Chapter 6: Evaluating Transportation Investments

In times of scarce resources for funding transportation projects, ever dollar counts. The SAWMPO has evaluated projects using an objective, data-based process to ensure that the region meets its transportation system needs over the next 25 years.

This chapter addresses:
6-1 Project List Development
6-2 MAP-21 and Performance Based Planning and Programming
6-3 VTrans2040 and House Bill 2
6-4 SAWMPO Performance Measurement

6 – 1 Project List Development

The universe of potential transportation projects was drawn from three sources:

4. Priority projects identified by the MPO in 2013
5. SAWMPO-area projects in the Central Shenandoah Planning District Commission 2011 Rural Long Range Transportation Plan
6. Projects identified in local plans from Augusta County, Staunton, and Waynesboro.

Projects were categorized as corridor, intersection, interchange, new alignment or bike and pedestrian. As described elsewhere, transit investments for the SAWMPO region are described in the separate Transit Development Plan.

The project team and the TAC refined the combined list of potential transportation projects to avoid duplication and to eliminate projects that are complete or underway. The result was a list of 4 “previously committed” projects already in the VDOT Six Year Improvement Program, and 50 remaining projects to be considered for federal aid funding. The project lists are included in Appendix C.

The following sections in Chapter 6 describe the method that the SAWMPO developed to evaluate this multimodal list of projects.

6 – 2 MAP-21 and Performance-Based Planning and Programming

With the passage of MAP-21 in 2012, MPO planning efforts have increased emphasis on performance management within the federal-aid highway and transit programs. MAP-21 is not prescriptive in establishing specific performance measures or targets for MPOs, but rather shapes and redefines the role of the MPO in fulfilling its long- and short-term planning responsibilities.

Performance-based planning and programming refers to the application of performance criteria within the planning and programming processes of transportation agencies to achieve desired outcomes for a range of modes in our transportation system. PBPP helps to ensure that transportation projects are selected based on their ability to meet established goals. This best practice for long range transportation planning has been adopted both by the State of Virginia, and the SAWMPO.

6 – 3 VTrans2040 and House Bill 2

In Virginia, the Office of Intermodal Planning and Investment has implemented performance-based transportation planning within its long range statewide multi-modal policy plan, VTrans2040, and through the General Assembly mandated House Bill 2 (HB2) program. VTrans2040 identifies 10 years of transportation needs by region in order for the State to reach a projected economic future. HB2 uses a performance measurement program to ensure that projects meet the transportation needs stated in VTrans2040. Per state law, the HB2 process begins implementation in Fiscal Year 2016, starting July 1, 2015.

VTrans2040 consists of two independent, but connected documents. First, the VTrans2040 Vision document outlines the policy vision for Virginia's transportation system over the next 25 years. Second, the VTrans2040 Multimodal Transportation Plan (VMTP) will serve as the guiding document for Virginia's transportation agency business plans and statewide transportation funding programs until the next update in 2020. The VMTP will identify needs for all modes of travel across the Commonwealth. The policy and recommendations of the plan will focus on corridors of statewide significance, identified regional networks, locally designated growth areas, and identified safety areas along the existing transportation network.

House Bill 2 (HB 2) is a new state law that requires the implementation of a performance based, priority-scoring process for the evaluation of transportation projects that utilize state and federal funding (some types of projects and funding are exempt from HB 2). The scoring process includes 5 Factors including Congestion Mitigation, Economic Development, Accessibility, Safety, and Environmental Quality (Land Use will be a sixth factor in areas over 200,000 in population, but not applicable in Staunton District). Localities, regional entities, transit and rail providers will be eligible to submit candidate projects (via a web-based application) for scoring that meets an identified need within one of the four focus areas of VTrans2040 (corridors of statewide significance, regional networks, urban development areas, and safety). The 5 Factors each carry a different percentage weight, depending on a community's designated area type. The area types range from a dense urban center classification

(Type A) to areas more rural in nature (Type D). The final score of a candidate project will be the sum of the scores calculated from the 5 Factors, relative to cost. The Commonwealth Transportation Board will utilize scoring information in the selection of projects to fund in the SYIP.

HB 1887 removes the 40-30-30 formula put in place by the 1986 Special Session legislation and replaces it with a new funding formula. HB 1887 will be fully implemented by FY2021. Prior to that, it will have a partial (early) implementation beginning in FY17 when funds will be distributed to projects through two programs: the High Priority Projects Grant Program and the District Grant Program (with each program subject to HB 2):

- 50% of the funds will go to each program.
  - Projects applying for District Grant Program funds will compete against other district projects.
  - Projects applying for High Priority Projects Grant Program funds will compete against projects statewide.

Beginning in FY21 funds from HB 1887 will be distributed as follows:

- 45% - State of Good Repair
- 27.5% - High Priority Projects
- 27.5% - District Grant Program

6 – 4 SAWMPO Performance Measurement

The SAWMPO developed a performance measurement program through a collaborative process. In this first long range planning process for the SAWMPO, the program evaluates transportation investments based on 1) how well they align with Plan goals and 2) their cost effectiveness based on existing year of expenditure estimates.

