DURHAM-CHAPEL HILL-CARRBORO MPO
METHODOLOGY FOR RANKING
METROPOLITAN TRANSPORATION IMPROVEMENT PROGRAM
PRIORITY PROJECT REQUESTS (FY 2009-2015)

INTRODUCTION

The purpose of the Regional Priority List is to facilitate determination of the region's project priorities to be used in development of a fiscally constrained Transportation Improvement Program (TIP). SAFETEA-LU calls for a TIP development process that documents a methodology for ranking project requests, reflects local and metropolitan goals, and addresses mobility, environmental and air quality goals.

OBJECTIVE

The methodology outlined below is designed to address multi-modal transportation needs and to ensure regional balance through the use of specific technical criteria. The Technical Coordinating Committee (TCC) will use the methodology to develop a draft Regional Priority List. This draft Priority List is to be used as a starting point or a reference base by the Transportation Advisory Committee (TAC) for the approval of a final Regional Priority List.

The TAC may reorder projects at its discretion to promote jurisdictional and geographical balance, or based upon the TAC members' knowledge of the urban area and the policies of their communities. Therefore, the TCC will make its technical recommendation on a draft Priority List based on the methodology described in this document, and the TAC will then be afforded the opportunity to make any changes it deems appropriate.

METHODOLOGY GOALS

- Produce a program of projects (or project priorities) which satisfies MPO, local and state goals, and addresses SAFETEA-LU policies of system preservation, operational efficiency in the movement of people and goods, multi/inter-modalism, and air quality mandates.

- Be simple enough for project-level analysis without requiring unnecessary data collection.

- Be understandable by the general public.

PROCEDURE FOR RANKING PROJECTS

1. **Goal Setting For Regional Priority List**

   Since the Regional Priority List should be a subset of the DCHC MPO Long Range Transportation Plan (LRTP), the goals for the regional priority list are the same as the DCHC MPO goals and objectives in the 2030 LRTP.

2. **Ranking Criteria**

   The screening criteria for project ranking fall into four broad groups:

a. Regional Goals - How well does the project meet the adopted regional goals? Is the project an element of the current long-range plan? Does it implement community objectives (for the intrastate system, does it meet NCDOT mobility objectives)? Does the project have a broad base of local support?

b. Cost Effectiveness - How much benefit does the project offer compared to the estimated cost?

c. Timing Factor - Is timing a critical element for the project (one-time opportunity)? Will the opportunity to do the project be lost if it is not in the current priority cycle?

d. Specific Project Merits - How many points does a project receive using scoring criteria?

APPLICATION OF THE METHODOLOGY

1. There are three separate ranking methodologies based on the primary mode of transportation: 1) highway; 2) bicycle and pedestrian; and 3) transit. ITS, TSM, and TDM projects would be included in whichever mode best fits the specific project. The three ranking methodologies are independent of each other. Points for different modes are on different scales and are not comparable.

2. Local jurisdictions may elect to use the ranking methodology to create their local priority lists but are not required to do so. When the local priority lists are submitted to the MPO, local jurisdictions are requested to provide project information and, in some cases, award points in categories. Some point categories can only be applied by the MPO once all projects have been submitted and evaluated.

3. The TCC first examines the consistency in which local jurisdictions have responded to the project criteria. If the criteria are not applied consistently, the TCC can agree to change some criteria responses for consistency among all projects.

4. Project criteria points are weighted and totaled for each project request using the three modal ranking methodologies outlined on pages 7 through 10 of this document.

3. Projects receiving the same number of project criteria points are ordered by the local ranking. If the local ranking is also the same (for example, Orange-1 vs. Chapel Hill-1), then the project with the most additional local rankings will be ranked higher. If the projects also have the same number of additional local rankings, then the project with the highest additional local ranking will be ranked higher.

