

CHAPTER VI

GOALS AND

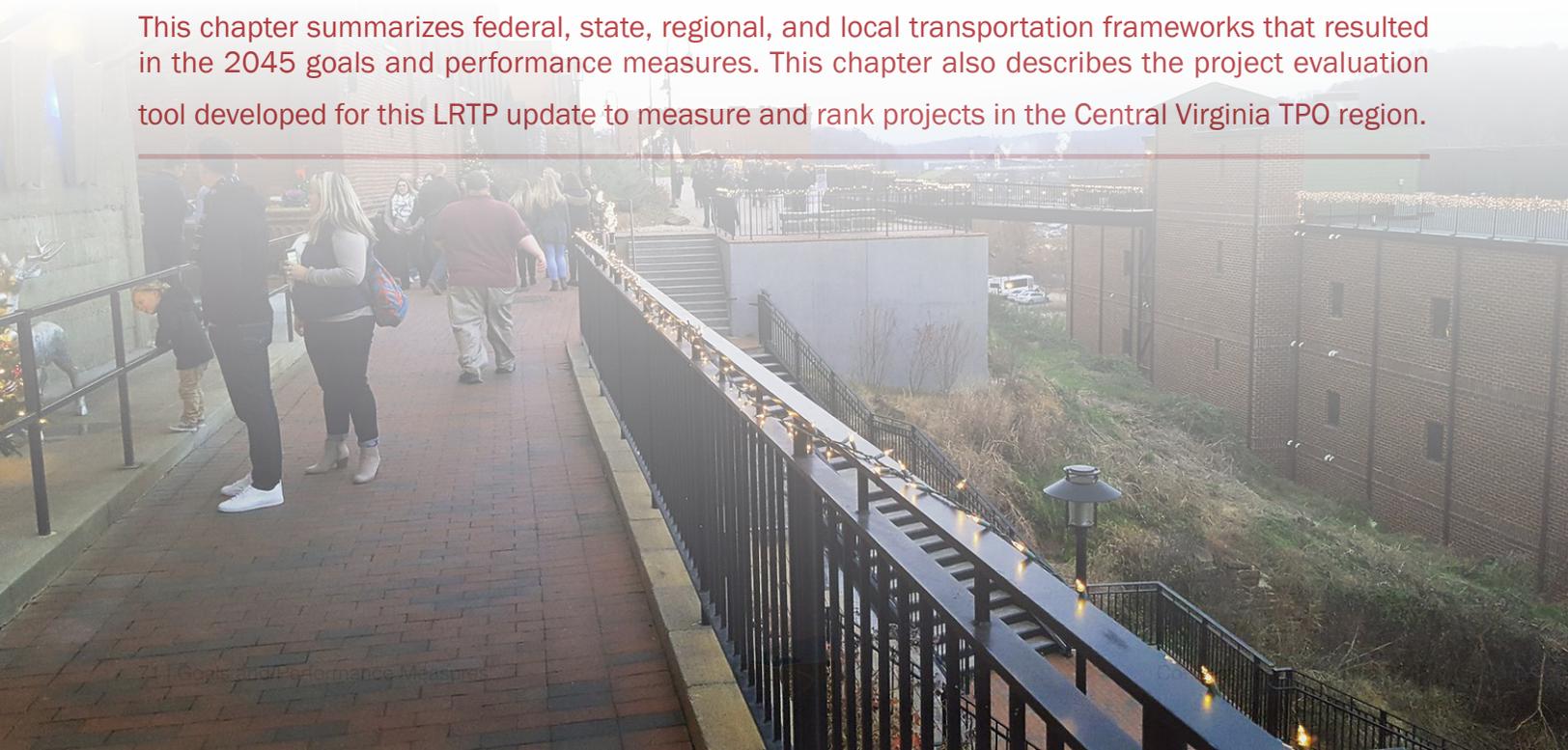
PERFORMANCE

MEASURES

The Federal Code calls for performance-based processes in the TPO transportation planning process. To evaluate transportation improvements in the LRTP, clear goals and performance measures are needed. In the Connect Central Virginia 2045 process, CVTPO has updated and refined the performance measures used in the 2040 update in accordance with local, state, and federal transportation frameworks. Specifically, the 2045 performance measures arose from:

- » Guidance from the Federal Code
- » State funding criteria
- » Statewide plans and identified needs
- » Regional transportation goals
- » TPO transportation targets
- » Local policy documents

This chapter summarizes federal, state, regional, and local transportation frameworks that resulted in the 2045 goals and performance measures. This chapter also describes the project evaluation tool developed for this LRTP update to measure and rank projects in the Central Virginia TPO region.



