Transportation Planning Capacity Building Program

Performance-based Planning and Programming in the Context of MAP-21

A TPCB Workshop

Location: New York City, New York

Date: March 6-7, 2014

Host Agency: New York Metropolitan Transportation Council (NYMTC)

Peer Agencies: Metropolitan Transportation Commission (MTC)
North Jersey Transportation Planning Authority (NJTPA)
Southeast Michigan Council of Governments (SEMCOG)
Washington Metropolitan Area Transit Authority (WMATA)

Federal Agencies: Federal Highway Administration (FHWA)
Federal Transit Administration (FTA)
Volpe National Transportation Systems Center (Volpe Center)

U.S. Department of Transportation
Federal Highway Administration • Federal Transit Administration

REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503.

1. AGENCY USE ONLY (Leave blank)	2. REPORT DATE	3. REPORT TYPE AND DATES COVERED
	January 2015	Final Report

4. TITLE AND SUBTITLE

Performance-based Planning and Programming in the Context of MAP-21

5. FUNDING NUMBERS

MY152 / HW2LA300

6. AUTHOR(S)

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7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)

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Research and Innovative Technology Administration
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Cambridge, MA 02142

8. PERFORMING ORGANIZATION REPORT NUMBER

DOT-VNTSC-FHWA-15-06

9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)

Federal Transit Administration/Federal Highway Administration
Office of Planning & Environment/Office of Planning
1200 New Jersey Avenue, SE
Washington, DC 20590

10. SPONSORING/MONITORING AGENCY REPORT NUMBER

FHWA-HEP-15-017

11. SUPPLEMENTARY NOTES

12a. DISTRIBUTION/AVAILABILITY STATEMENT

12b. DISTRIBUTION CODE

13. ABSTRACT (Maximum 200 words)

This report highlights key recommendations and noteworthy practices identified at the workshop on "Performance-based Planning and Programming in the Context of MAP-21" held on March 6-7, 2014 in New York City, New York 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).

14. SUBJECT TERMS

Keywords: Performance-based Planning and Programming; Performance Measures, MAP-21; New York Metropolitan Planning Council

15. NUMBER OF PAGES

33

16. PRICE CODE

17. SECURITY CLASSIFICATION OF REPORT	18. SECURITY CLASSIFICATION OF THIS PAGE	19. SECURITY CLASSIFICATION OF ABSTRACT	20. LIMITATION OF ABSTRACT
Unclassified	Unclassified	Unclassified	Unlimited

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Introduction

This report highlights key recommendations and noteworthy practices identified at the workshop on "Performance-based Planning and Programming in the Context of MAP-21" held on March 6-7, 2014 in New York City, New York 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). Additional information about the TPCB Program is available on page 23 of this report.

Overview of the Workshop

Goals of the Workshop

The objectives of this workshop were to increase awareness of performance management and performance-based planning and programming; to discuss the planning challenges faced by the New York Metropolitan Transportation Council (NYMTC), its adjoining MPOs, and other planning partners in the New York metropolitan area; and to identify action items to help participating agencies prepare for implementation of performance-based planning and programming. This workshop helped agencies to prepare for three key requirements of the Moving Ahead for Progress in the 21st Century Act (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.

This workshop resulted in a framework for future discussions between the U.S. Department of Transportation (USDOT) and metropolitan planning organizations (MPOs) on the reporting of performance information to USDOT required by MAP-21. This workshop also provided training for NYMTC and its regional planning partners and resulted in the development of action plans for implementing performance-based planning requirements in the New York metropolitan area.

Selecting the Peers

In advance of the event, the TPCB Program worked to identify MPOs and transit agencies 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 the host agency. Each of the chosen peers brought unique experience to the workshop.

The four peer MPOs/transit agencies represented at the workshop were: the San Francisco Bay Area's Metropolitan Transportation Commission (MTC), the North Jersey Transportation Planning Authority (NJTPA), the Southeast Michigan Council of Governments (SEMCOG), and the Washington Metropolitan Area Transit Authority (WMATA). Contact information for each of the peer representatives is included in Appendix A of this report. A full list of attendees is available in Appendix B of this report.

Format of the Event

The two-day workshop was held on March 6-7, 2014, at NYMTC in New York City, NY. The peer presenters, NYMTC staff, FHWA/FTA facilitators, TPCB staff, and several guest agencies from the New York metropolitan area participated in-person, while staff from adjoining MPOs in Connecticut and New York State participated via webinar.

The workshop was an interactive discussion among all participants. During the morning of day one, peer presenters and participants discussed how their agencies are planning for MAP-21 performance management requirements and regulations. In the afternoon, participants held facilitated discussions on the role of collaboration in performance-based planning and the necessary data for measuring performance. During the second day, the participants 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

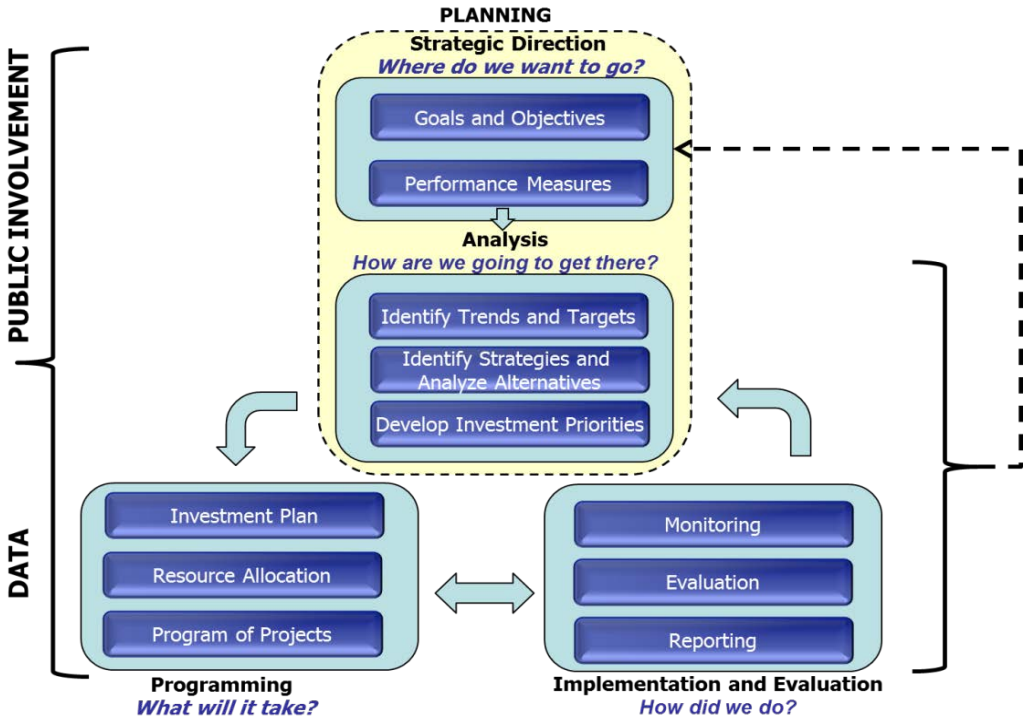
What is Performance-based Planning?

