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2012 NATIONAL STATE SAFETY ENGINEERS AND TRAFFIC ENGINEERS PEER-TO-PEER WORKSHOP

Prepared By
Yanfeng Ouyang
University of Illinois at Urbana-Champaign

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A report of the findings of
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2012 National State Safety Engineers and Traffic Engineers Peer-to-Peer Workshop

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16. Abstract

The Illinois Department of Transportation (IDOT) and the Illinois Center for Transportation (ICT) sponsored and hosted the 2012 National State Safety Engineers and Traffic Engineers Peer-to-Peer Workshop on November 14 and 15, 2012, at the Hyatt Regency Woodfield hotel in Schaumburg, Illinois. The peer-exchange workshop was attended by representatives of highway safety engineers and traffic engineers from 33 states, and the discussion focus was the implementation of a variety of safety engineering and traffic operations countermeasures and initiatives, in addition to complying with new federal rules. The workshop covered a wide range of topics, including the history of mobility and safety; the national scene and perspective; linking safety engineering and traffic engineering efforts; organizational structures of state agencies and the interrelationships between traffic and safety engineering procedures; managing performance (operations and safety), and systematic safety and operations. This report summarizes the attendee statistics, the conference program, the main activities (including 17 presentation and discussion sessions), and feedback provided on attendee surveys.

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EXECUTIVE SUMMARY

The Illinois Department of Transportation (IDOT) and the Illinois Center for Transportation (ICT) sponsored and hosted the 2012 National State Safety Engineers and Traffic Engineers Peer-to-Peer Workshop on November 14 and 15, 2012, at the Hyatt Regency Woodfield hotel in Schaumburg, Illinois. The peer-exchange workshop was attended by representatives of highway safety engineers and traffic engineers from 33 states, and the discussion focus was the implementation of a variety of safety engineering and traffic operations countermeasures and initiatives, in addition to complying with new federal rules.

The workshop covered a wide range of topics, including the history of mobility and safety; the national scene and perspective; linking safety engineering and traffic engineering efforts; organizational structures of state agencies and the interrelationships between traffic and safety engineering procedures; managing performance (operations and safety), and systematic safety and operations. This report summarizes the attendee statistics, the conference program, the main activities (including 17 presentation and discussion sessions), and feedback provided on attendee surveys.

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CHAPTER 1 INTRODUCTION

At the national level, significant emphasis has been placed on improving safety on public highways by using low-cost safety countermeasures. At the same time, new federal policies, statements, and guidelines have been issued that directly impact state efforts in the areas of safety engineering, traffic engineering, and operations. States have made significant improvements in the safety performance of highways through their efforts, practices, and initiatives. Estimating the quantitative safety performances of proposed projects or design alternatives, for example, is becoming a routine part of the project development process. However, although safety-improvement strategies typically complement other strategies (e.g., traffic management strategies), creating synergy, there are instances in which one effort might have a negative impact on another. Hence, it is important to understand how safety countermeasures might have both a positive and a negative effect on the traffic operations and maintenance of a roadway. Illinois has held two previous national peer exchanges in the area of safety: Safety Performance Functions and the Highway Safety Manual (HSM) Implementation workshops. Both allowed Illinois to share information with other states in a forum conducive to the open discussion and exchange of ideas, which has led to significant advancement of Illinois's safety engineering program. The IDOT Bureau of Safety Engineering and Bureau of Operations see significant benefits in the department's holding its first National State Safety Engineers and Traffic Engineers Peer-to-Peer Workshop. A recent workshop held at a national conference demonstrated this benefit when several states learned from another state about FHWA's interpretation of the new MUTCD. This type of forum is an extremely successful method for learning from each other's successes and failures, for sharing lessons learned and best practices, and discussing how to advance new initiatives, especially when resources are limited.

Accordingly, the Illinois Department of Transportation (IDOT) and the Illinois Center for Transportation (ICT) sponsored and hosted the 2012 National State Safety Engineers and Traffic Engineers Peer-to-Peer Workshop on November 14 and 15, 2012, at the Hyatt Regency Woodfield in Schaumburg, Illinois. The focus was the implementation of a variety of safety engineering and traffic operations countermeasures and initiatives, in addition to promoting compliance with new federal rules. Specific discussion topics included implementation efforts, lessons learned, benefits and challenges, and overall implementation successes. Seventeen podium presentations followed by question-and-answer time, parallel breakout sessions, and facilitated discussions provided a unique opportunity for representatives from 33 state lead

agencies and other organizations to learn about recent developments relating to these state and federal initiatives. Sessions were held on the following topics:

- History–Mobility and Safety
- Setting the National Scene
- Opportunities to Link Safety Engineering and Traffic Engineering Efforts
- State Agencies' Organizational Structures and the Interrelationships Between Traffic and Safety Engineering Procedures
- Organizational Structures
- Intersections: Managing Performance—Operations and Safety
- Systematic Safety and Operations

There was open communication and sharing of experiences, challenges, and successes throughout the workshop, which helped ensure that safety engineers and traffic engineers gained a boarder perspective and benefited from each other's experiences. The survey at the end of the workshop showed that all participants found the experience very positive and would like to return to another workshop next year. It was clear that the momentum created in the recent series of workshops has continued to grow, and we would aim to engage in activities to continue the advancement in the explicit quantification of safety. Among the 103 participants, about 30 came from Illinois (IDOT district and central offices, as well as the University of Illinois); hence, the workshop also helped IDOT staff benefit from the experiences of other states.

The organization of this report is as follows: Chapter 2 briefly describes the attendee statistics. Chapter 3 presents the conference program and then briefly summarizes the contents of the main activities at the workshop. Chapter 4 summarizes the attendees' feedback.

CHAPTER 2 ATTENDEE STATISTICS

The travel expenses of up to two attendees from invited state DOTs were covered by the workshop organizers (through a separate IDOT funding source). Additional representatives from the IDOT Central Office and each of the IDOT districts were also invited. There were a total of 103 attendees at the workshop, representing safety engineers, traffic engineers, administrators, and researchers and developers from the private sector. A list of attendees and their affiliations is included in Appendix A.

The Workshop Planning Committee was formed in July 2012 to plan the theme and activities at the workshop. The list of committee members is given in Appendix C. On the online registration page, each attendee was requested to provide personal contact information. The Workshop Planning Committee also distributed a short survey on the registration page to gain insight into the attendees' experiences with safety and traffic engineering operations. The following questions were on the survey:

1. What state do you represent?
2. What is your title?
3. What are your job responsibilities?
4. Where does traffic engineering fit within your organization?
5. Where does safety engineering fit within your organization?
6. Is traffic performance measurement included throughout processes (i.e., planning, programming, design, construction, maintenance, and operations)? Which processes? How is this accomplished?
7. Is safety-performance measurement included throughout processes (i.e., planning, programming, design, construction, maintenance, and operations)? Which processes? How is this accomplished?
8. Is quantitative safety used along with traffic performance measures to select the recommended project alternative or guide the decision?
9. Please provide suggested or recommended best practices for integrating traffic and safety analysis and performance into the decision-making process.

The Workshop Planning Committee reviewed each of the questionnaire responses when preparing for the workshop. Among the 103 attendees, 88 provided responses to these questions. Based on the responses to the first two questions, it was clear that the majority of the

attendees (82%) are local/state engineers. Their affiliations can be classified into four categories.

- Academic organizations
- Federal agency
- Private organization
- State/local agency

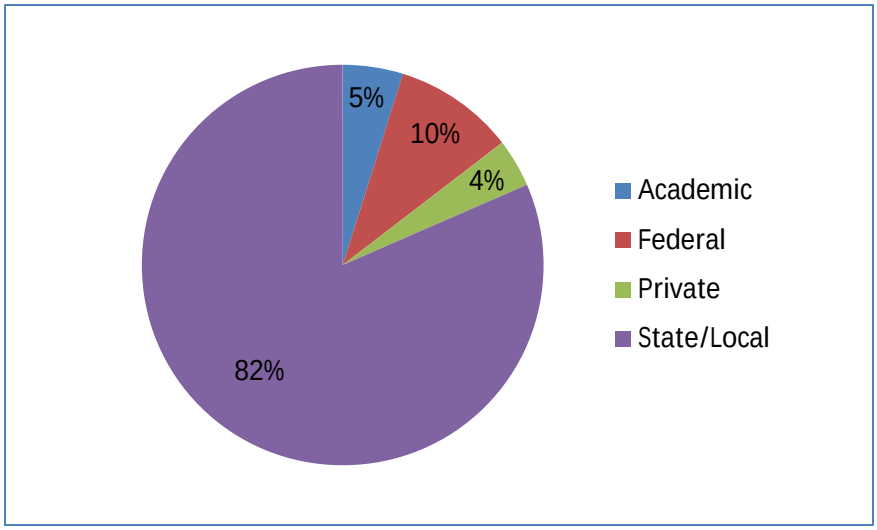

Figure 1. Breakdown of participants by affiliation.

The following agencies/organizations were represented at this workshop (the number of attendees from each agency or organization is shown in parentheses).

AASHTO (1)
Alabama DOT (2)
American Traffic Safety Services Assn. (1)
Arizona DOT (2)
CH2M HILL (1)
Connecticut DOT (1)
Federal Highway Administration (9)
Florida DOT (2)
Georgia DOT (2)
Illinois DOT (25)
Iowa DOT (2)
Kansas DOT (2)

Kentucky Transportation Cabinet (1)
Local Highway Technical Assistance (1)
Louisiana DOT (2)
Maine DOT (2)
Maryland State Highway Administration (2)
Massachusetts DOT (2)
Michigan DOT (2)
Minnesota DOT (2)Mississippi DOT (2)
Missouri DOT (3)
Montana DOT (2)
NAVIGATS Inc. (1)
Nebraska Department of Roads (1)
Nevada DOT (2)
New Hampshire DOT (2)
New Mexico DOT (2)
Ohio DOT (1)
Oklahoma DOT (2)
Oregon DOT (1)
Pennsylvania DOT (2)
Rhode Island DOT (2)
South Dakota DOT (2)
Texas DOT (2)
University of Illinois at Urbana-Champaign (4)
University of Wisconsin-Madison (1)
Virginia DOT (2)
Washington State DOT (3)
Wisconsin DOT (2)

The responses to the other questions show that the attendees can be classified into four major categories.

- Safety Engineer/Manager/Related Area
- Traffic Engineer/Manager/Related Area
- Traffic and Safety Engineer/Manager/Related Area
- No Response

The chart below shows that the majority of the attendees are involved with highway traffic operations and safety engineering.

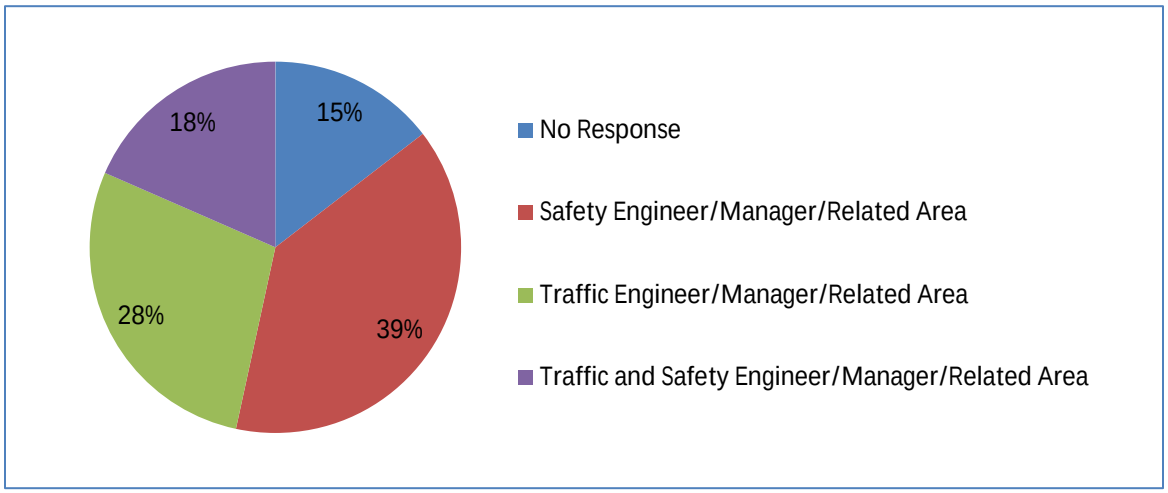

Figure 2. Job responsibility classification among participants.

CHAPTER 3 THE WORKSHOP

During the planning for the Highway Safety Management Lead State Peer-to-Peer Workshop, the Workshop Planning Committee held individual conference calls with potential speakers to discuss themes and topics and to gather input. The first set of calls was intended to gather basic information and to determine the vision for a successful workshop. The information gathered from the calls was used to refine the workshop agenda. The invitations to speakers and attendees, as well as online registration for the workshop, started in July 2012.

Onsite registration for the workshop started 4:00–6:00 p.m. on Tuesday, November 13, 2012, and continued 7:30–8:00 a.m. on Wednesday, November 14, 2012. The conference sessions (including two sets of four parallel breakout sessions) started at 8:00 a.m. on November 14, 2012, and concluded at 4:45 p.m. on November 15, 2012. In most sessions, the presentations were followed by a question-and-answer session or a facilitated discussion.

3.1. PROGRAM OVERVIEW

Table 1 provides a list of sessions and speakers/moderators at the workshop. Speaker and moderator biographies can be found in Appendix C, and the complete workshop agenda (including breakout groups) is in Appendix D. Some communications and preparation documents are included in Appendix E, and the presentation slides are in Appendix F. Electronic versions of these files, as well as video footage of all sessions, are available at the conference website http://ict.illinois.edu/conferences/safetytrafficworkshop2012/.

Table 1. 2012 National State Safety Engineers and Traffic Engineers P2P Workshop Program

Day 1	Welcome and Introductions	Aaron Weatherholt and Priscilla Tobias
Session 1	Setting the Goal and Vision for the Workshop	Aaron Weatherholt and Priscilla Tobias
Session 2	History—Mobility and Safety	FHWA, Illinois: Norman Stoner
Session 3	Setting the National Scene	Washington: John Milton Maine: Bruce Ibarguen
Session 4	Breakout Groups: Opportunities to Link Safety Engineering and Traffic Engineering Efforts	Four pre-assigned groups
Session 5	State Agencies Organizational Structures and the Interrelationships Between Traffic and Safety Engineering Procedures	Nebraska: Dan Waddle Florida: Joe Santos and Mark Wilson Illinois: Joe Monroe and Lisa Heaven-Baum
Session 6	Breakout Groups: Organizational Structures	Four pre-assigned groups

(table continues, next page)

Day 2	Welcome: Overview of Highlights of Day 1 and Setting the Vision for Day 2 of Peer Exchange	University of Illinois: Yanfeng Ouyang Illinois: Priscilla Tobias
Session 1	Intersections: Managing Performance—Operations and Safety (Part 1)	Oregon: Kevin J. Haas Illinois: Randall Laninga
Session 2	Intersections: Managing Performance—Operations and Safety (Part 2)	Illinois: Kyle Armstrong Florida: Mark Wilson
Session 3	Systematic Safety and Operations (Part 1)	Maine: Duane Brunell Minnesota: Derek Leuer
Session 4	Systematic Safety and Operations (Part 2)	Missouri: Michael Curtit
Session 5	Lessons Learned	NAVIGATS Inc.: Geni Bahar CH2M HILL: Kim Kolody University of Illinois: Yanfeng Ouyang

3.2. SUMMARY OF THE SESSIONS: PRESENTATION AND DISCUSSION

In this section, we briefly summarize the sessions and the discussions.

Day 1 Opening

Workshop co-chairs Aaron Weatherholt and Priscilla Tobias from Illinois DOT welcomed the attendees and gave a brief introduction to the workshop.

Session 1: Setting the Goal and Vision for the Workshop

Weatherholt and Tobias clarified the objectives of the workshop: to encourage and support a dialog of challenges, best practices, and lessons learned that can help state organizations further advance the collaboration and integration of safety and traffic operations efforts. In particular, the workshop tried to address safety and mobility and their interlinked impacts, and how organization structures impact the coordination and collaboration. The workshop was intended to provide an opportunity for safety and traffic engineers to share their respective analytical and decision-making processes and to facilitate discussion of (1) engineering countermeasures to increase mutual understanding of the benefits and challenges of implementation, (2) distinct performance measures , and (3) potential collaborative means to enhance the treatments for the best possible outcomes for all road users.

Session 2: History—Mobility and Safety

In this session, Norman Stoner from FHWA reviewed the Highway Safety Act of 1966. FHWA was responsible for the following among 18 safety program standards that integrate the roles of traffic engineers and safety engineers in the following areas: (1) highway design, construction, and maintenance; (2) traffic engineering services; (3) pedestrian safety (highway

aspects); and (4) traffic records. Great achievements in safety and mobility have been made nationwide, but much work still lies ahead. For example, the annual fatality total has been decreasing since the 1970s, particularly in the past decade, and the annual fatality rate per 100 million vehicle miles traveled (VMT) is steadily decreasing. However, the annual fatality rate per 1,000 miles of road remains stagnant. Keys to the discovery of breakthroughs rely on the following: (1) fresh, multidisciplinary perspectives, (2) breaking a link in the "chain of events" (e.g., misjudgments, over-reactions) that eventually lead to accidents, and (3) data analysis and mining for new insights.

Session 3: Setting the National Scene

John Milton of Washington State DOT and Bruce Ibarguen of Maine DOT discussed the national scene. The strategic highway safety plan naturally involves safety and traffic operational aspects. The most recent HSM provides a set of analytical tools for safety engineering (e.g., statistical, data-driven analysis for high-crash locations). HSM implementation is ongoing in many states, with awareness at both traffic and safety offices. However, many state data record systems need improvement to accommodate this change. In light of this situation, the Moving Ahead for Progress in the 21st Century Act (MAP 21) helps improve data collection and performance assessments by addressing the following questions: What data should be collected? What performances should be assessed? and How should data be investigated to avoid pitfalls (e.g., safety impacts of an intelligent transportation systems device might be disguised by a change of traffic volume)?

The SHRP 2 naturalistic driving study provides knowledge and data that might potentially revolutionize safety study. It integrates multiple design and human factors (e.g., curvature, vehicle, driver reaction) into a safety study, using thousands of instrumented vehicles at 5+ sites nationwide. MUTCD (2009, latest edition) presents the challenges of (1) uniformity versus engineering judgments (uniformity is the goal, but it should also allow unique characteristics of each state) and, at the same time, (2) standards versus innovation (e.g., variable speed limit). The coexistence of the AASHTO Green Book, the MUTCD, and now the HSM also raise the challenge of how to take a proactive, systematic, and strategic approach to both safety and traffic.

Session 4: Breakout Groups—Opportunities to Link Safety Engineering and Traffic Engineering Efforts

The workshop attendees were split into four breakout sessions to discuss the following topics. Some of the discussion outcomes are summarized below.

1. *How to explicitly integrate/link daily project decisions to support the strategic highway safety plans (SHSP)*
   A. Issues related to SHSP
      - Strategic rather than specific combination
      - Involve different agencies, governor's safety office, and education enforcement
   B. Communication is a key
      - Not only communication but also when and where to implement (the earlier is better)
      - Apply various methods such as restrictive laws
   C. Collaboration and networking
      - Facilitate collaboration across disciplines
      - Funding: how to optimize the resources
2. *How can MAP 21 and other transportation bills be integrated with non-safety-focused projects led by traffic engineers?*
   A. Scope projects and create opportunities for safety to be considered
      - Even if the project is not related to the safety
      - Aligning the processes of project planning (e.g., timing, budgeting)
   B. As a result of legislation, there is more funding for safety projects
      - Other areas use the terms "safety" and "collaboration" to get funding for projects
      - Impacts on issues such as liability
   C. More responsibility as well as more flexibility
      - The Highway Safety Improvement Program (HSIP) has a special focus on safety
      - Some concerns about the decrease of funds beyond safety
      - Balancing overall DOT projects (not just those for safety) is generally a challenge
   D. Management of HSIP
      - Maintenance issues (whether the funding is used for maintenance projects).
      - There was much discussion about getting the locals involved (e.g., giving lighting and signals to the locals)
      - Convincing the politicians: Cutting the budget is not in the best interest of safety
      - Leveraging other types of funds (e.g., homeland security) for safety
3. *What can be done to increase the performance of capacity building and asset management through our policies and our day-to-day processes and procedures?*
   A. Emphasis is on 3R/4R definition

B. Identify your strategic objectives (operational or safety)
    - Identify the focus measures (how to define “performance” for the public)
    - Understand/recognize training needs for the various multidisciplinary approaches

C. Balancing priorities
    - Use data to link operation and safety
    - Resources and staff time

D. Data connections at the local level
    - For example, track aging population, local traffic information

4. *What needs to be done to create synergy among the applications of national manuals such as HSM, HFG, HCM, and MUTCD (and Green Book) for better, more-informed decision making?*

A. Do not create another new manual
    - Find and train the key people on the project

B. Balancing various requirements
    - How to find balance among the standards, guidance, manuals, and politics
    - These documents can help agencies mitigate the lack of data
    - Processes for conducting analyses vary
    - Safety evaluation is included in operational analysis/evaluations
    - Various documents must provide consistency

C. Relationship between congestion and safety/fatalities
    - Performance measure for congestion associated with safety
    - A standard or guideline is needed to encourage the engineer or designer to go beyond the minimum.

D. Significant challenge to create synergy to get multiple professional organizations (e.g., AASHTO, FHWA, TRB) to work together
    - How to establish educational processes?

5. *What is the correlation between highway capacity and quality of service, geometric configuration, crash rates/types, and time of day? Does (or how does) your agency overlap the types of analysis/data to identify trends or target locations for possible mitigation? How does your agency define the concept of operation and performance objectives of a project to identify a mitigation strategy?*

A. Most of the states do data overlap and analysis through safety evaluation

B. Various stakeholders get together and identify their project locations and priorities
    - Data and performance measures analyzed in GIS to show their correlations

C. We need to evaluate or reevaluate traffic and safety at the same time; this is a concept that needs deeper investigation.

Session 5: State Agencies Organizational Structures and the Inter-Relationships Between Traffic and Safety Engineering Procedures

There were three presentations in this session. Dan Waddle from Nebraska gave a presentation on "Nebraska Department of Roads: Traffic and Safety Engineering Procedures." Joe Santos and Mark Wilson from Florida gave a presentation on "Office Overview—Traffic Operations and Safety." Joe Monroe and Lisa Heaven-Baum from Illinois gave a presentation on "Illinois Department of Transportation: Partnering for Safety—Driving Zero Fatalities to a Reality." The main points from the presentations are as follows: Some of the states' organizational structures (and roles and responsibilities) have changed or expanded as a result of legislative changes (e.g., SAFETEA-LU, HSIP). New bureaus and/or new committees have been formed. In some other states, safety is integrated into the design and traffic engineering process, but safety still does not have an independent voice. Most states have independent offices for traffic operations and safety and have a rather decentralized organization structure that (1) allows diversification in activities and new grassroots initiatives, and (2) requires proactive coordination to maintain consistency.

Session 6: Breakout Groups: Organizational Structures

The workshop attendees were again split into four breakout sessions to discuss the following topics. The discussion outcomes are summarized below.

1. *What are the most important elements in centralized vs. decentralized organizational structures for successful integration of traffic and safety for programs and projects?*
   A. In a decentralized organization, networking, relationship, and communication are really important
      - Timely communication between organizations is important for decision making.
      - Communication has strong influences on networking among stakeholders and various offices within the organizations
      - Communication and personalities really matter in creating initiatives via contacts (being proactive vs. reactive)
   B. Definition of centralization and decentralization (in terms of operations) is important
      - Some states do not define themselves as centralized or decentralized
      - Advantages and disadvantages
        - The advantage of centralization is consistency (e.g., uniform policies and programs)
        - The advantage of decentralization is flexibility for locals to operate
        - No universal rule on which is the best

2. *Is organization structure relevant, or are the procedures and policies of greater importance in creating mutual collaboration?*
   A. A couple of states have standing cross-disciplinary committees outside their existing organizational chart
      - Because these committees are multidisciplinary, collaboration has already happened (e.g., safety-funding committee)
      - Having a contact person might improve the communication
   B. How to operate better regardless of centralization or decentralization
      - The headquarters might provide a recommended project with funding, but the districts still might want to have flexibility and alternatives
      - A change of management might switch the focus from safety to traffic or vice versa
      - Strong leadership from the top helps in decision making (regardless of whether the organization is centralized or decentralized)
   C. Some find that policies and procedures are more important, compared with the organization structure
      - Relationships within the organization are important
      - There was interest in providing and sharing high-quality data to achieve a mutual goal
3. *What types of barriers or challenges does your organizational structure pose for integrating traffic and safety-performance measure management?*
   A. Personality and communication are important; organization structure will help but is not crucial
   B. Each district might have a different structure, leading to inconsistency across the state
   C. In some states, operations and safety are separate in terms of funding
4. *How are HCM and HSM quantitative analyses addressed? How do partnerships facilitate integration of safety and traffic programs?*
   A. Results-oriented committees with specific goals so as to improve efficiency
   B. Cross-training at different offices (e.g., webinars)
   C. Educating the public on implementation of the strategies
   D. Outreach not only to the community itself but also to locals
      - Make a strong investment in the locals
      - Work with counties and locals on developing the local county-level road safety plan and low-cost safety projects and help them in developing crash data analysis
   E. Cooperation with the local technical assistance program (LTAP), special associations, agencies, and authorities to deal with traffic special events

Day 2 Welcome: Overview of Highlights of Day 1 and Setting the Vision for Day 2 of Peer Exchange

Yanfeng Ouyang gave a brief presentation highlighting \ key information from the sessions on the first day. Priscilla Tobias gave an opening speech for the second day of the workshop.

