

2019 Transportation Performance Management Peer Exchange

TPM Implementation

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1 Overview

This report summarizes the proceedings of the 2019 Transportation Performance Management (TPM) Peer Exchange sponsored by the Transportation Performance Management Pooled Fund, led by the American Association of State Highway and Transportation Officials (AASHTO) and the Rhode Island Department of Transportation (DOT). The peer exchange was held in St. Paul, Minnesota on November 14-15, 2019.

1.1 Peer Exchange Purpose

The 2019 Transportation Performance Management (TPM) Pooled Fund Peer Exchange focused on how transportation agencies are implementing TPM in light of federal requirements and advancing TPM and performance-based planning and programming (PBPP) practice. The purpose of the peer exchange was to provide participants an opportunity to share their experiences implementing TPM and to discuss related best practices.

This peer exchange provided a forum for agencies to share and discuss TPM and performance-based planning and programming (PBPP) implementation practices, including how to resource and align their internal performance management systems with federal requirements. They discussed current communication challenges and the future of TPM. The primary goal of this peer exchange was to advance the state of the TPM practice, particularly by sharing lessons learned.

Participants learned about resources available to support TPM implementation. Agencies shared how they are managing short- and long-term system performance and how they are balancing investment decisions. How agencies are setting targets and managing targets in the context of performance-based planning, budgeting and management was also a focus of the discussion.

As part of the event, the participating agencies prioritized the TPM implementation initiatives of supporting entities such as FHWA, AASHTO, the Association of Metropolitan Planning Organizations (AMPO), and Transportation Research Board (TRB). The peer exchange was organized around the following core activities:

- **Share the experience** of recent TPM implementation, including the best examples of how the TPM has led to advancement in the organization and with partner organizations
- **Discuss performance based planning and programming** resources and federal requirements

- **Discuss the ingredients** for good TPM implementation, including communication challenges, noteworthy practices and lessons learned
- **Develop a vision** of what the next generation of TPM will look like
- **Prioritize initiatives** for future TPM activities for the TPM Pooled Fund, FHWA, AASHTO, AMPO, and TRB to undertake

1.2 Peer Exchange Format and Summary

The peer exchange consisted of five panel sessions focused on the topics outlined above. Each section included speaker presentations followed by time for questions and small or large group discussions. Each of the two days concluded with a wrap-up summary and further discussion. This format was designed to encourage open dialogue in the targeted topic areas.

A peer exchange welcome was offered by Tim Henkel (Minnesota DOT), Susanna Reck (FHWA) and Christos Xenophontos (TPM Pooled Fund Chair, Rhode Island DOT). Next, Matt Hardy (AASHTO) shared a summary of pooled fund accomplishments. Hyun-A Park (Spy Pond Partners, LLC) provided an overview of the peer exchange and its objectives. Participants then had the opportunity to introduce themselves to the group.

The first panel of the peer exchange, *PBPP – Resource Allocation*, examined how agencies are implementing performance based planning and programming (PBPP) and described how linking planning and programming to good investment decision-making yields good performance results. This session looked at examples of resource allocation practice. The panel included presentations by Matt Haubrich (Iowa DOT), Karen Miller (Missouri DOT) and Ryan Granger (Texas DOT). The panel concluded with a group discussion on how to improve investment decision-making.

The second panel, *PBPP – Federal Measures and Requirements*, continued the focus on PBPP, with agencies sharing their challenges with integrating federal measures and requirements. Edgardo Block (Connecticut DOT) and Deanna Belden (Minnesota DOT) presented. The panel concluded with small group breakouts and reports to the large group to generate ideas for how to make improvements at both the federal and state levels.

The third panel, *Emerging Agency Needs*, focused on an agency in the early stages of their TPM implementation process. Rachel Roper (Hawaii DOT) shared her agency's challenges and posed the needs they have in implementing performance management. The presentation was followed by a large group discussion in which participants developed ideas for how agencies can accelerate TPM progress in less mature agencies.

Following this, Karen Miller (Missouri DOT) provided a wrap-up and summary of the first day of the peer exchange, offered ideas to consider and gave an overview of Friday's agenda.

At the start of the second day, Edgardo Block (Connecticut DOT) provided a recap of Thursday's discussion and Hyun-A Park (Spy Pond Partners, LLC) provided an overview of Friday's agenda.

The fourth panel of the peer exchange, *TPM Communication Challenges*, featured agencies sharing noteworthy practices on communicating TPM. Presentations included Holly Bieneman (Illinois DOT), Gabe Philips (Washington State DOT) and Chris Berrens (Minnesota DOT). The panel concluded with a "fishbowl" group discussion designed to provide agencies an opportunity to showcase their communication practices and products, and share their thoughts on what is needed nationally and how to support different levels of communication maturity across agencies.

The fifth and final panel, *Speed Sharing – TPM Lessons Learned*, provided a series of short, five-minute presentations aimed at sharing wisdom gained through both TPM successes and failures. Jackie Irving (Wisconsin DOT), Thor Anderson (Arizona DOT), Steve Guenther (California DOT), Rick Johnson (Oklahoma DOT), Kelly Travelbee (Michigan DOT), Patrick Cowley (Utah DOT), Gehan Elsayed (West Virginia DOT) and Toria Lassiter (Maryland State Highway Administration) presented. The panel concluded with a group discussion of the content.

After the final presentation, TPM Pooled Fund Chair Christos Xenophontos led participants in a review and clarification of participant ideas for the next potential set of activities to be undertaken by the TPM Pooled and national entities to support the future of TPM. The peer exchange concluded with participants prioritizing issues and future activities.

1.3 Peer Exchange Agenda

Day 1 – Thursday, November 14, 2019

Introductions

- Noon - 1:00 pm Lunch available for participants
- 1:00 - 1:30 pm Welcome, Opening Remarks
*Tim Henkel, Minnesota DOT, Susanna Reck, FHWA,
Christos Xenophontos, Chair, TPM Pooled Fund*
- TPM Pooled Fund Accomplishments
Matt Hardy, AASHTO
- Peer Exchange Overview and Objectives
Hyun-A Park, Spy Pond Partners, LLC
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A. PBPP – Resource Allocation

Implementing performance-based planning and programming (PBPP) is a key challenge facing many transportation agencies. Linking planning and programming to good investment decision-making yields good performance results. This session looks at examples of resource allocation practice and will end with a group discussion on how to improve investment decision-making.