4. The draft Regional Priority List will consist of three modal priority lists: 1) highway; 2) bicycle and pedestrian; and 3) transit. Projects with the highest number of project criteria points are selected first – taking into consideration local priority rankings, geographical balance, and a mixture of project types.

5. The draft Regional Priority List is then forwarded to the TAC, as the TCC's recommended project priorities for the urban area.

6. The TAC will use the draft Regional Priority List as a starting point for the creation of the final Regional Priority List. The TAC may wish to combine the three modal lists into one comprehensive list. If this is done, it is important to note that the points are not comparable across different modes.

MODAL RANKING METHODOLOGIES IN DETAIL

Highway

All seven point categories are weighted equally. A maximum of four points can be received for each point category. After roadway projects are ranked, the projects will be sorted by estimated cost into two lists so that high cost and low cost projects can be considered separately.

1. *Travel Demand* - This category awards points to projects based on the level of travel demand. For road projects, travel demand is measured by the volume to capacity (V/C) ratio based on the 2035 socio-economic data on the existing plus committed network. For new road facilities in which traffic counts are not available, volumes on a parallel existing facility may be used. Projects must have a V/C ratio of at least 0.80 to receive points. All projects with a V/C greater than 0.80 will be divided equally into four quartiles based on V/C ratio. Assigning points by quartile will ensure that points are distributed evenly and that projects are compared relative to each other. Traffic signal systems, Intelligent Transportation Systems (ITS), and Transportation Demand Management (TDM) projects receive four points because these projects reduce congestion system-wide.

   Local jurisdictions are asked to provide the V/C ratio for their local priorities. MPO staff will divide the projects into quartiles and award points.

2. *Safety (Accidents/100 Million Vehicle Miles)* - Safety points are awarded to projects with reported accident rates significantly greater than statewide averages for urban road segments – the statewide average is 330 to 370 accidents per 100 million vehicle miles (or, 330-370 ACC/100 MVM). Projects must have an accident rate of at least 300 ACC/100 MVM to receive points. All projects with an accident rate of at least 300 ACC/100 MVM will be divided equally into four quartiles based on accident rate. Assigning points by quartile will ensure that points are distributed evenly and that projects are compared relative to each other. Traffic signal systems, Intelligent Transportation Systems (ITS), and Transportation Demand Management (TDM) projects receive four points because these projects improve safety system-wide.

   Local jurisdictions are asked to provide the accident rate for their local priorities. MPO staff will divide the projects into quartiles and award points.

3. *Environmental Impacts – natural environment* - Points are awarded based on the impact on wetlands, streams, wildlife habitat, parks, and air quality.

   The MPO will provide local jurisdictions a base map of environmental areas. Local jurisdictions are asked to apply the ranking methodology based on a GIS analysis.

4. Community Impacts – Points are awarded based on the impact on neighborhoods and communities.

   Local jurisdictions are asked to apply the ranking methodology based on a GIS analysis.

5. *Environmental Justice-* Points are awarded based on the impact on low-income and minority populations. This item is designed to penalize projects that may have negative impacts on low income areas or federally recognized disadvantaged groups.

   The MPO will provide local jurisdictions a base map that indicates which Transportation Analysis Zones have a high percentage of minority and low income populations. Local jurisdictions are asked to apply the ranking methodology based on a GIS analysis.

6. *Funding Status in the Transportation Improvement Program (TIP)* - Points are awarded to projects based on the percentage of the total project cost that is funded in the currently adopted Transportation Improvement Program (TIP), or if the project has postyear status in the TIP.

   Local jurisdictions are asked to provide funding status and apply the ranking methodology.

7. *Benefits to Other Modes of Transportation or Deployment of New Technology* – Points are awarded to projects based on how they benefit other modes of transportation and deploy new technology (carpool, transit, bicycle, pedestrian, ITS, and TDM). For example, a road widening that adds additional travel lanes, bicycle lanes, and sidewalks on a transit route would benefit 3 other modes.

