

2035 LRTP and CTP Alternatives – Detailed Description

Purpose of Alternatives

The DCHC MPO plans to develop and evaluate several Alternatives in the process to create the 2035 Long Range Transportation Plan. Each Alternative will be a combination of a Transportation System, which includes a set of highway, transit and other transportation improvements, and a Land Use Scenario that distributes the forecasted population and employment for the year 2035. These Alternatives will be run in the Triangle Regional Model (TRM) to produce a set of transportation performance measures that describe how the transportation system will handle the travel demand generated by a particular population and employment distribution in the year 2035. These performance measures, such as the level of roadway congestion, average travel time, and transit ridership, will be used to evaluate and compare the various Alternatives.

In the next major step in the 2035 LRTP development process, the public, elected officials and technical staff will use this evaluation and comparison information to create a single Alternative that best meets the MPO's Goals and Objectives and the fiscal constrain requirement that demands that the project costs do not exceed the expected funding revenues. This final Alternative is called the Preferred Option, and it will also go through an extensive public review process similar to that of the Alternatives.

It should be noted that it is very unlikely that one of the Alternatives in its entirety would be advanced as the Preferred Option. These Alternatives have been designed to emphasize a particular mode in meeting the future travel demands so that the public and technical staff can understand how well the designated mode works. For example, the Intensive Highway Alternative has a high level of High-Occupancy Vehicle/Toll (HOV/HOT), road widenings and new roads, a relatively low level of bus transit and no fixed-guideway (e.g., light rail) to meet the future demands. The Alternative is helpful in understanding the effect of increased roadway capacity on specific corridor congestion, travel time, mode share and other performance measures. This knowledge will be used to develop the Preferred Option, which is likely to have a lower level of roadway expansion than the Intensive Highway Alternative and a more balanced modal approach.

Development of Alternatives

The table on the page 3 shows the combinations of Transportation Systems and Land Use Scenarios that will be modeled for the 2035 LRTP development process. Each of these Transportation Systems will be combined with one, or more, Land Use Scenarios to create an Alternative.

- The first two Transportation Systems (#1 and #2), the 2030 LRTP and Comprehensive Transportation Plan, will be used to compare with the 2035 LRTP Alternatives, and therefore will not form Alternatives.
- The next five Transportation Systems (#3 through #7), are Alternatives for the 2035 LRTP.

There is a unique set of Socioeconomic Data (SE Data) for each Land Use Scenario. The Baseline Land Use Scenario, for example, is the SE Data approved by the Transportation Advisory Committee (TAC) for use in developing the 2035 LRTP and is based on the current land use plans and policies of the local jurisdictions in the DCHC MPO's planning area. The other Land Use Scenarios assume certain changes to current land use policies.

The Transportation System and Land Use Scenarios have only been combined into logical matches. For example, the Intensive Highway Transportation System assumes many highway improvements, relatively few transit improvements and no fixed-guideway service. Thus, this System was not matched with the Transit Node Land Use Scenario, which is designed to support fixed-guideway stations. There are 15 combinations of Transportation Systems and Land Use Scenarios to form the Alternatives. The System Preservation (#7) will not require separate travel demand data because the TRM (model) is not designed to be sensitive to the levels of Intelligent Transportation Systems (ITS), Travel Demand Management (TDM) and the other related programs and policies inherent in the System Preservation Alternative. The impact of these particular programs and policies will be accounted for after the model is run (these are sometimes called off-model credits).

Description of Transportation Systems

Each Transportation System is composed of many highway, transit and other transportation projects. A review of the long list of projects is a difficult task. The table on page 4 provides a summary of the major projects in each of the Transportation Systems to highlight the level and type of investment in the three major modes – highway, bus transit and fixed-guideway.

The detailed Highway and Transit project lists are presented at the end of this section.

To compute the transportation system performance measures, the Triangle Regional Model (TRM) does not account for transportation facilities and services related to bicycles, pedestrians, Travel Demand Management (TDM), Transportation System Management (TSM), and Intelligent Transportation System (ITS). These facilities and services are accounted for after the model process occurs (called post processing adjustments), and therefore they are not listed in the Transportation System project lists.

