Systemic Safety Implementation Peer Exchange

November 18 and 19, 2014
Columbus, Ohio

Summary Report

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Introduction

Systemic safety involves the use of countermeasures that are widely implemented based on high-risk roadway features correlated with particular severe crash types. Data shows that a majority of fatal crashes occur on rural roads. However, these crashes are not evenly distributed across the many miles of rural roadways, making it difficult to isolate high-crash locations for safety improvements. Systemic safety is a proactive approach that helps agencies broaden their safety efforts and consider risk as well as crash history when identifying where to implement low-cost safety improvements.

To assist agencies with advancing the implementation of the systemic approach to safety, especially at the local level, the FHWA Office of Safety hosted a Systemic Safety Implementation Peer Exchange on November 18 and 19, 2014 in Columbus, Ohio. The peer exchange provided a forum for participants to discuss and exchange ideas on the application of systemic safety analysis, how their agencies are implementing a systemic safety program, and the systemic safety countermeasures being used.

Thirty eight attendees participated in the peer exchange with Federal, State, and local representatives from Connecticut, Delaware, Iowa, Louisiana, Michigan, Ohio, and Pennsylvania in attendance.   The peer exchange was formatted to provide a mix of presentations, facilitated roundtable discussions, and breakout sessions. This structure provided attendees with several opportunities to collect information from their peers to advance the implementation of systemic safety. Each State was encouraged to share their noteworthy practices and strategies as well as challenges and barriers experienced with the systemic approach to safety.

Each State delegation spent time developing Action Plans at the end of the peer exchange. A virtual peer exchange will be coordinated within the next year to follow up with attendees on their progress.

Key Takeaways

Attendees identified the following key takeaways from the peer exchange.

- Obtain public buy-in for systemic safety at ALL levels.
- It is important to understand the difference between systemic and systematic safety. Case studies are available on the FHWA website (www.safety.fhwa.dot.gov/systemic) which include information on true systemic programs.
- If there is no data to start with, use low/medium/high as systemic risk factor categories.
- Linking crash data and roadway data to develop systemic safety projects is a challenge.
- It is important to evaluate systemic projects.
- Use a multi-year contract for implementation of infrastructure improvements.
- The following programs/initiatives were of interest to attendees, with some agencies indicating they will try to replicate them.
    - Local road safety plans.

> The FHWA Division Office is a resource and can assist State and local agencies with advancing a systemic safety program. FHWA staff can also attend meetings to help promote the benefits of the systemic approach to safety.

- o Connecticut's use of a van to collect their own roadway inventory data. Connecticut has two vans for the State system, but they want to expand to the local system.
- o Delaware's sign de-clutter initiative.
- o Iowa's spreadsheet for inputting a curve's characteristics to determine what type of signs to use. This spreadsheet is available at http://www.iowadot.gov/traffic/horizontalcurve.html.
- o Lapeer County, Michigan's fixed object program.
- o Louisiana's contract to collect local road data.
- o Louisiana's incorporation of roadway data into the crash analysis.
- o The pedestrian/bicycle safety posters/cards developed by the Lafayette Metropolitan Planning Organization.
- o Louisiana's use of GIS to help identify curve locations for safety improvements.
- o Ohio's Township Sign Program, which pushes projects out through direct contact with local agencies.
- o Ohio's use of multi-agency contracts. This method is especially useful when locals do not want to use the Federal-aid process.
- o Pennsylvania's benefit/cost reports.
- o Pennsylvania's Traffic Safety Development Course/Workbook.

Welcoming Remarks

Michelle May, Ohio DOT (ODOT) Safety Program Manager, welcomed the group to the peer exchange and provided opening remarks. In her address she mentioned, Ohio has seven urban areas and the fourth largest highway network in the country. In 2013, the State recorded 990 highway fatalities making it the safest year in history.   They are on track for another record-breaking year in 2014. While it is difficult to pinpoint one thing that is lowering the numbers, ODOT's collaborative efforts and use of systemic safety are part of the reason. Agencies cannot continue to reduce fatal and serious injury crashes by doing the same thing; road owners need to try new solutions. This peer exchange will help prevent agencies from flat lining.

Laurie Leffler, FHWA Ohio Division Administrator, also provided opening remarks. She said Ohio looks at safety from a holistic point of view and is excited to share their experiences with other States. Everyone has a different way of doing the same thing and this peer exchange provides an opportunity for attendees to take little nuggets away for implementing systemic safety.

After welcoming remarks, self-introductions were conducted. As attendees introduced themselves, they also stated their expectations for the peer exchange. A complete list of all peer exchange attendees is included in Appendix A. Table 1 summarizes attendees' expectations.

Table 1. Attendee peer exchange expectations

Learn what other States are doing with systemic safety.
Use information from the peer exchange to reinvigorate and expand existing systemic safety programs.
Learn about low-cost systemic countermeasures.
Learn strategies to improve safety on rural roads.
Learn how to get safety improvements on the local system to reduce statewide fatal crashes.
Brainstorm systemic improvements that can be researched.
Learn how other States are getting local/regional agencies involved in implementing the systemic approach.
Learn how local agencies can implement systemic improvements when they do not have the staff or funds.
Learn how to coordinate with local governments to get funding.
Learn how other States have used Highway Safety Improvement Program (HSIP) funds for systemic implementation.
Learn how to leverage HSIP funds for locals.
Learn how to get support for systemic safety programs.
Learn new strategies to make local road safety programs even better.

Overview of the Systemic Approach to Safety

Dave Engstrom, FHWA Resource Center
Karen Scurry, FHWA Office of Safety

A systemic safety improvement is one that is widely implemented based on high-risk roadway features that are correlated with particular crash types. There is a difference between systematic and systemic safety.

> 57% of fatal crashes occur on rural roads.

- Systematic safety is deploying countermeasures everywhere – at all locations.
- Systemic safety is deploying countermeasures at locations with the greatest risk.

Some of the challenges with implementing systemic safety are changing from a reactive to a proactive approach and overcoming public/political resistance.

When analyzing the road system, agencies must look at the system as a whole. For example, when deciding where to systemically install cable median barrier, an agency should review the crashes as well as other factors such as the median width, location of entrance ramps, and weather/climate.

The following systemic safety countermeasures are successful.
- Cable median barrier
- Rumble strips/stripes
- Edge line pavement markings
- Chevrons on curves

- Signal upgrades
- Countdown pedestrian indications

The following systemic safety countermeasures are trending and show promise.
- High friction surface treatments (HFST)
- Safety Edge
- Wrong-way driving treatments
- Alternative intersection design
- Data – This is important; the more data an agency has, the better its decisions will be.
- Improved analysis tools

Gaps in systemic safety implementation include the following.
- Enforcement countermeasures
- Fewer signals
- Pedestrian/bicycle countermeasures
- Better roadway data
- Better crash data
- Public/political/management support

Following are some of the benefits of systemic safety.
- It is lower cost; improvements across hundreds of miles for thousands of dollars.
- It is more proactive; systemic safety eliminates the crash before it happens.
- It gives an agency better knowledge of their roadway system.
- It is a repeatable and defensible process.

