Transportation Planning Capacity Building Program

Establishing and Integrating Performance Measures

A TPCB Peer Exchange

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This report highlights key recommendations and noteworthy practices identified at "Establishing and Integrating Performance Measures" Peer Exchange held on April 27-28, 2015 in Dimondale, Michigan and via video teleconference. This event was sponsored by the Transportation Planning Capacity Building (TPCB) Peer Program, which is jointly funded by the Federal Highway Administration (FHWA) and Federal Transit Administration (FTA).

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Introduction

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Overview of the Workshop

Goals of the Workshop

The objective of this peer exchange was to help the Michigan Department of Transportation (MDOT) and its partners (including metropolitan planning organizations (MPOs) and transit agencies) prepare for forthcoming rulemaking under the Moving Ahead for Progress in the 21st Century Act (MAP-21). MAP-21 will require transportation agencies to integrate performance management principles into planning and programming. Specifically, the event helped MDOT and its partner agencies prepare for three key requirements of MAP-21:

- The development of performance measures and targets;
- The integration of performance measures into the planning process; and
- The development of performance-based plans for safety, asset management, and congestion.

The peer exchange was an opportunity for peer agencies to share knowledge and best practices on key topics in performance-based planning and programming, such as data collection, target setting, and performance reporting. The event resulted in action plans for implementing performance-based planning requirements in Michigan (see Action Planning). As a result of the event, MDOT will be better prepared to coordinate with its partner agencies as MDOT, MPOs, and transit agencies adapt to a national system of performance measures.

Selecting the Peers

In advance of the event, the TPCB Program worked to identify State DOTs and MPOs to share their experiences, lessons learned, and recommendations for developing and implementing a performance-based planning process. Peers were selected based on their experience with performance-based planning and programming and their similarities to MDOT. While the peers shared many common challenges and characteristics, each peer brought a unique set of experiences to the event.

The four peer agencies represented at the peer exchange were: the Arizona Department of Transportation (ADOT), the Mid-Ohio Regional Planning Commission (MORPC), the Minnesota Department of Transportation (MnDOT), and the Ohio Department of Transportation (ODOT). ODOT had two representatives in attendance: one from the Office of Program Management and the other from the Office of Transit. Contact information for each of the peer representatives is included in Appendix A of this report.

Format of the Event

The two-day peer exchange was held on April 27-28, 2015, at the MDOT Horatio Earle Center in Dimondale, MI. The peer presenters, MDOT staff, FHWA/FTA facilitators, TPCB staff, and several Michigan MPOs and transit agencies participated in-person. Some representatives from other Michigan MPOs participated via webinar. A full list of attendees is available in Appendix B of this report.

The workshop was an interactive discussion among all participants. During the morning and afternoon of day one, MDOT and the peer presenters discussed how their agencies are preparing for MAP-21 performance management requirements and regulations. In the afternoon of day one and the morning of day two, participants held facilitated discussions on the role of collaboration in performance-based planning, the necessary data for measuring performance, and the implementation of performance-based planning. During the second day, the participants also divided into action planning breakout sessions according to the following topics: safety target setting, highway asset management target setting (pavements and bridges), transit asset management, congestion and system performance target setting, and transit safety plans. The event concluded with a review of key actions developed by each of the breakout groups. The agenda for the workshop is provided in Appendix C of this report.

Key Concepts in Performance-based Planning and Programming

What is Performance-based Planning and Programming?

Performance-based planning and programming is an approach to applying performance management principles to transportation system policy and investment decisions. This approach (outlined in Figure 1 below) provides a link between short-term management and long-range decisions about policies and investments that an agency makes for its transportation system. Performance-based planning and programming is a system-level, data-driven process to identify strategies and investments.[1] FHWA and FTA provide resources that define the characteristics of performance-based planning and programming and help assess the effectiveness of plans and programs in meeting performance goals.[2] The Michigan-based document *Performance-based Planning & Programming: Self-Assessment*, for example, is a voluntary tool that agencies can use to assess their overall performance-based planning and programming processes and create action plans for implementing performance management principals.

Steps of Performance-based Planning and Programming

Performance-based planning and programming begins with a strategic direction, which indicates where an agency would like to go in the future. Agencies set this strategic direction by choosing goals, quantifiable objectives, and performance measures to guide decisionmaking. Next, agencies create long-range plans that demonstrate how they will achieve their goals and objectives. Performance-based long-range plans identify trends and targets; define strategies; analyze alternatives; and develop investment priorities. Agencies then link their plans to a transportation improvement program (TIP) or statewide transportation improvement program (STIP) and deliver projects that improve performance and achieve targets within the strategic direction. Finally, agencies monitor, evaluate, and report on the performance-based planning and programming process and create a feedback loop that informs future planning efforts.

Figure 1: The performance-based planning process under MAP-21

[1] Performance-based Planning and Programming. Federal Highway Administration. May, 2012.
[2] http://www.fhwa.dot.gov/planning/performance_based_planning/

Performance Management and MAP-21

Federal legislation has encouraged transportation agencies to incorporate aspects of performance management into the transportation planning process for many years. The congestion management process (CMP), for example, has relied on performance measures such as traffic counts and travel times for many years. Currently, most transportation agencies have experience tracking and reporting on various aspects of system and agency performance.

In 2012, MAP-21 created a performance-based and multimodal program to strengthen the U.S. transportation system. MAP-21 identified seven national goal areas to guide decisionmaking at State DOTs and MPOs:

- Safety;
- Infrastructure condition;
- Congestion reduction;
- System reliability;
- Freight movement and economic vitality;
- Environment sustainability; and
- Reduced project delivery delays.

USDOT is implementing MAP-21 performance requirements through a series of interrelated rulemakings that are being released in several phases. Figure 2 summarizes these rules and provides the approximate timeframe for their release. This information was current at the time of the workshop, in April 2015. For an updated timeframe, please visit FHWA's MAP-21 performance requirements implementation schedule webpage at http://www.fhwa.dot.gov/tpm/about/schedule.cfm.

With input from States and MPOs, USDOT is establishing a total of twelve performance measure categories within the seven goal areas. After these measures are established, State DOTs and MPOs will independently set two- and four-year targets for each measure and develop long-range plans that describe how programming and project selection decisions will help achieve these targets. States may set different performance targets for urbanized and rural areas. Once the rulemaking is complete, States will have up to one year to select their targets, after which MPOs will have an additional 180 days to either select their own targets or decide to use the State-level targets. After this process is complete, States and MPOs will report on their progress toward performance targets to USDOT every two years.

Agencies such as FHWA, FTA, the American Association of State Highway and Transportation Officials (AASHTO), the American Public Transportation Association, the Association of Metropolitan Planning Organizations, and others all have a key role in establishing national performance-based planning and programming standards. These agencies are working informally to:

- Define key elements of performance-based planning and programming;
- Identify examples of good practice; and
- Engage with stakeholders and identify key challenges and opportunities for capacity building.

Although this event was an opportunity for MDOT and other participating agencies to learn about new Federal performance measure requirements, the event focused more broadly on developing a successful overall performance-based planning and programming process. MAP-21 provided a point of reference for the workshop. MAP-21 also provides a foundation for transportation planning agencies as they develop performance-based planning processes.

Figure 2: Expected timeframe for a series of interrelated rulemakings in 2014 and 2015 as of April 2015, including Notices of Proposed Rulemaking (NPRM). These rulemakings will explain new requirements for MPOs, State DOTs, and transit agencies in several different performance areas.

Performance Area	NPRM	Comments due	Anticipated Final Rule
Safety Performance Measures	March 11, 2014	Closed June 30, 2014	September 2015
Highway Safety Improvement Program	March 28, 2014	Closed June 30, 2014	August 2015
Statewide and Metro Planning; Non-Metro Planning	June 2, 2014	Closed October 2, 2014	September 2015
Pavement and Bridge Performance Measures	January 5, 2015	Open until May 8, 2015	n/a
Highway Asset Management Plan	February 20, 2015	Open until May 29 2015	n/a
System Performance Measures	***Projected*** July 30, 2015	90 days	n/a
Transit Asset Management Plan	***Projected*** September 1, 2015	60 days	n/a
Transit Safety	***Projected*** September 1, 2015	60 days	n/a

Key Recommendations and Lessons Learned

Over the course of the two-day workshop, peer agency staff delivered presentations and engaged in discussions about their experiences with performance-based planning and programming. This section highlights recommendations for MDOT and other transportation agencies as they adapt their existing performance-based planning and programming processes to a system of national performance measures. It summarizes the key recommendations that emerged from the event and profiles noteworthy practices used by peer agencies.

A. Essentials of Performance-based Planning and Programming

During the event, the peers highlighted benefits of performance-based planning and programming and explained how their organizations initially adopted performance management principles. The peers and other meeting participants discussed how performance-based planning and programming leads to better decisions for transportation agencies.

Benefits of Performance-Based Planning and Programming

A key tenet of performance-based planning is that what gets measured gets done. To this point, the peer agencies emphasized that performance-based planning has helped them make effective long-term planning decisions, set priorities for the future, and communicate valuable information to the public. Setting performance measures can help agencies manage assets effectively and make efficient use of limited resources. Another benefit of establishing performance measures is that they can help agencies make justifiable decisions and communicate these decisions to the public. Tracking and monitoring performance measures can help agencies demonstrate their successes to stakeholders and build the trust of the general public and elected officials. Overall, performance-based planning and programming can also help agencies use public investments to benefit the health, safety, and welfare of people within their jurisdictions.

Connecting to National Goals and Performance Areas

One of MDOT's key questions going into the peer exchange was how State DOT performance measures should connect to the national goal areas and performance measure categories established in MAP-21 and the rulemaking process. While all State DOTs will need to adhere to national performance measures, each State faces a unique set of circumstances. For that reason, FHWA and FTA will allow States to set their own performance targets based on what is realistic for each situation. Additionally, States can maintain existing performance measures or set new, customized performance measures as necessary.

Integrating Performance-based Plans into the Planning Process

MAP-21 requires States, MPOs, and transit agencies to incorporate performance management principles into a number of formal plans and planning processes, including: long-range transportation plans, TIPs/STIPs, Strategic Highway Safety Plans (SHSPs), Transportation Asset Management Plans (TAMPs), Transit Safety Plans, State Freight Plans, and CMPs. Some agencies have already begun implementing performance management principles in these required plans. MnDOT's TAMP, for example, includes asset management performance measures and targets for six highway assets, including pavements and bridges, and provides a decisionmaking framework improving and preserving the asset condition and system performance. In doing so, MnDOT's TAMP helps connect the agency's goals and objectives to the priorities included in other performance-based plans. However, incorporating aspects of all these performance-based plans into long-range plans while also addressing national goal areas presents a challenge for some agencies. Figure 3 explains how long-range plans and other performance-based plans, such as the TAMP and the SHSP, should address performance management elements.

