Research Report: Proposal for a Program and Project Prioritization Framework

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# Table of Contents

**Introduction** .......................................................................................................................... 5

**I. Why a Performance-Based Planning and Programming Framework** .................................. 7

**Brief Background** .................................................................................................................. 7

- Traditional Project Selection ........................................................................................................ 7
- Federal Requirements .................................................................................................................. 8
- Overview of Performance-Based Planning and Programming (PBPP) ........................................... 8

**Primary Qualities of PBPP** ...................................................................................................... 10

- Based On Comprehensive Performance and Goals ..................................................................... 10
- Provides Consistency from Conception to Construction ............................................................... 10
- Provides a Common Framework for All Transportation Modes: 
  - Provides a Common Framework for All Geography Areas ...................................................... 11
  - Provides a Common Framework for All Types of Projects: Preservation, Expansion, Enhancement .... 11
  - Provides a Common Framework for All Projects Sizes and Time Frames ................................. 12
- Provides Coordination within and between Agencies ................................................................. 12
- Provides Transparency and Accountability ............................................................................... 12
- Provides Flexibility .................................................................................................................... 13

**Structure of the Proposed UTC Framework** .......................................................................... 14

- Goals and Policies Stage ............................................................................................................. 15
- Investment Prioritization Stage ................................................................................................... 18
- Project Selection Stage ............................................................................................................... 20
- Monitoring and Feedback ......................................................................................................... 22

**II. Case Studies** .................................................................................................................... 23

**Virginia Department of Transportation: VTrans 2035** ............................................................ 23

- Introduction and Overall Process .............................................................................................. 23
- Goals and Policy Stage ............................................................................................................... 26
- Investment Prioritization Stage .................................................................................................. 30
- Project Selection Stage .............................................................................................................. 35

**Virginia Department of Transportation: VTrans 2040** ............................................................ 35

- Introduction and Overall Process .............................................................................................. 35
- Goals and Policies Stage ............................................................................................................. 37
- Investment Prioritization Stage .................................................................................................. 37
- Project Selection Stage ............................................................................................................... 43

**Florida Department of Transportation** .................................................................................. 46

- Introduction and Overall Process .............................................................................................. 46
- Goals and Policies Stage ............................................................................................................. 46
- Investment Prioritization & Project Selection Stages .................................................................. 47
Introduction

Since the passage of federal transportation authorization act “Moving Ahead for Progress in the 21st Century” (“MAP-21”), the movement towards measuring the performance of transportation projects has been significant. While the federal government has proposed preliminary rulemaking on what performance measures are legally required, they are still in the comment period as of this report and are years behind schedule. There has also been a trend at the state level to set performance metrics that not only meet those posited to come from the federal government, but also exceed these metrics by including areas of measurement outside of MAP-21.

The Illinois Department of Transportation (“IDOT”) has been committed to adoption of a performance- and economic-based system of project development and prioritization. That commitment has also recognized the limits of performance-based project selection with a desire to maintain flexibility, etc. First, this report is designed to phase in and institutionalize a project development and prioritization program. This will ensure that a new project development and selection system will positively benefit the agency and its goals and reflect the unique needs and situation of Illinois.

Second, creating a performance measurement structure without having an agency-wide framework to organize the performance measure data and put it in context, will inevitably lead to inter- and intra-agency conflicts and duplication. In order to achieve effective and efficient results, the agency must first know its goals and what it wants to achieve in order to know specifically what to measure. The data that IDOT currently has at its disposal will make the process of developing performance measures much easier than if the department was starting from scratch. Unfortunately, this data will not be sufficient to perform the level of analysis that
would make a project selection system a worthwhile tool. IDOT staff has to determine what its goals are, before determining what new data needs to be collected.

Finally, with IDOT staff working on the Illinois Long Range Transportation Plan (“LRTP”) 2017 update, it is important that the LRTP (or some other process) clearly identify the Goals for the Agency. Establishing such Goals is a critical step to implementation of performance measurement which is one of the main federal requirements for the LRTP update.

IDOT commissioned the Urban Transportation Center at the University of Illinois Chicago (“UTC”) to produce a report and proposal to provide a solid basis for what an agency-wide, performance-based project selection framework should look like. The framework proposed by UTC (“the UTC Framework” or “the Framework”) is a thousand-foot view of a potential system that is modular in nature and able to adjust the level of district control, types of metrics used, and funding levels for specific types of projects. It is not the final answer to the question, “How should we do performance-based funding?” Instead, it is an effort to give guidance to the agency as it moves forward with instituting a performance measurement system and how that system will shape long-range planning efforts.

The UTC Framework is rooted in a style of transportation planning generally known as Performance-Based Planning and Programming (“PBPP”). UTC used case studies, federal guidelines, and academic materials to understand best practices and conducted discussions with directly IDOT regarding its specific needs. The UTC Framework is clear and consistent, yet general and adjustable in order to provide IDOT with a framework that is both systematic and flexible, and able to handle any transportation proposal. The following paragraph briefly describes the UTC Framework and how IDOT would implement it.
Beginning with establishing statewide goals and policies, IDOT would then incorporate local input to identify area-specific investment priorities. Building off of the various components involved in the goals, policies, and investment priorities, IDOT would create a scoring mechanism to evaluate and rank individual projects. An IDOT decision making body would then use the project descriptions and rankings to better inform their project funding decisions.

Part I of this report discusses the background, benefits, and qualities of a PBPP framework. Part II reviews the performance-based frameworks of other transportation agencies including the state departments of transportation of Virginia, Florida, Tennessee, and North Carolina. Part III describes the UTC Framework the current phase of this research and demonstrates how the recommended Goals apply to example projects. Part III also highlights the similarities and differences between the UTC Framework and those of the four state DOTs in Part II.

I. Why a Performance-Based Planning and Programming Framework

Brief Background

Traditional Project Selection

Traditionally, state DOTs have no uniform or clear structure by which projects are developed and selected. This is often preferred for allowing flexibility to transportation agencies and their jurisdictions (FHWA). However, the FTA notes that the lack of clarity and transparency also makes the process difficult or even impossible to comprehend for stakeholders and the general public. Additionally, it leads to projects that are not well connected to goals and highest transportation needs but instead are more guided by available funding or politics.

All too often public officials tout transportation investments in terms of temporary construction jobs, dollars spent or miles of road built rather than direct long term transportation and economic benefits achieved. However, more recently due to funding constraints and federal
requirements, many state DOTs are beginning to shift their process to a performance-based approach.

**Federal Requirements**

With MAP-21 its predecessor, DRIVE, and federal rule 23 U.S. Code § 135, state DOTs must begin to incorporate performance-based planning and prioritization into their planning process. Although, the federal government has yet to fully establish rules for all aspects of transportation planning, many states have already chosen to begin developing their own systems in order to adhere to the anticipated regulations. Additionally, federal regulations require state DOTs to incorporate certain broad goals into their plans:

- Economic Vitality.
- Safety and Security.
- Accessibility and Mobility of People and Freight.
- Multimodal Connectivity.
- Environmental Protection, Energy Conservation, and Quality of Life.
- Coordination with Local, Regional and Statewide Plans.
- System Efficiency.
- Preservation of Existing Transportation Systems.

