard Conversion	2.5	Replaced by a new project

The third table below lists all projects which are adjusted and modified by location, project range and type.

Adjusted/Modeified Project	From	To	Existing Lanes	Proposed Lanes	Original Improvement Type	Length (miles)	Modification /Adjustment
Orange Grove Connector	Orange Grove Rd	NC 86	0	2	New Location	0.4	Revised to NC 86
Eno Mountain Rd realignment	Mayo St	Eno Mountain Rd	2	2	New Location	0.3	Intersection & Safety Improvement
Falconbridge Rd Connector	Falconbridge Rd	Farrington Rd	0	2	New Location	0.2	Location
Duke St	I-85	W Lakewood Av	2	2	Two-way conversion	2.5	Revised from W Club Blvd to W Lakewood Rd

Tables and Maps

The roadway and intersection/interchange projects to be included in the Preferred Option are shown in the maps and tables in this document. The roadway table includes the columns described below:

- MTP ID – Project ID in the MTP.
- Roadway Project – Project Name.
- AQYEAR – The Air Quality Year designates the year, if before 2035, or decade in which the project will be operational. This designation helps demonstrate that the MTP is accountable to the federal fiscal constraint requirement and air quality conformity determination. It is the preliminary designation and may be change in the final MTP.

- Improvement Type – This category includes, but is not limited to, the following types:

    - Modernizations do not add general purpose lanes for vehicle traffic. In urban areas, they typically include bicycle, pedestrian, and transit facilities; add turn lanes at intersections; and, in some cases, widen narrow roads or improve curves and sight lines. In rural areas, improvements may include widening narrow roads and shoulders, adding turn lanes at intersections.

      The current transportation legislation in North Carolina (STI – Strategic Transportation Initiative) that controls the prioritization of projects for funding does not favor modernization projects. Prioritization favors projects that either significantly increase capacity on heavily congested roadways or enhance traffic safety. As such, the funding of many modernization projects assumes changes to the STI Prioritization process that values modernization benefits, and assumes that the funding based on the NC FIRST Commission recommendations may be available for modernization projects.

    - Grid, or connector roads, improve bicycle, pedestrian and transit trips by reducing the trip length, and can also reduce vehicle VMT (vehicle miles traveled). These roadways are mostly built by developers.

    - Boulevard improvements typically include: one to three travel lanes in each direction; a raised, landscaped median; sidewalks; bike lanes; and bus pull outs, if preferred. A multi-use path can be substituted for the sidewalks and bike lanes. The intersection with other roadways is at grade, i.e., no bridge or ramps, and provides facilities for safe cyclists and pedestrian crossings. The posted speed limits are 35-45mph.

- Bus advantage – Improvements add travel lanes to roadways but also provide a travel time advantage to transit vehicles when compared to general traffic. Transit buses would be able to use the uncongested managed lane roadway to reduce travel delays. More specifically, there is a possibility that two High Occupancy Vehicle (HOV) lanes would be added to I-885 between the East End Connector and I-40: one HOV lane per direction. The Preferred Option does include the bus advantage improvements, i.e., High Occupancy Vehicle (HOV) lanes.

- Cost Estimate – Costs in 2026 Dollars
- Cost Sources – Method used for cost estimate.

In the online map, the user can click on the roadway line or interchange point to view a pop-up of more detailed data such as:

- AQYEAR – The Air Quality Year designates the year, if before 2030, or decade in which the project will be operational. This designation helps demonstrate that the MTP is accountable to the federal fiscal constraint requirement and air quality conformity determination.
- TIP – This field designates the ID, if it exists, for the Transportation Improvement Program (TIP). The TIP identifies transportation projects that are likely to receive funding in the next ten years.

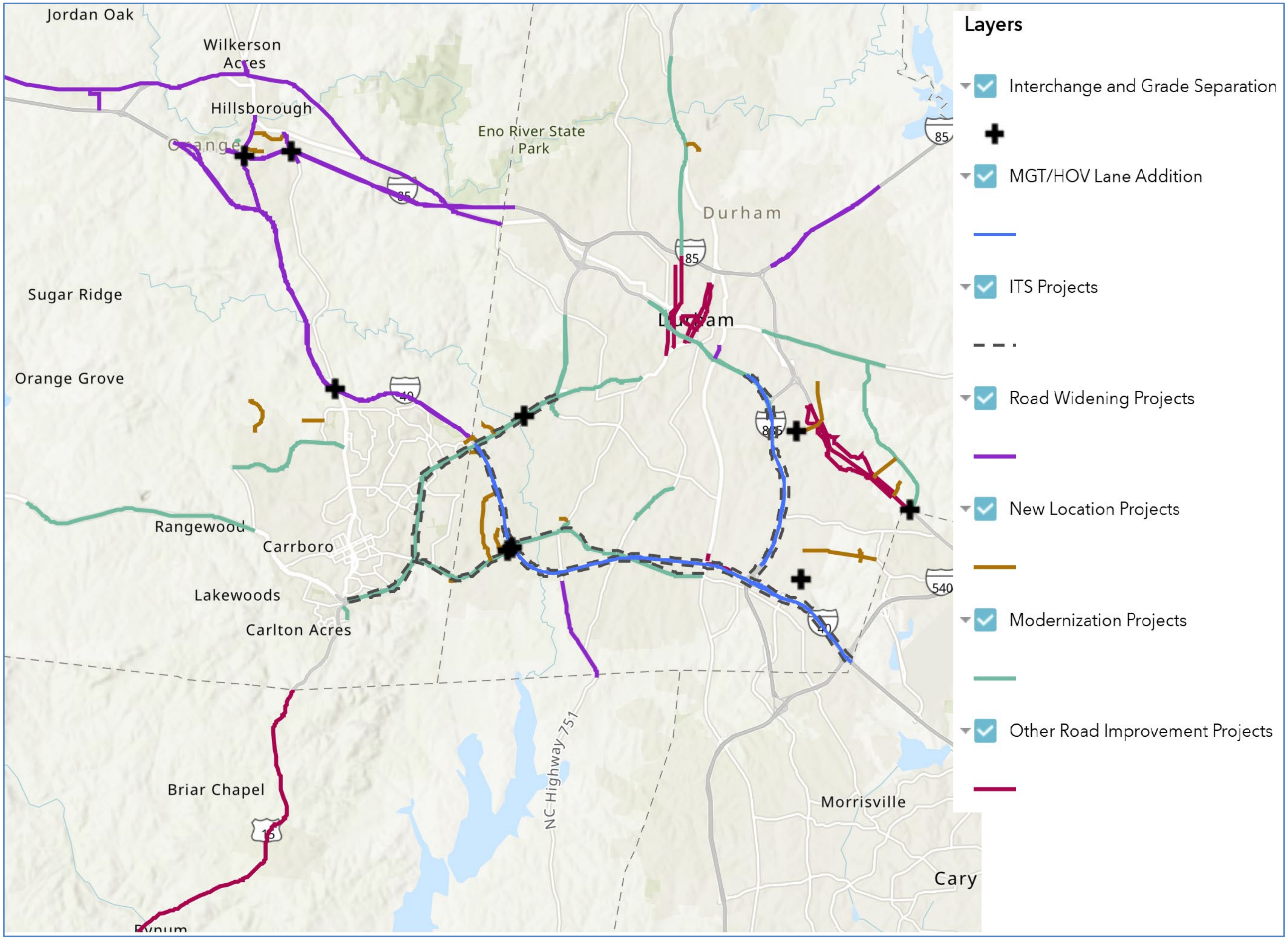
For some parts, new and upgraded interchanges/intersections are assumed to be part of the highway projects – not separate interchange projects. None of the interchanges were designated as a modernization, bus-advantage or grid project, and thus those data fields are not shown.