Combinations of Transportation Systems and Land Use Scenarios (1)

No.	Transportation System	Land Use Scenarios				
		Baseline	Constrained	Buildout	Corridor	Transit Nodes
Benchmarks for comparison						
1	2030 Adopted LRTP Currently adopted plan	1a				
2	Comprehensive Transportation Plan Vision Plan to address population and employment buildout beyond the year 2035; no budget constraint	2a		2b		
2035 LRTP Alternatives						
3	Intensive Highway Emphasize highway investment to address transportation needs	3a	3b		3c	
4	Intensive Fixed Guideway Light rail and other grade separated transit	4a			4b	4c
5	Intensive Bus Transit Emphasize bus transit service to address transportation needs	5a			5b	5c
6	Moderate Multimodal Continue current investment trends with some shift to non-automobile modes	6a			6b	6c
7	System Preservation (2) Preserve effectiveness of existing transportation using ITS, TDM, and CMS-TSM projects and policies					

- (1) Each combination of a Transportation System and Land Use Scenario creates an Alternative and will require a unique travel demand model run.
- (2) The Triangle Regional Model (TRM) is not designed to be very sensitive to changes in ITS, TDM, and CMS-TSM projects and policies. Therefore, the System Preservation Alternative will not require additional model runs.

Summary of Transportation Systems (Alternatives)⁽¹⁾

Transportation System	Highway	Bus Transit	Fixed Guideway
2030 LRTP	<ul style="list-style-type: none"> • 518 lane miles added • HOV/HOT on I-40 and part of NC 147 • Triangle Parkway (toll) • US 15-501 freeway • 7 “loop” projects 	<ul style="list-style-type: none"> • Major regular, express and regional bus expansion • Peak headways 10-15 minutes • Off-Peak headways 20-30 minutes 	<ul style="list-style-type: none"> • Light Rail -- Durham to Raleigh • Fixed guideway -- Durham to Chapel Hill
CTP	<ul style="list-style-type: none"> • 703 lane miles added • HOV/HOT on I-40, NC 147, East End Connector, US 70 and I-85 • Triangle Parkway (toll) • US 15-501 freeway • 7 “loop” projects 	<ul style="list-style-type: none"> • Major regular, express and regional bus expansion • Peak headways 5-7 minutes • Off-Peak headways 7-15 minutes • BRT in Chapel Hill • Includes all STAC recommendations 	<ul style="list-style-type: none"> • Light Rail -- Durham to Raleigh • Fixed guideway -- Durham to Chapel Hill • Includes all STAC recommendations
Intensive Highway	<ul style="list-style-type: none"> • 665 lane miles added • HOV/HOT on I-40, I-85 and part of NC 147 • Triangle Parkway (toll) • US 15-501 freeway • 7 “loop” projects 	<ul style="list-style-type: none"> • Minor regular, express and regional bus expansion • Peak headways 15-30 minutes • Off-Peak headways 30-45 minutes 	<ul style="list-style-type: none"> • No fixed guideway service
Intensive Fixed Guideway	<ul style="list-style-type: none"> • 276 lane miles added • No HOV/HOT • Triangle Parkway (toll) • 6 “loop” projects 	<ul style="list-style-type: none"> • Moderate regular, express and regional bus expansion • Peak headways 7-10 minutes • Off-Peak headways 15-20 minutes • BRT in Chapel Hill • Includes all STAC recommendations 	<ul style="list-style-type: none"> • Light Rail -- Durham to Raleigh • Fixed guideway -- Durham to Chapel Hill • Includes all STAC recommendations
Intensive Bus Transit	<ul style="list-style-type: none"> • 324 lane miles added • HOV/HOT on I-40 • Triangle Parkway (toll) • 6 “loop” projects 	<ul style="list-style-type: none"> • Major regular, express and regional bus expansion • Peak headways 5-7 minutes • Off-Peak headways 10-15 minutes 	<ul style="list-style-type: none"> • No fixed guideway service
Moderate Multimodal	<ul style="list-style-type: none"> • 285 lane miles added • No HOV/HOT • Triangle Parkway (toll) • 7 “loop” projects 	<ul style="list-style-type: none"> • Moderate regular, express and regional bus expansion • Peak headways 15 minutes • Off-Peak headways 30 minutes 	<ul style="list-style-type: none"> • Commuter Rail – Burlington to Raleigh; and Selma to Durham

(1) Some helpful definitions: **HOV/HOT** = High Occupancy Vehicle/Toll; lanes that can only be used by vehicles that pay a toll or have at least a specified number of passengers. **Headway** = minutes to wait before next bus arrives. **Peak** = period of highest travel, generally 7am-9am and 4pm-6pm. **BRT** = Bus Rapid Transit, which are buses on a separate roadway. **Fixed Guideway** = transit vehicles on traveling on separate track or roadway. **STAC** = Special Transit Advisory Commission, which was a regional commission that recommended major transit investments. **Loop** = Highway projects funded by the N.C. Highway Trust Fund – this funding is in addition to the standard transportation budget (i.e., Transportation Equity Formula).