



# **Motorcyclist Advisory Council to the Federal Highway Administration Fifth Meeting Summary Report**

**November 13, 2008**

**Prepared for:**

**US Department of Transportation  
Federal Highway Administration  
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Washington, D.C., 20590**

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**Motorcyclist Advisory Council to the Federal Highway Administration**  
**Fifth Meeting: November 13, 2008**  
 Marriott Crystal City Hotel

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# AGENDA

## November 13, 2008

- 9:00 Welcome – Mr. Joseph Toole, Associate Administrator, Office of Safety, Federal Highway Administration (FHWA)
- 9:05 Overview of Status to Date, Recommendations, and Current Issues – Mr. Michael Halladay, Director, Office of Safety Integration, and Designated Federal Official, FHWA
- 9:15 Meeting Format, Review of Ground Rules, and Agenda – Ms. Fran Bents, Westat
- 9:20 Results of the Motorcyclist Survey – Mr. Ed Moreland, AMA
- 10:20 Break
- 10:35 Intersection Design – Mr. Joseph Bared, FHWA
- 11:15 Safety Research
1. Status Report on Crash Causation Study – Dr. Carol Tan, FHWA
  2. Latest Crash Statistics – Mr. Anders Longthorne/Mr. Umesh Shankar, NHTSA
  3. Update on the Motorcycle NPA in the MUTCD
- 12:00 Lunch
- 1:30 Public Private Partnerships – Plans and Perceptions – Mr. Michael Saunders, FHWA
- 2:15 Motorcycle VMT Demo Update – Mr. Ralph Gillmann
- 2:30 Pavement Stitching for Motorcycle Safety in Texas – Mr. Mark Bloschock, NTTA
- 2:45 Summary of Discussions and Consensus of Advisory Council – Ms. Bents
- 3:00 Break
- 3:15 Awareness Topics – All
- 3:30 Public Comment
- 3:45 Summary of Action Items, and Plans for Next Meeting – Ms. Bents
- 4:00 Closing Comments – Mr. Halladay
- 4:15 Adjourn

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**Council Members Present:** Mr. Jeff Hennie  
Mr. Darrel Killion  
Mr. Ken Kiphart  
Mr. Ed Moreland  
Mr. James “Doc” Reichenbach II  
Mr. Dean Tisdall  
Ms. Kathy Van Kleeck  
Mr. Donald Vaughn

**Council Members Absent:** Mr. Gerry Salontai

**Others Present:** Mr. Joseph Toole, Associate Administrator, Office of Safety, FHWA  
Mr. Michael Halladay, Director, Office of Safety Integration, FHWA  
Mr. Nick Artimovich, FHWA  
Mr. Joseph Bared, FHWA  
Mr. Mark Bloschock, NHTA  
Mr. William Cosby, NHTSA  
Mr. Ralph Gillmann, FHWA  
Mr. Anders Longthorne, NHTSA  
Mr. Matt Lupes, FHWA  
Dr. Morris Oliver, FHWA  
Mr. Michael Saunders, FHWA  
Mr. Dick Schaffer, FHWA  
Mr. Umesh Shankar, NHTSA  
Ms. Esther Strawder, FHWA  
Dr. Carol Tan, FHWA  
Mr. Paul Tremont, FHWA

## **Agenda:**

- a. Welcome
- b. Overview of Status, Recommendations, and Current Issues
- c. Meeting Format Overview
- d. Results of the Motorcyclists Survey
- e. Intersection Design
- f. Safety Research
- g. Summary of Discussions and Consensus of Advisory Council
- h. Public Private Partnerships
- i. Motorcycle VMT Update
- j. Pavement Stitching for Motorcycle Safety
- k. Awareness
- l. Public Comments
- m. Summary of Action Items
- n. Closing

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## Meeting Summary

A summary of the meeting and copies of selected presentations can be found on <http://safety.fhwa.USDOT.gov/MAC-FHWA/>.

## Summary of Proceedings

### a. **Welcome**

Mr. Halladay, Mr. Toole

Mr. Halladay began the meeting by noting changes that had occurred since the last meeting in May 2008. He stated that Jeff Lindley, former Associate Administrator for Safety, is now the Associate Administrator for Operations. Tom Madison is the new Federal Highway Administrator, and will be closing out for the current administration. Joe Toole is the new Associate Administrator for Safety. By way of introduction to the group, Mr. Halladay reported that Mr. Toole has held several leadership positions at FHWA, including corporate and professional development and acting Executive Director. His interests lie in technology transfer and support of partnering efforts.