Following are resources that are available to assist agencies with implementing systemic safety.
- FHWA has multiple resources available including a Systemic Safety Project Selection Tool, training, and technical assistance. FHWA also coordinates peer exchanges and webinars. There will be a webinar series in 2015 to allow States participating in the Eastern and Western Systemic Safety Peer Exchanges to share information between each other. For detailed information on FHWA's resources, visit www.safety.fhwa.dot.gov/systemic.
- Strategic Highway Safety Plans (Emphasis Areas are identified in these plans)
- FHWA-supported Intersection and Roadway Departure Safety Implementation Plans.
- US Road Assessment Program (usRAP)
- SafetyAnalyst – There will be a new module in 2015 to support systemic safety analysis.

New legislation and FHWA's Every Day Counts (EDC) Initiative provide additional opportunities to advance the systemic approach to safety.
- GROW AMERICA Act – This legislation includes a Critical Immediate Investments Program which incorporates a systemic safety initiative.
- EDC – The third wave of EDC[1] innovations was recently announced and data-driven safety analysis is one of the innovations. This is the application of two science-based analysis approaches into one common transportation process. This leads to more informed decision making. The goal is that by

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[1] For more information on Every Day Counts (EDC) and complete information on EDC innovations, visit http://www.fhwa.dot.gov/everydaycounts/.

2015, all States will have piloted systemic safety analysis approaches. By 2016, 25 states will have fully implemented systemic safety analysis approaches as an integral part of their safety management process statewide.

Nationwide, Minnesota and Missouri are pioneers in systemic safety. Kentucky, New York, and Thurston County (WA) piloted the systemic safety project selection tool. Washington, Ohio and California are integrating systemic safety into their existing programs. New Jersey and Oregon are applying the systemic approach to improve pedestrian safety.

The following feedback was provided by attendees on resources needed to advance the implementation of systemic safety.

- *Attendee Needs*
    - Cost/benefit analysis
    - Before/after analysis of treatments
    - True before/after studies; most studies compare different sites with different populations.
- *FHWA input*
    - Systemic risk factors for particular focus crash types
    - Economic appraisal of systemic safety improvements

Additional comments/observations included the following.

- States that are using practical design to save money eliminating systemic improvements.
- Local roads do not have robust data (such as shoulder width) and agencies are interested in substitutes that can be used for this missing data.
- How do you proactively tie risk factors into design?

Additional information on systemic safety is available at http://safety.fhwa.dot.gov/systemic/.

Systemic Safety Programs

Louisiana, Michigan, and Pennsylvania gave presentations on their systemic safety programs. Following is a summary of the information they shared as well as the roundtable discussion that took place after the presentations.

Louisiana
April Renard, Louisiana DOTD
- When comparing the definitions of systemic and systematic safety, Louisiana's experience is primarily with systematic.
    - Promoting systemic safety to the DOTD Districts is challenging because of the maintenance costs associated with appropriate countermeasures.
    - Using roadway departure crashes on rural roads as an example, Louisiana applies a systematic approach to addressing this crash type by performing Road Safety Audits at locations that receive the most complaints or by ranking two-lane rural roads by roadway departure crash rate. Applying the systemic approach, Louisiana ranks rural two-lane roads using the presence of the following risk factors associated with roadway departure crashes:
        - Degree of horizontal curvature

- Lane width
- Shoulder width
- Density of curves
- Louisiana's program includes the following components:
  - Intersection Safety Action Plan
  - Low-cost safety improvements at curves and intersections
- Intersection Safety Implementation Plan
  - As part of the focus state initiative, FHWA assisted the DOTD with the development of an Intersection Safety Implementation Plan.
  - The State can now quantify the expected reduction in intersection crashes.
  - Strategies from the plan have been implemented at 205 intersections.
  - One thing the DOTD learned is that typical plan sheets do not provide enough specific information. The next iteration of the plan will include site-specific plan sheets.
- Low-cost Safety Improvements
  - Criteria for curve locations to qualify for improvements include the following:
    - Minimum number of crashes is five.
    - 50% of crashes must be roadway departure.
  - An intersection was included if it was within the same roadway segment, with a minimum of five crashes per year.
- The following low-cost safety improvements are installed at qualifying locations:
  - 6" Edge lines
  - Chevron and curve warning signs
  - HFST
  - Advance street name signs
- Louisiana has developed target classifications and target crash types to implement a systemic approach to safety. Data analysis led to the following criteria for curve location identification:
  - Two-lane rural roadway
  - ADT range of 2,500-7,500
  - Lane width of 12' or greater
  - Shoulder width between 2' and 6'
  - Degree of curve > 3.5 (radius , 1640')
- 282 curves meet this criteria and plans are now being developed to improve safety at these locations.

QUESTION: Any concern about placing traffic control devices (TCDs) identified in the intersection plans on personal property?

ANSWER: Louisiana did not encounter this issue because sign placement was in the right of way.

QUESTION: Does the 12" lane width include the shoulder stripe?
ANSWER: It could.

COMMENT   There was some discussion with the DOTD Districts about whether to use 36" or 48" signs at intersections. The use of 48" signs requires two posts which creates issues for maintenance when mowing. Therefore, the DOTD made the decision to use 36" signs.

Michigan
Joe Gorman, Michigan DOT

- Michigan is moving beyond using only crash locations to identify sites for improvements. Their current program of choice is SafetyAnalyst, but they also have experience with usRAP. With the usRAP program, a data analysis leads to a star rating for roadways.
- usRAP is a software tool. The premise is that drivers should be able to choose a road to travel based on its safety rating; just like choosing a car based on its safety rating. Properties of usRAP include Risk Maps and Star Maps. Star maps indicate routes with engineering features that make the roadway safer. usRAP helps prioritize and plan for projects to be able to spend safety funding. usRAP is quantitative and based on a benefit-cost analysis. It considers a full range of countermeasures and explicitly considers risk to vulnerable users and vehicle occupants.
- Michigan DOT Local Safety Initiative engineers work with local agency staff to evaluate crash types and apply for funding.

QUESTION: Is the software free?
ANSWER: The software and training is free until the end of 2014. usRAP is currently sponsored by the AAA Foundation, but they will no longer be supporting it.

QUESTION: How does a user enter data for geometric variables?
ANSWER: The program does not support a direct import. Variables are entered via standard form.

