MAP-21 Encourages MPOs to Undertake Optional Scenario Development and Establishment of Performance Measures

There is a growing shift towards coordinating performance based planning across Federal, State, and local levels. An effective tool for this coordination and decision making is establishing baseline and future conditions. Through the use of Scenario Planning, agencies can support performance based planning by establishing both baseline and desired future conditions, quantifying the measures associated with each approach, and then examining the different sets of policies and investments that could support those desired outcomes. MAP-21 supports the option for Metropolitan Planning Organizations (MPOs) to use "scenario development" in the development of metropolitan long-range transportation plans. Scenario analysis allows agencies to test possible approaches to meeting future needs and identify the most effective package of policies or investments that can address performance goals, objectives and targets. Scenario development and analysis may address:

► Different packages of investments by focusing on investments across different modes (e.g., transit, highways) or types of strategies (e.g., demand management, system preservation, system expansion)

► Different land use patterns (distribution of population and employment)

► Different levels of transportation funding and/or performance expectations.

Scenario planning is often an inclusive and interactive process, involving considerable public participation. Agencies which use performance measures to compare alternatives, will be more informed about selecting strategies that will most ably support attainment of delineated objectives and make informed tradeoffs among different investment options.

Map-21 Section 1201 (I)(4) Optional Scenario Development.—

"A metropolitan planning organization may, while fitting the needs and complexity of its community, voluntarily elect to develop multiple scenarios for consideration as part of the development of the metropolitan transportation plan, in accordance with subparagraph (B).

(B) RECOMMENDED COMPONENTS.—A metropolitan planning organization that chooses to develop multiple scenarios under subparagraph shall be encouraged to consider—

(i) potential regional investment strategies for the planning horizon;

(ii) assumed distribution of population and employment;

(iii) a scenario that, to the maximum extent practicable, maintains baseline conditions for the performance measures identified in subsection (h)(2);

(iv) a scenario that improves the baseline conditions for as many of the performance measures identified in subsection (h)(2) as possible;

(v) revenue constrained scenarios based on the total revenues expected to be available over the forecast period of the plan; and ''(

vi) estimated costs and potential revenues available to support each scenario."

Performance based scenario analysis can assist affected stakeholders and decision makers by providing a better understanding of performance implications of transportation investment decisions. It also, potentially, has the benefit of providing more transparency and accountability in the transportation decision making process because it is conducted in a public forum with stakeholder and public input. This public forum helps to determine the preferred investment scenario that is ultimately included in the long-range plan. The incorporation of data and analysis provides informed program prioritization which helps decision makers select appropriate investment levels by goal area. Scenario analysis provides information on the—continued page 4

SPECIAL POINTS OF INTEREST:

- *Performance Based Planning and Programming in Michigan: Cooperation, Coordination, and Collaboration*

- *Southeast Michigan's Approach to Performance Based Planning*

Performance Based Planning and Programming in Michigan: Cooperation, Coordination, and Collaboration

The Michigan Department of Transportation (MDOT) is regularly involved with planning activities and processes with Michigan's MPOs and Regional Planning Agencies (RPAs) which range from attending committee meetings, providing workshops, and being a resource for transportation needs. The MPOs' planning processes are each designed to promote consistency between transportation improvements State and local planned growth and economic development patterns. Effective relationships are vital to addressing Michigan's' complex and overlapping transportation, land use, environmental and economic development challenges.

There are many coordinated issues that both MDOT and its planning partners address.

There is a direct connection between the planning process and how projects are selected and prioritized. It involves goal setting, performance measurement, and connecting capital investments to the achievement of those goals. MDOT has actively implemented performance based program development and asset management since 1997, when the State Transportation Commission (STC) established state trunkline pavement and bridge goals. MDOT's long history with performance measurement has enabled the department to develop robust measurement capabilities. The asset management process, via the Michigan Transportation Asset Management Council, has proven to be particularly useful for enhancing the effectiveness of roadway management and for demonstrating the value of regional planning to local officials.