Mr. Toole noted the importance of groups such as the MAC-FHWA in bringing insight and a reality check to the Federal Government. He stated that the Council and FHWA need to find opportunities to work together. He envisions this working together as going beyond cooperation, which is an understanding of each other's positions, to collaboration, where we find objectives we both are moving toward and share our values in making those objectives happen. This is one goal of the Safety office. The second goal is to promote innovation. Innovation in transportation does not occur rapidly; however, Mr. Toole pointed out that time taken in the highway arena leads to lives lost. Transportation innovation, therefore, needs to move at a quicker pace.

Mr. Toole went on to say that the role of the MAC-FHWA is important to the user community. It is unique in many ways. It is still disturbing to see that the number of motorcyclist fatalities continues to increase. The MAC-FHWA needs to help turn that tide and bring about change. The overall Federal highway authorization, the central piece of legislation that guides all of the FHWA programs, expires September 30, 2009. The program was funded for 5 years and established the Highway Safety Improvement Program (HSIP). Although reauthorization is always a contentious time, it will be more so this year because the available funds in the Highway Trust Fund for programs is decreasing. In July of this year, the funds were depleted. The amount of revenue from gas taxes is not keeping pace with commitments made. And although the program received a cash infusion of \$8 billion, that will just keep the program going through next September.

Therefore, the two biggest issues facing the FHWA program are available revenues and reauthorization. Mr. Toole charged that, during its discussions, the MAC-FHWA should keep in mind how the reauthorization should change to keep pace with anticipated dramatic changes in surface transportation in the coming years. How should we think about transportation in this country and how are we going to deal with it?

### b. **Overview of Status to Date, Recommendations, and Current**

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### Issues

Mr. Halladay

After participants introduced themselves, Mr. Halladay summarized the topics of the MAC-FHWA meetings so far. The first meeting, October 2006, discussed infrastructure issues. The second, in May 2007, brought in operations in addition to infrastructure issues.

In December 2007, the group discussed intelligent transportation system (ITS) structure and whether motorcycles were part of that structure. May 2008 saw discussion of operations, the *Manual on Uniform Traffic Control Devices* (MUTCD), and ITS and raised some of the issues that will be discussed today. Thus, recommendations from the fourth meeting helped set the agenda for the current meeting. At that fourth meeting, discussion topics included (1) recommending to the Secretary continued use of HOV lanes by motorcycles; (2) discussing public/private partnerships, led by the new Innovative Program Delivery office; (3) encouraging the Secretary of Transportation to broaden the use of motorcycles because of their fuel and resource cost efficiencies; and (4) discussing the Bike Safe Program in North Carolina, led by Sgt. Mark Brown.

Action items from the May meeting included: (1) preparing a letter of support for the Notice of Proposed Amendments for the update of the MUTCD, which was submitted to the docket and closed June 08; (2) providing a report on the Motorcyclist Survey data; (3) soliciting a presentation by Regina McElroy and Mike Saunders on public/private partnerships; and (4) sending a letter of recommendation to the North Carolina State Highway Patrol endorsing BikeSafe.

On other topics, Mr. Halladay noted that the charter for the MAC-FHWA was extended through July 2010. He will present a paper on motorcycle safety and ITS to the ITS World Congress next week in New York. This will be part of a session on motorcycles that includes manufacturers.

Mr. Moreland asked Mr. Halladay to reflect on what the new administration will mean for DOT. In response, Mr. Halladay reported that Mort Downey is engaged in the transition team; Federico Pena is a member of the advisory committee for the transition team; and “parachute teams” have been sent to each department to meet with key officials. Mr. Toole led a general discussion of how the transition between administrations is handled and the expected timetable for the confirmation of political appointments.

Mr. Tisdall asked if the reauthorization would be extended. Mr. Toole responded that there were 13 extensions of the bill during the last authorization, but at that time, revenue supported the continuation of the bill. The current atmosphere, however, is different. The revenue issue has to be addressed. It is possible that the bill could be extended without revenue but prorated, which means that money would be cut from all State DOT programs. In any event, Mr. Toole believes there will be extensions; no one expects a full bill will be passed by September.

MAC-FHWA members speculated as to who may be appointed as secretary of transportation, and the potential future focus on motorcycle safety issues. Mr. Toole noted that there are 2,600 people working for the FHWA, and only 5 are political appointees. FHWA will keep the programs moving regardless of possible delays in the confirmation of political appointees. Mr. Halladay pointed out that HSIP is the funding engine from the US DOT into State DOTs and localities for safety

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programs. Those programs are the means that States use to meet their priority needs. The extensions serve to make sure there is no break in the ability of a State's DOT to obligate funds and keep projects moving.