**Overview of Performance-Based Planning and Programming (PBPP)**

Ideally, project selection is just one part of a comprehensive process generally referred to as Performance-Based Planning and Programming (PBPP). Basically, PBPP relies on performance data (or performance measures) to plan the direction of a transportation system and select (or program) projects to move the system in the chosen direction. In conjunction with performance measures, PBPP creates a framework to guide and support decision making which ultimately requires drawing a clear links between planning and funding. The FTA notes that this added structure and support can be especially crucial if the status quo decision making involves a political process. While a proper PBPP framework adds structure, it does not do so at the cost of
flexibility for a DOT. It is not a “black box” that gives a score based on rigid rules and formulas, nor does the system make any final funding decisions.

Any particular PBPP framework should be custom fit for each DOT, however, the DOT creating the new PBPP should not attempt to reinvent the wheel. There are many current agency practices and best practice guides from which to learn. FTA. The common purpose of all PBPP frameworks answers three core questions:

- Where are we now?
- Where do we want to go?
- How can we get there?

These core questions are answered through a chronological method that can be organized in a variety of ways through stages and components. This report recommends organizing the framework into three stages: Goals and Policies, Investment Priorities, and Project Selection. With some variation, the project selection stage would involve a scoring mechanism to allow for apples-to-apples comparison of any project. Next, the report will detail the qualities and benefits of PBPP frameworks before further describing the general organization.

In addition to the benefits and qualities discussed below, cost-effectiveness – in terms of planning resources, limiting duplication of effort and maximizing impact of projects – is a major benefit of the PBPP framework. However, it is important to note that some state DOT frameworks, such as Virginia Department of Transportation’s (“VDOT”), choose not to directly consider project costs until the project selection at the end of the framework. This allows the needs to be fully analyzed free of interference from cost considerations, which may otherwise prevent vital needs from ever being considered. For example, safety may add significant cost to a project, and spending money in rural communities may be less effective than spending money in urban areas; but, DOTs have an obligation to value safety and geographic equity in addition to
cost-effectiveness. While cost-effective decision-making is an important benefit of PBPP frameworks, it is not listed below as a primary quality.

**Primary Qualities of PBPP**

**Based On Comprehensive Performance and Goals**

First and foremost, a proper framework is rooted in performance measures that are used and useful, data-driven, and outcome-based. Outcome should be based on the outcome the agency wishes to achieve and outcomes as experienced by users, for example, travel times, reliability, and fatalities. FTA performance measures act as the units of measure in setting targets and evaluating expected and actual project performance regarding the goals. The goals address the major desired outcome of the DOT for the transportation system. The goals provide consistent purpose to every part of the PBPP framework.

**Provides Consistency from Conception to Construction**

An important feature of a PBPP framework is that each stage is connected to the next (FTA). Goals and trends shape policies which shape priorities which shape projects. Each proposed project must specifically state the goals, policies, and priorities that it helps achieve. The end result is projects that are based on the goals. VDOT sees PBPP frameworks as a “vertically integrated process that links long range planning and short range programming” (VTrans 2035). A well-structured PBPP framework also provides consistencies in many other levels, as discussed below.

**Provides a Common Framework for All Transportation Modes**

All forms of transportation investments should take multimodal approaches by considering all users in every project (CMAP). A road project should not only consider cars but also motorcycles, transit riders, bicyclists, and pedestrians. While some PBPP frameworks like
VDOT’s HB2 process consider all modes together, other frameworks like Florida Department of Transportation’s (“FDOT”) use a mixed approach and evaluate modes separately at times and together at other times. The proposed UTC Framework with its emphasis on consistency and flexibility opts for the mixed approach.

**Provides a Common Framework for All Geography Areas**

A framework can also accommodate and compare projects in a variety of regions both urban and rural. While PBPP frameworks are primarily based on performance merits, a DOT can introduce qualitative criteria support geographic equity. Frameworks like FDOT’s guarantees geographic equity by ensuring every district get back at least what it contributes as required by Florida law. However, such rigid measures, while understandable in a political context, could lead to substantial inefficiencies in producing outcomes consistent with state goals and priorities. UTC’s Framework insures that geographic equity is a major consideration but would leave to IDOT how to weight it for decisions between policies, programs and specific projects.

**Provides a Common Framework for All Types of Projects: Preservation, Expansion, Enhancement**

FHWA has identified three main types of transportation projects: preservation, expansion, and enhancement. While many state DOTs such as VDOT and North Carolina Department of Transportation (“NCDOT”) use their PBPP frameworks for only expansion and enhancement projects, a PBPP framework can be designed to compare all three types. By allowing a true comprehensive comparison between all types of projects, a state DOT can create a more cost-effective planning and implementation of projects. Able to see all needs for an area, a DOT can more strategically align enhancement projects with maintenance projects. Moreover, comprehensive framework encourages all projects to consider all goals. For example, it would incentivize preservation projects to consider congestion, safety, and land use and incentivize expansion projects to consider how to better connect and utilize existing assets. It would
naturally lead to a discussion for any project of the need for expansion or capacity increase by promotion of multiple transportation modes such as used by the Illinois Toll Highway Authority.

**Provides a Common Framework for All Projects Sizes and Time Frames**

PBPP frameworks can also allow DOTs to consider projects of all sizes and of many time frames while keeping them consistent with the goals. At least some PBPP frameworks, such as Virginia and Florida, analyze needs of an area and the merits of a project before analyzing issues of cost and funding. By focusing on performance evaluation, projects of all sizes, regardless of cost, can be more fairly compared. As a prioritization process, a PBPP framework can also allow a DOT determine when a project should be implemented if at all.

**Provides Coordination within and between Agencies**

PBPP frameworks can be flexible and applicable for a wide range of decisions faced by any transportation agency. Within a state DOT itself, a PBPP framework serves as a clear uniform evaluation process for the various departments of the DOT which may traditionally each have separate and conflicting evaluation process and priorities. By making the framework public, MPOs and other local transportation agencies can better incorporate state identified goals and priorities into the development of projects. Likewise, a PBPP should require the state DOT to mutually coordinate with other transportation agencies and local governments to incorporate regional and local plans and priorities into the state policies and priorities (CMAP Performance-Based Funding).

**Provides Transparency and Accountability**

One of the most essential features of the PBPP framework is the emphasis on transparency and explanation. With huge sums of public money at stake and even bigger infrastructure needs, it is very important that the decision-making process be understood by the public and especially
by the agencies themselves (CMAP Performance-Based Funding). Not only is the PBPP framework developed transparently with input from the public and local agencies, but, more importantly the PBPP framework provides transparency by clarifying the process so the public, all stakeholders, and the DOTs themselves understand how decisions are made.

In addition to transparency, the FTA notes that the framework’s most crucial feature is financial accountability. All proposed project state clear links to goals and the performance of all selected projects are monitored thereby linking funding decisions to current goals and recent performance (FTA).

**Provides Flexibility**

As noted earlier, one of the major reasons many agencies prefer not to use a structured or “black-box” project selection processes are to maintain the flexibility and control that comes with a vague decision making process. However, a proper PBPP does in fact allow for significant flexibility to account for equity and other factors that are hard to quantify.

Much of the flexibility in project selection in a PBPP framework comes through adjusting the weighting of each goal or criteria in the scoring process to reflect priorities relevant to a subject project. The FHWA recommends considering policy impacts while setting the weight of the scoring criteria. In an extreme example, if a region has a policy of not running a road through existing park land, the DOT could create the scoring criterion: “Does the road cut through park land?” If the answer is “yes,” the process deducts 30 points from the project’s final score. If the answer is “no,” then no points are deducted or added (FHWA).