Session 1: Managing Performance—Operations and Safety (Part 1)

Session 2: Managing Performance—Operations and Safety (Part 2)

In these two sessions, there were four talks: "Protected Only vs. Protected/Permissive Left-Turn (PPLT) Phasing," "Flashing Yellow Arrow (FYA)," "Adaptive Signal Control Technology Research and Implementation in Illinois," and "Pedestrian Safety vs. Capacity." Some interesting discussions are summarized as follows:

1. Traditionally, the driving force is operational issues; sometimes, safety benefits take effort to measure (e.g., "after" data collection)
2. Some safety concerns are tied to traffic operational issues (e.g., improper signal timing)
3. Often a trade-off exists between safety and capacity performances (e.g., mid-block crosswalk, coordinated vs. uncoordinated pedestrian beacons)
4. New countermeasures might have cost implications to design/planning in other areas (e.g., resetting all signals/wiring) and therefore might be met with resistance
5. Education and public outreach are keys for success of new countermeasures
    A. Countermeasures are successful only if the public understands and accepts them
    B. Public relations/education is crucial to success
    C. Enforcement is also effective, but it has cost/resource implications
    D. More funds from the Strategic Highway Research Program (SHRP) should be used for behavioral research

Facilitated discussions on related topics followed the presentations. One such discussion covered general protocols for making an implementation decision. Also, participants agreed that it is challenging to deal with conflicting objectives and to conduct education and public relations programs.

Session 3: Systematic Safety and Operations (Part 1)

Session 4: Systematic Safety and Operations (Part 2)

In these two sessions, there were three talks: "Interstate Highways and Wrong-Way Drivers," "Systematic Improvements on Curves," and "Rural Intersections: Signing and Pavement Marking." Some interesting discussions are summarized as follows:

1. Wrong-way driving
    A. Age, alcohol, and mental factors have greatest impact on driver behavior
    B. Need to consider driver behavior and the decision-making process in engineering and design considerations
        · Critically evaluate what you have and consider the options (e.g., “dynamic signs,” pavement markings and delineations)
        · Preventive measure: video surveillance and camcorder installation
    C. Training and assessment for older and younger drivers
2. Curve treatments
    A. More severe run-off-road crashes occur on larger curves at nighttime
    B. Most curve treatments are cost effective (e.g., shoulder building, rumble strips)
    C. Integrate crash analysis and roadway inventory analysis for curve treatments
3. Signing and pavement marking
    A. Low-cost, systematic improvements have proven effective

3.3. RESOURCES

Representatives from many participating states emphasized the need to share information. All current resources from this workshop (including presentation files and video recordings) are available on the permanent website (hosted by the Illinois Center for Transportation) for open public access:

http://ict.illinois.edu/conferences/safetytrafficworkshop2012/

CHAPTER 4 SURVEY FEEDBACK

At the end of the workshop, the attendees were asked to fill out a two-page survey. The responses provided valuable feedback to the organizing committee. A copy of the survey is available in Appendix F. A total of 39 responses were collected.

The attendees were asked about their satisfaction with a few key aspects of the workshop. As shown in Table 2, most attendees said (90% of all answers) that they were very satisfied or somewhat satisfied with all aspects of the workshop, including the registration process (98%), materials/handouts (90%), speakers/presenters (100%), and venue/facility (74%).

Table 2. Attendees' Overall Satisfaction

Overall satisfaction	Very satisfied	Somewhat satisfied	Neutral	Somewhat dissatisfied	Very dissatisfied	Total
Registration process	27	11	1	0	0	39
Materials/handouts	19	16	4	0	0	39
Speakers/presenters	26	13	0	0	0	39
Venue/facility	19	10	8	2	0	39

As part of the question regarding overall satisfaction attendees were also asked for suggestions to improve the workshop. Only ten meaningful responses were provided. Five attendees suggested improving the venue facility (e.g., providing tables and free wireless Internet; using a smaller room because it was hard to see from the back and to hear unless a microphone was used; providing a room without pillars; putting more space between seats). Some attendees were in favor of more breakout sessions with smaller groups; by contrast, some thought the breakout sessions were of little value because they included too many complex and unclear questions. A few attendees suggested more time for lunch because the informal discussions during meals could be also valuable.

A total of 34 attendees responded to Question 2: "What did you like most about the workshop, and what is your most important gain from it?" Many attendees said they thought that more than one aspect of the workshop was beneficial. The responses are summarized in Table 3. About one third of the attendees stated that they benefited from sharing peer states' experiences in implementing safety. Moreover, many attendees felt that the wide range of topics, the facilitated discussions, and the interactions were informative and the most useful.

Some attendees also thought the workshop was a good opportunity to learn many new ideas and solutions, and they benefited from the networking opportunity.

Table 3. Attendees' Most Important Gain (out of 34 responses)

Various topics of presentations and discussions	25	45%
Networking opportunity with peers	5	9%
Learning opportunities (basic introduction, new information, available resources) on safety	7	13%
Peer states' experience and plan sharing	18	33%

In Question 3, the attendees were asked, "Would you be interested in attending similar workshops again in the near future (e.g., next year)?" An absolute majority of attendees stated that they plan to attend next year, as shown in Table 4. During the course of the conference, organizers also heard from many attendees that they were interested in bringing more participants from their states to benefit from the (next) workshop.

Table 4. Attendees' Plans to Attend Next Year (out of 39 responses)

Yes	36
No	0
Undecided or no response	3

Table 5 is a summary of 24 responses to Question 4, about the types of sessions to be included in future workshops. Although the suggestions were highly diverse, many attendees wanted examples of technical applications or implementations to be included in the next workshop. Other suggestions included rural safety, roadway lighting, pedestrian and bicyclist safety, and funding of safety projects, which are represented as "Other topics" in Table 5.

Table 5. Attendees' Preference for Sessions To Be Included Next Year

Examples of technical application/implementation	7
Update on statistical tools and data	4
Training and tutorial	2
Relationship between locals and states	2
Other topics	11

The last question on the survey asked the attendees what types of help they would anticipate needing to develop and implement the ideas or lessons learned in this workshop in the coming year. A total of 21 attendees responded to this question. There were a variety of suggestions and ideas about resources and support needs. It seems there is a need for greater depth on all topics covered in the workshop. In particular, many attendees mentioned the need for training, which should be organized as a national effort in terms of creating a pool of courses, such as tutorials or executive training. The hope is that various state agencies could access the materials and adapt them as needed. Also, webinars and conference calls on various topics were suggested by many attendees to keep knowledge flowing. Resource identification and access to workshop notes and presentations were requested as well.

Overall, the survey feedback demonstrates that the 2012 National State Safety Engineers and Traffic Engineers Peer-to-Peer Workshop very successfully achieved its objectives. The attendees benefited significantly from this event and look forward to attending future workshops to further advance their knowledge in the important areas of traffic and safety.

APPENDIX A ATTENDEE ROSTER

ATTENDEES

Alabama	**Timothy Barnett** Alabama DOT 1100 John Overton Drive Montgomery, AL 36110 334-353-6464 barnettt@dot.state.al.us	**Stacey Glass** Alabama DOT 1409 Coliseum Boulevard Montgomery, AL 36130 334-242-6275 glasss@dot.state.al.us
Arizona	**Scott Orrahood** Arizona DOT 1615 W Jackson Street Mail Drop 065R Phoenix, AZ 85007 602-712-7800 sorrahood@azdot.gov	**Mark Poppe** Arizona DOT 1615 W. Jackson Street Mail Drop 065R Phoenix, AZ 85007 602-712-8496 mpoppe@azdot.gov
Connecticut	**Joe Ouellette** Connecticut DOT 2800 Berlin Turnpike Newington, CT 06016 860-594-2721 Joseph.ouellette@ct.gov	
Florida	**Mark Wilson** Florida DOT 605 Suwannee St, MS 36 Tallahassee, FL 32399 850-410-5419 mark.wilson@dot.state.fl.us	**Joe Santos** Florida DOT 605 Suwannee Street, MS53 Tallahassee, FL 32399 850-245-1502 joseph.santos@dot.state.fl.us
Georgia	**Michael Turpeau, Jr.** Georgia DOT 935 E. Confederate Ave., SE Atlanta, GA 30316 404-635-2831 mturpeau@dot.ga.gov	**Norm Cressman** Georgia DOT 935 E. Confederate Ave., SE Atlanta, GA 30316 404-635-8131 ncressman@dot.ga.gov
Idaho	**Laila Maqbool** Local Highway Technical Assistance Council (LHTAC) 3330 W. Grace St Boise, ID 83703 208-344-0565 lmaqbool@lhtac.org	

Illinois	**Aaron Weatherholt, Deputy Director** Illinois DOT, Division of Highways 2300 South Dirksen Pkwy., Room 215 Springfield, IL 62764 217-785-0888 aaron.weatherholt@Illinois.gov	**Priscilla Tobias** Illinois DOT, Safety Engineering 2300 South Dirksen Pkwy., Room 323 Springfield, IL 62764 217-782-3568 priscilla.tobias@illinois.gov
Illinois	**Riyad Wahab** Illinois DOT, Safety Engineering 2300 South Dirksen Pkwy., Room 323 Springfield, IL 62764 217-558-1793 riyad.wahab@illinois.gov	**Tim Sheehan** Illinois DOT, Safety Engineering 2300 South Dirksen Pkwy., Room 323 Springfield, IL 62764 217-782-8608 tim.sheehan@illinois.gov
Illinois	**Paul Lorton** Illinois DOT, Safety Engineering 2300 South Dirksen Pkwy., Room 323 Springfield, IL 62764 217-785-0720 paul.lorton@illinois.gov	**Kyle Armstrong** Illinois DOT, Operations 2300 S Dirksen Pkwy., Room 009 Springfield, IL 62764 217-782-7414 kyle.armstrong@illinois.gov
Illinois	**Irene Soria** Illinois DOT, Safety Engineering 2300 S Dirksen Pkwy., Room 323 Springfield, IL 62764 217-524-8041 irene.soria@ilinois.gov	**Filiberto Sotelo** Illinois DOT, Safety Engineering 2300 S. Dirksen Pkwy., Room 323 Springfield, IL 62764 217-557-2563 filiberto.sotelo@illinois.gov
Illinois	**Katherine Beckett** Illinois DOT, Safety Engineering 2300 South Dirksen Pkwy., Room 323 Springfield, IL 62764 217-524-9025 katherine.Beckett@Illinois.gov	
Illinois	**Kimberly Kolody** CH2M HILL 8735 W Higgins Road, Suite 400 Chicago, IL 60637 312-402-3792 kkolody@ch2m.com	
Illinois	**Lisa Heaven-Baum** Illinois DOT, District 1 201 West Center Court Schaumburg, IL 60013 847-705-4158 lisa.heaven-baum@illinois.gov	**Peter Stresino** Illinois DOT, District 1 201 W. Center Court Schaumburg, IL 60193 847-705-4135 peter.stresino@illinois.gov

Illinois	**Dan Long** Illinois DOT, District 2 819 Depot Avenue Dixon, IL 61021 815-284-5966 Dan.Long@illinois.gov	**Scott Kullerstrand** Illinois DOT, District 2 819 Depot Avenue Dixon, IL 61021 815-284-5468 scott.kullerstrand@illinois.gov
Illinois	**Thomas Schaefer** Illinois DOT, District 3 700 E. Norris Drive Ottawa, IL 61350 815-434-8446 thomas.schaefer@illinois.gov	**Dave Broviak** Illinois DOT, District 3 700 E Norris Drive Ottawa, IL 61350 815-434-8423 david.broviak@illinois.gov
Illinois	**Randall Laninga** Illinois DOT, District 4 401 Main Street Peoria, IL 61603 309-671-4477 Randall.Laninga@illinois.gov	**Sean Coyle** Illinois DOT, District 4 401 Main St. Peoria, IL 61602 309-671-4478 sean.coyle@illinois.gov
Illinois	**Kevin Trapp** Illinois DOT, District 5 5 Magnolia Manor Paris, IL 61944 217-466-7233 kevin.trapp@illinois.gov	
Illinois	**Marshall Metcalf** Illinois DOT, District 6 126 East Ash Street Springfield, IL 62704 217-785-5312 marshall.metcalf@illinois.gov	**Michael Irwin** Illinois DOT, District 6 126 East Ash Street Springfield, IL 62704 217-524-7765 michael.p.irwin@illinois.gov
Illinois	**Kahn Kellams** Illinois DOT, District 7 400 W. Wabash Street Effingham, IL 62401 217-342-8247 kahn.kellams@illinois.gov	
Illinois	**James Wessel** Illinois DOT, District 8 1102 Eastport Plaza Drive Collinsville, IL 62234 618-346-3273 james.wessel@illinois.gov	**Joseph Monroe** Illinois DOT, District 8 1102 Eastport Plaza Drive Collinsville, IL 62234 618-346-3252 joseph.monroe@illinois.gov

Illinois	**Doug Keirn** Illinois DOT, District 9 1508 W Grand Carterville, IL 62918 618-351-5285 douglas.keirn@illinois.gov	**Scott Stokes** Illinois DOT, District 9 P.O. Box 100 Carbondale, IL 62901 618-201-9378 scott.stokes@illinois.gov
Illinois **UIUC**	**Yanfeng Ouyang** University of Illinois, Urbana-Champaign 1209 Newmark Civil Engineering Lab, 205 N. Mathews Ave. Urbana IL 61801 217-333-9858 yfouyang@illinois.edu	**Leila Hajibabai** University of Illinois, Urbana-Champaign B-156 Newmark Civil Engineering Lab, 205 N. Mathews Ave. Urbana, IL 61801 217-819-0955 hajibab1@illinois.edu
Illinois **UIUC**	**Taesung Hwang** University of Illinois, Urbana-Champaign B-156 Newmark Civil Engineering Lab, 205 N. Mathews Ave. Urbana, IL 61801 217-417-8387 hwang7@illinois.edu	**Seyed Mohammad Nourbakhsh** University of Illinois, Urbana-Champaign B-156 Newmark Civil Engineering Lab, 205 N. Mathews Ave. Urbana, IL 61801 217-778-7607 nourbak1@illinois.edu
Iowa	**Tim Crouch** Iowa DOT, Office of Traffic and Safety 800 Lincoln Way Ames, IA 50010 515-239-1513 tim.crouch@dot.iowa.gov	**Willy Sorenson** Iowa DOT 800 Lincoln Way, North Annex Ames, IA 50010 515-239-1212 willy.sorenson@dot.iowa.gov
Kansas	**Steven Buckley** Kansas DOT 700 SW Harrison Street, 6th Floor Topeka, KS 66603 785-296-1148 Buckley@ksdot.org	**Kathleen Deitering** Kansas DOT 700 SW Harrison, 6th Floor Topeka, KS 66614 785-296-1141 deitering@ksdot.org
Kentucky	**Tracy Lovell** Kentucky Transportation Cabinet 200 Mero St. Frankfort, KY 40622 502-564-3020 tracy.lovell@ky.gov	

Louisiana	**Daniel Magri** Louisiana Department of Transportation and Development 1201 Capitol Access Road Baton Rouge, LA 70802 225-379-1871 Dan.Magri@la.gov	**Jody Colvin** Louisiana Department of Transportation and Development 1201 Capitol Access Road Baton Rouge, LA 70802 225-242-4635 jody.colvin@la.gov
Maine	**Bruce Ibarguen** Maine Department of Transportation 16 State House Station, Child Street Augusta, ME 04333 207-624-3624 bruce.ibarguen@maine.gov	**Duane Brunell** Maine Department of Transportation 16 State House Station Augusta, ME 4333 207-624-3278 duane.brunell@maine.gov
Maryland	**Eric Tabacek** Maryland State Highway Administration 7491 Connelley Dr. Hanover, MD 21076 410-787-5805 etabacek@sha.state.md.us	**Cedrick Ward** 7491 Connelly Dr. Hanover, MD 21076 cward@sha.state.md.us
Massachusetts	**Neil Boudreau** Massachusetts DOT 10 Park Plaza, Room 7210 Boston, MA 02116 857-368-9655 neil.boudreau@state.ma.us	**Bonnie Polin** Mass DOT - Highway Division 10 Park Plaza, Room 7120 Boston, MA 02460 857-368-9636 bonnie.polin@state.ma.us
Michigan	**Mark Bott** Michigan DOT 425 W. Ottawa, PO Box 30050 Lansing, MI 48909 517-335-2625 bottm@michigan.gov	**Tracie Leix** Michigan DOT 425 W Ottawa St., PO Box 30050 Lansing, MI 48909 517-373-8950 leixt@michigan.gov
Minnesota	**Derek Leuer** Minnesota DOT 1500 West County Road B2 Roseville, MN 55113 651-234-7372 derek.leuer@state.mn.us	**Sue Groth** Minnesota DOT 1500 West County Road B2 Roseville, MN 55113 651-234-7004 sue.groth@state.mn.us
Mississippi	**Daniel Helms** Mississippi DOT 2567 North West Street Jackson, MS 39216 601-359-1454 dhelms@mdot.ms.gov	**James Sullivan** Mississippi DOT 2567 North West Street Jackson, MS 39216 jssullivan@mdot.ms.gov

Missouri	**Eileen Rackers** Missouri DOT 1320 Creek Trail Drive, P. O. Box 270 Jefferson City, MO 65102 573-526-2803 eileen.rackers@modot.mo.gov	**Michael Curtit** Missouri DOT 1320 Creek Trail Drive Jefferson City, MO 65109 573-526-0121 michael.curtit@modot.mo.gov
Missouri	**Ashley Reinkemeyer** Missouri DOT 1320 Creek Trail Drive Jefferson City, MO 65109 573-751-3728 ashley.reinkemeyer@modot.mo.gov	
Montana	**Kraig McLeod** Montana DOT 2701 Prospect Avenue, PO Box 201001 Helena, MT 59620 406-444-6256 krmcleod@mt.gov	**Danielle Bolan** Montana DOT 2701 Prospect Avenue, PO Box 201001 Helena, MT 59620 406-444-7295 dbolan@mt.gov
Nebraska	**Dan Waddle** Nebraska Department of Roads 1500 Hwy 2, P.O. Box 94759 Lincoln, NE 68509 402-479-4594 dan.waddle@nebraska.gov	
Nevada	**Ken Mammen** Nevada DOT 1263 South Stewart Street Carson City, NV 89712 775-888-7459 kmammen@dot.state.nv.us	**Thomas Moore** Nevada DOT 1263 South Stewart Street Carson City, NV 89712 775-888-7566 tmoore@dot.state.nv.us
New Hampshire	**Tobey Reynolds** NH DOT P.O. Box 483 18 Smokey Bear Blvd. Concord, NH 03301 603-419-0391 treynolds@dot.state.nh.us	**Stuart Thompson** NH DOT P.O. Box 483 18 Smokey Bear Blvd. Concord, NH 03301 603-271-1407 gthompson@dot.state.nh.us

New Mexico	**Steve Eagan** New Mexico DOT Program Management Division, Traffic Technical Support Bureau, P.O. Box 1149 Santa Fe, NM 87504 505-475-3545 steve.eagan@state.nm.us	**Afshin Jian** New Mexico DOT 1120Cerrillos Road, Room 216B Santa Fe, NM 87504 505-827-5490 afshin.jian@state.nm.us
Ohio	**Michelle May** Ohio DOT 1980 W. Broad Street, 2nd Floor Columbus, OH 43223 614-644-8309 michelle.may@dot.state.oh.us	
Oklahoma	**Harold Smart** Oklahoma DOT 200 NE 21st Street Oklahoma City, OK 73105 405-521-2861 hsmart@odot.org	**David Glabas** Oklahoma DOT 200 NE 21st Street Oklahoma City, OK 73105 405-521-2861 dglabas@odot.org
Oregon	**Kevin Haas** Oregon DOT Traffic-Roadway Section, 4040 Fairview Industrial Drive SE Salem, OR 97302 503-986-3580 kevin.j.haas@odot.state.or.us	
Pennsylvania	**Christopher Speese** Penn DOT 400 North Street, 6th Floor Harrisburg, PA 17120 717-705-1437 chspeese@pa.gov	**Gary Modi** Penn DOT 400 North Street, 6th Floor Harrisburg, PA 17120 717-783-1190 gmodi@pa.gov
Rhode Island	**Steve Pristawa** Rhode Island DOT Traffic Engineering 2 Capitol Hill Providence, RI 02903 401-222-2694 spristw@dot.ri.gov	**Sean Raymond** Rhode Island DOT 2 Capitol Hill Providence, RI 02903 401-222-2694 sraymond@dot.ri.gov

South Dakota	**Jon Becker** South Dakota DOT 700 E. Broadway Pierre, SD 57501 605-773-5361 jon.becker@state.sd.us	**Nicole Frankl** South Dakota DOT 700 E. Broadway Ave Pierre, SD 57507 605-773-4421 nicole.frankl@state.sd.us
Texas	**Margaret (Meg) Moore** TX DOT 125 E. 11th Street Austin, TX 78701 512-416-3135 meg.moore@txdot.gov	**Brian Stanford** TX DOT 125 E. 11th Street Austin, TX 78701 512-416-3122 brian.stanford@txdot.gov
Virginia	**Stephen Read** Virginia DOT 1401 East Broad Street, Suite 207 Richmond, VA 23219 804-786-9094 stephen.read@vdot.virginia.gov	**Ray Khoury** Virginia DOT 1401 E. Broad street Richmond, VA 23219 804-786-1061 raymond.khoury@vdot.virginia.gov
Washington	**John Nisbet** WS DOT P.O. BOX 47344 310 Maple Park SE Olympia, WA 98508 360-705-7280 nisbetj@wsdot.wa.gov	**Mike Dornfeld** WS DOT P.O. BOX 47344 310 Maple Park SE Olympia, WA 98504 360-705-7288 dornfem@wsdot.wa.gov
Washington	**John Milton** WSDOT, Risk Management Office 310 Maple Park, P.O. BOX 47418 Olympia, WA 98504 360-705-6343 miltonj@wsdot.wa.gov	
Wisconsin	**Andrea Bill** University of Wisconsin- Madison 714 Ontario St. Madison, WI 53714 608-890-3425 bill@wisc.edu	**Travis Feltes** Wisconsin DOT 1089 Jerico Lane Sun Prairie, WI 53590 608-225-5230 travis.feltes@dot.wi.gov
Wisconsin	**Rebecca Szymkowski** Wisconsin DOT 4802 Sheboygan Ave, Room 501 Madison, WI 53707 608-266-9381 rebecca.szymkowski@dot.wi.gov	

Ontario (Canada)	**Geni Bahar** NAVIGATS Inc. 486 Cranbrooke Avenue Toronto Ontario, Canada M5M 1N7 416-932-9272 genibahar@navigats.com	
AASHTO	**Kelly Hardy** AASHTO 444 N. Capitol St., NW, Suite 249 Washington, DC 20001 202-624-5868 khardy@aashto.org	
ATSSA	**Laura Perrotta** American Traffic Safety Services Assn. 209 Pennsylvania Ave., SE Washington, DC 20003 202-454-5246 laura.perrotta@atssa.com	
FHWA Headquarters	**Mshadoni Smith** Federal Highway Administration 1200 NW Jersey Ave SE, Room E73-413 Washington, DC 20590 202-366-7105 mshadoni.smith@dot.gov	
FHWA Florida	**Felix Delgado** Federal Highway Administration 545 John Knox Road, Suite 200 Tallahassee, FL 32303 850-553-2229 felix.delgado@dot.gov	
FHWA Resource Center	**Grant Zammit** USDOT – FHWA 61 Forsyth Street, Suite 17126 Atlanta, GA 30303 404-562-3575 grant.zammit@dot.gov	
FHWA Illinois	**Dean Mentjes** FHWA 3250 Executive Park Drive Springfield, IL 62703 217-492-4631 dean.mentjes@dot.gov	**Alan Ho** FHWA 3250 Executive Park Drive Springfield, IL 62703 217-492-4622 alan.ho@dot.gov