Goal Weighting

Following the Policy Board's adoption of the seven plan goals, the Board ranked the goals in terms of their relative importance for the LRTP and the region. The goal weights clarify what is most important for the region, and allow for refinement of project evaluation.

Each jurisdiction received one "vote" for the ranking process, and the results for the three jurisdictions were then summed for each goal, with a score of 1 indicating greatest importance and 7 least importance. The sum for each goal was translated into a goal percentage/goal weight, with all goal weights totaling 100. The process is detailed in **Table 15**.

Table 15 – Goal Weighting

Goal	Augusta	Staunton	Waynesboro	Total	Goal %
Economic Vitality	5	7	5	17	20.24%
Efficient System Management	7	1	7	15	17.86%
Safety	4	3	6	13	15.48%
Land Use Coordination	6	2	4	12	14.29%
Connectivity	3	5	2	10	11.90%
Accessibility	2	4	3	9	10.71%
Quality of Life	1	6	1	8	9.52%

Evaluation Criteria and Metrics

The next step in developing the performance evaluation program was identifying evaluation criteria and metrics to measure how well projects meet the plan goals. To determine which performance criteria and metrics to use, staff considered the following:

- **Does it represent a key concern?** The performance criteria should clearly relate to the Plan Goals.
- **Is it clear?** Is the measure understandable to policy makers, transportation professionals, and the public?
- **Are data available?** Is it feasible and practical to collect, store, analyze data and report performance information for the selected measures.
- **Is the measure something the MPO can influence?** While a good measure does not need to be something that the MPO controls, measures that can be influenced through MPO policy and investment decisions may be the most useful.

With assistance from the TAC, the project team selected the following set of criteria and metrics:

Table 16 – Goals, Evaluation Criteria, and Metrics

Goal	Criteria	Metric
Economic Vitality	Project supports future jobs in growth areas.	Projected jobs
Efficient System Management	Project supports maintaining a minimum standard for roadway design and geometry	Project addresses geometric deficiency or brings facility to current design standards
	Project extends the life of an existing facility (rather than constructing a new facility)	Yes/No for project types: access management, turn lanes, signal optimization, ITS
	Project adds capacity on a corridor with limited capacity in the future	Project adds capacity on a corridor with a future failing or decreased LOS
Safety	Project located at an intersection or along a corridor with a history of injury or fatal crashes	# of crashes/million VMT
	Project enhances non-motorized safety	Adds pedestrian, cyclist or shared use facilities
Land Use Coordination	Project supports implementation of LRTP's Preferred Alternative	Project improves access to development on growth sites identified in and consistent with Preferred Alternative of LRTP
Connectivity	Project supports mode-to-mode connections for people	# of bus stops, bus stop shelters, park-&-ride lots & bike/ped facilities within 1/4-mile of the project/created by the project or connected to the project (bike and ped)
	Project supports mode-to-mode connections for goods	Project improves access to a current transloading facility, or railroad siding, or potential rail access on an industrial site
Accessibility	Project provides additional opportunities for pedestrians and cyclists	Are new sidewalks & trails, bike lanes, sharrows, or transit facilities created by the project? Additional points for trail than sidewalk/bike lane/sharrow
Quality of Life	Project supports protection of historic & cultural resources	New alignment adjacent to a site or property on the National Historic Register
	Presence of exceptional value natural areas (wetlands, habitat cores, migration corridors)	New alignment or widening (i.e. additional ROW) adjacent to or passes through natural resource area

Environmental Mitigation Measures

Mitigation measures are required where the potential for adverse impacts may result with a transportation project. Mitigation measures can include limiting project scope, rehabilitating/restoring the affected environmental/cultural feature, or avoidance entirely.

The LRTP considered the proximity of proposed transportation projects to the presence of cultural and environmental resources throughout the UZA. During the preliminary planning stage of all projects, they are evaluated for the potential to impact private property, historic/archaeological resources, threatened and endangered species, farmland, public recreational facilities, jurisdictional waters, land use, contaminated sites, and noise levels as required by federal, state and local laws/regulations.

Programmatic mitigation measures include the following elements:

- Historic/Archaeologic Resources: mitigation for impacts is accomplished through avoidance or scientific excavation and documentation. Surveys, including deep testing and evaluations on a case-by-case basis are developed in consultation with key stakeholders.

- Wetlands: where unavoidable, consultation occurs with various resource agencies to develop replacement wetlands within the affected watershed. There are also wetland banking programs where projects commit funding to offset impacts.

- Floodplains: transportation projects must accommodate impacted floodplains through either avoidance, or designing highway elements (e.g., bridge/culvert openings, etc.) that allow water to flow without increasing the regulated floodplain level. Any adjustments to the floodplain level must conform to requirements set forth by the Corps of Engineers that may result in requiring adjustments to FEMA-regulated flood maps.