- 1:30 - 2:00 pm - *Matt Haubrich, Iowa DOT – Data-Driven Project Initiation and Prioritization*
 - *Karen Miller, Missouri – Resourcing TPM and PBPP*
 - *Ryan Granger, Texas DOT – Maximizing Efficiency Through Predictive Tools*
- 2:00 - 2:45 pm Large Group Discussion
-

B. PBPP – Federal Measures and Requirements

This session continues the focus on PBPP. Many agencies identified the challenges of aligning federal measures and requirements with their agency's TPM practices. This session will start with agencies sharing their challenges with integrating federal measures and requirements and end with small group breakouts to generate ideas for how to make improvements at both the federal and state levels.

- 2:45 - 3:05 pm - *Edgardo Block, Connecticut DOT – Reconciliation of State & National Measure Dashboards*
 - *Deanna Belden Minnesota DOT – Integrating Federal Measures into a Mature Performance Management System*

- 3:05 - 3:20 pm Break
- 3:20 - 4:15 pm Small Group Discussion
- 4:15 - 4:45 pm Group Reports

C. Emergency Agency Needs

Agencies just starting their TPM implementation process will share their challenges (5-minute shares) and pose the needs they have in implementing TPM.

- 4:45 - 4:50 pm - *Rachel Roper, Hawaii DOT*
- 4:55 - 5:30 pm Large Group Discussion

Peer exchange participants will be asked to develop ideas for how emerging agencies can accelerate their TPM progress.

Day 1 Wrap Up

- 5:30 - 5:45 pm Summary of Day 1 Discussion, Ideas to Consider, Overview of Friday's Agenda
Karen Miller, Missouri DOT

Day 2 – Friday, November 15, 2019

Day 2 Introduction

- 8:00 - 8:30 am Recap Thursday's Agenda and Overview of Friday's Agenda
Edgardo Block, Connecticut DOT
Hyun-A Park, Spy Pond Partners, LLC

D. TPM Communication Challenges

Good TPM communication is a challenge facing DOTs as both federal and their agency TPM programs are maturing and performance results are available to the public. This session will start with agencies sharing noteworthy practices on communicating TPM and end with a group discussion on what is needed nationally and how to support different levels of communication maturity across agencies.

- 8:30 - 9:00 am - *Holly Bieneman, Illinois DOT – Collaborating and Coordinating with MPOs and Transit Agencies on PBPP Activities*

- *Gabe Philips, Washington State DOT – Communicating and Reporting Project Performance*
- *Chris Berrens, Minnesota DOT – The Evolution of Reporting and Communicating Results*

9:00 - 10:00 am Large Group Discussion

10:00 - 10:15 am Break

E. Speed Sharing – TPM Lessons Learned

The following peer exchange participants will share their TPM lessons learned through 5-minute highlights that are supported by documentation that will be available to all participants before the peer exchange. The purpose of this session is to share the wisdom gained through both TPM successes and failures.

- 10:15 - 10:45
- *Jackie Irving, Wisconsin DOT*
 - *Thor Anderson, Arizona DOT*
 - *Steve Guenther, California DOT*
 - *Rick Johnson, Oklahoma DOT*
 - *Kelly Travelbee, Michigan DOT*
 - *Patrick Cowley, Utah DOT*
 - *Gehan Elsayed, West Virginia DOT*
 - *Toria Lassiter, DOT*

10:45 - 11:30 Large Group Discussion

Priority Needs and Peer Exchange Wrap-Up

11:30 – Noon Discussion of Priority Issues and Future Activities, Summary of Peer Exchange
Christos Xenophontos, Chair, TPM Pooled Fund

1.4 Peer Exchange Participants

The following is a list of peer exchange participants.

State DOT Participants (by state)

Name	Agency
Thor Anderson	Arizona DOT
Greg Byers	Arizona DOT
Steve Guenther	California DOT
Edgardo Block	Connecticut DOT
Michael Cohen	Connecticut DOT
Alexander Finch	Connecticut DOT
Maureen Kelley	Delaware DOT
Rachel Roper	Hawaii DOT
Matt Haubrich	Iowa DOT
Charlie Purcell	Iowa DOT
John Selmer	Iowa DOT
Holly Bieneman	Illinois DOT
Bill Morgan	Illinois DOT
Toria Lassiter	Maryland SHA
Kelly Travelbee	Michigan DOT
Tim Henkel	Minnesota DOT
Deanna Belden	Minnesota DOT
Jean Wallace	Minnesota DOT
Michael Iacono	Minnesota DOT
Karen Miller	Missouri DOT
Tammy Haas	New Mexico DOT
Rick Johnson	Oklahoma DOT
Michelle Nickerson	Tennessee DOT
Peggy Thurin	Texas DOT
Ryan Granger	Texas DOT
Patrick Cowley	Utah DOT
Gabe Philips	Washington State DOT

Name	Agency
Gehan Elsayed	West Virginia DOT
Jackie Irving	Wisconsin DOT

Other Participants (by organization)

Name	Organization
Matt Hardy	AASHTO
Susanna Reck	FHWA
Christos Xenophontos	TPM Pooled Fund (Rhode Island DOT)
Hyun-A Park	Spy Pond Partners, LLC
Lori Richter	Spy Pond Partners, LLC

2 Peer Exchange Introduction

2.1 Welcome, Opening Remarks

Tim Henkel (Minnesota DOT and Chair of AASHTO CPBM) and Susanna Reck (FHWA) provided a welcome and introduction to the peer exchange. Mr. Henkel highlighted that even mature agencies are in a learning mode, and he looked forward to everyone learning together and creating a vision for TPM improvement at all maturity levels. Both speakers emphasized this was a perfect time to stop and reflect on implementation so far and share noteworthy practices and lessons learned. Christos Xenophontos (TPM Pooled Fund Chair, Rhode Island DOT) talked about the history of the pooled fund and reminded participants the original goal was to build a partnership around developing capacity.