Mr. Vaughn noted that transportation is funded at about \$43 billion annually, which has sustained FHWA through reauthorizations and downturns in revenue; however, the balance of the Highway Trust Fund has been spent down. Money is coming into the trust fund now at the rate of \$27-28 billion a year. There is a need to increase revenue, but with people driving less and the development of fuel-efficient vehicles, there is a crisis in transportation funding.

Mr. Toole reported that there might be another economic stimulus package for infrastructure, which would provide short-term infusion of cash into the program.

### c. Meeting Format, Review of Ground Rules, and Agenda

Ms. Bents

Ms. Bents reviewed the ground rules, emphasizing that the full agenda is designed for open sharing of information and respect for the opportunity of all to be heard. She pointed out that Dr. Oliver, Mr. Halladay, Diane Wigle, and the NHTSA team had recently received a Secretary's Award for their work in motorcycle safety. She then discussed logistics for the meeting and asked participants to use the microphones to facilitate recording.

### d. Results of the Motorcyclist Survey

Mr. Moreland

The Motorcyclist Survey resulted in a lot of data, much of which are unmined. The survey presents a national picture of responses to questions about motorcycle safety in urban, rural, and limited access locations. It was fielded in June 2008 and closed in August 2008. Approximately 10,000 people answered the survey, and about 6,000 answered every question on the survey. Texas had the highest rate of response (714); the District of Columbia had the lowest (4). The responses can be broken out by State, but for the current presentation, data are at the national level.

Mr. Moreland pointed out that if the survey were fielded again, he would use a 6- or 8-point Likert scale because many of the responses on the 5-point scale were midline. For reporting purposes, he recommended eliminating the middle responses and presenting results in terms of people who stated an opinion against or for.

The results for the questions regarding motorcycle safety in urban areas included the following:

#### Urban

Is lighting at intersections sufficient?	A majority of respondents answered yes.
Is signage useful and well placed?	Most said signage was useful and well placed.
Is painting/stripping sufficient?	Most said striping in urban settings was sufficient, but a significant portion disagreed.
Does striping provide traction?	People said there was enough striping, but it didn't provide traction.



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Do road crews take motorcycles into account?	No.
Are completed road repair areas safe for motorcycles?	No.
Do you get stuck at lights?	Yes.
Is road debris an issue? Is it cleaned up in a timely manner?	Yes.
Are railroad crossings well marked?	Yes, and at the appropriate angle and right height.
Are dropoffs/edge traps present?	Yes, and they are a concern.
Are you satisfied with overall road conditions?	No, not satisfied.

**Rural**

Is lighting at intersections sufficient?	Lighting is not sufficient.
Is signage useful and well placed?	More respondents answered yes than no.
Is painting/striping sufficient?	More respondents answered yes than no.
Does striping provide traction?	Absolutely not.
Do road crews take motorcycles into account?	No.
Are completed road repair areas safe for motorcycles?	No.
Do you get stuck at lights?	Yes.
Is road debris an issue?	Yes, roads are not maintained as well as they could be—sand, gravel, etc.
Are railroad tracks well marked? Right angle and height?	Yes.
Are dropoffs/edge traps present?	50 percent said dropoffs happen too often.
Are you satisfied with overall road conditions?	This was about evenly split, leaning toward need for improvement.
Are cattle guards well placed?	This was about evenly split.

**Limited Access Highways**

Is lighting on highways sufficient?	Yes.
Is signage sufficient and well placed?	Yes.
Is painting/striping sufficient?	Yes, but it doesn't provide traction.
Do road crews take motorcycles into account?	No.
Are road repair areas safe for motorcycles?	No, they are not motorcycle friendly.
Do you get stuck at lights?	Yes.
Are HOV lanes marked to allow motorcycles?	This varied, surprisingly because it's a Federal mandate that motorcycles be allowed. Responses to this question seemed to indicate that if motorcyclists knew they were allowed to ride in HOV lanes, they would do so.
Do you use HOV lanes?	Yes.
Is road debris an issue?	This was about evenly split.
Are dropoffs/edge traps present?	This was about evenly split. This is less of an issue on limited access highways because there

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Are toll booths safe and motorcycle friendly?	are more guard rails.
Are other drivers aware of motorcycles?	This was about evenly split.
Are you satisfied with overall road conditions?	No. Riders felt they were not given sufficient space on highways.
	Yes—more so than not.