Roadway Project Map

The roadway project map on the next page shows the highway improvements that were considered for the Preferred Option. An interactive online map is also available at the top of the Preferred Option web page (2055 Preferred Scenario Roadway Projects)

2055 Metropolitan Transportation Plan (MTP)

Preferred Option



2055 MTP -- Preferred Option

Roadways

MTP ID	AQYr	Roadway Project	From	To	Existing Lanes	Proposed Lanes	Improvement Type	Transit Advantage	Estimated Cost	CostSrce
15	2025	I-885 (East End Connector - EEC)	NC 147	NC 98 in Durham	0	4	New Location		$0	N/A
23	2025	Fayetteville Rd	Barbee Rd	Cornwallis Rd	2	4	Widening		$0	N/A
407	2025	Lynn Rd/Pleasant Dr Connector	Lynn Rd	Pleasant Dr	0	2	New Location		$11,300,184	Inflation
75.2	2025	NC 55 (Alston Ave)	Main St	NC 98	2	2	Modernization		$0	N/A
202	2025	Hopson Rd	Davis Dr	S Miami Blvd (NC 54)	2	4	Widening		$4,286,000	TIP
221	2025	S Elliot Rd Ext	Fordham Blvd	Ephesus Church Rd	0	2	New Location		$12,436,200	Inflation
379	2035	Freeland Memorial Extension	S Churton St	New Collector Rd	0	2	New Location		$9,416,820	Inflation
87	2035	S Churton St	Eno River in Hillsborough	I-40	2	4	Widening		$77,400,000	TIP
434.2	2035	NC 98 (Wake Forest Hwy)	Junction Rd	Lynn Rd	4	4	Modernization		$28,951,000	TIP
124	2035	Duke St	I-85	W Lakewood Av	2	2	Safety Improvement & 2-way conversion		$9,313,500	Inflation
123	2035	N Gregson St & Vickers Av	W Club Blvd	University Dr (US 15-501	2	2	Safety Improvement & 2-way conversion		$9,313,500	Inflation
373	2035	Falconbridge Rd Connector	Falconbridge Rd	Farrington Rd	0	2	New Location		$3,607,380	Inflation
114.2	2035	US 15-501 Bypass/Cornwallis Rd	US 15-501 Bypass	Cornwallis Rd	4	4	Bridge replacement		$45,200,000	TIP
364.1	2035	Orange Grove Rd	Mayor St	Eno Mountain Rd	2	2	Safety/Intersection improvement		$6,000,000	SPOT
700	2035	Cornwallis Rd/Miami Blvd/NCRR bridge	Miami Blvd	Cornwallis Rd	N/A	N/A	Grade separation		$41,156,000	TIP
701	2035	Glover Rd/ Rail bridge	Glover Rd	NCRR rail line	N/A	N/A	Grade separation		$75,327,000	TIP
75.1	2035	NC 55 (Alston Ave)	NC 147	Main St	2	4	Widening		$62,000	N/A
43	2035	I-40	Durham County line	NC 86	4	6	Widening		$14,585,667	TIP
44	2035	I-40	NC 86	I-85	4	6	Widening		$29,171,333	TIP
123.11	2035	Woodcroft Pkwy Ext	Garrett Rd	Hope Valley Rd	0	2	New Location		$9,200,000	TIP
201	2035	Falconbridge Rd Extension	Farrington Rd	NC 54	0	4	New Location		$49,053,900	Inflation
220	2035	Purefoy Rd Ext	Sandberg Ln	Weaver Dairy Rd	0	2	New Location		$11,104,380	Inflation
113.0	2035	US 15-501/Garrett Rd Interchange	US 15-501	Garrett Rd	N/A	N/A	New Interchange		$53,300,000	TIP
690	2035	US 70/Northern Durham Parkway	US 70	Northern Durham Parkwa	N/A	N/A	New Interchange		0	N/A
111	2035	Fordham Blvd (US 15-501)	I-40	Ephesus Ch Rd	4	4	Modernization Plus Intersection Improvement		$83,600,000	TIP
636	2035	I-40/NC 54 Interchange	I-40	NC 54	N/A	N/A	Interchange Upgrade		$279,400,000	TIP
48	2035	I-85	Orange Grove Rd	Sparger Rd	4	6	Widening		$139,998,000	TIP
650	2035	I-85/S Churton St	I-85	S Churton St	N/A	N/A	Interchange Upgrade		$164,500,000	TIP
45.3	2035	I-40 Westbound Auxiliary Lane	NC 147	NC 55	3	4	Add Auxiliary Lane		$10,289,000	TIP
704	2035	NC 55 Southbound	Meridian Parkway	I-40 interchange	4	5	Add Auxiliary Lane		$7,550,000	TIP
638	2035	I-40 and NC-86 interchange improvem	I-40	NC 86	N/A	N/A	Interchange improvements		$10,970,000	SPOT
77.3	2045	NC 751	Renaissance Pkwy	O'Kelly Chapel Rd	2	4	Widening		$49,500,000	SPOT
346	2045	Danziger Dr Extension	Mt Moriah Rd	E Lakewood Dr	0	2	New Location		$86,900,000	SPOT
23.2	2045	Fayetteville Rd	Woodcroft Pkwy	Barbee Rd	2	2	Modernization		$23,380,000	Cost wkbk
240	2045	Fordham Blvd (US 15-501)	NC 54	Ephesus Ch Rd	4	4	Modernization Plus Intersection Improvement		$35,345,000	TIP
73	2045	Fordham Blvd (US 15-501)	NC 54	NC 86 (S Columbia St)	4	4	Modernization Plus Intersection Improvement		$28,286,000	TIP
36	2045	Homestead Rd	Old NC 86	Rogers Rd	2	2	Modernization		$30,087,960	Inflation
35	2045	Homestead Rd	Rogers Rd	NC 86	2	2	Modernization		$20,153,700	Inflation
646	2045	I-85/NC 86	I-85	NC 86	N/A	N/A	Interchange improvements		$71,400,000	TIP
83.11	2045	Northern Durham Pkwy	US 70 E	Sherron Rd	2	2	Modernization		$69,090,000	Inflation
65.1	2045	I-885 HOV/MGT Lane	I-40	EEC	0	2	Add MGT/HOV Lane	Yes	$142,610,000	TIP
64.2	2045	NC 147 HOV/MGT lane	EEC	Briggs Ave	0	2	Add MGT/HOV Lane	Yes	$30,000,000	TIP