FEDERAL FRAMEWORK

The TPO receives money for its transportation improvement projects primarily through state and federal transportation funding programs. In 2012, the FHWA’s Federal Surface Transportation Program established a performance and outcome-based approach under a law entitled “Moving Ahead for Progress in the 21st Century Act”—also known as “MAP 21.” One of the key requirements set forth by MAP 21 was that MPOs must incorporate performance goals, measures, and targets into their process of identifying and selecting transportation improvements in their LRTPs. The law established a list of national performance goals to guide this process, which included economic development, safety, infrastructure repair, congestion reduction, system reliability, freight movement and economic vitality, environmental sustainability, and reduced project delivery delays. In 2015, Congress passed the Fixing America’s Surface Transportation Act, also referred to as the FAST Act, which added two new planning factors: resilience and tourism.

STATE FRAMEWORK

CVTPO’s consultants, EPR, P.C., evaluated state-wide funding processes and identified needs from Virginia’s multimodal transportation plan, VTrans. Virginia’s Commonwealth Transportation Board (CTB) is responsible for funding transportation projects in the Commonwealth. In response, Connect Central Virginia 2045 consists of performance measures (project evaluation methods) that are consistent with the CTB’s decision-making process. This approach is intended to improve the success of CVTPO’s funding applications.

SMART SCALE

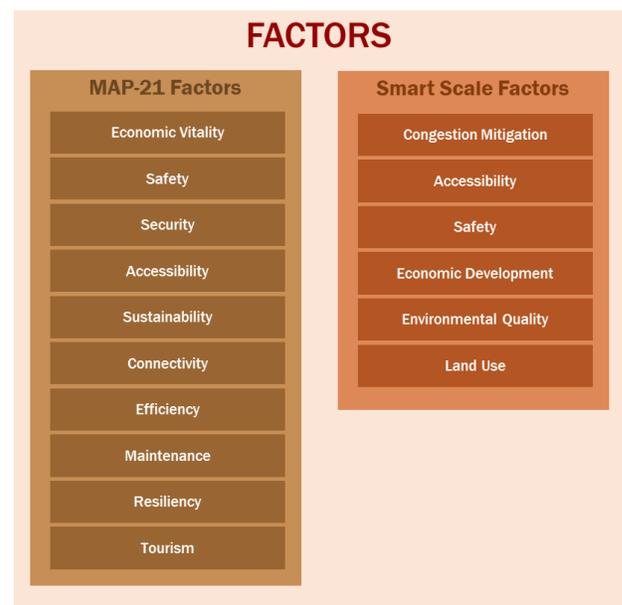
On the state level, federal transportation funding is combined with state revenue sources to create Virginia’s Commonwealth Transportation Fund. Some of the money in the Commonwealth Transportation Fund is distributed proportionally among the commonwealth’s MPOs to support general maintenance and infrastructure rehabilitation. Funding for new or enhanced infrastructure, however, is discretionary and is awarded to MPOs on

a project-by-project basis through a program known as SMART SCALE. MPOs can nominate projects for SMART SCALE funding if they are considered to hold regional or statewide significance. Nominated projects are evaluated using a standardized and objective scoring system that considers each project’s impact on safety, congestion mitigation, accessibility, environmental quality, and economic management. The resulting score is used to rank projects by either VDOT district or statewide to determine which projects will receive funding.

VTRANS

The CTB updates its multimodal transportation plan, VTrans, every four years. VTrans lays out the overarching Vision and Goals for transportation in the Commonwealth, identifies transportation investment priorities, and provides direction on implementation strategies and programs to the CTB and to transportation agencies such as Virginia Department of Transportation (VDOT) and Virginia Department of Rail and Public Transportation (DRPT), as well as regional Metropolitan Planning Organizations (MPOs). During the 2045 LRTP update, the CTB was in the midst of a VTrans update. CVTPO considered preliminary direction from the VTrans process but had to rely on the current version of that document through the planning process.