2.2 TPM Pooled Fund Accomplishments

Matt Hardy (AASHTO) reviewed the pooled fund products including:

- TPM Portal, which provides TPM community support as well as tools, and resources, including the MODAT web application and calendar of deadlines.
- Benchmarking site to allow states to continuously compare their performance with their peers and includes an online platform, new measure data and new comparison screens; the purpose of this site is not to compete with FHWA information, but rather, to enhance access. He stressed this platform could become the authoritative source for the state of transportation data and the system.
- Knowledge and capacity-building, including the peer exchange, *TPM NOW!* video series, and *TPM Newsletter*.

- Task 4 PM3 web-based tool provided by University of Maryland CATT Lab data analytics to help with calculating PM3 measures, as well as the national performance measurement reliability data set (NPMRDS) data expansion option.

Mr. Hardy also talked about how the pooled fund’s research roadmap led to NCHRP 20-24(127) – *Performance Management Implementation Concerns, Issues and Challenges*, whose objectives are to document and develop a prioritized list of TPM concerns, issues and challenges, linked to specific examples, and then provide a framework for more systematic assessment of implementation costs to address, reduce or eliminate these issues, along with a way to calculate the implementation level of effort and possible next steps. He also discussed several other related efforts, including the FHWA National Implementation Review (NIR) and the analysis of the “Basis for Target” comments highlighting TPM areas of concern for states. He wrapped up with a call for members to help get the word out about the portal , newsletter, tools and resources.

2.3 Overview, Objectives, and Introductions

Hyun-A Park (Spy Pond Partners) wrapped up the introduction by introducing the agenda and the purposes of the peer exchange, including to:

- Advance the state of the TPM practice, including lessons learned
- Discuss the ingredients for good TPM implementation
- Gain knowledge of the resources available to support TPM implementation
- Share the experience of recent TPM implementation, including the best examples of how the TPM has led to improved system performance in the organization and with partner organizations
- Discuss what the next generation TPM will look like at state DOTs and MPOs
- Prioritize future TPM initiatives for FHWA, AASHTO, and TRB

She encouraged attendees to take advantage of the opportunity to ask questions and learn from each other. After Ms. Park’s remarks, individual introductions (names, roles and organizations) were shared.

3 PBPP – Resource Allocation

Implementing performance based planning and programming (PBPP) is a key challenge facing many transportation agencies. Linking planning and programming to good investment decision-making yields good performance results. This session looks at examples of resource allocation practice and ended with a group discussion on how to improve investment decision-making.

3.1 Matt Haubrich, Iowa DOT

Matt Haubrich gave a presentation on how Iowa DOT plans for an uncertain future, focusing on how they use data to help align projects and priorities. He talked about how project development staff needed a consistent set of information and format to consider potential projects and a transparent process for prioritizing their investments, rooted in performance-based planning methods.

In response, they developed a way to use data and seven prioritization factors, including: safety, road class, freight, pavement, bridge, traffic and mobility to develop weights for prospective projects. The department visualizes the impact analysis in LRS, and uses an automated process to calculate project-level and performance level metrics to create alignment with their agency objectives and to support trade off decision-making. Mr. Haubrich noted this methodology is a unified way of measuring impact, but does not look at what is going to be delivered. It identifies the criticality of projects in any given area and can look for points of coordination. Next, the agency wants to start looking at project prioritization and incorporating cost-benefit analysis (CBA).

3.2 Karen Miller, Missouri DOT

Karen Miller provided background on Missouri DOT, which is governed by an independent commission. Her summary included a discussion of its ongoing transportation funding challenges. She indicated the state has the 7th largest system in the nation, but rank 48th in revenue per mile.

Ms. Miller described the state's decentralized planning framework, and its long history of performance management, including the longstanding publication of the *Tracker*. She talked about data sharing within the agency, which includes planning, performance management and asset management functions. Ms. Miller described the asset management rolling timeline. Because the agency is decentralized, locals help to prioritize projects, and recently, the agency discovered some areas were underfunded. As a result, the agency undertook an initiative to revise the way it distributed its construction program funds. She wrapped up her presentation with information about a safety, campaign to engage the public to "Buckle Up, Phone Down," with lower fatalities reported the past 2 years and their collaboration using a SharePoint site

and monthly webinars to share information and work with their partners. This has allowed the partners to voice similar transportation needs statewide.

3.3 Ryan Granger, Texas DOT

Ryan Granger provided a presentation on maximizing efficiency through predictive tools. He indicated the department is focusing on performance-based planning to choose investments to achieve desired outcomes. They are currently developing a more robust link between planning and programming, and have several tools in development associated with this, including the corridor prioritization tool (CPT) and the corridor evaluation tool (CET). They also have several tools they have been using but are still evolving, including the performance metrics: data integration system (PM-DIS) and use of Decision Lens. Mr. Granger demonstrated several views of these tools and talked about the agency's corridor evaluation process, safety and pavement targets and their performance crosswalk.

Next, Mr. Granger discussed agency challenges, needs and opportunities. Challenges include:

- All areas: accuracy and extent of data, predictability of investments and outcome, and differences between federal and state measures
- Safety: the optics of non-zero fatalities targets and limitations of what they can control
- Pavement: consistency between databases and measurement methodologies
- Bridge: adjust their state measures to match or align with federal measures
- System: statewide measures' insensitivity to investment
- Transit: their statewide focus of investments and their lack of relevant historical data
- Project performance versus portfolio performance and predicted outcomes
- Measures affecting their investment decisions versus required measures

Needs include:

- All: many years of data to improve their outcome predictability and decision-making
- Safety: time and resources to update and reinvigorate non-structural safety measures
- Pavement: time to align their state methodology with federal requirements and to fill data gaps
- Bridge: time and resources to adjust state measures to match federal measures
- System: to investigate alternative performance measures or how to make better relationships between investments and outcomes
- Transit: broader support for multi-modal investment, better data

Opportunities include:

- To use PBPP for a whole life cycle of programs that help inform decisions on investment at system-wide level, corridor level and project-portfolio level

- As historical investment and outcome data are amassed, predictability should improve
- Apply best practices from other states/MPOs

3.4 Large Group Discussion

The presentations were followed by questions for the panelists, followed by an open discussion about the TPM Resource Allocation issues.

