

## Appendix E, Addendum 3: Performance Based Planning and Programming – Pavement and Bridge Performance Measures

### Performance Targets

In accordance with the requirements of MAP-21 and the FAST Act, Virginia has established pavement and bridge condition performance targets as reported in Virginia’s Baseline Performance Period Report for 2018-2021<sup>1</sup>. This report, submitted to FHWA in October 2018, satisfies the federal requirement that State DOTs submit a Baseline Performance Period Report to FHWA by October 1<sup>st</sup> of the first year in a performance period. Performance measures for pavement condition are required for the National Highway System (NHS), while bridge condition requirements relate to structures identified as part of the National Bridge Inventory on the NHS. The pavement condition measures and established performance targets for the 2018-2021 performance period are indicated in Table 1 below.

**Table 1: Pavement Condition Measures and Performance Targets**

<b>Interstate Pavement Condition Measures<sup>2</sup></b>	<b>CY 2018-2019 Two Year Target</b>	<b>CY 2018-2021 Four Year Target</b>
Percentage of Pavements in Good Condition	N/A <sup>3</sup>	45.0%
Percentage of Pavements in Poor Condition	N/A <sup>3</sup>	3.0%
<b>Non-Interstate NHS Pavement Condition Measures<sup>4</sup></b>	<b>2018-2019 Two Year Target</b>	<b>2018-2021 Four Year Target</b>
Percentage of Non-Interstate Pavements in Good Condition	25.0%	25.0%
Percentage of Non-Interstate Pavements in Poor Condition	5%	5.0%

Bridge condition measures and established performance targets for the 2018-2021 performance period are indicated in Table 2 below.

<sup>1</sup> Virginia’s Baseline Performance Period Report data is through December 2017.

<sup>2</sup> Interstate condition measures are based on four distresses: International Roughness Index (IRI), cracking, rutting, and faulting.

<sup>3</sup> During this first performance period, States are not required to establish 2-year targets for interstate pavements; however, Virginia has chosen to establish performance targets and are 45.0% and 3.0% for percentage of pavements in good and poor condition, respectively.

<sup>4</sup> During this first performance period, Federal requirements for Non-Interstate NHS pavement condition and performance targets are based on a single distress, IRI. However, Federal guidance outlined in a September 27, 2018 Memorandum on State DOT Targets for Non-Interstate NHS Pavement Measures allows for the use of full distress data when reporting Non-Interstate NHS performance targets. Given the availability of full distress data, Virginia has chosen this approach and reported performance targets for Non-Interstate NHS pavements based on all four distresses. This allows for consistency in assessing the condition and setting performance targets for both Interstate and Non-Interstate NHS pavements.

**Table 2: NHS Bridge Condition Measures and Performance Targets**

<b>NHS Bridge Condition Measures</b>	<b>CY 2018-2019 Two Year Target</b>	<b>CY 2018-2021 Four Year Target</b>
Percentage of Deck Area of NBI Bridges on the NHS in Good Condition	33.5%	33.0%
Percentage of Deck Area of NBI Bridges on the NHS in Poor Condition	3.5%	3.0%

**Background/History**

Virginia’s history of monitoring asset conditions and utilizing performance information to determine investment strategies based on available funding levels spans over 10 years for pavements and bridges.

VDOT maintains a comprehensive inventory of all pavement and bridges on the state-maintained network. This inventory, which includes location, maintenance responsibility, ownership, and current condition or inspection information, serves as the foundation for life cycle planning, performance forecasting, maintenance and rehabilitation needs estimation, as well as prioritization of work to maximize asset life given available funding. Condition information is also important for communicating with external stakeholders, including the general public.

VDOT’s commitment to responsible Transportation Asset Management (TAM) practice is demonstrated through VDOT’s annual condition data collection programs and its establishment and publication of network level pavement and bridge performance goals. VDOT’s current condition measures and performance goals have been in place for many years and are fully integrated into VDOT’s budgeting process and investment strategies.

The federal pavement and bridge performance measures apply to a limited portion of the network for which VDOT is responsible (less than 15% of all lane miles and 18% of the bridge inventory).

**Connection to Other Performance Based Planning Documents**

VTrans, the state’s long-range multimodal plan, provides the overarching vision and goals for transportation in the Commonwealth. The long-range plan provides a vision for Virginia’s future transportation system and defines goals, objectives, and guiding principles to achieve the vision. It also provides direction to state and regional transportation agencies on strategies and policies to be incorporated into their plans and programs. The most recent approved long-range multimodal plan is VTrans2040.

