



Introduction

In 2019 the General Assembly passed Rebuild Illinois, the largest capital program in the state’s history. State, local and federal investments for transportation make up \$33.2 billion of the \$44.8 billion Rebuild Illinois capital plan. GOMB works with state agencies to review potential capital investments and projects. Projects include roads and bridges, transit and rail systems, aeronautics, schools, environmental protection, energy programs, information technology infrastructure, and deferred maintenance. These long-term investments are designed to improve the quality of life for all Illinois residents, promote economic development, increase state operating efficiencies and create jobs in every region of the state. Capital budgets are enacted on an annual basis, often times as part of multi-year, branded capital plans. Fiscal year 2020 is the inaugural year of a new capital plan, Rebuild Illinois.

This report requested by the Illinois Budgeting for Results Commission summarizes the current state of funding prioritization practices for investments in roads and bridges, which is termed “horizontal capital.”

Budgeting for Results Commission 2019 Recommendation

Horizontal capital is the largest portion of the capital budget, making up two-thirds of the total program. As such, the Commission recommends that the GOMB BFR staff work with the Department of Transportation to document the current process utilized by IDOT to allocate capital dollars to horizontal capital projects, and report on best practices in other states for potential incorporation into future capital planning where appropriate. Staff should submit their final report to the Commission as soon as practicable.¹

Background

Transportation Asset Management Plan

In 2012, the federal government passed the Moving Ahead for Progress in the 21st Century law (MAP-21), and built upon it in 2015 with the Fixing America’s Surface Transportation act (FAST). MAP-21 and FAST combined several new and existing federal transportation programs to create a structure for implementing Transportation Performance Management (TPM)².

MAP-21 and FAST mandated that each state’s Department of Transportation (IDOT) create a Transportation Asset Management Plan (TAMP). The TAMP must include asset management objectives

¹ <https://www2.illinois.gov/sites/budget/Documents/Budgeting%20for%20Results/2019-BFR-Annual-Commission-Report-Final.pdf> (p. 22)

² <https://www.fhwa.dot.gov/policy/23cpr/pdfs/23cpr.pdf>

and measures, performance gap identification, lifecycle cost, risk management analysis, a financial plan and future investment strategies³.

The Illinois Department of Transportation (IDOT) began working on the state's TAMP in 2017. The final TAMP was approved by the Federal Highway Administration (FHWA) on August 29, 2019. IDOT's stated priority is to focus funding on transportation preservation, the maintenance and upkeep of existing roads and bridges.

Multi-Year Plan

IDOT has also released the *Proposed Highway Improvement Program*, a Multi-Year Plan (MYP) for fiscal years 2020-2025. The MYP explains that IDOT is following the strategy set up in the TAMP to focus on the maintenance and preservation of existing roads and bridges.

IDOT has also begun working on the Illinois Statewide Intelligent Transportation Systems (ITS) Architecture and Strategic Plan. ITS is "the integrated application of sensor, computer, electronics, and communications technologies and management strategies to provide traveler information to increase the safety and efficiency of the surface transportation system."⁴ The IDOT ITS Strategic Plan is still in the development stage.

IDOT is working to complete the five steps in developing their MYP; (1) determine available revenue, (2) assess highway system needs, (3) develop funding targets, (4) ensure performance targets are achieved and (5) publish the program for General Assembly review.

Illinois plans to use a data driven approach in decision-making, however "IDOT recognizes that it currently does not have pavement and bridge management systems that meet the minimum requirements outlined by the federal requirements. Therefore, one of the most important enhancements that will occur is the acquisition and implementation of a new Enterprise Asset Management System (EAMS) that contains software that will give IDOT the ability to evaluate the long-term impacts and cost-effectiveness of different pavement and bridge treatment strategies."⁵

On October 10, 2019, IDOT awarded a contract to a consultant for the development of the EAMS. The development of the EAMS will take up to three years for completion and implementation. Currently, IDOT has made enhancements to existing data driven tools and created new tools to assist the districts in identifying project needs and selection.