- Question for Texas DOT related to decision lens criteria: how do they use economic development as a criteria, do they leave out jobs created by project?
 - Answer: That is one of weakest areas at Texas DOT, it is a matter of having the data to measure what that is and what they want the consultant to look at it.
- Question for Missouri DOT regarding decentralization: how do they coordinate?
 - Answer: Karen Miller serves as the internal and external TPM requirements liaison with subject matter experts (SMEs). She developed a process to work collaboratively with the MPOs that can be used with any of the targets. She also meets regularly with internal experts. During the 30-day comment period, she tracked questions and assumptions, and would go through them the next time they met to ensure knowledge sharing. Districts are invited to the monthly calls, which central office coordinates.
- Question for Texas DOT: how did they set up Decision Lens?
 - Answer: Texas DOT has multiple legacy systems in place. The consultant brought it together in the software tool. Mr. Granger indicated the other challenge is they have never asked data to perform this way in the past. If they had anomalies in the past, it didn't matter as much, but now that projects are being assessed on it, is more important to understand and deal with them.
- Question for Iowa DOT: where they are at in PBPP?
 - Answer: They have taken trial runs at developing a CBA, but it is not mainstream yet. Matt Haubrich asserted just because you can put something in dollars, doesn't mean it is the same dollars. He also clarified on their LRS and GIS that most in the system are related to highway development projects.
- General question: what jumped out at you?
 - A participant pondered whether Iowa DOT considers themselves at risk to have all environmental resources identified and whether they are thinking about their internal liability? Mr. Haubrich responded they want to know where resources

are at. This will put them in a better position from liability standpoint to know their risks. They believe they are at more exposure being blind to them.

- Another participant wondered about Texas DOT's practice of categorizing projects by cost. Mr. Granger responded how they break it down and categorize it depends on funding. He also noted the main programming in Decision Lens is for large capital projects.
- Finally, a participant noted Texas DOT talked about project vs portfolio, and wondered how they get at the best mix when looking at whole portfolio of projects? How do they optimize to make sure get best return on the investment? Mr. Granger noted when they refer to portfolio, they mean all projects in a district. Direction is set by the commission, and some are based on formulas. He also asserted they haven't done resource optimization.
- General question: what resourcing support do you need?
 - Sharing information about how using tools to help with programming decision making.
 - Issue between federal and state performance measures. There is a concern they might tell different stories. Mr. Hardy asked whether this is this something we need to address? Michigan DOT noted have kept spotlight off the federal measures. For example, they have had an issue with federal pavement measures tell a drastically different story than the measures they use for their prioritization process, especially related to thresholds. Ms. Reck (FHWA) indicated their report stopped short of how to apply the messages but did a good job at explaining what they are intended to do.
 - Help with molding data and making better decisions.
 - One participant noted decision making can get hijacked, and there is a need to formalize prioritization across different asset classes and non-facility priorities. There is also a need for a formalized, comprehensive and transparent process.
 - One participant noted that ingrained and sustainable is the next stage of TPM development.

4 PBPP – Federal Measures and Requirements

This session continued the focus on PBPP. Many agencies identified the challenges of aligning federal measures and requirements with their agency’s TPM practices. This session started with agencies sharing their challenges with integrating federal measures and requirements and ended with small group breakouts to examine the biggest barriers to integrating federal measures into existing performance management systems, how to overcome these barriers and lessons learned in integrating federal measures. Afterward, the group identified what can be done nationally to support integrating federal measures into existing performance management frameworks, and what role the TPM Pooled Fund can play in this support structure.

4.1 Edgardo Block, Connecticut DOT

Edgardo Block presented on reconciling state and national TPM perspectives. He described several potential problems inherent in this exercise, including:

- State DOT performance management initiatives often pre-date national performance measures and have been telling a performance story successfully; often, perspectives (and uses) of state and national measures are different.
- “Power of the measure.” With a need to present a national performance perspective, the usefulness of the federal measures for local decision-making is lessened – he gave the example of people of various ages (2 and under is young, 80 and older is old, everyone else is “fair”).
- Some measures are too abstract and difficult to communicate or understand, such as the air quality measures/total emissions reduction measure, for example.
- There are several measures that are still fairly immature, including system reliability and freight.
- Expectations from decision-makers to use measures to make local decisions (create a “line of sight between actions and outcomes”) is often not feasible with the federal measures. This runs contrary to the need to tell a clear performance story to stakeholders.

Mr. Block talked about driving the narrative, and the approach Connecticut DOT has used to reconcile state and national perspectives, using a side-by-side listing of performance measures. He wrapped up his presentation with the actions, products and status of the work they have undertaken thus far.

4.2 Deanna Belden, Minnesota DOT

Deanna Belden presented on integrating federal measures into a mature performance management system. She talked about the national safety measures and mentioned the

department plans to link from their website to the FHWA dashboard. She indicated there were discussions within the department about whether targets should reflect expected outcomes or be aspirational. She displayed Minnesota DOT's safety dashboard for participants.

Next, Ms. Belden presented information about the pavement and bridge measures and the weakness of the federal measures in predicting roughness and cracking but not rutting, and the agency's determination to use their state measures for their decision-making. She also mentioned there is confusion when communicating information about minimum condition versus targets. Ms. Belden talked about freight and reliability measures and presented Minnesota DOT's visualization for interstate reliability and track travel time reliability. Last, she covered the CMAQ congestion and emissions measures and indicated the agency supports the repealed greenhouse gas performance measure.

Ms. Belden wrapped up her presentation with an activity the department is taking to communicate "understanding performance measurement" for state versus federal measures, including what they are, how they are different and why both perspectives are important.