Figure 3: This chart from FHWA explains the intended connections between long-range plans and other performance-based plans completed by States, MPOs, and transit agencies.

Performance Management Elements	Long Range Plan	Performance-Based Plans (SHSP, CMP, TAMP, etc.)
Goals/Objectives	Broad goals touching all areas	Drill down into the details of each goal, define meaningful objectives
Performance Measures	Limited number of high level measures	Additional measures to address objectives more thoroughly
Target Setting – Evaluate Programs, Projects & Strategies	Scenario analysis and tradeoff decisions across goals and measures	Identify & prioritize range of strategies (e.g, lifecycle cost, risk management, 4Es). Define scenario bounds
Allocate Resources	Resource constrained targets and trends	Implementation plan (phasing and funding)
Measure, Evaluate and Report Results	Monitor and report system performance	Evaluate effectiveness for update cycle

Tools and Resources to Support Performance-based Planning
During the peer exchange, FHWA highlighted the *Performance-based Planning and Programming Guidebook* as a useful resource for implementing performance-based approaches to transportation decisionmaking. The FHWA and FTA Offices of Planning offer many other resources to help State DOTs, MPOs, transit agencies, and others develop performance-based planning processes. Many of these resources, including best practice case studies, are summarized in Appendix D.

During presentations to workshop participants, FHWA and FTA staff described a series of tools to support the development of performance-based plans for safety, infrastructure, transit, congestion, system reliability, and freight. These tools included:

- Highway Safety Manual and SafetyAnalyst;
- Interactive Highway Safety Design Manual;
- Crash Modification Factors Clearinghouse;
- Highway Economic Requirements System (HERS and HERS-ST);
- National Bridge Inspection Analysis System;
- Life-Cycle Cost Analysis software;
- Transit Economic Requirements Model (TERM and TERM Lite);
- Quick Response Freight Manual;
- BCA.Net economic analysis tools; and
- Surface Transportation Efficiency Analysis Model.

B. Setting Performance Measures and Targets

Performance-based planning begins with the development of a strategic direction, which identifies goals that define the desired result of a plan. These goals should take into account the national goal areas identified in MAP-21 as well as customized State and regional goals.

Once an agency has identified the goals of a performance-based plan, the next component of the performance-based planning process is to develop objectives that determine how performance in each goal area will be tracked and evaluated. Objectives are measureable steps toward the attainment of a goal. Once chosen, agencies monitor objectives through the use of appropriate performance measures.

Agencies also set targets that define whether each performance measure has been fulfilled. During the peer exchange, the participants explained their processes for selecting performance measures and targets in the development of their performance-based plans.

Selecting Performance Measures
Performance measures help agencies define goals in specific areas, such as safety, congestion, and pavement management. Performance measures can also help agencies monitor and report on the implementation of goals and objectives; identify performance needs or deficiencies; and evaluate the potential impacts of programs and projects. In choosing performance measures, agencies should consider questions such as:

- Do the proposed measures capture key concerns?
- Will it be possible to measure this performance area? What data are available?
- Is this performance measure clear? Will the public be able to understand it easily?
- Is this performance measure something that the agency has influence over?

In performance-based planning, performance measures can be outcome-based or output-based. Outcome measures reflect the impacts of actions and activities on system condition or performance (e.g. the percentage of pavement in good condition). Output measures present a count of the activities undertaken in a given reporting period (e.g. miles of highway lanes added per year). While a mix of the two types is useful, outcome-based measures may be more meaningful because they connect more directly to performance objectives**.**

One peer noted the utility of the *SMART* approach to performance management, which focuses on performance measures that are:

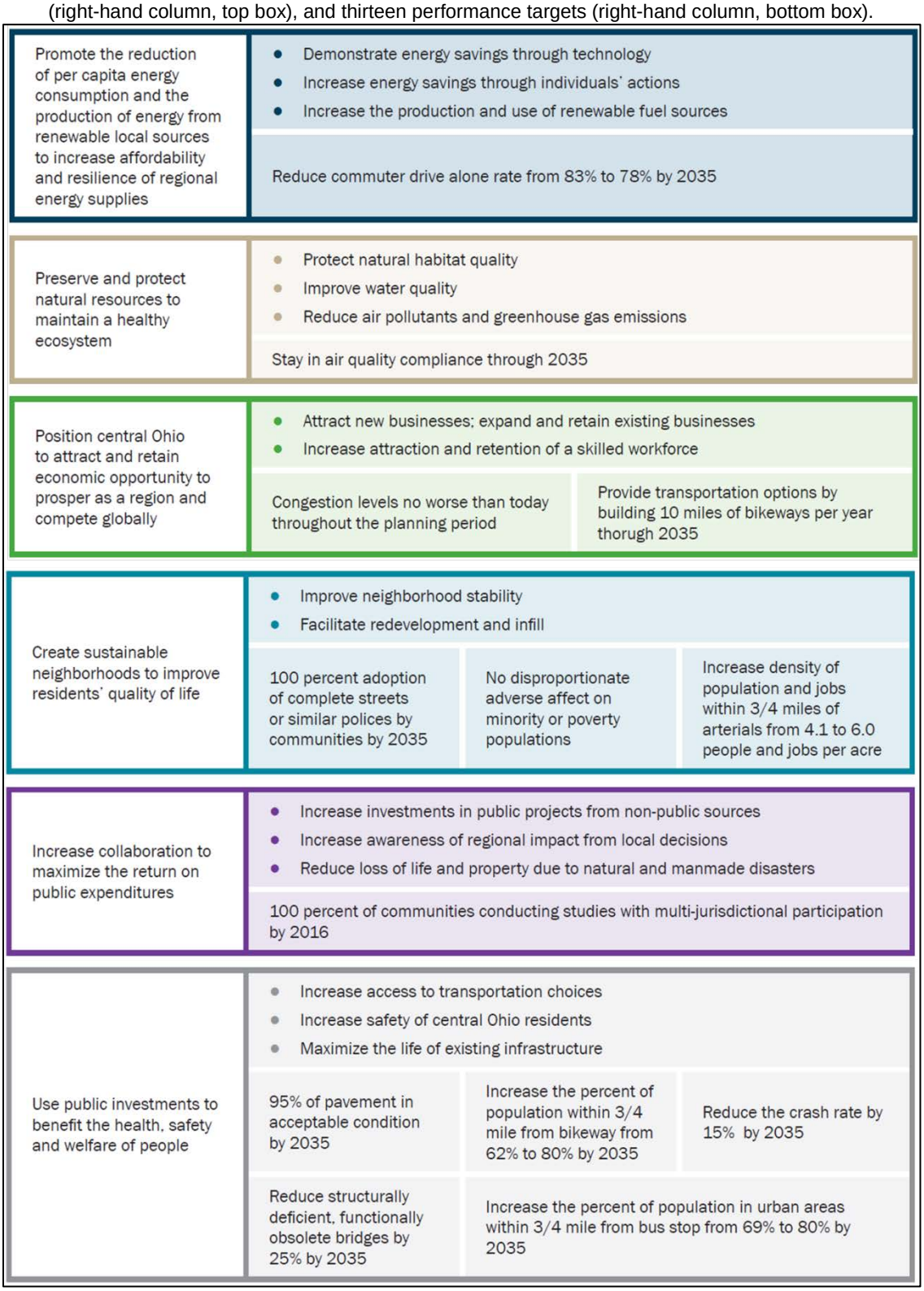
- **S**pecific
- **M**easurable
- **A**greed upon by collaboration with stakeholders
- **R**ealistically achievable
- **T**ime-bound

Performance measures should be descriptive, but should not dictate the outcome of a long-range plan. Rather, performance measures should draw upon input from the public and partner agencies. Measures should represent a meaningful desired outcome that helps an agency set realistic performance targets.

Setting Performance Targets
In keeping with the *SMART* approach, agencies should set targets that are achievable and realistic. There are several different approaches to setting targets within each performance measure. Agencies can derive targets from historic performance, financial conditions, formal customer feedback, State/Federal policies, or benchmarks from peer agencies. While agencies have a good deal of flexibility in setting targets, ideal targets are clear, credible, and aligned to specific goal areas. When setting targets, agencies should be careful to document their performance monitoring processes so that they can easily and reliably monitor performance during regular reporting cycles.

> ***Best Practice Example:*** MORPC's 2012-2035 Metropolitan Transportation Plan began the performance-based planning process by establishing six goals (related to energy consumption, natural resources, economic opportunity, sustainable neighborhoods, return on investment, and public welfare). Building off of these goals, MORPC identified sixteen system objectives (see bullet points in Figure 4). MORPC also assigned a total of 13 performance targets to each goal to help the agency monitor its progress toward desired results.

Figure 4: MORPC Metropolitan Transportation Plan identified six goals (left-hand column), sixteen system objectives (right-hand column, top box), and thirteen performance targets (right-hand column, bottom box).