FHWA Resource Center	**David Engstrom** FHWA 4749 Lincoln Mall Drive, Suite 600 Matteson, IL 60443 708-283-3545 david.engstrom@dot.gov	**Ken Wood** FHWA, Resource 4749 Lincoln Mall Drive Matteson, IL 60443 708-283-4340 ken.wood@dot.gov
FHWA Resource Center	**Keith Sinclair** FHWA: Resource Center 10 S. Howard Street, Suite 4000 Baltimore, MD 20101 410-962-3742 keith.sinclair@dot.gov	
FHWA Headquarters	**Shyuan-Ren (Clayton) Chen** Federal Highway Administration 6300 Georgetown Pike, Room T-303 McLean, VA 22101 202-493-3054 clayton.chen@dot.gov	

APPENDIX B PLANNING COMMITTEE MEMBERS

Name	Title	Affiliation
Kyle D Armstrong	Operations Design and Planning Engineer	Illinois DOT
Geni Bahar	State Safety Operations Engineer	NAVIGATS Inc.
Steven Buckley	Deputy Director, Division of Highways	Kansas DOT
Sean P Coyle	Assistant Traffic Engineer	Illinois DOT
Mike Curtit	Safety Design Engineer Unit Chief	Missouri DOT
Kelly Hardy	Chief Civil Engineer	AASHTO
Alan Ho	Highway Research Engineer	FHWA
Bruce Ibarguen	State Traffic Operations Engineer	Maine DOT
Kimberly Kolody	Transportation Safety Specialist	CH2M HILL
Randall K Laninga	Traffic Programs Engineer	Illinois DOT
Yanfeng Ouyang	Associate Professor	University of Illinois
Joseph Santos	Traffic Safety Engineer	Florida DOT
Shyam 'Sam' Sharma	Program Manager for Engineering	AASHTO
Daniel J Waddle	State Traffic Engineer	Nebraska Department of Roads
Aaron A Weatherholt	CE III - Safety Engineer	Illinois DOT
Mark Wilson	State Traffic Engineer	Florida DOT

APPENDIX C SPEAKER BIOGRAPHIES

Illinois Safety Engineers-Traffic Engineers Peer Exchange Planning Committee:

Aaron Weatherholt, P.E., Illinois Department of Transportation - Deputy Director, Division of Highways

Aaron has worked for IDOT in various construction, design, planning, traffic engineering, and Operations capacities since 1984. He was the District 6 Traffic Engineer for 12 years before becoming the State Traffic Engineer in 2005. In 2008 he was promoted to the position of State Operations Engineer which includes Maintenance Operations, Traffic Engineering & Operations, Transportation Infrastructure Security, and Day Labor Construction activities. In 2011 Aaron was promoted to Deputy Director for the Division of Highways. He is responsible for policy development and program development for highway operations, land acquisition, local agency roads and streets, and project design and environmental studies. Aaron represents the Illinois Department of Transportation as a member of the AASHTO Subcommittee on Traffic Engineering, Subcommittee on Maintenance, and Subcommittee on Systems Operations and Management. He has served as a technical committee member of the National Committee on Uniform Traffic Control Devices. He is a member of the Illinois Terrorism Task Force (ITTF) and Chair of the ITTF – Transportation Committee. Aaron has a Bachelor of Science in Civil Engineering from the University of Missouri at Rolla. He is a registered professional engineer in Illinois and a graduate of the inaugural class of the Operations Academy Senior Management Program held at the University of Maryland.

Priscilla Tobias, State Safety Engineer, Illinois Department of Transportation

Priscilla Tobias is the State Safety Engineer for the Illinois Department of Transportation. She is a graduate of Virginia Tech and a licensed professional engineer for the state of Illinois. She has been with IDOT for over 20 years and has worked both in the district and central office. She has served as the Illinois State Safety Engineer and Bureau Chief of Safety Engineering since 2004. Priscilla is responsible for Illinois' SHSP, HSIP, SRTS, work zone safety, RSAs, roadside hardware, and for establishing programs and policies focused on improving the safety performance of Illinois roadways both at the state and local level. She works closely with multi-discipline safety stakeholders to provide an integrated approach to safety.

Kyle Armstrong, Illinois Department of Transportation

Kyle Armstrong is a graduate of the University of Illinois where he received a Bachelor's degree in civil engineering. He has worked at the Illinois Dept of Transportation for 13 years mostly for the District 6 office in Springfield as traffic signal engineer and traffic operations engineer. He is currently the Engineering and Standards Unit Chief for IDOT's Central Bureau of Operations where some of his duties include developing the Illinois Supplement to the MUTCD and policies for highway signing and pavement markings. He is a licensed Professional Engineer in the State of Illinois and is a certified Professional Traffic Operations Engineer through ITE.

Randall K. Laninga, Illinois Department of Transportation
Randy Laninga is a graduate of the University of Michigan where he received a Bachelors and a Masters degree in Civil Engineering. He has worked for the Illinois Department of Transportation in District Four, Peoria, for 31 years. Five of those years he was the Traffic Signal Engineer and the last 20 he has been the Design and Planning Engineer for Traffic. His position includes being the Intelligent Transportation Systems (ITS) Coordinator and the Safety Committee Chairman for the District.

Norman R. Stoner, P.E., Division Administrator - FHWA, Illinois Division
Norm Stoner has served as the Division Administrator in Illinois since July 2001. Norm joined the Federal Highway Administration (FHWA) in 1969. Before moving to Springfield, he served in a variety of positions in FHWA's headquarters, the former regional office in Homewood, Illinois, and the Michigan and Ohio Divisions. A native of Ohio, Norm Stoner received his Bachelor of Science in Civil Engineering from Ohio University and is a registered Professional Engineer in the State of Ohio.

Ken Wood, Operations Technical Service Team, FHWA Resource Center
Ken Wood is a Traffic Operations Engineer with the Operations Technical Service Team in the Federal Highway Administration's (FHWA) Resource Center. He is a member of the FHWA's Manual on Uniform Traffic Control Devices team and responsible for Part 6 of the manual. He also is involved in the Federal Highway Administration's work zone programs dealing with implementing the Work Zone Safety and Mobility rules. Ken previously spent 30 years with the Illinois Department of Transportation working in the various aspects of traffic engineering, eventually holding the position of the State Traffic Operations Engineer.

Alan Ho, FHWA Illinois Division
Alan Ho is the Mobility & Safety Team Leader/Safety Engineer for the FHWA Illinois Division. Prior to this he was the Safety Engineer in the New Mexico Division. Some of the areas Alan has worked on include: RSAs and training, Pedestrian safety, SHSP development and implementation, ADA, SRTS, data, Work Zone Safety, MUTCD compliance, Incident Management, and Wrong Way Driving.

Dean Mentjes, FHWA Illinois Division
Dean Mentjes is the Transportation Operations Engineer in the FHWA Illinois Division, working in the areas of Operations, Work Zone Safety, MUTCD, and Freight Programs. In his 21 years with FHWA, he has worked primarily in the Oklahoma and Illinois Divisions, including assignments in the areas of ITS, Quality Programs, Pavement & Materials Engineering, and Transportation Engineering.

Shyuan-Ren (Clayton) Chen, FHWA – Turner-Fairbank Highway Research Center
Shyuan-Ren (Clayton) Chen - Clayton currently serves in the Office of Safety Research and Development at the FHWA's Turner-Fairbank Highway Research Center. In this capacity he manages FHWA's Geometric Design Laboratory which develops / implements the Interactive Highway Safety Design Model (IHSDM) and provides technical support for AASHTO's Highway Safety Manual.

Mshadoni Smith, FHWA – Office of Safety

Mshadoni Smith has over ten years experience in Transportation Civil Engineering. Her career began in consulting at Hubbell Roth and Clarke, Inc. where she designed storm water systems and managed construction projects for local jurisdictions. She began work for the Federal Highway Administration (FHWA) in the Office of Operations in 1999 after receiving her Master's degree from Michigan State University. She administered Intelligent Transportation Systems program areas within the states of California, Virginia and Georgia before separating from the federal government in 2006 to pursue a doctoral degree full time. Dr Smith graduated from the Georgia Institute of Technology in 2010 and conducted a one year post-doctoral fellow to continue research of customer satisfaction performance measure integration in transportation decision making. She has been a member of the Data and Analysis Team for the FHWA's Office of Safety since 2011 focusing on supporting data-driven decision making specifically utilizing scientific quantitative safety methodologies like the Highway Safety Manual (HSM) .

Geni Bahar, P.E., President, NAVIGATS Inc.

Ms. Bahar, P.E., President of NAVIGATS Inc., (genibahar@navigats.com) is a civil engineer with 33 years of professional experience as a researcher and a practitioner. Ms. Bahar has been involved with all national safety initiatives in the past decade and beyond. She provided leadership as a Principal Investigator, or a project manager, as well as a technical expert contributing to several federal, state, local and project teams. Ms. Bahar is Emeritus member of ITE Transportation Safety Executive Council; and an active member of the TRB Committee for Transportation Safety Management, TRB Safety Workforce Development Task Force, and TRB Highway Safety Performance Committee, and several related subcommittees.

Neil E. Boudreau, Massachusetts Department of Transportation

Neil Boudreau is the State Traffic Engineer for the Massachusetts Department of Transportation, Highway Division and has been with Mass DOT since 1995 serving in many roles within the Traffic Operations and Safety Management groups. In his current position, Neil serves on the AASHTO Sub-committees on Traffic Engineering and Safety Management, as well as being a member of the National Committee on Uniform Traffic Control Devices. In addition, Neil has been a member of Institute of Transportation Engineers (ITE) for nineteen years and is a member of the American Traffic Safety Services Association (ATSSA). Neil serves on the ATSSA Highway Safety Practitioner Working Group with a focus on continually improving safety for road workers and motorists alike.

Duane Brunell, P.E., Maine Department of Transportation

Duane is a registered professional engineer with the Maine Department of Transportation (Maine DOT), working as the Safety Performance Analysis Manager in the Safety Office, administering Federal Safety Fund dollars for highway improvements. He is involved on a wide variety of tasks including coordinating Maine's multi-agency Strategic Highway Safety Plan; and chairs Maine's multi-agency Large Animal Crash Group. He conducts crash analysis activities and is on Maine's Traffic Records Coordinating Committee's steering committee. He also has served as chair of the Maine Transportation Safety Coalition and is on the Data Committee that publishes ***The Status of Transportation Safety in Maine*** and its annual Crash Results supplements.

Steven Buckley, Kansas Depart of Transportation
Steven has been with the Kansas Department of Transportation since 1990, after graduating from the University of Kansas with a degree in Civil Engineering. Nearly all of that time has been in Traffic Engineering, becoming a jack of all trades and master of none, including safety infrastructure projects and programs, traffic signal design, safety studies, access management, permanent signing and work zone traffic control. In October 2006 he accepted the position of State Highway Safety Engineer, with the responsibility of developing and implementing Kansas' Strategic Highway Safety Plan (SHSP). Just recently the state's Governor's Highway Safety Office was added to his staff in an effort to better align the Highway Safety Plan (behavioral and enforcement) with the SHSP.

Mike Curtit, PE, Missouri Department of Transportation
Mike Curtit is the Traffic Liaison Engineer for the Missouri Department of Transportation and is currently responsible for statewide policy related to traffic safety, highway signing, and pavement marking. He has worked 26 years for the Missouri Department of Transportation in both the Central Office and the Central District in Jefferson City. He has held a variety of positions in both traffic engineering and safety engineering at MoDOT. He is a member of AASHTO's Subcommittee on Safety Management and serves as the Vice Chair of its Task Group for Technical Publications and participates on several NCHRP projects related to the Highway Safety Manual.

Mike Dornfeld, Traffic Operations Division – Washington State DOT
Mike Dornfeld is the program Development and performance manager for the Traffic operations Division at the Washington State Department of Transportation. He is responsible for a group that does traffic control signing policy, outdoor advertising control, traffic office performance measures and budget as well as represents traffic safety on WSDOT's safety team. Mike leads the department's Highway Safety Issues Group. This group, made up of highway safety technical experts, is tasked with researching highway safety issues and recommending policies and procedures to department executives

David B Engstrom, Safety and Design Team, Matteson, IL
Dave is a safety engineer by trade and preference. He has a strong passion for improving safety for all users of the transportation system. His career is quite varied, but traffic engineering has always been a major driver throughout his entire career. He graduated from the University of Minnesota with a Bachelors of Civil Engineering with distinction in 1973 and has been a registered Civil Engineer since 1977. He worked as a traffic engineer/civil engineer for the first few years of his career as a consultant. In 1977 he began his career as an engineer for the State of Minnesota. He officially retired from the State in January of 2011 after 34 years of service. His positions varied from Maintenance, Pre-Design, Access Management to Traffic Engineering. He also spent about 2 years as a liaison to the Metropolitan Council (the Twin Cities MPO) working on the implementation of ISTEA. Over the last 12 years with Mn/DOT, his emphasis has been safety. First as the Safety Engineer for the Metro District and then as the State's Traffic Safety Engineer. From a safety perspective, he has considerable expertise in planning, project solicitation and evaluation, crash analysis, countermeasure selection, and performance measures. He is most proud of his role in the construction of Minnesota's first high-speed roundabout and the implementation of the low cost systemic safety improvements throughout the state. He was a member of the executive committee for Minnesota's Toward Zero Death program and was awarded the Star Award for Engineering in 2009 for his achievements in reducing fatal and serious injury crashes in the state.

Kevin Haas, Oregon Department of Transportation
Kevin Haas is the Traffic Investigations Engineer for Oregon DOT working out of the headquarters office in Salem, Oregon. Kevin has been with Oregon DOT for 15 years and prior to that worked for both the Washington State DOT and Pierce County in Seattle and Tacoma, Washington respectively. Kevin is a graduate of the University of Washington in Seattle and is surrounded by all women at home with his wife of 19 years and 6 daughters ranging in age from 15 all the way down to 2.

Lisa Heaven-Baum, Illinois Department of Transportation
Traffic Programs Section Chief within the Bureau of Traffic Operations for the 6-county northeastern IL region including the Chicago Metro area. Responsibilities include oversight of Traffic Studies, Traffic Design and Traffic Signal Maintenance & Operations.

Bruce Ibarguen, Maine Department of Transportation
Bruce Ibarguen is State Traffic Engineer for the Maine Department of Transportation. He is a licensed professional engineer in Maine, with a BS degree in Civil Engineering from the University of Maine. He is a career employee for the state with 43 years of experience, all in the area of traffic and safety engineering. He serves on AASHTO's Subcommittee on Traffic Engineering and is the Signing and Markings Technical Team chair for that committee. He serves on AASHTO's Standing Committee on Highway Traffic Safety and is a member of AASHTO's *Highway Safety Manual (HSM)* Task Force. He served as a member of the Strategic Highway Research Program 2 (SHRP2) Safety committee. Mr. Ibarguen has been a member of the National Committee on Uniform Traffic Control Devices (NCUTCD) since 1993, and is Chairman of the Regulatory and Warning Signs Technical Committee (RWSTC). He is an AASHTO delegate to the NCUTCD Council on the *Manual on Uniform Traffic Control Devices*. Both positions he has held for 14 years.

Kim Kolody Silverman, PE
Ms. Kolody is a professional engineer in CH2M HILL's Chicago office with over 14 years of experience in highway safety, transportation planning, preliminary design, and operations. She has specialized experience on safety management, safety analysis, network screening methodologies, countermeasure selection, strategic safety program and policy development, development of safety implementation programs at the state and local level, including Highway Safety Manual analysis approaches. Ms. Kolody has worked on safety projects for the Illinois Department of Transportation, local municipalities, the National Cooperative Research Council and others. Ms. Kolody is active on Transportation Research Board (TRB) Safety Committees, a leader in the Institute of Transportation Engineers (ITE) Illinois Section and ITE Midwest District Section, and an Eno Fellow.

Derek Leuer, PE, Minnesota Department of Transportation
Derek Leuer, PE, is the Assistant State Traffic Safety Engineer for MN/DOT. He graduated from North Dakota State University with a degree in Civil Engineering. He is currently pursuing a Master's degree at the University of Minnesota. While in his current role, Derek has over seen the development of the County Roadway Safety Plans, a plan to develop a coordinated roadway safety plan for all 87 counties in Minnesota. He is also currently charged with developing the Highway Safety Manual for use in the department, and throughout the state. Derek has 6 years of experience in both the private and public sector. While at MN/DOT he has also worked in the Geometrics Design Support Unit, and Metro Water Resources.

John Milton, PH.D., P.E., Washington State Department of Transportation
John Milton, PH.D., P.E. currently serves as the Director of Enterprise Risk and Safety Management for the Washington Department of Transportation. He is a licensed engineer with over 23 years of experience in transportation and traffic engineering. He has held a number of engineering positions in WSDOT's design, traffic and planning sections. John holds a B.S. in Civil Engineering and a Masters in Engineering Management from St. Martin's College; he also holds a M.S. and Ph.D. in Civil Engineering from the University of Washington. His research has focused on econometric and statistical modeling of the frequency and severity of collisions. John has served on a number of National Academy of Engineering research panels with an emphasis on highway safety and data analysis. He is on the Statistical Methods Committee (ABJ80) and he is the Chair of the TRBs Highway Safety Performance Committee (ANB25). John is also active with AASHTO and serves on the Safety Management Subcommittee, Task Force for the Highway Safety Manual, and is the Chair of the Performance Measurement and Data Task Group.

Yanfeng Ouyang, University of Illinois at Urbana-Champaign
Yanfeng Ouyang is an associate professor and Paul F. Kent Endowed Faculty Scholar in the Civil and Environmental Engineering Department at the University of Illinois at Urbana-Champaign. He has served as the principal investigator or co-principal investigator of several safety projects for the Illinois Department of Transportation, such as the development of safety performance functions for Illinois roadways. His research aims at developing mathematical and statistical models to improve sustainability, safety, efficiency, and reliability of transportation systems. He is now on the editorial advisory board of Transportation Research Part B and the ASCE Journal of Infrastructure Systems. He is also an incoming associate editor of the international journal Transportmetrica B: Transport Dynamics. He possesses an active membership and holds several leadership roles within a number of professional organizations, including the Transportation Research Board of the National Academies and the Institute of Operations Research and Management Sciences. He received the Faculty Early Career Development (CAREER) Award from the National Science Foundation in 2008, the Xerox Faculty Research Award from the University of Illinois in 2010, and the Gordon F. Newell Award from the University of California at Berkeley in 2005. Ouyang holds a bachelor's degree in civil engineering from Tsinghua University, China in 2000, a master's degree in civil engineering from the University of Washington in 2001, and another master's degree in industrial engineering and operations research from the University of California at Berkeley in 2005. He received his Ph.D. in civil engineering from the University of California at Berkeley in 2005.

Stephen W. Read, P.E. - Virginia Department of Transportation
Stephen currently serves as the Highway Safety Improvement Planning Manager in the Traffic Engineering Division of the Virginia Department of Transportation. He has 25 years of traffic engineering and multi-modal transportation planning projects, research and management. He has done project consulting and research work in London, UK; Toronto and Ottawa, ON; and Alexandria, VA. Within VDOT he has experience in northern VA conducting and managing multi-modal corridor environmental, planning, operational, safety studies and research; design project travel forecasting and traffic operations and safety assessments; regional long-range plan development and documentation. Stephen presently leads the highway, bicycle and pedestrian, and rail-grade crossing crash data analysis and safety improvement planning for VDOT. He earned his B. Sc. Civil Engineering from the University of New Brunswick, Canada and his M.A. Sc. Civil Eng. from the University of Waterloo, Canada. He is a licensed PE in both Virginia and Arizona

Joe Santos, Florida Department of Transportation
Joe Santos is presently the State Safety Engineer in the State Safety Office for the Florida Department of Transportation. In his role as the State Safety Engineer Joe works with 7 District Safety Engineers to implement the Highway Safety Improvement Program. Joe has been with FDOT for 20 years and has worked in the areas of Construction, Systems Planning, and Project Management. Joe is also a 27 year veteran of the United States Navy Seabees Civil Engineer Corp. Joe lives in Tallahassee with his wife Becky and three children Olivia, Joshua, and Joe. Joe is a registered Professional Engineer in Florida and received his BSCE from Florida State University.

Dan Waddle, Nebraska Department of Roads
Dan Waddle is the State Traffic Engineer for the Nebraska Department of Roads. Dan graduated from the University of Nebraska in 1982 with a Bachelor of Science degree in Civil Engineering and is as registered professional engineer in the state of Nebraska. Dan started his career with the Nebraska Department of Roads after graduation in the Traffic Engineering Division and in his 30 years with the Department has held many different positions within the Traffic Engineering Division. He is currently the State Traffic Engineer – Division Manager.

Mark C. Wilson, PE, Florida Department of Transportation
Mark is currently the State Traffic Operations Engineer for the Florida Department of Transportation and manages the Traffic Engineering and Operations Office. His office includes the ITS, Incident Management, Equipment Certification, Commercial Motor Vehicles Operations, Traffic Studies and Highway Signing areas. He is a registered Professional Engineer and an Auburn University graduate with a BS in Civil Engineering. Mark has worked for the Florida Department of Transportation for the past 29 years in the areas of Traffic Engineering, Roadway Design, Project Management, and Professional Services.

Grant Zammit, Operations Technical Service Team Member
Grant has been working in the field of engineering since 1991. He graduated from Oregon State University in 1991 with his Bachelors in Civil Engineering. His expertise is in the Application of Traffic Analysis Tools, Interchange Justification and Modifications, Performance Measures and Demand and Congestion Management. He is a member of the Institute of Transportation Engineers and he serves in the U.S. DOT Operations Council as both a Member and a subcommittee chairman. He obtained his Master of Science in Civil Engineering from the Georgia Institute of Technology in 1996. His career has taken him from the position of Transportation Management Specialist with the FHWA Resource Center to the Senior Transportation Engineers role at the FHWA's Florida Division where he has also served as ITS Specialist. He was honored as the ITS Florida Professional of the Year in 1999. In addition, he has served as the Traffic and Planning Engineer, Kentucky Division of FHWA.