Pennsylvania
Gary Modi, Pennsylvania DOT (PennDOT)

- Pennsylvania's goal is to reduce fatalities to 706 by 2030.
- PennDOT has blended the systemic and systematic approaches.
- All safety improvements are tracked to determine their effectiveness.
- Pennsylvania looks at the ratio of urban versus rural fatalities to figure out where to focus. Fatalities in both settings should be declining at the same rate.
- PennDOT started local safety improvements in 1999.
- The first success story in Pennsylvania was the rumble strip. They installed the first rumble strip in 1999. Based on its success, PennDOT analyzed the entire system and determined that centerline rumble strips on roads with >15,000 ADT would have a tremendous benefit/cost ratio.
- There are 4,000 miles of Expressway and Interstates in Pennsylvania. There are not enough funds to install cable median barrier on all of these miles. PennDOT evaluated the roads to decide which were truly transversible and also looked at 10 years of crash data. Based on analysis, PennDOT addressed 4% of the highway system and reduced >60% of the fatalities.
- PennDOT is developing a Risk Management Safety Plan. This plan focuses on areas that lead to tort liability. Systemic maintenance can help.
- Another program is "Green Light Go." PennDOT does not own any traffic signals. They give them to the locals (i.e., PennDOT buys the signals and gives them to the locals).
- As part of the focus state initiative, FHWA assisted PennDOT with the development of an Intersection Safety Implementation Plan and Roadway Departure Safety Implementation Plan.
- PennDOT uses rumble strips and HFST to address roadway departure crashes.

- One in six fatalities occur on local roads in Pennsylvania, but no HSIP funds go to local roads. PennDOT works with their LTAP to improve local roads. The LTAP offers two programs free to municipalities.
    1. Walkable Communities Program – This includes an assessment report to reduce pedestrian crashes (~40 completed to date).
    2. Local Safe Roads Communities Program – This includes an assessment report to reduce vehicle crashes (86 completed to date).
    The reports are not yet implemented because there is no funding. One option to overcome this challenge is to bundle projects. The State Transportation Innovation Council (STIC) approved grouping improvements from multiple jurisdictions within a region into a single project.

Roundtable Discussion on Systemic Safety Programs

Attendees provided the following input on systemic safety program challenges.
- Lack of local participation.
- Lack of data on the local system. (crash data and roadway data; also curve identification)
    o Solutions
        ▪ Use LTAP data.
        ▪ Use GIS data.
        ▪ Metropolitan and Regional Planning Organizations can collect data.
        ▪ Louisiana is using safety funds (penalty transfer) to collect local road data. It was expensive and a one-time event, but the State will have the data.
        ▪ Systemically implement proven countermeasures. For example, one county engineer applies thermoplastic extensively because it is known to reduce crashes.
        ▪ Ohio starts with a nationally proven countermeasure and uses crash filters to know where to apply the treatment.
        ▪ Connecticut used the High Risk Rural Road (HRRR) set aside and HSIP funds for targeted enforcement on identified roads.
        ▪ Use low/medium/high as systemic risk factor categories if you do not have specific data.
- Leadership support.
    o Solutions
        ▪ Show the effectiveness of treatments.
        ▪ Obtaining buy-in comes down to the funding at the local level; funding is the first hurdle.
        ▪ Emphasize that FHWA is pushing the use of systemic safety. Keep in mind there is a lag when there is a national shift in safety program approaches. County engineers have been told for years to use their data to address crashes, and now they are hearing establish the risk factors. This can create a bit of a back lash from locals.
- Many local governments do not want more signs, chevrons, etc. because they have to maintain these devices and remove graffiti. Sustainability is increasingly important.
    o Solutions
        ▪ Build trust.
        ▪ Provide training.
        ▪ Personalize safety. Tell stories and ask how many family members dying in car crashes is acceptable.
- Political buy-in.
- Maintenance support.

- Federal funding process for systemic projects.
  - Solutions
    - Use creative funding, such as force account. In Ohio, the LTAP does all the paperwork to buy signs for the Townships and the Townships install the signs with their own forces.
    - Bundle projects across multiple jurisdictions. Delaware is doing this with HFST projects. Iowa is implementing corridor-based improvements with a single contractor. Administratively, this is easier to accomplish by States where they own/maintain the local roads
    - Connecticut manages local projects from beginning to end. They obtain local buy-in during the project development process.

Attendee input on incorporating systemic safety into local road safety plans (LRSP).
- Ohio is at the beginning of the LRSP process and selecting pilot counties. They are reviewing data and selecting countermeasures. If counties participate in the process, there is a guarantee of getting some funding. Counties are being selected based on their enthusiasm for participating and developing plans. ODOT also wants to ensure there is diversity in representation and that the counties selected meet an identified crash threshold.
- In Iowa, 12 counties have been identified for initial LRSPs. Iowa DOT is providing the funding and oversight, but these are local plans based on data. The project selection and countermeasures are up to the counties. The development of the plan is free to the county, but there is no guarantee of funding. Counties volunteered to participate. County engineers promoted the program to their peers so it was not a directive from Iowa DOT. That seemed to help with gathering enthusiasm. Iowa DOT also provided PowerPoint presentations to the county engineers to use at Board meetings.
- Pennsylvania develops SHSP-type reports for their MPOs.
- The New Orleans Regional Planning Commission has developed their own Pedestrian Safety Action Plan using GIS data.
- The Mid-Ohio Regional Planning Commission (MORPC) is participating in a pilot program using the two largest Emphasis Areas for the State and selected proven countermeasures to replicate the SHSP at the local level. They are working with local jurisdictions to install retroreflective back plates on traffic signals. The design plans are being developed and they will be letting a contract.
- In Louisiana, MPOs cannot apply for a local road safety project; a local agency must apply.

Attendee input on how changes in federal or local policies have impacted efforts for systemic or systematic safety enhancements.
- In Delaware, the flexibility in funds (such as penalty transfer) allows for more systemic projects.
- The MAP-21 language that includes ALL roads and performance measures makes a difference.
- We need to make sure the pendulum does not swing the other way so that agencies are only using systemic improvements. There is still value in spot improvements.
- At what point will a systemic project become a maintenance project? At some point, all locations will be addressed with systemic improvements and they will become maintenance projects, which cannot be funded with HSIP.
  - Connecticut DOT had an issue where a road was milled and repaved and the rumble strips were taken out. Maintenance would not use funds to reinstall the rumble strips. CTDOT could not get Federal-aid funds to reinstall the rumble strips since the Department had essentially removed them.

- o Ohio tries to institutionalize improvements by using HSIP funds to jump start their use and then they develop a policy for the countermeasure.
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Breakout Session – Analysis Approaches

Attendees divided into three groups to discuss data and analysis approaches that can be used to support systemic safety implementation efforts. Groups discussed different analysis tools and resources being utilized by State and local agencies to implement systemic safety. A representative of each group provided a summary of their discussion to all of the attendees. A summary of the discussion is provided below.