Figure 38: Correlation between the Federal and State planning factors



REGIONAL FRAMEWORK

CVTPO also considered policy statements and goals from regional plans to create consistency between the LRTP and those other approved documents. These other documents included:

- » Transportation plans such as the 2040 LRTP Update and the Region 2000 RL RTP 2040 Update
- » Economic development plans such as the Lynchburg Regional Connectivity Study (LCS), the Region 2000 Comprehensive Economic Development Strategy, and the Commuter Services Study
- » Alternative mode transportation plans such as the Region 2000 Greenways, Blueways, and Trails Plan 2021 Connection Vision, the Region 2000 Bicycle Plan, the Transit Development Plan, and Central Virginia’s Region 2000 Park and Ride Lot Location Study
- » Community engagement plans such as the Public Participation Plan and the Central Virginia TPO’s Title VI Plan
- » Public safety plans such as the Region 2000 Hazard Mitigation Plan

- » Corridor studies such as the Route 221 Corridor Plan, the Simons Run Corridor Study, and the Route 29 Corridor Study

Merged with the Lynchburg Connectivity Study, Connect Central Virginia 2045 incorporates themes from the previous version of that plan, including “Labor Market and Intra-Regional Connectivity.” The three main strategies for the first theme incorporated into Connect Central Virginia 2045 were:

1. Placemaking: Enhancing the sense of place using elements such as complete streets, bike corridors, wayfinding improvements, and expanded multimodal connectivity to higher education campuses and urban cores.
2. Local Bottlenecks: Relieving traffic bottleneck conditions within the region.
3. Transit and TDM: Improving commuter travel within the region through enhanced business community outreach, commuter rewards programs, unified transit pass programs, and statewide rural vanpooling efforts.



The second transportation theme carried over from the LCS report was “Inter-Regional Connectivity” and included four strategies:

1. Intercity Passenger Rail: Expanding passenger rail service through Amtrak marketing, tourism destination promotion efforts, and advocacy for enhanced rail reliability and connectivity.
2. Air Service Development: Expanding passenger air service by coordinating regional narratives on the Lynchburg Airport, advocating for direct service to Dulles Airport, sharing air market data with colleges and universities, and communicating information about “leading indicators” of economic development.
3. Access on Key Highway Corridors: Improving highway connections to surrounding regions through key corridor improvements, working with adjacent communities on key corridors, and leveraging the Commonwealth’s “Protecting Virginia’s Arterial Investments” program.
4. Cargo-Oriented Development: Expanding freight railroad capacity by building awareness of Virginia’s Rail Industrial Access Program, focusing on sites adjacent to existing rail infrastructure, and supporting ongoing communication with Class I railroads.

The goals and priorities of the Rural Long Range Transportation Plan 2040 Update align with Virginia’s statewide transportation programs. This includes improvements to US 29 and US 60 in Amherst County, US 460 in Appomattox County, US 460 and VA 24 in Bedford County, and US 29 and US 460 in Campbell County.

LOCAL FRAMEWORK

EPR, P.C. also affirmed that 2045 goals and performance measures were consistent with local goals and policies. To do this, numerous local plans including corridor studies, economic development strategies, neighborhood plans, bicycle and pedestrian studies, and downtown plans were reviewed for both project recommendations and transportation strategies.

As part of this process, the comprehensive plans of each member locality in the TPO were reviewed to identify overall policy goals and recommendations. An overview of these recommendations and principles are listed below:

City of Lynchburg’s Guiding Principles for Transportation:

- » Consistency
- » Multimodal support
- » Connectivity
- » Efficiency
- » System Design

Amherst County’s Transportation Goals

- » Goal 1: Ensure that the County’s transportation systems complement desired land uses.
- » Goal 2: Improve and preserve the safety, efficiency, and aesthetics of all roads.
- » Goal 3: Promote and develop a multimodal transportation system.
- » Goal 4: Strive to improve on surrounding visual qualities of existing transportation systems and every transportation infrastructure design.
- » Goal 5: Increase the use of public transportation by Amherst County citizens.

Bedford County’s Transportation Objectives

- » Objective 1: Promote roadway improvements that support and enhanced the Comprehensive Plan and Future Land Use Map.
- » Objective 2: Maintain or improve existing transportation facilities to meet increased demand and economic development opportunities.