The presentation showed a side-by-side comparison of data from Washington State and Pennsylvania in the areas of road work and road crews. This was primarily to show that data could be reported by State, that there is disparity among States, and that, at least to some extent, the survey results represent every State.

Mr. Halladay asked if the survey generated comments about what respondents meant when reporting that road crews did not take motorcyclists into account. Motorcyclists felt tar snakes, uneven plating, unmarked dropoffs, and milling made road work unsafe for them. Mr. Moreland responded that 3,000 comments were submitted, but some were not for presentation. He was quite pleased with the response rate for the survey and added that the data are available for further study. If the MAC-FHWA so desires, he offered to drill down the data or present other information as requested. He can provide the URL for anyone who wants to look at the data him- or herself.

Mr. Halladay noted that the purpose of the survey was to engage the motorcycle community regarding key issues; most of the issues motorcyclists raised are the same ones the MAC-FHWA has identified. He said that States might want to see their individual information and what the issues are in their State.

Mr. Toole reiterated that major concerns seemed to concern striping, construction zones, and dropoffs. Sufficiency of lighting doesn't seem to be an issue, but light cycling is.

Ms. Van Kleeck asked if any States stuck out as being particularly bad and if so, should those States be contacted?

Mr. Vaughn said that it would be good if motorcyclists could notify State DOTs of unsafe practices of road crews—maybe through a web site. This should be done in real time, such as through a published telephone number. Ms. Van Kleeck responded that Texas tried a notification system. Mr. Bloschock agreed that this concept was tested by Texas DOT on a web site.

Mr. Vaughn said that Alabama worked through the FHWA to get a pilot project to use the motorcycle sign in road construction zones along with signage telling motorcyclists to stay in the right lane. Ms. Bents added that Maryland is also using the sign.

Mr. Killion addressed the debris issue. He said a program in South Dakota uses an 800 number to report road debris. South Dakota's American Bikers Aiming Toward Education (ABATE) chapters man the phone lines and report the information to the responsible DOT agency.

In response to Mr. Reichenbach's question of whether Alabama got a Federal grant for its pilot to use the motorcycle logo sign, Mr. Vaughn replied that Alabama did not receive a grant, it received

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authority to use the sign placards as an experimental feature, which could be made permanent if included in the final update of the Manual on Uniform Traffic Control Devices (MUTCD)..

Mr. Reichenbach told the group that he had not heard of the Motorcyclist Survey and did not know who was asked to complete it, but he felt that it did not represent a cross-section of cyclists. Mr. Toole reported that responses came from a number of organizations. Mr. Reichenbach reiterated that the survey needed a better cross-section. He noted that Florida has a lot of problems with debris accidents. He believes that the MAC-FHWA should recommend that law enforcement be required to pick up debris if they see it.

In response, Mr. Toole stated that the FHWA sponsored the Travelers Opinion and Perceptions Survey (TOPS), which uses a statistical sample nationwide, and gathered 10,000-15,000 responses. The Department is looking at doing another TOPS survey. It might be helpful to get suggestions from the MAC-FHWA about questions to put on the survey regarding motorcycles. Particular issues that are sensitive to motorcyclists should be part of the survey. Mr. Moreland said that MAC-FHWA should help develop motorcycle-specific questions.

Mr. Halladay asked the group to think about uses for the results from the Motorcyclist Survey. In response to Mr. Reichenbach's comments regarding data validity, he stated that there are limitations to any survey effort. He also noted that the Motorcyclist Survey was not a Federal survey, rather it was conducted by the MAC-FHWA. It was also a snapshot survey, for which 10,000 respondents is a good number. He noted, however, that there are opportunities to get more respondents if another survey is done. In that vein, he suggested that the group might want to redo the survey for next summer.

Mr. Vaughn agreed that although the survey was not scientific, it still had good information. He asked how could the results be summarized and sent to State DOTs as part of an awareness effort. The issues brought up, debris, real-time feedback, issues with construction zones, are things State DOT directors are interested in, and communicating to them what is happening on the road is important. State DOTs need to know there are concerns and work issues through committees, maybe even the American Association of State Highway and Transportation Officials (AASHTO) itself. The group needs to think about moving the results forward.

Mr. Blosschok agreed with Mr. Vaughn. He added that the information should be brought forward to dispel misconceptions held by the public and State DOTs—such as the belief that painted stripes do provide traction.