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] The FHWA Office of Planning makes available resources that define the characteristics of performance-based planning and programming and presents information to help assess the effectiveness of plans and programs in meeting performance goals.[2] For MPOs, performance measures provide a nuanced means of assessing progress toward meeting the intent of the long-range transportation plan (LRTP).

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

The Safe, Accountable, Flexible, and Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) of 2005 and prior Federal legislation encouraged MPOs to incorporate aspects of performance management into their metropolitan area planning processes. 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.

With input from states and MPOs, USDOT is establishing a total of twelve performance measure categories within these seven goal areas. After these measures are established, State DOTs and MPOs will then independently set targets for each measure and develop long-range plans that describe how programming and project selection decisions will help achieve these targets. States will report on their progress toward performance targets to USDOT by October 1, 2016, and every two years thereafter. By focusing on national goals, increasing accountability, and improving transparency, these changes will improve decisionmaking through better informed planning and programming.

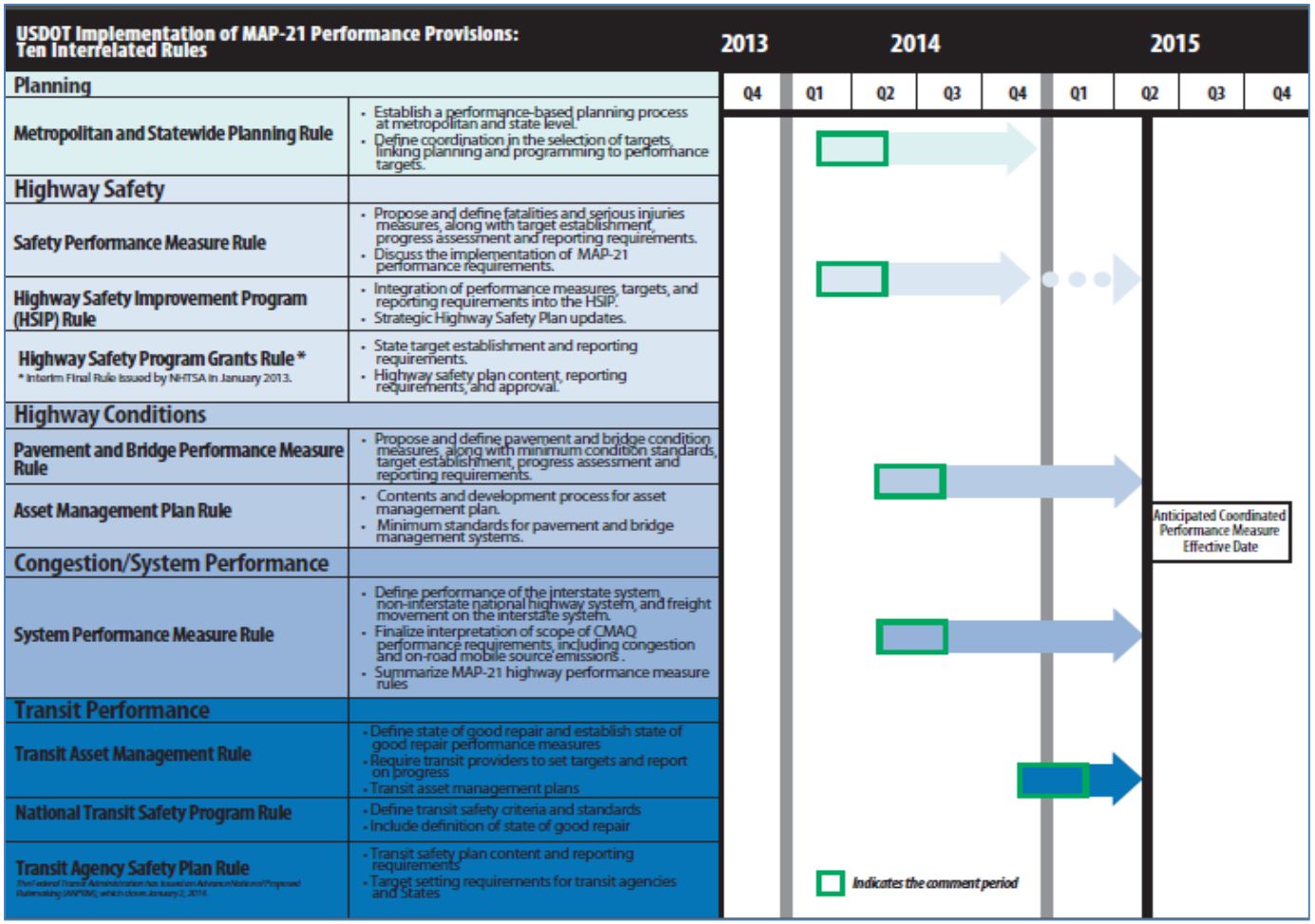
Agencies such as FHWA, FTA, the American Association of State Highway and Transportation Officials (AASHTO), the American Public Transportation Association (APTA), the Association of Metropolitan Planning Organizations (AMPO), the National Association of Regional Councils (NARC), and the National Association of Development Organizations (NADO) 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.

The USDOT is implementing MAP-21 performance requirements through ten interrelated rulemakings that will be 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 March 2014. 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.

Although this event was an opportunity for NYMTC 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 ten interrelated rulemakings in 2014 and 2015, as of March 2014. These rulemakings will explain new requirements for MPOs, State DOTs, and transit agencies, including the twelve required performance measure categories within the seven national goal areas.



Key Questions

Over the course of the workshop, peer agency representatives delivered presentations and engaged in discussions about their experience with performance-based planning and programming. The following is a summary of questions asked by workshop participants during and after presentations from the peer agencies and FHWA and FTA staff. Many of these questions are addressed at length in the "Recommendations and Lessons Learned" portion of this report.

- Where does performance management and performance-based planning occur within an agency?
  - See Page 8.
- What level of effort is required for effective performance-based planning and programming? What resources does it require?
  - See Page 8.
- What tools and resources can help support performance-based planning and programming?
  - See Page 9.
- What parameters or guidelines do State DOTs, MPOs, and transit agencies follow in setting appropriate objectives and performance measures?
  - See Page 9.
- What is the ideal relationship between an MPO's performance-based goals and the goals of its member agencies? What is the ideal relationship between an MPO goals and State DOT or transit agency performance measures?
  - See Page 11.
- How can an MPO ensure consistency in performance-based planning and programming across multiple jurisdictions and political boundaries?
  - See Page 11.
- Can an MPO's member agencies use data and data analysis tools from the MPO in order to conduct analysis within their jurisdictions?
  - See Page 12.
- How can performance-based planning and programming integrate various plans within an agency or between agencies?
  - See Page 12.
- How should MPOs use data to inform investment strategies?
  - See Page 13.
- What is the optimum level of public participation in the development of performance measures? What level of public engagement is required for performance-based plans?
  - See Page 13.
- How can an MPO quantify the benefits and costs of subjective performance measures?
  - See Page 14.
- What are the most common data gaps for measuring performance targets? How can MPOs deal with data deficiencies? Is sampling a valid alternative to data collection?
  - See Page 14.
- To what extent should data availability determine what performance measures are selected?
  - See Page 14.
- How should decisionmakers at MPOs balance the trade-off between different criteria (e.g. safety and congestion)?
  - See Page 14.
- Is long-term forecasting a necessary aspect of reporting on performance-based plans?
  - See Page 14.
- What are the best strategies for reporting on performance measures and targets efficiently and effectively?
  - See Page 15.