Following is a list of names of data analysis systems used by the States.
- CARS
- GCAT
- Roadsoft
- CMAT
- SAVER
- SafetyAnalyst

Following are different software programs that can be used for data collection, screening, and analysis.
- GIS
- Excel
- usRAP

General Comments
- Linking crash data and roadway data to develop systemic safety projects is a challenge.
- Data drives the SHSP. Link your systemic approach to the SHSP.
- Very few states have good local data.
- States without roadway data are using the systematic approach. If your agency has roadway data, use the systemic approach. To get roadway data, reach out to whoever is managing this information at the State DOT.
- Some states struggle because they do not use GIS reporting; just street names. GIS is needed to locate crashes.
- Convey the importance of crash reports to law enforcement to help improve the quality of data.
- To supplement the data, have the county engineer go out during the investigation of a fatal crash.
- Some States have so much data they do not know where to go next.
- Data can be used to generate maps and crash trees (even at the county level).
- MPOs can use the crash data in different ways.
- Local agencies sometimes want to be told where their problems are and what to do to fix them. They will go do it if they have the information.

State Initiatives with Data / Analysis
- Delaware
  - o The Delaware system will automatically pull in roadway data from law enforcement GPS coordinates of a crash location.

- In Delaware, the LTAP connects the crash data to the roadway data. (The State Police do not want the crash database to be linked directly with anything else.)
- Iowa
  - Iowa is spending safety funds to develop State specific CMFs.
  - Iowa combines data with GIS.
- Iowa DOT is working on the development of a web-based analysis tool.
- Louisiana
  - Louisiana goes to the crash report narrative if the coordinates/GIS are not on the report and manually identifies the crash location.
  - Louisiana has developed an interface that allows them to use crash and roadway data together.
  - Louisiana participated in a Roadway Data Improvement Program which led to several recommendations for their data program.
- Ohio
  - Ohio is a roadway data only state. There are certain data elements that they have on the State system, but not on the local system.

Systemic Safety Countermeasures

Delaware, Iowa, and Pennsylvania gave presentations on the systemic safety countermeasures being used in their States. Following is a summary of the information they shared as well as the roundtable discussion that took place after the presentations.

Delaware
Adam Weiser, Delaware DOT (DelDOT)

- In Delaware, 47% of all fatal crashes are involved in a roadway departure crash. Roadway departure is the top Emphasis Area in the State's SHSP. These types of crashes cannot be predicted, but the State can use data to identify risk factors and predict where they might occur. Delaware looks at the roadway characteristics of fatal crashes.
- Delaware uses data to identify locations for rumble strip treatments with a focus on rural collectors and local roads. When evaluating locations they consider noise impacts, target roadways with ADT > 8,400, and look at roadway features such as shoulder vs. no-shoulder, lane width, the presence of bike lanes, and divided vs. undivided roadways. Lane width and shoulders are the primary factors when focusing on rumble strip installation.
- In 2013, DelDOT developed a 3-year open end contract for rumble strips. The award value was $1.3M funded with HSIP, HRRRP and penalty transfer funds.
- Lessons learned with rumble strips include the following.
  - Make sure that contract notes are detailed. In Delaware, the contractor missed notes and installed rumble strips in bike lanes. These were patched with FloMix material or aquaphalt.[2.]
  - DelDOT changed their bicycle friendly rumble strip design to a 6" offset and 6" wide. This gives bicyclists 5' of space between the rumble strip and the outside of the pavement. (They can go to 48" for safety reasons if needed.) DelDOT's Bicycle Coordinator is now notified prior to the installation of all rumble strips.

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[2] Aquaphalt is an asphalt patch.

- HFST addresses wet weather, roadway departure crashes and DelDOT will begin implementing treatments this spring on rural roadways. DelDOT is making sure that HFST is not being installed in locations that are going to be repaved in the near future.
- Other systemic programs include median barrier installation and horizontal curve warning sign upgrades.

QUESTION: What is the advantage of a three-year contract instead of one year?
ANSWER: Better prices and it avoids dealing with contract administration every year. Locals are able to work off of State contracts in Delaware.

QUESTION: How does tourism affect the data?
ANSWER: It affects the pedestrian/bicyclist data in the beach areas.

QUESTION: Are shoulders widened if they are not wide enough to accommodate the 60" wide buffer?
ANSWER: DelDOT will instead use rumble stripes (not rumble strips) or use a different countermeasure.

Iowa
Chris Poole, Iowa DOT

- There are a lot of unpaved roads in Iowa.
- Legislature directs ½ of 1% of the gas tax be spent on safety improvements. This gives Iowa DOT a good pot of safety funds (about $7M per year). They use this money to fund improvements on the local system.
- Iowa is now providing $2M in HSIP funds to locals, but this requires a 10% match. Iowa DOT uses the State fund to pay the 10% match so it's "free" money for the locals.
- Roadway Segment Countermeasures
  - Pave shoulders with rumble strips. This costs $50k - $60k per mile; 37% crash reduction.
  - Use edgeline and centerline rumble strips. This costs $2,200 to $2,500 per mile; 25% crash reduction.
  - Safety Edge; 6% crash reduction
- Horizontal Curve Sign Program
  - This is the fourth year Iowa DOT has funded this program and they have spent over $198k on over 1,300 curves.
  - Each county gets up to $10k/year.
  - 28 counties have participated to date.
  - A spreadsheet tells the user what types of signs to install based on the characteristics of the curve. This spreadsheet is available at http://www.iowadot.gov/traffic/horizontalcurve.html.
- Iowa is also using destination lighting. This is the installation of a single light at rural intersection; it is not full lighting.
- The flashing beacon replacement program is replacing span wire mounted beacons with stop sign mounted beacons. This is funded with State funds.
- Iowa DOT has an intersection database and is developing a curve database. They are looking at different ways to divide the roadways into segments for analysis.
- Iowa has a program to help cities replace/upgrade regulatory signs to be MUTCD compliant.

- o Every county in Iowa has a licensed engineer and they will not put their license on the line by not installing a sign correctly. The LTAP also provides MUTCD training so the engineers know what the standards are.
  - o In Ohio, the State DOT provides the sign materials and the Townships install them. They must then sign an affidavit of installation and State verifies the signs were installed correctly.
- Iowa DOT is working on the development of a web-based analysis tool. They are using CMAT right now, but want to get to web-based. The State wants crash information to be available to anyone.
- There are SHSP goals targeted towards the local system. Local road safety plans are one of the goals.
- Distribution of HSIP funds and the ½ of 1% State fund have been application based, but they are working towards a data-driven approach.

