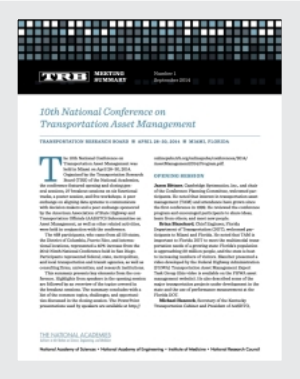

10th National Conference on Transportation Asset Management

DETAILS

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TRB MEETING SUMMARY

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10th National Conference on Transportation Asset Management

TRANSPORTATION RESEARCH BOARD ■ APRIL 28–30, 2014 ■ MIAMI, FLORIDA

The 10th National Conference on Transportation Asset Management was held in Miami on April 28–30, 2014. Organized by the Transportation Research Board (TRB) of the National Academies, the conference featured opening and closing general sessions, 27 breakout sessions on six functional tracks, a poster session, and five workshops. A peer exchange on aligning data systems to communicate with decision makers and a peer exchange sponsored by the American Association of State Highway and Transportation Officials (AASHTO) Subcommittee on Asset Management, as well as other related activities, were held in conjunction with the conference.

The 468 participants, who came from all 50 states, the District of Columbia, Puerto Rico, and international locations, represented a 40% increase from the 2012 Ninth National Conference held in San Diego. Participants represented federal, state, metropolitan, and local transportation and transit agencies, as well as consulting firms, universities, and research institutions.

This summary presents key elements from the conference. Highlights from speakers in the opening session are followed by an overview of the topics covered in the breakout sessions. The summary concludes with a list of the common topics, challenges, and opportunities discussed in the closing session. The PowerPoint presentations used by speakers are available at http://onlinepubs.trb.org/onlinepubs/conferences/2014/AssetManagement2014/Program.pdf.

OPENING SESSION

Jason Bittner, Cambridge Systematics, Inc., and chair of the Conference Planning Committee, welcomed participants. He noted that interest in transportation asset management (TAM) and attendance have grown since the first conference in 1999. He reviewed the conference program and encouraged participants to share ideas, learn from others, and meet new people.

Brian Blanchard, Chief Engineer, Florida Department of Transportation (DOT), welcomed participants to Miami and Florida. He noted that TAM is important to Florida DOT to meet the multimodal transportation needs of a growing state: Florida's population is approaching 20 million people, and the state is host to increasing numbers of visitors. Blancher presented a video developed by the Federal Highway Administration (FHWA) Transportation Asset Management Expert Task Group (this video is available on the FHWA asset management website). He also described some of the major transportation projects under development in the state and the use of performance measurement at the Florida DOT.

Michael Hancock, Secretary of the Kentucky Transportation Cabinet and President of AASHTO,

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welcomed participants to the conference and thanked the Florida DOT, TRB, and the planning committee for organizing an informative and interactive conference. He suggested that although the Moving Ahead for Progress in the 21st Century Act (MAP-21) requires state DOTs to develop transportation asset management plans (TAMPs) and to report on the condition of pavements and bridges, asset management is a smart and sound way for transportation agencies to conduct business.

Hancock explained that asset management is both a new mindset and a data-driven, decision-making process. He defined this process as "a strategic and systematic approach to operating and maintaining, upgrading, and expanding physical assets effectively throughout their life cycle." Asset management focuses on businesses and engineering practices for resource allocation and utilization with the objective of better decision making based on quality information and carefully considered objectives. Asset management is more than just bridges and pavement; it covers all the physical elements of the transportation system. Hancock noted that asset management becomes even more important when funding for transportation is limited.

Effective asset management is a key part of the transportation planning process. As Secretary of the Kentucky Transportation Cabinet, Hancock has worked to change the department's linear mindset of planning, designing, and construction followed by operating and maintaining to a circular process that links operations and maintenance back to planning. This process is being further expanded into a performance-based planning and programming (PBPP) approach. Ensuring that planning, operations, and maintenance personnel work together is a key part of the PBPP process.

AASHTO has made a concerted effort to distinguish between asset management and performance management, Hancock noted. Asset management is policy driven and performance based, analyzes options and trade-offs, and bases decisions on quality information and credible current data. These principles are similar to those associated with performance management; the key difference is that asset management is used to manage physical assets, and performance management is used to manage a broad set of concerns. Both approaches are needed to facilitate PBPP.

In closing, Hancock challenged conference participants to learn from colleagues, to share new information with coworkers at the conference, to develop new relationships, and to learn about available resources.