4.3 Small Group Discussions and Group Report

The presentations were followed by small group discussions and group reports about federal measures and requirements. Following is a summary of the responses for each of the major topics discussed:

- What do you think are the biggest barriers to integrating federal performance measures into existing TPM systems, from what you heard?
 - Measures needed internally are different from federal measures. For example, related to the pavement measures, rutting will never show up in certain areas of the county, which will overstate their pavement condition. Also, the highway system some states report on is not same as what they control.
 - There is sometimes an inability to forecast certain measures and a lack of data for measurement.
 - It is difficult to tell a correct, accurate story.
 - Data quality and collection are sometimes an issue.
 - Data elements are not the same between state and federal measures, and FHWA cares about different things for reporting than states do for decision making.
 - The reporting time lag is a challenge, and states need time lines that align; they can't control the report timing.

- There is a mismatch on the NHS between roads DOTs maintain and those upon which they are required to report; local NHS issues.
- Some measures are not granular enough (Ed's age description above).
- States desire flexibility to avoid a worst first mismatch.
- There are data discrepancies, for example, pavement measures are based on cracking, bridges are measured at the component level versus the element level.
- Some measures are complicated to calculate and difficult to communicate.
- The biggest impediment in TPM is ourselves – we need to be prepared to have more of these conversations, there is a tendency to replace measures with the goal we want to achieve, we need to be careful about measures and what we want to get out of them, we need to work on TPM communications.
- How can these barriers be overcome?
 - Develop different measures if the aim is doing different things with them.
 - Foster comfort, knowledge and understanding of data.
 - Developing state measures separately from federal measures allows trying new things and setting sights high without the same level of risk.
 - “The Minnesota DOT example cross walk is great.”
 - Perhaps efforts could be made to better align federal targets with the way states measure.
- What are good lessons learned on how to integrate federal measures and requirements within transportation agencies' TPM systems and practices?
 - Look at data using different time frames - four years is very short, especially when using a five-year rolling average for fatalities, for example.
 - Foster interactions with other states – we are all interdependent as transportation agencies, even among local/state/federal levels, so promoting collaboration is important.
 - Technology and data are changing. The way we measure will change over time, that needs to be overcome but beyond that, allow for ways to advance the practice.
 - Federal measures don't drive decisions but instead reflect decisions.
 - There is a need for leading in addition to lagging measures.
 - Support should be given to help less mature states.

- Trend lines can be a challenge because they are new, and how we will solve this is in part through time and continued communication.
- What can be done nationally to support integrating federal measures into existing TPM frameworks?
 - Using simpler measures that are less derivative might be easier to share at the executive level.
 - FHWA should do more to communicate to state leaders the reasons for national measures versus the measures used by states for decision making.
- What role can the TPM Pooled Fund play in this support structure?
 - Be a voice and share tools.
 - Continue deeper discussions about the requirements.
 - Talk about how to get measures closer in alignment and help us tell the story of the purpose behind the measures on the federal and state levels.
 - Continually assess where states are having issues, and assist with those challenges.
 - This event was critical; the last TPM conference was in Denver in 2015.
 - Pair states near each other to cross-pollinate ideas and conduct knowledge transfer.
 - We need another TPM Conference [*Note: Matt Hardy from AASHTO indicated there will be an April 2021 Performance Management Conference in RI*].
 - Make tangible products, create templates to more effectively communicate and share our opinions.
 - Be prepared to have the dialogue.
 - Better curate the articles we get to people.
 - Better marketing on the TPM site, quarterly product promoting the site.

5 Emerging Agency Needs

An agency in the early stages of their TPM implementation process shared their challenges and needs they have in implementing TPM. In the large group discussion, agencies discussed which issues resonated with them, other impediments to TPM maturity, actions that can be taken to make progress and ways the TPM Pooled Fund can help.

5.1 Rachel Roper, Hawaii DOT

Rachel Roper began by summarizing Hawaii DOT's background and challenges related to organizational structure, culture change and data. At present, the agency does not have a dedicated TPM section or staff for performance management or asset management, and they lack processes to conduct these functions. They don't have all of the data they need to perform the required reporting.

She also described their difficulty explaining the importance and requirements of TPM and federal measurements, and the need and challenges of getting data from staff to meet these requirements. Ms. Roper talked about having needs greater than available resources, and the unique geography of Hawaii's isolated location, limited land area and mountainous terrain.

5.2 Large Group Discussion

The presentation was followed by a large group discussion about emerging agency needs, what can be done to make progress and how FHWA, AASHTO and the TPM Pooled Fund can assist. Following is a summary of each of the major topics discussed:

- What emerging issues from the presenter resonated the most for you?
 - People other than practitioners often think of performance management as a calculation, but not as something integral to thinking about management. This is not only an issue for emerging agencies, but for everyone.
 - There was a time when everyone was thinking about performance measures, but many agencies have moved away from strategic thinking about measures. We need to start educating our agencies about how we can make better decisions and make links to our prioritization process.
 - We need to focus on leaders to build strength. If an agency loses a critical leader, performance management can begin to suffer quickly. The question is, how can agencies create a sustainable program? Find people who are passionate about their subject management area. Find out who is passionate about it. They will help you develop, grow and will outlast CEOs.

- TPM is necessary but not sufficient. We can't just say we are meeting a goal area. It runs deeper than the numbers, there are investments that are not performance based that are still deemed priorities.
- What issues were not raised by the presenter that are important to address to help agencies mature in their implementation of TPM?
 - If performance management is not driven from the top down, it is very difficult to develop maturity.
 - Employee engagement is also critical to TPM maturity – help staff understand how what they do relates to the measures.
- What should we do to make progress on these emerging issues?
 - Provide basic guidance, on topics like “what is a measure? “what is variability?”
 - Offer training on the fundamentals of measurement and statistical analysis.
 - “Get the base in place.”
- How can FHWA, AASHTO and the TPM Pooled Fund assist?
 - Provide training for different levels of maturity.
 - Offer general capacity-building support.