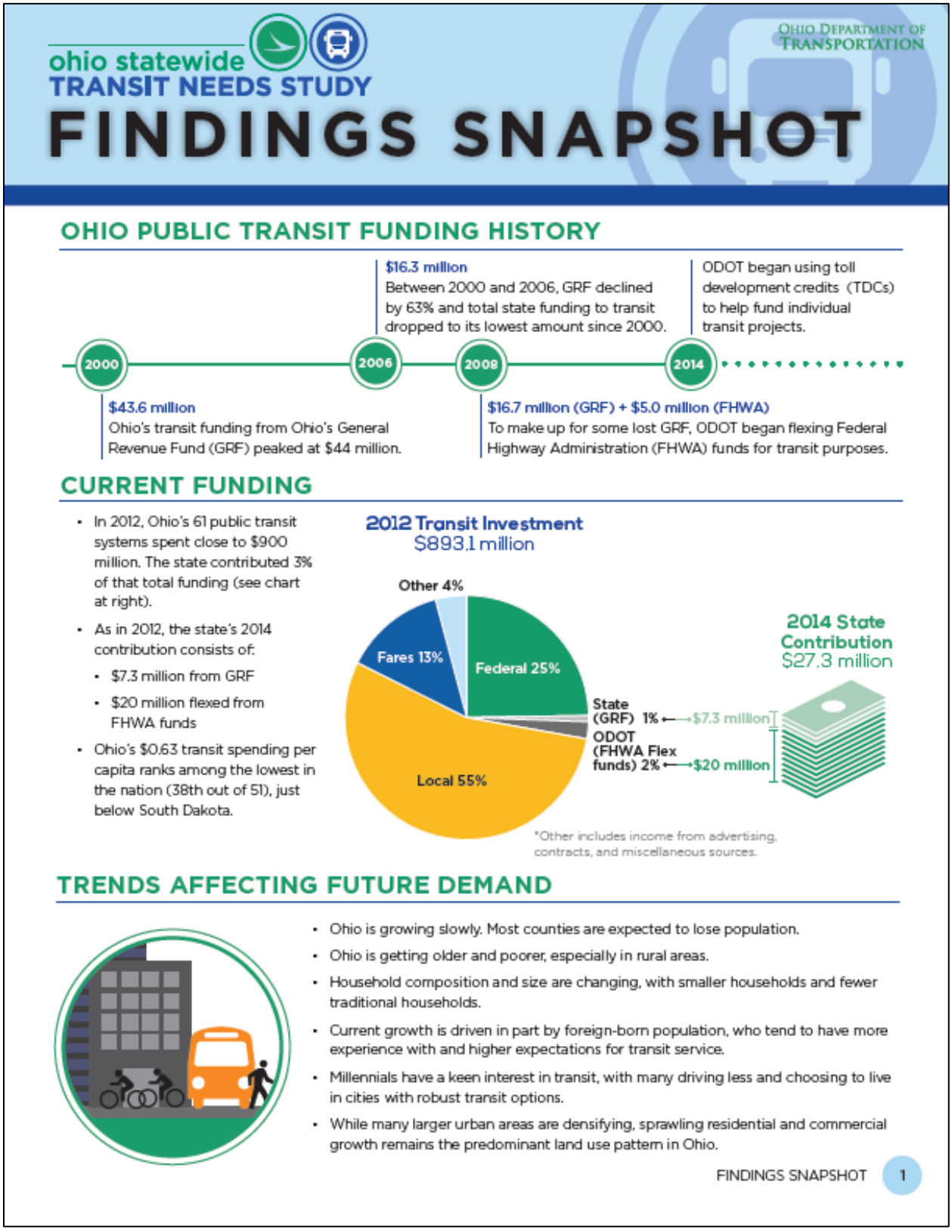


Engaging the Public
Public involvement is an essential aspect of performance-based plans. Public engagement is useful for informing the goals, objectives, performance measures, and strategies articulated in a long-range transportation plan. While several peers emphasized the value of soliciting input from road users in the strategic visioning, participants also cautioned that the public may not have the expertise to set specific targets for asset management or other complex performance measures.

Target Setting for Public Transit Agencies
By establishing goals, developing performance measures, and setting targets, transit agencies can develop plans for delivering better, safer, more reliable service to their customers. Due to existing requirements for transit asset management and state of good repair, many transit agencies are already setting targets that are anticipated to fulfill performance management requirements. Transit agencies in Ohio, for example, have a long history of applying the performance-based approach to transit planning.

> ***Best Practice Example:*** In the early 2000s, ODOT began implementing performance-based transit decisionmaking by establishing the Public Transit Index – a set of performance measures about the State's 61 transit systems. In 2003, ODOT linked these performance measures to State funding to strengthen its oversight of transit agencies in the State. In January 2015, ODOT completed a Transit Needs Study that analyzed level of service and transit needs according to a set of four key performance measures: passengers per hour, cost per hour, cost per passenger, and customer satisfaction (see Figure 5). ODOT developed these performance measures in collaboration with small and large transit providers from across the State. Because Ohio's transit agencies vary widely in size and complexity, ODOT divided transit systems into seven different classifications to develop a more fair comparison between different agencies.

Figure 5: Ohio's Statewide Transit Needs Study analyzed the State's 61 transit agencies according to four key performance measures.



Declining Targets
During the peer exchange, FHWA and FTA explained that, with the exception of safety targets, performance targets do not necessarily need to reflect improving conditions. Rather, agencies may set targets that maintain existing conditions or slow the rate of a decline in a given performance measure. Because State DOT and MPO staff are most familiar with the particular characteristics of their areas, FHWA and FTA do not intend to decide whether chosen targets are appropriate (i.e. too high or too low). While declining performance targets may not represent ideal circumstances, agencies can use declining targets to tell a useful story about funding scenarios. In Michigan, for example, current funding levels may not be able to support improved pavement conditions, so MDOT may choose to set performance targets that reflect decreasing pavement quality ratings and demonstrate the need for additional funding.

C. Coordinating with Partner Agencies

At the beginning of the exchange, FHWA noted that an important benefit of MAP-21 implementation is that it provides an opportunity for State DOTs to strengthen their relationships with regional and local partners as they work toward developing consistent or compatible goals for their respective performance-based plans. Throughout the workshop, participants discussed various strategies for coordinating performance measures between State DOTs, MPOs, and transit agencies.

Setting Collaborative Performance Measures and Targets
To ensure consistency within each State, MAP-21 requires State DOTs to coordinate with MPOs and transit agencies when setting performance targets that affect the area represented by an MPO or public transportation provider. To achieve this, State DOTs will need to actively engage MPOs and transit agencies in target setting at the statewide level. For their part, MPOs must also collaborate with State DOTs and transit agencies to the maximum extent possible when setting their own performance targets. To prepare for this requirement, FHWA encourages DOTs, MPOs, and transit agencies to build strong relationships and to begin coordinating on performance measures prior to the completion of rulemaking.

Aligning DOT and MPO Performance Targets
MPOs do not typically implement projects or maintain transportation assets. Rather, MPOs conduct planning activities, collaborate with DOTs to prioritize projects, and serve as liaisons between local governments and State DOTs. For that reason, MPOs have a different perspective on performance management. However, under MAP-21, MPOs must collaboratively establish performance targets within the national performance areas, either by committing to support the State DOT's targets or by setting targets of their own. MPOs may choose to set their own performance targets because of regional characteristics that distinguish their planning areas from the rest of their State (i.e., growth areas and non-growth areas; congested metropolitan areas and rural areas, etc.). Additionally, MPOs can use the target setting process as an opportunity to prepare a statement of values for their regions. However, while MPOs may have distinct goals for their areas, MPO-specific performance targets should contribute to the State DOT's overall progress toward achieving the State-level performance targets.

> ***Best Practice Example:*** ODOT is creating a performance management committee that will establish performance measures and targets. ODOT and Ohio's seventeen MPOs will participate in this committee to discuss whether each MPO will adopt ODOT's performance targets or develop their own. MORPC, for example, intends to set its own congestion reduction performance measures because its planning area is more urban than the rest of the State and because the MPO has a long history of performance-based congestion management. However, MORPC also intends to adopt ODOT's performance targets in areas such as bridge condition, pavement condition, and safety. Other MPOs in the State may also follow ODOT's lead on performance targets.

Performance-based Planning and Programming for Smaller MPOs
Of Michigan's fourteen MPOs, nine serve urbanized areas with populations less than 200,000. Smaller MPOs, particularly those that plan for urbanized areas with populations less than 200,000, typically have smaller organizations and more limited resources than MPOs that plan for larger metropolitan areas. However, these smaller MPOs face many of the same required responsibilities under the joint Federal transportation planning requirements as larger MPOs. The FHWA document *Performance-Based*

Planning for Small Metropolitan Areas provides insights on effective practices in performance-based planning by smaller MPOs. One possibility is for smaller MPOs to simply accept the performance targets established by State DOTs, although this strategy may pose a problem if the goals of smaller MPOs do not align with those set by DOTs. Congestion, for example, may be a greater concern for the State than for the small MPO. During the action planning portion of the exchange, Michigan's smaller MPOS decided to convene a working group to address these issues and discuss their implementation of performance-based planning and programming under MAP-21.

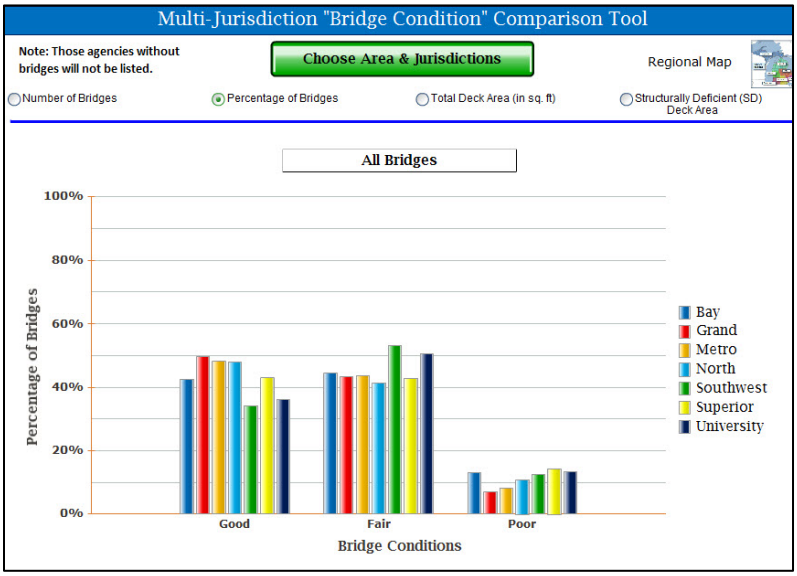
Coordinating Performance Management across Jurisdictions

Michigan's transportation network is vast and complex. The State owns more than 32,000 lane miles of highways and 4,700 bridges. Michigan is also home to a 90,000-mile county-owned highway system – the fourth largest in the United States. Beyond highways, Michigan's 78 transit agencies provide over 95 million passenger trips per year. Freight transportation is also a crucial element of Michigan's highway and rail networks; 35 percent of all trade between the U.S. and Canada flows through Michigan.

Complex transportation networks such as Michigan's are often characterized by overlapping jurisdictions and dispersed responsibilities for roadways, bridges, transit systems, and other assets. This level of complexity presents a challenge for coordination between State DOTs, MPOs, transit agencies, and other partners, particularly when planning agencies are faced with the task of integrating their own performance measures and targets with existing measures at other agencies (e.g., safety, pavement, or bridge performance measures). Fortunately, Michigan has already developed strategies for overcoming the challenge of coordinating performance management across multiple jurisdictions.