2055 MTP -- Preferred Option

Roadways

MTP ID	AQYr	Roadway Project	From	To	Existing Lanes	Proposed Lanes	Improvement Type	Transit Advantage	Estimated Cost	CostSrce
485.61	2045	US 70 Boulevard Conversion	Lynn Rd	S Miami Blvd	4	4	Boulevard Conversion & Parallel Road		$80,297,838	US 70 Study
116.61	2045	US 70 Boulevard Conversion	S Miami Blvd	MPO Boundary	4	4	Boulevard Conversion & Parallel Road		$167,287,162	US 70 Study
434.1	2045	NC 98 (Holloway St)	Miami Blvd	Junction Rd	4	4	Modernization		$14,612,500	Cost wkbk
479	2045	US 15-501	Smith Level Rd	US 64	4	4	Synchronized Street		$117,700,000	Inflation
51	2045	Lake Hogan Farms Rd	Eubanks Rd	Legends Way	0	2	New Location		$12,956,580	Inflation
121	2045	Mangum St	W Lakewood Av	N Roxboro St	2	2	Two-way conversion		$6,027,000	Inflation
410	2045	Marriott Way	Friday Center Dr	Barbree Chapel Rd	0	2	New Location		$2,005,080	Inflation
64.13	2045	NC 147 (Durham Fwy - possible boulev	Swift Av	Briggs Ave	4	4	Modernization		$146,782,774	Inflation
69.41	2045	NC 54	Barbee	NC 55	2	2	Modernization		$20,720,000	TIP
69.31	2045	NC 54	Fayetteville	Barbee	2	2	Modernization		$15,417,000	TIP
70.3	2045	NC 54	Fordham Blvd (US 15-501)	Barbee Chapel Rd	6	6	Modernization Plus Intersection Improvement		$93,000,000	TIP
69.21	2045	NC 54	Highgate Dr	Fayetteville Rd	2, 4	2, 4	Modernization		$38,868,472	TIP
69.11	2045	NC 54	I-40 Interchange	NC 751	2	2	Modernization		$19,501,000	TIP
69.22	2045	NC 54	NC 751	Highgate Dr	2	2	Modernization		$38,868,472	TIP
428	2045	NC 54	Old Fayetteville Rd	Orange Grove Rd	2,4	2,4	Modernization		$21,650,000	TIP
70	2045	NC 54	I-40	Barbee Chapel Rd	4	4	Modernization Plus Intersection Improvement		$28,011,000	TIP
70.2	2045	NC 54/Farrington Rd	NC 54	Farrington Rd	N/A	N/A	Grade Separation		$0	N/A
440	2045	New Hope Commons Dr Extension	Eastowne Dr	New Hope Commons Dr	0	2	New Location		$86,900,000	similar to Danziger wit
89.3	2045	Orange Grove Connector	Orange Grove Rd	NC 86	0	2	New Location		$22,500,000	SPOT
122	2045	Roxboro St	W Lakewood Av	W Markham Av	2	2	Two-way conversion		$6,027,000	Inflation
230	2045	Southwest Durham Dr	NC 54	I-40	0	2	New Location		$36,461,880	Inflation
113.1	2045	US 15-501 (possible boulevard convers	US 15-501 Bypass	I-40	6	6	Modernization		$97,855,183	Inflation
130	2045	US 15-501 Business (modernization)	US 15-501 Bypass	Chapel Hill Rd	4	4	Modernization		$25,188,454	Inflation
131	2045	US 15-501 Business (modernization)	Chapel Hill Rd	University Dr	2	2	Modernization		$12,594,227	Inflation
120	2045	US 70 Bus (W Morgan/Ramseur/N Gre	N Roxboro St	W Main St	4	4	Two-way conversation		$10,500,000	SPOT
304.1	2045	Angier Av Ext	US 70	Northern Durham Pkwy	0	2	New Location		$14,805,210	Inflation
343	2045	Crown Pkwy/Roche Dr	Page Rd	T.W. Alexander Dr	0	2	New Location		$7,400,890	Inflation
46.21	2055	I-40 HOV/MGT Lanes	NC 54	US 15-501	0	2	Add MGT/HOV Lane	Yes	$179,804,100	Inflation
46.22	2055	I-40 HOV/MGT Lanes	NC 147	NC 54	0	2	Add MGT/HOV Lane	Yes	$525,609,000	Inflation
46.1	2055	I-40 HOV/MGT Lanes	Wake County Line	NC 147	0	2	Add MGT/HOV Lane	Yes	$937,574,400	Inflation
434.3	2055	NC 98 (Wake Forest Hwy)	Lynn Rd	Nichols Farm Dr	4	4	Modernization		$37,575,000	Cost wkbk