Key Recommendations and Lessons Learned

Over the course of the two-day workshop, peer agency staff delivered presentations and engaged in discussions about their experience with performance-based planning and programming. This section highlights recommendations for NYMTC and other transportation agencies serving large metropolitan areas as they introduce performance management into the metropolitan transportation planning process. It summarizes the key recommendations that emerged from the workshop and profiles noteworthy practices employed by peer agencies.

A. Why Undertake Performance-based Planning and Programming?

Throughout the course of the workshop the peers highlighted many of the benefits of performance-based planning and programming, and explained what initially motivated their organizations to adopt performance management principles. The peers and workshop participants explored how performance-based planning and programming leads to better decisions for transportation agencies.

Tracking Progress and Reporting Successes
The peers remarked upon the value of identifying and measuring performance targets to track progress toward goals for mobility, safety, and other conditions. Target setting provides a useful mechanism for defining success, documenting the rationale behind major programming decisions, and reporting on measurable achievements. Furthermore, establishing performance measures supports the attainment of important goals. As one peer noted, “What gets measured gets done.”

Evaluating Performance
One peer noted that a key motivation for undertaking performance-based planning was the ability to gain an understanding of the current performance of the transportation system, evaluate whether it is sufficient, and determine how it could be improved. Performance-based planning also allows agencies to consider improvements to system performance with respect to funding constraints and agency priorities. Performance management supports data-driven analysis of current performance and future needs.

Thinking Long-term
The peers commented that performance-based planning and programming is a way to make long-term planning decisions and extend priorities beyond a near-term timeframe. One agency, for example, was able to promote pavement preservation by demonstrating that putting off investments in preservation increases overall expenditures over time.

B. Getting Started on Performance-based Planning and Programming

Each of the peers described their experiences getting started with performance-based planning and programming. The peers also explained how performance management responsibilities are distributed within their agencies.

Leveraging Staff Resources
The peers acknowledged that performance-based plans require data, funding, staff time, and other resources. Given that collecting and analyzing data can be the most time-consuming and labor-intensive aspects of establishing a performance management program, the peers identified several ways to make the most efficient use of limited resources, including: selecting performance measures that are simple to collect and analyze and utilizing data that is already being collected. Furthermore, the peers noted that performance-based planning efforts can draw upon many business areas within an agency.

> ***Best Practice Examples:*** Although MTC has staff dedicated to performance management, performance management occurs at multiple levels across the agency. For example, MTC draws upon its modeling workforce to support performance-based plans. The agency also works with consultants to conduct economic analyses. Similarly, WMATA has a dedicated Office of Performance, but also uses performance-based planning principles to guide decisionmaking in

other areas of the agency as well.

Tools and Resources to Support Performance-based Planning
Several workshop participants identified FHWA's *Performance-based Planning and Programming Guidebook* as a useful resource for agencies that are implementing performance-based approaches to transportation decisionmaking. The FHWA and FTA Offices of Planning offer resources to assist 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 a presentation to workshop participants, FHWA and FTA staff elaborated on 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.

C. Determining Appropriate Objectives and Performance Measures

Objectives are measureable steps toward the attainment of a goal. Once chosen, objectives are monitored through the use of appropriate performance measures. The peers explained their processes for selecting objectives and performance measures in the development of their performance-based plans.

Setting Goals
Performance-based planning begins with a strategic direction, which identifies goals that define the desired result of a plan. Goals take into account the national goal areas identified in MAP-21 as well as State or regional goals, as appropriate. Once the goals have been identified, the next component of the performance-based planning process is developing objectives and measures to determine how performance in each goal area will be tracked and evaluated.

Using the SMART Approach
Multiple peers noted the utility of the *SMART* approach to performance management, which focuses on objectives that are:

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

SMART objectives should be descriptive, but should not dictate the outcome of a performance measure. Rather, *SMART* objectives draw upon input from the public and partner agency stakeholders in order to represent a meaningful desired outcome. No one objective can apply to every MPO or to every circumstance; the *SMART* approach produces effective objectives and measures that are tailored to each metropolitan planning area.

Choosing Realistic Objectives
One key aspect of the *SMART* approach is selecting objectives that are realistically achievable. In

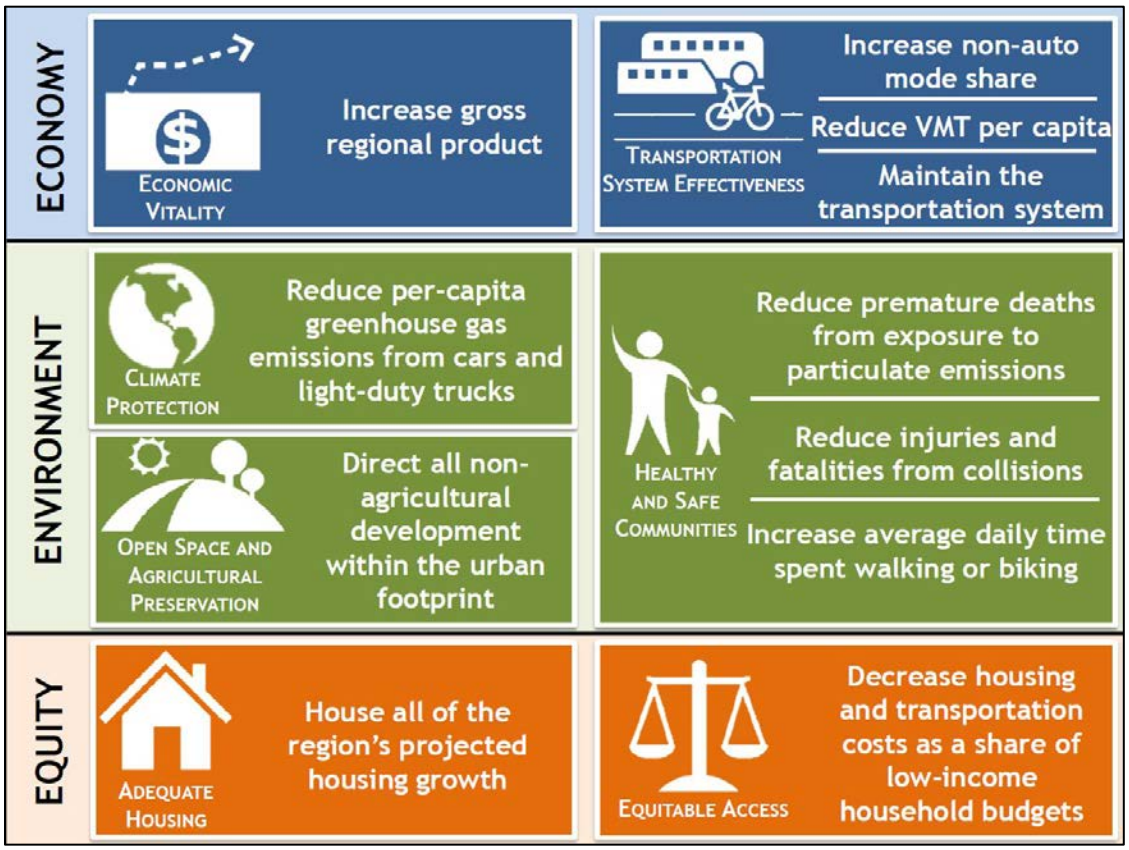
selecting objectives for each of the MAP-21 national goal areas, agencies should choose objectives that are aspirational but feasible. In many large metropolitan areas, for example, reducing the rate of increase in congestion may be a viable objective for the "congestion reduction" goal area given existing conditions and necessary trade-offs with other goal areas. Because MPO staff are most familiar with the particular characteristics of their metropolitan areas, FHWA and FTA do not plan to tell MPOs whether their chosen objectives are appropriate (i.e. too high or too low).