> ***Best Practice Example:*** MDOT has a long history of collaborating with MPOs, transit agencies, local governments, and other stakeholders through performance-driven groups such as the Governor's Intergovernmental Coordinating Committee, the Great Lakes Regional Transportation Operations Coalition, and the Michigan Transportation Asset Management Council. The Michigan Transportation Asset Management Council was created in 2002 to help the agencies that own transportation assets in the State of Michigan to collaboratively manage assets across 617 different municipalities. The council maintains performance measures and hosts six dashboards on its public-facing website. These dashboards present condition goals for pavement condition, bridge condition, safety, traffic, maintenance, and finance (see Figure 6) and compare conditions across different jurisdictions. Moving forward, the council will provide a useful venue for coordinating performance measures and targets between transportation agencies.

Figure 6: Michigan's Transportation Asset Management Council prepares performance-based dashboards to display performance measures and compare performance across jurisdictions and regions. The dashboards represent six performance areas, including bridge condition.



D. Making Performance-Based Investment Decisions

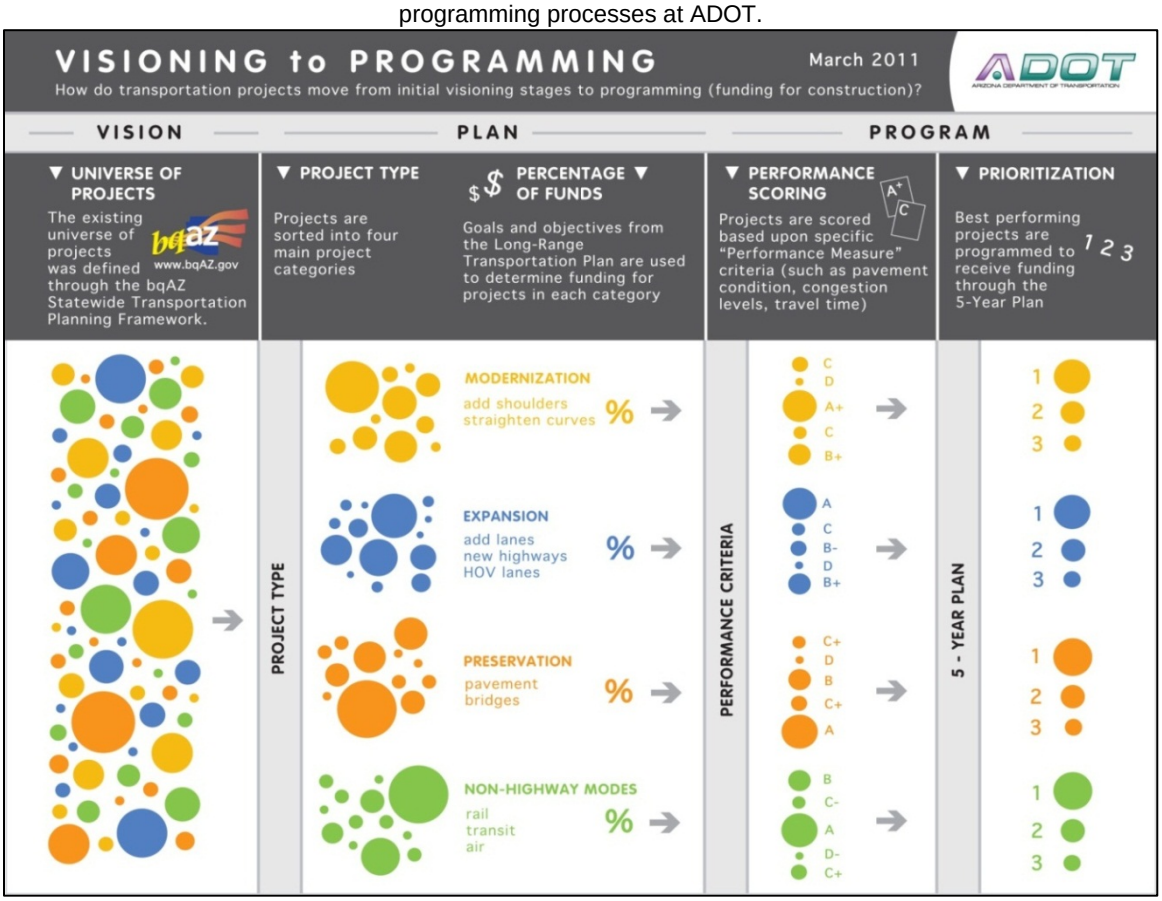
With the appropriate performance measures and targets in place, the next step in the development of a performance management system is for agencies to consider how their investment decisions can achieve the targets, measures, and objectives of their performance-based plans. To this end, performance-based plans should describe how programming and project selection decisions can support performance measures and targets. One key topic of discussion during the peer exchange was the need to connect performance-based plans to capital programming decisions through STIP/TIP development.

Linking Performance-Based Planning to Project Programming

During the peer exchange, participants noted that performance-based programming can help agencies present a transparent, defensible, logical, and reproducible framework for transportation decisionmaking. The peers noted that a strong connection between planning and programming helps agencies use funds more effectively.

> ***Best Practice Example:*** In the process of developing its most recent STIP, ADOT improved the connections between performance-based planning and capital programming in order to present a clear and defensible case for its project selection decisions. (Figure 7 provides an overview of this connection.) ADOT's performance-based transportation framework document, *Building a Quality Arizona* (BqAZ), identifies fiscally unconstrained transportation needs across the State, which ADOT then sorts into four categories and ranks. This list of projects feeds into ADOT's long-range transportation plan, *What Moves You Arizona*, which in turn feeds into ADOT's 5-10 year developmental program and 5-year capital program (i.e., the STIP).

Figure 7: The flow chart below explains the connections between performance-based visioning, planning, and programming processes at ADOT.

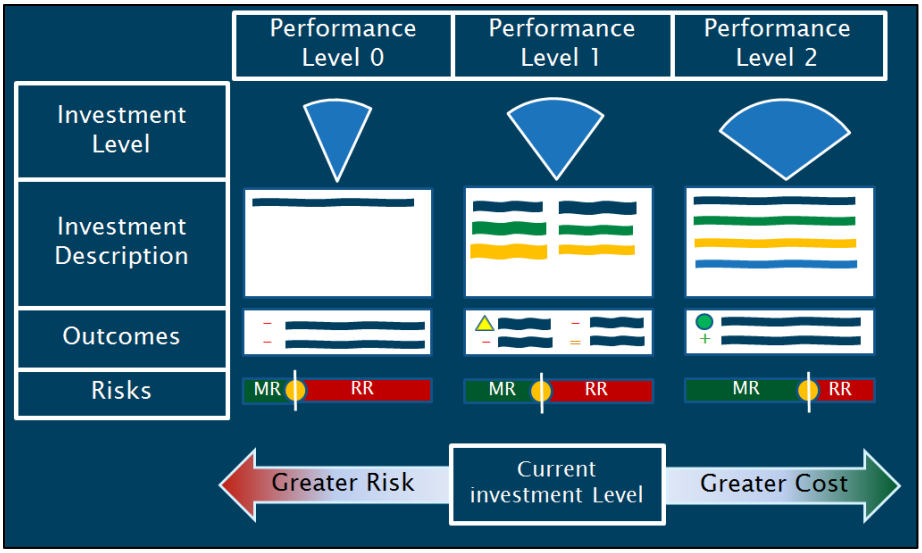


The Risk-Based Approach to Project Selection

Multiple peer exchange participants commented on the risk-based approach to setting targets, prioritizing projects, and allocating resources. The risk-based approach considers whether projects are fundable, developable, constructible, and programmable. Similar to scenario planning, risk-based programming establishes different investment scenarios for various funding levels and funding strategies (e.g. transit-first, pavement-first, or public opinion-based scenarios) that agencies can use to estimate the resulting performance levels. While this approach is a useful tool for incorporating forecasting into the planning process and for reporting on performance targets, it is not required by MAP-21.

> ***Best Practice Example:*** MnDOT's 20-Year State Highway Investment Plan (MnSHIP) sets performance measures and identifies investments needed to meet those targets. MnSHIP also creates and analyzes a range of investment options that MnDOT then evaluates for risk. MnSHIP considers a range of both quantitative and qualitative risks, such as lowering State bond ratings, failing to achieve MAP-21 performance targets, damaging public trust, and losing flexible investment responsiveness. MnDOT evaluates the risk associated with different levels of investment, as demonstrated in Figure 8, where "MR" is "managed risk" and "RR" is "reduce risk." From these concepts, MnDOT rolls up funding scenarios and makes policy-level decisions about project selection.

Figure 8: MnDOT's long-range transportation plan, MnSHIP, evaluates the various types of risk associated with various investment scenarios according to the template below.



Balancing Competing Funding Priorities
During the performance-based programming process, agencies make difficult decisions about how to make the best use of limited funding. Often, agencies face trade-offs between competing priorities, such as reducing congestion and improving infrastructure conditions, or between investments in different classes of assets. Using scenario planning techniques to assess the impacts of different funding scenarios is one strategy for overcoming this challenge.

During the peer exchange, participants noted that satisfying required minimum condition levels under MAP-21 may pose a challenge to the necessary balance of funding priorities. For example, States not meeting minimum Interstate pavement conditions will be required to set aside a portion of their National Highway Performance Program (NHPP) funds for eligible projects on the Interstate System. Under MAP-21, States must also meet minimum bridge condition levels on the National Highway System (NHS). Based on the proposed minimum pavement and bridge conditions, MDOT anticipates that it may not meet these thresholds. As a result, MDOT is concerned that the financial penalties imposed on the agency will prevent it from maintaining adequate conditions elsewhere on the State's transportation network.

> ***Best Practice Example:*** ADOT recently updated the classification of certain roadways in the State and reduced the State's total NHS mileage by approximately 40 percent. Prior to the reclassification, ADOT found that many roads included in the NHS were inappropriate for inclusion in the NHS. As such, ADOT was able to successfully petition FHWA to remove roads from the NHS. ADOT suggested that updating the classification of highways and bridges could help States meet required minimum conditions and avoid incurring penalties. MDOT may consider reevaluating its NHS corridors to address minimum bridge condition levels on the NHS.