114.1	2055	US 15-501 Bypass (modernization)	MLK Parkway	Cameron Blvd	4	4	Modernization		$85,011,035	Inflation
28.11	2055	Glover Rd	Angier	US 70	0	2	New Location		$10,919,160	Inflation
382	2055	Hebron Rd Extension	Hebron Rd	Roxboro Rd (501 N)	0	2	New Location		$10,619,280	Inflation
77.11	2055	Hope Valley Rd (NC 751)	NC 54	Woodcroft Pkwy	4	4	Modernization		$7,883,835	Cost wkbk
53	2055	Leesville Rd Ext	US 70/Page Rd Ext	Leesville Rd	0	2	New Location		$7,773,360	Inflation
57	2055	Lynn Rd Extension	US 70	Existing Lynn Rd	0	2	New Location		$20,174,280	Inflation
242	2055	Mt Carmel Ch Rd	US 15-501	Bennett Rd	2	2	Modernization		$10,242,415	Inflation
14.1	2055	N Duke St (501 N)	I-85	N Roxboro split	5	4	Modernization		$39,040,260	Inflation
80	2055	NC 86	Old NC 10	US 70 Business	2	4	Widening		$21,341,460	Inflation
81	2055	NC 86 (and US 70 intersection)	US 70 Bypass	North of NC 57	2	4	Widening		$30,800,000	SPOT
83.12	2055	Northern Durham Pkwy	Sherron Rd	NC 98	2	2	Modernization		$39,984,000	Inflation
502	2055	Patriot Dr Extension	S Miami Blvd	Page Rd	0	2	New Location		$38,472,840	Inflation
92	2055	Roxboro Rd (501 N)	Duke St	Goodwin Rd	4	4	Modernization		$42,847,560	Inflation
106.1	2055	Southwest Durham Dr	US 15-501 Business	Mt Moriah Rd	0	4	New Location		$10,780,980	Inflation
72	2055	US 70 West	Durham/Orange Co Line	West TPO Border line	2	4	Widening		$534,400,000	SPOT
71	2055	MT. Willing Rd	I-40/I85	US-70	2	4	Widening		$25,977,778	Based on US
49	2055	I-85	East of Midland Terrace	Red Mill Rd	4	6	Widening		$135,400,000	SPOT

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Public Transportation

Transit Service and Infrastructure

The 2055 Preferred Option uses the transit services in the All-Together Alternative.

The table below shows those investments and the decade in which the services and assets will begin to operate or be available. Note that the transit plans have a 2040 horizon year and the MTP has a 2055 horizon year. Thus, some of the transit projects in the 2055 MTP will not be in the upcoming, updated county transit plans.

Transit Element	Year/Extent
Intercity Passenger Rail (ICR) – Intercity Passenger Rail Stations	2035 – Downtown Durham and RTP with transit centers 2055 – Hillsborough with a transit center
Bus Rapid Transit (BRT) - Chapel Hill North-South	2029 – Eubanks to Southern Village
Bus Rapid Transit (BRT) - Central Durham	2034 – The Village to Duke
Bus Rapid Transit (BRT) – Durham-Orange Durham/Chapel Hill/Carrboro	2036 – Carrboro, UNC to Duke (via US 15-501)
Bus Rapid Transit (BRT) – Duke/Durham/RTP	2045 – Duke, NCCU to RTP
Bus Rapid Transit (BRT) - Chapel Hill/RTP	2055 – Chapel Hill, UNC to RTP
Bus Service – frequency, coverage and connection improvements, especially major corridors	2030 – Short-range plans
Bus - amenity and access improvements	2030 – All transit systems
Express Bus	2041 – White Cross/UNC 2041 – Chapel Hill/Hillsborough 2041– Chapel Hill/Pittsboro 2046 – Durham/Butner and more
Bus Advantage – BRT/bus on HOV lanes	2040 – on NC 147/I-885 from Briggs Ave to I-40 2050 – on I-40 from NC 54 to RTP