A summary of the transportation needs for the Central Virginia region identified by the most recent VTrans plan is included below:

Route 29 Modal Choice and Reliability: Ensure long-term corridor reliability for regional transportation and economic success.

Lakeside Drive/Lynchburg Expressway Area: Address reliability and bottleneck issues to support knowledge-based activity centers.

Walkability in Activity Centers: Enhance pedestrian accommodations and placemaking infrastructure to support key social and economic activity centers.

College and University Bicycle/Pedestrian Enhancements: Improve trail and bicycle connections around Lynchburg-area colleges and universities to provide a safer and more pleasant pedestrian environment for student populations.

Rural Transit Service: Expand and improve paratransit systems to better connect rural workforces to regional activity centers.

Wards Road Area Reliability: Improve safety and traffic operations to enhance access to major retail and education centers, as well as to strengthen connections between the City of Lynchburg and Campbell County.

Route 221/Route 460 Corridor Reliability: Improve safety and traffic operations to support travel time reliability and inter-regional connections.

Route 460 Corridor Reliability and Modal Choice: Enhance commuter connections to Appomattox by improving traffic operations and expanding modal choices.

Danville to Lynchburg Connections: Improve traffic operations on Rt. 29 and provide bus and passenger rail service between Lynchburg and Danville to support the growing healthcare industry in Danville.

Route 501 Commuter Connections: Improve travel time reliability to support this key regional commuter and freight corridor.

- » Objective 3: Develop appropriate through and local connector transportation infrastructure.
- » Objective 4: Support opportunities for greater use of the County and region’s rail and airport facilities.
- » Objective 5: Create targeted mixed-use development areas with pedestrian facilities that decrease the need for motorized transportation.
- » Objective 6: Provide transportation programs for the elderly, disabled and indigent populations.
- » Objective 7: Enhance bikeway and pedestrian access between and within targeted development areas of the County.
- » Objective 8: Improve public access to and around Smith Mountain Lake.

Campbell County’s Transportation Goals

- » Goal 1: Promote a safe, effective, and environmentally sound transportation system throughout Campbell County.
- » Goal 2: Promote a transportation system compatible with existing and future planned land uses.

Town of Amherst’s Transportation Priorities

- » Route 29/Seminole Corridor
- » Downtown parking
- » Pedestrian facilities

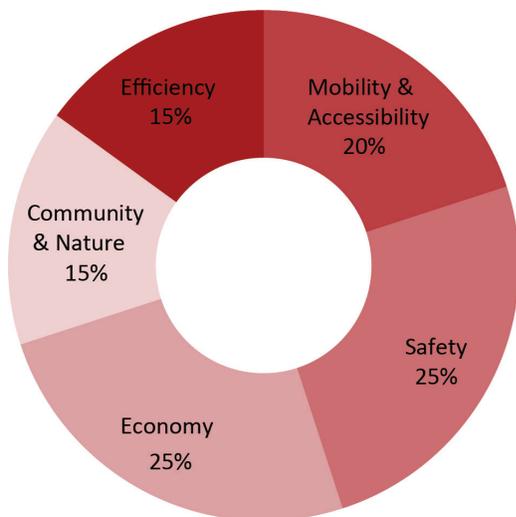


2045 GOALS

Considering these frameworks, CVTPO adopted a set of five regional goals with 16 associated performance measures used to evaluate LRTP projects. The CVTPO Policy Board also set weights on these goals and performance measures that formed a project evaluation tool described in the next section. CVTPO's official 2045 goals include the following:

- » **Economy:** Retain and increase business and employment opportunities.
- » **Safety:** Provide a safe and secure transportation system.
- » **Mobility and Accessibility:** Provide a transportation system that facilitates the efficient movement of people and goods.
- » **Community and Nature:** Improve the quality of life and protect the environment.
- » **Efficiency:** Preserve the existing transportation system and promote efficient system management.

Figure 39: Goal weights



PROJECT SCORING SHEETS AND PERFORMANCE MEASURES

Using the five 2045 goals, CVTPO's consultants developed a project evaluation tool to assign scores to the region's proposed improvement projects. This

tool shares a basic structure and approach with the state's SMART SCALE evaluation program and allows the region to gain a greater sense of how well its projects will score relative to other proposed projects in the region. The prioritization process also served as an incubation period for projects, identifying ways to enhance transportation improvements that are important to the region and its localities.