VDOT weights their scoring criteria with extensive input from the region where the project is located. NCDOT weights local input as 30% and technical performance as 70% in regional projects but weights local input as 50% and technical performance as 50% in district projects.
Structure of the Proposed UTC Framework

Note: While the exact structure and language of PBPP frameworks vary by transportation agency, UTC has identified patterns and translated the various styles into the following generic framework. UTC uses this version of a generic PBPP framework throughout this report in order to provide a standard frame of reference in order to explain best practices, compare the various states in the case studies, and explain the UTC’s proposed framework for IDOT. UTC’s version of the generic PBPP framework has three stages:

1) The Goals and Policies Stage states the goals, performance measures, objectives, targets, and policies. This stage is ideally, but not necessarily, part of a state DOT’s LRTP.
2) The Investment Priority (or Needs Assessment) Stage sets the weighting of the goals and provides broad recommendations for transportation improvements in an area. This stage is also commonly included in the LRTP.
3) The Project Selection Stage scores and ranks submitted projects based on the established goals, targets, policies, weighting, and recommendations.

To use a metaphor, the basic structure and process of a PBPP framework is similar to the examination process in a classroom with three basic components: an exam description, a rubric, and the exam.

The exam description states the main concepts the teacher wants to see in students’ answers and what the passing grade is. For example, in a transportation class the exam description may state the goal of the class is to increase your knowledge of freight transportation to a beginner level.

The rubric effectively prioritizes certain concepts through establishing weighting used to score the quality of answers. For example, math accounts for 80% of the exam grade, vocabulary accounts for 10%, and reading comprehension accounts for 10%.

The exams apply the rubric’s weighting in order to evaluate how well the submitted answers match concepts and targets set forth in the exam description. For example, a question
may ask for the number of TEUs on two standard barges and the teacher would evaluate the answers correctness of math, vocabulary and reading comprehension.

The PBPP equivalent of the exam description is the goals and targets set in the Goals and Policies Stage. For the rubric, Investment Priority Stage is the equivalent which sets the weighting of the goals. The exam’s equivalent is the Project Selection Stage which asks specific questions to evaluate the anticipated performance of projects compared to the goals and targets set in the Goals and Policies Stage.

Goals and Policies Stage

The role of the Goals and Policies Stage in the PBPP framework is two-fold. First, it establishes the DOT’s goals, objectives, performance measures, and targets. Second, based on those components, the DOT evaluates and sets forth statewide policies put before it. Third, this Stage lays out the entire prioritization framework (including describing the second two stages) that draws a concrete line between goals and projects funded. That is, this Stage shows how the chain of the goals, policies, and investment priorities, act as the justification for projects in the STIP and MYP (FHWA).

The goals are the overarching outcomes that must be achieved in order to realize the agency’s vision for the state’s transportation system. In order to be better understood and useful, a goal should aim to accomplish specific achievements (VTrans 2040).

Commonly, plans also identify objectives which are statements identify general desired trends within goals for example, “Improve safety for users of the transportation system.” Derived from a discussion of the goals, objectives are developed to serve as the foundation for specific performance measures. Objectives should consider all types of travel affected (passenger and freight), modes, and geographies.
The FTA recommends starting with objectives focused on outcome, which lead to creating objectives based on output, which lead to objectives based on activity. This hierarchy of outcome, output, and activity moves from more broad to less broad in scope and also with different focuses. Outcome objectives guiding policy decision in the LRTP and should be based on how users experience transportation. Output objectives link outcomes to activities and may or may not involve direct control by the transportation agency. Activity objectives guide project-level decisions and involve to direct actions of the transportation agency. Figure 1 is an Objectives Tree provided by the FHWA and FTA which demonstrate the hierarchy in the development of objectives.

Figure 1: Example of an Objective Tree

Source: FTA PBPP Recommendations
Narrowing down of objectives leads an agency to see the most important specific ways, or metrics, to measure progress toward a goal. These metrics are called *performance measures*. Performance measures are used to determine a project’s anticipated ability to achieve the goals and then measure the actual performance of a project once it’s implemented. Measures may be general enough to adapt to most projects, but some measurements may only apply to some projects or modes. (FHWA). VDOT’s VTrans 2035 recommends that measures be based on:

- Data availability.
- Outcome not output.
- Understandability.
- Timeliness (ability of indicator to reflect performance changes within a reasonable and meaningful time frame).
- Consistency with state of the practice.
- Ability of organization to influence.
- Consistent with goals.

DOTs then identify specific and time-constrained *targets* for each performance measure.

To form targets, a DOT should analyze past performance measure trends as well as predict future impacts on transportation from anticipated patterns in demographics, economics, environment, and technology (VTrans 2040). Based on past performance, current objectives, and likely future, a DOT should ideal yet achievable targets (VTrans 2040).

Example of the four components goals, objectives, performance measure, and targets are as follows:

- **Goal**: Improve resilience and congestion.
- **Objective**: Reduce hours of incident-based delay.
- **Performance measures**: Average annual delay per capita, average crash removal time.
- **Target**: Reduce annual average delay per capita by 5% by 2020. This would reduce the annual average delay by one hour per person from the baseline year of 2010 and reverse a trend of increasing delay at 0.5% per year.
Using the four components in the Goals and Policies Stage, the DOT can evaluate whether a proposal on the statewide policy level fits the DOT’s strategic direction.

Though states may choose to put the PBPP Goals and Policies Stage in a strategic plan document separate from the LRTP document, ideally the LRTP should do so. The FHWA describes the LRTP function as a broad picture of the present and future and “policy document to set a strategic direction for investment decision making” (FHWA). Moreover, MAP-21 began to lay the foundation for PBPP framework in LRTPs by requiring state DOTs to inject them with goals, measures, and targets which should reflect national, state, and regional goals. The LRTP must also describe and report on the results of the planning process (FTA). Therefore, the LRTP is functionally the appropriate vehicle for the Goals and Policies Stage of the PBPP framework.

The same document that lays out the Goals and Policies Stage (e.g., the LRTP) should also discuss the Investment Priorities Stage and at least briefly layout the basics of the Project Selection Stage. The goals, objectives, performance measures, and targets should become the basis for selecting Investment Priorities. For the Project Selection Stage, some defer entirely to other “investment or modal plans” to discuss the project selection process. However, commonly LRTPs will layout the generally framework and possibly even list the project selection criteria since they may the same as or closely related to the overall goals of the Goals and Policies Stage.

**Investment Prioritization Stage**

The Investment Priorities stage, sometimes called a “needs assessment,” applies the state goals and targets to an area’s unique needs. It does this in the PBPP framework through two major outputs criteria weights of the criteria in the project prioritization scoring process and broad investment recommendation (FHWA). Together, the weights and recommendations guide and evaluate proposed projects to ensure they achieve state and regional goals.
Both outputs are area specific and should be developed with local input. While local input can take many forms, the FTA identifies two ideal components of the local input:

- Comparing current and ideal system performance.
- Comparing current conditions to expected trends in population, land use, employment, etc.

The FTA recommends combining the two components to identify investments that will help the region achieve their target transportation performance. Sources of local input should include direct collaboration with MPOs/RPOs and other local agencies or at least involve reviewing of relevant local plans.

Some Investment Priorities Stages are based more strictly on performance rather than local input. For example, VDOT’s previous needs assessment system (under the VTrans 2035 plan) required the worst performing goals of the prior four years to receive the highest priorities. However, it can be hard for many agencies rely so heavily on performance data because data collection may be sparse and fragmented — this may be part of the reason VDOT’s most recent needs assessment process shift to rely more on local input than strictly performance data.