Mr. Hennie asked if any States had particularly good reports—any we could look at as a model. Mr. Moreland responded that the information is there, but mining it for all 50 States would be time consuming. The data do exist on a spreadsheet that can be shared. In response to a question regarding regional issues, Mr. Moreland stated that issues were exacerbated in northern States. He would like to see a spring survey and compare those responses to a prime riding season survey regarding debris, striping, and weather conditions. Another survey should also look at rider actions.

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Mr. Tisdall added that deicing agents are an issue in some areas. For example, magnesium chloride becomes slick if it is applied to a road surface, but then it doesn't snow. This issue applies particularly to new deicing agents.

In response to the question of what format the data should take, Mr. Vaughn said they should be summarized by the MAC-FHWA and given to FHWA. Mr. Toole said that although it wasn't a Federal survey, FHWA could say the information was provided to it, and the agency could help the Council distribute the survey results, including the raw data, through publications, ASHTO committees, and 38,000 local governments. He also suggested distribution to organizations such as the National Association of County Engineers or the American Public Works Association. If FHWA has the information, it can find a way to get it out. In addition, each group represented on the MAC-FHWA could have publications that would serve as distribution venues. Moreover, publishing the data would show that feedback from their communities helped promote motorcyclist safety.

Mr. Moreland stated that he would like a commitment from FHWA that the message would be pushed up because, in the past, the group has put forth issues that have not been expeditiously followed up. Mr. Toole said within a month of getting the summary from the MAC-FHWA, FHWA would let MAC-FHWA know the vehicles that would be used to distribute the information.

Mr. Reichenbach told the Council that the results by State should not be distributed because small response States might lead State legislatures to believe motorcyclist fatalities and hazards are not issues in their State. Also, he would like another survey that goes to State organizations that deal with motorcycle riders to widen distribution and obtain a better cross-section of riders. He would like what he views as better data that can be submitted to State legislatures.

Mr. Halladay reiterated that the survey was a national snapshot; individual States may want to do their own surveys. Mr. Moreland said he would be happy to give the questions to States for them to develop their own surveys. In response, Mr. Reichenbach said that each State organization could reproduce the survey for each motorcycle chapter to distribute to its members and encourage them to complete it. He pointed out that not everyone has a computer, so a web-based survey eliminates some respondents from the beginning. The objective is to get a better cross-section.

Mr. Shankar said that the numbers from the current survey at the national level could not be used to try to describe State issues because the individual State numbers were too small. The survey results could be presented as a national aggregate with a statement that State-level data are available, but with a cautionary footnote regarding their significance.

Mr. Toole advised the group that before it considered doing another survey, it should look at what the survey is telling the MAC-FHWA. What are the results pointing to? The group needs to know what it wants the survey to tell it—what is the survey's objective? More resources? New State policy? What are the actions taken after the survey? The survey may raise awareness, but how will it drive change? For example, is there research on friction coefficient of striping so we have data to resolve the issue?

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Mr. Tisdall suggested that strategic highway planning committees from each State should be involved to determine what the issues are for States.

Mr. Moreland stated that the survey shows where common problems are and where they are not. Lighting is not an issue; striping traction is. He added that although the number of respondents was not as high as hoped, the numbers did accurately reflect where the riders are.

### **e. Intersection Design**

Mr. Bared

Mr. Bared has been with FHWA for 18 years and currently is in the Research and Development Office. He stated that fatal motorcycle crashes are still a major problem. According to the Fatality Analysis Reporting System (FARS) data, the number of crashes is increasing—more than 60 percent since 2002—although we do not really know why that is true. This is true both for unsignalized urban and unsignalized rural intersections.

The Research and Development Office is researching innovative highway intersection designs that force drivers to slow down, such as roundabouts, which are intended to reduce conflicts and speeds on approaches and through intersections. Mr. Bared presented the following data:

- 98.1 percent of motorcycle crashes at intersections and 97.2 percent of all motorcycle crashes occur when weather conditions are good. This is true for passenger vehicles as well.
- 87.7 percent of motorcycle crashes at intersections and 87.4 percent of all motorcycle crashes involve male drivers. In response to a query from the group, Mr. Hennie stated that about 10 percent of registered motorcycle owners are women. For all fatal crashes at intersections, 65 percent involve males.
- 62.8 percent of motorcycle crashes at intersections and 58.4 percent of all motorcycle crashes occur during daylight hours.
- 42.7 percent of motorcycle crashes at intersections and 37.7 percent of all motorcycle crashes involve some sort of driving under the influence.