The 2045 LRTP project evaluation tool considers 16 standardized and objective performance measurements related to each proposed project. Performance measurements supported the CVTPO's five goals. The tool allowed the TPO to adjust the relative importance or weight of each transportation goal area so that the final rankings can more closely reflect the region's priorities. A description of each goal, as well as a description of the performance measures used within each, is provided below.

ECONOMY: WEIGHTING AND PERFORMANCE MEASURES

Among the five goal categories, regional leaders decided that the goal of "Economy" should be one of the most important considerations. 25% of a project's score was determined by its impact on the region's economy. This weighting was consistent with SMART SCALE scoring. The evaluation included four performance measures: placemaking, CEDS consistency, employment density of environs, and freight volume.

Placemaking

The "Placemaking" performance measure considered whether the project proposal supports the placemaking goals described by the Project for Public Spaces and regional CEDS. This measure favors projects that enhance neighborhoods, downtowns, and other activity centers so that they can become the focus of social and economic activity. Scoring was determined as follows:

- » **High:** Directly supports a comprehensive placemaking strategy that is championed by the private sector (citizens, community organizations, business coalitions, etc.).
- » **Medium:** Includes placemaking elements but does not directly support a comprehensive placemaking strategy, or project directly supports a comprehensive placemaking strategy that is championed by the public sector.



- » **Low:** Does not include placemaking elements.

CEDS Consistency

Connect Central Virginia 2045 serves as the transportation element of the CEDS plan. The “CEDS Consistency” performance measure considered projects in relation to the recommendations provided by the region’s Comprehensive Economic Development Strategy (CEDS) document. This measure favored projects that address specific needs or improvements recommended by the CEDS study. Scoring was determined as follows:

- » **High:** Specifically recommended in Chapter 6 of the previous LCS (Strategies and Recommended Actions).
- » **Medium:** Generally supports the transportation-related goals of the previous LCS by addressing challenges or opportunities presented in Chapter 5 of the LCS.
- » **Low:** Does not support the transportation-related goals and strategies of the previous LCS.

Surrounding Employment Density

The “Surrounding Employment Density” performance measure considered the density of jobs in the area surrounding the project corridor or intersection. This measure favored projects that directly serve areas that support a high concentration of jobs such as downtown districts and business parks. Data for this measurement was provided by the 2017 LEHD Origin-Destination Employment Data. Scoring was determined as follows:

- » **High:** Surrounding employment density of more than 4 jobs per acre
- » **Medium:** Surrounding employment density of 1-4 jobs per acre
- » **Low:** Surrounding employment density of less than 1 job per acre

Freight

The “Freight” performance measure considered the volume of heavy trucks using the corridor or intersection, measured as a percentage of total traffic. This measure favored projects that improve the operations of major freight corridors to support the fast and reliable movement of goods and resources

in and out of the region. Data for this measurement was provided by VDOT’s 2017 SPS data. Scoring was determined as follows:

- » **High:** Improves traffic operations on a road with more than 4% truck volume
- » **Medium:** Improves traffic operations on a road with 2% to 4% truck volume
- » **Low:** Improves traffic operations on a road with less than 2% truck volume, or does not improve traffic operations

SAFETY: WEIGHTING AND PERFORMANCE MEASURES

The other highest-weighted goal category in the evaluation tool was “Safety.” 25% of a project’s score was determined by its impact on transportation safety. This evaluation included two performance measures: Fatal and Injury Crash Rate, and PSI locations.

Fatal and Injury Crash Rate

The “Fatal and Injury Crash Rate” performance measure considered the rate of traffic accidents in the project corridor or intersection that resulted in fatalities or serious injuries during the past 5 years, as measured by accidents per 1 million vehicle miles traveled (VMT). This measure favored projects that improve the safety of corridors and intersections that experience a high frequency of life-threatening accidents. Data for this measurement was provided by VDOT’s Crash Analysis Tool. Scoring was determined as follows:

- » **High:** Over 1.81 fatal and serious injury crashes per 1 million VMT
- » **Medium:** 0.5 to 1.81 fatal and serious injury crashes per 1 million VMT
- » **Low:** 0 to 0.5 fatal and serious injury crashes per 1 million VMT