Outcome-based Performance Measures

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 are the primary focus of performance management**.**

> ***Best Practice Example:*** To set targets for MTC's 2040 Regional Transportation Plan (RTP), known as *Plan Bay Area*, the agency selected ten outcome-based targets across the three "E's" of sustainability: economy, environment, and equity (see Figure 3). These targets include: increasing the gross regional product an annual growth rate of two percent; reducing per-capital carbon dioxide emissions from cars and light-duty trucks by seven percent by 2020; and decreasing by ten percent the share of low-income and lower-middle income residents' household income consumed by transportation and housing. MTC chose these targets through a six-month collaborative process that involved many counties, cities, and transit agencies in the San Francisco Bay Area.

Figure 3: MTC's 2040 RTP, known as *Plan Bay Area*, identified outcome-based performance targets that draw upon the three "E's" of sustainability.



Best Practice Example: In the development of SEMCOG's 2040 RTP, *Creating Success with Our Transportation Assets*, the agency's Technical and Policy Committee worked with members and partners to select six interrelated outcome-based objectives that are critical for creating a successful and sustainable region. These objectives include healthy, attractive environmental assets and economic prosperity. SEMCOG selected over forty performance measures for these outcomes and created a matrix to provide an overview of the measures that are driving each of the six outcomes (see Figure 4), including measures that are not specific to transportation.

Figure 4: SEMCOG's outcomes matrix provides an overview of the measures included in the agency's 2040 RTP. This chart, available in full on the *Creating Success* website, identifies up to nine performance measures for each outcome.

What We Need to Achieve: Outcomes

Economic Prosperity	Desirable Communities	Fiscally Sustainable Public Services	Reliable, Quality Infrastructure	Healthy, Attractive Environmental Assets	Access to Services, Jobs, Markets, & Amenities
Percent of population age 25 and over with a bachelor's degree or above	Percent of 4th and 8th grade students at or above proficiency in reading, math, and science (MEAP scores)	Community Fiscal Indicator Score – number that are: - fiscal neutral - fiscal watch - fiscal stress	Percent of roads in good, fair, poor, condition	Percent of time in compliance with air quality standards	Percent of households with access to jobs
Percent of population age 25 and over with an associate's degree	ACT scores	Municipal credit rating	Percent of bridges in good, fair, poor condition	Percent of green cover	Percent of households with reasonable access to amenities such as: - entertainment venues - museums/cultural attractions - walking/biking facilities - parks - sports venues

D. Coordinating with Partner Agencies and the Public

Complex regions such as the New York metropolitan area are often characterized by overlapping jurisdictions and dispersed responsibilities for roadways, bridges, and transit systems. 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 existing performance measures and targets with those in place at other agencies. However, the peers noted that effective collaboration between agencies can result in broad support for performance management from key stakeholders, leaders, and policymakers.

Coordinating Goals and Targets between Planning Levels

The implementation of MAP-21 provides an opportunity for MPOs to strengthen their relationships with State and local partners as they work toward developing consistent or compatible goals for their respective performance-based plans. Performance-based goals at MPOs will need to reflect member agency goals and fit into goals at the State level. States, MPOs, and transit agencies must coordinate their target-setting processes to ensure consistency. To achieve this, MPOs should be active participants in target setting at the statewide level.

Best Practice Example: During the performance-based planning process, NJTPA considers potential investment scenarios and analyzes the probable outcomes of each option. This analysis often requires close collaboration with other agencies. For example, NJTPA works with the New Jersey Department of Transportation (NJDOT) to analyze regional performance measures such as intelligent transportation system architecture and asset management systems. NJTPA also partners with other MPOs, including NYMTC, to share transportation, land use, economic, and

environmental data. NJTPA, NYMTC, and three Connecticut MPOs take part in the MAP Forum, which provides a setting for formal coordination among the MPOs with regard to required planning products and analyses. The NYMTC 2014 Annual Report *Expanding Horizons: Planning Partnerships in the NY-NJ-CT Region* offers additional information on the origins and functions of the MAP Forum.

Collaborating with Member Agencies and Other Partners

Through performance-based planning and programming, MPOs can empower their member agencies and local partners to adopt performance management principles and integrate their planning activities. NJTPA, for example, helps local agencies examine congestion-related projects as part of the CMP. By doing so, NJTPA broadens participation in the CMP while also maintaining the integrity of the CMP approach.

> ***Best Practice Example:*** SEMCOG's planning area includes 233 units of local government, in addition to the City of Detroit and a number of county roads commissions. During the development of SEMCOG's RTP, the agency coordinated with these stakeholders to select goals, objectives, and performance measures. SEMCOG has also developed county-level analytical tools capable of the same analysis that SEMCOG conducts at the regional level. As a result, SEMCOG's local partners can conduct their own analyses and develop their own performance-based plans. Typically, these agencies have submitted plans and projects to SEMCOG that have closely resembled the intended funding allocation developed by SEMCOG for the broader planning area included in its RTP.

Integrating Performance-based Plans

MAP-21 requires States, MPOs, and transit agencies to incorporate performance management principles into a number of formal plans and planning processes, including: Strategic Highway Safety Plans (SHSPs), Transportation Asset Management Plans (TAMPs), Transit Safety Plans, State Freight Plans, and the CMP. Some MPOs have already begun integrating their long-range plans with plans from other agencies. NJTPA's latest RTP, for example, connects the agency's goals and objectives to the national, State, and local priorities of other performance-based plans. However, incorporating aspects of all these performance-based plans into the RTP (while also addressing national goal areas) presents a challenge for MPOs. Figure 5 explains the important relationships between long-range plans, such as the RTP, and other performance-based plans, such as the SHSP.

Figure 5: 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

Engaging the Public

Public involvement is an essential aspect of performance-based plans, and it is useful for informing the goals, objectives, performance measures, and strategies articulated in an RTP. Several peers emphasized the value of soliciting input from local citizens, businesses, and local elected and community officials in the selection of objectives and performance measures.

> ***Best Practice Example:*** Engage North Jersey is a joint public engagement effort by NJTPA and Together North Jersey, a planning initiative led by Rutgers University. Engage North Jersey supports the development of the MPO's RTP, known as *Plan 2040*. The Engage North Jersey website allows community members to share ideas, provide feedback to NJTPA, and visualize the impact of regional planning efforts.