Adjustable weighting provides flexibility in evaluations of projects both within and between areas. Area-specific weighting based on local input gives local entities some control in the evaluation of all projects being considered within the area. CMAP argues that metropolitan areas in particular deserve more control in transportation funding since metropolitan areas drive the economy (CMAP GO TO 2040). For example, in industrial area, weighting may reflect local priorities to favor freight projects, however, in a suburban residential area, weighting favor commuter projects.

Weighting also allows the DOT to adjust how projects are compared between areas. The issue of geographic equity is a particularly important issue for state DOT project selection. DOTs can use weighting to help balance the “needs of rural transportation planning organizations and
transit operators” against metropolitan needs. For example, if an urban project has more beneficial impact than rural project in an underserved area, the DOT could use a heavily weighted equity factor to prioritize the rural project.

The Investment Priorities Stage can be described in the same document as the Goals and Policies Stage or in its own document.

**Project Selection Stage**

The Project Selection Stage is the final piece of the PBPP framework. It chooses which projects to fund based on performance and cost-effectiveness (FHWA). It takes submitted candidate projects, evaluates them, and then chooses which ones get funding priority. The Project Selection stage creates the STIP which is the federally required list (or program) of projects to be accomplished in the near-term, the project timelines, and the project funding (FHWA). Projects must be included in the STIP to be eligible for federal funding. However, in practice, the more important project list document is the DOT’s multi-year plan (“MYP”).

Commonly, the Project Selection Stage involves scoring proposed projects based on expected performance in certain categories or criteria. The project selection criteria may be the same as or closely related to the overall goals of the Goals and Policies Stage. The FTA’s examples of such criteria include:

- Transportation performance.
- Geographic equity.
- Cultural preservation.
- Environmental impacts.
- Life cycle cost.

According to the FHWA, project proposals may be sourced from:

- LRTPs of MPOs and the state DOT itself.
- Other state planning documents such as a DOT asset management plan or state investment plan.
• Transit operators’ transit development plans (TDP).
• Local governments.
• The public via a DOT or MPO “call for projects.”

These sources can develop project proposals through several methods including (FHWA):

• Data analysis.
• Modeling.
• Other plans.
• Community/stakeholder input.
• Intergovernmental consultation.

Once projects are submitted they are run through the DOT selection process. While the selection process can vary by state, the FHWA recommends three basic steps:

1. Preliminary screen (purpose and feasibility test).
2. Project evaluation.
3. Weight, rank, and choose.

The evaluation step should compare proposed projects against the top Investment Priorities identified in the Investment Priorities Stage (VTrans 2035). The result of the evaluation may be a score for each criterion. For criteria that are hard to quantify, a specific score may not be appropriate. A general unit can work instead such as: significant, moderate, or minimal impact from a project on a goal (FHWA).

The DOT should then apply the criteria weights for relevant area established in the Investment Priorities Stage. Once the weighted scores are added to get an overall score, the DOT can then rank the projects in a variety of ways, such as statewide, by district, or by mode. In addition to the score and rank, each project should also include a brief narrative describing which goals, targets, policies, and priorities the project links to. The score, rankings, and narrative serve as a guide for choosing which projects to include in the STIP and MYP.
The Project Selection Stage can be laid out in the same document as the first two stages but can alternatively be in a separate document. The evaluation and scoring process is usually done through an online tool submission tool.

**Monitoring and Feedback**

One of the most important pieces of the PBPP process is monitoring progress of implemented projects and adapting future decisions according to past results. Every planning cycle should be used to analyze past methods given the present performance and make the system better for the future (FHWA). According to the FTA and FHWA, each project selected should include a brief description of which goals the project supports in addition to explaining the relevant criteria, decisions, successes, and failures. This narrative helps link the projects and funding to the goals. Additionally, Maryland DOT recommends that the burden lay with each agency submitting candidate projects to state which target the project supports (FHWA). Maryland DOT explains that the requirement dually encourages the localities and agencies to consider the LRTP as a guide in their own project selection process as well as enabling a monitoring process.

The DOT can then track the project’s impact on the goals and targets which the project claims to support. By monitoring the impact of projects, DOTs can base decisions of the future four years on successful investments of past four years. In the bigger picture looking at all projects in the aggregate, the DOT can gauge the overall impact of their investments in goals.
II. Case Studies

**Virginia Department of Transportation: VTrans 2035**

**Introduction and Overall Process**

VDOT’s VTrans 2035 LRTP was the agency’s first major plan in the direction of creating a PBPP framework. Prior to the VTrans 2035, Virginia only used performance measures to track progress of targets set in the long range plan. However, the performance measures were not directly used in the project selection process more than loosely considering them during planning and funding development. VDOT used VTrans 2035 to begin clearly linking the project selection process to performance measures for each goal in the LRPT. VDOT cites MAP-21’s funding strings as a primary motivation for the shift.

VTrans 2035 sets performance targets, priorities, and projects aimed at achieving the overall VTrans 2035 Vision. The restructured process was done with extensive research and input from the public and stakeholders. VDOT intentionally designed the framework to “not [as] a black-box with a single answer, but a process for making better informed decisions” (VTrans 2035 Update).

VTrans first sets forth the overarching goals and targets for VDOT to accomplish along with performance measures to establish benchmarks for tracking target progress toward those goals. In the second stage, VTrans 2035 calculates the gap between the goals and targets. The least improved goals are seen as the most in need. Then based on the highest needs, VDOT sets Investment Priorities, which set the primary focus of state and regional transportation planning (VTrans 2035 Update), and notifies relevant parties of the types of projects that will be selected for funding. Finally, in the third stage, based on the investment priorities, VDOT then planned to select projects. All specific projects must be linked to at least one Investment Priority (VTrans
2035 Update). It is also worth noting the framework allows for dynamic weighting of goals. That
is, VDOT planned to adjust weighting every year based on changes in performances and based
on contextual appropriateness, for example, by mode or by region (urban versus rural).

Taking a step back it becomes clear that not just the project selection stage but the entire
VTrans process — stages one, two, and three — all serve to evaluate and filter out projects.
Providing clear goals in stage one and tangible investment recommendations in stage two allows
parties to generate informed projects submissions more aligned with the long range plan. The
flow chart in Figure 2 explains the basic idea of VTrans 2035.
For agencies, the ratings framework serves as a guiding tool for their decision-making that is flexible and applicable to a wide range of decisions. Chronologically, it also helps guide MPOs and other agencies in developing projects. Then, the framework clarifies for VDOT workers the process of choosing between complex competing investment priorities. In the final stage of prioritization, the framework guides evaluations of submitted projects and helps the decision making board choose which projects to put into the STIP.
VDOT stresses that the VTrans 2035 framework only applies to future discretionary projects. That is, the framework does not take away from already obligated projects or from core functions and legislatively mandated policies such as safety and preservation. Nor is the framework based on a strict formula that imposes any final decision. On the contrary, says VDOT, if a core function such as safety is performing poorly, then the framework will actually lead to increased funding for safety (VTrans 2035 Update).

**Goals and Policy Stage**

The goals that VTrans 2035 sets out are:

- Safety and security.
- System maintenance and preservation.
- Mobility, connectivity, and accessibility.
- Environmental stewardship.
- Economic vitality.
- Coordination of transportation and land use.
- Program delivery (i.e., fiscal responsibility).