PSI Locations

The “PSI Locations” performance measure considered whether the project addressed a PSI (Potential for Safety Improvement) location, as identified and ranked by VDOT. This measure favored projects that improve the safety of corridors and intersections that have been identified by the state as priority locations





for safety improvements. Data for this measurement was provided by the VDOT PSI list for the years 2014-2018. Scoring was determined as follows:

- » **High:** Includes a Top 20 PSI location
- » **Medium:** Includes a PSI location not ranked in the Top 20
- » **Low:** Does not include a PSI location

MOBILITY AND ACCESSIBILITY: WEIGHTING AND PERFORMANCE MEASURES

The next highest weighted goal category in the evaluation tool was “Mobility and Accessibility.” 20% of a project’s score was determined by its impact on user mobility and accessibility in the region. This evaluation included five performance measures: Existing Congestion, Future Congestion, Existing Traffic Volume, Future Traffic Volume, and Alternative Transportation Facilities.

Existing Congestion

The “Existing Congestion” performance measure considered existing peak-hour congestion levels for the project corridor or intersection, as measured by a volume-to-capacity (V/C) ratio. This measure favored projects that increase the traffic capacity of locations in the transportation network that currently experience high levels of congestion. Data for this measurement was provided by the 2017 VDOT SPS dataset. Scoring was determined as follows:

- » **High:** V/C is greater than 1.1 and the project increases road capacity
- » **Medium:** V/C is between 0.8 and 1.1, and the project increases road capacity

- » **Low:** V/C is less than 0.8, or the project does not increase road capacity

Future Congestion

The “Future Congestion” performance measure considered the peak-hour congestion levels that are projected for the project corridor or intersection in 2045, as measured by a volume-to-capacity (V/C) ratio. This measure favored projects that increase the traffic capacity of locations in the transportation network that are expected to experience congestion in the future. Future traffic projections were calculated using both the overall growth of the region, as well as anticipated developments that are expected to generate large amounts of traffic. Data for this measurement was provided by the 2017 VDOT SPS dataset. Scoring was determined as follows:

- » **High:** Projected V/C is greater than 1.1 and the project increases road capacity
- » **Medium:** Projected V/C is between 0.8 and 1.1, and the project increases road capacity
- » **Low:** Projected V/C is less than 0.8, or the project does not increase road capacity

Existing Traffic Volume

The “Existing Traffic Volume” performance measure considered the existing volume of traffic that uses the project corridor or location, as measured by Weighted Traffic Flow (calculated as the average number of vehicles per lane, per hour). This measure favored projects that improve corridors that currently feature high volumes of traffic. Data for this measurement was provided by the 2017 VDOT SPS database. Scoring was determined as follows:

- » **High:** Weighted Traffic Flow is greater than 300 vehicles



- » **Medium:** Weighted Traffic Flow is between 150 and 300 vehicles
- » **Low:** Weighted Traffic Flow less than 150 vehicles

Future Traffic Volume

The “Future Traffic Volume” performance measure considered the volume of traffic that is projected to use the project corridor or location in 2045, as measured by Weighted Traffic Flow (calculated as the average number of vehicles per lane, per hour). This measure favored projects that improve corridors that are expected to handle high volumes of traffic in the future. Future traffic projections were calculated using both the overall growth of the region, as well as anticipated developments that are expected to generate large amounts of traffic. Data for this measurement was provided by the 2017 VDOT SPS database. Scoring was determined as follows:

- » **High:** Projected Weighted Traffic Flow is greater than 300 vehicles
- » **Medium:** Projected Weighted Traffic Flow is between 150 and 300 vehicles
- » **Low:** Projected Weighted Traffic Flow less than 150 vehicles

Alternative Transportation Facilities

The “Alternative Transportation Facilities” performance measure considered the estimated number of non-automotive modes (transit, bicycle, or pedestrian) that would be served by the proposed improvements. This measure favored projects that expand the region’s transportation options and increase the mobility of those who do not have access to an automobile. Scoring was determined as follows:

- » **High:** Includes facilities for two or more alternative modes of transportation
- » **Medium:** Includes facilities for one alternative mode of transportation
- » **Low:** Does not include facilities for alternative modes of transportation

COMMUNITY AND NATURE: WEIGHTING AND PERFORMANCE MEASURES

The next highest weighted goal category in the evaluation tool was “Community and Nature.” 15% of a project’s score was determined by its impact on the region’s social and environmental resources. This evaluation included two performance measures: Cultural Resources and Environmental Resources.