- Threatened & Endangered (T&E) Species: transportation projects must review and consider the presence of T&E species in consultation with the US Fish and Wildlife Service (FWS), Virginia Department of Game and Inland Fisheries (DGIF), and the Division of Natural Heritage (DNH) within the Virginia Department of Conservation and Recreation (DCR). Assessments must be conducted considering that may include biological and habitat assessments. If T&E species are present, the project must either avoid the impact or consider mitigation to include relocation of species, time of year restrictions for construction, etc.

- Marine Resources: when impacts to fish and aquatic resources cannot be avoided, transportation projects are required to protect resources by effectively managing stormwater runoff, incorporating design features that minimize impacts to fisheries or minimize disruption to natural cycles such as not working within waters during periods of spawning activities.

- Surface and Ground Water: projects that impact waters are required to obtain all necessary regulatory approvals, permits, and licenses for each project. Where avoidance is not available, mitigation measures

are required to be addressed through design and construction. VDOT requires completion of the Natural Resources Due Diligence Checklist (Form EQ-555) early in the design process.

- Noise: federal regulations require that VDOT determine and analyze anticipated noise impacts and alternative noise abatement measures for those impacts for specific type of highway construction projects. Noise impact studies are conducted to consider options for reducing noise levels along proposed federally funded highway improvement projects. FHWA has set forth project types that require noise abatement studies, but typically, these are projects where a new highway is constructed on new location, or an existing highway's existing alignment is adjusted substantially either horizontally or vertically requires consideration of noise abatement.

- Air Quality: the Clean Air Act requires that transportation projects not result in or contribute to violation of the National Ambient Air Quality Standards, or delay timely attainment of them. NEPA requires that each federally funded transportation project be evaluated for its potential impact on air quality in the immediate vicinity of the project, known as a "hot spot" analysis. Each applicable project must demonstrate that sensitive populations will not be exposed to pollutant concentrations above an applicable air quality standard.

- Hazardous Materials: due diligence must be performed to determine any "recognized environmental conditions" (REC's) on properties that will be acquired for the transportation project. REC's can indicate a continuing release, past release, or a material threat of a release of a hazardous substance into the soil, groundwater or surface water. When REC's are determined to be present, the project is responsible for coordinating with appropriate environmental agencies to determine regulatory requirements must be met or followed ahead of or during construction.

- Public Recreational Resources (Section 4(f) properties): the Department of Transportation Act of 1966 included a special provision stipulating that the FHWA and state DOTs cannot approve the use of land from publicly owned parks, recreational areas, wildlife refuges or public/private historical sites unless there is no feasible and prudent alternative to the use of the land and the action includes all possible planning to minimize harm to the property resulting from use.

- Right of Way Acquisition: mitigation measures for impacted property owners, including minority and low-income populations should be considered, which may include avoidance, minimizing project scope, compensation and/or relocation. The Uniform Act must be adhered to for all federally-funded transportation projects.

Depending on complexity, size, and potential impacts, transportation projects with federal funding must be evaluated to determine three "classes of action" to determine how compliance with NEPA is implemented and documented. These include:

- Categorical Exclusions (CE's) which are issued for transportation project actions that do not individually or cumulatively have a significant impact on the environment.

- Environmental Assessment (EA) are prepared for transportation project actions in which the environmental impact is not clearly understood or established. Should environmental analysis at the interagency review process result in a finding of no significant impact to the quality of the environment, a Finding of No Significant Impact (FONSI).
- Environmental Impact Statement (EIS) is prepared for projects where it is known and evident that a transportation project action will have a significant impact to the environment.

Project Scoring and Ranking

To evaluate the candidate projects, staff assigned each metric a possible score of 0-3 points. The "raw score" was then multiplied by a weighting factor tied to the Goal Weights discussed in Section 6-4.

For example, an intersection realignment project with a crash rate of 150 crashes per 100 million VMT would be scored as follows:

Table 17 – Example Goal Scoring

Criteria	Metric	Scoring	Project Score	Weighting Factor	Total Score
Project located at an intersection or along a corridor with a crash history	# of crashes/million VMT	0 = CR < 20 1 = CR 20-100 2 = 100-400 3 => 400	2	2.58	5.16

For more information on the weighting and scoring methodology, see **Appendix D**.

Cost Effectiveness

In addition to evaluating how well projects meet the Plan Goals, this performance measurement program also developed a very preliminary indicator of cost effectiveness by comparing the estimated cost of the project to the projected number of trips along the corridor, or through an intersection or interchange in the year 2040. As discussed in Chapter 6, the 2040 ADT projections are based on the Preferred Scenario developed by the TAC and Policy Board. Projects with a lower cost per ADT were generally considered to be a better investment of limited transportation dollars as they represent a lower-cost project serving a larger number of people each day. For complete information on the Cost Effectiveness scores, see Appendix C.

The next chapter presents the Constrained Long Range Plan (CLRP). The CLRP is the list of projects that the MPO expects to fund and implement in the next 25 years, based on projected revenues for this time period. Revenue projections were discussed in Chapter 5.