> ***Best Practice Examples:*** Public town hall-style meetings are an effective way to solicit feedback from community members on performance measures and objectives. MTC held numerous events during the development of *Plan Bay Area*, including over 270 public meetings. As a result, MTC has noted a high level of familiarity with the targets included in the plan. Similarly, WMATA's performance-based processes have included extensive outreach efforts, surveys, and public meetings to solicit feedback on the agency's goals and objectives. However, WMATA did not involve the public in its target setting process. Setting measures for and calculating rail on-time performance, for example, was a task reserved for agency management.

E. Performance-based Decisionmaking

With the appropriate performance measures 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 the RTP. These programming decisions can help MPOs prioritize projects, make annual updates to the TIP, and determine which projects should be eligible to receive Federal funding. Developing investment priorities requires a robust data collection and analysis effort, which can be a challenge for many agencies.

Data Challenges
During discussion of data needs, workshop participants identified several challenges related to collecting and analyzing data to measure performance. One major challenge is creating consistency between data sources. MPOs have unique data needs, which may not always be consistent with the data that MPOs receive from partner agencies. Toll authorities, for example, may collect data on axle-based vehicle classifications, while MPOs may need data on weight-based classifications. Another challenge is the difficulty of obtaining data from the private sector regarding freight and private transit activities. One final challenge for MPOs is establishing a common referencing system for geospatial data files.

> ***Best Practice Example:*** When facing data deficiencies, MPOs and transit agencies have seen a benefit in allowing data availability to determine the selection of performance measures. For example, WMATA measures bus on-time performance instead because it is easier and more cost effective to collect than bus travel times. In general, agencies should focus on selecting performance targets that are measurable through existing data sources, while also addressing more qualitative objectives such as equity and livability are the most difficult to measure.

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:

- Relating data to goals, objectives and targets;
- Collecting data that are available;
- Keeping data collection as simple as possible;
- Thinking strategically about long-term data needs;
- Relying on partnerships to secure necessary data;
- Making efforts to ensure the accuracy and quality of data; and
- Sampling when adequate data are not available.

Data Sources for Performance Management
During the workshop, FHWA and FTA staff identified a variety of data sources available to MPOs that can support performance measurement, including:

- Fatality Analysis Reporting System;
- National Bridge Inventory;
- National Transit Database;
- Highway Performance Monitoring System; and
- National Performance Management Research Data Set.

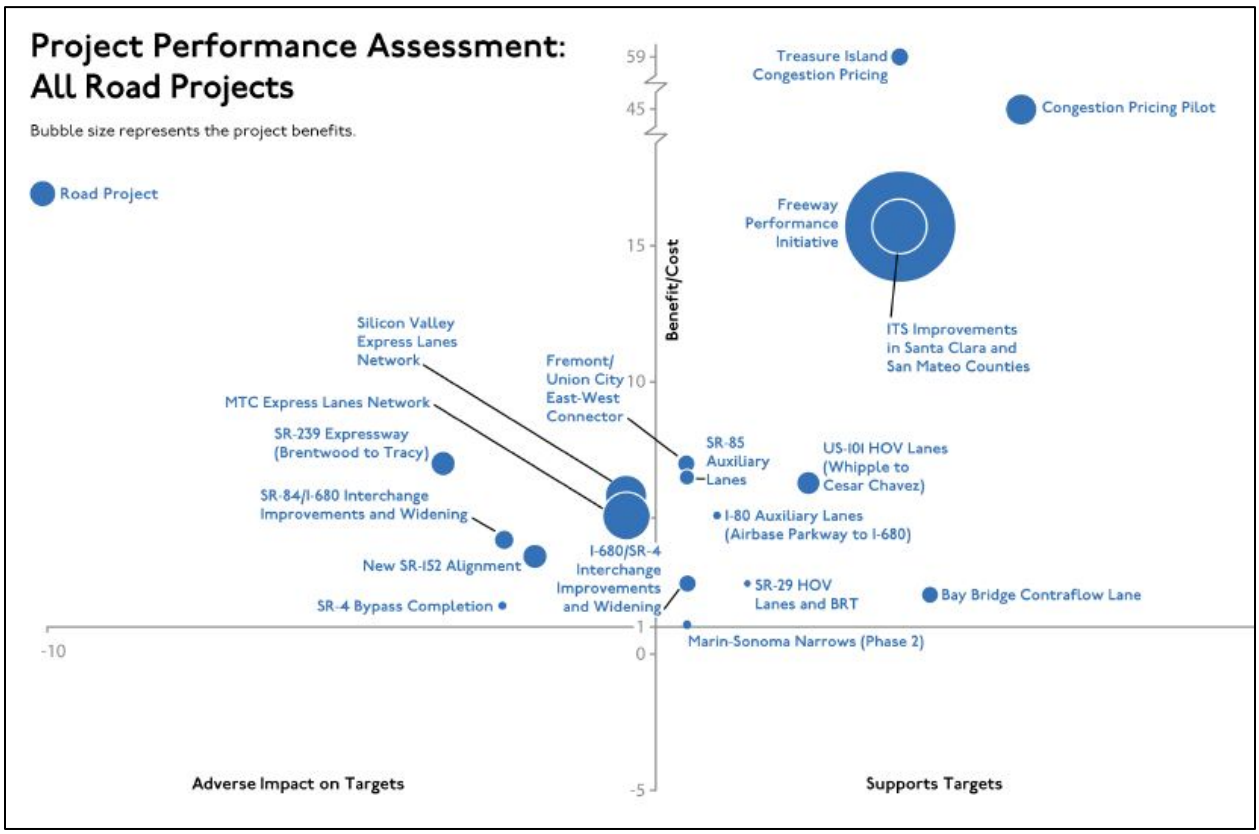
FHWA's *Performance Based Planning and Programming Guidebook* offers more information on national-level data collection efforts.

Comparing Scenarios and Selecting Projects
Scenario planning is an analytical tool that provides a framework for the development of RTPs and other plans by analyzing the various forces that affect future growth. Two peers commented on the utility of the scenario-based approach to setting targets, prioritizing projects, and allocating resources. By establishing different investment scenarios for various funding strategies (e.g. transit-first, pavement-first, or public opinion-based scenarios), MPOs can analyze trends, control for proposed funding levels, consider difficult trade-offs, and estimate the resulting performance over the planning horizon of an RTP. Scenario planning is a useful tool for incorporating forecasting into the planning process and for reporting on performance targets, however it is not required by MAP-21.

> ***Best Practice Example:*** In the development of *Plan Bay Area*, MTC used integrated transportation and land use scenarios to compare forecasted outcomes of each scenario in terms

of its effects on performance targets. MTC compared the projected outcomes for each scenario to the regional targets in the RTP in order to make big-picturing programming decisions. MTC also developed a rigorous benefit-cost ratio for each of several proposed project. MTC then plotted these projects according to their impact on targets and their benefit/cost ratios (see Figure 6). Typically, MTC does not consider projects with a benefit/cost ratio value lower than one. These figures helped MTC to identify the preferred scenarios for long-range plan.

Figure 6: In order to decide between investment scenarios, MTC plotted potential projects according to their impact on performance targets (X-axis) and their overall benefit/cost ratio (Y-axis).