Ms. Van Kleeck asked if alcohol use was related to the motorcyclist or the driver of the other crash vehicle. Mr. Bared replied that the data were per incident, rather than per person, so they could reflect either the rider or the driver. He volunteered to check to see if the 2006 FARS data could distinguish between the two. Mr. Moreland asked if the report pointed out that this statistic referenced either the driver or the rider. Mr. Reichenbach also expressed concern that this number included either passenger vehicle drivers or riders involved in the fatal crash because without language stating that fact, motorcycle riders might look bad. Mr. Halladay pointed out that the presentation also showed that alcohol being related to a crash was higher for all categories of all fatal crashes. Mr. Shankar stated that FARS data show that motorcycle riders have a higher proportion of alcohol-related fatalities than do passenger car drivers or truck drivers. Mr. Kiphart reiterated that FARS data show only that alcohol was involved. The data are gathered from police reports from the accident and often do not attribute the alcohol use.

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- 67.6 percent of motorcycle crashes at intersections and 70.5 percent of all motorcycle crashes involve people ages 25 to 60.
- In all settings—signalized urban, signalized rural, unsignalized urban, and unsignalized rural—the highest percentage of motorcycle crashes were angle crashes (70.1, 67.7, 63.4, and 60.3 percent, respectively). This is true for all vehicle fatal crashes as well.
- The number of fatal motorcycle crashes at intersections by posted speed was comparable to the number for all fatal crashes, with most occurring between 30-35 mph and 40-50 mph.
- The total number of fatal crashes for all vehicles was comparable to the above data for urban signalized, rural signalized, urban unsignalized, and rural unsignalized.

Mr. Bared solicited research topics from the Council, asking members to let him know what they would like intersection safety research to examine. He then presented alternative intersection designs that could increase motorcycle and vehicle safety by reducing conflict points and reducing speed.

Roundabouts reduce the numbers of conflict locations and are recommended as one way to increase intersection safety. They can be inherently safer than signalized intersections because they create a physical environment that reduces speed. Mr. Reichenbach reported that since one county in Florida started using traffic circles, the number of motorcycle-related intersection crashes dropped to zero within 5 years. Mr. Bared opined that physical improvements were more likely than ITS improvements to reduce fatal motorcycle crashes at intersections. Conflict points for roundabouts decrease from 32 for a traditional 4-way intersection to 16.

A second alternative intersection is the Restricted Crossing U-Turn (RCU), known as the J turn in Maryland or the superstreet. There are signalized and unsignalized U-Turns. This intersection prevents crossing movement from the minor road. Drivers have to turn right and make a U-turn to turn left. It increases throughput capacity because it eliminates two-signal cycles that are no longer needed for left turns. Travel time will be longer, but capacity will increase with these intersections. One drawback to the design is that unsignalized U-Turn intersections require a long weave time to allow for acceleration, weaving, and deceleration. Conflict points decrease from 32 to 20.

The Displaced Left-Turn (DLT) intersection increases capacity because it eliminates all left turns. The intersection itself is a continuous flow through. It is also called the Continuous Flow intersection. Ms. Van Kleeck asked if the entire intersection was at grade. Mr. Bared responded that it was. This design is basically a three-phase signal, which should be timed such that the feed lane for the left merge does not back up to the main traffic. Conflict points decrease slightly, from 32 to 30; however, capacity increases.

Mr. Moreland asked how long it takes for drivers to learn a new intersection pattern. Mr. Bared responded that people adjust quickly to this type of low-speed change. The Louisiana DOT conducted a survey of drivers and businesses in the vicinity when it built one of these intersections, and most drivers adjusted very quickly. Mr. Reichenbach asked if this design was primarily for urban areas. Mr. Bared said it could be urban or rural; its usefulness depended more on volume than location. Mr. Halladay added that it is important to notify drivers that intersection patterns will be changing. The first few weeks are critical in terms of advance signage. Mr. Bared added that having police presence at the new intersections for the first few weeks is also helpful. Moreover, human



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factors laboratory data showed that drivers had no problem adapting to new patterns. Mr. Moreland then asked what the signage for a new intersection design looked like. Mr. Bared told the group that signage could include arrows on posts and incorporated into the traffic signals and wrong-way arrows.

