

# Equipment and Sensors

S018

## Getting Out of the Road

Laine Heltebridle, Pennsylvania Department of Transportation, presiding

As traffic continues to increase, especially in urban areas, using traditional methods of collecting traffic data can increase employees' exposure to injury. Presentations in this session can include collecting data using non-intrusive equipment, new methods of collecting traffic and turning movement counts in congested areas, the use of vendors to collect traffic data and how traffic data is collected on non-state owned roads.

S028

## Equipment: Traditional (Volume, Weight, Classification and Speed)

This session provides up-to-date information and developments on the use of traditional sensors for traffic data collection. The session will highlight field experiences from equipment installations, system durability and data accuracy as well as cost/benefit considerations. Reliability of traditional systems to collect data of recent focus (e.g. motorcycle and speed data) will be mentioned.

S030

## Emerging Technologies

This session will introduce emerging technologies for collecting traditional traffic data. Information on technology development, testing and field testing will be detailed.

S031

## Traffic Data Collection: Location, Location, LOCATION!

Where the equipment is placed can be as important a decision as the type of equipment. This session will include presentations on the site characteristics needed to select data collection locations as well as strategies for selecting locations to meet the data user needs. These may include strategies for combining data collection locations and types to determine network level changes. These may include site selection for cooperation and data sharing between organizations. Overcoming site challenges such as urban, high-volume, low speed settings and access to utilities will be mentioned.

S032

## Equipment Operations

This is a "Soup to Nuts" discussion regarding one of the greatest challenges to data collectors - how to maintain and keep their systems operational. In this session, lead states will provide best-practices on how to eliminate down-times and track repairs on their equipment network. In addition, information will be provided on tracking contracted traffic data collection activities. This session will also feature a roundtable discussion on sharing "tips of the trade." A wide range of topics will be included from Call-Before-You-Dig to including information on GIS.

S036

## **Where Are We At? Cell Phone / Wireless Location Tracking for Traveler Information**

People have looked to technology when they want data -- faster, cheaper, better. But., the application of technology often trails its promise. The promise of using anonymous data from wireless providers to track traffic by marking how fast cell-phone handsets are moving and overlaying that information with location data and maps anticipated for nearly a decade. So, where are we at for using cell phone and other wireless technologies for tracking traffic? While the technology is there; challenges have remained. Wireless carriers have long been reluctant to use the locations of their users for profit. Individual consumers and consumer advocate groups have raised concerns about privacy. Beyond, privacy concerns cell phone and other mobile tracking system have run up against some technical barriers in terms of the data itself. This session brings together individuals from state DOTs, the wireless location-based service industry, and other stakeholders to discuss when this technology solution will be brought to the masses -- next year or next decade.

## **Data Requirements, Standards, and Guidelines**

S003

### **HPMS Reassessment - How will State DOT's respond to new requirements? What will be the potential impacts on Dot's? What additional resources are needed?**

Recent authorization of SAFETEA-LU and the changing business needs of transportation, the Federal Highway Administration (FHWA) conducted a reassessment of the Highway Performance Monitoring System (HPMS). The HPMS'

purpose has always been to provide data that reflects the extent, condition, performance, use, and operating characteristics of the Nation's highways. Reassessment Objectives are: Improve HPMS to support customer business needs; incorporate efficient and appropriate quality data collection & reporting; Maximize use of existing, future, and other data sources; Enhance value of information to providers and customers; Promote effective use of changing technology. These objectives have created the following additional data collection requirements for State DOT's

- Modify volume groups to be consistent across rural and urban functional classes

- Expand upper and lower volume groups

- Extend universe AADT coverage through Major Collectors

- Better truck volume data to derive truck travel estimates

- Mandatory reporting of motorcycle VMT data in summary table

- Collect information on ramps

- Collect truck volumes (single and combination) for entire NHS

Close partnerships with local agencies and private entities will be needed more than ever. This session will feature discussions on how State DOT's plan to achieve these new requirements.