IDOT also explains in the TAMP that analysis of the Rebuild Illinois capital construction plan on "funding and projected asset conditions will be assessed and the TAMP will be fully revised."⁶

³ <https://www.fhwa.dot.gov/asset/tamp/workplan.pdf> (p.1-1)

⁴ <http://idot.illinois.gov/Assets/uploads/files/Transportation-System/Reports/OP&P/ITS/il-statewide-its-strategic-plan-update-draft.pdf>

⁵ https://idot.illinois.gov/Assets/uploads/files/About-IDOT/Misc/IDOT_TAMP.pdf

⁶ https://idot.illinois.gov/Assets/uploads/files/About-IDOT/Misc/IDOT_TAMP.pdf

Performance Based Planning and Programming

Performance Based Planning and Programming (PBPP) is another federal requirement of MAP-21 and FAST. The United States Department of Transportation (USDOT) requires PBPP be used to coordinate federally mandated transportation planning and programming processes including; asset management, congestion management and safety planning. PBPP was created to help municipalities, states and the federal government align long-range and short-range investment decision-making.

Outside of the asset management discussed in TAMP, IDOT has identified six programs in its MYP receiving further investment; Highway Safety Improvement Program, Illinois Transportation Enhancement Program, Congestion Mitigation/Air Quality (CMAQ) Program, Illinois Special Bridge Program (ISBP), the National Highway Freight Program and statewide line items.

According to the FHWA, PBPP is intended to be used monitor the performance of these programs and plan for future program development. IDOT's TAMP should be closely aligned with their PBPP goals and should reflect the agencies Long Range Transportation Planning (LRTP). Performance based planning of asset management is influenced by the physical condition of facilities, including passenger and freight demand, safety characteristics, capacity, and user behavior, "Agencies should try to ensure that the schedule for developing the TAMP aligns with planning and programming cycles so that the results can be incorporated into these processes. Planning staff should be involved in TAMP development so that there is heightened coordination between the TAMP and LRTP."⁷

MAP-21 and FAST stress the importance of priority alignment within the Federal highway and state transit programs. Through the TAMP, IDOT is updating its approach to preservation funding from a reactive 'worst first' priority funding approach toward proactive strategic lifecycle management and alignment with LRTP.

According to IDOT, at current funding levels and the present state of roads and bridges, it will take several years to "achieve and sustain a desired state of good repair over the lifecycle of the assets at a minimum practicable cost."⁸

Beyond Maintenance

Every state has produced a TAMP within the past year, aligning maintenance and preservation practices and priorities across the nation. Some states have begun to go further by implementing evaluation tools to prioritize funding which has not been algorithmically pre-assigned.

In 2016, USDOT presented a report to Congress on the use of Benefit-Cost Analysis (BCA) in transportation funding⁹. The report summarized state DOT use of BCA, common obstacles and suggestions on best practices.

⁷ <https://www.fhwa.dot.gov/asset/tamp/workplan.pdf>

⁸ <http://www.idot.illinois.gov/Assets/uploads/files/Transportation-System/Reports/OP&P/HIP/2020-2025/2020%20MYP%20Internet%20Version.pdf>

⁹ https://www.fhwa.dot.gov/policy/otps/pubs/bca_report/

According to the USDOT report, the use of BCA is not systematic, but ad hoc and inconsistent among states nationwide, “Of 40 State DOTs responding to GAO's survey, only 12 reported conducting BCA more than half the time for highway expansion projects.”¹⁰ BCA is most commonly used to help determine safety standards for stand alone projects, and often other criteria are added based on individually determined needs. Alternatives to BCA also exist for state DOTs to use, like life-cycle cost analysis or multifactor scoring systems.

The quality of state BCA, or fidelity to a pre-approved standard, has also been inconsistent, “Overall, while the quality of BCAs varies from State to State and project to project, the literature describes a number of deficiencies commonly found in States' analyses. According to GAO, issues that are frequently encountered in States' BCAs include erroneously including economic development impacts or construction costs as benefits; double-counting benefits; omitting certain categories of impacts; not discounting future values correctly; using unrealistic base cases; and failing to include reference to other viable alternatives.”¹¹

The USDOT report concludes that BCA can be a valuable asset to states because it allows for common currency comparisons (apples to apples) among competing capital claims. Several suggestions are made in the report for how to properly create a BCA program, including the development of a clearinghouse of BCA resources and programs, technical assistance with analysis and visualization tools, and updated methodologies on how to estimate and quantify costs and benefits.