APPENDIX D PROGRAM AGENDA AND BREAKOUT GROUPS

D.1. PROGRAM AGENDA

Day 1

7:30 am	**Registration**
8:00 am	**Welcome and Introductions** Aaron Weatherholt, Deputy Director, Division of Highways, Illinois DOT Priscilla Tobias, State Safety Engineer, Illinois DOT
8:15 am	**Setting the Goal and Vision for the Workshop** Aaron Weatherholt, Deputy Director, Division of Highways , Illinois DOT Priscilla Tobias, State Safety Engineer, Illinois DOT
8:45 am	**History – Mobility and Safety** Facilitator: Aaron Weatherholt, Deputy Director, Division of Highways, Illinois DOT Speaker: Norman Stoner, FHWA Division Administrator, Illinois
9:00 am	**Setting the National Scene** Facilitator: Priscilla Tobias, State Safety Engineer, Illinois DOT Speakers: John Milton, Director, Enterprise Risk Management, Washington State DOT Bruce Ibarguen, State Traffic Engineer, Maine DOT
10:00 am	**Break**
10:15 am	**Breakout Groups: Opportunities to Link Safety Engineering and Traffic Engineering Efforts** Four pre-assigned groups will meet in the designated rooms.
11:15 am	**Report Back** Facilitator: Geni Bahar, President, NAVIGATS Inc.
12:00 pm	**Lunch (On Your Own)**

1:15 pm	**State Agencies Organizational Structures and the Inter-Relationships Between Traffic and Safety Engineering Procedures** Facilitator: Michael Curtit, Traffic Liaison Engineer, Missouri DOT Speakers: Dan Waddle, State Traffic Engineer, Nebraska DOT Joe Santos, Transportation Safety Engineer, Florida DOT Mark Wilson, State Traffic Operations Engineer, Florida DOT Joe Monroe, District 8 Operations Engineer, Illinois DOT Lisa Heaven-Baum, District 1 Traffic Programs Engineer, Illinois DOT
2:15 pm	**Breakout Groups: Organizational Structures** Four pre-assigned groups will meet in the designated rooms
3:15 pm	**Break**
3:45 pm	**Report Back** Facilitator: Kim Kolody, Highway and Traffic Safety Engineer, CH2MHill
5:00 pm	**Adjourn**

Day 2

8:00 am	**Welcome** Facilitator: Aaron Weatherholt, Deputy Director, Division of Highways, Illinois DOT Topics: 1. Overview of Highlights of DAY 1 Yanfeng Ouyang, Associate Professor, University of Illinois 2. Setting the Vision for 2nd Day Peer Exchange Priscilla Tobias, State Safety Engineer, Illinois DOT
8:30 am	**Intersections: Managing Performance--Operations and Safety (Part 1)** Facilitator: Kyle Armstrong, Engineering & Standards Unit Chief, Illinois DOT Topics: 1. Protected vs. Permissive Left-Turn Phase Speaker: Kevin J. Haas, Traffic Investigations Engineer, Oregon DOT 2. Flashing Yellow Arrow Speaker: Randall Laninga, Traffic Engineer, Illinois DOT, District 4
10:00 am	**Break**
10:30 am	**Intersections: Managing Performance--Operations and Safety (Part 2)** Facilitator: Neil Boudreau, State Traffic Engineer, Massachusetts DOT Topics: 1. Adaptive Signal Control Speaker: Kyle Armstrong, Engineering & Standards Unit Chief, Illinois DOT 2. Pedestrian Safety Vs. Capacity Speaker: Mark Wilson, State Traffic Operations Engineer, Florida DOT
12:00 pm	**Lunch (On Your Own)**
1:00 pm	**Systematic Safety and Operations (Part 1)** Facilitator: Mike Dornfeld, Program Development and Performance Manager, Washington DOT Topics: 1. Wrong Way Drivers: Signing and Pavement Marking Speaker: Duane Brunell, Safety Performance Analysis Manager, Maine DOT 2. Curves: Identification and Delineation Speaker: Derek Leuer, Assistant State Traffic Safety Engineer, Minnesota DOT
2:30pm	**Break**
2:45 pm	**Systematic Safety and Operations (Part 2)** Facilitator: Stephen Read, Highway Safety Programs Planning, Virginia DOT

	Topics: 1. Rural Intersections: Signing and Pavement Marking Speaker: Michael Curtit, Traffic Liaison Engineer, Missouri DOT **2.** Systematic Improvements – Open Facilitated Discussion
4 pm	**Lessons Learned** Facilitator: Priscilla Tobias, State Safety Engineer, Illinois DOT Topics: 1. How policies and procedures can impact the collaborative and explicit consideration of traffic and safety aspects – Geni Bahar, President, NAVIGATS Inc. 2. Organization Structures and their impacts in effective integration of our disciplines - Kim Kolody, Highway and Traffic Safety Engineer, CH2MHill Managing Performance and Systemic Implementations – Operations and Safety - Yanfeng Ouyang, Associate Professor, University of Illinois
4:30 pm	**Concluding Remarks – Next Steps** Facilitator: Priscilla Tobias
4:45 pm	**Adjourn**

D.2. BREAKOUT GROUPS

Session 1 Group 1		
Florida	**Mark Wilson** Florida DOT	**Joe Santos** Florida DOT
Florida	**Felix Delgado** Federal Highway Administration	
Massachusetts	**Neil Boudreau** Massachusetts DOT	**Bonnie Polin** MassDOT - Highway Division
Missouri	**Eileen Rackers** Missouri DOT	**Michael Curtit** Missouri DOT
Missouri	**Ashley Reinkemeyer** Missouri DOT	
Nevada	**Ken Mammen** Nevada DOT	**Thomas Moore** Nevada DOT
New Mexico	**Steve Eagan** New Mexico DOT	**Afshin Jian** New Mexico DOT
Oklahoma	**Harold Smart** Oklahoma DOT	**David Glabas** Oklahoma DOT
South Dakota	**Jon Becker** South Dakota DOT	**Nicole Frankl** South Dakota DOT
Ohio	**Michelle May** Ohio DOT	

AASHTO	**Kelly Hardy**	
	AASHTO	
Illinois District 8	**James Wessel**	**Joseph Monroe**
	Illinois DOT	Illinois DOT
Illinois District 5	**Kevin Trapp**	
	Illinois DOT	
Illinois	**Paul Lorton**	**Filiberto Sotelo**
	Illinois DOT	Illinois DOT
	Aaron Weatherholt	
	Illinois DOT	

Session 1 Group 2		
Arizona	**Scott Orrahood** Arizona DOT	**Mark Poppe** Arizona DOT
Georgia	**Michael Turpeau Jr.** Georgia DOT	**Norm Cressman** Georgia DOT
Kentucky	**Tracy Lovell** Kentucky Transportation Cabinet	
Maryland	**Cedrick Ward** Maryland State Highway Administration	**Eric Tabacek** Maryland State Highway Administration
Michigan	**Mark Bott** Michigan DOT	**Tracie Leix** Michigan DOT
Oregon	**Kevin Haas** Oregon DOT	
Pennsylvania	**Christopher Speese** PennDOT	**Gary Modi** PennDOT
Rhode Island	**Steve Pristawa** Rhode Island DOT	**Sean Raymond** Rhode Island DOT
ATSSA	**Laura Perrotta** American Traffic Safety Services Association	
Illinois UIUC	**Yanfeng Ouyang** UIUC	

Illinois	**Priscilla Tobias**	**Katherine Beckett**
	Illinois DOT	Illinois DOT
Illinois District 2	**Dan Long**	**Scott Kullerstrand**
	Illinois DOT	Illinois DOT
Illinois District 9	**Doug Keirn**	**Scott Stokes**
	Illinois DOT	Illinois DOT

Session 1 Group 3		
Alabama	**Timothy Barnett** Alabama DOT	**Stacey Glass** Alabama DOT
Idaho	**Laila Maqbool** Local Highway Technical Assistance Council	
Maine	**Bruce Ibarguen** Maine DOT	**Duane Brunell** Maine Department of Transportation
Minnesota	**Derek Leuer** Minnesota DOT	**Sue Groth** Minnesota DOT
Montana	**Kraig McLeod** Montana DOT	**Danielle Bolan** Montana DOT
Nebraska	**Dan Waddle** Nebraska Department of Roads	
Louisiana	**Jody Colvin** Louisiana DOTD	**Daniel Magri** Louisiana DOTD
New Hampshire	**Tobey Reynolds** NH DOT	**Stuart Thompson** NH DOT
Illinois District 3	**Thomas Schaefer** Illinois DOT	**Dave Broviak** Illinois DOT
Illinois District 4	**Randall Laninga** Illinois DOT	**Sean Coyle** Illinois DOT

Illinois District 7	**Kahn Kellams**	
	Illinois DOT	
Illinois	**Kyle Armstrong**	
	Illinois DOT	
Illinois	**Riyad Wahab**	**Kimberly Kolody**
	Illinois DOT	CH2M HILL

Session 1 Group 4		
Iowa	**Tim Crouch** Iowa DOT	**Willy Sorenson** Iowa DOT
Kansas	**Steven Buckley** Kansas DOT	**Kathleen Deitering** Kansas DOT
Mississippi	**Daniel Helms** Mississippi DOT	**James Sullivan** Mississippi DOT
Connecticut	**Joe Ouellette** Connecticut DOT	
Texas	**Margaret (Meg) Moore** TxDOT	**Brian Stanford** TxDOT
Virginia	**Stephen Read** Virginia DOT	**Ray Khoury** Virginia DOT
Washington	**John Nisbet** WSDOT	**Mike Dornfeld** WSDOT
Washington	**John Milton** WSDOT	
Wisconsin	**Andrea Bill** University of Wisconsin- Madison	**Travis Feltes** Wisconsin DOT
Wisconsin	**Rebecca Szymkowski** Wisconsin DOT	

Illinois	**Tim Sheehan**	**Irene Soria**
	Illinois DOT	Illinois DOT
Illinois District 1	**Lisa Heaven-Baum**	
	Illinois DOT	
Illinois District 6	**Marshall Metcalf**	**Michael Irwin**
	Illinois DOT	Illinois DOT
Ontario (Canada)	**Geni Bahar**	
	NAVIGATS Inc.	

Session 2 Group 1		
Florida	**Mark Wilson** Florida DOT	**Joe Santos** Florida DOT
Florida	**Felix Delgado** Federal Highway Administration	
Georgia	**Michael Turpeau Jr.** Georgia DOT	**Norm Cressman** Georgia DOT
Ohio	**Michelle May** Ohio DOT	
Kansas	**Steven Buckley** Kansas DOT	**Kathleen Deitering** Kansas DOT
Virginia	**Stephen Read** Virginia DOT	**Ray Khoury** Virginia DOT
Arizona	**Scott Orrahood** Arizona DOT	**Mark Poppe** Arizona DOT
Maine	**Bruce Ibarguen** Maine DOT	**Duane Brunell** Maine Department of Transportation
New Hampshire	**Tobey Reynolds** NH DOT	**Stuart Thompson** NH DOT
Illinois	Aaron Weatherholt Illinois DOT	

AASHTO	**Kelly Hardy**	
	AASHTO	
Illinois District 8	**James Wessel**	**Joseph Monroe**
	Illinois DOT	Illinois DOT
Illinois District 5	**Kevin Trapp**	
	Illinois DOT	
Illinois	**Paul Lorton**	**Katherine Beckett**
	Illinois DOT	Illinois DOT

Session 2 Group 2		
Alabama	**Timothy Barnett** Alabama DOT	**Stacey Glass** Alabama DOT
Texas	**Margaret (Meg) Moore** TxDOT	**Brian Stanford** TxDOT
Nevada	**Ken Mammen** Nevada DOT	**Thomas Moore** Nevada DOT
Rhode Island	**Steve Pristawa** Rhode Island DOT	**Sean Raymond** Rhode Island DOT
Massachusetts	**Neil Boudreau** Massachusetts DOT	**Bonnie Polin** MassDOT - Highway Division
Pennsylvania	**Christopher Speese** PennDOT	**Gary Modi** PennDOT
New Mexico	**Steve Eagan** New Mexico DOT	**Afshin Jian** New Mexico DOT
Washington	**John Nisbet** WSDOT	**Mike Dornfeld** WSDOT
Washington	**John Milton** WSDOT	
ATSSA	**Laura Perrotta** American Traffic Safety Services Association	

Illinois UIUC	**Yanfeng Ouyang**	
	UIUC	
Illinois	**Priscilla Tobias**	**Filiberto Sotelo**
	Illinois DOT	Illinois DOT
Illinois District 2	**Dan Long**	**Scott Kullerstrand**
	Illinois DOT	Illinois DOT
Illinois District 9	**Doug Keirn**	**Scott Stokes**
	Illinois DOT	Illinois DOT

Session 2 Group 3		
Connecticut	**Joe Ouellette** Connecticut DOT	
Oregon	**Kevin Haas** Oregon DOT	
Iowa	**Tim Crouch** Iowa DOT	**Willy Sorenson** Iowa DOT
Maryland	**Cedrick Ward** Maryland State Hwy Administration	**Eric Tabacek** Maryland State Hwy Administration
Missouri	**Eileen Rackers** Missouri DOT	**Michael Curtit** Missouri DOT
Missouri	**Ashley Reinkemeyer** Missouri DOT	
Louisiana	**Jody Colvin** Louisiana DOTD	**Daniel Magri** Louisiana DOTD
Montana	**Kraig McLeod** Montana DOT	**Danielle Bolan** Montana DOT
Oklahoma	**Harold Smart** Oklahoma DOT	**David Glabas** Oklahoma DOT
Ontario (Canada)	**Geni Bahar** NAVIGATS Inc.	

Illinois District 3	**Thomas Schaefer** Illinois DOT	**Dave Broviak** Illinois DOT
Illinois District 4	**Randall Laninga** Illinois DOT	**Sean Coyle** Illinois DOT
Illinois District 7	**Kahn Kellams** Illinois DOT	
Illinois	**Kyle Armstrong** Illinois DOT	**Irene Soria** Illinois DOT
Illinois	**Riyad Wahab** Illinois DOT	

Session 2 Group 4		
Mississippi	**Daniel Helms** Mississippi DOT	**James Sullivan** Mississippi DOT
Nebraska	**Dan Waddle** Nebraska Department of Roads	
Michigan	**Mark Bott** Michigan DOT	**Tracie Leix** Michigan DOT
Wisconsin	**Andrea Bill** University of Wisconsin- Madison	**Travis Feltes** Wisconsin DOT
Wisconsin	**Rebecca Szymkowski** Wisconsin DOT	

South Dakota	**Jon Becker** South Dakota DOT	**Nicole Frankl** South Dakota DOT
Idaho	**Laila Maqbool** Local Highway Technical Assistance Council	
Kentucky	**Tracy Lovell** Kentucky Transportation Cabinet	
Minnesota	**Derek Leuer** Minnesota DOT	**Sue Groth** Minnesota DOT
Illinois	**Kimberly Kolody** CH2M HILL	**Tim Sheehan** Illinois DOT
Illinois District 1	**Lisa Heaven-Baum** Illinois DOT	
Illinois District 6	**Marshall Metcalf** Illinois DOT	**Michael Irwin** Illinois DOT
Illinois	**Aaron Weatherholt** Illinois DOT	

APPENDIX E COMMUNICATIONS AND PREPARATION DOCUMENTS

E.1. PLANNING COMMITTEE

All:

The summer has flown by and now we are in full planning mode for Illinois' sponsored National Peer Exchange for Safety Engineers and Traffic Engineers. Thank you for agreeing to be on IDOT's planning committee for this event. I'd like to set up a conference call to discuss vision/goal and agenda. Please fill out the doodle request as to your availability.

http://www.doodle.com/h8pugumgad65t4hz

I need a few things from you as soon as possible (please!)….besides your availability above….

Attached is a spreadsheet that we've started that will capture the names and contact information for the two individuals from each state that we'd like to invite. Because I don't know the people necessarily in each of the states I was hoping that you all could help fill in the blanks. So, that is the item I need most urgently filled out so we can get the "Save the Date" email out to potential attendees.

Attached is the "Save the Date" email. If you see something that needs to be added let me know, otherwise I'm considering it completed and ready to go.

Attached is a framework for the agenda that we can use to direct us. It is not set in stone but merely a place for us to start our discussion. Please review it, put your thoughts together…you can email them to me/the group prior to us talking on the conference call and I can consolidate thoughts/ideas, etc.

Again, thank you so much for your involvement.

Priscilla

E.2. NOTIFICATION

All:

Thank you for responding and agreeing to attend the Illinois hosted Safety Engineering & Traffic Engineering Peer Exchange Workshop. I've included the original email along with travel/registration information. If I've missed one of your state attendees, please forward this email and provide the name to me.

The Illinois Center for Transportation (ICT) and the Illinois Department of Transportation (IDOT) will sponsor and lead the planning and implementation of a national peer to peer workshop focused on Safety Engineering and Traffic Engineering. The workshop is scheduled to take place in Schaumburg, IL from 8AM to 5PM on November 14 and 15, 2012.

Significant emphasis has been placed on improving safety on public highways and reducing fatalities and serious injuries. The implementation of many of the safety strategies relates to traffic engineering. With that said, we recognize there is great benefit in collaborating and working together to improve the transportation system. The goal of this workshop is to provide an opportunity for safety and traffic engineers to share their respective analytical and decision making processes, to discuss a variety of implemented engineering countermeasures to increase mutual understanding of the benefits and challenges of implementation, to discuss distinct performance measures considered, and to jointly search for potential collaborative means to enhance the treatments for best possible outcomes for all road users. This workshop will provide an excellent forum to transition into the June 2013 Joint Meeting of the AASHTO Standing Committee on Highway Traffic Safety (SCOHTS) and the AASHTO Subcommittee of Traffic Engineers (SCOTE).

IDOT invites two representatives from each state: a safety engineer and traffic engineer, to come to Illinois and actively contribute and exchange experiences. Please save the dates and reply to Priscilla Tobias, P.E., Priscilla.Tobias@illinois.gov by September 27th providing the names and contact information for the two state representatives that would participate in this event. Travel and accommodation expenses will be reimbursed as per given conditions and Illinois travel regulations, and these will be transmitted to you in a future email correspondence. You can register at http://ict.illinois.edu/conferences/SafetyTrafficWorkshop2012/

As promised this email includes additional information regarding the Illinois hosted Safety Engineering & Traffic Engineering Peer Exchange Workshop scheduled for November 14 and 15 in Schaumburg, IL:

1. Registration: Please register at http://ict.illinois.edu/conferences/SafetyTrafficWorkshop2012/. Additional information will be placed on the website as it becomes available.

2. Meeting Dates and Location: The workshop will be held November 14 and 15 from 8:00 AM to 5 PM in Schaumburg, IL. Schaumburg is about 15 minutes from O'Hare Airport. We will hold the Peer Exchange at the Hyatt Regency Schaumburg-Chicago. Please allow for rush hour traffic if leaving Thursday evening. NOTE: We will provide PDH's for the workshops and will provide the certificates of attendance at the time of the course. For meals (they will NOT be provided) PLEASE NOTE THAT THERE ARE SEVERAL RESTAURANTS BY THE HOTEL.

3. Travel Arrangements and Reimbursement: Travel and accommodation expenses will be reimbursed after the peer exchange as per given conditions and Illinois travel regulations.

A. Lodging: Rooms can be reserved at any time between now and Monday, October 15, 2012. After the October 15 cut-off, rooms will be reserved based on availability and at the prevailing rate. The rooms are being held under the group name IL DEPT TRANSPORTATION.

HYATT REGENCY SCHAUMBURG, CHICAGO

1800 E. Golf Road

Schaumburg, IL 60173

847-605-1234 (Reservation Department)

http://schaumburg.hyatt.com/hyatt/hotels-schaumburg/index.jsp?extCorporateId=

Room rates are $104.00 per night for single/double occupancy (room rates are quoted exclusive of applicable state and local taxes, which are currently 14%, or applicable service, or hotel specific fees in effect at the Hotel at the time of the meeting). Attendees must use a credit card to secure their room. Please make the reservations now, as you can cancel if you cannot attend.

IT'S WELL BELOW THE STATE ($149) AND FEDERAL GOVT RATE for that area. This rate is applicable from November 13-16, 2012. Check-in time for is 3:00 p.m. however early check-in may be arranged when individual reservations are made.

TRANSPORTATION

1. FLIGHT: Make your flight arrangements. If you anticipate your flight cost being over $500, please let me know. I would recommend flying into O'Hare although Midway may be an option. Schaumburg is in the west suburbs of Chicago, about 20 minutes from O'Hare (assuming light traffic).

2. AIRPORT TO HOTEL: You do not need a rental car ---please use one of these options.

- O'Hare Transportation 800-851-0200; fee: 25 USD (one way); reservation required.
- ALL STAR CAB & SHUTTLE:

TO/FROM O'HARE: $27.00 for up to 4 travelers. Call (888) 533-4240 after picking up luggage at O'Hare.

TO/FROM MIDWAY: $47.00 for up to 4 travelers. Call (888) 533-4240. Advance reservations are recommended.

TO/FROM CHICAGO LOOP: $54.00 for up to 4 travelers. Call (888) 533-4240 to reserve a taxi.

- AMERICAN TAXI:

TO/FROM O'HARE: $31.50 for up to 4 travelers. Call (847) 253-4411 after picking up luggage at O'Hare.

TO/FROM MIDWAY: $60.00 for up to 4 travelers. Call (847) 253-4411 after picking up luggage at Midway.

TO/FROM CHICAGO LOOP: $58.00 for up to 4 travelers. Call (847) 253-4411 to reserve taxi.

REIMBURSEMENT

Most important, how do you get reimbursed???? We can cover up to 2 individuals (traffic engineer and safety engineer) from each of the participating states. Travel expenses will be reimbursed AFTER travel. So all TRAVEL expenses would be paid up front by the individual. We will provide the appropriate reimbursement forms at the workshop.

IF YOU HAVE ANY QUESTIONS, PLEASE LET ME KNOW!

Here is a draft agenda that is under development. I know some people need it to get travel approval. PDH's will be provided.

I look forward to your participation at this workshop, in Illinois.

Priscilla Tobias

Priscilla A. Tobias, PE

State Safety Engineer/Bureau Chief

Illinois Dept of Transportation, Bureau of Safety Engineering

2300 S. Dirksen Parkway, Room 323

Springfield, IL 62764

ph. 217-782-3568

fax 217-782-0377

Priscilla.Tobias@illinois.gov

E3: PLANNING CONFERENCE CALL AGENDA (EXAMPLE)

Conference Call 2 – 3PM 10/31/2012

Day 1 – 1:15 PM: State Agencies Organizational Structures and the Inter-Relationships Between Traffic and Safety Engineering Procedures

Participants: Dan Waddle, Lisa Heaven-Baum , Joe Santos, Mike Curtit, Kim Kolody, Mark Wilson, Joe Monroe, Priscilla Tobias

- 15 minutes for each presentation
- 15 minutes of facilitated discussions

For the session there will be varied representation:

- Nebraska – centralized, 1 district traffic engineer and the
- Florida – decentralized, department traffic of safety and traffic operations
- Illinois – district perspective

Presentation outline

- Slide 1 : Organizational structure; work chart including who people report to
  - Bring a copy of their organizational chart to hand out
- Slide 2: Staffing, Roles and responsibilities
- Slide 3: How the structures enhance traffic and safety integration
- Slide 4 +: Challenges of the structure and methods for overcoming the hurdles
- Slide 5: Partnerships outside of the agency

  - Questions to consider:
    - Expanding roles and responsibilities within the structure
    - When you try to implement how does your organizational structure help or integrate
    - How can we remove barriers to implement safety countermeasures i.e. signs not meeting MUTCD but have safety benefit
    - Dealing with funding constraints i.e. getting safety projects funded by HSIP need to be maintained with maintenance budgets like CMB. Wrote an issue paper and received funding
    - Benefits and challenges with coordinating and working with areas outside of safety to implement projects
    - Did your organizational structure changes as a result of legislative changes i.e. SAFETEA-LU, MAP-21
    - Approaches and benefits of selling safety to maintenance and traffic engineers, cannot implement policies without folks on board
    - Partnerships (inside and outside of the office) – statewide partnerships to address SHSP and others, discuss this and how it works i.e. how do they engage LTAP
    - How to carry the programs to the locals

Reminders

- Send bios, presentations 11/8th
- Call notes and facilitator notes will be provided

E4: FACILITATOR SUPPORT SHEETS

FACILITATOR SUPPORT SHEETS

Dear Facilitators,

Thank you for helping with the National Safety Engineering – Traffic Engineering Peer Exchange. You were recommended as a facilitator because of your experience and ability to draw out dialog and best practices to help integrate traffic engineering and safety engineering moving forward. This document is intended to provide resource information to the facilitators to support their efforts at the peer exchange. We appreciate your time and participation as a facilitator to help make the peer exchange successful.

Facilitators: Facilitators will be instrumental to helping to achieve our Peer Exchange objectives:

- Encourage and support dialog of challenges and best practices between workshop participants to maximize lessons learned that can be applied within their organization to further advance the collaboration and integration of safety and traffic operations efforts.
- Provide an opportunity for safety and traffic engineers to share their respective analytical and decision making processes, to discuss a variety of implemented engineering countermeasures to increase mutual understanding of the benefits and challenges of implementation, to discuss distinct performance measures considered, and to jointly search for potential collaborative means to enhance the treatments for best possible outcomes for all road users.

Reporters: There will be a recorder for each of the sessions. They will be responsible for capturing key items of discussion in each of the breakout sessions.

Breakout Groups: There will be 4 breakout groups. People will be pre-assigned a breakout group. Individuals will be kept together as a state. Consideration has been given to neighboring states,; structure differences; and different sets of people in each session.

When you meet in breakout sessions please consider the following:

- Introduce each participate; name, agency, role in their agency
- Ask the person speaking to identify their name to help the recorder
- Each breakout group will provide a verbal report in the report out session. The Facilitator or Recorder should provide the report out unless someone in the group would like the opportunity.
- Answer questions for the session

Report outs:

- Each reporter will provide the answers to each question one at a time
- Go to the next report out group
- Will go topic by topic so that there is more discussion

FACILITATOR SHEETS

Setting the Goal and Vision for the Workshop

Aaron Weatherholt and Priscilla Tobias

The peer exchange will have attendees from state DOTs across the nation representing traffic engineers and safety engineers. The goal is to collaborate and learn how our combined efforts can address the need to reduce fatality and serious injuries and improve mobility.