MDOT has established a linkage between planning and programming which has enabled us to successfully deliver our commitments year after year - since 2001, 94% of the announced program has been completed. This linkage has been instrumental in not only allowing us to deliver our project commitments, but the linkage has provided other benefits such as process and organizational alignment, and the linkage has assisted in connecting our efforts toward common and well understood goals.
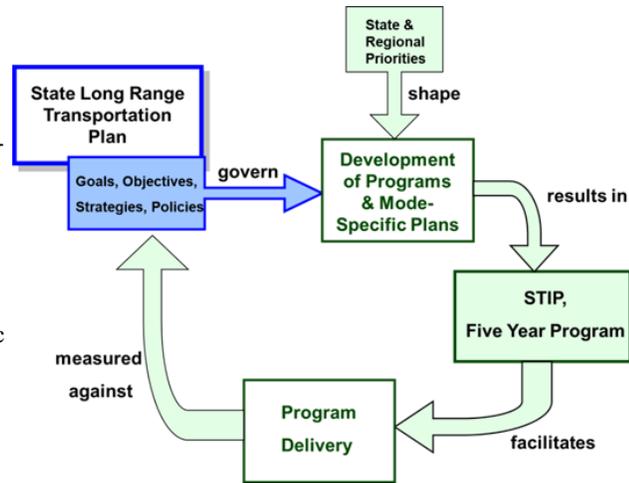
MDOT Framework

Development of the State Transportation Improvement Program (STIP) and the Five-Year Transportation Program is based on sound asset management principles, realistic revenue forecasts, reasonable investment strategies, extensive customer feedback, and collaboration with our partners. The Five-Year Transportation Program is a multi-stage, year-long effort and a crucial component of the cooperative planning process as well as the basis for implementing the policies, strategies and projects identified in the long-range planning process.

Linkage is established first through goal setting in the State Long-Range Transportation Plan (SLRTP). The SLRTP is the policy document that provides strategic direction and decision principles for the development of transportation programs at all levels. It establishes the goals and strategies for the transportation system as well as identifies critical issues and priorities.

Connected with our goals is investment planning. Investment strategies guide the allocation of capital resources to achieve the established goals. Investments are focused where they will most benefit the public and are consistent with the direction established. Dollars are assigned to program categories, such as road and bridge preservation, safety, and capacity improvements. We have developed what we call an investment template which identifies the investment level for each program category over a multi-year and annual timeframe.

Project selection decisions are guided by input received throughout the planning process and made in consultation with MPOs within the urbanized areas, and RPAs with Rural Task Forces in

This chart delineates connection between planning and programming at MDOT.

the outstate areas. Factors in the project selection and review process for the Highway Capital Program include ensuring consistency with Michigan State Transportation Commission policy, compliance with standards, region and statewide goal achievement, meeting eligibility requirements, degree of project readiness, and available funding. For multi-modal programs such as aviation, bus, marine and rail, project selection differs from mode to mode, and even within modes, but essentially factors comparable to the Highway Capital Program are used.

MDOT goes about linking the planning process and the programming process through organizational alignment and collaboration with its partners. Linking planning and programming allows an organization to demonstrate measurable progress. You are able to link goals to dollars to outcomes. This linkage provides a method for demonstrating accountability and trust as well as a method for showing that you are good stewards of the transportation system and the dollars that have been entrusted to you.

Performance reports may be found at: www.michigan.gov/mdot . Click on MDOT Performance.

Southeast Michigan's Approach to Performance Based Planning

There is a great deal of regional and metropolitan-level transportation planning occurring throughout Michigan today. In southeast Michigan, SEMCOG, the Southeast Michigan Council of Governments and the Michigan Department of Transportation, work together to facilitate more engagement of the general public and other stakeholders in the metropolitan and statewide transportation planning processes. Performance based planning is an effective way of developing priorities and effectively communicating information to the public.

The asset management process, a process that the Michigan Transportation Asset Management Council has been promoting for 10 years, has proven to be particularly useful for enhancing the effectiveness of roadway management and for demonstrating the value of regional planning to local officials.

An effective transportation system is vital to economic vitality, business attraction and expansion, trade, tourism, and quality of life. Southeast Michigan's transportation assets are key drivers of our economy and can be major contributors to the desirable communities that attract and retain a talented workforce.

The Southeast Michigan Council of Governments, SEMCOG, has continued to evolve its performance based planning to better integrate all of these important components with transportation planning through the development and implementation of the Regional Transportation Plan (RTP) every four years. The plan recognizes that Southeast Michigan has a wealth of transportation assets that are vital to the economy and quality of life, and that are essential to the well-being of our residents and business community.