All of the goals speak to VDOT’s mission as a state transportation agency and were largely determined by its ability to influence the goal outcomes. VTrans even ranks VDOT’s ability to influence outcomes by goal in order from most to least influence:

- Program delivery.
- Preservation.
- Environment and safety.
- Economic development and mobility.
- Land use.

In the Goals and Policies Stage, VDOT also looked at trends not directly related to travel, but which influence goals and targets. VDOT analyzed how demographic, economic, environmental, technology trends impacted transportation in the state.
VDOT also points out some lessons learned in setting goals and targets, as seen in Figure 3. VDOT highlights the need for their goals to better account for two particular needs: senior mobility and coordination between land use and transportation. Senior mobility was important due to a rapidly aging population, and the land use-transportation coordination was seen as the most important aspect of cooperation between state agencies who make transportation decisions and local government who control land use decisions.

In setting targets, VDOT learned it was important to set specific numeric targets rather than simple up and down trend targets. VDOT also learned that it was best to understandably communicate to the public and other agencies how their performance measures scores were derived (VTrans 2035).
### Figure 3 VTrans 2035 Update Summary of Suggest Performance Measure Changes

<table>
<thead>
<tr>
<th>Goal Area</th>
<th>Recommendations</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety and Security</td>
<td>Consider adding: Percent of traffic above posted speed (or 20% above) at select locations on Interstate system</td>
<td>Speed data are available at permanent count station locations</td>
</tr>
<tr>
<td>Safety and Security</td>
<td>Consider adding: Large truck at-fault crashes</td>
<td>Data should be available</td>
</tr>
<tr>
<td>Safety and Security</td>
<td>Consider adding: Rail crossing incidents</td>
<td>Data should be available</td>
</tr>
<tr>
<td>Safety and Security</td>
<td>Consider normalizing transit safety measure to vehicle miles/hour</td>
<td>Data are available</td>
</tr>
<tr>
<td>System Maintenance and Preservation</td>
<td>Consider adding: Airport pavement condition</td>
<td>Data should be available</td>
</tr>
<tr>
<td>System Maintenance and Preservation</td>
<td>Consider adding: Roads and bridges in poor condition or exceeding “poor” thresholds</td>
<td>Data are available</td>
</tr>
<tr>
<td>System Maintenance and Preservation</td>
<td>Transit vehicle fleet condition: Consider changing target to average age of fleets in states with similar populations/transit needs</td>
<td>Data should be available. <em>Virginia Performs</em> provides comparative data</td>
</tr>
<tr>
<td>Mobility, Connectivity and Accessibility</td>
<td>Consider adding: Percentage of non-interstate roadway sidewalk coverage</td>
<td>Consider for longer-term implementation, requires work with partner agencies</td>
</tr>
<tr>
<td>Mobility, Connectivity and Accessibility</td>
<td>Consider adding: Percentage of roadway system with bike lanes</td>
<td>Consider for longer-term implementation. May limit to larger jurisdictions, may need additional data collection</td>
</tr>
<tr>
<td>Mobility, Connectivity and Accessibility</td>
<td>Consider adding: Total mileage of bike trails</td>
<td>Consider for longer-term implementation. May limit to larger jurisdictions, may need additional data collection</td>
</tr>
<tr>
<td>Mobility, Connectivity and Accessibility</td>
<td>Consider adding: Employer participation in Transportation Demand Management (TDM) programs</td>
<td>Consider for longer-term implementation. May limit to larger jurisdictions, may need additional data collection</td>
</tr>
<tr>
<td>Mobility, Connectivity and Accessibility</td>
<td>Consider adding: Percentage of peak hour traffic operating at 50% of speed limit or below</td>
<td>Data are available from analysis of permanent count station location data</td>
</tr>
<tr>
<td>Goal Area</td>
<td>Recommendations</td>
<td>Comments</td>
</tr>
<tr>
<td>-----------</td>
<td>----------------</td>
<td>---------</td>
</tr>
<tr>
<td>Mobility, Connectivity and Accessibility (cont.)</td>
<td>Consider adding: Number/percentage of intermodal facilities with direct access to National Highway System</td>
<td>Data should be available</td>
</tr>
<tr>
<td></td>
<td>Consider using: Hours of delay per household</td>
<td>Currently using total hours of delay</td>
</tr>
<tr>
<td></td>
<td>Consider adding: Number/rate of accidents involving seniors</td>
<td>Addresses senior safety issues</td>
</tr>
<tr>
<td></td>
<td>Consider adding: Number of county and municipal comprehensive plans with explicit provisions for senior housing and/or transportation</td>
<td>Addresses senior mobility</td>
</tr>
<tr>
<td></td>
<td>Consider adding: Number of transit riders aged 65 and older</td>
<td>DRPT reports senior transit ridership in <em>Virginia Performs</em></td>
</tr>
<tr>
<td>Environmental Stewardship</td>
<td>Consider adding: Percentage of DOT fuel consumption defined as cleaner fuels</td>
<td>Consider for longer-term implementation. Data should be available</td>
</tr>
<tr>
<td></td>
<td>Consider adding: Backlog of roadway mile noise barriers</td>
<td>Consider for longer-term implementation. Data should be available</td>
</tr>
<tr>
<td></td>
<td>Consider adding: NAAQS exceedences</td>
<td>Data should be available</td>
</tr>
<tr>
<td>Economic Vitality</td>
<td>Consider adding: Total annual (per capita) congestion costs for large urban areas</td>
<td>HERS data may be used for this</td>
</tr>
<tr>
<td></td>
<td>Consider adding: Transportation user benefits of roadway expansion elements of 6-year program versus costs</td>
<td>Would need to use spreadsheet or adapt statewide model</td>
</tr>
<tr>
<td></td>
<td>Freight shipped measure: Consider reporting percentage of Port of Virginia’s share of the total on east coast or competitive geography</td>
<td>Data should be available</td>
</tr>
<tr>
<td>Transportation and Land Use</td>
<td>Consider measuring density in corridors where higher densities are important to the success of a transit investment. Or, characterize corridor types and report average population densities within certain distance of corridor</td>
<td>There is a strong correlation between density and transit use</td>
</tr>
<tr>
<td></td>
<td>Consider adding: Percentage of corridor centerline miles of Corridors of Statewide Significance that conform to access management standards</td>
<td>Addresses efforts to link transportation and land use</td>
</tr>
<tr>
<td></td>
<td>Consider adding: Number of comprehensive plans that require use of Context Sensitive Solutions (CSS) to coordinate land use and transportation</td>
<td>CSS is a planning and design process to match a transportation facility with the needs of the local community and the physical environment</td>
</tr>
<tr>
<td>Program Delivery</td>
<td>Consider adding: Average incident clearing/response time</td>
<td>Consider for longer-term implementation. Would require improved data quality</td>
</tr>
<tr>
<td></td>
<td>Consider adding: Customer satisfaction with traveler information services</td>
<td>Consider for longer-term implementation. Would require survey</td>
</tr>
<tr>
<td></td>
<td>Consider adding: Dollar value of transportation funds that are “flexed”</td>
<td>Flex funds require coordination between highway and transit agencies</td>
</tr>
<tr>
<td></td>
<td>Consider adding: Dollar value of shared resources (staff, property)</td>
<td>An operational-level indicator of “silo-breaking” and resource sharing to accomplish agency-wide objectives</td>
</tr>
<tr>
<td></td>
<td>Consider adding: Percentage of local long-range transportation plans reviewed/approved through the 527 process</td>
<td>An example of local/state agency cooperation in transportation-land use planning</td>
</tr>
</tbody>
</table>

Source: VDOT’s VTrans 2035 Update
**Investment Prioritization Stage**

While the VDOT’s goals remain relatively stable over time, the Investment Priorities are re-evaluated every four years based on a fresh needs assessment done with every update of the LRTP. The VTrans 2035 needs assessment has a rating system and four main steps: performance, affordability, implementability, and risks of inaction. (Update 36).