Cultural Resources

The “Cultural Resources” performance measure considered the project’s impact on cultural and historic sites that have been identified by localities. This measure favored projects that do not negatively affect the region’s important civic structures or sites. Data for this measurement included the location of National Register of Historic Places properties, schools, churches, libraries, and local points of interest. Scoring was determined as follows:

- » **High:** Little or no potential impact on sensitive historic and cultural resources
- » **Medium:** Moderate potential impact on sensitive historic and cultural resources
- » **Low:** Major potential impact on sensitive historic and cultural resources

Environmental Resources

The “Environmental Resources” performance measure considered the project’s impact on important environmental features in the region. This measure favored projects that do not disrupt environmental resources that provide aesthetic, ecological, recreational, and functional benefits to the region. Data for this measurement included the location of wetlands, rivers, streams, parks, and Virginia Outdoor Foundation easements. Scoring was determined as follows:

- » **High:** Little or no potential impact on sensitive environmental resources
- » **Medium:** Moderate potential impact on sensitive environmental resources
- » **Low:** Major potential impact on sensitive environmental resources



EFFICIENCY: WEIGHTING AND PERFORMANCE MEASURES

The final goal category used in the evaluation tool was “Efficiency.” 15% of a project’s score was determined by the efficiency of its use of the region’s resources and transportation funding. This evaluation included three performance measures: Right of Way Sufficiency, Plan Coordination, and Distribution of Benefits.

Right of Way Sufficiency

The “Right of Way Sufficiency” performance measure considered the sufficiency of the existing public right of way for accommodating the proposed project facilities. This measure favored projects that require little or no new land easements to be purchased by the state to be completed. Scoring was determined as follows:

- » **High:** Does not require any additional right of way
- » **Medium:** Will require a minor acquisition of additional right of way
- » **Low:** Will require a major acquisition of additional right of way

Plan Coordination

The “Plan Coordination” performance measure considered the number of previously conducted plans that identified the proposed project as a study recommendation. This measure favored projects that have been supported and recommended by planning studies other than the region’s LRTP. Data for this measurement was provided by regional and local government agencies. Scoring was determined as follows:

- » **High:** Project is recommended by two or more existing plans
- » **Medium:** Project is recommended by one existing plan
- » **Low:** Project is not recommended by other existing plans



Photo Courtesy of LuAnn Hunt, City of Lynchburg



Distribution of Benefits

The “Distribution of Benefits” performance measure considered the projected geographic distribution of benefits provided by a project. This measure favored projects that offer significant benefits to multiple jurisdictions in the region. Scoring was determined as follows:

- » **High:** Significant benefits projected for three or more localities
- » **Medium:** Significant benefits projected for two localities
- » **Low:** Significant benefits projected for one locality

RURAL TRANSPORTATION PROJECT SCORING

Transportation recommendations from the RL RTP were reviewed and updated by LGC staff along with local and state planning officials. The transportation recommendations were prioritized based on the following measures:

RL RTP Measures	
Level of service	Projects on road segments with higher levels of service received a higher score.
Volume to Capacity (V/C) Ratio	Projects on road segments with lower V/C ratios received a higher score.
Average Annual Daily Traffic	Projects on road segments with higher AADT rates receive higher scores.
Flow Rate	Projects on road segments with lower flow rates receive higher scores.
Fatal + Injury Crashes per mile	Projects on road segments with higher incidents of crashes involving a fatality or serious injury received higher scores.
Heavy Trucks	Projects on road segments with higher percentages of heavy trucks received higher scores.
Economic Factor	Projects on road segments with higher economic development potential received higher scores.
System Management and Preservation	Projects were determined by geometric conditions of the roadways, bridge conditions if applicable, and bike and pedestrian accommodation
Community and Environmental Preservation	Each road segment or intersection was reviewed to determine if the impact of the recommended transportation improvement would affect the following categories of land or natural features: <ul style="list-style-type: none"> » Wetlands » Streams » Agricultural or Forestry Land » Cultural or Historical Resources » Conservation Lands » Virginia Outdoors Foundation Land » Threatened and Endangered Species Habitat