S015

### **Regulations, Guidelines and Operating Procedures for Traffic Data Collection Programs**

This session will feature discussions on:

- 1) Present/Discuss 2007 AASHTO Traffic Data Guidelines.
- 2) Updated TMG.
- 3) Section 1201 regulation on real-time traffic monitoring and standards.

S017

### **Motorcycle Travel Data**

Laine Heltebridle, Pennsylvania Department of Transportation, presiding

In 2008, the Federal Highway Administration began requiring states, the District of Columbia and U.S. Territories, which are required to submit Highway Performance Monitoring System (HPMS) data, to collect and report motorcycle travel data. While reporting motorcycle travel data was optional prior to 2008, all but 6 states reported it. Issues that have been identified in collecting this data include: equipment accuracy; the Traffic Monitoring Guide instructions on when to collect short term traffic counts and how to factor this data. Presenters will discuss successes in collecting motorcycle travel data.

S042

### **Data Business Plans – Ensuring maximum value**

Catherine McGhee, Virginia Transportation Council

Traffic data provides the basis for numerous processes, applications, and decisions within transportation agencies. Often data collection methods and parameters and data storage environments are the result of traditional requirements that have existed for decades. Too often, opportunities for expanding the value of the collected data are missed. Data business plans provide a framework for determining all potential uses of data within an agency (and perhaps partner agencies) along with the requirements that accompany those uses. By identifying a complete set of data requirements, the most effective means of collecting, storing, and providing access to data can be established that meets the needs of the agency as a whole. Data business plans also provide the support for continuing investment in data programs by documenting the value of the data to the agency.

## **Partnering: ITS Data and Traffic Monitoring**

S011

### **Use of ITS Real Time Data and Archives**

How are state DOT's and resellers of ITS data making the best use of this information and accurately delivering it so that their customers understand what they are receiving and trust it? This session will feature discussion on State DOTs and resellers of data best practices for insuring quality data. Innovative ways to visualize, mine, and analyze real time and archive data along with merging traditional data collection sites (i.e. in rural areas, conventional highways) into ITS archives will be discussed.

S024

### **It is Now 1201, Do You Know How Your Real Time Traffic Data is Being Shared?**

Ed Christopher, Federal Highway Administration, presiding

Requirements of the SAFETEA-LU Section 1201 called for a program to provide the capability to monitor, in real-time, the traffic and travel conditions of the major highways and share that information to improve surface transportation system security, address congestion, improve response to weather events and surface transportation incidents, and to facilitate national and regional highway traveler information. This session will chart the progress with implementing Section 1201 highlighting what USDOT has done to meet the 1201 requirements as well as what several states have done.

S035

### **Beautiful Evidence: Data Mining and Visualization Techniques for Real-Time and Archived Data**

It is well known that human understanding is much more effective with pictures than with rows and columns of numbers. However, much of the output from traffic management centers remains trapped in traditional reporting formats. In this session, we explore best practices in deriving insight from vast amounts of data using visualization techniques. Data visualization plays a critical role in data mining, both in terms of techniques to find new patterns in data as well as a way to represent complex patterns after they have been discovered. The session focuses on both real-time and archived traffic data. The session will highlight actionable decision-making achieved through use of visualization coupled with data mining techniques.

S038

### **Evaluating the Quality and Accuracy of Real-Time Traffic and Incident Information**

Various public agencies and private entities are collecting and disseminating real-time traffic information. Until several years ago, this traffic information was provided in fairly coarse categories such as green-yellow-red Internet speed maps. However, recent growth in personalized traveler information and in-vehicle navigation devices is demanding that traffic information be of better quality and greater accuracy. In response, a few public agencies and private companies have conducted quality assessments to benchmark the quality of their real-time traffic information. This session will highlight some of the best practices related to evaluating the quality and accuracy of real-time traffic and incident information.