Performance management, specifically as it relates to pavements and bridges, is included in the VTrans2040 Vision, Goals & Objectives, and Guiding Principles as noted below:

- Guiding Principle 5: Ensure Transparency and Accountability, and Promote Performance Management - Work openly with partners and engage stakeholders in project development and implementation, and establish performance targets that consider the needs of all communities, measure progress towards targets, and to adjust programs and policies as necessary to achieve the established targets.
- Goal D: Proactive System Management - maintain the transportation system in good condition and leverage technology to optimize existing and new infrastructure.
  - Objectives:
    - Improve the condition of all bridges based on deck area.
    - Increase the lane miles of pavement in good or fair condition.

Virginia’s federally required Transportation Asset Management Plan (TAMP) presents pavement and bridge inventory and conditions, along with the Commonwealth’s performance objectives, measures, and associated risks as they relate to the federal requirements. Asset funding, investment strategies, forecasts, goals, and gaps are also included. The TAMP is specific to the NHS and provides the Commonwealth’s Transportation Asset Management (TAM) processes and methodology to meet federal requirements. Pavement and bridge projects included in the STIP are consistent with Virginia’s reported TAM processes and methodology.

The program of projects in the STIP are directly linked to the pavement and bridge objectives outlined in VTrans2040 and the TAMP through the strategies and actions that are priorities in Virginia.

### **Funding for Pavement and Bridge Projects**

There are two key funding sources for pavement and bridge projects, the Highway Maintenance and Operations Fund (HMOF) and State of Good Repair (SGR) program funds. The pavement and bridge funding is used for differing projects from routine maintenance to reconstructive work. Funds are allocated to pavement and bridge projects based on an annual needs assessment process supported by a data-driven prioritization and selection process. The prioritization process is the same for the various funding sources; however, the [State of Good Repair](#) program funds are designated for deteriorated pavements and structurally deficient bridges.

The SGR program requires funds be distributed proportionality between VDOT and localities, based on assessed needs. More details, including the requirements for pavements and bridges, and the SGR prioritization process methodology, can be found at: [State of Good Repair for Bridges](#) and [Local Assistance Funding Programs](#).

VDOT has developed a robust asset management program, placing maintenance of the transportation network at the forefront of VDOT’s investment decisions. This commitment to responsible asset management practice is demonstrated through VDOT’s annual collection of condition data on pavements and bridges along with its establishment and publication of network-level pavement and bridge performance targets. For more than a decade, VDOT has

monitored pavement and bridge conditions using performance information (measures and targets) to determine investment strategies based on available funding levels.

In the annual needs assessment process, VDOT assesses 100% of the pavement network on Virginia's Interstate and Primary systems and approximately 20% of the Secondary system. In 2016, VDOT assessed 100% of the Secondary pavement network to create a condition baseline. The pavement condition data is compiled, analyzed and reviewed to report the optimized needs at a roadway system and district level. VDOT's pavement program selects resurfacing projects, in relation to needs, and optimizes the timing of projects through a data-driven pavement management system.

For bridges, VDOT follows national standards in performing safety inspections and determining general condition of the structures. Condition assessments are performed by certified safety inspection personnel. The inspection program requires a qualified inspector to complete a "hands-on" review of the structure or bridge during each inspection. By federal regulation, VDOT is required to conduct detailed inspections of NBI structures at intervals not to exceed 24 months. VDOT uses BrM software to store bridge condition and inventory data for each structure and to program, schedule, and track bridge and structure inspections. The data collected during inspections allows VDOT to use a proactive approach to maintenance. Preventive maintenance and timely intervention repairs are performed to avoid and slow deterioration that leads to greater rehabilitation or replacement cost. Virginia's bridge maintenance program is large and complex, so in order to direct its efforts more easily, performance targets have been developed.

VDOT uses a prioritization process when determining funding for the pavement and bridge programs and prioritizes work ranging from preventative maintenance to replacement. The prioritization processes take into account similar factors such as condition, cost effectiveness, maintenance history, and traffic volumes. While the systematic prioritization processes are a guide to assist in funding projects, districts direct the work performed as the local experts.

### **How do Pavement and Bridge Projects get selected for Inclusion in the STIP?**

As noted above, the funding to meet Virginia's pavement and bridge objectives and targets is allocated to projects in the CTB-approved SYIP and is consistent with VTrans2040. Each spring, the public is invited to comment on projects included in the draft SYIP prior to CTB approval. Since the SYIP is the foundation for the STIP, the program of projects in the STIP demonstrates support to achieve Virginia's pavement and bridge performance objectives and targets and is consistent with Virginia's TAMP.