The VTrans 2035 Update clarified funding decisions by introducing an investment priorities rating system that more clearly linked Investment Priorities to goals, performance measures, and funding (VTrans 2035 Update). The investment priorities rating system provided logical and consistent support by “directly relating investment choices to potential future system performance” (VTrans 2035 Update). Moreover, the ratings allow the process to stay dynamic and current because VDOT can easily update ratings to account for most up-to-date transportation system conditions as they fluctuate over the years. Through a comprehensive comparison of many investment options, the ratings system suggests investments most likely to improve performance. This results in the most cost-effective solutions for the greatest needs.

As noted, the VTrans 2035 investment prioritization process has four steps: the need screen, affordability score, implementation score, and a score of the impact of not making the investment. The needs screen is the first and most important step. The score has two components: the investment’s expected performance towards goals and the state's ability to influence that goal. A candidate investment priority moves on to the next three steps only if it has a passing needs score, that is, only if it meets a need. The affordability score is based on likely general cost and the state’s ability to get funding. The implementation score evaluates the ease of implementation in light of existing policies and procedures. The score for impact of not making
an investment looks at the potential negative impacts of inaction. All four scores are combined to get the investment priority score, as shown in Figure 4.

Figure 4. VTrans 2035 Prioritization Rating Process Inputs

Breaking down the investment prioritization steps further, the needs score has two parts. The first part is a performance assessment which identifies the most in-need goals based on annual performance reports. Lower performing goals are given more weight as seen in Figure 5. The second part of the needs score is an influence assessment which identifies the investment priorities that have the most impact on lowest performing goals. VDOT create a table, shown in Figure 6, to evaluate the influence each candidate investment priority likely will have on each goal identified in the first step. To get the final score, VDOT multiplies each cell by the weights set in the first step, then adds across each row to get the final needs screen score for each candidate investment priority.

Source: VDOT’s VTrans 2035 Plan
### Figure C-3: Goal Performance Inputs

<table>
<thead>
<tr>
<th>Goal</th>
<th>2009 Score</th>
<th>2009 Score</th>
<th>2010 Score</th>
<th>2010 Score</th>
<th>2011 Score</th>
<th>2011 Score</th>
<th>3-Year Avg Score</th>
<th>3-Year Average</th>
<th>Goal Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety &amp; Security</td>
<td>4.62%</td>
<td>8.39%</td>
<td>-3.23%</td>
<td>-3.23%</td>
<td>3.26%</td>
<td>3.26%</td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Maintenance &amp; Preservation</td>
<td>0.04%</td>
<td>-1.04%</td>
<td>-3.10%</td>
<td>-3.10%</td>
<td>-1.37%</td>
<td>-1.37%</td>
<td></td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>Mobility, Connectivity, and Accessibility</td>
<td>-0.73%</td>
<td>-4.81%</td>
<td>-6.91%</td>
<td>-6.91%</td>
<td>-4.15%</td>
<td>-4.15%</td>
<td></td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>Environmental Stewardship</td>
<td>0.87%</td>
<td>0.40%</td>
<td>9.26%</td>
<td>9.26%</td>
<td>3.51%</td>
<td>3.51%</td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Economic Vitality</td>
<td>1.34%</td>
<td>-1.24%</td>
<td>-2.35%</td>
<td>-2.35%</td>
<td>-0.75%</td>
<td>-0.75%</td>
<td></td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>Transportation and Land Use</td>
<td>4.94%</td>
<td>11.33%</td>
<td>7.67%</td>
<td>7.67%</td>
<td>7.98%</td>
<td>7.98%</td>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Program Delivery</td>
<td>0.40%</td>
<td>-2.68%</td>
<td>-10.93%</td>
<td>-10.93%</td>
<td>-4.40%</td>
<td>-4.40%</td>
<td></td>
<td></td>
<td>4</td>
</tr>
</tbody>
</table>

Source: VDOT’s VTrans 2035 Plan
Figure 6. VTrans 2035 Correlation Between Investment Priorities and Goals Chart

Source: VDOT's VTrans 2035 Plan
Examples of the questions asked in the remaining three stages are as follows. The affordability score asks: Is a project over or under $200 million? Does it require traditional or innovative funds? The implementability score asks: How many agencies must coordinate? Does it require legislative action? The inaction score asks: Will consequences be felt in near- or long-term? Will effects be felt locally or statewide?

Source: VDOT’s VTrans 2035 Plan
VDOT then shares this framework with the all applicable agencies and the public.

Communication allows the agencies to put together proposals that are more needs-based and cost-effective as identified by the framework and therefore more likely to be accepted.

**Project Selection Stage**

VTrans 2035 intended for proposed projects to be evaluated against the top Investment Priorities identified through the Investment Priorities Rating process. However, as of the VTrans 2035 and the Update, VDOT did not yet have a PBPP-type project selection process. The VTrans 2035 plans created the first two stages of the process that would work with the project selection process now called the HB2 process explained in VTrans 2040.

**Virginia Department of Transportation: VTrans 2040**

**Introduction and Overall Process**

VTrans 2040 mostly builds off of PBPP framework created in VTrans 2035 with a few adjustments and updates. VTrans 2040 uses a Goals and Policies Stage relatively identical to its predecessor, adjusts the Investment Priorities Stage, and adds a formal process to the Project Selection Stage.

The updated methodology for the Investment Priorities Stage (which VDOT calls the “Needs Assessment”) involves using local input to form region-specific investment recommendations and weightings of project selection criteria. The new project selection process known known as “HB2” comes from the state legislative mandate, Virginia House Bill 2 of 2014. Virginia’s Commonwealth Transportation Board (“CTB”) will make HB2 fully operational by the summer of 2016.

Once identified by VDOT, the Investment Priorities are shared with relevant stakeholders who submit projects to be analyzed with the HB2 process. HB2 scores candidate projects
according to the needs and weights set in the Investment Priority Stage. Figure 8 shows the simple flow of information through the VTrans 2040 framework.

Figure 8. Relationship of VTrans 2040 and HB2 Process

![Figure 8: Relationship of VTrans 2040 and HB2 Process](image)

Source: VDOT’s VTrans 2040

Figure 9 visualizes a fuller flow of information. While more clear than the process in VTrans 2035, the VTrans 2040 process remains complex. VDOT explains how the VTrans 2040 framework is a cyclical process where “the goals set forth in VTrans inform the long range transportation needs, project recommendations are implemented to meet the needs and help Virginia meet the performance targets...and ongoing monitoring of Virginia’s transportation system to meet these targets informs future adjustments of the goals...” (VTrans 2040).
Goals and Policies Stage

The Goals and Policies Stage in VTrans 2040 is relatively the same as that of VTrans 2035 and therefore will not be discussed separately in this report.

Investment Prioritization Stage

Similar to VTrans 2035, the Investment Prioritization Stage in VTrans 2040 plays a crucial screening role in the PBPP process. If a candidate project does not meet a capacity, operational
or safety priority as identified in the Investment Prioritization Stage, then the candidate project will not even be considered in the Project Selection Stage (VTrans 2040 Needs Report).