   Local jurisdictions are asked to describe the benefits and apply the ranking methodology.

Bicycle and Pedestrian

All eight point categories are weighted equally. A maximum of three points can be received for each point category.

1. *Street Classification* - This category awards points to projects based on the type of road the bicycle and pedestrian facility is provided on. Off-road greenways are based on the parallel or alternate roadways. More points are provided for higher classification facilities to reflect the safety hazard for bicyclists and pedestrians on larger busier roadways. The street classification should be taken from the Federal Functional Classification maps on the NCDOT website.

   Local jurisdictions are asked to provide the street classification and apply the ranking methodology.

2. *Right-of-Way Availability* – This category awards points to projects based on the right-of-way available for the project. Right-of-way should be estimated based on the local jurisdiction's best knowledge of the area. Extensive research into property deeds is not required.

   Local jurisdictions are asked to provide an estimate of right-of-way and apply the ranking methodology.

3. *Travel Demand* – This category awards points to projects based on the proximity to schools, colleges, major retail centers, transit routes, and major employment centers. The bicycle and pedestrian project travel demand worksheet will be used to assign interim points for each project. Projects will be divided equally into four quartiles based on the interim points. Final points will be assigned by quartile to ensure that points are distributed evenly and that projects are compared relative to each other.

   The interim points are assigned using two different tables for bicycle/multi-use paths and pedestrian projects to reflect the different travel times and accessibility of the two modes. The numbers of land uses or amenities within the specified distance for the project are recorded on the worksheet. The worksheet multiplies the number of land uses by the appropriate points and total points are calculated by the worksheet. The land uses considered are schools (public or private elementary, middle, or high schools), colleges and universities, major retail centers (major as defined by the local jurisdiction), major employment centers (major as defined by the local

jurisdiction), and transit routes. If a project includes both bicycle and pedestrian improvements, the travel demand points are added together for a total.

Local jurisdictions are asked to provide the number of land uses served by the project in the travel demand worksheet. MPO staff will divide the projects into quartiles and award final points.

4. *Environmental Impacts – natural environment* - Points are awarded based on the impact on wetlands, streams, wildlife habitat, parks, and air quality.

   The MPO will provide local jurisdictions a base map of environmental areas. Local jurisdictions are asked to apply the ranking methodology based on a GIS analysis.

5. Community Impacts – Points are awarded based on the impact on neighborhoods and communities. Population density should also be considered for the benefits to the community. The MPO will provide local jurisdictions a map of population density.

   Local jurisdictions are asked to apply the ranking methodology based on a GIS analysis.

6. *Environmental Justice* - Points are awarded based on the impact on low-income and minority populations. This item is designed to reward projects that may have positive impacts on low income areas or federally recognized disadvantaged groups. Most bicycle and pedestrian projects directly benefit neighborhoods by increasing accessibility and safety. If negative impacts are expected, the project will not receive points.

   The MPO will provide local jurisdictions a base map that indicates which Transportation Analysis Zones have a high percentage of minority and low income populations. Local jurisdictions are asked to apply the ranking methodology based on a GIS analysis.

7. *Connectivity to Existing Bicycle and Pedestrian Facilities* - Points are awarded based on if projects connect to existing bicycle and pedestrian facilities. This will reward projects that extend the existing bicycle and pedestrian network. Projects will be divided equally into four quartiles based on the number of connections. Final points will be assigned by quartile to ensure that points are distributed evenly and that projects are compared relative to each other.

   Local jurisdictions are asked to provide a list of facilities that the project will connect. MPO staff will divide the projects into quartiles and award final points.

8. *Funding Status in the Transportation Improvement Program (TIP)* - Points are awarded to projects based on the percentage of the total project cost that is funded in the currently adopted Transportation Improvement Program (TIP), or if the project has postyear status in the TIP.

   Local jurisdictions are asked to provide funding status and apply the ranking methodology.