The 2014 Transportation Asset Management Conference included breakout sessions on adapting to extreme weather events and climate change. The damage caused by the September 2013 flash flooding in Colorado highlighted in this photo was presented as one example of the need for considering extreme weather events in transportation asset management. (Photo: Colorado DOT.)

Greg Nadeau, Acting Administrator, FHWA, highlighted the Obama administration proposal for reauthorization of the surface transportation program. He shared FHWA's perspective on asset management. Although asset management is not as glamorous as building new facilities—there are no ribbon-cutting ceremonies with asset management—it is critical for maintaining the transportation infrastructure in the United States. Nadeau observed that when the FHWA Office of Asset Management was established in 1999, the initial asset management framework focused on five key questions: What do I own? Where is it located? What conditions is it in? What is its remaining useful life? What is its remaining useful value? These questions have helped shift the focus and the culture at state DOTs.

Nadeau summarized the rulemaking process on the asset management–related provisions in MAP-21. He also emphasized the importance of the partnership between FHWA and the states in meeting the MAP-21 requirements and in ensuring the effective use of TAM to address current and future needs.

Nadeau provided three points for conference participants to consider. First, asset management is no longer just a good idea or a good concept; with MAP-21, it is the law. Second, asset management addresses a key

priority of U.S. DOT Secretary Anthony Foxx to ensure that existing transportation assets are available to serve the United States longer and make the most of available funding. Third, asset management is an investment in the future and is key to ensuring that the transportation system is left in better condition for future generations.

Dorval Carter, Chief Counsel of the Federal Transit Administration (FTA), observed that the principles of asset management are similar across all modes and that managing transit assets is important. He noted that this conference is the second TRB asset management conference with a transit track and significant participation from transit agency personnel. It is important for transit to be a part of the asset management discussion and process.

Carter observed that transit ridership continues to increase, with transit systems in the country experiencing the highest ridership levels since 1957. The seventh year in a row with more than 10 billion annual trips made by transit was in 2013. With population growth projected to continue, with many in the millennial generation choosing transit over driving, and with the aging of the baby boom generation, transit asset management will be even more critical in the future. Carter noted that asset management is key to meeting the goals of expanding transit services to meet growing needs, repairing and maintaining existing transit infrastructure, and ensuring that transit is safe and reliable. MAP-21 gave FTA oversight for transit safety for the first time in the agency's history. Linked with the safety requirements, MAP-21 also requires all recipients and subrecipients of FTA funding to develop transit asset management plans. Carter reviewed the rulemaking process, including the Advance Notice of Proposed Rulemaking issued in the fall of 2013, which linked safety, asset management, and state of good repair.

Carter stressed the importance of transit asset management plans and commented on the diversity among transit agencies related to size, modes, infrastructure, resources, and other factors. FTA recognizes this diversity, Carter noted, and that "one size does not fit all" when it comes to the scope, scale, and complexity of asset management plans. FTA will provide transit agencies with a targeted list-based oversight process in certifying transit asset management plans and will offer assistance and support tools for transit agencies.

Carter stressed that FTA does not have all the answers and seeks input from transit agencies, transit operators, and other groups through the Notice of Proposed Rulemaking process and other venues, including a question-and-answer session at this conference. FTA will continue to use a collaborative process involving all stakeholders. He described the transit elements of the administration's reauthorization proposal and noted that long-term predictable funding is needed to meet the needs of a growing country. Ultimately, transit asset management should result in maintaining the infrastructure in better condition to meet the future needs of a growing and prosperous population.

Kevin Walsh of the Massachusetts DOT discussed the importance of including climate change and extreme weather adaptation in TAMPs to better manage risk. Sea level rise, changing precipitation patterns, increases and decreases in precipitation, and temperature changes represent examples of climate change that may affect the transportation system. Extreme weather events, including heat waves, more intense storms, hurricanes, tornados, and northeasters will also affect the transportation system. He noted that just a two-foot rise in sea level would affect roadways in communities along the Massachusetts coast.

Asset management focuses on businesses and engineering practices for resource allocation and utilization with the objective of better decision making based on quality information and carefully considered objectives.... [I]t covers all the physical elements of the transportation system.

Walsh highlighted topics for the climate change track breakout sessions. These topics included the science of climate change, the impact of climate change and extreme weather on the transportation system, and climate change and extreme weather events in TAMPs.

