

Prioritization 3.0 Bicycle & Pedestrian Scoring Criteria Summary Report

May 2014

In 2013, the North Carolina General Assembly created the Strategic Transportation Investments Act (STI) to strengthen the state's economy and provide a new formula to direct construction funds through strategic transportation investments. Governor Patrick McCrory signed the Act on June 26, 2013. Governor McCrory and the N.C. Department of Transportation (NCDOT) are committed to improving the quality of life for citizens in North Carolina. The desire is to find more efficient ways to better connect all North Carolinians - to jobs, health care, education and recreational experiences. The STI law will help make that possible by better leveraging existing funds to enhance the state's infrastructure, providing greater opportunity for economic growth.

The STI law outlines a new Strategic Mobility Formula (SMF) which is a new way to fund and prioritize transportation projects to ensure they provide the maximum benefit to our state. It allows NCDOT to use its existing revenues more efficiently to fund more investments that improve North Carolina's transportation infrastructure, create jobs and help boost the economy.

It was apparent even in the early stages of the STI draft bill that the identification of scoring criteria, methodologies, and transportation data to quantify the need of a future project would be critical to potential bill implementation. A Workgroup (previously established by NCDOT for its Prioritization 3.0 process) provided recommendations for both highway and non-highway scoring methodologies to support bill requirements. The Workgroup consisted of representatives from MPO's, RPO's, NCDOT planning staff, Division Engineers and other advocacy organizations. Bicycle and Pedestrian Division staff attended meetings and brought forward criteria and data recommendations that would best represent and point to the bicycle and pedestrian needs across the state.

The criteria used to rank bicycle and pedestrian projects represents an evolution of the criteria used in SPOT 1.0 and 2.0, as well as inputs gathered from the state's MPOs and RPOs and other state DOTs for scoring bicycle and pedestrian projects. Multiple presentations and discussions with the P3.0 Workgroup helped shape the final criteria, point distribution and weights applied. The criteria also had to pass a strict test of being data-driven and providing scalable scores per criteria. Thus, readily available crash, speed limit, and population and employment data were utilized. Additionally, there was reliance on local data inputs for a few criteria items including access and constructability, as well as the development of project cost estimates.

As described below, a few eligibility requirements are also applied to bike and pedestrian projects.

- In order for a bicycle or pedestrian project to be scored and considered for funding under the Strategic Transportation Investments legislation, it needs to be included in an adopted plan. Adopted bicycle plans, greenway plans, pedestrian plans, Safe Routes to School action plans, comprehensive transportation plans (CTPs) and long range transportation plans that identify the specific project of interest are an acceptable type of plan.
- Projects submitted must meet a minimum cost requirement of \$100,000.

- Local governments are responsible for providing the necessary non-federal match (usually 20% of the project's total cost). Per conditions set forth during SPOT 3.0 workgroup discussions, NCDOT will not reimburse for any of the costs associated with right-of-way acquisition. Other eligible costs (preliminary engineering and construction) may be reimbursed subject to federal guidelines and the municipal agreement.
- Local governments do not have to have 100% of right-of-way secured for submitted projects. They will, however, need to have the right-of-way secured in advance of receiving federal construction funding.

Please be aware all criteria are measured on a 0 to 100 point scale. Also, though the criteria utilized are the same, bicycle (includes multi-use facilities) and pedestrian projects are scored with slight adjustments in formulas to a few of the criteria.

The following criteria were used in the bicycle and pedestrian scoring methodology:

Criteria	Proposed Weight
Safety	15%
Access	10%
Density	10%
Constructability	5%
Benefit-Cost	10%

The NCDOT Board of Transportation, on November 7, 2013, approved the criteria, weights and measures that will be used in the SMF. The following pages provide a brief description of each criteria, how it will be measured, its data source and what percentage it is of a project's overall score. The hope is that this information provides a clear, concise and transparent view of the data used in the SMF.

Safety

Definition

This criterion attempts to identify projects designed to remedy potential safety concerns by providing an improved transportation corridor or alternative travelling option that reduces vehicle-bicycle/pedestrian crash and creates a safer transportation environment. This criterion uses bicycle and pedestrian crash data and speed limit information along project corridors to determine the existing safety need. Calculation of crash points is based on a range of the number of crashes along the project corridor with five or more crashes serving as the maximum scoring range. Calculation of speed limit is based on a range of posted speed limits along the project corridor with a speed limit of 55 and over serving as the maximum scoring range. Crash score and speed limit score are weighted equally to determine overall safety score.

Formula

(Crash Points x 0.50) + (Speed Limit Points x 0.50)

Notes:

- Use the following to determine the Crash Points, based on # of crashes:

Bicycle Projects	Pedestrian Projects	Multi-Use Projects
▪ 5 or more <u>bicycle</u> crashes → 100	▪ 5 or more <u>pedestrian</u> crashes → 100	▪ 5 or more <u>bicycle + pedestrian</u> crashes → 100
▪ 4 <u>bicycle</u> crashes → 80	▪ 4 <u>pedestrian</u> crashes → 80	▪ 4 <u>bicycle + pedestrian</u> crashes → 80
▪ 3 <u>bicycle</u> crashes → 60	▪ 3 <u>pedestrian</u> crashes → 60	▪ 3 <u>bicycle + pedestrian</u> crashes → 60
▪ 2 <u>bicycle</u> crashes → 40	▪ 2 <u>pedestrian</u> crashes → 40	▪ 2 <u>bicycle + pedestrian</u> crashes → 40
▪ 1 <u>bicycle</u> crash → 20	▪ 1 <u>pedestrian</u> crash → 20	▪ 1 <u>bicycle + pedestrian</u> crash → 20
▪ 0 <u>bicycle</u> crashes → 0	▪ 0 <u>pedestrian</u> crashes → 0	▪ 0 <u>bicycle + pedestrian</u> crashes → 0