Getting to know and better understand each other's decisions and their interlinked impacts, what is happening today in the traffic and safety fronts and their inter-relationship, what is working for states or not, identify some potential changes for consideration, and a brief note on organization structures and how they impact the coordination and collaboration. Present the key topics of the agenda/program throughout the day today and tomorrow (If our survey revealed related issues such as "do we think of each other's decisions/ what is traffic engineering for the safety engineer? What is safety engineering for the traffic engineer?" – may include it here – as practical issues to overcome and open communication channels)

FACILITATOR SHEETS

History – Mobility and Safety

Facilitator: Aaron Weatherholt, Illinois Department of Transportation, Deputy Director

Speaker: Norman Stoner, FHWA, Illinois Division, Division Administrator

The 15 minute session is titled: *History-- Mobility and Safety* and has a description: "As a nation, moving goods, services, and people are essential to the well being of our economy. The loss of lives on these roadways has become an unacceptable cost of doing business. How can we learn from past lessons and begin the collaboration and integration of traffic and safety decisions and strategies to mutually provide benefit to mobility and safety?".

Consider importance of moving people and goods, the development of HCM and MUTCD and later HSM – the implicit vs. explicit consideration of safety – and need to continue the learning and evaluation of traffic decisions within the context of safety effects; and the "price' to be paid for sharing the road – cars and trucks vs. pedestrians and bicyclists. Aaron will facilitate the session.

FACILITATOR SHEETS

Setting the National Scene

Facilitator: Priscilla Tobias, Illinois Department of Transportation, State Safety Engineer

Speakers: John Milton, Washington State Department of Transportation, Director of Risk Management

Bruce Ibarguen, Maine Department of Transportation, State Traffic Engineer

Several national Safety and Mobility goals, programs, and transportation bills impact the approach that the state and municipal transportation agencies perform at the management of their transportation system. Two of the many disciplines involved in the highway management system are traffic and safety engineering. Of course, designers and maintenance/construction are other engineering sides that are also inter-related but we are focusing on traffic and safety engineering.

Many of the decisions and actions taken at the national level will impact (or not) the day to day decisions taken by engineers. We will be focusing today on:

1. Toward Zero Death and Goal for significant and defined reduction of fatalities and serious injuries within a pre-defined timeframe.
2. MAP 21 and performance measures
3. HSM publication
4. HSM implementation at the state level
5. HSIP and safety performance measures
6. Strategic Highway Safety Plans (SHSP) and adopted emphasis areas
7. Transportation mode changes for healthier and more sustainable future by increasing walking and cycling travel
8. HCM
9. MUTCD
10. Capacity building
11. Maximum Posted Speed Limit
12. Centralized source of safety effects in terms of CMFs (HSM and CMFClearinghouse.org)
13. Human Factors Guidelines for Road Systems, NCHRP Report 600, 2nd edition
14. Systematic Safety strategies and approaches/ programs
15. Potential knowledge to be learned from data collected by SHRP2/naturalistic study

Note: During this session, we will not be focusing on organizational structure as it is the focus of the next session in day 1, and will not focus on any specific strategy as cable rails, as it is the focus of day 2. However, the impact of national programs and measures may be closely related to how we can modify, improve or weaken the linkages (integration) between the day to day decisions taken by safety and traffic engineers in their own sole functions. NOTE: AASHTO SCOTE and SCOHTS will be meeting jointly in June. This will further advance efforts at national level.

FACILITATOR SHEETS

Opportunities to Link Safety Engineering and Traffic Engineering Efforts

Breakout Groups

Group	Facilitators:	Recorders:
1	**Mshadoni Smith**	**Alan Ho**
2	**Ken Wood**	**Clayton Chen**
3	**Dave Engstrom**	**Grant Zammit**
4	**Keith Sinclair**	**Dean Mentjes**

Facilitator will introduce himself/herself followed by the recorder; and each participant will self introduce by name, role, discipline, and organization level.

Discussion Topics

- Considering the state strategic highway safety plans and their emphasis areas, and the related measurable safety goal adopted by each state, how can safety and traffic engineers explicitly integrate/link their daily project decisions to support this key state plan toward safer systems? Consider procedures, project selections, countermeasure selection, program priority, funding allocation, traffic analysis and their parameters, safety audits, safety assessments/reviews, value engineering /analysis, etc.
- MAP 21 and other transportation bills in the past two decades have strengthen the funding amount and allocation, and the management of the Highway Safety Improvement Programs; how can these be integrated with non-safety focused projects led by traffic engineers?
- Capacity building and asset management will be evaluated and among other parameters, by the level of service and safety performance of the transportation systems; what can be done to increase their performances through our policies, and our day to day processes and procedures? Consider 3R/4R projects, transit systems and their linkages with other transportation modes (incl. walking and cycling), ageing population as pedestrians, driver diminishing performance due to fatigue and distraction, etc.
- The HCM and MUTCD are not safety explicitly driven documents – their guidance lead to traffic analysis (flow, capacity, delay, etc – and how regulate, guide, and inform drivers). National manuals such as HSM and HFG, complement HCM and MUTCD (and Green Book) by providing explicit, quantifiable safety, and behavioral performance. What needs to be done to create synergy among their applications for better, more-informed decision making?
- What is the correlation between Highway Capacity and Quality of Service, geometric configuration, crash rates / types, and time of day? Does (or how does) your agency overlap type of analysis / data to identify trends or target locations for possible mitigation? And with this, how does your agency define the concept of operation and performance objectives of a project to identify a mitigation strategy?

FACILITATOR SHEETS

Facilitator: Geni Bahar

Report Back

Each recorder or facilitator (one selected by each group) will report at the plenary session by discussion topic.

FACILITATOR SHEETS

State Agencies Organizational Structures and Inter-relationships between Traffic and Safety Engineering Procedures

Facilitator: Michael Curtit, Missouri DOT, Traffic Liaison Engineer

Speakers: Dan Waddle, Nebraska DOT, State Traffic Engineer

Joe Santos, Florida DOT, Transportation Safety Engineer

Mark Wilson, Florida DOT, State Traffic Operations Engineer

Joe Monroe, Illinois DOT, District 8 Operations Engineer

Lisa Heaven-Baum, Illinois DOT, District 1 Traffic Programs Engineer

Organizations are structured in a variety of ways i.e. centralized, decentralized, a combination based on areas of focus. Traffic engineering and safety engineering responsibilities can be performed or administered at Central office, in the regional or district offices or both. Various organizational structures can influence (promote or limit) the interaction and integration of perspectives and processes between traffic and safety engineers. During this session we will discuss the different structures, their ability to support or challenge the link between traffic and safety engineering and the impact of legislative requirements on the process or procedures. Each of the presenters represents a different type of structure and brings the perspective of the Central office and regions/districts.
Key Items of Emphasis in this Session:

- Organizational structure or work chart, including who people report to (presenters and attendees will be asked to bring a copy of their organizational chart to hand out)
- Staffing, Roles and Responsibilities
    - Did your organizational structure or roles and responsibilities change or expand as a result of legislative changes or changes in the industry i.e. SAFETEA-LU, MAP-21, *SHRP2.*
- Barriers and Challenges
    - What types of barriers or challenges does your organizational structure pose for integrating traffic and safety performance measure management.
    - Dealing with funding constraints i.e. getting safety projects funded by HSIP need to be maintained with maintenance budgets (cablerail, rumblestrips, pavement markings).
- Traffic and Safety Performance Process Integration
    - How do your organizational structure and roles and responsibilities facilitate integration of traffic and safety engineering?
    - Approaches and benefits of selling safety to maintenance and traffic engineers, cannot implement policies without other areas of responsibility being supportive.
- Partnerships (inside and outside of the agency)
    - Benefits and challenges of coordinating and working with areas outside of safety to implement projects.
    - SHSP partnerships to address SHSP and others, discuss this and how it works.
    - How to carry the programs to the local agencies (i.e. MPOs, counties, LTAP centers).
- Best practices roadmap

FACILITATOR SHEETS

State Agencies Organizational Structures and the Inter-Relationships Between Traffic and Safety Engineering Procedures

Breakout Groups

Group	Facilitators:	Recorders:
1	**Mshadoni Smith**	**Alan Ho**
2	**Ken Wood**	**Clayton Chen**
3	**Dave Engstrom**	**Grant Zammit**
4	**Keith Sinclair**	**Dean Mentjes**

Facilitator will introduce himself/herself followed by the recorder; and each participant will self introduce by name, role, discipline, and organization level.

Each participant will describe their organization structure including where traffic engineering and safety engineering responsibilities are accomplished (each participant is asked to bring a copy of their organizational chart to share). THIS NEEDS TO BE BRIEF THOUGH!

Discussion Topics

- Different organizational structures can provide the leadership and processes to integrate traffic and safety performance management and decision making (such as Traffic Impact Studies are paired with Safety Impact Studies; safety audits paired with traffic analysis).
    - What are the most important elements for successful integration of traffic and safety for programs and projects?
    - How can a centralized structured be collaborative in the manner that safety and traffic decisions are taken?
    - How can a decentralized structure be effective and consistent in relation to safety and traffic engineering decisions?
    - What types of barriers or challenges does your organizational structure pose for integrating traffic and safety performance measure management?
- There are a lot of influences on the effectiveness of traffic and safety programs including organizational structure, responsibilities within the organization, and procedures and policies.
    - Is organization structure relevant or are the procedures and policies of greater importance to create mutual collaboration?
    - What is the correlation between Highway Capacity and Quality of Service, geometric configuration, crash rates / types, and time of day? Does (or how does) your agency overlap type of analysis / data to identify trends or target locations for possible mitigation? And with this, how does your agency define the concept of operation and performance objectives of a project to identify a mitigation strategy? Share example projects and approaches for quantifying and comparing the traffic impacts (LOS, delay, operating speed, etc.) and safety impacts (predicted number of crashes, cost of lives lost, etc.) for decision making. i.e. alternatives evaluation, NEPA, etc.
    - How do partnerships facilitate integration of safety and traffic programs?

FACILITATOR SHEETS

Facilitator: Kim Kolody

Report Back

Each spokesperson, recorder, or facilitator.

FACILITATOR SHEETS

Intersections: Managing Performance – Operations and Safety (Part 1)

Facilitator: Kyle Armstrong, Engineering & Standards Unit Chief, Illinois DOT

Topics/Speakers

Protected vs. Permissive Left-Turn Phase
Kevin J. Haas, Traffic Investigations Engineer, Oregon DOT
Flashing Yellow Arrow
Randall Laninga, Traffic Engineer, Illinois DOT, District 4

Traffic engineers and safety engineers make decisions that affect operations and safety. Sometimes it may be safety is the driving force; other times it may be capacity. Safety countermeasures reduce capacity or increase delay or may actually help capacity. The same may be said for traffic operations strategies. But a consideration of both can balance and optimize safety and traffic operations. In this session, example initiatives and approaches for quantifying and comparing the traffic impacts (LOS, delay, operating speed, etc.) and safety impacts (predicted number of crashes, cost of lives lost, etc.) for decision making will be discussed.

Discussion Topics

- With the decision to implementation of "new" countermeasures, various items are taken into consideration. Specific to these two countermeasures/initiatives:
    - What are the factors or policies/procedures taken into consideration to implement?
    - What is the driving force behind the initiative and were the barriers to implementing these countermeasures and how were they overcome?
    - Many times there are barriers to implementing "new" countermeasures. What were the barriers to implementing these countermeasures and how were they overcome?
    - How have issues such as Yellow Trap vs. Lag/Lead been addressed? Is this really an issue—a safety or operational issue?
    - Highlight key benefits (if any) to both safety and traffic operations.
    - Is there a consideration to go from protected left to FYA to achieve increased capacity and still have safety benefits?
    - What about pedestrian safety?
- Many times education of agency staff or the public is an important component of successful implementation. What are some specific recommended practices and approaches for educating agency staff or the public on safety countermeasures that may adversely impact operations?
- There are a lot of experimental and tried safety countermeasures that may be effective in addressing safety concerns. Has there been resistance to implementing strategies that are not included in policies i.e. MUTCD, design manuals, etc and how has this been addressed?

FACILITATOR SHEETS

Intersections: Managing Performance – Operations and Safety (Part 2)

Facilitator: Neil Boudreau, State Traffic Engineer, Massachusetts DOT

Speakers: *Adaptive Signal Control*

Kyle Armstrong, Engineering & Standards Unit Chief, Illinois DOT

Pedestrian Safety Vs. Capacity

Mark Wilson, State Traffic Operations Engineer, Florida DOT

Traffic engineers and safety engineers make decisions that affect operations and safety. Sometimes it may be safety is the driving force; other times it may be capacity. Safety countermeasures reduce capacity or increase delay or may actually help capacity. The same may be said for traffic operations strategies. But a consideration of both can balance and optimize safety and traffic operations. With the increased emphasis on different modes of travel (pedestrian and bicyclists), there is an explicit need to address these roadway users and their safety. Balancing safety and traffic operations becomes even more critical. In this session, example initiatives and approaches for quantifying and comparing the traffic impacts (LOS, delay, operating speed, etc.) and safety impacts (predicted number of crashes, cost of lives lost, etc.) for decision making will be discussed.

Discussion Topics

- With the decision to implementation of "new" countermeasures, various items are taken into consideration. Specific to these two countermeasures/initiatives:
  - What are the factors or policies/procedures taken into consideration to implement? Safety/Traffic Operations?
  - Many times there are barriers to implementing "new" countermeasures. What is the driving force behind the initiative and were the barriers to implementing these countermeasures and how were they overcome?
  - Specific to pedestrian safety, Were there any specific barriers to implementing safety countermeasures that may have an adverse impact on operations and how were they overcome?
  - Highlight key benefits/successes (if any) to both safety and traffic operations.
  - How do the initiatives help when as agencies we encourage multi-modal transportation?
- Many times education of agency staff or the public is an important component of successful implementation. What are some specific recommended practices and approaches for educating agency staff or the public on safety countermeasures that may adversely impact operations?
- There are a lot of experimental and tried safety countermeasures that may be effective in addressing safety concerns. Has there been resistance to implementing strategies that are not included in policies i.e. MUTCD, design manuals, etc and how has this been addressed?
- Pedestrian and bicycle related crashes are a major concern since they are often injury or fatal crashes. Significant focus has been put on implementing effective countermeasures. What have been effective pedestrian/bicycle safety countermeasures and has there been resistance to the potential impact on traffic operations? How were these issues resolved?

FACILITATOR SHEETS

Systematic Safety and Systemic Operations and Programmatic Measures

Part 1

Facilitator: Mike Dornfeld, Program Development and Performance Manager, Washington State Department of Transportation

Speakers: ***Wrong Way Drivers: Signing and Pavement Marking***

Duane Brunell, Safety Performance Analysis Manager, Maine DOT

Curves: Identification and Delineation

Derek Leuer, Assistant State Traffic Safety Engineer, Minnesota DOT

Discussion Topics

- Data is a strong factor supporting the implementation of initiatives.
    - What does the data indicate for these two issues? Are there specific characteristics/trends that stand out?
    - What approach is taken to identify locations for improvement and how do you implement-statewide vs. district/regional level?
    - **Wrong way driving crashes** seem to be an increasing problem. Has your agency seen this as an area of growing concern? How is it being addressed?
    - **Roadway departure crashes and horizontal curves –** This is continuing to consistently be a problem, especially in rural areas. A variety of countermeasures have been implemented using a system wide approach. Has your agency been implementing curve improvements systemically? How were the locations and countermeasures identified and implemented?
- Many times there are barriers to implementing "new" countermeasures. What were the barriers to implementing safety countermeasures and how were they overcome? What were the barriers to implementing safety countermeasures that may have an adverse impact on operations and how were they overcome?
- Many times education of agency staff or the public is an important component of successful implementation. What are some specific recommended practices and approaches for educating agency staff or the public on safety countermeasures that may adversely impact operations?
- There are a lot of experimental and tried safety countermeasures that may be effective in addressing safety concerns. Has there been resistance to implementing strategies that are not included in policies i.e. MUTCD, design manuals, etc and how has this been addressed?
- ITS is a potential solution that can be effective. Any considerations for this?

FACILITATOR SHEETS

Systematic Safety and Systemic Operations and Programmatic Measures

Part 2

Facilitator: Stephen Read, Highway Safety Programs Planning, Virginia DOT

Speakers:

Rural Intersections: Signing and Pavement Marking

Michael Curtit, Traffic Liaison Engineer, Missouri DOT

Systematic Improvements – Open Facilitated Discussion

Discussion Topics

- Many times there are barriers to implementing "new" countermeasures. What were the barriers to implementing safety countermeasures and how were they overcome? What were the barriers to implementing safety countermeasures that may have an adverse impact on operations and how were they overcome?
- Many times education of agency staff or the public is an important component of successful implementation. What are some specific recommended practices and approaches for educating agency staff or the public on safety countermeasures that may adversely impact operations?
- There are a lot of experimental and tired safety countermeasures that may be effective in addressing safety concerns. Has there been resistance to implementing strategies that are not included in policies i.e. MUTCD, design manuals, etc. and how has this been addressed?
- **Rural Roadways:** Rural 2 lane and 4 lane roadways have unique traffic and safety challenges. How are these being addressed within different organizations at the state and local level?
- **Systematic Improvement:** A variety of countermeasures have been implemented using a system wide approach. Has your agency been implementing systemically? How were the locations and countermeasures identified and implemented? How have the improvements been evaluated i.e. benefit – cost?

APPENDIX F PRESENTATION HANDOUTS

November 14-15, 2012
Hyatt Regency Woodfield Hotel – Schaumburg, Illinois

SAFETY ENGINEERING – TRAFFIC ENGINEERING PEER EXCHANGE

Welcome

- Thanks to the Illinois Department of Transportation and the Illinois Center for Transportation (research program)
- 2 people from each state, TE and SE
- 109 participants from 34 states attending
- Concept for the PX began a year ago
- AASTHO SCOTE and SCOHTS meet in June 2013 to continue to work together

Objectives

- Improve safety on highways
  - Low cost safety countermeasures
- Balancing + and – effects of countermeasures on operations and maintenance
- Learning from each other's successes and failures on limited resources
- Advance safety engineering and traffic engineering efforts nationally

Day 1 Agenda

- Setting the Goal and Vision
- History – Mobility and Safety
- Setting the National Scene
- Breakout Groups: Opportunity to Link Efforts
- Relationship Between Traffic and Safety Engineering
- Breakout Groups: Organizational Structures
  - Note : NCHRP 17-50 meeting from 515 to 615PM

Day 2 Agenda

- Intersections: Managing Performance
  - Protected vs. Permissive Left-Turn Phase
  - Flashing Yellow Arrow
  - Adaptive Signal Control
  - Pedestrian Safety Vs. Capacity
- Systematic Safety and Operations
  - Wrong Way Drivers: Signing and Pavement Marking
  - Curves: Identification and Delineation
  - Rural Intersections: Signing and Pavement Marking
  - Systematic Improvements
- Lesson Learned
- Next Steps

Planning Committee

- Planning committee members
  - Priscilla Tobias
  - Aaron Weatherholt
  - Kyle Armstrong
  - Sean Coyle
  - Joe Monroe
  - Randy Laninga
  - Bruce Ibarguen
  - Mike Curfi
  - Mike Wilson
  - Joe Santos
  - Stephen Buckley
  - Dan Waddle
  - Dr. Yanfeng Ouyang
  - Geri Bahr
  - Kim Kolody

History - Mobility and Safety

Norman R. Stoner, P.E.
Division Administrator
FHWA Illinois Division Administrator
National Peer Exchange Safety Engineers and Traffic Engineers
Schaumburg, IL – November 14, 2012

History - Mobility and Safety

Market Street – San Francisco – April 1906

History - Mobility and Safety

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History - Mobility and Safety

Market Street – San Francisco – April 1906

History - Mobility and Safety

Market Street – San Francisco – April 1906

History - Mobility and Safety

Urban Brothers Paving Co. – Stark County, Ohio – Circa 1924

History - Mobility and Safety

The Highway Safety Act of 1966

The act authorized states to use federal funds to develop and strengthen their highway traffic safety programs in accordance with uniform standards promulgated by the secretary of transportation.

History - Mobility and Safety

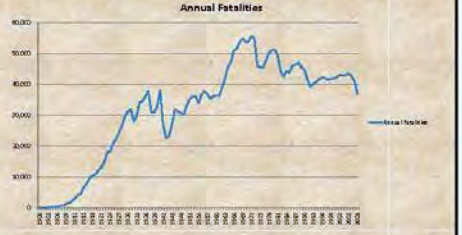
The Highway Safety Act of 1966

Safety Program Standards

1. Periodic Motor Vehicle Inspection
2. Motor Vehicle Registration
3. Motorcycle Safety
4. Driver Education
5. Driver Licensing
6. Codes and Laws
7. Traffic Courts
8. Alcohol in Relation to Highway Safety
9. Identification and Surveillance of Accident Locations
10. Traffic Records
11. Emergency Medical Services
12. Highway Design, Construction, and Maintenance
13. Traffic Engineering Services
14. Pedestrian Safety (Highway Aspects)
15. Police Traffic Services
16. Debris Hazard Control and Cleanup
17. Pupil Transportation Safety
18. Accident Investigation and Reporting

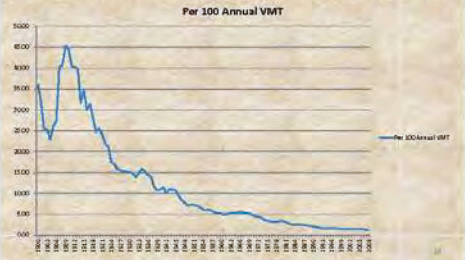
History - Mobility and Safety

Nationwide Annual Fatality Totals 1900 - 2008



History - Mobility and Safety

Nationwide Annual Fatality Rate Per 100 MVMT - 1900 - 2008



History - Mobility and Safety

Nationwide Annual Fatality Rate Per 100 MVMT - 1900 - 2008
Nationwide Annual Fatality Rate Per 1,000 Miles Road- 1900-2008

History - Mobility and Safety

Much has been done……. More work remains……

History - Mobility and Safety

Keys to the discovery of break-through safety strategies

- Welcome fresh perspectives
- Break a link in the chain of events
- Mine the data for new relational insights

History - Mobility and Safety

Adaptive Signal Control Technology - ASCT

History - Mobility and Safety

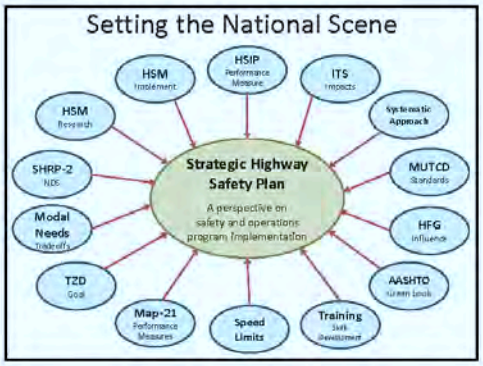
Back to the Future?

History - Mobility and Safety

Norman R. Stoner, P.E.
Division Administrator
FHWA Illinois Division Administrator
National Peer Exchange Safety Engineers and Traffic Engineers
Schaumburg, IL – November 14, 2012

Safety Engineering - Traffic Engineering Peer Exchange

- **Setting the National Scene**
  - Facilitator:
    - Priscilla Tobias, State Safety Engineer, Illinois DOT
  - Speakers:
    - John Milton, Director, Enterprise Risk Management, Washington State DOT
    - Bruce Ibarguen, State Traffic Engineer, Maine DOT



Report Back
Day 1: 11:15 am – 12 pm

Setting the National Scene
Opportunities to Link Safety Engineering and Traffic Engineering Efforts

Facilitator: Geni Bahar

Discussion Point 1

- *Considering the state strategic highway safety plans and their emphasis areas, and the related measurable safety goal adopted by each state, how can safety and traffic engineers explicitly integrate/link their daily project decisions to support this key state plan toward safer systems? Consider procedures, project selections, countermeasure selection, program priority, funding allocation, traffic analysis and their parameters, safety audits, safety assessments/reviews, value engineering /analysis, etc.*

Discussion Point 2

- *MAP 21 and other transportation bills in the past two decades have strengthen the funding amount and allocation, and the management of the Highway Safety Improvement Programs; how can these be integrated with non-safety focused projects led by traffic engineers?*

Discussion Point 3

- *Capacity building and asset management will be evaluated and among other parameters, by the level of service and safety performance of the transportation systems: what can be done to increase their performances through our policies, and our day to day processes and procedures? Consider 3R/4R projects, transit systems and their linkages with other transportation modes (incl. walking and cycling), ageing population as pedestrians, driver diminishing performance due to fatigue and distraction, etc.*

Discussion Point 4

- *The HCM and MUTCD are not safety explicitly driven documents – their guidance lead to traffic analysis (flow, capacity, delay, etc – and how regulate, guide, and inform drivers). National manuals such as HSM and HFG, complement HCM and MUTCD (and Green Book) by providing explicit, quantifiable safety, and behavioral performance. What needs to be done to create synergy among their applications for better, more-informed decision making?*

Discussion Point 5

- *What is the correlation between Highway Capacity and Quality of Service, geometric configuration, crash rates / types, and time of day? Does (or how does) your agency overlap type of analysis / data to identify trends or target locations for possible mitigation? And with this, how does your agency define the concept of operation and performance objectives of a project to identify a mitigation strategy?*

NAVIGATS inc.