Other topics addressed in the breakout sessions included FHWA and FTA pilot studies on data collection methods, vulnerability assessment and adaptation tools, and integrating resiliency into planning, designing, and constructing transportation facilities. Using this information to better inform decision making related to prioritizing resources, assessing risks, conducting

cost–benefit analyses, and improving resilience was also a discussion topic.

BREAKOUT SESSIONS OVERVIEW

The 27 breakout sessions in the six tracks featured 113 presentations. These tracks and the topics covered are listed below, along with the names of the people responsible for coordinating each session and reporting on key points made by the speakers.

Establishing, Using, and Monitoring Asset Management Plans
Michael Bridges, Louisiana Department of Transportation and Development, Track Leader
The 14 presentations in four sessions in this track focused on developing a TAMP to meet the requirements of MAP-21. Speakers also discussed ways to use TAMPs to improve existing practices. The first session considered the FHWA asset management plan pilot projects in which TAMPs have been implemented in three state transportation agencies in Louisiana, New York, and Minnesota. Speakers highlighted the FHWA pilot program and available resources and described the pilot projects. The second session focused on the various components of TAMPs. Speakers discussed incorporating life-cycle costs into TAMPs, the process used by the Delaware DOT for identifying and including assets in the TAMP, and the lessons learned from the FHWA pilot study. The third breakout session described the experiences with developing and using TAMPs at state DOTs and in New Zealand. Speakers discussed the development of a risk-based asset management plan in Colorado, PBPP and asset management building blocks in Florida, performance-based capital investment planning in New Jersey, and the evolution of TAMPs in New Zealand. Speakers in the fourth breakout session highlighted available resources to help agencies just beginning to implement asset management, including TAMP templates, a TAM gap analysis tool, and the AASHTO TAM guide.

Implementing Within and Across Organizations
Kathryn Zimmerman, Applied Pavement Technology, Inc., Track Leader
This track featured 16 presentations in four breakout sessions. Speakers in the first session highlighted the approaches used at the Colorado, Connecticut, Wyoming, and Iowa DOTs to align asset management with organizational cultures, strategic goals, and investment decisions. Speakers in the second session described strategies for linking planning, design, maintenance, and operations with asset management in state DOTs in Connecticut, Washington, North Carolina, and North Dakota. The third session focused on using asset management information to communicate transportation needs to internal and external stakeholders. Speakers highlighted examples from Georgia, Michigan, and New Zealand. An update on a preconference peer exchange (Aligning Data Systems to Communicate with Decision Makers: Supporting Risk-Based Asset Management) was also provided. Speakers in the final session addressed the financial aspects of TAMPs, including return on investments, investment planning, and financing, in Kentucky, Minnesota, and Colorado.

Tools and Technology to Assist Decision Making
Matthew H. Hardy, American Association of State Highway and Transportation Officials, Track Leader
This track featured 21 presentations in four breakout sessions. The first session included nine presentations on innovative asset management technologies and practices. The speakers in this session also participated in the evening poster session. Speakers in the second session provided examples of tools and techniques used in Florida, Georgia, Colorado, and North Dakota for managing risks and analyzing trade-offs. In the third breakout session, speakers presented case studies on data integration, data analysis, and decision making in Philadelphia, Rhode Island, Ohio, and Virginia. Speakers in the final breakout session highlighted the use of geographic information systems and related technologies with asset management at state transportation agencies in Colorado, Arkansas, Wyoming, and Alaska.

Performance Measures for Asset Management
Matthew Haubrich, Iowa Department of Transportation, and Tim Lattner, Florida Department of Transportation, Track Leaders
The 13 presentations in the four breakout sessions in this track focused on emerging practices associated with implementing asset management measures. Speakers from state transportation agencies in Maine, Michigan, Minnesota, Delaware, North Carolina, and Wyoming and Washington, D.C., provided updates on current asset management plans and programs in the first two breakout sessions. In the third session, speakers from Tillamook County, Oregon; the Metropolitan Transportation Commission in the San Francisco–Oakland metropolitan area; and the District DOT in

Washington, D.C., provided further examples of implementing TAM. The final session featured representatives from FHWA providing updates on the MAP-21–related rulemaking on safety performance management and TAMPs, performance management and PBPP requirements, and a strategic framework for implementing asset management in state transportation agencies.