6 Day 1 Wrap-Up and Day 2 Introduction

6.1 Summary of Day 1

After the conclusion of the group discussion on emerging agency needs, Karen Miller led a wrap-up of the first day of the peer exchange. She summarized the Day 1 discussion, talked about ideas to consider and provided an overview of Friday’s agenda and logistics.

Ms. Miller thanked the planning committee for their hard work. She also thanked FHWA for their partnership. She expressed gratitude to AASHTO for maximizing the TPM Pooled Fund contributions. She thanked participants, and asked them to reach out to CBPM subcommittees to provide their support.

Ms. Miller talked about the tools and resources discussed to help agencies see where their priorities lie and where their money is spent. She stressed tools are not the end all, and cannot be the sole reason for decisions. TPM depends on trained humans, who can proactively get in front of messages and make sure decisions are the right ones for agencies. She said “by learning what each of our peers is doing, we improve all our products.”

6.2 Day 2 Introduction and Overview

Ed Block opened Day 2 with a recap of notable takeaways from Day 1. Afterwards, Hyun-A Park introduced the agenda for the day.

Susanna Reck provided an overview of FHWA's capacity-building offerings. She toured FHWA's TPM site and provided a status of 11 web-based trainings that have been completed or are being finalized. Ms. Reck described 18 of FHWA'S *TPM Essentials* videos, which are scheduled to be posted on FHWA's website/YouTube channel in December 2019. She covered several other topics of note, including updates on HER-ST modules, the HEPGIS planning tool and the *TPM 2018 Biennial Summary Report* data. She wrapped up with a summary of upcoming deadlines and requirements.

7 TPM Communication Challenges

Good TPM communication is a challenge facing DOTs as both federal and their agency TPM programs are maturing and performance results are available to the public. This session started with agencies sharing noteworthy practices on communicating TPM and concluded with a group discussion on what is needed nationally and how to support different levels of communication maturity across agencies. This session started with agencies sharing their TPM communication challenges and ended with a "fish bowl exercise," which provided participants an opportunity to provide insights and showcase their communication products.

7.1 Holly Bieneman, Illinois DOT

Holly Bieneman presented on Illinois' TPM coordination with MPOs and Federal Transit Administration (FTA). After providing a brief background, including the fact Illinois has the largest number of local governments in the nation (7,000), she talked about the challenge of working with local transit agencies and MPOs, including 4 bi-state MPOs. She distinguished between providing written procedures and offering guidance and training to partner agencies. Ms. Bieneman described how the agency mobilized staff and created accountability for TPM. She stressed the agency still has room to grow, including establishing regular meetings with MPOs, and by improving their effectiveness at sharing and discussing targets, sharing data and communicating results.

8.2 Gabe Philips, Washington State DOT

Gabe Philips presented on the agency's communicating and reporting program performance. He discussed several critical aspects, including:

- Coordination
- Data Sharing

- *Folios*, which are the agency’s primary communication deliverable
- The *Corridor Capacity Report (CCR)* and engagement process
- *Gray Notebook*, which is the quarterly performance and accountability report, as well as *Gray Notebook Lite*

Mr. Philips reflected on the agency’s lessons learned, including:

- PM1 targets were well coordinated
- The agency experienced a “sophomore slump” in performance management
- How they improved TPM by involving MPOs

8.3 Chris Berrens, Minnesota DOT

Chris Berrens presented on the evolution of performance reporting within Minnesota DOT. He described the agency’s transition from their previous performance report to their new performance website. He described the development of their performance dashboard, and how they collaborate on the management of their visualizations and web pages. Mr. Berrens wrapped up by describing how the agency tells their performance story and their next steps to improve integration of their performance management and risk management.

8.4 Large Group Discussion

The presentations were followed by a “fish bowl” format for sharing ideas to address communication challenges. Suggested topics included:

- What communication challenges from the presentations resonated with you?
- What have you done to improve TPM communication within your agency?
- What communication challenges were not raised by the presenters that are important to address?
- What can AASHTO, FHWA and the TPM Pooled Fund do to support and improve effective communication of TPM and PBPP?

Following is a summary of participants and their ideas:

- Christos Xenophonos (Rhode Island DOT) stressed data is still key; it helps us tell a story. How do we make that story compelling, internally as well as externally? He talked about the Roadworks initiative, where data helped tell a credible story to the Legislature. He also described performance related to project delivery, indicating we haven’t talked much about this topic. He indicated it is a powerful tool for communicating with Legislature and the Governor.
- Karen Miller (Missouri DOT) described how the agency uses reports to tell their story. She shared their “placemat” to talk about funding with the Legislature and local stakeholders. It is graphical in nature, which has helped external parties understand. She

shared *Results*, which describes what transportation funding provides to users. Communicating needs has helped them get additional funding for bridges from general revenue.

- Matt Haubrich (Iowa DOT) talked about the agency's outreach related to highway asset management, and how they have not provided as much outreach on TPM with locals. They are hoping to do so more broadly, and not just with federal measures. He talked about how to make this information available in a way local citizens and stakeholders can understand, and perhaps exploring this in more graphical ways.
- Steve Guenther (California DOT) shared the agency's *Mile Marker* publication, whose audience is primarily the Legislature, and less so for users of system. The agency is looking to do user survey related to TPM communication.
- Toria Lassiter (Maryland SHA) shared the best way to communicate to people is the way (format) in which they want to see it. Currently, the agency primarily uses dashboards to share results, but they are looking for better ways to communicate. She believes the better Maryland SHA communicates with its MPOs, the better the MPOs will be able to communicate their needs. Ms. Lassiter cited the example of safety targets. As MPOs become more savvy, they are asking for more data and better communication.
- Maureen Kelley (Delaware DOT) talked about communication as perception, and stressed agencies should "make it, don't try to change it." How does this relate back to project delivery? Telling the story can help the agency achieve its goals by changing their perceptions.
- Peggy Thurin (Texas DOT) shared that their MPOs wanted to know information about their area and do a deeper dive on their data. They were looking at their areas and asking questions about how to set their targets. The agency provided the last five years of TIP targets to help them estimate for their target-setting.
- Kelly Travelbee (Michigan DOT) shared the agency did a deep dive on various TPM areas with their MPOs. First, they analyzed the PM rule with partners. She believes this approach has paid off because when MPOs adopted the state's targets, they bought into them. They developed criteria and influencing factors similar to the Washington model. Additionally, DOT staff attend the MPO annual meeting. The agency invites MPOs to bridge and safety conferences for the state DOT. The SMEs for the safety area go to board meetings and help MPOs sit with their board and talk about the "why" of the targets.
- Thor Anderson (Arizona DOT) shared that during their last long-range planning activity, the agency put most of their focus on preservation, bridges and pavements. Now, they are looking at longer range trends. As a newer state, they need to start planning for replacing facilities. Safety will likely be their next focus area He indicated they are