E. Data Needs for Performance-Based Planning and Programming

Performance-based planning and programming can help agencies prioritize projects, update the STIP/TIP, and make efficient use of Federal transportation funding. However, making performance-based programming decisions requires robust data collection and analysis, which can be a challenge for many agencies.

Data Challenges
During discussions of data needs, workshop participants identified several challenges related to collecting and analyzing data to measure performance. The primary challenge for State DOTs, MPOs, and transit agencies is finding and analyzing datasets that line up with their unique needs. The high cost of acquiring quality data is another concern for many agencies, in part because every additional dollar spent on data is a dollar not spent directly on transportation projects. Another challenge is the difficulty of integrating and comparing data from different sources, particularly when the data are in incompatible formats. Finally,

many agencies lack the staff capacity necessary to analyze complex datasets without additional training or other resources. MDOT, for its part, is in the process of developing statewide data guidance to help its partner agencies analyze data, particularly complex freight data.

> ***Best Practice Example:*** The peer agencies suggested that transportation agencies should not let the lack of a perfect dataset prevent them from selecting a desired performance measure. MnDOT, in particular, has found that the selection of a given performance measure can elevate the importance of a given dataset. MnDOT commented that, over time, the quality of the data often improves as a result of its use for performance management. MnDOT also noted that in some circumstances it is acceptable to use sampling when adequate data are not available. For example, MnDOT uses sampling to measure pavement cracking and recognizes that sampling may be useful for monitoring the condition of its sign inventory, which is too large to monitor in full on a regular basis.

Data Solutions

During the workshop, FHWA and FTA staff presented several guidelines for data collection and analysis that may help agencies overcome the data challenges listed above. Some best practices for data-driven performance-based planning include:

- Relate data to goals, objectives and targets;
- Focus on data that are available;
- Keep data collection as simple as possible;
- Think strategically about long-term data needs;
- Make use of nationally-available data sources such as the National Performance Management Research Data Set[3];
- Make efforts to ensure the accuracy and quality of data; and
- Rely on partnerships to secure necessary data.

Data Collection and Data Sharing

Many State DOTs provide various datasets to MPOs and local agencies, in part because it can be more cost effective for the DOT to coordinate data collection across an entire State as opposed to MPOs collecting similar datasets on a region-by-region basis. Some State DOTs even use their existing data collection contracts to collect data on locally-owned roads. For their part, MPOs, transit agencies, and other partners may also collect data that is useful to State DOTs. As such, State DOTs may be able to leverage data collected by other agencies by coordinating with their partners.

> ***Best Practice Example:*** MDOT uses the Michigan Transportation Asset Management Council to coordinate with county road commissions, municipalities, MPOs, and others. Through this body, MDOT stays abreast of data collection efforts going on in the State. MDOT is also in the process of acquiring a vendor to collect asset management data on bridges, pavements, signs, and lighting that will provide a uniform dataset that MDOT may make available to its partner agencies on the Transportation Asset Management Council.

> ***Best Practice Example:*** ODOT coordinates most roadway data collection across Ohio. Although Ohio's MPOs do contribute funding to ODOT to support this data collection, ODOT has found that it is more affordable to take a consolidated approach to data collection, using a single source for all roadway data. ODOT regularly shares roadway data with MPOs in the State and also provides some assistance with data analysis.

Pavement Condition Data

[3] FHWA's Performance Based Planning and Programming Guidebook offers more information on national-level data collection efforts.

The type of pavement data that transportation agencies will need to collect under MAP-21 was a key topic of discussion during the exchange. Under MAP-21 rulemaking, the proposed pavement performance targets for pavements (i.e., cracking, rutting, faulting, and the International Roughness Index, or IRI) differ from the pavement metrics that MDOT and other agencies traditionally collect. As a result, some agencies do not currently have baseline data on pavement conditions that they could use to compare future pavement condition to, as required under the proposed rule. Some participating agencies, including MDOT, expressed concern that the proposed pavement target setting measures incentivize a non-asset management strategy approach to project selection that would impact long-term system health. This is because short-term overlay fixes may improve IRI, while not providing the long-term preservation value of full reconstruction projects.

> ***Best Practice Example:*** For many years, MDOT has been monitoring pavement condition using the Pavement Surface Evaluation and Rating (PASER) system. Each year local agencies in the State collect PASER data through visual inspections on at least half of their Federal-aid eligible roads and submit the data to the Transportation Asset Management Council. MDOT uses this information to make funding decisions based on the pavement distress ratings generated. MDOT does not currently collect IRI ratings, which focus on pavement smoothness. As a result, MDOT will not be able to use PASER to report on required pavement targets.

F. Performance Reporting

One key benefit of performance-based planning is the ability to use performance measures to communicate information about transportation planning and decisions to key stakeholders and to the general public. Transparent communication leads to higher levels of accountability for transportation agencies, which can help them build support for their planning processes. Internally, performance reporting allows agencies to continually check on the results of their programming decisions and make adjustments as needed.

Monitoring Performance

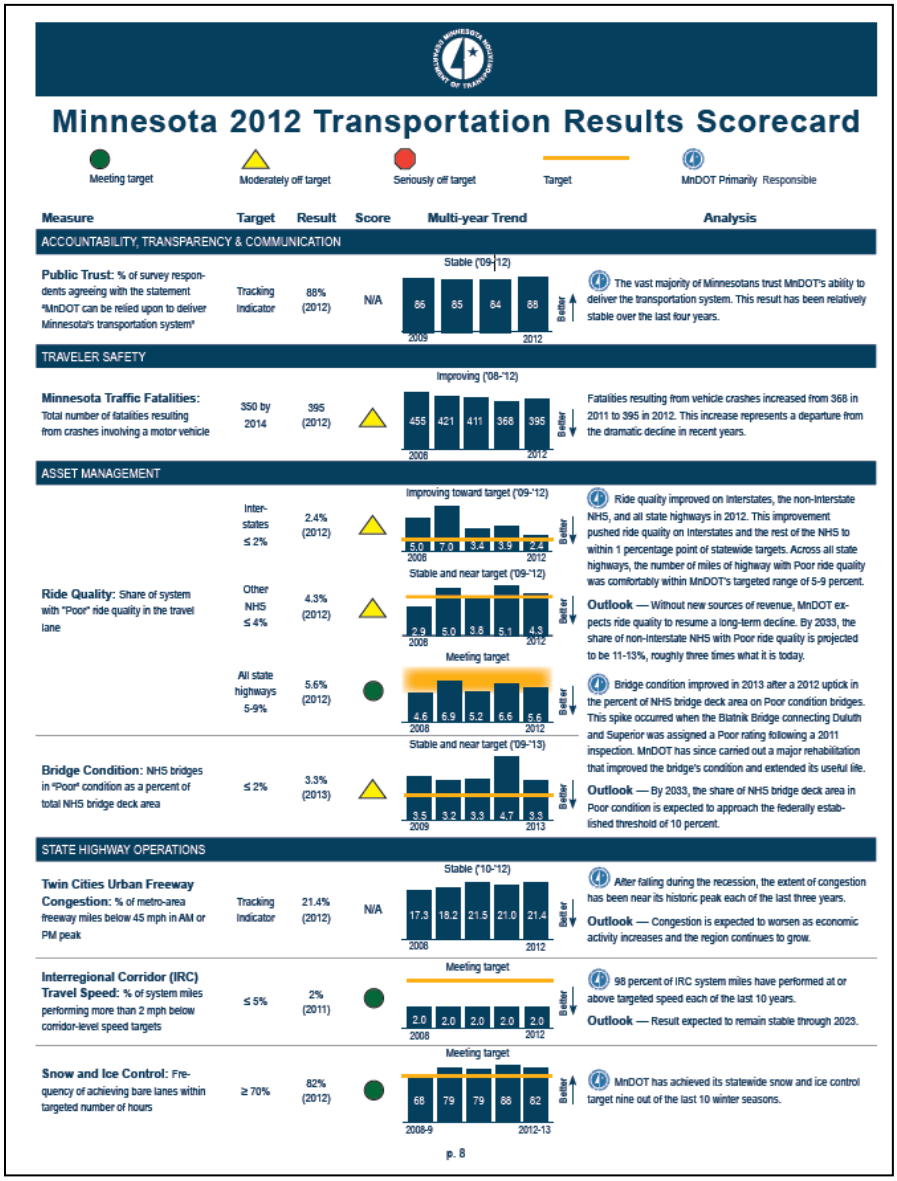
With performance targets, investment plans, and programming documents in place, the next step of performance-based planning is monitoring and reporting progress toward stated goals. Monitoring progress is an important mechanism for evaluating both system performance and the overall success of performance-based planning efforts. Because performance-based planning is cyclical, the monitoring and evaluation process should create a feedback loop that informs future planning efforts (see Figure 1).

Reporting Systems

The peers commented on the value of report cards, dashboards, and other reporting mechanisms that track performance measures and summarize progress for the general public. While there are many options for communicating the results of performance-based plans, reporting systems should ideally be visible, interactive, and up-to-date. Reporting systems should also provide a suitable level of detail for the intended audience. For example, a high-level summary of outcomes is appropriate for the general public, while a greater level of supporting detail is shown to executive management. The peers also emphasized that reporting systems should be graphically appealing and easy to understand. As one peer put it, if an agency needs to explain their performance measures, then their measures and reporting techniques are too complicated.

> ***Best Practice Example:*** MnDOT's Transportation Results Scorecard (see Figure 9) and annual transportation performance report provide easily understandable performance updates. The reporting system lists several performance targets and graphically indicates whether the MnDOT is making progress on these targets. The scorecard also provides a brief analysis of short-term and long-term progress toward these targets. Reporting helps MnDOT evaluate the efficiency of its program and build confidence in its decisionmaking processes.

Figure 9: MnDOT's Transportation Results Scorecard provides high-level information on performance measures and targets to elected officials and the general public on annual basis.