F. Monitoring Progress and Communicating Success

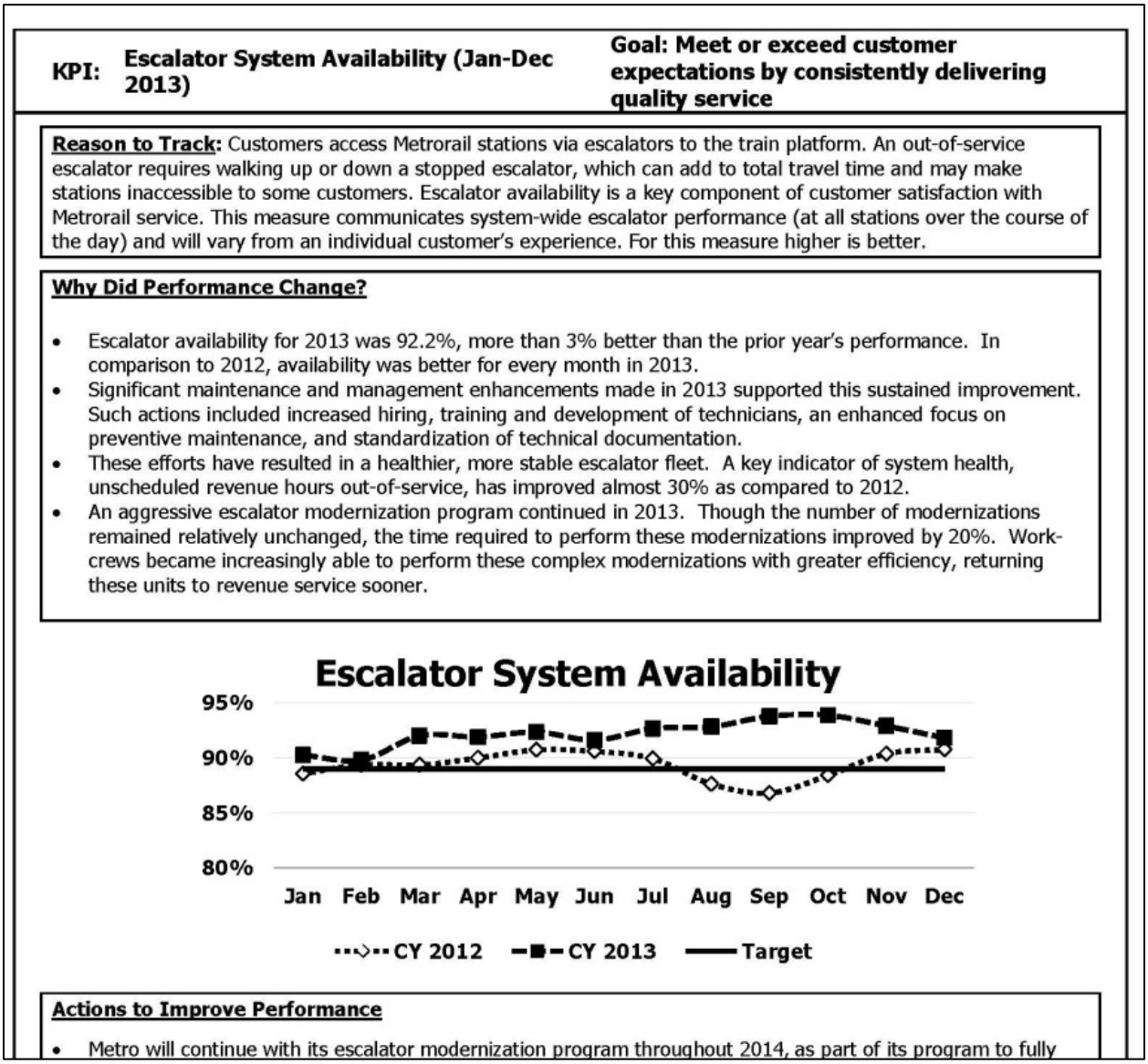
One key benefit of performance-based planning is the ability to use performance measures to communicate information about transportation planning and decisions to key stakeholders and to the general public. The transparent communication of planning goals leads to higher levels of accountability for MPOs and other agencies, which can improve support for the planning process

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. For example, SEMCOG plans to evaluate its 2040 RTP and identify which pavement treatments yielded the strongest results in order to improve upon future performance measures and strategies for pavement assets.

Best Practice Example: WMATA produces Vital Signs Reports for each of the agency's objectives, or Key Performance Indicators (KPIs). These reports explain why each KPI is being tracked, how a KPI has changed over time, and why performance has improved or worsened. The Vital Signs Reports also identify actions to improve performance. WMATA uses these reports to solicit stakeholder input on system performance and to open a transparent dialogue with the public. The agency also uses these reports to inform the media of its activities. Figure 7 displays a sample Vital Sign Report.

Figure 7: WMATA publishes Vital Signs Reports to provide easy-to-understand performance scorecard for each KPI. This Vital Sign Report focuses on the KPI of "Escalator System Availability."



Demonstrating Results

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.

> ***Best Practice Example:*** During the development of SEMCOG's 2040 RTP, the agency created a publically-available performance measures dashboard on the *Creating Success* website. SEMCOG has found that the dashboard has increased the transparency of the agency's planning process.

> ***Best Practice Example:*** NJTPA is currently developing the Planning Recommendation Integration Management Engine (PRIME). PRIME is a searchable database, map viewer and analysis tool that will demonstrate the results of the agency's performance-based plans and processes. PRIME will be capable of organizing, tracking, mapping, and reporting planning recommendations and needs identified by NJTPA and its partners.

G. Performance-based Planning: Challenges and Opportunities

In conclusion, one peer noted that MAP-21 requirements for performance-based planning and programming offer both challenges and opportunities for States, MPOs, and transit agencies. Figure 8 summarizes the challenges and opportunities associated with performance-based planning and programming.

Figure 8: Challenges and opportunities posed by performance-based planning and programming

CHALLENGES	OPPORTUNITIES
Some agencies may face cultural resistance to the adoption of performance-based plans and performance management principles.	Performance management can reveal areas in which current performance may be lacking. Through planning and target setting, agencies may realize new strategies to improve performance.
In adopting performance management, agencies may be tempted to choose too many measures to focus on. Agencies may be reluctant to report on disappointing outcomes. Finally, agencies may pay too much attention to meeting quantitative targets, rather than achieving the desired outcomes of performance-based plans.	Reporting on targets provides agencies the opportunity to celebrate success, to build trust with stakeholders, to make better use of existing resources better.
Coordination between agencies can pose a challenge. Agencies may fear surrendering control, MPOs may not own the assets that affect system performance, and agencies may struggle to coordinate competing priorities.	Adopting performance management provides agencies with opportunities to learn from best practices in the field, to coordinate data-sharing efforts, to monitor regional trends, and to build on existing collaboration.
Some agencies may view performance targets as additional requirements. Target setting may require gathering data and input from a variety of sources. Targets may vary between agencies.	Target setting provides agencies with an opportunity to focus on the connection between actions and results. The process of selecting targets also provides an opportunity to increase stakeholder buy-in, expose data deficiencies, and highlight areas where more resources are needed.
Many agencies face limitations on staff time, funding, and other resources necessary for performance management.	Performance-based asset management allows agencies to make more effective use of limited funding.