- Use the following to determine the Speed Limit Points, based on existing speed limit:
 - 55 mph or greater → 100
 - 40 mph to 54 mph → 50
 - 30 mph to 39 mph → 25
 - 25 mph to 29 mph → 10
 - Less than 25 mph → 0
- For new off-road facilities, crash and speed limit data for existing neighboring traveling corridors was used.
- Project alignment was buffered at 500 feet to capture the number of crashes.

Data Source

Division of Bicycle and Pedestrian Transportation (DBPT) 2007-2011 geocoded bicycle and pedestrian crash data

Speed limit data from Traffic Engineering Accident Analysis System Dataset (TEAAS)

Criteria Percent Weight by STI Category:

Statewide Mobility – N/A

Regional Impact – N/A

Division Needs – 15%

Access

Definition

This criterion is structured to identify projects that are in close proximity to multiple destinations and that provide a potential opportunity for mode share. This criterion utilizes user input regarding various major and secondary centers that are within 0.5 miles of pedestrian projects and 1.5 miles of bicycle projects. For major centers within the buffered distance, a project receives ten points per destination with a cap of seventy points; for secondary centers within the buffered distance, a project receives five points per destination with a cap of thirty points. Access benefit is also measured by the proximity of the project to the most significant identified destination with points scaled based on mileage distances using the same modal distance thresholds stated above. Destination number/type score and destination distance score are weighted equally to determine overall access score.

Formula

Bicycle Projects – $((\# \text{ Major Centers} \times 10) + (\# \text{ Secondary Centers} \times 5)) \times 0.5 + ((1.5 - \text{Distance to Destination}) \times 66.67) \times 0.5$

Pedestrian Projects – $((\# \text{ Major Centers} \times 10) + (\# \text{ Secondary Centers} \times 5)) \times 0.5 + (0.5 - \text{Distance to Destination}) \times 200 \times 0.5$

Notes:

- The number of Major Centers is capped at 7
- The number of Secondary Centers is capped at 6
- The Distance to Destination is capped at 1.5 (bicycle projects)
- The Distance to Destination is capped at 0.5 (pedestrian projects)

Data Source

Local input

Criteria Percent Weight by STI Category:

Statewide Mobility – N/A

Regional Impact – N/A

Division Needs – 10%

Demand/Density

Definition

The purpose of this criterion is to identify projects in areas where the presence of higher concentrations of residents and employees can potentially benefit a higher number of users. This criterion uses US Census data to calculate the density of population and employment within 0.5 miles of pedestrian projects and 1.5 miles of bicycle projects. Population density score and employment density score are weighted equally to determine overall demand/density score.

Formula

$$\left(\left(\frac{\text{Persons within Buffer Area}}{\text{Buffer Area}}\right) / 100\right) \times 3 \times 0.5 + \left(\left(\frac{\text{Employees within Buffer Area}}{\text{Buffer Area}}\right) / 100\right) \times 3 \times 0.5$$

Notes:

- Population Density points are capped at 100
- Employment Density points are at 100
- A buffer distance of 1.5 miles is used to calculate population and employment densities for bicycle projects.
- A buffer distance of 0.5 miles is used to calculate population and employment densities for pedestrian projects.

Data Source

2010 US Census

Criteria Percent Weight by STI Category:

Statewide Mobility – N/A

Regional Impact – N/A

Division Needs – 10%

Constructability

Definition

This criterion measures project readiness and the ease of constructing a project. This criterion uses local user input and local NCDOT Highway Division input to determine the percentage of right-of-way acquired, the percentage of preliminary engineering completed and the anticipated level of environmental impact of the project. Right-of-way and preliminary engineering are both scored on a scalable range of 0 to 100 percent, while environmental impact is assessed by the anticipated NEPA documentation required. Right-of-way score is weighted at 50 percent, while preliminary engineering and environmental impact are both weighted at 25 percent to derive overall constructability score.

Formula

$(\text{Right-of-Way Acquired} \times 0.50) + (\text{Preliminary Engineering / Design Completed} \times 0.25) + \text{Environmental Impact Points} \times 0.25$

Notes:

- Environmental Impact Points are as follows:
 - Categorical Exclusion Type I/II → 100
 - Environmental Assessment → 50
 - Environmental Impact Statement → 0

Data Source

Local Input and Highway Division Input

Percent Weight by STI Criteria

Statewide Mobility – N/A

Regional Impact – N/A

Division Needs – 5%

Benefit-Cost

Definition

The purpose of this criterion is to evaluate a project's cost effectiveness. This criterion combines the Access and Demand/Density scores to generate a benefit score. The benefit score is then divided by the estimated project cost to NCDOT to derive a project's benefit-cost score.

Formula

$((\text{Access Points} + \text{Demand/Density Points}) / (\text{Cost to NCDOT})) \times 200,000$

Data Source

Local Input and Highway Division Input for cost estimates

Same sources as noted in Access and Demand/Density calculations

Criteria Percent Weight by STI Category:

Statewide Mobility – N/A

Regional Impact – N/A

Division Needs – 10%