Pennsylvania
Gary Modi, Pennsylvania DOT

Pennsylvania is using the following systemic safety countermeasures.
- YIELD TO PEDESTRIAN channelizing devices. 10,000 devices have been deployed and pedestrian fatalities have decreased. Motorist compliance increased 30% after the signs were deployed.
- Utility pole mitigation. Pennsylvania has 9,000 pole hit crashes per year. Strategies include relocating poles.
- Tree mitigation. The State has 9,500 tree crashes per year. Fatalities are reduced by removing or trimming trees.
- Advance curve warning signs and markings. Improvements include chevrons, advisory plaques, and pavement markings. Improvements have led to fewer fatalities.
- High friction surface treatments. This countermeasure mitigates wet road or curve crashes. The coarse aggregate increases pavement friction. PennDOT does not install on old pavement that is going to be repaved in the near future. There is not enough data yet to evaluate this countermeasure. HFST was installed at 42 locations this year and 102 locations are planned next year.
- Rumble strips (including centerline, edgeline, and shoulder locations). The edgeline benefit/cost ratio is now up to 125:1; centerline rumble strips have a 77:1 benefit/cost ratio.

QUESTION: How is a benefit defined in benefit/cost ratio?
ANSWER: It is the cost to society of a crash/fatality.

Roundtable Discussion on Systemic Countermeasures

Discussion about high friction surface treatments.
- Iowa does not get negative feedback from land owners after HFST is installed, but most HFST is located on ramps. Iowa is predicting that there will be an issue with motorists taking ramps faster because they can with the HFST installed. Iowa is determining where to install HFST to get the best benefit.
- Pennsylvania does not allow HFST on straight sections of road with HSIP funds.
- Ohio uses HFST sparingly. They start with lower cost improvements and only use HFST if those do not work. ODOT might be more prescriptive in the future about when to use HFST. Pennsylvania also uses low cost improvements first prior to using HFST.

Discussion about signs.

- Ohio is using signage systemically and has a Township Signage Grant. The LTAP handles all the paperwork to order the signs and have them delivered then the township installs the signs with their forces.
- Many local roads use chip seals so signage is the only countermeasure available to improve safety.

Discussion about rumble strips.

- Iowa is just starting to use rumble stripes systemically. These are installed when the roadway is narrower or there is no paved shoulder.
- Local roads do not have shoulders so a standard is needed for rumble stripes.

Discussion about pedestrian/bicycle systemic countermeasures.

- YIELD TO PEDESTRIAN signs. These are being used systemically in many downtown areas.
- Pedestrian countdown signals.
- HAWK signals. These are effective in Arizona because there are so many and people understand them. Ohio is going to pilot the HAWK, but there is a requirement that the community have an outreach plan because ODOT does not want the public to dislike them before they even know what they are.
- Delaware has performed pedestrian Road Safety Audits and noticed that bus stops play a critical role in where pedestrians cross. If the bus stops mid-block, that is where pedestrians will cross.
- Michigan asked about agency experiences with increasing bicycle/pedestrian/vehicle conflicts when a bike lane is added at the community's request. The MUTCD and AASHTO advise not to include physical separation, but Louisiana is considering this.   Physical barriers slow people down.

Agencies administering multi-agency systemic projects.

- Delaware – The fact that Delaware DOT owns and operates the majority of the road mileage in the state makes it easier for them to do multi-jurisdiction projects.
- Ohio DOT is working with an MPO to use one contract to install retroreflective back plates on traffic signals in 15 jurisdictions.

Other comments.

- Wider edge lines are used as a systemic countermeasure.
- The road surface can limit the countermeasures that can be used. For example, an agency cannot use rumble strips or HFST on gravel roads.
- Maintenance is an issue. When more signs are installed they must be maintained. Agencies also have to mow around the signs.
- Locals need clear, concise guidance on how to install devices.
- Agencies must balance countermeasure use. There is some concern that if a countermeasure is overused, people will stop paying attention to it.
- Signs need to be credible so that people pay attention to them.

Day 1 Recap

Attendees had the following comments about what they learned during the first day of the peer exchange.

Connecticut
- Interested in pursuing multi-year contracts for systemic projects.
- Interested in learning how the final rule on MAP-21 performance measures will impact the systemic approach.

Delaware
- Nice to learn that other States are having similar challenges and problems.
- Learned new formulas and processes for determining a set aside for systemic vs. spot improvements.

Louisiana
- A true systemic safety program requires roadway data, but that is a problem on local roads.
- Wants to see true before/after studies of TRUE systemic projects.
    - This might take a while since true systemic projects are still new and not enough time has passed to be able to evaluate.
    - Before/after analysis of systemic projects could become an FHWA webinar.
- Interested in pursuing multijurisdictional projects.
- Learned they will have to use systemic safety for pedestrians/bicycles because there are so few crashes and they are widely disbursed.

Ohio
- Gained a better understanding of systemic safety.
- Learned new ideas from other attendees to try in Ohio.

Pennsylvania
- Really need local data to implement systemic safety.

Other Comments
- There are opportunities to apply the systemic approach with the Safe Routes to School Program.
- Use systemic education countermeasures when it comes to improving pedestrian/bicycle safety. Agencies cannot engineer solutions to address all of the pedestrian/bicycle crash problems.
- Signing and delineation are really all that can be done systemically to improve safety on unpaved roads.
- Systemic safety, systematic safety, and system-wide safety are all risk-based approaches to safety management. Systemic and systematic use low-cost safety improvements across lots of miles to address certain road characteristics.
- Countermeasures that lend themselves to the systemic approach:
    - Signs
    - Markings (edgeline and center line)
    - Rumble strips
    - HFST

State Initiatives
- Ohio is piloting delineation on low-speed loop ramps to address fixed-object crashes.
- Pennsylvania is experimenting with guardrail striping, but it is expensive. They would rather use the funds for other improvements.

- As part of the Texas Curve Advisory System, Texas developed a GPS method for determining curve advisory speeds as an alternative for traditional ball banking.   The report is available at http://d2dtl5nnlpfr0r.cloudfront.net/tti.tamu.edu/documents/5-5439-01-1.pdf.

Systemic Safety Implementation on Local Roads

Ohio, Louisiana, Michigan, and Connecticut gave presentations on how they are advancing the implementation of systemic safety on local roads. Following is a summary of the information they shared as well as the roundtable discussion that took place after the presentations.

Ohio
Michelle May, Ohio DOT (ODOT)

- Roadway Departure and Intersections are the engineering Emphasis Areas in Ohio.
- Their lack of data on roadway elements has led them to use the systemic approach to improve safety.
- A majority of Ohio crashes are on the local system.
- ODOT sets aside $102M annually for safety. These funds are available for any public roadway. ODOT accepts applications twice a year and they are reviewed by multidisciplinary committees. ODOT typically accept requests for $5M or less.
- Historically, ODOT has used the following strategies as systematic treatments:
    - Doubling up stop signs
    - Edge line rumble strips – this countermeasure has been institutionalized with a policy
    - Cable median barrier
    - Reflectorized back plates – this countermeasure has been institutionalized with a policy
    - Signal timing upgrades
    - Curve signage upgrades
    - Pairing new improvements with new policies to institutionalize their use
- ODOT selects investments using the following system:
    - Review nationally proven low-cost safety improvements to see what treatments get results.
    - Identify high-risk roadway features
    - Set crash thresholds to prioritize locations
    - Establish templates and guidelines
- Ohio needs to get down to the local level to avoid plateauing with reducing statewide fatal and serious injury crashes. ODOT relies on partnerships with the LTAP, MPOs, and the County Engineers Association.
- ODOT created two local programs with the LTAP.
    - County Road Safety Audits – ODOT will provide HSIP funds for good Road Safety Audit recommendations.
    - Township Sign Upgrade Program – The LTAP contacts the top 100 Townships based on the number of crashes. LTAP offers up to $50k in HSIP funds to upgrade safety-related signs. ($1M is set aside annually.) The LTAP handles all the paperwork to order the signs and have them delivered. The Township then installs the signs with their forces. They have one year to install all of the signs. The average cost is $20k per Township, so they are not maxing out the $50k available, but Townships report they get all of the signs they need.