Transit State of Good Repair
Laura J. Zale, Southeastern Pennsylvania Transportation Authority, Track Leader
This track included 19 presentations in five breakout sessions focusing on setting the context for transit asset management, tools and technologies, performance measures, implementation strategies, and incorporating transit asset management into agency processes. The first session featured a variety of subjects, including the U.S. Government Accountability Office's leading practices in the analysis of transit asset management and capital investment effects; federal policy and rulemaking on transit state of good repair; the American Public Transportation Association's standards development process; state and AASHTO involvement in transit asset management; and the perspective of the Community Transportation Association of America, Inc., on asset management with rural transit providers. Speakers in the second session addressed Transit Cooperative Research Program projects on the state of good repair framework and analysis and prioritization tools (E-09) and additional guidance and revised tools (E-09A), FTA's transit economic requirements model (TERM) and TERM Lite, and the Massachusetts Bay Transportation Authority state of good repair database and capital investment program decision-support tool. Speakers in the final three sessions highlighted performance measures for transit asset management, implementation strategies, and incorporating asset management into transit agencies. Examples were presented from the Utah Transit Authority, Bay Area Rapid Transit, the Denver Regional Transportation District, the Southeastern Pennsylvania Transportation Authority, the Chicago Regional Transportation Authority, and the New York Metropolitan Transportation Authority.

With population growth projected to continue, with many in the millennial generation choosing transit over driving, and with the aging of the baby boom generation, transit asset management will be even more critical in the future.

Adaptation to Extreme Weather Events and Climate Change
Robert Kafalenos, Federal Highway Administration, Track Leader
This track featured 30 presentations in six breakout sessions focused on why climate change and extreme weather events matter, protecting system assets in the face of climate change and extreme weather events, experiences with vulnerability assessments, conducting cost analysis and risk assessment for climate change adaptation, and transit-related adaptation. Speakers in the first session provided an overview of the science behind climate change and discussed recent reports and activities, including the Gulf Coast 2 study; the FHWA climate change resilience framework and pilots; and the National Cooperative Highway Research Program's Project 20-83 (5), Climate Change, Extreme Weather Events, and the Highway System. Speakers in the second session provided examples of approaches being used in Maryland, Tennessee, New Jersey, Washington, and California to assess the potential impacts of climate change and extreme weather events on transportation assets. Speakers in the third session addressed transit state of good repair and climate change adaptation and provided examples from Atlanta, Los Angeles, Philadelphia, and Chicago. In the fourth and fifth sessions speakers highlighted state-level efforts in Massachusetts, Minnesota, and Arizona and activities in San Francisco, the Tampa Bay area, and Logan International Airport in Boston. Speakers in the final session focused on risk assessments, investment prioritization, evaluating adaptation strategies, and cost–benefit analyses.

CLOSING SESSION

In the closing session, the Conference Planning Committee chair and track leaders highlighted selected topics, challenges, and opportunities emerging from the presentations and discussions in the breakout sessions.

The session concluded with a look forward to workshops, conferences, meetings, and research products anticipated in 2015 and 2016.

Jason Bittner opened the session by complimenting the attendees for their active participation throughout the conference. He suggested that the conference met the three challenges outlined in the opening session by Michael Hancock of sharing information, building relationships, and exploring resources. Bittner noted that in preparing for the closing session, the track leaders identified four common topics from the breakout sessions relating to crosscutting challenges and opportunities for asset management:

- Data and information;
- Organizational issues: culture, climate, and change;
- Risk: assessment, management, mitigation, and understanding; and
- Telling the story: communication and collaboration.

The track leaders highlighted examples given by speakers in the breakout sessions under each of these four topics.

Data and Information

The track leaders shared various data and information challenges and opportunities discussed during the sessions. Matthew Hardy and Robert Kafalenos noted the challenges and opportunities associated with innovative data collection methods, new data sources, and integrating data from multiple sources. Examples included crowd-sourced data from smartphones and weather data from university climate centers, state climatologists, the National Oceanic and Atmospheric Administration, and the National Climate Data Center. Matthew Haubrich cited the examples of the Wyoming DOT, which leverages linear referencing system and geospatial capabilities to combine data sources and uses analytics to develop safety investment strategies; and the Washington, D.C., DOT, which analyzed utility cost and repair data to identify LED-based streetlight lighting needs. Kathryn Zimmerman noted that many state DOT executives in the preconference peer exchange stressed the importance of considering data and information as an asset. Laura Zale commented that speakers from transit agencies described different tools and resources that have been developed to support asset management. She also mentioned that some speakers highlighted the importance of matching the appropriate level of data aggregation and detail to the needs of different users and stakeholders. Michael Bridges reported that many speakers highlighted the need to begin with existing data and improve data accuracy and quality over time rather than waiting for "perfect" data.