Transit

Transit projects are awarded points based on seven categories. A maximum of four points can be received for each point category. Essential services is weighted double the other point categories. Most projects will not receive points in every category because transit projects often have specific purposes.

After transit projects are ranked, the projects will be sorted into two lists for short- and long-term needs. These lists should correspond to what is shown as funded (short-term) and unfunded (long-term) in the TIP.

1. *Expansion of Existing Routes* - Projects that expand existing routes are awarded points based on travel demand on the existing route as is measured by the vehicle crowding or load factor. The load factor used will be the average daily riders divided by the product of the peak vehicle pullout and the average vehicle capacity. The load factor is calculated separately for bus and paratransit vehicles. Projects will be divided equally into four quartiles based on the load factor. Final points will be assigned by quartile to ensure that points are distributed evenly and that projects are compared relative to each other.

   Local jurisdictions are asked to provide the load factor. MPO staff will divide the projects into quartiles and award points.

2. *Regional Connectivity* – Projects receive points based on the number of connections to other transit systems. The transit systems considered are: DATA, Chapel Hill Transit, TTA, Orange Public Transit, Duke University Transit, Chatham Transit Network (must connect in Chatham County), and Capital Area Transit (CAT). These are the fixed route systems in the MPO with the exception of the Chatham Transit Network because Chatham County does not have a fixed route service.

   Local jurisdictions are asked to apply the ranking methodology.

3. *Essential Services* – Projects receive points based on if the project provides funds to maintain the current level of transit service. This category will award points for maintenance projects and replacement vehicles. This point category is weighted double to reflect the importance of maintaining the existing system.

   Local jurisdictions are asked to apply the ranking methodology.

4. *Enhancement of Existing Service of New Service* – Projects receive points based on the estimated increase in new riders. For new service, this should be based on surveys or other market research. For enhancements of existing service (bus shelters, ITS projects, etc.), this should be based on studies of similar projects. Jurisdictions are expected to document and justify their estimates. Projects will be divided equally into four quartiles based on the number of new riders. Final points will be assigned by quartile to ensure that points are distributed evenly and that projects are compared relative to each other.

   Local jurisdictions are asked to provide the number of new riders anticipated. MPO staff will divide the projects into quartiles and award points.

5. *Funding Status in the Transportation Improvement Program (TIP)* - Points are awarded to projects based on the percentage of the total project cost that is funded in the currently adopted Transportation Improvement Program (TIP), or if the project has post year status in the TIP.

   Local jurisdictions are asked to provide funding status and apply the ranking methodology.

6. *Environmental Impacts – natural environment* - Points are awarded based on the impact on wetlands, streams, wildlife habitat, parks, and air quality.

The MPO will provide local jurisdictions a base map of environmental areas. Local jurisdictions are asked to apply the ranking methodology based on a GIS analysis.

7. *Community Impacts* – Points are awarded based on the impact on neighborhoods and communities.

Local jurisdictions are asked to apply the ranking methodology based on a GIS analysis.

OBSERVATIONS

The order of transit priorities could vary significantly from year to year if anticipated funding sources are reduced or eliminated by Congress.

- Mandates (e.g., the American's with Disabilities Act) may take precedence when programming projects from the Regional Priority List in the TIP.

- The fiscal constraints of programming projects in the TIP may result in the programming of less expensive, lower ranked projects.

- Some lower ranking projects may be implemented earlier than a higher ranked, large project due to the time constraints associated with a more complex project (i.e., major investment studies, preparing environmental documents, designing the project, right-of way acquisition, etc.).

- The significance of ranking more than 25 projects is minimal, at best due, to the availability of project funds.