THANK YOU!

Nebraska Department of Roads

Traffic and Safety Engineering Procedures
November 14, 2012

Dan Waddle – Traffic Engineer

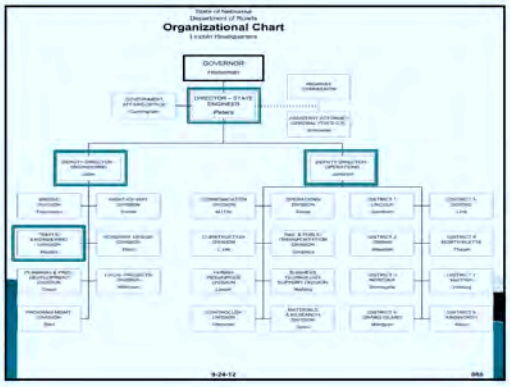
- NDOR Districts
- Highway Commission & Organization Structure The Department and Traffic's
- Staffing Role and Responsibilities
- SHSP
- Safety Committees
- Strengths and Challenges

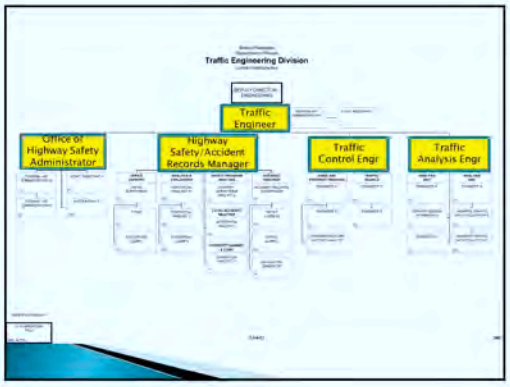
Nebraska Department of Roads
NDOR

- 10,000 Miles of Highway – 8 Districts
- 2,100 Employees – Centralized Design

Nebraska Highway Commission

- The Commission serves in an advisory capacity to the Director, but is not involved in the daily business of NDOR.
- 8 Members – 4 Democrat – 4 Republican
- 1 Member from each of the 8 NDOR Districts
- Appointed by the Governor – 6 Year Term
- Annual Memorial Highway Naming





Traffic Engineering Division Roles and Responsibilities

- Traffic Control Design and Standards
- Traffic Engineering Studies and Recommendations
- Maintaining the State Crash Database and FARS
- Administering the HSIP and HRRR Safety Programs and Safety Schedule
- Identifying Safety Improvement Locations and Safety Improvement Countermeasures
- Lead the Interagency Strategic Highway Safety Plan (SHSP)
- Manage the NHTSA Safety Program
- Safety Advocate for the Department

Traffic Control Section

- Traffic Signal Design and Signal Timing
- Signing Plans and Standards
- Sign Design and Material Specifications
- Pavement Marking Plans and Material Specifications
- WZ Traffic Control Plans and Annual Reviews
- Traffic Control Standard Plans and Specifications
- Review all Fatal Accident Reports.
- Representative on the NDOR Safety Committee and HRRR Committee and AGC Traffic Control Committee
- NDOR Compliance and Adoption of the MUTCD and
- Development the Nebr. Supplement to the MUTCD

Traffic Analysis Section

- Three Traffic Reviews in the Project Scheduling System
  - Crash History Review and Recommendation
  - Traffic Engineering Recommendation
  - Traffic Engineering Review

- Conduct Traffic Engineering Studies
  - Speed Zones – Crosswalks – Signal Warrants – Turn Bays – Parking
- Traffic Research Advisory Team Member
- Review of Traffic Impact Studies
- Review all Fatal Accident Reports
- Representative on the NDOR Safety Committee and the Interagency Strategic Safety Working Team

Highway Safety/Accident Records

- Receive, Process and Store all Nebr. Accident Reports
- Maintain the State Traffic Crash Database & FARS
- Lead the NDOR Safety Committee
- Manage the HSIP Safety Schedule and the Annual Report
- Identification of High Accident Locations for Safety Committee Review
- Safety Analysis and Highway Safety Manual Analysis
- Safety Evaluations, B/C, and After Project Evaluations
- Manage the State Property Damage System
- Prepare Collision & Spot Diagrams

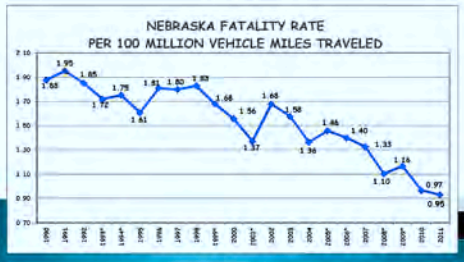
Nebraska Office of Highway Safety

- Responsible for Administration of Title 23, United States Code, Chapter 4 and Related Highway Safety Provisions Administered by the National Highway Traffic Safety Administration (NHTSA).
  - Section 402 Nebraska Annual Highway Safety Program Plan
  - Section 405 (Occupant Restraint),
  - Section 408 (Traffic Records),
  - Section 401 (Alcohol Incentive),
  - 1906 (Racial Profiling), and
  - 2010 (Motorcycle Safety) funded programs.
- Administration of the U.S. Department of Justice's (DOJ) Enforcing Underage Drinking Laws Grant Program
- Traffic Records System
- Drug Recognition Expert (DRE) Training.
- Member of the Interagency Strategic Safety Working Team

Nebraska Interagency Safety Committee – SHSP

- Leadership Committee
  The Director's From:
  - Department of Roads
  - Nebraska State Patrol
  - Dept. of Motor Vehicles
  - Health and Human Services
    - Public Health – Chief Medical Officer
  - Nebraska League of Municipalities
  - Nebraska Association of County Officials

2011 Lowest Fatality Rate Ever 0.95



Interagency Safety Committee Working Team

- NDOR Traffic Engineer – Team Leader
  - Traffic Analysis Engineer
  - Hwy Safety/Accident Records Manager
  - Nebraska Office of Highway Safety Administrator
- Nebraska State Patrol
  - Field Services Major
  - Carrier Enforcement Division
- Department of Motor Vehicles
  - Drivers Licensing Service Administrator
- Health & Human Service
  - Public Health – State EMS Coordinator
- Nebraska LTAP
  - LTAP Director

Three NDOR Safety Committees

- NDOR Safety Committee (HSIP Program)
  - 12.3 Million
  - Location Specific Type Projects
  - State Highway or Local Agency
- High Risk Rural Roads Committee (HRRR)
  - $930,000
  - Systemic or Location Type Projects
  - Rural County Roads
- Strategic Safety Infrastructure Team
  - NDOR Systemic Type Projects
  - Policy Development for Systemic Projects
  - Approval of the Larger HSIP Projects

Safety Committee (HSIP Program)

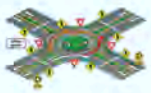
- Members:
  - Traffic Engineering
    - Highway Safety/Accident Records Manager Team Leader
  - Roadway Design
  - Rail and Public Transportation
  - Local Projects
  - Operations (ITS Engineer)
  - City of Lincoln
  - City of Omaha
  - LTAP
  - NACO (one Representative)

Safety Committee Review Process

- Location Identified for Committee Review
- Review Crash History and Collision Diagram
- Review Photos, Aerials or Video
- Committee Review, Discussion and Approval

Typical HSIP Projects

- Intersection Modifications:
  - Turn Bays – Left or Right turn lanes
  - Roundabouts
  - Radius Improvements
  - Islands – Median Modification
  - Lighting – Pedestrian Nodes at Intersections
- Traffic Signals – Installations – Modifications – UPS
- Count Down Pedestrian Heads – Lincoln-Omaha
- Curve Realignment or Warning Devices
- Bridge Anti-Icing
- Road Diets Four Lanes Reduced to Three Lanes
- Widened Highway from Four Lanes to Five Lanes – Hastings
- Added Uninterrupted Power Supplies (UPS) to NDOR signals



High Risk Rural Roads Committee

- Members:
  - Traffic Engineering (Team Leader)
  - Local Projects Division (County Projects Engr.)
  - LTAP (Director and Staff)
  - NACO (one Representative)

Typical HRRR Projects

- Horizontal Curve Signing and Chevrons
  (3 STWD Projects 78 of 93 Counties Participated)
- Intersection Signing
- Rumble Strips (Advance Stop)
- Bridge Rail Object Marker Replacement
- RR Signing and Markings
- County Roadway Regrading
- Retroreflectometer & Inspection Program

Strategic Safety Infrastructure Team

- Members:
  - Traffic Engineer (Team Leader)
    - Traffic Control Engineer
    - Highway Safety/Accident Records Manager
  - Roadway Design Engineer
    - Roadway Design Assistant Engineer
  - Local Projects Division Engineer
    - Municipality Engineer
  - One District Engineer
  - Deputy Director (Policy Approval)

Infrastructure Team Projects

- Shoulder and Centerline Rumble Strips
- Advance Signal Warning Signs W/Beacons
- Bridge Rail and Guard Rail Upgrades
- Pavement Marking Improvements
- NDOR STWD Countdown Pedestrian Heads
- DMS Replacements Upgrades

Strengths

- Safety is an integral part of the Department's Design and Traffic Engineering Process
- Our Safety Committee Project Review Process is a Multi-Disciplinary Team Approach to Safety Improvement Recommendations
- Our Engineers and Safety Analysts are Involved in the Selection and Approval of Safety Strategies and Projects
- Good Partnerships with LTAP and NACO

Challenges

- The Nature of Traffic Engineering Standards May create an Inherent Fear of Litigation
- NDOR has No Limit on Liability
- Safety Does Not have an Independent Voice
- Seat Belt Regulation
- Federal Regulations

Dan Waddle, PE
Traffic Engineer
Nebraska Department of Roads
Dan.Waddle@nebraska.gov

Office Overview - Traffic Operations and Safety

Florida Department of Transportation
Mark C. Wilson, P.E., State Traffic Operations Engineer
Joseph B. Santos, P.E., State Safety Engineer

Traffic Operations and Safety Peer Meeting
Schaumburg, IL
November 14-15, 2012

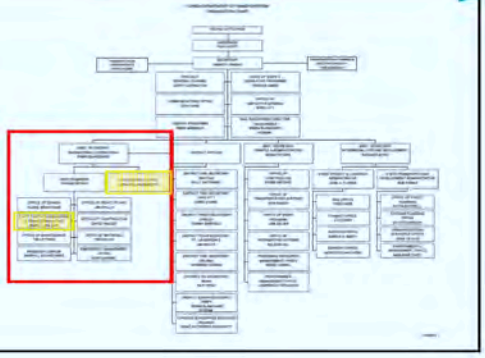
Office Overview - Traffic Operations and Safety

- Overview of Florida Department of Transportation
- Traffic Operations Office and Safety Office
  - Mission and Goals
  - Roles and Responsibilities
  - Organization Chart
  - Strengths, Challenges, and Weaknesses
  - Partnerships
- Closeout

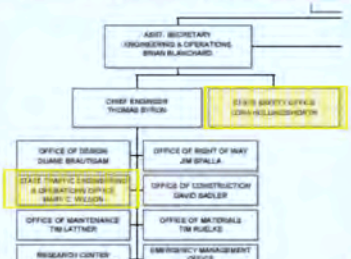
Florida Department of Transportation

Our Mission
The department will provide a safe transportation system that ensures the mobility of people and goods, enhances economic prosperity and preserves the quality of our environment and communities

- Decentralized
- Tallahassee Central Office
- Seven Districts and Florida's Turnpike Enterprise.
- 7,426 employees statewide
- State Highways
  - 12,076 centerline miles and 6,661 bridges

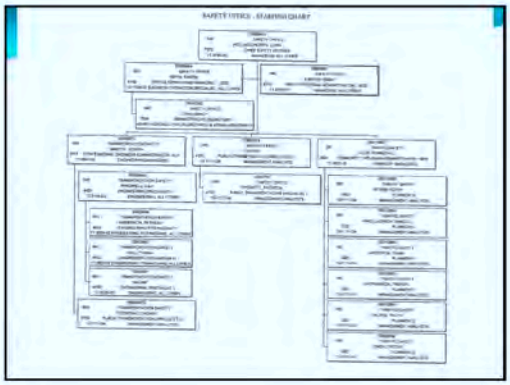


Florida DOT Central Office Organization



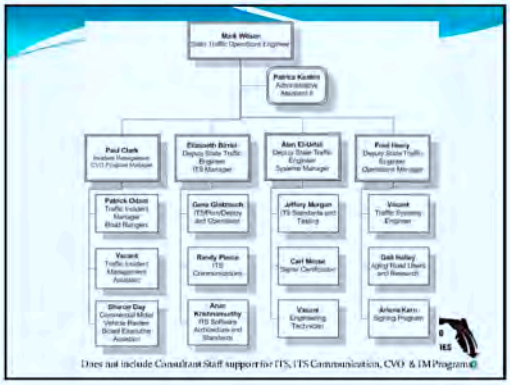
State Safety Office

- **Our Mission**
  - Our mission is to continually improve the safety of users of Florida's highway system, and the safety of Department employees.
- **Our Goals**
  - Decrease the frequency, rate, and severity of, and potential for, crashes involving motor vehicles, pedestrians, and bicycles on public roads in Florida through the implementation of comprehensive safety programs involving engineering, enforcement, education and/or emergency services.
  - Provide procedures, training and awareness activities that foster safe work practices and workplaces for Department employees.

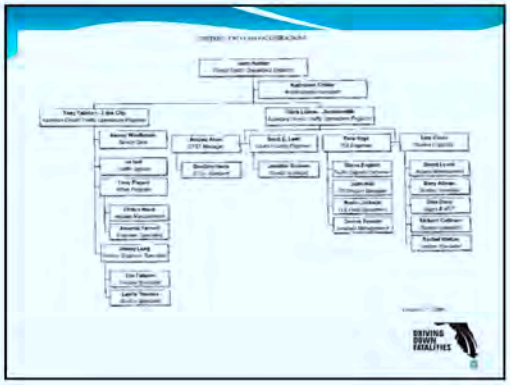


Traffic Engineering and Operations Office

- The State Traffic Engineering and Operations Office provides support and expertise in the application of traffic engineering principles and practices to improve safety and mobility.



Does not include Consultant Staff support for ITS, ITS Communication, CVO & IM Programs



Roles and Responsibilities

- State Safety Office
  - Highway Safety Improvement Program
  - Strategic Highway Safety Plan
  - Highway Safety Plan
  - Crash Data
- State Traffic Engineering and Operations
  - Traffic Engineering Studies, Signing and Operations
  - Certification of traffic control signal devices and ITS devices
  - Intelligent Transportation Systems Program (ITS), the Statewide Incident Management Program, and Safe Mobility for Life Program
- District & Turnpike Safety Staff
  - Safety Project Development

Florida DOT Organization - Strengths, Challenges, and Weaknesses

- Pro's & Con's of having Two Independent Offices and a de-centralized Statewide Organization
  - Pro's
    - Separate Offices allow diversification in activities.
    - Decentralized allows bold initiatives.
  - Con's
    - Safety Related activities require proactive coordination.
    - Safety Engineering staff includes 1 PE.
    - Decentralized require tracking to maintain consistency.

Questions?

Mark C. Wilson, P.E.
State Traffic Operations Engineer
Florida Department of Transportation
605 Suwannee Street, MS 36
Tallahassee, Florida 32399-0450
[redacted]
850-410-5419

Joseph B. Santos, P.E.
Transportation Safety Engineer
Florida Department of Transportation
605 Suwannee Street, MS 53
Tallahassee, Florida 32399-0450
[redacted]
850-245-1502

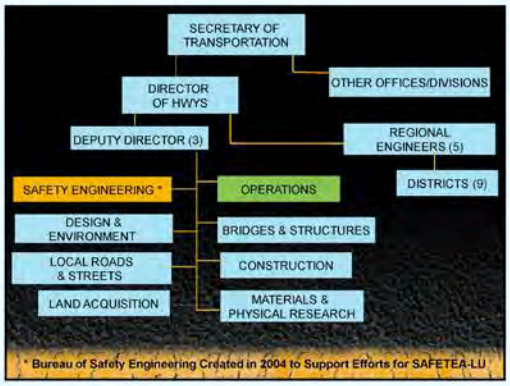
Illinois Department of Transportation: Partnering for Safety--Driving Zero Fatalities to a Reality

Joseph Monroe, IDOT District 8
Lisa Heaven-Baum, IDOT District 1
Illinois Department of Transportation

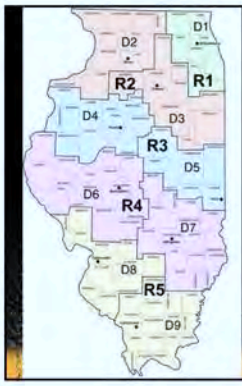
Illinois SHSP

- Zero Fatality Goal
- All public roads
- Severe Crashes
- Substantive Safety
- 4E Partnership
- Continual Evaluation
- www.ishsp.org

Driving Zero Fatalities to a Reality



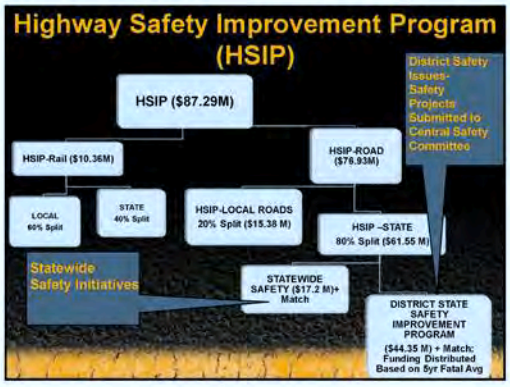
* Bureau of Safety Engineering Created in 2004 to Support Efforts for SAFETEA-LU

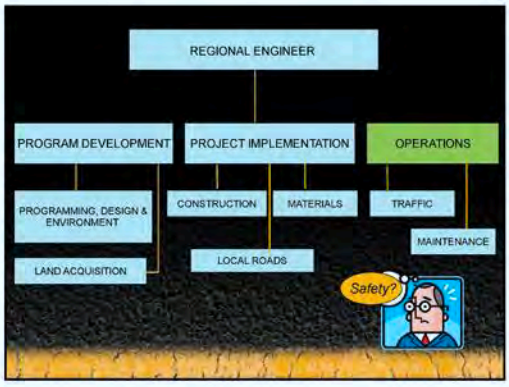


Illinois Department of Transportation

Regional & District Map

Highway Safety Improvement Program (HSIP)



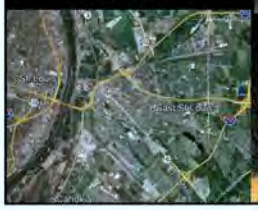


What is IDOT District 8?

- Southern Illinois near St. Louis
- 2nd Highest IL Population
- 2nd Highest IL Fatalities
- Rural and Urban Areas
- Multi-State Area

What is IDOT District 8?

~14k Centerline Miles
- 86% on the Local Roads
- Multiple Interstates
- ADT / VMT



- 11 Counties
- More than # cities
- # Illinois State Police Districts

IDOT District 8 Perspective

Integration of Safety Engineering & Traffic Engineering

- Structure within D8
- Staff Roles & Responsibilities for Safety Engineering & Traffic Engineering
- Process for Integrating Safety Engineering & Traffic Engineering
  - Traffic Engineering In HSIP Process
  - Safety Engineering Throughout Processes

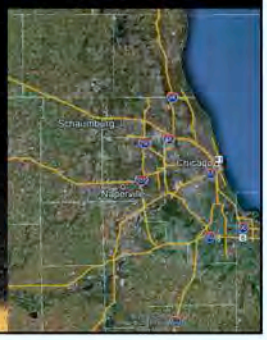
IDOT District 8 Perspective

Integration of Safety Engineering & Traffic Engineering

- Challenges with the Approach
- Advantages with the Approach
- Leveraging Partnerships
- Best Practices

What is IDOT District 1?

- Chicagoland Area
- Highest IL Population
- Highest IL Fatalities
- 30k Centerline Miles
  - ~90% on Local Roads
  - ~ ADT / VMT
- 6 Counties
- More than # cities

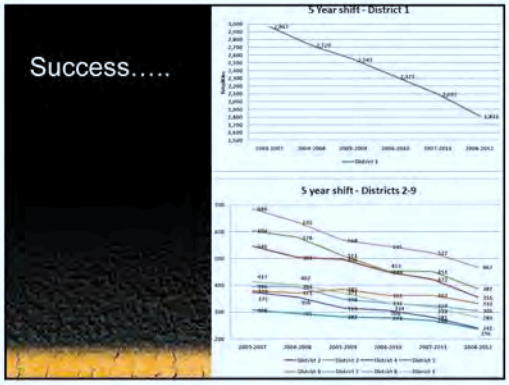


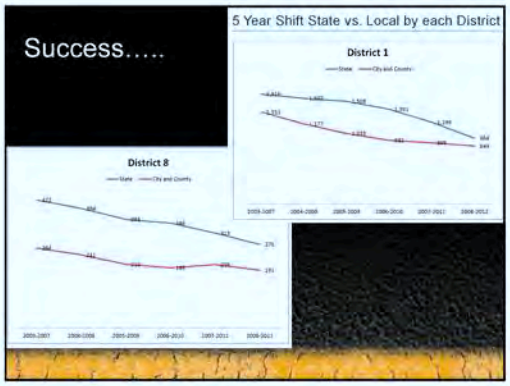
IDOT District 1 Perspective

Integration of Safety Engineering and Traffic Engineering

- Structure within D1
- Staff Roles & Responsibilities for Safety Engineering & Traffic Engineering
- Process for Integrating Safety Engineering & Traffic Engineering
  - Traffic Engineering In HSIP Process
  - Safety Engineering Throughout Processes


IDOT District 1 Perspective
Integration of Safety Engineering and Traffic Engineering
Challenges with the Approach
Advantages with the Approach
Leveraging Partnerships
Best Practices


Success…..
5 Year shift - District 1
5 year shift - Districts 2-9


Success…..
5 Year Shift State vs. Local by each District
District 1
District 8

November 14-15, 2012
Hyatt Regency Woodfield Hotel – Schaumburg, Illinois

SAFETY ENGINEERING – TRAFFIC ENGINEERING PEER EXCHANGE

State Agencies Organizational Structures and Inter-relationships between Traffic and Safety Engineering Procedures

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State Agencies Organizational Structures and Inter-relationships between Traffic and Safety Engineering Procedures

- Different organizational structures
  - provide the leadership
  - processes to integrate traffic and safety performance management and decision making
- What are the most important elements for successful integration of traffic and safety for programs and projects?
  - In a centralized organizational structure
  - In a decentralized organizational structure

State Agencies Organizational Structures and Inter-relationships between Traffic and Safety Engineering Procedures

- Is organization structure relevant or are the procedures and policies of greater importance to create mutual collaboration?
- What types of barriers or challenges does your organizational structure pose for integrating traffic and safety performance measure management?

State Agencies Organizational Structures and Inter-relationships between Traffic and Safety Engineering Procedures

- There are a lot of influences on the effectiveness of traffic and safety programs
- How are HCM and HSM quantitative analyses addressed:
  - What is the correlation between Highway Capacity and Quality of Service, geometric configuration, crash rates / types, and time of day?
  - Does (or how does) your agency use this type of analysis / data to identify trends or target locations for possible mitigation?
  - And with this, how does your agency define the concept of operation and performance objectives of a project to identify a mitigation strategy?
  - Share example projects and approaches for quantifying and comparing the traffic impacts (LOS, delay, operating speed, etc.) and safety impacts (predicted number of crashes, cost of lives lost, etc.) for decision making; i.e. alternatives evaluation, NEPA, etc.

State Agencies Organizational Structures and Inter-relationships between Traffic and Safety Engineering Procedures

- There are a lot of influences on the effectiveness of traffic and safety programs
  - How do partnerships facilitate integration of safety and traffic programs?