Minnesota 2012 Transportation Results Scorecard

Meeting target · Moderately off target · Seriously off target · Target · MnDOT Primarily Responsible

Measure	Target	Result	Score	Multi-year Trend	Analysis
ACCOUNTABILITY, TRANSPARENCY & COMMUNICATION					
Public Trust: % of survey respondents agreeing with the statement "MnDOT can be relied upon to deliver Minnesota's transportation system"	Tracking Indicator	88% (2012)	N/A	Stable ('09-'12) 86 85 84 88 (2009–2012) Better	The vast majority of Minnesotans trust MnDOT's ability to deliver the transportation system. This result has been relatively stable over the last four years.
TRAVELER SAFETY					
Minnesota Traffic Fatalities: Total number of fatalities resulting from crashes involving a motor vehicle	350 by 2014	395 (2012)	▲	Improving ('08-'12) 455 421 411 368 395 (2008–2012) Better	Fatalities resulting from vehicle crashes increased from 368 in 2011 to 395 in 2012. This increase represents a departure from the dramatic decline in recent years.
ASSET MANAGEMENT					
Ride Quality: Share of system with "Poor" ride quality in the travel lane	Inter-states ≤ 2%	2.4% (2012)	▲	Improving toward target ('09-'12) 5.0 7.0 3.4 3.9 2.4 (2008–2012) Better	Ride quality improved on Interstates, the non-Interstate NHS, and all state highways in 2012. This improvement pushed ride quality on Interstates and the rest of the NHS to within 1 percentage point of statewide targets. Across all state highways, the number of miles of highway with Poor ride quality was comfortably within MnDOT's targeted range of 5-9 percent. **Outlook** — Without new sources of revenue, MnDOT expects ride quality to resume a long-term decline. By 2033, the share of non-Interstate NHS with Poor ride quality is projected to be 11-13%, roughly three times what it is today.
	Other NHS ≤ 4%	4.3% (2012)	▲	Stable and near target ('09-'12) 2.9 5.0 3.8 5.1 4.3 (2008–2012) Better	
	All state highways 5-9%	5.6% (2012)	●	Meeting target 4.6 6.9 5.2 6.6 5.6 (2008–2012) Better	
Bridge Condition: NHS bridges in "Poor" condition as a percent of total NHS bridge deck area	≤ 2%	3.3% (2013)	▲	Stable and near target ('09-'13) 3.5 3.2 3.3 4.7 3.3 (2009–2013) Better	Bridge condition improved in 2013 after a 2012 uptick in the percent of NHS bridge deck area on Poor condition bridges. This spike occurred when the Blatnik Bridge connecting Duluth and Superior was assigned a Poor rating following a 2011 inspection. MnDOT has since carried out a major rehabilitation that improved the bridge's condition and extended its useful life. **Outlook** — By 2033, the share of NHS bridge deck area in Poor condition is expected to approach the federally established threshold of 10 percent.
STATE HIGHWAY OPERATIONS					
Twin Cities Urban Freeway Congestion: % of metro-area freeway miles below 45 mph in AM or PM peak	Tracking Indicator	21.4% (2012)	N/A	Stable ('10-'12) 17.3 18.2 21.5 21.0 21.4 (2008–2012) Better	After falling during the recession, the extent of congestion has been near its historic peak each of the last three years. **Outlook** — Congestion is expected to worsen as economic activity increases and the region continues to grow.
Interregional Corridor (IRC) Travel Speed: % of system miles performing more than 2 mph below corridor-level speed targets	≤ 5%	2% (2011)	●	Meeting target 2.0 2.0 2.0 2.0 2.0 (2008–2012) Better	98 percent of IRC system miles have performed at or above targeted speed each of the last 10 years. **Outlook** — Result expected to remain stable through 2023.
Snow and Ice Control: Frequency of achieving bare lanes within targeted number of hours	≥ 70%	82% (2012)	●	Meeting target 68 79 79 88 82 (2008-9–2012-13) Better	MnDOT has achieved its statewide snow and ice control target nine out of the last 10 winter seasons.

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G. Performance-based Planning: Challenges and Opportunities

Throughout the exchange, the peers explained that MAP-21 requirements for performance-based planning and programming pose several challenges to States, MPOs, and transit agencies. The peers and other participants also elaborated on several strategies for overcoming these challenges and unlocking the many opportunities afforded by performance-based planning and programming. Figure 10 summarizes these challenges and opportunities.

Figure 10: Challenges and opportunities posed by performance-based planning and programming

CHALLENGES	OPPORTUNITIES

One peer explained that one internal challenge for agencies to overcome is cultural resistance to moving away from the way "we've always done it."	To address culture change, agencies need to be able to provide a compelling explanation of why their agency is adopting performance-based planning (see "Benefits of Performance-Based Planning and Programming"). One peer noted that culture change requires strong buy-in from internal stakeholders, which in turn requires careful and consistent communication.
In making performance-based programming decisions, agencies may struggle to select the right group of projects that will help them make progress toward their chosen performance targets.	By connecting performance-based plans to capital programming decisions, agencies can make decisions that support their overall goals. By regularly reporting on progress toward their performance targets, agencies have the opportunity to assess their progress and adjust their decisionmaking processes as needed.
Coordination between agencies and across jurisdictions can pose a challenge for performance management. Coordinating competing priorities across agencies can be a challenge for DOTs.	Performance-based planning provides State DOTs the opportunity, through collaboration, to help MPOs and transit agencies set performance targets that contribute to statewide goals.
Effective performance-based planning requires data collection that may exceed what agencies are used to.	The process of setting performance targets provides an opportunity for agencies to recognize data deficiencies and use performance reporting as a chance to strengthen their data collection and data sharing activities.
Determining the correct format and level of detail for reporting on progress toward performance targets can be a challenging decision.	Agencies should keep their performance reports simple and easy to understand. Reporting on targets provides agencies the opportunity to celebrate success, to build trust with stakeholders, and to make better use of existing resources.
Two- and four-year reporting cycles, as required under MAP-21, may not provide enough time for agencies to make substantive changes to the overall conditions of their assets. Agencies cannot "turn around an aircraft carrier in a pond."	Agencies can set goals that are realistically achievable within the given reporting period, even goals that show decline. Although change may be incremental, performance reporting will help agencies transition toward a more strategic approach to asset management.
Many agencies face limitations on funding, staff time, and internal capacity necessary for performance management.	Performance-based planning and programming allows agencies to make more effective use of limited funding. Over time, the effort required to implement performance management will pay for itself.

Action Planning

During the second day of the workshop, FHWA and FTA staff facilitated two sets of breakout sessions. The first set of breakout sessions addressed the following topics:

- Highway asset management target setting (bridges),
- Safety target setting, and
- Transit asset management/state of good repair.

The second set of breakout sessions addressed:

- Highway asset management target setting (pavement),
- Congestion and system performance target setting, and
- Transit safety plans.

During the breakout sessions, workshop participants worked with the facilitators to summarize their next steps to develop performance-based plans and to use the information shared during the event.

Figure 11: During the action planning portion of the workshop, participants and facilitators discussed next steps for performance-based planning and strategies to implement important lessons from the event.

Highway Asset Management Target Setting – Bridges

During the highway asset management breakout session focused on bridges, participants identified the following key issues and potential next steps.

Key Issues and Concerns:

- MDOT noted that the Notice of Proposed Rulemaking (NPRM) asks State DOTs to measure the percentage of "good" and "poor" bridges in their State, but not "fair." This method of measurement presented a concern for MDOT for three reasons:
    - Maintaining bridges in "fair" condition is a sound asset management strategy. However, the proposed measures may incentivize States to prioritize avoiding penalties, rather than making the most efficient and effective preservation decisions (i.e., a DOT might normally choose to allow bridges to drop from "good" to "fair" to prevent bridges falling from "fair" to "poor," but a performance target for "good" bridges might emphasize a "worst first" approach to preservation).
    - The proposed measures may be confusing to the public because the percentages will not add to 100 and because it may be unclear how many condition ratings fall in between "good" and "poor."
    - Like many other State DOTs, MDOT traditionally reports on the percentage and number

of "good" and "fair" bridges in the State. For that reason, transitioning to reporting on "good" and "poor" bridges may create confusion internally and with the general public.

- As with all target setting, there are concerns of adequate funding and staff time for setting and measuring performance targets related to bridge asset management.
- Due to competing funding needs, MDOT may need to set an increasing target for "poor" bridges and/or a decreasing target for "good" bridges.
- MDOT noted that AASHTO has recommended that the pavement/bridge asset management NPRM change its definition of "structurally deficient" to an NBI condition rating of three or less out of concerns related to the public perception of safety.
- MDOT and other State DOTs may need time to prepare for performance management through project generation and project selection, which may not line up with the required timing of target setting and reporting. MDOT would prefer some flexibility in the reporting period for the first year after the pavement and bridge performance measures are final. The beginning of the calendar year may likely not be the optimal date to begin the performance reporting process cycle.
- Although the proposed time period for target setting is 2 years and 4 years, it is difficult for any agency to make significant progress on bridge condition in that short a timeframe.

Next Steps and Strategies to Move Forward:

- MDOT will submit comments on the proposed bridge performance measures reflecting the concerns listed above.
- MDOT will investigate innovative funding strategies, such as altering the funding sources dedicated to NHS roads (e.g., use STP dollars to address NHS bridges).
- MDOT will request an extension of its funding waiver to allow off-system bridge funds to be used on the NHS.
- If the final performance measures for bridges do not change from the proposed measures, MDOT will set declining targets for the percentage of "good" bridges. MDOT will use the declining target to communicate the need for investment to improve infrastructure.
- If the final performance measures for bridges do not change from the proposed measures, MDOT may fall into NBI penalty status.[4] One strategy for resolving this issue would be for MDOT to modify its project selection processes to avoid losing Federal funds through penalty status. Specifically, MDOT may prioritize projects on larger bridges that they otherwise could have been safely maintained in "poor" condition in order to satisfy performance targets, which weight large bridge more heavily.
- Another strategy for MDOT would be to consider reevaluating its NHS corridors to increase the number bridges in good condition included in the NHS.
- MDOT will also consider breaking its targets for bridge asset management into separate rural and urban goals.

[4] MAP-21 requires each State to maintain minimum thresholds for NHS bridges. Specifically, no more than 10% of total NHS bridge deck area in a State may be on structurally deficient bridges.

Safety Target Setting

During the safety target setting breakout session, participants identified the following key issues and potential next steps.