ROADWAY

	RANKING CRITERIA (MEASURES)	SCORE (points)	Category Weight
1	*Travel Demand*		1
	2035 volume to capacity ratio (v/c) on existing or parallel roadway		
	Traffic Signal System, TDM, ITS Projects	4	
	First quartile of ranked projects, v/c >0.80	4	
	Second quartile of ranked projects, v/c >0.80	3	
	Third quartile of ranked projects, v/c >0.80	2	
	Fourth quartile of ranked projects, v/c >0.80	1	
	v/c <= 0.80	0	
2	*Safety*		1
	Accident rate (accidents/100 million VMT)		
	Traffic Signal System, TDM, ITS Projects	4	
	First quartile of ranked projects, Accident Rate >300 accidents/100 million VMT	4	
	Second quartile of ranked projects, Accident Rate >300 accidents/100 million VMT	3	
	Third quartile of ranked projects, Accident Rate >300 accidents/100 million VMT	2	
	Fourth quartile of ranked projects, Accident Rate >300 accidents/100 million VMT	1	
	Accident Rate <=300 accidents/100 million VMT	0	
3	*Environmental Impacts - natural environment*		1
	Based air quality impacts and GIS analysis including wetlands, stream crossings, wildlife habitat, parks, etc.		
	No negative or adverse impacts or positive impact	4	
	Low negative or adverse impacts	3	
	Medium negative or adverse impacts	2	
	Medium-High negative or adverse impacts	1	
	High negative or adverse impacts no mitigation	0	
4	*Community Impacts*		1
	Based on GIS analysis including proximity to neighborhoods		
	No negative or adverse impacts or positive impact	4	
	Low negative or adverse impacts	3	
	Medium negative or adverse impacts	2	
	Medium-High negative or adverse impacts	1	
	High negative or adverse impacts no mitigation	0	
5	*Environmental Justice*		1
	Based on GIS analysis of low-income and minority areas (TAZ)		
	Positive impact	4	
	No negative or adverse impacts	3	
	Low negative or adverse impacts	2	
	Medium negative or adverse impacts	1	
	High negative or adverse impacts	0	
6	*Funding Status in TIP*		1
	Partially funded in current TIP cycle at least 25% of total cost (construction & ROW)	4	
	Partially funded in current TIP cycle at least 10% of total cost (construction & ROW)	3	
	Partially funded in current TIP cycle at least 5% of total cost (construction & ROW)	2	
	Partially funded in post year (construction & ROW)	1	
	Not programmed in TIP	0	
7	*Benefits to Other Modes of Transportation or Deployment of New Technology*		1
	Any 4 or more modes (Carpool, transit, bike, pedestrian, ITS, TDM)	4	
	Any 3 modes (Carpool, transit, bike, pedestrian, ITS, TDM)	3	
	Any 2 modes (Carpool, transit, bike, pedestrian, ITS, TDM)	2	
	Any 1 mode (Carpool, transit, bike, pedestrian, ITS, TDM)	1	
	No other modes	0	

BIKE/PED

	RANKING CRITERIA (MEASURES)	SCORE (points)	Category Weight
1	*Street Classification of Roadway or Parallel Roadway for Off-Road Facilities*		1
	Arterial	3	
	Collector	2	
	Local	1	
2	*Right-of-Way Availability*		1
	Adequate right-of-way available	3	
	Some right-of-way available	2	
	Much right-of-way needed	1	
	Major barriers to right-of-way acquisition	0	
3	*Travel Demand*		1
	Based on proximity to schools, colleges, parks, major retail centers, transit, and major employment centers (see attached worksheet)		
	First quartile of ranked projects	3	
	Second quartile of ranked projects	2	
	Third quartile of ranked projects	1	
	Fourth quartile of ranked projects	0	
4	*Environmental Impacts - natural environment*		1
	Based air quality impacts and GIS analysis including wetlands, stream crossings, wildlife habitat, parks, etc.		
	High positive impact	3	
	Medium positive impact	2	
	Low positive impact	1	
	Negative impact	0	
5	*Community Impacts*		1
	Based on GIS analysis including proximity to neighborhoods		
	High positive impact	3	
	Medium positive impact	2	
	Low positive impact	1	
	Negative impact	0	
6	*Environmental Justice*		1
	Based on GIS analysis of low-income and minority areas (TAZ)		
	High positive impact	3	
	Medium positive impact	2	
	Low positive impact	1	
	Negative impact	0	
7	*Connectivity to Existing Bicycle and Pedestrian Facilities*		1
	First quartile of ranked projects	3	
	Second quartile of ranked projects	2	
	Third quartile of ranked projects	1	
	Fourth quartile of ranked projects	0	
8	*Funding Status in TIP*		1
	Partially funded in current TIP cycle at least 25% of total cost (construction & ROW)	3	
	Partially funded in current TIP cycle at least 10% of total cost (construction & ROW)	2	
	Partially funded in post year (construction & ROW)	1	
	Not programmed in TIP	0	