2012 National Safety Engineering - Traffic Engineering Peer Exchange

Recap on Day 1

Yanfeng Ouyang, University of Illinois

Setting the Goal and Vision for the Peer Exchange Workshop

- Objectives:
  - Encourage and support dialogue of **challenges, best practices, and lessons learned** that can help state organization further advance the collaboration and integration of safety and traffic operations efforts.
    - safety and mobility: interlinked impacts
    - how organization structures impact the coordination and collaboration
  - Provide an opportunity for safety and traffic engineers to share their respective analytical and decision-making processes
  - Facilitate discussion of
    - implemented engineering countermeasures to increase mutual understanding of the benefits and challenges of implementation
    - distinct performance measures considered, and
    - potential collaborative means to enhance the treatments for best possible outcomes for all road users.

History – Mobility and Safety

- **The Highway Safety Act of 1966**
  - FHWA was responsible for the following among 18 Safety Program Standards which integrates the roles of traffic engineers and safety engineers
    - Highway Design, Construction, and Maintenance
    - Traffic Engineering Services
    - Pedestrian Safety (Highway Aspects)
    - Traffic Records
- **Great achievements nationwide, but much work ahead**
  - Annual Fatality Totals decreasing since the 1970s, particularly in the past decade
  - Annual Fatality Rate Per 100 MVMT steadily decreasing
  - Annual Fatality Rate Per 1,000 Miles Road still stagnant
- **Keys to the discovery of break-through**
  - Fresh (multidisciplinary) perspectives
  - Break a link in the "chain of events"
  - Data analysis and mining for new insights

Setting the National Scene

Setting the National Scene

- Strategic Highway Safety Plan naturally involves safety and traffic operational aspects
- HSM publication provides a set of analytical tools to safety engineering
  - Statistical, data driven (e.g., high crash locations, data analysis)
  - HSM implementation ongoing at many states, with awareness at both traffic & safety offices
  - Many state data record systems need improvement.
- MAP 21 (Moving Ahead for Progress in the 21st Century) helps improve data collection and performance assessments
  - What data to collect, and what performance to assess?
  - Data needs to be carefully investigated to avoid pitfalls (e.g., safety impacts of an ITS device may be disguised by change of traffic volume)

Setting the National Scene

- SHRP2/naturalistic study provides knowledge and data that may potentially revolutionize safety study
  - Integrating multiple design and human factors (e.g., curvature, vehicle, driver reaction)
  - Thousands of vehicles already studied at 5+ sites nationwide
- MUTCD (2009 latest edition)
  - Challenges: uniformity versus engineering judgments: Uniformity is the goal, but should also allow unique characteristics of each state
  - Challenges: standards versus innovation (e.g., variable speed limit)
- AASHTO green book vs MUTCD vs HSM vs HCM
  - How to take a proactive, systematic, and strategic approach to both safety and traffic?
- Training and education
  - Incorporation of safety as well as traffic issues into university courses?

Breakouts: Opportunities to Link Safety Engineering and Traffic Engineering Efforts

- **What can be done to increase the performance of capacity building and asset management through our policies, and our day to day processes and procedures?**
  - Identify your strategic objectives (operational or safety)
    - Identify the focus measures (how to define the performances for the public)
    - Understand/recognize training needs for the various multi disciplinary approaches
  - Balance between priorities
    - Use data to link operation and safety
    - Resources and staff time
  - Invest in data (e.g., at the local level)
    - E.g., track aging population, local traffic counts

Breakouts: Opportunities to Link Safety Engineering and Traffic Engineering Efforts

- **How can MAP 21 and other transportation bills be integrated with non-safety focused projects led by traffic engineers?**
  - Scoping projects and create opportunities for safety to be considered
    - Even if the project is not related to safety
    - Aligning the processes of project planning (e.g., timing, budgeting)
  - More responsibility as well as more flexibility
    - Balancing overall DOT projects (not just those for safety) is generally a challenge
  - Management challenges
    - Getting the locals involved
    - Convincing the politicians: cutting the budget is not in the best interest of safety
    - Leveraging other types of funds (e.g., homeland security) for safety

Breakouts: Opportunities to Link Safety Engineering and Traffic Engineering Efforts

- **What needs to be done to create synergy among the applications of national manuals such as HSM, HFG, HCM, and MUTCD (and Green Book), for better, more-informed decision making?**
  - Balancing various requirements
    - How to find balance among the standards, guidelines, manuals and policies
    - Safety evaluation is included in operational analysis/evaluations
    - Mitigate the lack of data
    - Ways and process in which they do analysis
  - Congestion versus safety and fatality
    - Performance-measure for congestion associated with safety
    - Standards or guidelines need to encourage engineer to go beyond the minimum
  - Significant challenge to create synergy to get multiple professional organizations (e.g., AASHTO, FHWA, TRB) to work together
    - Various documents must provide consistency
    - How to establish educational processes?

State Agencies Organizational Structures and Inter-relationships between Traffic and Safety Engineering Procedures

- Some of the states' organizational structures (and roles and responsibilities) have changed or expanded as a result of legislative changes (e.g., SAFETEA-LU, HSIP)
  - New bureaus
  - New committees
- In some other states, safety is integrated in the design and traffic engineering process, but it does not have an independent voice
- Most states have independent offices for traffic operations and safety, and have a rather de-centralized organization structure
  - Allow diversification in activities and new grass-root initiatives
  - Require proactive coordination to maintain consistency

Breakouts: State Agencies Organizational Structures and the Inter-Relationships Between Traffic and Safety Engineering Procedures

- **What are the most important elements in centralized vs decentralized organizational structures for successful integration of traffic and safety for programs and projects?**
  - Definition of centralization and decentralization (in terms of the way of operations) is important
    - Some states do not define themselves as centralized or decentralized
    - Both have advantages and disadvantages
  - In a decentralized organization, networking, relationship, and communication are really important
    - Timely communication btwn organizations is important for decision making
    - Communication has strong influences on the relationship among stakeholders and various offices within the organization
    - Communication and personalities really matters in creating initiatives via contacts (being proactive or reactive)

Breakouts: State Agencies Organizational Structures and the Inter-Relationships Between Traffic and Safety Engineering Procedures

- **Is organization structure relevant or are the procedures and policies of greater importance to create mutual collaboration?**
  - A couple of states have standing cross-disciplinary committees outside of the existing organization chart
    - Since they are multi-disciplinary, collaboration has already happened (e.g., safety funding committee)
  - Some find that policies and procedures are more important compared to the organization structure
    - Relationship within the organization is important
    - Interest in providing and sharing high quality data for a mutual goal
  - How to operate better regardless of centralization or decentralization
    - The headquarter may provide a recommended project with funding, but still the districts may want to have flexibility and alternatives
    - Strong leadership from the top helps make decisions (centralized or decentralized, regardless)

Breakouts: State Agencies Organizational Structures and the Inter-Relationships Between Traffic and Safety Engineering Procedures

- **How do partnerships facilitate integration of safety and traffic programs?**
  - Form result-oriented committees with specific goals so as to improve efficiency
  - Cross-training at different offices (e.g., webinars)
  - Educating the public on the implementation of the strategies
  - Outreach to not only the public/community but also locals
    - Make strong investment in the locals
    - Work with counties and locals on developing local county level road safety plan, low cost safety projects, and help them developing crash data analysis

Setting the Vision for 2nd Day Peer Exchange

Priscilla Tobias, State Safety Engineer,
Illinois DOT

Oregon Department of Transportation

Intersections: Managing Performance—Operations and Safety

Protected Only vs. Protected/Permissive Left-Turn (PPLT) Phasing

Flashing Yellow Arrow (FYA)

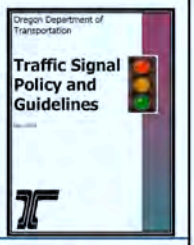
Kevin J. Haas, P.E.
Traffic Investigations Engineer
Oregon Department of Transportation

Randall Laninga, P.E.
Traffic Engineer
Illinois Department of Transportation

Oregon Department of Transportation

Protected Only Left-Turn Phasing Policy

- Required
  - Intersection sight distance less than AASHTO minimums for left turn
- Recommended
  - Speed limit > 45 mph
  - Left-turn movement crosses 3 or more lanes
  - Dual left-turn lanes
  - High percentage of left-turning trucks



Oregon Department of Transportation

PPLT Left-Turn Phasing Policy

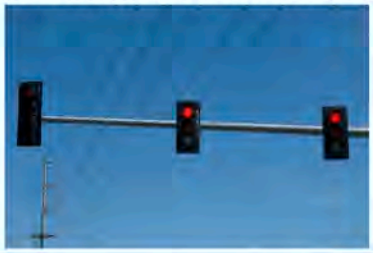
- PPLT provided when left-turns > 200 vph (existing volumes or within 5 years)
- 4-section head with flashing yellow arrow
  - No more "doghouse" heads!
- PPLT with FYA is preferred phasing unless Protected-Only criteria are met

Oregon Department of Transportation

Traditional 5-Section "Doghouse"

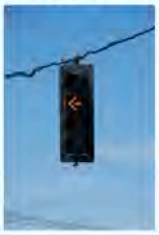
Oregon Department of Transportation

Intersection with a FYA Head



Oregon Department of Transportation

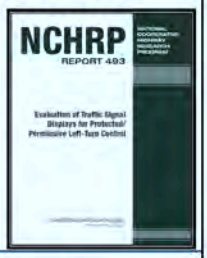
Flashing Yellow Arrow (FYA) Head



Oregon Department of Transportation

NCHRP 3-54 & Report 493

- First Oregon FYA installed in 2001
  - Oregon was one of the lead States participating in NCHRP 3-54
    - Oregon DOT (Woodburn)
    - City of Beaverton
    - Jackson County
- Interim Approval for FYA granted by FHWA in 2006



Oregon Department of Transportation

State highways in Oregon

- 8,000 centerline miles
  - 10% of Oregon total mileage
  - 60% of Oregon VMT
  - 1,500 signalized intersections
    - Approximately 50% with at least 1 PPLT leg

Oregon Department of Transportation

Aggressive FYA outreach & education campaign since 2001

Arrows point toward safety

Oregon Department of Transportation

NCHRP Web-Only Document 123

- Follow-up study to NCHRP Report 493
  - Published in 2007
  - 13 intersections converted from PPLT "doghouse" heads to FYA signal heads
  - 12 of 13 intersections saw reductions in left-turn crashes after FYA installed

Oregon Department of Transportation

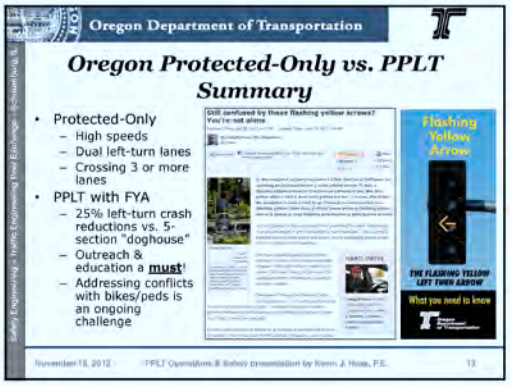
Oregon FYA crash reductions

- Aggressive campaign initiated in 2007 to replace all "doghouse" signal heads with FYA
- Typical conversion cost = $10,000 per intersection
- Typical left-turn crash reduction = **25%**

Oregon Department of Transportation

Conflicts with pedestrians & bicyclists for permissive left-turns

- Drivers focused on looking for gaps rather than pedestrians & bicyclists
- Portland is #1 bicycle commuting city in U.S.
  - 5.4% commute by bicycle
- Advanced traffic signal controllers provide options:
  - Protected only operation during pedestrian call to controller
  - Set FYA parameters based on gaps (requires good detection)


Oregon Department of Transportation
Oregon Protected-Only vs. PPLT Summary
Protected-Only
High speeds
Dual left-turn lanes
Crossing 3 or more lanes
PPLT with FYA
25% left-turn crash reductions vs. 5-section "doghouse"
Outreach & education a must!
Addressing conflicts with bikes/peds is an ongoing challenge
Still confused by these flashing yellow arrows? You're not alone.
Flashing Yellow Arrow
THE FLASHING YELLOW LEFT TURN ARROW
What you need to know
November 13, 2012
PPLT Operations & Safety presentation by Kevin J. Haas, P.E.
13

Peer to Peer Exchange, Schaumburg, IL – November 15, 2012

FLASHING YELLOW ARROWS

WHAT'S THE PROBLEM ?

- Safety problems with left turn movements at traffic signals.
- High probability for an injury in a left turn crash.
- Circular green for left turns can be confusing.
  - For buried lefts
  - For a vehicle just pulling up.
  - For beginners and the elderly
  - For the distracted

NCHRP 493 AND 123

- Results
  1. Reduced Left Turn Crashes
  2. So Intuitive there would be no need for signs
  3. With the exclusive left turn signal it would reduce the left turn trap problem. Therefore use of lead/lag left turn phasing for better progression would not be a problem.
  4. Provides an exclusive display for left turn control
  5. Promotes nationwide consistency for protected/permissive display

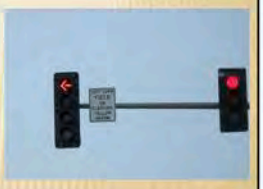
DISTRICT FOUR FYA PROJECT

- Two Major Safety Projects
  - April 2010 Letting
    - IL 40 (Knoxville Ave) & US 150 (War Memorial Drive)
    - $400,000.00
  - June 2010 Letting
    - Rest of the State routes in Peoria, East Peoria, Pekin, Bartonville, Creve Coeur, North Pekin and Morton
    - $500,000.00
- Multiple small projects
- Total of 104 intersections

OUTREACH

- Support from the cities
- Presentations
- Brochures
- You Tube
- Attempted Press Conference
- Television News Stories
- News Paper Articles

SIGNS

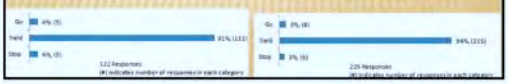


PASADENA CALIFORNIA

COMPARATIVE SURVEY RESULTS

- If you want to turn left, and you see the traffic signal shown below, what would you do?

PHASE 1 PHASE 2



COMPARATIVE SURVEY RESULTS

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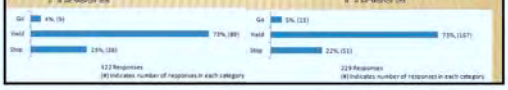

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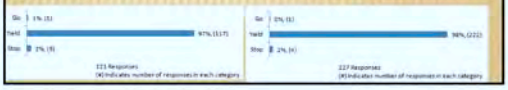


CRASH EVALUATION: PRELIMINARY RESULTS

- 91 FYA approaches included with signs accompanying the signal

FYA APPROACH BASIS	PRELIMINARY RESULTS (TOTALS)			
PARAMETER	Before	After	% Reduction	Significant?*
Total approach crash frequency	103.33	76	26.5%	Yes, 99%
Injury crash frequency	30.33	21	30.8%	Yes, 95%
LT related crash frequency	42.33	32	24.4%	No
LTHO only crash frequency	30	18	40.0%	Yes, 95%

BRADLEY UNIVERSITY *Based on Poisson test for crash frequencies

CRASH EVALUATION: PRELIMINARY RESULTS

- 73 FYA approaches included without signs accompanying the signal

FYA APPROACH BASIS	PRELIMINARY RESULTS (TOTALS)			
PARAMETER	Before	After	% Reduction	Significant?*
Total approach crash frequency	82.33	85	-3.2%	No
Injury crash frequency	25.33	23	9.2%	No
LT related crash frequency	25.33	24	5.3%	No
LTHO only crash frequency	19.67	13	33.9%	No

BRADLEY UNIVERSITY *Based on Poisson test for crash frequencies at 95% LOC

CRASH EVALUATION: PRELIMINARY RESULTS

- 164 total FYA approaches included

FYA APPROACH BASIS	PRELIMINARY RESULTS (TOTALS)			
PARAMETER	Before	After	% Reduction	Significant?*
Total approach crash frequency	185.67	161	13.3%	Yes, 95%
Injury crash frequency	55.67	44	21.0%	No
LT related crash frequency	67.67	56	17.2%	No
LTHO only crash frequency	49.67	31	37.6%	Yes, 99%

BRADLEY

*Based on Poisson test for crash frequencies

LEFT TURN TRAP

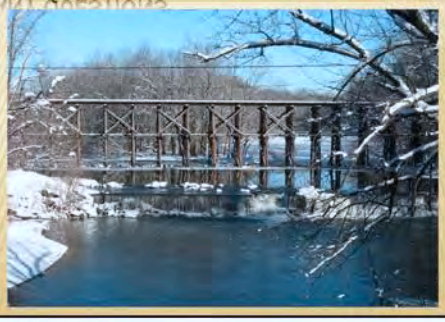
- Lead - Lag Lefts
  - Progression – Great results
  - Crashes - Lake St. Left Turn crashes 3 to 14
    - Louvers?
    - Patience?
    - Left turn sight distance?

LEFT TURN BAY TREATMENTS

REVIEW

- Results
  1. Reduced Left Turn Crashes Excellent
  2. So Intuitive there would be no need for signs Need signs and Outreach
  3. With the exclusive left turn signal it would reduce the left turn trap problem. Therefore use of lead/lag left turn phasing for better progression would not be a problem. Use with caution
- Should we convert Protected only to protected/permissive?

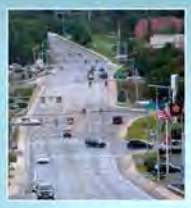
ANY QUESTIONS



CONTACT INFORMATION

- Randy Laninga
- Traffic Engineer
- Illinois Department of Transportation
- (309) 671-4477
- Randall.Laninga@illinois.gov

Adaptive Signal Control Technology Research and Implementation in Illinois



What is Adaptive Signal Control Technology (ASCT)?

- Continuously adjusts traffic signal timings to accommodate real-time changes in traffic patterns and to improve traffic flow
- Many different manufacturers and products with different methodologies for adjusting timings
- Some systems may only require software upgrades while others may require additional hardware
- FHWA recommends performing a systems engineering analysis to assist in selecting the appropriate technology

Purpose and Benefits of Adaptive Signal Control Technology (ASCT) Research

- Measure improvements in traffic flow and efficiency
- Determine if there is a reduction in crashes due to ASCT implementation
- Develop a Crash Modification Factor (CMF) for ASCT implementation
- Implementation site to be used as a test bed for future ASCT training and research

Purpose and Benefits of Adaptive Signal Control Technology (ASCT) Research

- Testimonials and information from manufacturer websites typically show improved traffic flow and efficiency benefits
- There appears to be a lack of research and information regarding potential safety benefits of ASCT
- Reduction in stops should lead to reduction in rear-end crashes
- Flexibility in adjusting phase times particularly for left turning traffic could reduce angle crashes

Research

Quick Research
- Gathered crash and cost data from agencies outside Illinois
- Data acquired through user surveys

Full Research
- Implement ASCT system in Illinois
- Gather before and after efficiency and crash data
- Develop CMF for ASCT implementation

Quick Research

- Prof. Ray Benekohal, Univ. of Illinois Urbana-Champaign
- Final report should be complete by January 2013
- Preliminary results have shown crash reductions after ASCT was implemented
- Very limited data sample

Full Research

- 3-year project scheduled to begin January 2013
- Select an existing coordinated signal system containing a high crash segment or high crash intersections
- Perform a systems engineering analysis to assist in determining which ASCT system to implement
- Researcher will purchase and have the system installed
- Received one proposal for this research which is currently under review

Full Research

- Primary goal is to develop a Crash Modification Factor in accordance with recommendations from NCHRP 20-7(314)
- Consider including in Crash Modification Factor Clearinghouse and Highway Safety Manual

Proposed installations in Lake County

- Part of FHWA Every Day Counts Initiative
- Developed a Systems Engineering Document for Aptakisic Rd. corridor
- Working on a separate systems engineering document for Gilmer Rd. corridor
- Currently developing the construction plans
- Implementing ASCT to help mitigate congestion issues

Proposed installations in Lake County

Aptakisic Rd – Buffalo Grove and Lincolnshire, IL 8 intersection corridor

Proposed installations in Lake County

Gilmer Rd
5 intersection corridor

Kyle Armstrong, PE, PTOE
Engineering & Standards Unit Chief
IDOT Bureau of Operations
217/782-7414
Kyle.Armstrong@illinois.gov

Pedestrian Safety vs. Capacity

Mark C. Wilson, P.E.
State Traffic Operations Engineer
Florida Department of Transportation

Traffic Operations and Safety Peer Meeting
Schaumburg, IL
November 14-15, 2012

The Question

What is the (right, correct, best) decision?

Signalized Intersection Operations: Pedestrian Safety Options

- Use of 3-ft/sec Ped Walk Speed (could add 2 - 8 seconds per phase)
- Advanced Ped Phase (could add 3 - 5 sec per phase)
- Ped Only Phase (could add 15 - 40 sec per phase)
- No Permissive Left-Turn across Ped Phase (Protected Ped Phase Always (could add 0 - 15 sec & Operational issues)
- No Right-Turn-on-Red (Operational issues)
- Longer All-Red Intervals (could add 1-3 sec per phase)
- Use of shorter Cycle-Lengths (additional lost-time per cycle)
- All of these applications can affect cycle-length and coordination

Group Discussion - additional operations - comments

Signalized Intersection Operations:

Safety	Capacity
> Walk Time	Less Green on Major Street
Ped Exclusive Phases	Increased Lost Time
Turn Restrictions	Increased chance of operational issues

Mid-Block Crosswalks:

Rectangular Rapid Flashing Beacon (RRFB)

Safety	Capacity
Increases vehicular compliance	Reduces flowrate (through-put)

Mid-Block Crosswalks:

Pedestrian Hybrid Beacon (HAWK)
Non-Coordinated Application

Safety	Capacity
Control vehicular traffic to assist ped crossing	Reduces flowrate (through-put)

Mid-Block Crosswalks:

Pedestrian Hybrid Beacon (HAWK)
Coordinated Application

Safety

- Peds usually ignore the in-step wait period

Capacity

- Reduces flowrate (through-put)

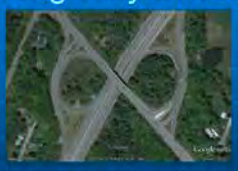
Research:

- **NCHRP 07-17 [Active] Pedestrian and Bicycle Transportation along Existing Roads (Completion Date 02/17/2013)**
- **NCHRP 17-56 [Active] Development of Crash Reduction Factors for Uncontrolled Pedestrian Crossing Treatments (Completion Date 10/31/2014)**

Questions?

Mark C. Wilson, P.E.
State Traffic Operations Engineer
Florida Department of Transportation
605 Suwannee Street, MS 36
Tallahassee, Florida 32399-0450
850-410-5419

Interstate Highways & Wrong Way Drivers



Duane Brunell
MaineDOT
Safety Office

Interstate Road Safety

We know…

- Interstate highways are the safest part of the state's road system (lowest crash and fatality rates)
- AND, high speeds do introduce higher serious injury potential when crashes do occur

Two specific interstate crash scenario concerns:

- Cross-median crashes

- Wrong way crashes (more frequent)

Wrong way crash comments:

- Not frequent
- BUT…More frequent than the headline news stories
  - Most drivers quickly realize they made an error and self correct
  - Some go for miles….
- More than 20% of WW result in a fatality

Maine – SHSP input

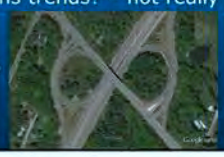
- Maine State Police input on leading on road safety concern…

Wrong Way Drivers

What are some of the crash factors?

- Alcohol, emotional/medical issues
- AGE:
  - In half of Maine fatal crashes driver age was 72+
  - In all other crashes, 26% of crashes involved mature drivers.
  - Locations trends? – not really

Ramp Type?



Story lines from various driver ages

- "…Police suspect he entered the interstate from Mallet Drive in Freeport and then drove north for about **two** miles in the southbound lane avoiding collisions with several other vehicles until the crash."
- "allegedly drove south for **five** miles in the northbound lanes of the turnpike near Ogunquit before crashing head-on with a limousine"
- "drove for almost **seven** miles — headed north in the southbound lane — before he collided with the other car."
- '…woman traveled north in the southbound lanes for **seven** miles …"It appears that she thought she was on a two-lane road," he said. The woman never exited the interstate but pulled over to clean off her windshield. '

Engineering and Design considerations…

Contemplate:

Driver Behaviors and Decision-making

(even when they are less than perfect)

Difficult area to come up with a 100% solution

- If driver is disoriented – due to mind or physical issues, what can provide positive guidance?
- One suggestion: One way tire spikes – presents other safety problems?