- ODOT is working with MORPC on a pilot program for low-cost safety improvements and creating a template for other MPOs. Phase one of the pilot program is focused on intersection treatments.
- ODOT provides maps and other tools to county/township engineers to at least show them where the crashes are occurring on their system. They also provide crash trees so the locals know what types of crashes are occurring.

Louisiana

Jeff Dickey, LSU Highway Safety Research Group

- Human factors can be approached with a systemic approach.
- Louisiana researched the road characteristics contributing to high crash rates. Analysis revealed curves as a problem.
- They used GIS to calculate the curve radius.   They then plot the curves in GIS and add the crashes.
- Louisiana discovered that their sharpest curves and turns had the highest crash rates so they decided to focus on these. However, there were 224 of these types of curves just in one parish alone. Louisiana trimmed down the locations to those with the longest tangents.
- This data goes to the LTAP Center to select the countermeasures and work with the parishes to implement the improvements.

Ashley Moran, Lafayette Metropolitan Planning Organization

- The MPO's Bicycle and Pedestrian Safety Education Program educates motorists, cyclists, and pedestrians about the rules of the road as they apply to each mode of travel.
- Activities include a public education campaign, pedestrian/bicycle crash analysis, pedestrian/bicycle counting program, walkability audit, outreach, and evaluation.
- Issues with pedestrians include their use of the street instead of sidewalks which causes them to get hit by vehicles. The main issue with bicyclists is their riding against traffic.
- The MPO developed advertisements s and responsibility cards. Cards are passed out at local university and community events. The MPO also gives them to community groups to pass to their constituents.
  - Delaware gives coupons to pedestrians/bicyclists who are observed traveling correctly (using crosswalks for example). This is done primarily in the beach areas.

Michigan

Lynnette Firman, Michigan DOT

- Michigan DOT has a Local Safety Initiative (LSI). This program has three dedicated staff assisting local agencies. They developed a three-tier approach which includes engineering assistance, providing safety tools, and training. Training is provided on the Highway Safety Manual (HSM) and Traffic Safety for Elected and Appointed Officials.
- LSI services include the following:
  - Staff will analyze crash data to give the local agency their top intersection and segment crashes.
  - Staff will drive the roads with the local agency. This is similar to an RSA; a different perspective with a fresh set of eyes.
  - Staff will provide local agencies with information on low-cost safety improvements.

- LSI is strictly for assisting local agencies.
- Locals can apply for safety funding. Michigan has $15M for the local agency system. Michigan DOT issues a call for projects and uses an application process. Locals must submit a Time of Return (TOR) or HSM analysis with their application. The maximum an agency can receive is $600k.
- Michigan DOT sets financial goals to encourage systemic projects.

Ryan Doyle, Lapeer County

- One of the county's biggest issues is fixed object removal (utility poles, pillars/fence posts, trees at the edge of the road, non-breakaway mailboxes, walls/barriers, non-breakaway fence posts).
- The County uses the following resources to identify problem areas on their roadways.
    - The LSI Report provided by Michigan DOT.
    - The Roadsoft Program.
    - Complaints/service requests from citizens.
    - Observations (field reviews) of scarred trees, tire tracks in the snow, vegetation blocking signs/line of sight.
    - The news/newspapers.
- The County has to work with the State Highway Preservation Office on Federal-aid projects and must obtain permits when getting ready to mitigate issues (tree trimming/cutting).
- Prior to a tree removal project, the County notifies the property owner(s), marks the tree(s), and determines a method for complaint resolution.
- During the project, they cut low or remove the stump. They also clear small trees so they do not become future problems.

Other systemic projects in Michigan include the following.
- Huron County installed reflective sign post sheeting and had a 42% reduction in intersection crashes.
- Genesee County installed flashing beacons.
- City of Lansing is using Road Diets.
- The LSI program is free to local agencies. It just takes the local's time with Michigan DOT for the field review.
- One local road safety plan has been completed in Michigan. Two pilots are scheduled in 2015. All (14) Regional Planning Organization (covering the 83 Counties) will have plans by 2019. The plans will include systemic improvements.

Connecticut
Joe Ouellette, Connecticut DOT

- Most of the roads in Connecticut are owned and maintained by local jurisdictions.
- In 2013, 15% of HSIP funding was designated for local roads.
- 39% of fatal and serious injury crashes occur on local roads.
- Connecticut is using signing, striping, rumble strips, and signal retiming as engineering countermeasures.
- Connecticut DOT partners with the Highway Safety Office and gave them HSIP funding for speed enforcement.
- Projects on local roads include school signing improvements and speed enforcement.
- Connecticut DOT has the following challenges:

- - Lack of local road data; missing geometric and traffic volume data.
  - Obtaining town participation and overcoming the mentality of "We've always done it this way."
  - Locals meeting the funding match because of limited budgets.
- Connecticut wants to spend more HSIP funding on local road projects (such as centerline rumble strips, horizontal curve signing, guiderail, and mitigating tree/utility pole crashes).

Jennifer Carrier, Capitol Region Council of Governments (COG)

- Barriers to advancing local road safety projects include the following:
  - Crash data and limited local road data.
  - Limited staff and funding at the local level.
  - Procuring and advancing projects through the federal system is difficult.
  - Administrative barriers (each region has a limited number of permitted submissions)
  - Maintenance
- The solutions to some of these issues is the following:
  - Have a crash data repository.
  - The COG has engineers to provide technical assistance to locals.
  - Training.
  - Working to address utility pole issues (where they are installed and removing an "older" pole when it is replaced)

Tony Lorenzetti, Connecticut LTAP

- The LTAP provides the following services to local agencies.
  - Coordinate Road Safety Audits.
  - Collects and analyzes traffic volume data (ADT, speed data, etc.)
  - Identify low-cost safety improvements.
  - Assist with development of local road safety plans. (Although no communities have volunteered to be the first yet to have a plan.)
  - Developing a toolbox of safety resources.
  - Provide training (retroreflectometer training, RSA training, etc.)