BIKE/PED TRAVEL DEMAND WORKSHEET

For Bicycle Projects or Multi-Use Trails

A project will receive points based on its proximity to the following land uses:

		Proximity				
		# within 1 mile	2 points per #	# within 2 miles	1 point per #	Total Points
Land Use	Schools		0		0	
	Colleges		0		0	
	Parks		0		0	
	Major Retail Centers		0		0	
	Major Employment Centers		0		0	
	Transit Routes		0		0	
Total			0	+	0	**0**

For Pedestrian Projects

A project will receive points based on its proximity to the following land uses:

		Proximity				
		# within 1/4 mile	2 points per #	# within 1/2 mile	1 point per #	Total Points
Land Use	Schools		0		0	
	Colleges		0		0	
	Parks		0		0	
	Major Retail Centers		0		0	
	Major Employment Centers		0		0	
	Transit Routes		0		0	
Total			0	+	0	**0**

Projects will be ranked by total points and categorized into quartiles.
The final points for this travel demand will be based on the quartile.

	Points
First quartile of ranked projects	3
Second quartile of ranked projects	2
Third quartile of ranked projects	1
Fourth quartile of ranked projects	0

TRANSIT

	RANKING CRITERIA (MEASURES)	SCORE (points)	Category Weight
1	*Expansion of Existing Routes*		1
	Vehicle crowding (load factor) on a specific route (daily riders/peak vehicle capacity)		
	First quartile of ranked projects	4	
	Second quartile of ranked projects	3	
	Third quartile of ranked projects	2	
	Fourth quartile of ranked projects	1	
2	*Regional Connectivity*		1
	Connections to other transit systems		
	Provides 4 or more connections	4	
	Provides 3 connections	3	
	Provides 2 connections	2	
	Provides 1 connection	1	
	Does not provide a connection	0	
3	*Essential Services (maintenance or replacement vehicles)*		2
	Provides an essential service to maintain the current level of transit service	4	
	Does not provide an essential service	0	
4	*Enhancement of Existing Service or New Service*		1
	Estimated number of new riders		
	First quartile of ranked projects	4	
	Second quartile of ranked projects	3	
	Third quartile of ranked projects	2	
	Fourth quartile of ranked projects	1	
5	*Funding Status in TIP*		1
	Partially funded in current TIP cycle at least 25% of total cost	4	
	Partially funded in current TIP cycle at least 10% of total cost	3	
	Partially funded in current TIP cycle at least 5% of total cost	2	
	Partially funded in post year	1	
	Not programmed in TIP	0	
6	*Environmental Impacts - natural environment*		1
	Based air quality impacts and GIS analysis including wetlands, stream crossings, wildlife habitat, parks, etc.		
	High positive impact	4	
	Medium positive impact	3	
	Low positive impact	2	
	Low negative impact	1	
	High Negative impact	0	
7	*Community Impacts*		1
	Based on GIS analysis including proximity to neighborhoods		
	High positive impact	4	
	Medium positive impact	3	
	Low positive impact	2	
	Low negative impact	1	
	High Negative impact	0	