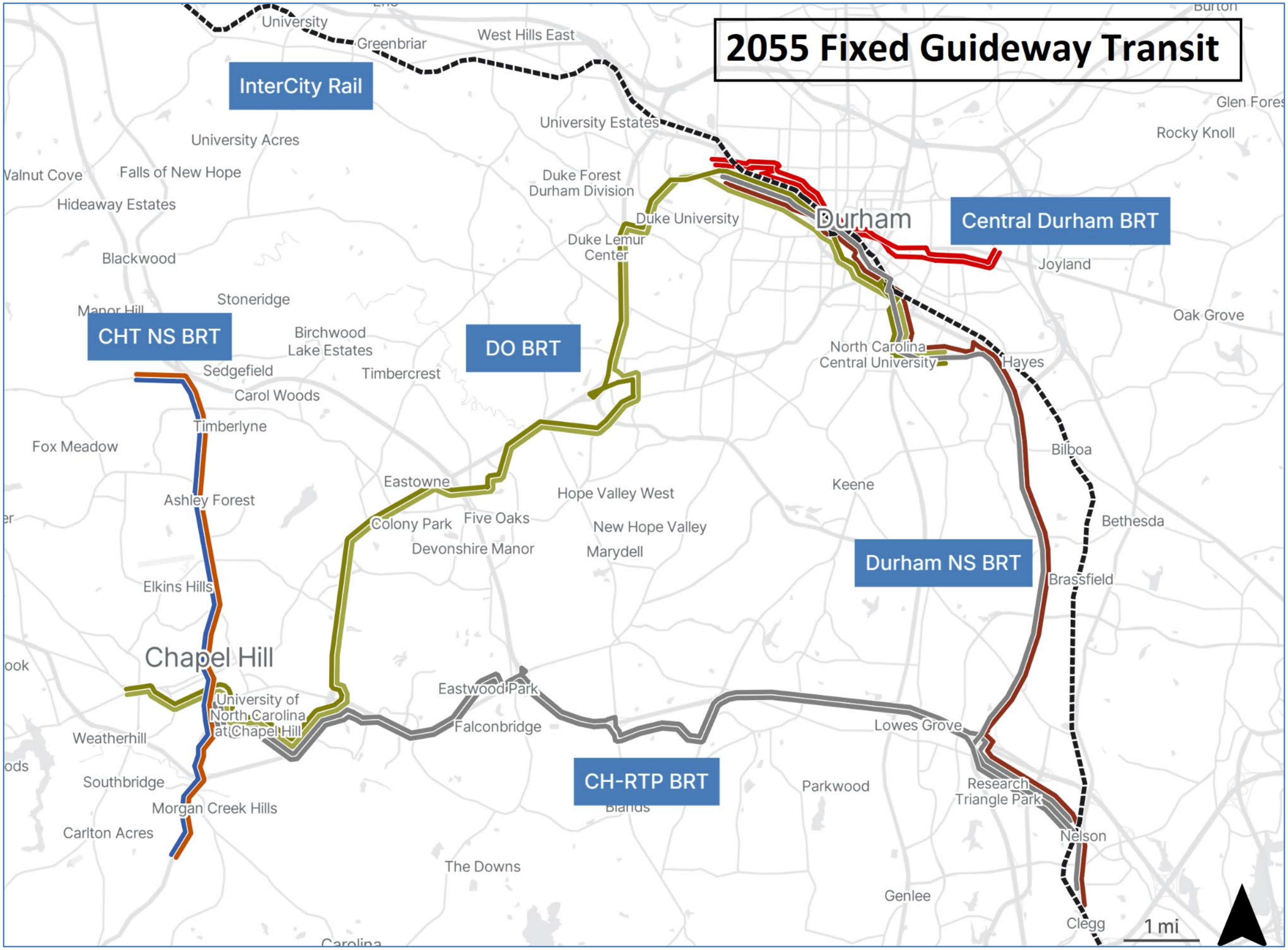
Transit Maps

The following page is a map of the intercity passenger rail transit (ICR), and bus rapid transit (BRT) for the Preferred Option and the link to the bus service map is listed below. Fixed-route bus services are identified in the MTP for the year 2055 for purposes of transportation modeling but the MTP does not list those individual bus transit projects. That service can change routing, bus frequency and service hours relatively frequently for the purpose of a 30-year long-range plan.

It should be noted that the ICR and BRT lines are to show the intent to serve major transit markets. They are for illustrative purposes only and are not intended to show detailed routing for transit services that are years, if not decades, from implementation.
Routing details will be set in later, more focused studies.

Two interactive, online transit maps are also available for the Preferred Option:

- Fixed Guideway Transit Map
- Bus Route Map


2055 Fixed Guideway Transit
InterCity Rail
Central Durham BRT
CHT NS BRT
DO BRT
Durham NS BRT
CH-RTP BRT
Durham
Chapel Hill
University of North Carolina at Chapel Hill
North Carolina Central University
Duke University
Research Triangle Park
1 mi

Bicycle and Pedestrian

Summary

The 2055 MTP does not specifically list all of the bicycle and pedestrian projects. The local jurisdictions and counties have identified, and in many cases prioritized, these projects and have coordinated their interaction in the jurisdiction boundary areas through the TW TPO. As a result, the 2055 MTP defers to those local government processes and documents.

Local Plans

Bicycle
TW TPO adopted a Comprehensive Transportation Plan (CTP) in May 2017 in cooperation with the North Carolina Department of Transportation (NCDOT). The CTP lists all the local bicycle projects from the jurisdiction and county plans in the TPO area as of the 2017 adoption date. Below is the web link to the Bike-Ped-Multiuse map and the tables in the CTP document provide information on those projects.