## **Data and our Customers**

S013

### **Who is using our Weigh-In-Motion Data?**

This session will address:

- 1) Best practices for disseminating WIM data to decision makers.
- 2) WIM for weight enforcement- Positive results, challenges.
- 3) Update on pool fund for installation of SPS sites and is the data better.

- 4) WIM Data for Goods Movement analysis.
- 5) WIM Data requirements for Mechanistic Pavement Design.

S025

### **Pavement Designers as a Traffic Data Customer**

Ed Christopher, Federal Highway Administration; Robert L. Orthmeyer, Federal Highway Administration, presiding

The "new" Mechanistic Empirical Pavement Design Guide (MEPDG) is in the process of being approved by AASHTO as the industry standard. Included in the MEPDG are several changes that should be of importance to the traffic data community. This session will focus on new changes to the MEPDG and its intersection with the traffic data world. This session is a must for anyone responsible for providing traffic data used in pavement design.

S027

### **Data Sharing Agreements with Private Companies**

Ed Christopher, Federal Highway Administration; Piyushimita (Vonu) Thakuria, University of Illinois, Chicago, presiding

Private companies now have a significant presence in collecting traffic operations data in the United States, and recent developments suggest that the private sector will be taking a much larger (and perhaps leading) role in gathering traffic information in the near future. Location-based services and private real-time traffic information services are using these data to a great extent. But such data are also very useful to DOT's as well as to the research community. The session will explore various aspects of private-public data sharing agreements such as the viability of different business models, data ownership/intellectual property and use provisions, privacy/confidentiality, pricing, , and data quality contract specifications.

The session will not serve as a platform for commercial marketing or advertising; instead, several industry analysts and practitioners will share their experiences, visions, and concerns related to private sector provision of traffic data.

S026

### **Travel Time and Speed--The New Customer Driven Traffic Paradigm**

Ed Christopher, Federal Highway Administration; Elaine Murakami, FHWA, presiding

While Travel Time and Speed have been metrics that have been around for a long time, Congestion and Safety concerns have elevated their importance to a fever pitch. Customers are requiring travel time and speed with their traffic data. In this session several new advances on how the traffic data community is coping will be explored. This session is for the traffic data manager and staff responsible for reporting on travel.

S039

### **Traffic Data for Work-Zone Operations**

There is increased focus on the minimization of traffic delays and improved safety in Work Zones. Availability of the appropriate traffic data can be essential to the construction decision process. Much more specific data from those in the annual traffic data collection reports are often needed. This session provides information on how, what and who is conducting traffic data collection to

improve work zone efficiency and performance. Details on the particular types of data needed for work-zone decision making and methods for safe and accurate collection of traffic data in various challenging environments will be presented.

S040

### **Handling Special Data Requests**

Ed Christopher, Federal Highway Administration; Jonette Kreideweis, Minnesota Department of Transportation, presiding

Over the last decade data program managers have seen more and more data requests that do not fall into the normal pattern of doing business. Many times these involve high profile projects or special customers including anything from emergency situations to special event planning/routing. This session will provide information on how special requests are practically handled. Attendees we will hear from a panel state and local data managers who must deal with these high-profile requests while balancing the staffing requirements needed for routine business. How are these requests handled? How is data accuracy handled or not handled? Are any costs recouped?

S033

### **And You Thought Current Data Uses Were Diverse? How Asset Management Will Expand the Data World**

Timothy J. Lomax, Texas Transportation Institute; Ed Christopher, Federal Highway Administration, presiding

As Asset Management moves farther into the mainstream operations of public sector agencies, there is an even greater need to understand the methods that allow communication and information sharing within the agency, and between agency personnel and their customers. The data collectors should understand the uses of their information in order to ensure relevance and to be able to maximize the return on the data collection investment. Asset management is a data-driven process that promises to stretch the use of data and models beyond their original design.