Organizational Issues: Culture, Climate, and Change

Bridges said that numerous speakers stressed the importance of obtaining executive-level participation and support for asset management. Although many organizational approaches were described, he suggested that a key element of successful asset management programs was ensuring the involvement of all parts of the agency, including the financing groups. Zimmerman noted that several speakers indicated asset management requires major changes in the operation of an agency. As an example, she cited the Colorado DOT's change management strategy, which focused on the people side of change to successfully implement change on the technical side. Zale noted that many speakers from transit agencies emphasized that state of good repair investments can be a major shift in organizational culture, supported the need for buy-in from all levels within an agency, and indicated that staffing levels vary greatly by agency size. Kafalenos further observed that asset management requires breaking down silos within agencies, and Hardy reported that speakers stressed that asset management requires new skill sets focusing on data analysis, statistics, economics, and finance within agencies. Haubrich noted the link between TAMPs and PBPP highlighted by some speakers.

Risk: Assessment, Management, Mitigation, and Understanding

Hardy suggested that transportation agencies can learn from electric, gas, water, and other utilities, which have much longer experience with asset management. He mentioned the Colorado DOT presentation addressing the response to the 2013 flooding in the state as an effective case study on the benefits of asset management (see photograph, page 2). Kafalenos said several speakers in the climate change adaptation sessions described the need to examine the cost of not adapting. These costs may include the need for more rapid replacement of infrastructure and maintenance cycles, impacts on businesses and services from traffic delays, and economic losses due to reduced productivity. Zale noted that some participants in the transit breakout sessions identified incorporating obsolescence into risk assessments as an important need. Haubrich highlighted the use of a risk register and a "mix of fixes" approach

to managing risk in Tillamook County, Oregon, and the Maine DOT's use of risk principles to segment the road network and prioritize investments. Zimmerman summarized examples from the Georgia DOT's use of risk associated with the potential loss of service due to pavement or bridge deterioration to establish priorities on the Interstate system. Bridges noted that the Minnesota DOT presentation provided a mature viewpoint on incorporating risk into the decision-making process. He remarked on the importance of risk assessments to avoid undermanaged risks and to prioritize mitigation strategies.

Telling the Story: Communication and Collaboration

Bridges noted the benefits of TAMPs in communicating with the legislature and the public about funding issues and the possible consequences of not investing in transportation. It is equally important to communicate these issues within one's own organization, he said. Zimmerman discussed a variety of points made by speakers in the implementation breakout sessions, including highlighting market-oriented data in TAMPs. Such data could encompass calculating the dollar volume of goods carried on the system; engaging stakeholders in decisions; linking TAMPs to other plans and policies; and using financial sustainability measures, return on investment, and other new ways to tell the story. Citing the Miami–Dade County Transit example, she also suggested that successful organizations use data to provide trends and indicators to customers so they can decide how to use the system. Haubrich noted the Michigan DOT's previous "what if" analysis of a funding decision to illustrate how that decision contributed to the funding crisis today. He also mentioned that the Metropolitan Transportation Commission used key performance indicators and dashboards to communicate pavement condition in the San Francisco–Oakland metropolitan area. Hardy suggested that technology can play an important role in communicating with different groups and described the use of common data-sharing platforms in Utah; Washington, D.C.; and other areas to better communicate and coordinate among agencies, to reduce costs, and to improve efficiency. Zale said some speakers identified the need for a common vocabulary for transit state of good repair and TAM. Kafalenos noted speakers highlighted the importance of adding resilience into TAM and the ongoing transportation planning process to address more frequent extreme weather events and climate change.

ACKNOWLEDGMENTS

This meeting summary was prepared by **Katherine F. Turnbull**, Texas A&M Transportation Institute, as a factual summary of what occurred at the conference. The Conference Planning Committee's role was limited to planning the meeting. The statements made are those of the author or individual meeting participants and do not necessarily represent the views of all conference participants, the planning committee, or the National Academies.

The summary was reviewed in draft form by **Brad Allen** of the New York State DOT and **Kathryn Zimmerman** of Applied Pavement Technology, Inc., to ensure that it meets institutional standards for quality and objectivity. The review comments and draft manuscript remain confidential to protect the integrity of the process.

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