Critically Evaluate what you have

- Placement of route directional signs
- Placement of turn arrow markings
- Clearly marked entrances
- One way/Do not enter sign placements/visibility
- Overall ramp design

Solutions to consider

- Improved static signs
- Improved pavement markings – skips to show path of travel
- Improved exit design and on/off separation (But often you have to work with what you have)
- Dynamic Signs (due to unusual nature of worst case scenarios - looking for something more attention grabbing for the wayward driver)

Installing DO NOT ENTER and WRONG WAY BlinkerSign® LED signs can deter drivers from making wrong-way movements onto freeways and other restricted roads. By providing the extra visible warning cues standard traffic signs lack. The solar-powered BlinkerSign® is directional and activated only by vehicles traveling in the wrong direction (speed threshold is adjustable). Additional signs facing the opposite direction can be added to warn drivers of the wrong way traveling vehicle.

BlinkerBeam™ Wireless Communication

Wrong Way BlinkerSign warning systems typically consist of two Wrong Way signs, one on each side of the roadway. When activated, the signs communicate wirelessly with each other through the BlinkerBeam™ transmitter. Instantly both signs are flashing in unison.

The Plan

- MaineDOT will pilot at one location
  I-295 NB Mallet Drive, Freeport
- Keep state police in communication/progress loop
- If system performs favorably, could go to many key exit locations
- Location system installations may vary
  ($6,500 for base dynamic sign pair)

Questions or feedback, contact

Duane Brunell
MaineDOT
Safety Office
624-3278
duane.brunell@maine.gov

Systematic Improvements on Curves

Office of Traffic, Safety, and Technology

Your Destination...Our Priority

Why Curves?

Only about 10% of the system

8% of total crashes

17% of total severe crashes (K+A)

Your Destination...Our Priority

Why Curves?

- Only about 10% of the system (County)

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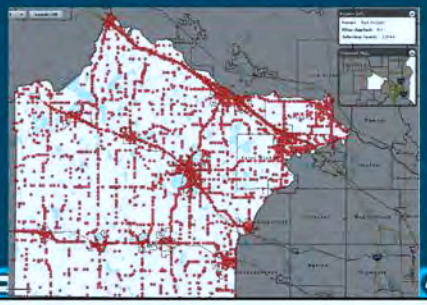
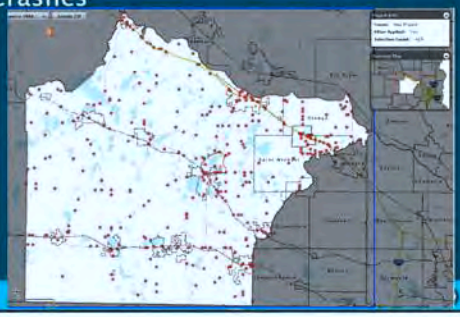
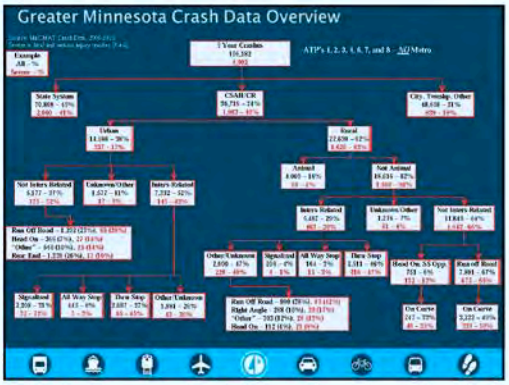
Wright County – All Crashes

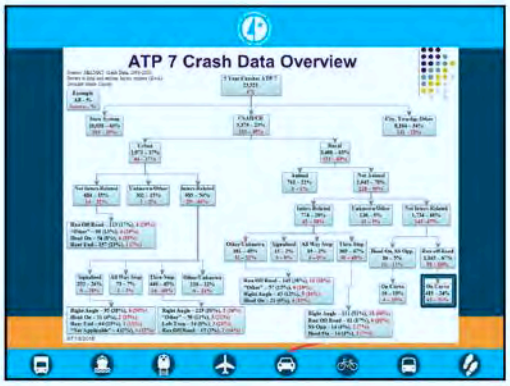


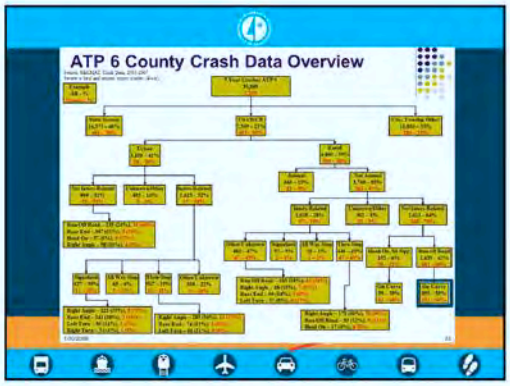
Wright County – Fatal and Serious Crashes



Greater Minnesota Crash Data Overview







Why Curves?

- Only about 10% of the system (County)

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Why Curves?

- 21% of rural severe crashes
- AND 50% of Run off the Road

Basically;
10% of the system has 50% of the Severe Run off the Road Crashes

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County Road Safety Plans

- A comprehensive plan of all 87 counties
- Looks at characteristics of severe crashes
- Segments, Intersections, and Curves

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County Road Safety Plans

ATP	Curves	Intersections	Segments (miles)	Severe Crashes
1	3,740	2,588	3,298	723
2	1,293	2,329	6,548	164
3	4,297	2,592	5,042	728
4	2,494	2,316	3,425	206
5	3,835	1,544	2,832	493
7	1,755	2,377	3,905	265
8	1,170	1,862	3,104	233
Total	18,584	15,608	27,924	2,363

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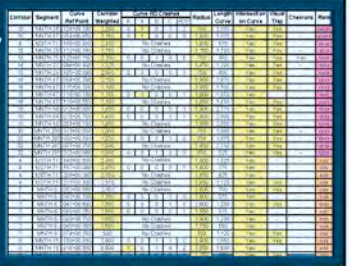
Inventory



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Surrogates

- Identify Characteristics of severe crashes
- Not Causation
- 5 risk factors were used

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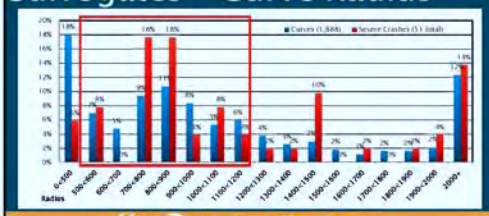
Surrogates – Curve Radius



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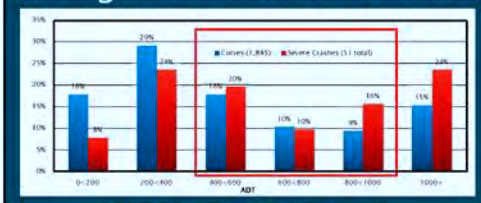
Surrogates – Traffic Volume



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Surrogates – Intersection in the Curve

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Surrogates – Visual Trap

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Surrogates – Crash Experience

If a curve had experienced a severe crash over the five-year study period, it received a star.

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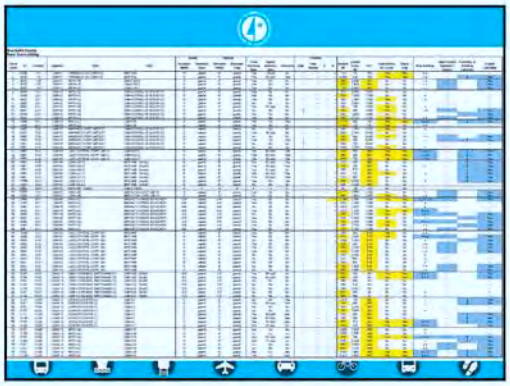
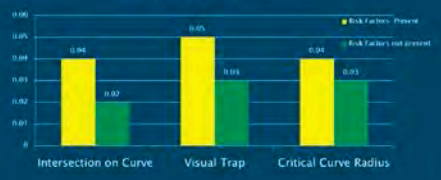


Do the Rating Criteria Really Identify At-Risk Locations?

Curve Risk Criteria



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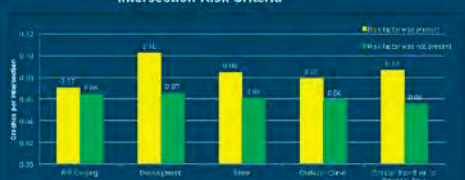
Do the Rating Criteria Really Identify At-Risk Locations?

Intersection Risk Criteria



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Project Ranking

Based Projects on:
- proximity to similar curves
- high priority segments
- critical radius and chevrons

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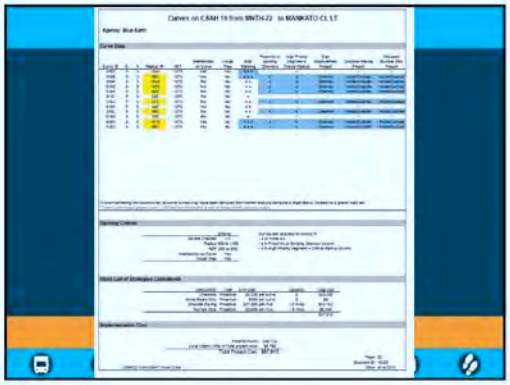

Projects Recommended

- Chevrons and Warning Signs
  ~$3,000 per curve
- Shoulder Paving
  ~$37,000 / mile
- Rumble Strips
  ~$3,000 / mile

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MN MUTCD

- 1,000 AADT

Type of Horizontal Alignment Sign	Difference between Speed Limit and Advisory Speed				
	5 mph	10 mph	15 mph	20 mph	25 mph or more
Turn (W1-1), Curve (W1-2), Reverse Turn (W1-3), Reverse Curve (W1-4), Winding Road (W1-5), and Combination Horizontal Alignment/Intersection (W1-10 Series) (see Section 2C.7 to determine which sign to use)	Recommended	Required	Required	Required	Required
Advisory Speed Plaque (W13-1P)	Recommended	Required	Required	Required	Required
Chevrons (W1-8) and/or One Direction Large Arrow (W1-6)	Optional	Recommended	Required	Required	Required

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Recommendations

ATP	Rumbles (miles)	Chevrons on Curves (Segments)	Intersection Lighting	Total Value of Recommended Projects
1	791	959	253	$22,834,983
3	1,226	373	328	$43,873,320
4	761	743	220	$24,310,928
6	576	430	199	$29,327,765
7	1,144	512	314	$28,541,925
8	943	427	166	$17,616,793
Total	5,444	3,444	1,480	$166,505,714

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Benefit – Cost

- Chevrons and Warning Signs
  20-40+% reduction in all crashes
  ~$3,000 per curve
- Realignment
  ~5% reduction per degree flattened
  ~$100,000 – $1,000,000+ per curve

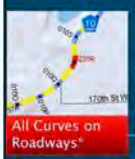
Your Destination...Our Priority

Questions?

Your Destination...Our Priority

Project Development – High Priority Curves

Three ways for a Curve to receive a project:



- Curves w/ Existing Chevrons
- High Priority Curves and those in close proximity
- High Priority Segments & Critical Curve Radius

→ PROJECT

Install/upgrade Chevrons
+2' Shoulder Paving
+Rumble Strip

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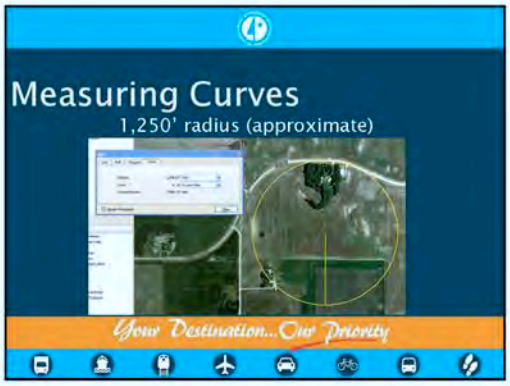

Measuring Curves
1,250' radius (approximate)
Your Destination...Our Priority

Rural Intersections:
Signing & Pavement Marking

Mike Curtit, P.E.
MoDOT

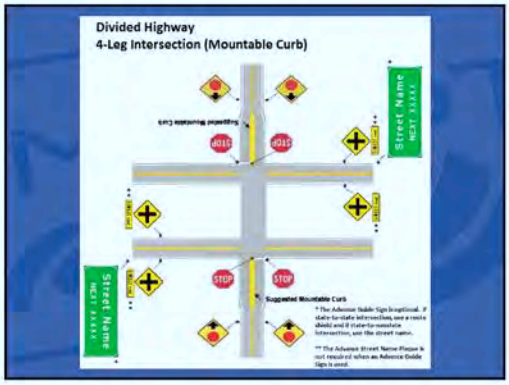
Why Rural Intersections?

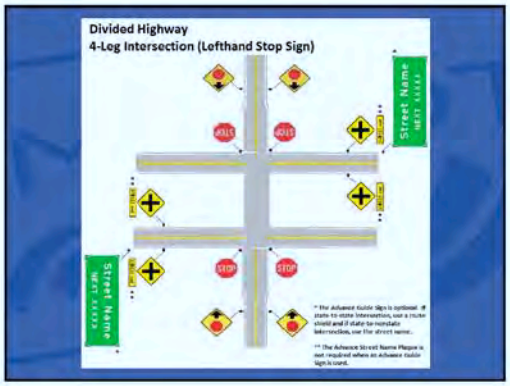
Number of State System Rural Intersections = 49,703

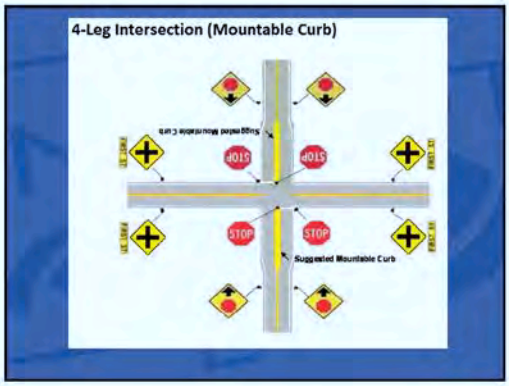
Fatalities at State System Rural Unsignalized Intersections = 91.3 fatalities/year (2009-2011 data)

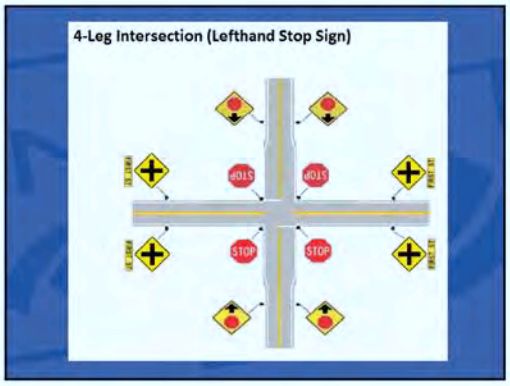
2009 FHWA Intersection Study

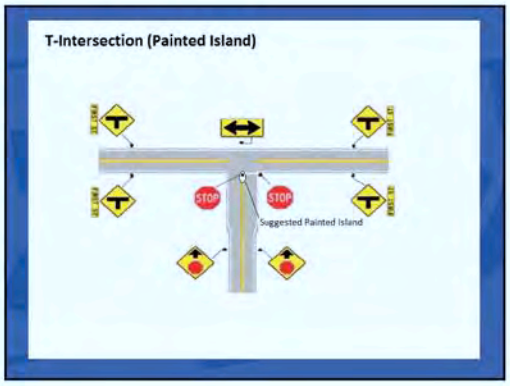
- Focus state for intersections
- Signalized and unsignalized intersections
- Low cost systematic improvements
- Identified 1100 rural state system intersections to be improved with signing and marking
  - Estimated 13 lives saved per year
  - Estimated contract cost of $7 million





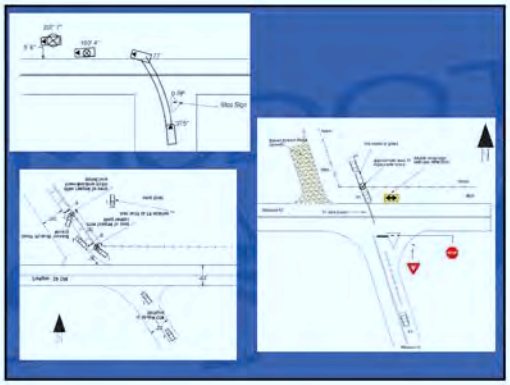



4-Leg Intersection (Lefthand Stop Sign)
STOP
STOP
STOP
STOP


T-Intersection (Painted Island)
STOP
STOP
Suggested Painted Island


T-Intersection (Lefthand Stop Sign)
STOP
STOP


CRD Barren Branch Road
MO 42
RT U

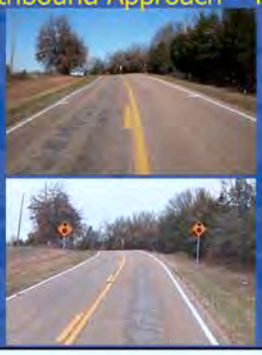



Westbound Approach – MO 42

2

Eastbound Approach – MO 42

Northbound Approach – RT U



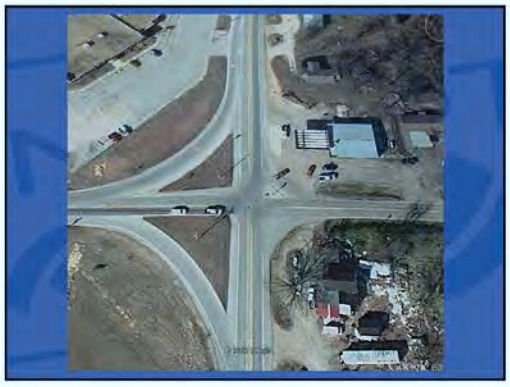
Northbound Approach – RT U @ MO 42

Northbound Approach – RT U @ MO 42

Results

Implementation

- Top 250 intersections in FY14
- Estimated 7 lives saved per year
- Estimated contract cost of $1.5 million ($6,000 per intersection)
- Funded through transfer funds/Open Container (Section 154)
- Possible funding FY15 (phase 2)




Pavement Marking & Rumble Strips


Questions?

LESSONS LEARNED

How Policies and Procedures can impact the Collaborative and Explicit Consideration of Traffic and Safety Aspect?

Geni Bahar

National Actions

- **Transportation bills have certainly channel the focus and processes toward**
  - Formation of committees of Es for safety and development of State Strategic Highway Safety Plans (SHSPs)
  - Identification and selection of projects (HSIP)
- **AASHTO, FHWA, TRB and NCHRP have certainly developed guidance (Green Book, HCM, RDM, HSM, HFG and others) toward**
  - More uniform, defendable, knowledge-base practice

However, in Practice at State Level

- **Execution (day-to-day decisions) will be enhanced by**
  - Multi-disciplinary teams working together from project scoping to completion
    - Traffic, safety, design, maintenance
  - Increased collaboration to strengthen project realization
    - Technical in the face of other pressures
  - Supporting procedures / policies at state level
    - "way we do business here" and less open to leadership changes

Greater positive outcome requires immediate actions toward

- **Information sharing**
  - National actions/news distributed to all fronts
  - SHSP to be found on all desks in a state agency
  - Development/presentation of internal webinars
- **Training - from theory to practice**
  - Hands-on use of manuals
  - Specific use to combined use of manuals
  - Multi-disciplinary training experiences
- **Workforce Development**
  - Traffic and safety engineering

NAVIGATS inc.
Traffic Safety Consultants

November 14-15, 2012
Hyatt Regency Woodfield Hotel – Schaumburg, Illinois

SAFETY ENGINEERING – TRAFFIC ENGINEERING PEER EXCHANGE

Lessons Learned
State Agencies Organizational Structures and
Inter-relationships between Traffic and Safety Engineering Procedures

Lessons Learned
State Agencies Organizational Structures and
Inter-relationships between Traffic and Safety Engineering Procedures

- Does organizational structures make a difference in integrating traffic engineering and safety engineering for projects and programs?
  - We support our jobs and responsibilities through changes in OS
  - Successful integration can come from the top down and from the bottom up
  - OS hinders when there are personalities that do not work well together

Lessons Learned
State Agencies Organizational Structures and
Inter-relationships between Traffic and Safety Engineering Procedures

- Key components of successful integration:
  - Supportive and strong leadership
  - Great communication
    - Regular, multi-discipline meetings
  - Adequate skills sets
    - TEs need to know something about safety and SE need to know about traffic
    - Cross-training
    - University programs, consultant support
  - Policies and procedures

Lessons Learned

(III) Managing Performance and Systemic Implementations – Operations and Safety

Yanfeng Ouyang, University of Illinois

Today's Objectives

- Objectives:
  - Encourage and support dialogue of challenges, best practices, and lessons learned that can help state organization further advance the collaboration and integration of safety and traffic operations efforts.
    - safety and mobility: interlinked impacts
    - how organization structures impact the coordination and collaboration
  - Provide an opportunity for safety and traffic engineers to share their respective analytical and decision making processes
  - Facilitate discussion of
    - implemented engineering countermeasures to increase mutual understanding of the benefits and challenges of implementation
    - distinct performance measures considered, and
    - potential collaborative means to enhance the treatments for best possible outcomes for all road users.

Intersections: Managing Performance – Operations and Safety

- Four talks
  - "Protected Only vs. Protected/Permissive Left-Turn (PPLT) Phasing"
  - "Flashing Yellow Arrow (FYA)"
  - "Adaptive Signal Control Technology Research and Implementation in Illinois"
  - "Pedestrian Safety vs. Capacity"
- Discussion
  - Traditional driving force is operational issues; sometimes safety benefits takes efforts to measure (e.g., "after" data collection)
  - Some safety concerns are tied to traffic operational issues (e.g., improper signal timing)
  - Often a trade-off exists between safety and capacity performances (e.g., mid-block crosswalk, coordinated vs uncoordinated pedestrian beacons)
  - New countermeasures may have cost implications to design/planning in other areas (e.g., re-setting all signals/wiring) and induce resistances
  - Education and public outreach are key for success of "new" countermeasures
    - Countermeasures successful only if the public understands and accepts them
    - Public relations/education is crucial to the success
    - Enforcement is also effective, but it also has cost/resource implications
    - More funds from HSIP be used for behavioral research

Intersections: Managing Performance – Operations and Safety

- Facilitated Discussion
  - What is the process/policy to make a implementation decision?
    - Generally there are protocols to follow
  - It is a challenge to deal with conflicting objectives
    - Freight industry strong on certain capacity changes and counter-measures (e.g., roundabouts)
  - Education and public relations

Systematic Safety and Systemic Operations and Programmatic Measures

- Three talks
  - "Interstate Highways & Wrong Way Drivers"
  - "Systemic Improvements on Curves"
  - "Rural Intersections: Signing & Pavement Marking"
- Discussion
  - Wrong-way driving
    - Heavy involvement of age, DUI and mental factors that affect driver behavior
    - Need to consider driver behavior and decision-making process into engineering and design considerations
      - Critically evaluate what you have and consider options (e.g., "dynamic signs" pavement markings and delineations)
      - Preventive measure: video surveillance and corner isolation
    - Training and assessment for older and young drivers
  - Curve treatments
    - More severe run-off-road crashes occur on longer curves at night time
    - Most curve treatments are cost-effective (e.g., shoulder building, rumble strips)
    - Integrate crash analysis and roadway inventory analysis for curve treatments
  - Signing and pavement marking
    - Low cost systematic improvement proven effective

Concluding Remarks – Next Steps

Priscilla Tobias, State Safety Engineer, Illinois DOT

APPENDIX G POST-WORKSHOP SURVEY

2012 National State Safety Engineers and Traffic Engineers Peer to Peer Workshop

Attendee Survey

Thank you for participating in the 2012 National State Safety Engineers and Traffic Engineers Peer to Peer Workshop. We would appreciate your opinions on the following items. Your comments will enable us to better plan and execute future workshops to meet your needs.

Name (Optional):_____

1. Please indicate your overall satisfaction with this workshop

	Very Satisfied	Somewhat Satisfied	Neutral	Somewhat Dissatisfied	Very Dissatisfied
Registration Process	☐	☐	☐	☐	☐
Materials/Handouts	☐	☐	☐	☐	☐
Speakers/Presenters	☐	☐	☐	☐	☐
Venue/Facility	☐	☐	☐	☐	☐

If you are not satisfied with any of the above, please let us know in what ways the workshop could be improved:

2. What did you like most about the workshop and what is your most important gain from it?

1/2

3. Would you be interested in attending similar workshops again in the near future (e.g., next year)?

☐ Yes ☐ Not

4. If you answered yes to Question 3, what kinds of sessions would you like to see included at the next workshop?

5. While developing and implementing the idea or lessons learned in this workshop in your organization, what kinds of resources and support would you like to have between now and future workshops (e.g., training, conference calls, tutorial and meetings) within your state, regionally, and nationally?

6. Any additional comments or feedback on this workshop?

Thank you!

The NS SE & TE P2P Workshop Planning Committee


Illinois Department
of Transportation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