Unlike VTrans 2035, however, the new Investment Priority analysis for VTrans 2040 adjusts how VDOT creates investment recommendations. The VTrans 2040’s Investment Priority Stage categorizes transportation needs into three geographic travel markets in addition to a fourth category for safety that receives a separate to-be-determined evaluation process. The three geographic categories are:

- Corridor of Statewide Significance (“COSS”): for major interregional corridors with needs focused exclusively on qualitative transportation measures.
- Regional Networks: for the intraregional travel market with needs focused directly on the economy, and indirectly on transportation via its role in economy. (p8)
- Urban Development Areas: for the local community travel market.

The COSS category evaluates corridor needs according to four criteria:

- Redundancy and mode choice.
- Safety.
- Congestion.
- Reliability.

The Urban Development Area needs are locally defined by each metro area or local community. Otherwise, if the local community decides not to identify its needs then general statewide needs guide decision making as to the local needs.

Regional Networks is the main focus of VDOT’s Investment Priorities Stage. For the Regional Networks categories, VDOT performed thorough research of the relationship of transportation and economics. Then based on that research, VDOT gathers local input for three steps which are done for each region: analyze current conditions and future desires, conduct a gap analysis, create investment recommendations. The entire process of gathering public input involves about four months of workshops and forums.
Once VDOT identifies a region (generally the MPO region), VDOT begins by gathering background information answers that question by examining three types of conditions within the region:

- Existing economic conditions and trends.
- Existing transportation conditions and trends.
- Desired future economic conditions.

Metrics for existing economic conditions include:

- Demographics.
- Top industries (i.e., employment, output, location quotient).
- Top employers.
- Activity centers (i.e., geographic concentration of jobs).

Metrics for assessing transportation conditions include:

- Commuting patterns and modes.
- Accessibility.
  - of jobs by all modes
  - of freight by highways
- Reliability of highways.
- Bottlenecks on highways.
- Freight network and commodity flows.

Methods of assessing desired future economic conditions include:

- Existing economic incentives.
- Community plans.

VDOT then devises a plan to bridge the gap between existing and desired economic conditions using transportation investments appropriate for each region’s primary industry clusters. VDOT defines three types of industry clusters:

- Freight-based.
- Knowledge-based.
- Local-serving.
Each cluster has different transportation needs based on its type of workforce and the nature of its operations as shown in Figure 10. To understand the specific needs VDOT asks questions created through research on transportation-economic linkages described including:

- Do the knowledge- and local-based activity centers have transit access?
- Do the freight- and local-based activity centers have appropriate highway access for freight?
- Are key commuting routes served by transit?
- Are key commuting and/or freight routes affected by bottlenecks?
- Are there reliability issues for commuters and/or freight?
- Are there conflicts between freight transportation and local travel needs?
- Are there barriers to active transportation modes that reduce their viability where they otherwise might be attractive/effective?
Then VDOT identifies the transportation needs for areas and facilities in a region. The transportation needs include a brief justification based on five categories of transportation needs: corridor reliability, network connectivity, transportation demand management, modal choice, and walkable and bikeable places. Note, VDOT does not state why the five categories differ from the goals set forth in the LRTP.

Finally, VDOT creates a list of broad recommendations to meet the identified needs. For example, for capacity needs on a regional corridor, VDOT may recommend creating parallel networks or using Travel Demand Management strategies (VTrans 2040 Needs Report). Recommendations would not be specific identifications of where to build a new road but are largely inspired by projects and priorities listed in a region’s MPO Constrained Long Range Plan (CLRP).

In addition to gathering data on the local conditions, VDOT hired Michael Baker International and Southeastern Research Institute (SIR) to performed extensive research on the relationship between transportation and business site selection (Economic Development Trends). The research included reviewing studies and reports along with completing 40 interviews and
collecting 185 survey responses from business leaders around the country. From the research, VDOT generally found that the most important factor in business site selection is available workforce. More specifically, jobs follow the workers and most workers prefer “livable communities.” (VTrans 2040 Needs Report). Thus VDOT concluded that transportation investments should focus on attracting and retaining talent by building livable communities. However, other factors were also important in site selection that have implications for transportation investments as shown in Figure 11.

Figure 11. VTrans 2040 Economic and Transportation Correlation Table

<table>
<thead>
<tr>
<th>Economic and Transportation Correlation Table</th>
<th>Local Sector</th>
<th>Knowledge Sector</th>
<th>Freight Sector</th>
</tr>
</thead>
<tbody>
<tr>
<td>Highway Access</td>
<td>HIGH</td>
<td>HIGH</td>
<td>HIGH</td>
</tr>
<tr>
<td>Passenger Reliability</td>
<td>MED</td>
<td>HIGH</td>
<td>MED</td>
</tr>
<tr>
<td>Bottleneck Relief</td>
<td>MED</td>
<td>HIGH</td>
<td>HIGH</td>
</tr>
<tr>
<td>Freight Reliability</td>
<td>MED</td>
<td>MED</td>
<td>HIGH</td>
</tr>
<tr>
<td>Freight Accessibility</td>
<td>MED</td>
<td>LOW</td>
<td>HIGH</td>
</tr>
<tr>
<td>Network Connectivity</td>
<td>HIGH</td>
<td>HIGH</td>
<td>MED</td>
</tr>
<tr>
<td>Transportation Demand Management</td>
<td>LOW</td>
<td>MED</td>
<td>MED</td>
</tr>
<tr>
<td>Modal Choice</td>
<td>HIGH</td>
<td>HIGH</td>
<td>MED</td>
</tr>
<tr>
<td>Transit Access</td>
<td>MED</td>
<td>HIGH</td>
<td>MED</td>
</tr>
<tr>
<td>Active Transportation Options</td>
<td>MED</td>
<td>MED</td>
<td>LOW</td>
</tr>
<tr>
<td>Walkable Places</td>
<td>MED</td>
<td>HIGH</td>
<td>LOW</td>
</tr>
</tbody>
</table>

Source: VDOT’s VTrans 2040 Plan

Once VDOT completes the process of identifying local Investment Priorities in light of the transportation-economic linkages, local governments can create projects based on the priorities. All submitted projects then head to the HB2 process for the Project Selection Stage.
**Project Selection Stage**

All candidate projects submitted to the HB2 process must clearly state which of the four Investment Priority categories (including the safety category) the projects best fits. VDOT has two grant programs for projects funded through the HB2 process:

- The “district grant program,” which is a general fund available for any of the four categories.
- And the “high priority projects program,” which only fund COSS and Regional Network projects.

As for the project screening timeline, submitted projects will be evaluated on a rolling basis during the fall every year. The process will follow this order:

1. Evaluation and recommendations by contracted experts.
2. Review of recommendations by state agency. Approved projects pass to HB2 team.
3. Scoring of approved projects by HB2 team.