Southeast Michigan has a sophisticated transportation network that includes 23,400 miles of roads and supports over 100 million miles of travel each and every day. It connects people to work, school, shopping, hospitals, social events, and other businesses. The network contains:

- More than 2,900 bridges
- More than 2,300 miles of fixed-route bus service
- Over 600 miles of walking or biking paths
- 4,000 miles of all-season truck routes
- 800 miles of main line rail
- 35 airports
- 8 international border crossings
- 5 commercial marine ports
- 7 rail/truck terminals

In 2009, SEMCOG was developing its 2035 RTP. We identified over $70 billion in infrastructure needs over the plan horizon. These needs exceed the anticipated revenue by approximately $30 billion. Given the large discrepancy between needs and available funds, a fundamental question is how potential transportation investments can be prioritized in a manner that best reflects regional priorities and makes the best use of the dollars we have?

SEMCOG developed a process to prioritize project types in an effort to enhance how the region's transportation investments are prioritized. They are designed to reflect the principles of asset management adopted by the Michigan Transportation Asset Management Council (TAMC), and to tie these concepts to the long-range planning process. The approach is policy-driven, relies on the quantitative assessment of system performance, and takes advantage of existing data and analytic tools. For policy members the new process resulted in exciting new opportunities to provide strategic direction to SEMCOG in terms of performance expectations.

As a result of a fiscal environment that is significantly constrained, policy makers in the region are faced with difficult investment choices. The new prioritization process enables policy makers to better understand the implications of their choices in terms of system performance. They will be able to test the impact of various investment scenarios and see how well that investment

strategy does in addressing their specific concerns. For example:

• What would happen to pavement conditions in the region if the pavement preservation budget was increased by 15 percent?

• What level of investment is required to significantly improve bridge conditions over the next 25 years?

• Taken as a whole, how well do the projects in the RTP reflect the region's transportation priorities?

The ability to answer these types of questions improved the overall policy-making capabilities by broadening the thinking about potential transportation solutions. It also encourages policy statements that focus on future system performance and lead to clear guidance that drives development of the RTP. The end result will be a transportation plan that maximizes the strategic achievement of regional transportation policies, goals and objectives.

We involved both the public and the elected SEMCOG leadership in developing target investment levels for pavement, bridge, transit, freight, safety and non-motorized spending in the long range transportation plan. Staff identified the likely outcome of investing these amounts on the future condition of the system. The Plan was developed with these funding and system condition outcomes in mind. We track the implementation of the expenditure types through the Transportation Improvement Program and have found that the TIP is generally consistent with the recommended expenditure levels.

SEMCOG continues to utilize the same outcomes in the development of the recently approved 2040 Regional Transportation Plan.

For more specific information, please refer to either of the two documents listed below.

http://www.semcog.org/uploadedFiles/Programs_and_Projects/Planning/Long_Range_Transportation_Plan/InvPrioritizationTechnicalReport.pdf

Continued: Optional Scenario Development and Establishment of Performance Measures

system performance tradeoffs between the level of funding investment in a particular goal area versus another goal area, and the resulting performance benefits and tradeoffs to a particular level of investment.

Using scenario analysis in a performance based approach demonstrates how the implementation of the long-range transportation plan can directly support the goals and system performance objectives of a transportation plan. Performance based scenario analysis supports the establishment of system performance goals by linking investment priorities to the appropriate mix of strategies and investment levels, and then addressing overall targets. Multiple scenarios demon-

strating a baseline of performances and trends provide information that is needed to contextualize future expected performance, for example, under various investment scenarios or particular funding levels. Demonstrating how performance trends change as a result of specific investments or scenarios then enables planners and decision makers to compare how outcomes may change depending on investment packages, and then help them select a scenario or investment strategy that is the most effective for their region. When scenario analysis is used with model outputs, GIS layer mapping, and data visualization tools, it can provide an appropriate level of detail for planning-level discussion and transportation planning deci-

sions. The maps and visualizations used in scenario planning are often useful in supporting more effective public engagement and informed decision making.

The result of performance based scenario analysis is the creation of a preferred planning scenario or selected alternative program of projects that have been agreed to and approved for inclusion into the transportation plan by decision makers.

For additional information, please contact Jody McCullough at 202-366-5001 Jody.McCullough@dot.gov or

Rae Keasler at 202-366-0329 or Rae.Keasler@dot.gov

Performance Based Planning and Programming Guidebook

Performance-based planning and programming (PBPP) refers to the application of performance management principles within the planning and programming processes of transportation agencies to achieve desired performance outcomes for the multimodal transportation system. The Guidebook has been designed to help State DOTs, MPOs, RTPOs, transit agencies, and other partner organizations understand: the key elements of a PBPP process and the relationship of these elements within existing planning and programming processes.