- CTP Web site

The local plans provide details on the planned facilities at the following links:
- Carrboro Comprehensive Bicycle Transportation Plan (2021)
- Chapel Hill Mobility and Connectivity Plan (2020)
- Chatham County Bicycle Plan (2011)
- Durham City and County Comprehensive Bicycle Plan (2006)
- Durham Bike+Walk Implementation Plan (2017)
- Hillsborough Community Connectivity Plan (2009, revised 2014 and 2017)

Pedestrian
Local pedestrian plans include:
- Chapel Hill Mobility and Connectivity Plan (2020)
- Durham Walks! Pedestrian Plan (2006)
- Durham Bike+Walk Implementation Plan (2017)
- Hillsborough Community Connectivity Plan (2009, revised 2014 and 2017)

TPO Policy

The TPO bicycle and pedestrian policy basically expects any roadway or other transportation project, whether it is a new or improved facility, to include appropriate pedestrian and bicycle accommodations. That policy provides extensive integration of bicycle and pedestrian needs into the design and construction of new and improved highway and other transportation projects. In addition, guidelines from the N.C. Department of Transportation, the American Association of State Highway and Transportation Officials (AASHTO), the National Association of City Transportation Officials (NACTO), and other related guidelines provide planning and design guidance for use when building new projects or making changes to existing infrastructure.

Although the 2055 MTP does not list the individual bicycle, pedestrian and multiuse path projects, the 2055 MTP requires an estimate of the level of investment for purposes of the financial plan. The TW TPO reviewed local plans and made the following estimates of infrastructure in those plans:

- 175 miles of sidewalks per decade;
- 70 miles of shared use paths per decade;
- 80 miles of protected bike lanes per decade; and,
- 20 miles of bicycle boulevards per decade.

A total of approximately 20 miles of the shared use paths and 30 miles of the sidewalk/bike lanes will be constructed as part of roadway modernization projects.

Financial Analysis

Background and Assumptions

This document provides:

- Narratives details of the financial analysis tables.
- Graphs of the level of investment in different modes.

The TPO created and reviewed three financial projections in the Preferred Option. The Preferred Option uses the 2050 MTP as a starting point and makes necessary refinements because it provides the most funding for transit, bicycle, and pedestrian projects. The key revenue sources and assumptions include:

1. “Traditional” revenues (2026-2055)
    - State and federal funds based on:
        - The current State Transportation Improvement Program (STIP), which identifies State and federal funding sources for projects over the next ten years;
        - NC Moves report and NCDOT revenue model, which estimate available transportation funding over the next few decades; and,
        - The financial plan follows the Strategic Transportation Initiative (STI) process for funding projects for the first five years, i.e., 2026-2030.
    - Continuation of county-level transit sales taxes
    - Past patterns for other sources (e.g., local bonds and revenue, developer-built projects)
2. NC FIRST Commission recommendation for additional <u>state</u> revenues (2036-2055):
    - The TPO will receive an amount based on the average share of STI funds that the TPO has received in previous rounds of Prioritization (P3 through P7); and,
    - The allocation will not go through STI, and therefore provides the TPO greater latitude to determine the investment target.
3. Additional <u>local/regional</u> revenues (2026-2055):
    - Based on the current revenues from the ½ cent transit sales tax, a one cent sales tax increase is assumed for the transit and bicycle and pedestrian projects.

Financial Table

This section provides additional information on the financial estimate. The columns break out the costs and revenues by decade, as required by federal guidelines. The values are in 2026 constant dollars, i.e., no inflation factors are applied. The itemized costs of highway, transit and bicycle/pedestrian projects in the MTP are also in 2026 constant dollars.

Roadways and Alternative Transportation -- Costs

Statewide, Regional and Division – These values are the sum of the roadway projects in the Preferred Option, and are broken out by the STI funding category, i.e., statewide, etc.

Roadway Maintenance and Operations – These cost values equal the revenue that will be available for maintenance and operations, which can only be invested in maintenance and operations.

Bicycle and Pedestrian -- The cost to implement the bicycle and pedestrian projects in the long-range local plans of counties and jurisdictions in the TW TPO is $3 billion. The financial plan values are the amount that will be available for bicycle and pedestrian projects, which will rely on NC First Commission, developer-built, local revenue, STBG-DA and CMAQ funding. The expected investment in these projects is expected to increase over the years of the first decade. The NC First Commission funding will not be available until the second and third decades.

Transportation Demand Management, Intelligent Transportation Systems, and Transportation System Management – A fixed amount investment per decade is based on current patterns of investment in these types of transportation projects.

Roadways and Alternative Transportation -- Revenues

Statewide, Regional and Division – These revenues are an estimate of the funding that would be available based on NCDOT's STI Prioritization process and current revenue forecasts. They are broken by the STI funding category, i.e., statewide, etc.

Roadway Maintenance and Operations – These revenue values can only be invested in maintenance, operations, and some other related costs.

Regional (State and Federal) – non roadways – STI allocation designates a small percent of the total available Regional funding for non-highway uses.

Division (State and Federal) – non roadways – STI allocation designates a small percent of the total available Division funding for non-highway uses.

Local/private - Roadways – This number is the value of the roadways that will be built by local governments and private developers. Most of these roadways will be connector roads.

Local/private – Bicycle and Pedestrian – This number is based on an estimate of past values. It is the value of the bicycle and pedestrian projects that will be built by local governments (e.g., financed by bonds) and private developers (e.g., related to development projects).

STBG-DA and CMAQ – This value is based on the record of revenues from the Surface Transportation Block Grant – Direct Apportionment and Congestion Management Air Quality federal funding grants that are provided to the TW TPO annually. TPO policy directs this funding to non-highway investments.

NC FIRST Commission – This value assumes that the recommended new transportation funding that the NC FIRST Commission identified will become available in 2031 and will be allocated in the same manner as previous Prioritization cycles (P3 through P7).

Public Transportation – Transit Plan

The cost estimate uses the county transit plan and further projects it into 2055, plus it adds new projects from 2041 to 2055.

Revenue and Investment Summaries

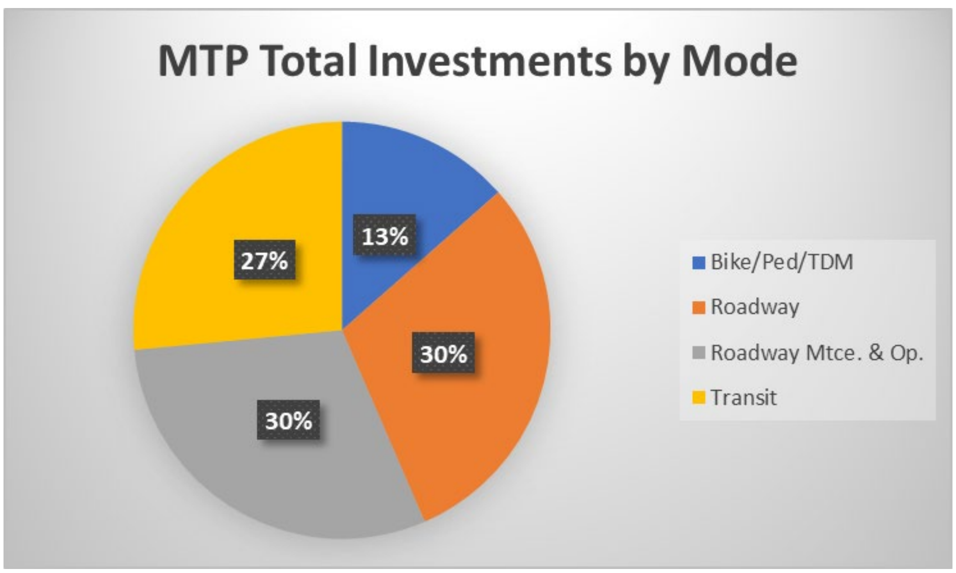
The revenue forecasts are shown in the following table by revenue source:

Revenue Forecasts in Constant (2026) Dollars:

Fund Sources	2026 Dollars
STI	**6,569,326,027.53**
Highway Fund (M&O)	**3,701,490,867.98**
Transit Local + Federal	**4,752,894,580.39**
NC FIRST Commission	**3,662,454,389.75**
Additional Local Tax/Fee	**4,422,227,961.47**
CMAQ, HSIP, & CRP	**207,370,433.18**
Fed Bridge	**97,391,023.39**
Total(All)	**23,413,155,283.69**

The pie graph and table below show the total and percent of investment by mode. Roadway maintenance and operations, roadway and transit have a similar level of investment, while Bike/Ped is at a relatively lower level.

MTP Investment	($ in billions)	% of Total
Bike/Ped/TDM	2.7	14%
Roadway	6.0	30%
Roadway Mtce. & Op.	6.0	30%
Transit	5.3	27%
Total	20.0	100%



MOE (Measures of Effectiveness)

Background

Measures of effectiveness (MOE) from the Triangle Regional Model (TRM) provide general, system-wide indicators for travel volume, mobility, travel time, congestion, and mode choice. The measures are not specific to a particular roadway or travel corridor but instead cover the entire transportation system, and therefore are useful for comparing the effectiveness of the Preferred Option with the 2020 Base Year and the 2055 Existing Plus Committed (E+C) no build scenarios. Most of the data used for calculating these Performance Measures comes from the TRM, which is a travel demand model that is capable of forecasting future transportation metrics based on a set of assumptions concerning the highway and transit network, and land use (i.e., location of population and employment).

This document presents and compares the MOEs for three transportation scenarios:

- 2020 Base Year – This is a model of the existing transportation network.
- 2055 E+C – This is the population and employment for the year 2055 on the existing transportation network, plus any projects that are currently committed for completion. This is a baseline scenario which could be called the "no-build" scenario.
- 2055 – This is the population and employment for the year 2055, using the land use scenario, and a transportation network that includes the highway and transit improvements in the Preferred Option.

Measures

The next section summarizes the key trends of the TRM measures. A table of all the measures follows that section. The TW TPO will post additional performance measures.

2055 MTP -- Preferred Option

Measures of Effectiveness for the <u>TW TPO</u>

Summary

2055 Performance Measure	Deficiency-Base	All Together	Increase (%) to Base	Preferred Option	Increase (%) to Base
VMT - WeekDay	19,430,923	19,215,989	-1.1%	19,480,831	0.26%
VHT - WeekDay	459,585	441,758	-3.9%	441,140	-4.01%
PMT - WeekDay	385,041	988,070	156.6%	990592	157.27%

<u>Key Measures</u>

VMT: total vehicle miles traveled in the TW TPO
VHT: total vehicle hours traveled in the TW TPO
PMT: total passenger miles traveled in the TW TPO on the transit system

Corridor Performance Measure

The TPO major corridor map can be reached via the weblink. Travel Time Index is the average travel time divided by the free-flow travel time. Percent of Extra Travel Time %ET = TTI – 1, which is a measure of peak traffic congestion.

%ET ≥ 50% (TTI≥1.5): moderate to severe congestion

2055 (E+C) - Base	
Top 10 TTI/%Extra Time	
Corridor Name	%Extra Time
US 70 East	84%
I-85 South	71%
I-40 East	57%
I-40 West	55%
US 15-501 North	52%
NC 751	46%
US 70 West	43%
I-885 North	38%
NC 54 East	35%
NC 98	34%

2055 Preferred Option	
TOP 10 TTI/%Extra Time	
Name	% Extra Time
US 15-501 North	51%
US 70 East	50%
I-40 West	42%
I-40 East	34%
NC 98	32%
I-885 North	31%
NC 86 South	24%
NC 751	23%
I-85 South	22%
NC 54 East	20%