The five criteria scored are congestion mitigation, safety, accessibility, environment, economic development, and land use. For weighting of the criteria, each region has an HB2 Area Type of A, B, C, or D based on degree of urbanization and industry type as shown in Figure 12 and x. Once the performance score is calculated across the five criteria, it is combined with a cost-benefit score to achieve the ultimate HB2 score. Each project is then ranked statewide and by district. The final scorecard is displayed in Figure 13.
Figure 12. VTrans 2040 Criteria Weightings by Category

<table>
<thead>
<tr>
<th>Category</th>
<th>Congestion Mitigation</th>
<th>Economic Development</th>
<th>Accessibility</th>
<th>Safety</th>
<th>Environmental Quality</th>
<th>Land Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category A</td>
<td>35%**</td>
<td>10%</td>
<td>25%</td>
<td>10%</td>
<td>10%</td>
<td>10%*</td>
</tr>
<tr>
<td>Category B</td>
<td>15%</td>
<td>20%</td>
<td>25%</td>
<td>15%</td>
<td>10%</td>
<td>15%*</td>
</tr>
<tr>
<td>Category C</td>
<td>10%</td>
<td>20%</td>
<td>30%</td>
<td>30%</td>
<td>10%</td>
<td></td>
</tr>
<tr>
<td>Category D</td>
<td>10%</td>
<td>30%</td>
<td>20%</td>
<td>30%</td>
<td>10%</td>
<td></td>
</tr>
</tbody>
</table>

Source: VDOT’s VTrans 2040 Plan
Figure 13. HB2 Project Scorecard

Source: VDOT’s HB2 Website
Introduction and Overall Process

The Florida Department of Transportation ("FDOT") has two major documents in its transportation planning: The Florida Transportation Plan 2060 ("FTP") and the Strategic Intermodal System ("SIS") Funding Strategy. The FTP is FDOT’s LRTP which lists out six goals and lays out the framework for the Investment Priority and Project Selection Stages. The SIS provides details on both the Investment Priority and Project Selection Stages. FDOT’s Systems Planning Office ("SPO") oversees the process.

To connect planning to projects, the SIS uses the goals and measures set in the FTP with special emphasis on economic development. In the SIS process, projects are generated by districts, ranked by state modal agencies, then finally slated for funding by the SPO. This FDOT framework, however, only addresses capacity investments on critical networks, while system preservation projects are prioritized and selected under a separate framework not discussed in this report.

Goals and Policies Stage

The FTP sets out the goals and current conditions, trends, performance measures, and performance targets along with the summary of the entire prioritization selection framework. The FTP sets out six goals under two emphasis areas:

- Quality of Life and Future Prosperity.
  - Economic Competitiveness
  - Livable Communities
  - Environmental Stewardship
- Performance of the Transportation System.
  - Safety and Security
  - Maintenance and Operations
Mobility and Connectivity

**Investment Prioritization & Project Selection Stages**

The Investment Priority and Project Selection stages will be discussed together since FDOT’s basically seems to perform them simultaneously through a four-step process as seen in Figure 14 by skipping a distinct Investment Priorities Stage and moving straight into recommending and selecting projects (FTP 2060). While FDOT does make broad policy recommendations in the LRPT they are not sufficiently specific in content or geography to be considered Investment Priorities as defined in this report.

Figure 14. FDOT’s Prioritization Framework

The first two steps seen above in Figure 14 prioritize based on needs, while the third and fourth steps are funding based. First, candidate projects are pulled from the project priorities of the FDOT Districts and as well as the Office of Freight Logistics and Passenger Operations. These District Level Priorities also consider plans from regional, local, and modal agencies.
Second, all projects are sent to one of the six respective state modal offices for ranking. Each state modal office has its own ranking system. Highway projects are ranked by the SPO’s online scorecard called the Strategic Investment Tool (“SIT”). The SIT scores projects based on expected performance toward goals set in the LRTP. Though currently FDOT uses SIT only for highway projects, FDOT says that the SIT could also be used for other modes.

Third, the modal agencies submit their priority projects to the SPO which considers all projects together for funding. In evaluating, FDOT uses an online database of the state transportation system with easy-to-update information. (SIS Handbook). The online database provides comprehensive information on:

- Road segments.
- Existing SIS projects in any of the SIS Funding Strategy documents (e.g., the Work Program).
- Historical road studies.
- SIT scores for projects, scenarios, or groups of projects.
- Performance measures used in the SIT scoring.

The fourth and final step places projects into one of four timeline documents:

- SIS Work Program or the 1st Five-Year Plan (years 1-5).
- SIS 2nd Five-Year Plan (years 6-10).
- SIS Cost Feasible Plan (years 11-25).
- SIS Multimodal Unfunded Needs Plan (rejected needs).

The 1st Five-Year Plan acts as FDOT’s MYP in which all projects must be listed to be eligible for funding. In the funding evaluation, the prioritization factors SPO considers include SIS funding availability, existing funding commitments, timing or phases of projects, and geographic distribution. SPO may emphasize one of those factors more based on current funding situation. For example, if extra highway funds become available then SPO would first list all of the highway eligible projects and then apply the other prioritization factors. In dealing with
geographic equity, Florida law guarantees all districts get back at minimum the amount of funds they contribute.

Lastly, note an important inconsistency with the goals linking the LRTP to the investments and projects. Though the SIT Handbook states that it uses the six goals of the FTP, the SIS Funding Strategy states that it particularly emphasizes only three of the six LRTP goals: movement (interregional connectivity), choice (intermodal connectivity), and economic development. While all frameworks will have certain goals, FDOT Investment Priority and Project Selection Stages seems to emphasize goals that are somewhat different than the goals set in the LRTP.

North Carolina Department of Transportation

Introduction and Overall Process

North Caroline Department of Transportation’s (“NCDOT”) prioritization process is known as the Strategic Transportation Investments (STI) process. The process begins with the LRTP setting goals and a prioritization framework. Then the Investment Priorities stage identifies statewide needs over the next 10 years in light projected revenues and costs. The Investment Priorities Stage was developed through significant coordination between NCDOT’s Strategic Planning Office of Transportation, other modal departments, and the state’s MPOs/RPOs.

The Project Selection Stage pulls existing projects from the 10-year plan and accepts new projects submitted by the NCDOT, its divisions, and MPOs/RPOs. To evaluate the projects, NCDOT then uses an online scoring tool to rank individual projects by mode based on qualitative data and local input. NCDOT uses a funding distribution formula to split funding between modes and geographic levels. This all culminates in a constrained 5-year plan.
Importantly, note that NCDOT’s framework only applies to new capacity projects and does not cover preservation projects.

**Goals and Policies Stage**

NCDOT’s LRTP called NC 2040, list goals, objectives, current conditions, and general transportation needs. As for goals specifically, the LRTP has several goal-type concepts including “goals,” “guiding principles,” and “initiatives.” All three concepts generally parallel, however, the “guiding principles” and policy “initiatives” are most similar to the idea of goals under a PBPP framework. To further add confusion, none of the goal concepts in the LRTP directly correspond to the criteria used in the Investment Prioritization and Project Selection Stages.

The LRTP “guiding principles” are (NCDOT Plan 2040):

- Maximize **economic opportunity** in its programming of financial resources.
- Maintain **transparency** in development and funding of multimodal projects and programs.
- Improve **modal systems** by clearly defining performance measures and expectations.
- Promote long-term viability of **environmental** systems, preservation of resources, **livability** of the state’s communities, and transportation system **efficiency and flexibility**.
- Recognize the growing diversity and mobility needs of the state’s **population** by continuously improving the mobility options that are available.
- Provide for the **security** of North Carolina's residents and its economy by considering security needs in project development processes, including in providing for the security of data.

Within the LRTP Appendix, NCDOT list nine high level policy “initiatives” to address general needs which also could be seen as goals in a PBPP framework. Each recommendation is explained through a table that includes a brief description, applicable goals, intended impact and benefits, consequences of inaction, and required policy changes to implement. (NCDOT 2040 Plan Appendices). The policy initiatives include: