



Moving Toward 2050

Defining Transportation System Needs

Moving Toward 2050 is the federally required long range transportation plan (LRTP) for the City of Charlottesville and urbanized portions of Albemarle County, which is the area served by the Charlottesville-Albemarle Metropolitan Planning Organization (CA-MPO). This plan, to be reviewed and adopted by the CA-MPO Policy Board, identifies long range transportation needs, considers possible infrastructure improvements, and establishes priorities to implement projects based on anticipated funding.

In addition to the substantive public engagement process the MPO undertook to hear feedback on transportation system needs, the MPO undertook a data analysis process to review the system performance.

After completing the first phase of public engagement for the Moving Toward 2050 plan in the late fall of 2023, consultants from EPR analyzed the responses and developed a full public engagement report. The feedback heard through this initial public engagement effort was used to inform the data analysis to determine the priority transportation needs.

Approach

The data analysis process and evaluation metrics were developed through a technical assistance grant the MPO received from the Office of Intermodal Planning and Investment. There were three levels of decision-making that needed to be made around the use of the data:

1. Defining the need **threshold**. The threshold is used to determine what constituted a system need in an individual evaluation metric. If the value of the metric exceeded the minimum threshold for a particular segment or intersection, it was considered a need and contributed to the overall need score for the segment/intersection. If it fell below the minimum threshold, then that metric did not contribute to the overall need score.
2. Determining the weighting for each **prioritization category**. The MPO first looked at the overall prioritization categories to determine how much each of the factors should influence the overall prioritization of system needs.

There were three weighting scenarios that were developed for initial discussion purposes by the MPO committees:

- The accessibility-focused scenario places a greater emphasis on transportation improvements that will improve people's ability to reach destinations.
- The balanced scenario will assume that each of the prioritization categories should be weighted equally.
- The mobility-focused scenario places a greater emphasis on transportation system efficiency.

The accessibility-focused weighting scenario best reflected the public feedback received in the first phase of public engagement. This scenario placed the greatest emphasis on multi-modal system

considerations and supported many of the environmental co-benefits that were discussed by the public that are not explicitly captured by the metrics used in the data evaluation – namely a desire to reduce transportation sector-related greenhouse gas emissions.

3. Determining the weighting for each **evaluation metric**. The influence of each evaluation metric within the prioritization categories had to be further defined to determine the extent to which each of the actual evaluation factors would contribute to the overall needs score.



A summary of the values chosen for Steps 1 through 3 are summarized in Tables 1 and 2.

Table 1. Weighting Scenarios for Transportation Needs Prioritization - Goal Categories.

Prioritization Category	Weighting Scenarios		
	Accessibility-Focused (selected)	Balanced	Mobility-Focused
Safety	30%	25%	30%
Multi-modal Accessibility	30%	25%	30%
Efficiency and Economic Development	10%	25%	30%
Land Use Coordination	30%	25%	10%
Environment	Applied to aggregate score in other factor areas		

Table 2. Evaluation Metric Weightings.

Prioritization Category	Evaluation Metric	Threshold	Evaluation Metric Weighting
Safety	Roadway Safety (PSI ¹)	All PSI locations	15%
	Bike/Ped Safety (PSAP ² Corridors)	Top 5% Regional Corridors	15%
Multi-modal Accessibility	PAI ³ - Bike/Ped	All segments PAI greater than 0	8%
	PAI - Transit	All segments PAI greater than 0	8%
	PAI - Vehicle	All segments PAI greater than 0	6%
	PAI – Disadvantaged Populations	All segments PAI greater than 0	8%
Efficiency & Economic Development	Travel Time Index (TTI)	Avg weeklong TTI > 1.5 for three hours; > 1.7 for one hour	3%
	Travel Time Reliability (PTI ⁴)	Avg weeklong PTI > 1.5 for three hours; > 1.7 for one hour	3%
	Transit On-Time Performance ⁵	On-time performance less than systemwide average performance from previous year	4%
Land Use Coordination	Walk Access - General	All segments in “somewhat walkable” census tracts	10%
	Walk Access – Disadvantaged Populations	All segments in transit viable EEA ⁶ that are also in “somewhat walkable” census tracts	20%
Environment	Flooding Exposure	Segments Exposed to Historical Flooding	Applied to aggregate score in other factor areas
		Additional Adjustment for economically distressed communities	Applied to aggregate score in other factor areas

¹ PSI – Potential for Safety Improvement

² PSAP – Pedestrian Safety Action Plan

³ PAI – Potential for Accessibility Improvement

⁴ PTI – Planning Time Index

⁵ Due to technical issues with available data reporting format, Transit On-Time Performance was not included in the final data analysis.

⁶ EEA – Equity Emphasis Areas; defined in [VTrans](#)



Outputs

The MPO used this analysis process to determine the location of high priority transportation needs. The transportation network data was evaluated using this approach, and the system needs across all metrics was aggregated to determine the highest need priorities. The MPO then categorized the overall system need as high, medium, or low based on the overall aggregate score of all metrics combined. These needs were then used in part to inform the projects the MPO could consider prioritizing for transportation system improvement investments.

Additional Data Considered

In addition to the outputs from the needs prioritization process, the MPO also considered future projected roadway Level of Service performance and safety needs that were identified by the Virginia Department of Transportation. These have historically been factors that have been used to identify priority project locations for studies. The use of future projected level of service provides for the consideration of the impact of future growth on the roadway infrastructure, and the specific review of safety needs ensures that high priority safety needs are addressed, even if the aggregate need score is not reflective of an overall high priority.

The future projected Level of Service is a measure of how well traffic flows along a specific segment of the roadway. It is a way to categorize how much traffic volume a road segment experiences compared to the roadway capacity. Traffic flow is categorized on a scale of A through F, with A meaning that traffic freely flows through the road segment without experiencing any delays, and F meaning that traffic volumes often exceed road capacity and experience significant delays.