PLAN 2040
CENTRAL VIRGINIA
LONG RANGE TRANSPORTATION PLAN

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Chapter 6: Project Evaluation Methodology

Project Benefit Score

The project evaluation criteria described on the preceding pages were used as a framework for generating an overall "Project Benefit Score" for every project that was evaluated in the region. Each project was given a score between 0-100 that reflected its consistency with the region's identified transportation goals. The higher the score, the more the project aligns with the region's goals.

Performance Measurement Scores

The Project Benefit Score is based on the High/Medium/Low ratings earned by projects in each of the performance measurement categories. A rating of High earned a project 100 points in that category, a rating of Medium earned 66.7 points, and a rating of Low earned 33.3 points.

Vision Theme Weighting

After determining a score for each performance measurement, it was then necessary to establish the relative scoring weight of each performance measurement within the project evaluation tool as a whole. This process began by assigning relative weights to each of the five "Vision Themes." These weights were assigned according to the results of surveys that were completed by members of the MPO's Transportation Technical Committee (TTC) and member of the public. Survey results indicated that the Vision Themes "Safety" and "Economy" were the region's highest priorities, followed by "Mobility and Accessibility" with a moderate importance, and then "Community and Nature" and "Efficiency" having a low importance. Specifically, the weights were assigned as shown in Figure 6.1 below:

Figure 6.1: Vision Theme Weighting Strategy

Theme	Goals	Weight
Mobility and Accessibility: Provide a transportation system that facilitates the efficient movement of people and goods	**Make it Flow, Make it Accessible**	20%
Safety: Provide a safe and secure transportation system	**Make it Safe**	25%
Economy: Retain and increase business and employment opportunities	**Promote Vitality, Make it Efficient**	25%
Community and Nature: Improve the quality of life and protect the environment	**Sustain Quality**	15%
Efficiency: Preserve the existing transportation system and promote efficient system management	**Make it Function, Coordinate Investments, Balance Priorities**	15%
Total		**100%**

Performance Measurement Weighting

Following the weighting of the vision themes, additional surveys were completed by the TTC to determine the relative weight of the performance measures within each vision theme. These were rated as shown in Figure 6.2 below:

Figure 6.2: Performance Factor Weighting Strategy

Theme	Performance Factors	Weight Relative to Goal
Mobility and Accessibility: Provide a transportation system that facilitates the efficient movement of people and goods	A. Congestion	37%
	B. Traffic Volume	23%
	C. Freight	20%
	D. Alternative Transportation	20%
	Total	**100%**
Safety: Provide a safe and secure transportation system	A. Accident Rate	61%
	B. Safety Features	39%
	Total	**100%**
Economy: Retain and increase business and employment opportunities	A. Economic Development Plans	25%
	B. Commuter Travel	44%
	C. Surrounding Employment Density	31%
	Total	**100%**
Community and Nature: Improve the quality of life and protect the environment	A. Cultural and Environmental Resources	30%
	B. Corridor Beautification	30%
	C. Right of Way Sufficiency	40%
	Total	**100%**
Efficiency: Preserve the existing transportation system and promote efficient system management	A. VDOT Functional Roadway Classification	20%
	B. Plan Coordination	38%
	C. Distribution of Benefits	42%
	Total	**100%**

Benefit to Cost Rating

In addition to calculating an overall Benefit Score for every project, the evaluation process also considered the relative benefit to cost achieved by each project. This Benefit to Cost Rating is critical to transportation planning efforts due to the extremely wide range of costs associated with different improvements.

As an example, imagine that the MPO was choosing between two projects. Suppose that Project A received a Benefit Score of 70.0, has an estimated cost of $5 million, and improves a corridor that is expected to serve 30,000 vehicles per day. Project B received a Benefit Score of 78.5, has an estimated cost of $40 million, and improves a corridor that is expected to serve 45,000 vehicles per day.

If the only factor considered were the Benefit Score, funding would be directed to Project B. The Benefit to Cost Rating, however, allows the MPO to ask how much benefit is achieved by each project relative to the estimated cost per project user. This rating is calculated as shown in Figure 6.3:

Figure 6.3: Benefit - Cost per User Rating Formula

Project				
Benefit Score				
(Millions of $)	÷	*(Thousands of Users)*	=	*Benefit-Cost Rating*

In the case of our example, the Benefit-Cost Ratings for each project would be calculated as follows:

Project A				
(Benefit Score) 70.0				
5 *(Millions of $)*	÷	30 *(Thousands of Users)*	=	420.0 *(Benefit-Cost Rating)*

Project B				
(Benefit Score) 78.5				
40 *(Millions of $)*	÷	45 *(Thousands of Users)*	=	88.3 *(Benefit-Cost Rating)*

In this example, we can see that while Project A may have a lower Benefit Score than Project B, it has a significantly higher Benefit-Cost Rating than Project B. This means that the amount of benefit acquired by the region per dollar spent on the project will be higher for Project A than for Project B.

Project Readiness Rating

The third project evaluation category considered by this process was a project's readiness. Due to the large scope of transportation improvement projects in terms of time, resources, money, and their effect on the surrounding environment, the time between a project's initial recommendation and its completion can span many years. This period of time can be especially lengthy if the project will require the acquisition of substantial amounts of right of way or still awaits environmental review.

The Project Readiness evaluation category was created in order to assess the project's status in relation to three factors that hold a major role in determining the amount of time needed to move the project from proposal to construction. These factors include:

National Environmental Policy Act (NEPA) Environmental Impact Statement

Every project that will receive federal transportation funding must prepare an Environmental Impact Statement (EIS). This document assesses the project's effect on the surrounding social and environmental resources. If the review finds no expected damages, the project may proceed as proposed. If a negative impact is predicted, however, measures may be required to mitigate these damages or, in rare cases, deny project funding entirely. Depending on the size and location of a project, the completion of the environmental impact statement may require a significant investment of time and money.

Right of Way Acquisition

In addition to materials and labor, some projects require the purchase additional right of way easements in order to accommodate the new infrastructure. This acquisition may be relatively minor, as in the case of a short road widening project, or a major undertaking, as in the case of a brand new road that will be built across multiple privately held properties.

Multi-Phase Projects

Often, large improvement projects are divided into multiple phases of planning, funding, and construction. If the proposed scope of a project is a continuation phase of an ongoing multi-phase project, it can be expected to receive local political support. Additionally, environmental impact statements and right of way acquisition processes may be well developed or complete.

Project Readiness was evaluated on a 3 point scale. Projects received:

- 1 point for a complete environmental impact statement or a "finding of no significant impact" (no EIS required)
- 1 point for a complete right of way easement
- 1 point if a continuation stage of a multi-phase project

The final project readiness rating was defined as follows:

- High Readiness: 3 points
- Medium Readiness: 2 points
- Low Readiness: 0-1 points