The Median U-Turn intersection, also known as the Michigan U-turn intersection, is similar to the Displaced Left-Turn intersection. It allows through traffic on the minor road but restricts all left turns away from the intersection and requires a U-turn. The major road also does not allow a left turn. It could be signalized or unsignalized. Mr. Reichenbach thought an intersection with no signal would be a problem. Mr. Bared stated that his group does not make recommendations about signaling or not, rather it discusses what the problems are and what potential solutions can be. Highway capacity manual recommendations cover protected left turns. Mr. Reichenbach stated that quite a number of motorcycle crashes are from left turns. This intersection design reduces conflict points from 32 to 16.

The Quadrant Roadway Intersection moves all left turns to side streets. Conflict points will be about the same as for a normal intersection but it will alleviate congestion.

The Double Cross & Diamond (DCD) Interchange switches traffic across lanes, thus eliminating the need for a left turn lane. This design increases capacity 15-30 percent or higher. It also reduces speed on the approach, similar to the roundabout; however, a roundabout cannot handle heavy capacity, unless it becomes very large and complicated. Mr. Hennie asked if the intersection designs were developed to alleviate congestion or to promote safety. Mr. Bared responded that they are designed primarily to relieve congestion. Mr. Halladay pointed out that these designs are geared toward specific situations—limited right of way, smaller bridges—to relieve specific problems; they are not meant for general applications. Mr. Moreland added that novel approaches to congestion relief will increase safety because congestion can contribute to unsafe driving behavior. There will be several applications of the DCD Interchange in the United States. The design also allows significant cost savings. The first one will be built at the end of the year and open in the middle of next year at a savings of \$5-6 million per interchange. Cost savings are realized because States do not have to rebuild structures; rather, they can adjust the approaches. In addition, there are no additional right-of-way purchases. The only DCD Interchanges currently built are in France. One is proposed for Kansas City, Missouri; one for Rochester, New York, and they could be recommended for probably 20 other sites across the country.

Mr. Bared added that there are many other innovative treatments, but these are closest to implementation.

Mr. Halladay told the group that the presentation was to show innovations in intersection design for the full vehicle fleet. He asked if the designs were looked at with motorcycle riders in mind. Mr. Bared responded that they were not.

Mr. Blosschok asked what Mr. Bared meant when he said that the designers drove the interchanges. Mr. Bared answered that it meant the designers drove a full-size car through a simulator. The engineers for the Missouri project spent several days working with the simulator.

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Mr. Blosscock pointed out that the extra signage needed at the new intersections means a lot of additional paint. Mr. Bared agreed that there was also concern about roundabouts because of markings and tight curves. Mr. Moreland closed the presentation by asking if the Council has looked at changing laws, such as is done in Europe—such as right-priority traffic, to make intersections safer or less congested. Mr. Bared is not involved with that aspect of traffic design.

### **f. Safety Research**

#### **Status Report on the FHWA Crash Causation Study (CCS) – Dr. Tan**

The Crash Causation Study has two parts: a pilot conducted by NHTSA and the main study to be conducted by FHWA. NHTSA has begun training for the pilot study, in Anaheim, California. Training will continue until the beginning of December. In the meantime, FHWA is exploring acquiring additional funds through the Transportation Pooled Funds studies. A Pooled-Funds study problem statement has been drafted, and Oklahoma and Texas have been contacted to lead the request for additional study funds. FHWA requested \$1.5 million, and the problem statement could be posted on the web site in December. The posting is dependent on the support of the Oklahoma DOT. FHWA is also looking for support from the DOD Joint Services Private Motor Vehicle Task Force, which was formed to address the high percentage of motorcycle crashes involving Marine sports bike riders. The Task Force will meet in December, and FHWA is trying to get on the agenda. It has sent the Task Force background material and hopes to gain the support of the DOD. Oklahoma State University has been reluctant to start the study until all the resources to conduct it are in order.

Mr. Reichenbach asked who was facilitating the study. Ms. Tan replied that the study mandated in the legislation will be managed by FHWA. Before FHWA was tasked with the main study, NHTSA had already explored piloting the methodology to determine levels of effort to conduct the study. Since that work was already underway, NHTSA is still conducting the pilot study to evaluate the methodology. Mr. Reichenbach asked to what extent motorcycle riders were being involved in this study. He stated that motorcyclists would like representation in these types of studies to monitor the programs. Ms. Tan reported that the Motorcycle Crash Causation Study was mandated to use the Organisation for Economic and Community Development (OECD) protocol. Modifications had to be made to adapt the protocol for use in the U.S., for example, the proposed study can't ask about immigrant status. NHTSA is coordinating with FHWA and sharing the NHTSA materials.