The Guidebook is designed to highlight effective practices to help transportation agencies in moving toward a performance-based approach to planning and programming.

To view the document: http://www.fhwa.dot.gov/planning/performance_based_planning/pbpp_guidebook/

For more information, contact Egan Smith at 202-366-6072 or Egan.Smith@dot.gov

Guidebooks designed to highlight effective practices to help transportation agencies in moving toward a performance-based approach to planning and programming.

Handbook for Addressing Greenhouse Gases in Performance Based Planning and Programming

The Handbook for Addressing Greenhouse Gases in Performance Based Planning and Programming provides a resource for State DOTs and MPOs engaged in performance based planning and programming (PBPP) to integrate GHG performance measures into transportation decision-making. It discusses key approaches for integrating GHG emissions into a PBPP approach, considerations for selecting an appropriate GHG performance measure, and using GHG performance measures to support

investment and policy decisionmaking.

To view the document: http://www.fhwa.dot.gov/environment/climate_change/mitigation/resources_and_publications/

For more information, contact John Davies 202-366-6039 or JohnG.Davies@dot.gov

Common Elements of PBPP

While there are unique issues associated with transportation planning and programming – there are common elements associated with PBPP.

Strategic Direction (Where do we want to go?) - PBPP is based on a strategic direction, which is used to shape decisions about policies and investments. In the transportation planning process, strategic direction is based upon a vision for the future, as articulated by the public and stakeholders. This vision often encompasses broad community factors such as quality of life, economic vitality, and environmental quality. PBPP includes:

Goals and Objectives – Stemming from a state or region's vision, goals address key desired outcomes, and supporting objectives (specific, measurable statements that support achievement of goals) play a key role in shaping planning priorities.

Performance Measures. Performance measures support objectives and serve as a basis for comparing alternative improvement strategies (investment and policy approaches) and for tracking performance over time.

Planning Analysis (How are we going to get there?) – Driven by data on performance, along with public involvement and policy considerations, agencies conduct analysis in order to develop investment and policy priorities:

Identify Trends and Targets – Preferred trends (direction of results) or targets (specific levels of performance desired to be achieved within a certain timeframe) are established for each measure to provide a basis for comparing alternative packages of strategies and measuring actual progress. This step relies upon baseline data on past trends, tools to forecast future performance, and information on possible strategies, available funding, and other constraints.

Identify Strategies and Analyze Alternatives - Performance measures are used to assess strategies and to prioritize options. Scenario analysis may be used to assess alternative packages of strategies, to consider alternative funding levels, or to explore what level of funding would be required to achieve a cer-

tain level of performance.

Develop Investment Priorities - This step builds on strategy analyses, and involves prioritizing strategies and investments and making tradeoffs between different goal areas with a system-level understanding of the level and mix of investments in a given area, for inclusion in the LRTP and related supporting plans. This step requires prioritizing what performance outcomes are most important. This process of prioritization should account for performance outcomes using analytical methods, as well as policy priorities, and concerns such as equity, environmental justice, and other considerations.

Programming (What will it take?) – Programming involves selecting specific investments to include in an agency capital plan and/or in a STIP or TIP. In a PBPP approach, programming decisions are made based on their ability to support attainment of performance targets or contribute to desired trends, and account for a range of factors.

Implementation and Evaluation (How did we do?) – These activities occur throughout implementation on an ongoing basis, and include:

Monitoring – Gathering information on actual conditions.

Evaluation – Conducting analysis to understand to what extent implemented strategies have been effective.

Reporting – Communicating information about system performance and the effectiveness of plans and programs to policymakers, stakeholders, and the public.

For more information, view the PBPP Guidebook: http://www.fhwa.dot.gov/planning/performance_based_planning/pbpp_guidebook/ or

contact Egan Smith at 202-366-6072 or Egan.Smith@dot.gov

Collaboration with Transportation Stakeholders

These projects are being developed in close collaboration with the American Association of State Highway and Transportation Officials (AASHTO), the Association of Metropolitan Planning Organization (AMPO), the National Association of Regional Councils (NARC), the American Public Transportation Association (APTA), and the National Association of Development Organization (NADO) .

For more information, go to the Performance Based Planning and Programming Web site at -
www.fhwa.dot.gov/planning/performance_based_planning/

Kenneth Petty, Acting Director, FHWA Office of Planning shares some considerations with practitioners: "Effective Performance Based Planning and Programming almost always involves collaborative thinking about performance across agencies, particularly given the relationships of different agencies in transportation planning, project development, and operations."