S034

### **Truck Data for Freight Planning**

Kathleen L. Hancock, Virginia Polytechnic Institute and State University; Ed Christopher, Federal Highway Administration, presiding

Reliable and relevant information about trucks is becoming more critical than ever for planning and making decisions about investments and policies related to our transportation infrastructure, particularly now, as congestion increases on our highway system and trucks make up a larger portion of the traffic flow. At the same time, the demand for this information is becoming more diverse, evolving from pavement design requirements to uses relating to air quality, safety, security, freight flows, forecasting, capacity and congestion, and regulations for truck size and weight, truck inclusion/exclusion routes, and truck speed limits. Several sources of information already exist. Examples include from the traffic monitoring community, we have several existing data collection programs that provide information about truck counts, volumes, classification, and weight. From the freight community, we have data collection programs that provide information about movement of goods. Unfortunately, as resources become more precious, we face the reality of losing some data sources such as the Vehicle Inventory and Use Survey.

The upcoming NATMEC meeting provides us with an opportunity to examine current and future expectations for truck data from various users, as well as new and emerging techniques for collecting truck data. Among the questions to be considered are:

What data are (will be) available?

What are their limitations?

What aspects of transportation decision making can these data address, beyond their original purpose?

What data can be fused to provide additional information and how?

What new technologies are/will be available for collecting relevant data?

How can we partner with non-traditional data collectors such as those in the private sector?

What is missing?

## **Traffic Monitoring Fundamentals**

S014

### **Traffic Monitoring 101, Basics of Traditional Data Collection - Collection, Analysis, Reporting, Retention**

This session will cover examples of best practices and techniques employed by state departments of transportation and contractors focused primarily towards the traditional data collection requirements to meet federal and state mandates. Discussion will address the most efficient means to accomplish:

1. Data Collection -
2. Data Analysis-
3. Reporting- meet customer's needs
4. Retention

S012

### **Estimating AADT beyond Functional Classification Factors**

Due to unique traffic patterns that may exist in a state, applying a single functional classification factor to all segments within that class may not be valid. This session will discuss various methods Traffic Monitoring groups use instead of functional classification to estimate AADT. Examples of route specific, geographical factors and sampling plans will be discussed.

S019

### **Training and Retraining the 21st Century Workforce**

Laine Heltebridle, Pennsylvania Department of Transportation, presiding

As employees retire and other employees are promoted or move to new positions, training and re-training employees is an issue agencies are forced to deal with. Presentations can include information on fostering university – DOT partnerships and establishing training and certification programs.

S020

### **Data Collection, Storage and Use**

Laine Heltebridle, Pennsylvania Department of Transportation, presiding

Collecting data once and sharing it with others is a cost and resources saving goal many agencies are striving to achieve. However, there are many obstacles that need to be overcome to achieve this goal. Presentations may include information on common formats; databases; metadata; user access; sharing of data collection devices; new partnering arrangements (i.e. cell phones); new technologies for modifying existing infrastructure for data collection and contractor support.

S037

### **Private Sector Provision of Traffic Data for Operators and Planners: Promises, Considerations, and Issues**

The private sector has been involved in the traffic information industry for some time; however, recent developments in the past few years suggest that the private sector will be taking a much larger (and perhaps leading) role in gathering traffic information in the near future. This has implications for transportation managers and planners in a variety of ways. This session will explore the various promises, considerations, and issues such as viability of business models, data ownership and use provisions, and data quality contract specifications. The session will not serve as a platform for commercial marketing or advertising; instead, several industry analysts and practitioners will share their experiences, visions, and concerns related to private sector provision of traffic data.

S041

### **Calibration and Validation for Traffic Data Collection**

Ralph A. Gillmann, Federal Highway Administration, presiding

Automated systems for collecting traffic data require proper calibration followed by a program of validation of data and re-calibration of systems. This session will discuss current issues and practices to calibrate and validate traffic data. Calibration methods, validation criteria, and QA/QC programs will be discussed.