Key Issues and Concerns:

- Michigan is not currently on target to meet the fatality targets of its current SHSP (2013-2016).
- MDOT will continue working with the Governor's Traffic Safety Advisory Commission on the next SHSP update, which will include new safety measures. MDOT will engage additional interested partners to participate as well.
- MDOT currently has both statewide and trunkline-specific safety targets.
- MDOT is currently working with the Michigan Local and Technical Assistance Program (LTAP) to enhance the existing safety module within Roadsoft (a GIS-based roadway management system). Among many other features and functions, Roadsoft currently provides local agencies timely crash data, as well as tools to analyze crash trends and diagnose crash patterns. Roadsoft users can link traffic count databases and other programs together by contacting Roadsoft directly.
- MDOT's other safety tools and descriptions can be found at the MDOT Traffic and Safety website, under "Resources."
- MDOT is currently working with SEMCOG and the Southwest Michigan Planning Commission to pilot a local SHSP program that will have a targeted rollout statewide. MDOT is looking to complete the rest of the State by the end of 2017.
- There are data gaps on bicycle and pedestrian traffic counts in Michigan. There is not easy to access to this data at the State or local level. There is a need for more tools for collecting bicycle and pedestrian traffic information.

Next Steps and Strategies to Move Forward:

- MDOT will research and pilot bicycle and pedestrian count programs, potentially by reaching out to the MDOT Research Centers of Excellence at various universities in the State. Pamela Boyd was identified as responsible for this action.
- MDOT will consider providing training on safety issues such as the systematic approach to safety. Tracie Leix was identified as responsible for this action.
- MDOT will continue working on its local SHSP plans by coordinating with MPOs through monthly meetings. The intended outcome of these plans is local target setting for safety by driving the statewide SHSP down to the local level. Tracie Leix was identified as responsible for this action.

Transit Asset Management/State of Good Repair

During the transit asset management breakout session, participants identified the following key issues and potential next steps.

Key Issues and Concerns:

- Most transit agencies are already doing a good job fulfilling current and anticipated asset management and state of good repair requirements (i.e., collecting data on the age of vehicles, the useful life of facilities, contributing to the National Transit Database, conducting regular FTA reviews, etc.).
- The forthcoming NPRM (projected September 1) will explain what requirements transit agencies will need to meet in the future. There is some reluctance on the part of transit agencies to make specific plans for responding to MAP-21 asset management requirements before the rulemaking is final.
- There is uncertainty regarding how MAP-21 requirements for asset management plans will apply to smaller transit agencies. For that reason, transit agencies might prefer a tiered system for rulemaking, reflecting that one size may not fit all in terms of transit agencies.

Next Steps and Strategies to Move Forward:

- Transit agencies in Michigan will be prepared to incorporate asset management requirements under the MAP-21 rulemaking into their current activities.
- Transit agencies would prefer to use the types of data they are already capturing to satisfy the final performance measures.
- Urban transit agencies in Michigan will work with their respective MPOs to establish common ground on priority investment needs. Rural transit agencies will work with their rural task forces regarding flexed funds, as MDOT receives and distributes federal formula funds that go to rural agencies and will largely control the investment priorities across the entire rural transit network.
- Michigan transit agencies will comment on the proposed transit asset management rule through their normal channels (either as individual agencies or through their national associations).

Highway Asset Management Target Setting – Pavement

During the highway asset management breakout session focused on pavement, participants identified the following key issues and potential next steps.

Key Issues and Concerns:

- Similar to the bridge discussion above, MDOT noted that the NPRM asks State DOTs to measure the percentage of "good" and "poor" pavements in their State, but not "fair." This method of measurement presented a concern for MDOT for three reasons:
    - Maintaining pavements in "fair" condition is a sound asset management strategy. However, the proposed measures may incentivize States to prioritize avoiding penalties, rather than making the most efficient and effective preservation decisions.
    - The proposed measures may be confusing to the public because the percentages will not add to 100 and because it may be unclear how many condition ratings fall in between "good" and "poor."
    - Like many other State DOTs, MDOT traditionally reports on the percentage and number of "good" and "fair" pavements in the State. For that reason, transitioning to reporting on "good" and "poor" may create confusion internally and with the general public. While MDOT could continue its traditional reporting methods in other reports, that strategy would create inconsistency between State and Federal reports on pavement conditions.
- The proposed pavement target setting measures (i.e., IRI, cracking, rutting, and faulting data) differ from the pavement metrics that MDOT traditionally collects. As a result, MDOT does not currently have baseline data on pavement conditions that it could use to compare future pavement condition to, under the proposed rule.
- MDOT feels that the proposed pavement target setting measures (i.e., IRI, cracking, rutting, and faulting data) incentivize a non-asset management strategy approach to project selection that would impact long-term system health. This is because short-term overlay fixes may improve IRI, while not providing the long-term preservation value of full reconstruction projects.
- Another data concern with the proposed reporting requirements is that MDOT currently collects data in intersection-to-intersection segments, rather than 1/10 mile segments, as proposed in the NPRM. It may be challenging for MDOT to report pavement segments according to a new method in such a short period of time.
- There may be cases where MDOT cannot collect pavement data on some small segments of roadway due to construction activity. However, the proposed rule will require State DOTs to report missing data as a "0," even where it can be inferred that the pavement quality is much higher. MDOT would like to be able to assume that recently improved pavement is high quality without needing to revisit stretches of the highway network where data is missing due to construction.
- MDOT feels that the proposed national Interstate goal[5] may create an incentive for disinvestment in the lower level highway systems.
- MDOT and other State DOTs may need time to prepare for performance management through project generation and project selection, which may not line up with the required timing of target setting and reporting project generation and project selection. MDOT would prefer some flexibility in the reporting period for the first year after the pavement and bridge performance measures are final. The beginning of the calendar year may likely not be the optimal date to begin the performance reporting process cycle.

[5] As proposed, the percent of Interstate lane-miles in poor condition in a State shall not exceed 5 percent.

Next Steps and Strategies to Move Forward:

- MDOT will submit comments on the proposed highway performance measures reflecting the concerns listed above, including flexibility in the use of pavement metrics.
- MDOT will recommend that the data collection frequency for pavement data be reduced to every two years, or request an exemption on data collection on the grounds that the costs of collecting pavement data annually may outweigh the benefits of having this information (especially on pavements that are known to be in poor condition).
- If the final performance measures for pavements do not change from the proposed measures, MDOT may request an extended period to transition to the proposed metrics and establish baseline conditions (i.e., extra time to collect data according to the new methods in order to build a historical dataset sufficient to draw trends from). If MDOT is required to provide a full report after the first performance cycle, it may need to submit limited quality data.
- MDOT will need to develop a strategy for accounting for missing pavement data (e.g., use of last entry data, statistically accounting for the missing data, defaulting to "poor," etc.).
- If the final performance measures for pavements do not change from the proposed measures, MDOT may fall into penalty status due to the proposed minimum thresholds for Interstate pavement condition. In this scenario, MDOT will use the penalties to communicate the need for greater investment in highway infrastructure in Michigan.
- If the final performance measures for pavements do not change from the proposed measures, MDOT will need to develop new techniques for accelerated construction to account for the new pavement target setting.
- Stakeholders in Michigan will use the Michigan Asset Management Council and other statewide venues to work on the issues above.

Congestion and System Performance Target Setting

During the congestion and system performance breakout session, participants identified the following key issues and potential next steps.

Key Issues and Concerns:

- MDOT has been reporting on congestion as part of the Congestion Management Process (CMP) for many years. However, now MDOT has access to data more quickly than ever before through tools and data sources, including commercially-available signaling data from cellular networks.
- MDOT is working to break this congestion data down to the MPO level. There is a need for coordination between MPOs, DOTs, and transit agencies on the CMP.
- There is the possibility of MDOT using and connecting real-world data and modeling data though the use of evolving analytical tools such as the Regional Integrated Transportation Information System (RITIS).
- It is necessary to draw connections between regional and national goals for congestion and system performance, although congestion issues vary by roadway type and setting (e.g. urban or rural).
- MDOT is looking forward to the release of the system performance measures NPRM (projected for July 30, 2015) to add clarity on the congestion and system performance target setting rule.

Next Steps and Strategies to Move Forward:

- MDOT will set up a statewide congestion management group through the Michigan Transportation Planning Association (MTPA). Brad Sharlow was identified as responsible for this action.
    - MDOT will consider strategies for improving congestion (i.e., systemic congestion fixes) and consider what will be most effective in Michigan.
    - MDOT will consider what additional data are needed for the CMP and how to make the most efficient use of resources in the CMP.
    - MDOT will educate smaller MPOs about CMP concepts and the use of large and complex datasets.

Transit Safety Plans

During the transit safety plans breakout session, participants identified the following key issues and potential next steps.

Key Issues and Concerns:

- The forthcoming NPRM (projected September 1) will explain what safety requirements transit agencies will need to meet in the future. There is some reluctance on the part of transit agencies to make specific plans for responding to the new safety requirements before the rulemaking is final.
- In various national dialogues, FTA has explained that each recipient of Federal funding will need to prepare a safety plan that follows FTA's risk-based Safety Management System.
- Various Federal programs have already defined three key areas of risk: drug and alcohol compliance for drivers; vehicle specifications and safety; and driver skills. Transit agencies in Michigan already address those three risk areas. However, transit agencies need to be prepared to address other areas of risk based on Federal requirements.
- Safety data from other existing reports or other sources may help inform transit safety plans.
- Transit safety plans should consider not only the safety of physical assets, but the how customers can safety use transit (e.g. ADA equipment, safe station access, etc.).

Next Steps and Strategies to Move Forward:

- Michigan transit agencies will comment on the proposed transit safety rule through their normal channels (either as individual agencies or through their national associations).
- MDOT will look to FTA to provide a common safety plan template that all States can use. If FTA does not provide such a template, MDOT may work with other States to develop one.

Conclusion and Next Steps

Throughout the workshop, the peers, facilitators, and participants explored several benefits of performance-based planning and programming. These benefits include improved coordination between partner agencies, strengthened asset management techniques, and increased transparency in the planning process.

Due to the numerous benefits of performance-based planning and programming and in light of forthcoming MAP-21 rulemaking, State DOTs and their partners will continue to apply performance management principles in their long-range plans. During the final stage of the workshop, the peer agencies and facilitators worked with MDOT and its partner agencies to summarize their next steps for performance-based planning and programming in Michigan. The result was an agreed-upon set of next steps that these agencies can take to support this effort, including:

- MDOT will work with its partners, including MPOs and transit agencies, to deliver a coordinated transportation program that meets the needs of Michigan's traveling public;
- MDOT and its MPO partners will work together to coordinate performance targets;
- Smaller MPOs in Michigan will, with the help of MDOT and the FHWA Michigan Division Office, convene a working group to discuss their implementation of performance-based planning and programming under MAP-21;
- MDOT will pay close attention to proposed and final MAP-21 rulemakings as they become available, but will begin preparing prior to the final rulemaking;
- Michigan stakeholders will use interagency groups like the Michigan Transportation Asset Management Council and the Michigan Transportation Planning Association to share information related to performance-based planning and to brainstorm new opportunities for collaboration; and
- MDOT will consider adding additional performance measures beyond those required by MAP-21 to ensure that Michigan's local priorities are addressed through performance-based planning and programming.