showing real-time data to the public, but in telling the story to stakeholders, they still have work to do.

- Patrick Cowley (Utah DOT) referenced Carlos Braceras' *TPM Now!* video, and indicated there is a difference between tactical measures and strategic measures. Agencies need to know their customer to understand which influencing message to use and via which channel(s). He stressed it is also critical to understand tactical measures lead to and interact with strategic measures, and sometimes these two sets of measures conflict. It helps to have a vision to know how they can and should connect.
- John Selmer (Iowa DOT) stated comments have focused on how to organize to communicate. It is critical to know who is the performance steward. It is not just about reporting. Different agencies have different levels of resources. Measures should tie to a Strategic Plan. He said it is important to know how we are using them, what we are doing to sustain it. Furthermore, it is also broader, about developing knowledge.
- Matt Hardy (AASHTO) talked about the www.communicatingperformance.com website and stressed one can get there from the TPM portal. This site is a curated communication site funded through NCHRP, and members should go there for TPM communication examples. He asked participants to share their communication examples and noteworthy practices there, stressing we need new examples.
- Alexander Finch (Connecticut DOT) shared his agency is using project delivery measures to justify funding, as well as to show the results of those projects. The agency controls most of their network, but collecting good data has been a challenge. They are building a data warehouse to help communicate the services they provide. He said performance management can help to “sell” and communicate needs and results.

8 Speed Sharing – TPM Lessons Learned

Peer exchange participants shared their TPM lessons learned through five-minute highlights. The purpose of this session was to share the wisdom gained through both TPM successes and failures.

8.1 Jackie Irving, Wisconsin DOT

Jackie Irving presented on Wisconsin DOT's TPM lessons learned, including:

- Communication and collaboration are important: the agency hosted a 2018 TPM technical assistance workshop with their MPOs. They have had good collaboration at quarterly director meetings. Many staff within the agency work on federal measures. They have monthly meeting to discuss federal measures. Asset management and MPO coordination updates are incorporated into the discussion during those meetings.

- A missed target does not equal a missed opportunity: The agency used an existing monthly meeting structure to talk about what missed safety targets will mean for the agency. They are establishing a safety working group to continue talking about the budget impact on HSIP funding.
- New requirements don't mean you have to start over: As a result of federal measures, the agency expanded their pavement measures to incorporate ride quality. They also updated their delay and reliability measures.

8.2 Thor Anderson, Arizona DOT

Thor Anderson presented on Arizona DOT's performance management successes and challenges. He talked about how the federal TPM requirements coincided with two of their initiatives that have helped set the stage for their success:

- Lean management helped establish a performance-based culture within the agency and made it easier to get buy-in for integrating TPM within their agency business processes.
- Planning to programming (P2P) initiative established a more disciplined approach to identifying and selecting projects for their five-year program.

Mr. Anderson showed several visualizations of their P2P scoring breakdown for preservation. He also talked about their biggest success, namely, their coordination with Arizona's MPOs on target setting. Bi-monthly meetings have been a good opportunity to share requirements and monitor progress. They also held TPM workshops related to data, statistical analysis and target setting, and developed a planning agreement related to TPM implementation. Taking these steps allowed them to achieve consensus on their targets. Conversely, their biggest challenge has been using performance measures to "tell their story."

8.3 Steve Guenther, California DOT

Steve Guenther presented on TPM at California DOT. He indicated in the past, the agency has not been very transparent, but they are starting to change that related to performance measures. He talked about leadership and funding in California, then discussed several successes they have had, including:

- State highway system management plan and TAMS, which incorporates the TAMP into their processes, aligns their needs to funding and performance and provides a system to implement their SHSMP
- Pavement management system (PaveM) for managing their pavements and collecting related data
- Performance measurement system (PeMS) for managing traffic operations, mobility and performing historical analysis
- Strategic/performance management software pilot

Mr. Guenther described several TPM improvements needed, including:

- Data quality
- Data governance
- CT-SMART

8.4 Rick Johnson, Oklahoma DOT

Rick Johnson presented on Oklahoma DOT's TPM experience. He described the agency's effort to manage system performance while balancing investment decisions, including managing long- and short-term system performance and balancing investment decisions. Mr. Johnson talked about setting and managing state and federal targets, and project selection strategies. The agency's lessons learned include:

- Setting clear goals and the actions to meet those goals
- After a performance cycle, reevaluating whether the current performance measures are communicating what they want them to say
- The importance of good data, and that it is not just the responsibility of the data stewards to ensure accurate data

Mr. Johnson stressed the ingredients for good TPM implementation include clear direction from executives, stakeholder engagement, accurate data and data management staff engagement.

8.5 Kelly Travelbee, Michigan DOT

Kelly Travelbee presented on Michigan DOT's TPM Implementation lessons learned in integrating national performance measures into and aligning them with the agency's existing TPM program. She described how the agency has aligned enterprise information management, asset management, performance management and risk management within their strategic planning and management. Ms. Travelbee described how they worked internally to create an organizational structure to do performance and asset management functions, how they established roles and responsibilities, and established processes for tracking, monitoring and reporting performance measures. She shared their process for ensuring external collaboration and coordination with their MPOs and other local agencies, as well as the Office of Highway Safety Planning. They also enhanced their TPM reporting tools to incorporate federal measures into their existing reports and how they are using TPM reporting to communicate their performance story.