The LTAP uses the following process to assist local agencies:
- Respond to local agency requests for assistance.
- Direct outreach to local agencies through identification of high crash locations.
- Work with safety stakeholders and partners.
- Provide educational outreach.

Can generate crash maps using Crash Data Repository. Use ESRI platform for crash location mapping.

Challenges from the LTAP perspective include the following:
- Lack of funding.
- Different organizational structures across local agencies.
- Different skillsets among local agency staff.
- Getting communities to look at proactive strategies (such as the systemic approach).

The LTAP has the following goals for assisting local agencies.
- Continue outreach activities.
- Improve crash data.
- Provide training through the Safety Academy.
- Provide technical assistance as needed.
- Act as conduit for improved communication.

Roundtable Discussion on Implementation

Following are strategies States are using to implement systemic safety on local roads.

Iowa
- Conduct local safety workshops. Staff goes out to different regions and invites partners to participate in the workshops.
- During the workshop, staff provides information on what is trending and the funding opportunities.
- Staff also listens to the goals of the local agencies and what they need.
- These efforts have resulted in 72 applications asking for $14M. (Iowa DOT only has $8M available.)

Connecticut
- Connecticut DOT uses the LTAP center and their listserv to distribute announcements and information about training opportunities.
- Connecticut DOT hopes to get more traction with systemic safety by getting knowledge out to the locals. Even simple things like making sure the locals know the HSM even exists.

Ohio
- ODOT works with their LTAP.
- The LTAP has revamped their training program to embrace low-cost safety improvements.
- ODOT offers RSA training and other training at no cost to the locals.
- ODOT is building a database of local jurisdictions that have implemented one or more of the nine proven countermeasures. This will include documentation on how the local agency implemented the countermeasure. This information will be used so other agencies can talk to their peers about how they implemented proven countermeasures.

Michigan
- Michigan DOT hosted a local agency safety peer exchange which received positive feedback.

Attendees identified the following challenges with implementing systemic safety on local roads.
- Getting the locals to participate.
    - Solution – Personal contact by LTAP staff; incorporate information/invitations with training.
- Not knowing where to begin. It is difficult to prioritize updating the SHSP, implementing new performance measure requirements, and implementing the systemic approach.
    - In Minnesota, local road safety plans got started with the State helping counties figure out what projects to implement and where.
    - Local road safety plans are locally driven and adopted while regional safety plans require local buy-in.

- Funding is a huge barrier to systemic implementation. The Federal-aid process needs to be streamlined for projects that are being implemented on roads with designated characteristics.
    o Solution – Bundle projects.
- Lack of knowledge in local townships.
    o To help with this challenge, Ohio conducted rural road safety training that focused on low-cost safety improvements.

Attendees identified the following processes for evaluating the benefits of systemic countermeasures.
- Pennsylvania systematically collects data for every countermeasure installed.
- Louisiana uses a Safety Evaluation Tool. Once they have sufficient data, they can look back at previous data for comparison.
- The Lafayette Metropolitan Planning Organization analyzes crash data after certain types of countermeasures are installed (like barriers).
- Updating the SHSP is a good time for evaluating.
- Ohio waits one year before evaluating a countermeasure; they want one year of data.

Breakout Session – Funding Strategies

Attendees divided into three groups to discuss funding sources for systemic safety. Groups discussed challenges with funding the implementation of systemic strategies, tradeoffs in funding spot location improvements versus systemic improvements, and how funding is allocated in their State for systemic safety improvements. A representative of each group provided a summary of their discussion to all of the attendees. A summary of the discussion is provided below.

Challenges
- Engineers tend to want to follow the MUTCD and warrants. Consultants also need training on the benefits of the systemic approach.
    o Systemic safety provides an opportunity for engineering judgment.
- There is a limited work force, but lots of programs to implement (EDC, SHRP2, etc.).
- Funds for maintenance.
- Public attitude/perception.
- Having data ready to prove that safety spending is effective.
- Public complaints will always drive spot improvements.
- Low-cost safety improvements do not get the same attention as roundabouts.

Strategies
- Partner with your LTAP and County Engineer Association.
- Identify safety champions at the State DOT level.
- Tell locals how much funding is available.
- Make safety a priority; give a lower priority to non-safety projects.
- Set aside funds for systemic projects.
- Use pilot programs with local agencies.
- Have strategies to convince elected officials of the benefits of the systemic approach.
- Local road safety plans can be tailored to the community and the issues they are having on their roads. This helps get buy-in at the local level.

- o Road Safety Audits (RSA) vs. local road safety plans (LRSP) – RSAs are focused more on a specific location or corridor. An LRSP can be used for a systemic approach. RSAs are usually performed based on one or two issues, but other issues are usually identified along the corridor or at the location while performing the assessment which can lead to systemic treatments.
  - o Michigan performs about 20 RSAs per year. They maintain a database of people who have taken the NHI course on RSAs as source for putting together a multidisciplinary team.
- Education/training is essential.
- Share data and the benefits/costs with the public.
- MPOs are helping with the 10% match in Ohio so the locals only have to come up with a small percentage of the project costs.

Attendees use the following techniques to justify safety projects.
- Iowa is currently using benefit/cost for State safety funds shared with the locals. They are changing this to get away from benefit/cost and embrace more systemic improvements.
- Michigan is using the HSM and time of return for projects on the State system. They are encouraging the HSM for local project selection, but currently projects are still selected by a team.

Attendees identified the following experiences with public attitudes.
- Outreach and education seem to help.
- One successful strategy is to advocate for safety projects by tying them to a particular crash that the public is familiar with.
- There is a positive public attitude with cable median barrier. Initially, however, agencies struggled with public perception because of property damage and motorcyclist concerns. Now if there is a cross-median crash, the public asks why a barrier is not installed.
- Public perception of signage is positive and local agencies have a positive response to reflectorized posts.
- Convincing locals to be proactive and use the systemic approach requires outreach and showing them evidence of success.

Action Plans

Attendees divided into their State delegations and created a list of actions they would undertake as a result of the information learned during the peer exchange. Following below is a summary of each State's strategies for advancing systemic safety.

Connecticut
- Pursue multi-year, open ended construction contracts. This will require stakeholder buy-in from the State DOT itself.
- Obtain missing roadway data elements.
- Start a pilot program for local road safety plans.
- Educate stakeholders on the importance of safety.
  - o Tie in safety with MAP-21 metrics.
  - o Provide safety training to educate stakeholders on the differences between systemic/spot/systematic improvements.
- Implement a systemic fixed object project.

    o   Incorporate the Roadway Departure Safety Plan with the SHSP.