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 plans. The second set of breakout sessions addressed: highway asset management target setting (pavements), 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 9: 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

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

Key Issues and Concerns:

- Due to the National Bridge Inspection Standards, there are no significant gaps in bridge data. However, there may be new inspection requirements. One important issue is making sure that bridge data are consistent no matter who conducts the inspection.
- There is a strong need for inter-organizational governance when multiple jurisdictions intersect. For example, there needs to be MPO involvement in any State's LRTP, STIP, and TAMP.
- As with all target setting, there are concerns of adequate funding and staff time for meeting targets.
- There may be time lags between updates to various plans for highway and bridge assets.
- States, MPOs, and other jurisdictions face an issue of "orphan bridges" without clear owners (e.g. old railroad bridges).
- Highway and bridge asset data must be in a consistent format, whether it comes from DOTs, transit agencies, or the private sector.
- NYSDOT is one of three pilot states putting together TAMPs as part of FHWA's TAMP Pilot Project.
- A clear definition is needed for the term "preservation first."

Next Steps and Strategies to Move Forward:

- NYSDOT and MPOs in New York State will meet to talk about the TAMP pilot project. These agencies will also discuss the data that are in the TMAP and what future data needs exist to

support asset management.

- Agencies in New York state will assess the analytical skills needed at the organizations involved in performance-based asset management.
- Transportation agencies in New York will harmonize their organizational plans (i.e. different performance plans such as ten-year capital program and the STIP).
- NYSDOT will consider cross-asset tradeoffs in the TAMP by looking at different scenarios for each asset class (i.e. the impacts of reducing investment in one class on another class of assets).
- MPOs in New York State will form a working group for discuss performance measures for pavement and bridges.
- FHWA will explain what funding is available for data collection for MPOs and local agencies (e.g. categorical funds, SPR funds, etc.).

Safety Target Setting

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

Key Issues and Concerns:

- There is a need for electronic crash reporting in New York City and elsewhere.
- A standard definition of "serious injury" is necessary before safety target setting can begin.
- There are data inconsistency issues between partner agencies in the New York area.
- There are data gaps for fatalities and injuries on non-NHS roads. There is limited data on bicycle and pedestrian injuries.
- Rural, suburban, and urban areas face different safety challenges and competing priorities for safety targets.
- NYSDOT's SHSP has safety targets, but New York MPOs currently do not.

Next Steps and Strategies to Move Forward:

- Many agencies maintain safety data (e.g. crash, traffic, and roadway data) in the New York area. There is a need to conduct an inventory of existing safety data, as well as existing transportation safety plans and safety targets.
- Safety data needs to be standardized and normalized across multiple data-owners.
- In order to standardize and analyze safety data, agencies will need to identify funds to support data efforts (e.g. metropolitan planning (PL) and State planning and research (SPR) funds).
- Agencies in the New York area need to connect engineering staff with education and enforcement staff to coordinate safety improvements.
- One strategy for coordinating activities within NYMTC would be reconvening the Safety Advisory Working Group.
- University Transportation Centers (UTCs) could serve a resource for safety target setting in New York.

Transit Asset Management Plans

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

Key Issues and Concerns:

- There is uncertainty regarding how MAP-21 requirements for asset management plans will apply to smaller or non-profit transit agencies.
- There is a need to address interregional travel, including travel between metropolitan planning areas.

- Clear definitions are needed for terms like “transit provider” and “transit assets.”
- It is often unclear whether bridges are transit assets or highway assets in cases of shared ownership or mixed use.

Next Steps and Strategies to Move Forward:

- Transit agencies can expand their asset management plans for vehicles to include infrastructure as well.
- Transit agencies may see a benefit in integrating complete streets efforts and intermodal activities into the TAMP.
- The TERM tool can be useful for prioritizing asset management needs and resolving state of good repair backlogs.

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:

- How to link measures to the plan
- 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).
- There are new sources of data available for use in the CMP, including commercially-available signaling data from cellular networks. There is the possibility of using and connecting real-world data and modeling data. Agencies have the opportunity to use evolving analytical tools.
- In planning, there is trade-off between congestion and other priorities, such as safety. There are concerns over acceptable thresholds for congestion target setting.
- There is a sense that congestion will continue to grow no matter what plans are put in place. However, congestion may be a sign of economic vitality and system reliability remains a major concern for the CMP.
- There is a need for coordination between MPOs, DOTs, and transit agencies on the CMP.

Next Steps and Strategies to Move Forward:

- MPOs can make use of new and innovative sources of data, including commercially-available signaling data from cellular networks. NYMTC is hosting a presentation from a UTC to discuss use of this type of data to supplement or replace the data that NYMTC is currently collecting.
- During an upcoming Metropolitan Area Planning (MAP) Forum meeting, NYMTC and its partners will discuss what level of coordination should exist between the MPOs in the New York area and whether the group should expand to include other adjoining MPOs.
- NYMTC members will hold a discussion on performance management during an upcoming staff meeting and Program, Finance, and Administration Committee meeting.
- NYMTC will explore possibilities for coordinating with a UTC on issues such as archiving and managing data and validating models of system performance.

Transit Safety Plans

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

Key Issues and Concerns:

- Safety is a priority for transit agencies, and it is related to state of good repair. There is hope that the NPRM will better the two fields.
- Safety plans for some transit agencies are more focused on crime and security than crashes.

- There is uncertainty how safety plans will be filed with FTA.
- Thresholds for safety funding are also a concern.

Next Steps and Strategies to Move Forward:

- MPOs could bring parties together to discuss transit safety plans.
- Rail safety oversight at the State level can be used to help transit agencies develop safety plans.
- 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. bus shelters, safe station access, lighting, etc.).

Conclusion and Next Steps

Throughout the workshop, the peers, facilitators, and participants explored several benefits of performance-based planning and programming, such as achieving needed system improvements, increasing input from the public and stakeholder agencies, and adding transparency to the planning process.

Due to the numerous benefits of performance-based planning and programming, State DOTs, MPOs, and transit agencies will continue to apply performance management principles in their long-range plans in future years as they continue to meet the needs of the traveling public in their respective planning areas. During the final stage of the workshop, the peer agencies and facilitators worked with NYMTC and its partner agencies to summarize their next steps to develop performance- based plans in the New York metropolitan area. The result was an agreed-upon set of next steps these agencies can take to support this effort. These include:

- Assess the analytical skills needed at the organizations involved in performance-based asset management;
- Harmonize various organizational plans across New York's transportation planning agencies;
- Set a clear plan for the use of performance measures in programming and prioritizing projects;
- Set realistic roles and responsibilities for staff members and partner organizations.
- Conduct an inventory of existing safety data in the New York metropolitan area;
- Standardize and normalize safety data across multiple data-owners;
- Explore the possibility of using UTCs as a resource for safety target setting and managing data;
- Convene NYMTC's Safety Advisory Working Group to coordinate activities within the agency;
- Form a working group for MPOs in New York State to discuss performance measures for pavement and bridge assets;
- Hold a meeting between NYMTC and NYSDOT to talk about NYSDOT's TAMP pilot project and discuss asset management data needs;
- Use of new and innovative sources of travel time data to supplement or replace the data that NYMTC is currently collecting;