8.6 Patrick Cowley, Utah DOT

Patrick Cowley presented on TPM at the Utah DOT. His presentation showed the lifecycle of a project, and focused on four key questions:

- Where do we want to go? This refers to how TPM is incorporated into all aspects of the agency.
- How are we going to get there? This includes engagement with the TPM committee, as well as working groups.
- What will it take?
- How did we do? This incorporates qualitative performance results.

8.7 Gehan Elsayed, West Virginia DOT

Gehan Elsayed presented on West Virginia DOT's TPM experience. She set the stage with a description of the state's transportation system, of which approximately 89 percent of miles are owned by the West Virginia Division of Highways. She described the agency's TPM resources and responsibilities, and visualized the integrated TPM process framework to engage their stakeholders in meeting the federal performance management requirements. Ms. Elsayed provided an overview of the collaborative target setting process, including workshops and webinars, which they use to develop consensus around performance targets with their MPOs and stakeholders. She described several challenges they faced with target setting, including coordination among their DOT divisions, data issues, staff turnover and other factors. They had several target setting lessons learned, related to:

- Early coordination and communication
- Data management
- Clear roles and responsibilities
- Training
- Staff expertise
- Leadership awareness and engagement

Ms. Elsayed talked about next steps, including developing a process to streamline and integrate TPM, an organizational reorganization underway, their efforts to test and implement several decision support tools, and to enhance their consistency with the next round of LRTP and future STIPs. She wrapped up her presentation with an overview of the agency's new strategic performance management division.

8.8 Toria Lassiter, Maryland SHA

Toria Lassiter presented on Maryland Department of Transportation State Highway Administration's (SHA) TPM lessons learned. Her presentation focused on three lessons/highlights:

- TPM education initiatives with internal and external partners, namely, they learned the importance of truthful, consistent and proactive communication
- TPM and performance-based planning initiatives, including formalizing PBPP processes

- Data sharing/product development, including TPM as a communication tool, providing MPO access to data for TPM and incorporating performance measures into their planning documents

Ms. Lassiter described how the agency provided quarterly presentations, participated in TPM activities, created offices focused on TPM, and established communication products to enhance data sharing.

8.9 Large Group Discussion

The presentations were followed by discussion. Ed Block noted one overriding theme is that it is a good thing to share data with MPOs so they can set their own targets. He asked how to reflect those targets at the state level. Susanna indicated the goal is that state DOTs and MPOs should be working together to set targets. As the process matures, the time lag between state DOT timelines and MPOs timelines becomes less of an issue if they are working together. This also allows them time to communicate with their constituents. The timing for those MPOs that set their own targets makes it more difficult. There was also discussion regarding the congestion measure, which requires a unified target for the region. Even though it is unified by law, MPOs have 180 days. Ms. Reck stressed if there is good communication, the parties should be in lockstep.

9 Priority Needs and Peer Exchange Wrap-Up

The large group reviewed the four overarching themes, comprising capacity building events, capacity building trainings, communication, and tools and products, which were raised via participants' discussion throughout the peer exchange as ways the TPM Pooled Fund may be able to support TPM needs. Using the four themes and a preliminary list of issues and possible support activities that were captured during the peer exchange as a starting point, participants discussed and clarified list into a comprehensive set of potential activities the pooled fund may be able to support TPM. The group used dot voting to weigh in on their top priorities for the next set of TPM activities. Below is the complete set with the number of votes each received:

- Capacity Building – Events
 - More peer exchanges (4 votes)
 - TPM conference (14 vote)
 - Regional exchange sessions (pairing up states), AASHTO regional meetings (7 votes)
 - Target setting sessions at agencies (2 votes)
 - Scanning tour (0 votes)
 - TPM book club (4 votes)
- Capacity Building – Trainings

- TPM training for CEOs and Executives (10 votes)
- TPM basics/TPM 101 (what is a measure, what is statistical analysis, etc.) (4 votes)
- TPM advancement for mature agencies (2 votes)
- Web-based trainings (1 vote)
- Portfolio management training (6 votes)
- Creating and maintaining a TPM culture (8 votes)
- Communication
 - Federal versus state measures – telling the TPM story (6 votes)
 - Communicating TPM to state leadership (very short and concise) (7 votes)
 - Communicating with the public (6 votes)
 - Communicating internally (agency) – concepts and practices (2 votes)
 - How to communicate complicated concepts using visualization (infographics, tell story) (16 votes)
- Tools and Products
 - Prioritization across TPM areas and asset classes (4 votes)
 - Performance measure hierarchy – simple measure at top level for executives (1 vote)
 - TPM marketing products/tools (videos, brochures, etc.) (6 votes)
 - Monitoring and assessment and focus on sustainable process (guide, best practices, training) (10 votes)
 - Communication tools (4 votes)
 - List active projects – updated research roadmaps (2 votes)
 - Rating resources and comments (1 vote)
 - Develop a document on next recommended set of measures (15 votes)

The top six priorities for the next set of TPM Pooled Fund activities as voted on by participants were:

1. How to communicate complicated concepts using visualization (infographics, tell story) – ranked #1 with 16 votes
2. Develop a document on next recommended set of measures – ranked #2 with 15 votes
3. TPM conference – ranked #3 with 14 votes
4. Monitoring and assessment and focus on sustainable process (guide, best practices, training) – ranked #4 with 10 votes
5. TPM training for CEOs and Executives – ranked #5 with 10 votes
6. Regional exchange sessions (pairing up states), AASHTO regional meetings – ranked #6 with 7 votes

After the participants determined their priority needs, TPM Pooled Fund Chair Christos Xenophontos wrapped up the discussion with a summary of the peer exchange. He thanked participants for their active participation. He remarked, “being trusted with states’ biggest

asset, it is easy to get lost in why we [TPM professionals] are doing it and in the data. We are doing it because we are public stewards and need to deliver on our agency promises.”