Although it is far too soon to determine how MDOT and its partners will be able to move forward with their plans to implement performance-based planning and programming, the TPCB Program will follow up with the host agencies in the future to evaluate the success of this event.

About the Transportation Planning Capacity Building (TPCB) Program

The Transportation Planning Capacity Building (TPCB) Program is a joint venture of the Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA) that delivers products and services to provide information, training, and technical assistance to the transportation professionals responsible for planning for the capital, operating, and maintenance needs of our nation's surface transportation system. The TPCB Program website (www.planning.dot.gov) serves as a one-stop clearinghouse for state-of-the-practice transportation planning information and resources. This includes over 70 peer exchange reports covering a wide range of transportation planning topics.

The TPCB Peer Program advances the state of the practice in multimodal transportation planning nationwide by organizing, facilitating, and documenting peer events to share noteworthy practices among State departments of transportation (DOTs), Metropolitan Planning Organizations (MPOs), transit agencies, and local and Tribal transportation planning agencies. During peer events, transportation planning staff interact with one another to share information, accomplishments, and lessons learned from the field and help one another overcome shared transportation planning challenges.

Appendices

A. Key Contacts

Peer Agencies

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B. Event Participants

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George Yang	Grand Valley Metro Council
Jan Yuergens	City of Midland Dial-A-Ride

C. Workshop Agenda

Establishing and Integrating Performance Measures
Peer Exchange: Michigan Department of Transportation
Lansing, Michigan
Revised 4/15/2015

Dates: April 27-28, 2015

Host Agency: Michigan Department of Transportation (MDOT)
Facilitator: FHWA/FTA Team
Peers:

- Arizona Department of Transportation (ADOT)
- Mid-Ohio Regional Planning Commission (MORPC)
- Minnesota Department of Transportation (MnDOT)
- Ohio Department of Transportation (ODOT) Office of Program Management
- Ohio Department of Transportation (ODOT) Office of Transit

Format:

- Brief presentations by peer agencies
- Facilitated discussion among all participants, with opportunities for questions and information sharing throughout

Day 1: April 27, MDOT Horatio Earle Center

Time	Topic	Lead Presenter
8:30 a.m.	**Welcome and Overview** Facilitator welcomes presenters and audience members, reviews the agenda, describes documentation, and establishes ground rules for discussions. FHWA/FTA discuss TPCB and the Peer Program	Facilitator FHWA/FTA representatives
8:45 a.m.	**MDOT Welcome and Goals** • Introduction from Bureau of Transportation Planning Director David Wresinski • Opening remarks from MDOT Director Kirk T. Steudle, P.E. • Performance Measurement in Michigan, Mark Van Port Fleet, P.E., Bureau Director, Bureau of Highway Development • Review of MDOT's goals for the exchange • And Provide context on what motivated the peer exchange request should follow the three presenters	MDOT
9:45 a.m.	**Setting the context:** • Key concepts in performance management • MAP-21 performance management requirements **Comments and Discussion**	FHWA/FTA **All**
10:15 a.m.	***Break***	
10:30 a.m.	**Session 1: Panel of Peers** *A summary of performance management at each agency.* • ADOT • MnDOT **Comments and Discussion**	Peers All

Time	Topic	Lead Presenter
12:00 p.m.	***Lunch***	
1:00 p.m.	**Session 1: Panel of Peers (*Continued*)** *A summary of performance management at each agency.* • MORPC • ODOT **Comments and Discussion**	Peers All
2:30 p.m.	***Break***	
2:45 p.m.	**Session 2: Coordinating Performance Measures between Agencies** • Coordinating measures between DOTs, MPOs, and transit agencies • Establishing a collaborative interagency process to support performance-based planning and programming (PBPP) • Selecting measures that improve interagency collaboration • Ideal relationship between MPO performance measures and DOT performance measures • Ideal relationship between an MPO goals and goals of its member agencies • Aligning and improving upon existing performance measures • Selecting modal and multimodal/systems measures • Involving the public and stakeholders in the development of performance measures	All
4:15 p.m.	**Identification of key take-aways from Day 1**	All
4:30 p.m.	**Wrap up Day 1 and prepare for Day 2**	Facilitator

Day 2: April 28, MDOT Horatio Earle Center

8:00 a.m.	**Recap of Day 1 and introduction for Day 2**	Facilitator
8:15 a.m.	**Session 3: Data and Tools for Performance-based Planning and Measurement** • Data necessary for PBPP – practical and ideal • Best practices for data sharing between agencies • Data roles for DOTs, MPOs, transit agencies, and other partners • Dealing with data deficiencies • Identifying responsibilities for collecting and managing data • Using data to inform investment strategies • Setting data governance/management policies • Reporting meaningful, data-driven results to the public • Using analytical tools to assist in establishing attainable targets • Tools to support long-term forecasting and reporting	All
9:30 a.m.	**Session 4: Implementing a Performance-based Planning Process** • Integrating performance management principles into planning and programming • Using performance targets to evaluate the results of the planning process • Adapting to a national system of performance measures • Organizational framework for successful PBPP • Constraints to implementing performance management • Resources for overcoming common constraints • Overcoming staff or resource limitations • Evaluating the success of performance-based planning efforts	All
10:45 a.m.	***Break***	

11:00 a.m.	**Action Planning Breakout Session #1** *A multidiscipline discussion of best practices and lessons learned* Discussion organized by discipline: • Highway asset management target setting (bridges) • Safety target setting • Transit state of good repair/asset management	Small Group Discussions
12:00 p.m.	***Lunch***	
1:00 p.m.	**Review of Action Planning Session:** • Report out • Key actions from each group • Open roundtable discussion/Q&A	Facilitator, Small Group Leaders
2:00 p.m.	**Action Planning Breakout Session #2** *A multidiscipline discussion of best practices and lessons learned* Discussion organized by discipline: • Highway asset management targeting setting (pavements) • Congestion/systems performance target setting • Transit safety plans	Small Group Discussions
3:00 p.m.	***Break***	
3:15 p.m.	**Review of Action Planning Session:** • Report out • Key actions from each group • Open roundtable discussion/Q&A	Facilitator, Small Group Leaders
4:15 p.m.	**Identification of key take-aways and next steps (this session may be recorded for distribution on the TPCB website)**	All
4:30 p.m.	**Adjourn**	**Facilitator**

D. Additional Resources

AASHTO/TRB, *Performance-based Planning and Programming Peer Exchange: Addressing Institutional Challenges to Implementing MAP-21 Summary Report* (2013)
https://sites.google.com/site/statewideplanning/activites

Environmental Protection Agency, *Guide to Sustainable Transportation Performance Measures* (2011)
http://www2.epa.gov/smart-growth/guide-sustainable-transportation-performance-measures

MDOT Traffic and Safety Website (MDOT safety tools and descriptions available under "Resources"
www.michigan.gov/tands

NCHRP 8-36: *Integrating Performance Measures into a PBPP Process* (2012)
http://onlinepubs.trb.org/onlinepubs/nchrp/docs/NCHRP08-36(104)_FR.pdf

NCHRP 551: *Performance Measures and Targets for Transportation Asset Management* (2006)
http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_551.pdf

NCHRP 664: *Measuring Transportation Network Performance* (2010)
http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_664.pdf

NCHRP 446: *A Guidebook for Performance-Based Transportation Planning* (2000)
http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_446.pdf

NCHRP 666: *Target-Setting Methods and Data Management to Support Performance-Based Resource Allocation by Transportation Agencies* (2010)
http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_666.pdf

FHWA, *Advancing Metropolitan Planning for Operations: An Objectives-Driven, Performance-Based Approach – A Guidebook* (2010)
http://www.ops.fhwa.dot.gov/publications/fhwahop10026/

FHWA, *Performance Based Planning and Programming Guidebook* (2013)
http://www.fhwa.dot.gov/planning/performance_based_planning/pbpp_guidebook/

FHWA, *Performance-Based Planning & Programming: Self-Assessment* (2014)
www.mtpa-mi.org/downloads/pbpp_selfassessment.docx

FHWA Website on Performance-based Planning
http://www.fhwa.dot.gov/planning/performance_based_planning/

FTA TERM Lite Quick Start User Guide
http://www.fta.dot.gov/documents/TERM-Lite_v2.0_Quick_Start_Guide.pdf

MPO/State DOT Best Practice Case Studies
http://www.fhwa.dot.gov/planning/performance_based_planning/case_studies/

TPCB Homepage
http://www.planning.dot.gov/

USDOT MAP-21 Homepage
http://www.dot.gov/map21

USDOT Report on Significant Rulemakings
http://www.dot.gov/regulations/report-on-significant-rulemakings

E. Acronyms

AASHTO	American Association of State Highway and Transportation Officials
ADOT	Arizona Department of Transportation
CMP	Congestion Management Process
DOT	Department of Transportation
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
GIS	Geographic Information Systems
HERS	Highway Economic Requirements System (HERS and HERS-ST);
IRI	International Roughness Index
LRTP	Long-Range Transportation Plan
MAP-21	Moving Ahead for Progress in the 21st Century
MPO	Metropolitan Planning Organization
MTP	Metropolitan Transportation Plan
MORPC	Mid-Ohio Regional Planning Commission
MnDOT	Minnesota Department of Transportation
MnSHIP	MnDOT State Highway Investment Plan
MTPA	Michigan Transportation Planning Association
NHPP	National Highway Performance Program
NHS	National Highway System
NPRM	Notice of Proposed Rulemaking
ODOT	Ohio Department of Transportation
PASER	Pavement Surface Evaluation and Rating
RITIS	Regional Integrated Transportation Information System
SAFETEA-LU	Safe, Accountable, Flexible, Efficient Transportation Act: A Legacy for Users
SEMCOG	Southeast Michigan Council of Governments
SHSP	Strategic Highway Safety Plan
STIP	Statewide Transportation Improvement Program
TIP	Transportation Improvement Program
TAMP	Transportation Asset Management Plan
TERM	Transit Economic Requirements Model
TPCB	Transportation Planning Capacity Building
USDOT	U.S. Department of Transportation
VMT	Vehicle Miles Traveled