Although it is far too soon to determine assess how transportation agencies in the New York metropolitan area will be able to move forward with their plans to institute 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

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B. Event Participants

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Victor Austin	Federal Transit Administration
Michele Bager	New York State Department of Transportation
Seth Berman	New York City Department of Transportation
Brian Betlyon	Federal Highway Administration Resource Center
Sutapa Bhattacharjee	North Jersey Transportation Planning Authority
Sangeeta Bhowmick	New York Metropolitan Transportation Council
Gerry Bogacz	New York Metropolitan Transportation Council
Hector Boggio	Greater Buffalo-Niagara Regional Transportation Council
Michael Bradley	New York City Department of Transportation
Robert Brickman	Nassau County
Tom Bruff	Southeast Michigan Council of Governments
Donald Burns	Federal Transit Administration
Maria Chau	Federal Highway Administration New York Division Office
Dana Crisino	Herkimer-Oneida Counties Transportation Study
Nancy Danzig	Federal Transit Administration
Sandra Dixon	Port Authority of New York and New Jersey
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Angelina Foster	New York Metropolitan Transportation Council
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Lynn Weiskopf	New York State Department of Transportation
Connie Yew	Federal Highway Administration

C. Workshop Agenda

Performance-based Planning and Programming in the Context of MAP-21
Workshop: NYMTC
March 6-7, 2014

To Connect Remotely via Webinar:
Follow this link to register for Day 1 (March 6th). Follow this link to register for Day 2 (March 7th).
Once you have registered, you will receive an automated email with the event number, password and call-in information you will need to connect. This email will also include a link to the webinar itself and contact information for technical support. *Virtual participants are welcome to join for all of Day 1 and the 10:15 a.m. session on Day 2.*

Host Agency:
Gerry Bogacz, New York Metropolitan Transportation Council (NYMTC)

Facilitators/Presenters:
Brian Betlyon, FHWA
Ralph Rizzo, FHWA
Spencer Stevens, FHWA
Victor Austin, FTA
Connie Yew, FHWA

Peers:
David Vautin, Metropolitan Transportation Commission (MTC)
Tom Bruff, Southeast Michigan Council of Governments (SEMCOG)
Patricia Hendren, Washington Metropolitan Area Transit Authority (WMATA)
Brian Fineman, North Jersey Transportation Planning Authority (NJTPA)

Workshop Objective

This workshop will incorporate both training modules and Peer Exchange elements in order to create a framework for future discussions between U.S. DOT and MPOs such as NYMTC. This workshop will help agencies advance their efforts to coordinate on three key requirements of MAP-21:

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

In light of changes under MAP-21, it is critical to coordinate data collection, measurement, reporting, and planning efforts between and within agencies. An update of the Federal roll-out of performance measurement requirements under MAP-21 will be provided.

The goal of this workshop is to start a dialogue among transportation agencies on the reporting of performance information to U.S. DOT required by MAP-21 and to provide common training for regional partners. The workshop will produce lists of data requirements, data sources, key contacts, communication plans, and action plans.

Workshop Format
The workshop will be an interactive discussion among participants. Participants should be prepared to discuss how their agencies are planning for MAP-21 performance measurement and planning regulations and to develop concrete action plans that identify how they will contribute to a collaborative approach towards delivering a performance-based approach.

Day 1: March 6th, 2014 at NYMTC
**Virtual participants are welcome throughout Day 1*

Time*	Topic	Lead Presenter
10:00 a.m.	**NYMTC Welcome and Goals** NYMTC welcomes participants and describes their goals for the exchange.	NYMTC
10:15 a.m.	**Welcome and Introductions** FTA and FHWA staff welcome attendees, review the agenda, describe documentation/follow-up, and establish ground rules for discussions. FTA and FHWA staff introduce upcoming presentations and action planning sessions.	FHWA/FTA
10:30 a.m.	**Performance-based Planning and Programming** Regional efforts related to PBPP in New York.	NYMTC and FHWA/FTA
12:00 p.m.	***Lunch***	
1:00 p.m.	**Panel of Peers** *A summary of PBPP initiatives in place at each agency.* **Comments and Discussion**	MTC SEMCOG WMATA NJTPA
2:30 p.m.	***Break***	
2:45 p.m.	**Facilitated Discussion** State/MPO/Transit Performance-based Planning Collaboration and Coordination	All
3:30 p.m.	**Data and Tools for Performance-based Planning and Measurement** **Facilitated Discussion** • Data necessary for PBPP • Tools that support PBPP • Setting data governance/management policies • Dealing with data deficiencies	FHWA/FTA All
4:30 p.m.	**Wrap up Day 1 and prepare for Day 2**	Facilitators

Day 2: March 7th, 2014 at NYMTC
**Virtual participants welcome during the 10:15 a.m. session on Day 2.*

Time	Topic	Lead Presenter
10:00 a.m.	**Recap/Overview of Day Two**	Facilitator
10:15 a.m.	**MAP-21's Performance Management and Performance Plan Requirements**	FHWA/FTA*
10:45 a.m.	**Action Planning:** Breakout Sessions and Facilitated Discussion • *Multiple Discipline/Agency Discussion on collaboration for Target Setting and Reporting*	All
11:45 a.m.	***Lunch***	
12:45 p.m.	**Action Planning:** Breakout Sessions and Facilitated Discussion • *Multiple Discipline/Agency Discussion on collaboration for Target Setting and Reporting*	All
1:45 p.m.	**Review action planning sessions:** key actions for group discussion • Action planning • Report out • Open roundtable discussion/Q&A	All
2:45 p.m.	**Wrap up**	**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

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

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

FHWA Scenario Planning Homepage
http://www.fhwa.dot.gov/planning/scenario_and_visualization/scenario_planning/index.cfm

FHWA Transportation Planning Update Newsletter
http://www.fhwa.dot.gov/resourcecenter/teams/planning/publications.cfm

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/

SEMCOG Creating Success in Southeast Michigan Initiative
http://www.semcog.org/CreatingSuccess.aspx

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
AMPO	Association of Metropolitan Planning Organizations
APTA	American Public Transportation Association
CMP	Congestion Management Process
DOT	Department of Transportation
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
GIS	Geographic Information Systems
KPI	Key Performance Indicators
LRTP	Long-Range Transportation Plan
MAP-21	Moving Ahead for Progress in the 21st Century
MAP Forum	Metropolitan Area Planning Forum
MPO	Metropolitan Planning Organization
MTC	Metropolitan Transportation Commission
MTP	Metropolitan Transportation Plan
NADO	National Association of Development Organizations
NARC	National Association of Regional Councils
NHS	National Highway System
NJDOT	New Jersey Department of Transportation
NJTPA	North Jersey Transportation Planning Authority (NJTPA)
NPRM	Notice of Proposed Rulemaking
NYCDOT	New York City Department of Transportation
NYMTC	New York Metropolitan Transportation Council
NYSDOT	New York State Department of Transportation
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
TPCB	Transportation Planning Capacity Building
USDOT	U.S. Department of Transportation
VMT	Vehicle Miles Traveled
WMATA	Washington Metropolitan Area Transit Authority