Delaware
- Start tracking improvements (spot/systematic/systemic).
  - By tracking improvements, DelDOT can start evaluating to conduct before/after analyses and benefit/cost ratios.
- Develop an annual funding program to change how safety funds are distributed, with more of a focus on funding systemic improvements.
- Focus more on non-State owned roads and collecting roadway data.
  - Purchase own road inventory van.
- Create a GIS crash data portal. Data is currently only available to people with credentials. DelDOT wants to develop a web-based portal so the public can get the data.
- More crash data analysis.
- Start developing local road safety plans.

Iowa
- Raise awareness of programs through phone calls and in-person meetings with counties.
- Look at starting from scratch, including rewriting administrative codes.
- Change the HSIP funding process. This includes deciding whether to keep it application based. Iowa is interested in developing an HSIP Investment Plan.

Louisiana
- Develop local road safety plans. They will concentrate on the top 20 parishes (which have already been identified).
- Implement a program for specific areas that can include both State and local roadways.
  - Develop a fixed object crash program. They will look at the nature of the problem and identify candidate corridors and locations based on risk factors.
- Develop a communications and outreach plan.
  - Meet with DOTD Districts about systemic safety.
  - Develop presentations for different levels of government on safety.
  - Attend safety coalition meetings to discuss systemic safety.

Michigan
- Increase functionality in Roadsoft modules to develop a 'systemic tool', which would require collecting a broader range of roadway data.
- Perform analysis.
- Promote systemic safety to local agencies through education and outreach.
- Encourage local agencies to bundle projects (like markings, rumble strips, etc.).

Ohio

- Timely implementation of the local road safety plan pilot program.
- Take another look at roadway inventory data and advance the collection of critical elements. They will use HSIP funds to collect this data.
- Streamline the federal process to make it easier for locals to access federal funds.

- Educate local partners on systemic safety and the benefits of this approach.

Pennsylvania
- Implement a pilot program to identify problem areas through an LTAP contract.
- Bundle municipalities with similar problems under one contract to implement low-cost safety improvements.
- Designate HSIP funds for systemic projects.
- Track low-cost systemic improvements to determine if they are working effectively.

Appendix A – List of Attendees

Agency	Name
Connecticut Delegation	
Connecticut DOT	Joe Ouellette
Connecticut DOT	Colin Baummer
Connecticut DOT	Ryan Pothering
Connecticut LTAP	Tony Lorenzetti
Capitol Region Council of Governments	Jennifer Carrier
Delaware Delegation	
Delaware DOT	Adam Weiser
Delaware T2 / LTAP Center	Rusty Lee
Iowa Delegation	
Iowa DOT	Terry Ostendorf
Iowa DOT	Nicole Fox
Iowa DOT	Chris Poole
Montgomery County	Brad Skinner
Iowa LTAP	Tom Stoner
Louisiana Delegation	
Louisiana DOTD	April Renard
Lafayette Metropolitan Planning Organization	Ashley Moran
LSU Highway Safety Research Group	Jeff Dickey
Louisiana LTAP Center	Steve Strength
Michigan Delegation	
Michigan DOT	Lynnette Firman
Michigan DOT	Joe Gorman
Lapeer County Road Commission	Ryan Doyle
Michigan LTAP	Dale Lighthizer
Ohio Delegation	
Ohio DOT	Michelle May
Ohio LTAP Center / DOT	Victoria Beale
Madison County Engineer's Office	Dave Brand
Violet Township	Greg Butcher
Licking County Area Transportation Study	Matt Hill
FHWA Ohio Division Office	Laurie Leffler
FHWA Ohio Division Office	Ron Garczewski

Pennsylvania Delegation	
Pennsylvania DOT	Gary Modi
Pennsylvania DOT	Christian Goetz
Penn Township, Butler County, PA	Doug Roth
Pennsylvania DOT / LTAP	Lou Ferretti
FHWA	
FHWA Headquarters	Rosemarie Anderson
FHWA Headquarters	Karen Scurry
FHWA Resource Center	Dave Engstrom
FHWA Texas Division Office	Steve Ratke
Leidos (contract support)	Heather Rigdon

Appendix B – Agenda

<u>**Tuesday, November 18, 2014**</u>

8:00 AM   **Welcome**

Michelle May, *Highway Safety Program Manager, Ohio Department of Transportation*
Laurie Leffler, *Division Administrator, FHWA Ohio Division*

Peer Exchange Overview
Introductions/Expectations

9:00 AM   **Overview of Systemic Approach to Safety**
- **Dave Engstrom**, *FHWA Safety and Design Technical Services Team*
- **Karen Scurry**, *FHWA Office of Safety*

10:00 AM   **BREAK**

10:15 AM   **State Presentations: Systemic Safety Programs**
- Lane Departure Program (Using Systemic Tool), ***Louisiana***
- usRAP Network Analysis Review and Evaluation, ***Michigan***
- Approach to Systemic Safety Implementation, ***Pennsylvania***

11:15 AM   **Roundtable Discussion: Systemic Safety Programs**
Group will discuss opportunities and challenges to developing and establishing a systemic safety program.

12:00 PM   **LUNCH**
1:00 PM   **Breakout Discussion: Analysis Approaches**
Discussion will include analysis tools and resources being utilized by state and local agencies to implement systemic safety.

2:00 PM   **Report Back**

2:30 PM   **BREAK**

2:45 PM   **State Presentations: Getting to Systemic Safety Countermeasures**
- Rumble Strips/High Friction Surface Treatment, ***Delaware***
- Systemic Countermeasures on Local Roads, ***Iowa***
- Evaluation of Multiple Countermeasures, ***Pennsylvania***

3:45 PM   **Roundtable Discussion: Systemic Countermeasures**
Highlight the countermeasures that are being used by states and local agencies for systemic safety implementation. Discuss the benefits and challenges and other countermeasures that agencies should be considering.

4:45 PM   **Wrap-up/Adjourn**

Wednesday, November 19, 2014

8:00 AM   **Recap of Day 1**

8:30 AM   **State Presentations: Systemic Safety Implementation on Local Roads**
- Data and Funding to Locals, *Ohio*
- LSU Systemic Implementation on Local Roads, *Louisiana*
- Local Systemic Safety Implementation, *Michigan*
- Challenges in Advancing Local Road Safety Projects, *Connecticut*

9:30 AM   **Roundtable Discussion: Implementation**
Discussion will include opportunities and challenges to systemic safety countermeasures implementation, strategies to overcome challenges, and the role of LTAP Centers, Regional Planning Organizations and local agencies.

10:15 AM   **BREAK**

10:30 AM   **Breakout Discussion: Funding Strategies**
This session will include discussion on how agencies are funding systemic safety initiatives and how officials are being persuaded to fund systemic projects from their limited funds.

11:15 AM   **Report back**

11:30 AM   **Key Takeaways**

12:00 PM   **LUNCH**

1:00 PM   **State Breakout Discussions: Action Plans**
Including Roles and Responsibilities

2:15 PM   **Report Back**

2:45 PM   **Wrap-up/Next steps**

3:00 PM   **Adjourn – Safe travels!**