Illinois

Former IDOT Secretary Randy Blankenhorn spoke in 2017 to the Metropolitan Planning Council on the need to create criteria for funding based on desired outcomes. Secretary Blankenhorn said that although performance reporting on safety and national alignment in the TAMP were important, they were not the only issues Illinois citizens identified as priorities. He identified six criteria; mobility, safety, livability, economic development, transparency of delivery timeliness and regional priorities.¹² Secretary Blankenhorn stressed that Illinois is still early in the development process of criteria and analytical tools.

Virginia – SMART SCALE – Best Practice

A comparison of other state horizontal capital prioritization practices identified Virginia as a best practice. Beginning in 2016, the Virginia Commonwealth Transportation Board (CTB) has phased in and administered the peer reviewed SMART SCALE evaluation tool, a quantitative and qualitative assessment process to manage and allocate transportation resources. A technical evaluation team is appointed by CTB staff to validate proposed capital project information, evaluate project readiness and calculate project scores.

There are two criteria considered for calculating SMART SCALE scores. Capital projects must fit into Virginia's LRTP and be used for at least one of the LRTP goals; safety, congestion mitigation, accessibility,

¹⁰ https://www.fhwa.dot.gov/policy/otps/pubs/bca_report/

¹¹ https://www.fhwa.dot.gov/policy/otps/pubs/bca_report/

¹² <https://www.metroplanning.org/news/8423/Illinois-Transportation-Moving-in-the-Right-Direction>

environmental quality, economic development and land use coordination. The technical evaluation team at CTB analyzes and calculates qualitative ratings for each goal of a proposed project. The second criterion the team considers in Smart Scale scoring is Area Typology, “Area typologies are used to evaluate each project’s benefit on a scale relative to the needs of that region.”¹³

The SMART SCALE evaluation process has six steps, from the calculation of project measures to producing a list of scored projects for CTB to prioritize. “Each project’s benefit is determined by calculating values for each of the evaluation measures, converting those values into a normalized value for each factor (0 to 100 scale), and then by weighting the factor values according to one of several potential weighting frameworks approved by the CTB. Ultimately, a Project Benefit is divided by the amount of funds requested from the SMART SCALE programs to obtain the final SMART SCALE score used to rank projects and develop the staff-recommended funding scenario.”¹⁴

Ten percent of projects that are accepted are randomly put through a second evaluation to ensure the consistency of results. “The CTB is not required to fund the highest-scoring projects and may use other considerations, in addition to the SMART SCALE process, to make final funding decisions. However, if the CTB makes modifications to the staff recommended funding scenario, then the member seeking such change must provide a rationale for such modification and seek approval, by majority vote, of the Board.”¹⁵

The Smart Scale team also produces a public Tableau visualization on the development and completion of state projects.¹⁶

Conclusion

MAP-21 and FAST are the existing federal transportation programs created to structure and guide public transportation investments across the nation. MAP-21 and FAST mandated that the Illinois Department of Transportation create a Transportation Asset Management Plan (TAMP). The TAMP must include asset management objectives and measures, performance gap identification, lifecycle cost, risk management analysis, a financial plan and future investment strategies.

The Illinois Department of Transportation’s TAMP was approved by the Federal Highway Administration on August 29, 2019. IDOT’s priority in the TAMP is to focus funding on the maintenance and upkeep of existing roads and bridges.

Illinois is still early in the development of the technology and analytical tools required to move beyond the focus on transportation preservation, and create performance goals based on mobility, safety, livability, economic development, transparency of delivery timeliness, regional priorities, or other criteria IDOT determine.

¹³ http://vasmartscale.org/documents/hb2_quick_guidev3.pdf

¹⁴ http://vasmartscale.org/documents/20171115/ss_technical_guide_nov13_2017.pdf

¹⁵ http://vasmartscale.org/documents/20171115/ss_technical_guide_nov13_2017.pdf

¹⁶ <http://dashboard.vasmartscale.org/>