Detailed Table – Measures of Effectiveness

Measurement	Preferred	2055 E+C	Base 2020
Performance Measures			
Total VMT (All Facility - no C Connectors)	19,480,831	19,430,807	13,780,559
Total VHT (daily)	441,140	459,591	290,778
Average Speed			
- Daily	44.2	42.3	47.4
- AM	45.5	44.0	48.1
- PM	41.6	39.2	45.3
Average Speed by Facility (miles/hour)			
Daily			
- Arterial	38.0	36.7	39.7
- Collector	36.9	37.1	39.0
- Freeway	56.4	52.4	60.8
- Local	25.7	25.5	27.2
- MLHighway	47.1	52.2	52.8
- MajorArterial	35.0	34.6	38.5
- MajorCollector	38.1	36.6	39.6
- Superstreet	36.5		
- TLHighway	53.8	52.8	53.8
PM Period			
- Arterial	36.5	34.7	38.8
- Collector	35.6	35.2	38.1
- Freeway	53.1	48.2	58.3
- Local	25.3	25.1	26.9
- MLHighway	45.4	51.0	52.8
- MajorArterial	33.4	32.7	37.3
- MajorCollector	37.0	34.8	38.2
- Superstreet	33.9		
- TLHighway	53.4	51.5	53.7
Daily Average Travel Length - All Person Trips			
- Travel Distance	6.3	5.0	6.4
- Travel Time	8.9	7.6	8.8
Daily Average Travel Length - Work Trips			
- Travel Distance	10.3	9.8	10.4
- Travel Time	13.6	13.9	13.7
Peak(PM) Average Travel Length - All Person Trips			
- Travel Distance	6.2	5.0	6.3
- Travel Time	8.8	7.5	8.7
Percent of VMT experiencing congestion			
- Daily	2.2%	4.3%	0.1%
- PM	4.0%	9.0%	0.2%

2055 MTP -- Preferred Option

Measures of Effectiveness for the TW TPO

Measurement	Preferred	2055 E+C	Base 2020
Percent of VMT experiencing congestion by Facility			
Daily			
- Arterial	0.3%	0.9%	0.1%
- Collector	0.2%	0.3%	0.0%
- Freeway	3.6%	7.6%	0.0%
- Local	0.1%	0.2%	0.1%
- MLHighway	0.5%	0.0%	0.0%
- MajorArterial	0.9%	1.6%	0.3%
- MajorCollector	0.0%	1.7%	0.0%
- Superstreet	6.4%		
- TLHighway	0.0%	0.0%	0.0%
Mode Share Measures			
All Trips - Daily			
- Drive alone (single occupant vehicle -SOV)	1,372,566	1,416,639	950,669
- Carpool (Share ride -HOV)	1,036,703	1,051,621	701,527
- Bus	59,727	71,496	42,916
- BRT	34,046	2,288	0
- Commuter Rail	8,097		
- NHB All Transit	49,223	18,618	9,067
All Trips - Peak Hours (PM)			
- Drive alone (single occupant vehicle -SOV)	336,169	348,700	236,163
- Carpool (Share ride -HOV)	255,733	259,867	173,308
- Bus	13,056	16,123	10,643
- BRT	9,652	803	0
- Commuter Rail	2,471		
- NHB All Transit	11,751	4,000	2,086
Work Trips - Daily			
- Drive alone (single occupant vehicle -SOV)	190,481	192,432	138,382
- Carpool (Share ride -HOV)	20,807	20,632	14,140
- Non-Motorized (Bike and Walk -NM)	15,641	15,274	6,431
- Bus	5,603	7,991	6,466
- BRT	5,351	68	0
- Commuter Rail	135		
Home Based Trips - Daily			
- Drive alone (single occupant vehicle -SOV)	729,093		515,798
- Carpool (Share ride -HOV)	627,640		430,882
- Bus	23,411		23,059
- BRT	34,046		0
- Commuter Rail	8,097		

2055 MTP -- Preferred Option

Measures of Effectiveness for the TW TPO

Measurement	Preferred	2055 E+C	Base 2020
Demographics Measures			
Household Population	647,513	644,006	449,791
Employment	571,419	571,567	310,491
Student Group Quarters	22,103		18,075
Total Daily Person Trips	3,295,488	3,292,021	2,116,141
Work Person Trips	238,017	236,397	165,419
Total Daily CV Trips	423,184	423,029	250,978
Daily Truck Trips	95,200	95,136	58,953
Other Measures			
Lane Miles			
Arterial	818	742	740
Collector	465	436	426
Freeway	550	500	455
Local	358	352	330
MLHighway	65	67	67
MajorArterial	433	455	461
MajorCollector	99		97
Superstreet	31	97	
TLHighway	4	4	4
TransitOnly	352	334	125

Measurement	Total	Total	Total
Transit Measures			
Transit Ridership by Agency (Prod. Ends)			
Chapel Hill Transit	47,583	41,677	23,012
Duke	12,808	13,004	9,009
GoDurham	53,947	36,910	24,218
GoTriangle	303,528	96,472	18,796
Orange County Public Transit	225	188	117
PART	542	237	180
BRT Ridership By Prod. Ends by Route			
Apex_to_RTC_BRT	3,874		
CH-RTP BRT HOV EB Preferred	3,813		
CH-RTP BRT HOV WB Preferred	5,484		
CHT NS BRT NB	3,222		
CHT NS BRT SB	4,519		
Central Durham BRT EB	3,250		
Central Durham BRT WB	5,344		
DO BRT EB Ext	8,349		
DO BRT WB Ext	8,635		
Durham NS BRT HOV EB	11,771		
Durham NS BRT HOV WB	13,044		
Rail Ridership By Prod. Ends by Route			

Carolinian: Durham to Raleigh	720		
Carolinian: Raleigh to Durham	329		
Piedmont: Hillsborough to Raleigh Preferred	2,605		
Piedmont: Raleigh to Hillsborough Preferred	2,814		
Piedmont: Raleigh to Wake Forest	272		
Piedmont: Wake Forest to Raleigh	931		
Total Rail Ridership	7,671		