Ms. Van Kleeck asked about the timetable for completion of the pilot. Ms. Tan responded that training should be done by the middle of December, and then the study will go straight to data collection. Data collection will last 3 months or until acquisition of 37 crashes, whichever comes first. Once the data are analyzed, if funding gets worked out, FHWA can start the main study. The pilot should have a draft report by the end of 2009. Ms. Bents said that the task expires in October 2009 and it will produce weekly reports on data collection activities. The study is still trying to get a Certificate of Confidentiality from the National Institutes of Health per the recommendation of Westat's Institutional Review Board. In response to the question "who are the data collectors?" Ms. Bents replied that this is an independent study; the data collectors are not part of national associations; they are retired police officers and motorcycle riders who have had some crash investigation experience, but are not experienced reconstructionists. Data collectors will receive 6



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weeks of classroom training and additional field training. They were hired specifically for the pilot study.

### Latest Crash Statistics – Mr. Longthorne

Mr. Shankar, Chief of the Data Reporting Division, and Mr. Longthorne, Senior Analyst and Statistician, presented, “A Decade of Increase in Motorcyclist Fatalities.”

Mr. Longthorne noted that the data being reported were from FARS and represented a census of all motor vehicle accidents from police accident reports. The purpose of the presentation is to report on the motorcycle numbers. Data from the presentation included:

- Motorcyclist fatalities have been increasing for the past 10 years.
- 2007 had the highest number of motorcyclist fatalities since 1980. For 2007 it was 5,154, an increase of 10 over the previous high in 1980.
- The percentage change in registered motorcycles from 1998-2006 was +72 percent compared to a +21 percent change in vehicle miles traveled.
- The increase in the number of fatalities is highly correlated with an increase in motorcycle registrations.
- Motorcyclist fatalities increased to 12.6 percent of all motor vehicle traffic crash fatalities in 2007, from 5.5 percent in 1998.
- The number of total vehicle fatalities dropped from 41,945 in 2000 to 41,059 in 2007; conversely, the number of motorcyclist fatalities increased from 2,897 in 2000 to 5,154 in 2007.
- Trend data for motorcycle fatalities show that in 1998, there were 22.31 fatalities per 100 million motorcycle miles traveled. By 2006, that proportion increased to 39/100M miles. Similarly, in 1998, there were 59.13 motorcyclist fatalities per 100,000 registered motorcycles, increasing to 72.34/100K registered motorcycles in 2006.

Mr. Shankar pointed out that these data show that the number of fatalities has outpaced the number of registrations.

Mr. Reichenbach questioned the statistics. Registrations have increased, but the death total increased only by 10. Mr. Shankar responded that Mr. Reichenbach was looking at the total number of fatalities in 2007. Mr. Reichenbach stated that for the previous high, in 1980, there were 50 percent fewer motorcycles on the road.

Mr. Hennie noted that more motorcycle registrations and fewer fatalities is a good thing. Mr. Halladay stated that it depends on what years you look at. He asked if more miles are being put on motorcycles, which may contribute to an increase in fatalities without an increase in registrations. He acknowledged that FHWA realizes that its Vehicle Miles Traveled (VMT) data are suspect. Mr. Reichenbach added that FHWA needed to study the breakdown of what caused the accidents. He said State legislatures often blame the rider. He offered that the FHWA needs to do a study breaking out causes because before you can stop an accident, you need to know the cause and effect of the accident. He referred to the Marine Sports Bike Training Program as an example of determining

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cause and effect to fix the problem. Mr. Shankar responded that the FARS data cannot break out crash causes. He also pointed out that the demographics reflected in the FARS data are quite different from those of the Marines. They have primarily a young population, whereas FARS data show more fatalities among older riders. Mr. Longthorne agreed that the FARS data have very limited abilities in terms of crash causation. The current presentation was to show what is happening, not to determine causation.

Mr. Moreland asked if the rate of fatal crashes has outpaced both the rate of registrations and the rate of VMT. After hearing that it did, he asked that after two meetings and the realization that States and the FHWA were not collecting accurate motorcycle VMT data, those data should not be presented at the MAC-FHWA meetings. Mr. Longthorne agreed there were concerns over the validity of the data.

A lively discussion developed around presentation of VMT data. Mr. Reichenbach stated that registrations in Florida have gone up 20 percent, but the number of fatalities has stayed the same. Mr. Longthorne reported that he was presenting national data; the data could break out differently by State. Mr. Moreland added that if everyone knows the VMT are not valid—States don't know how to collect it, it differs significantly from industry estimates—why is US DOT still showing VMT data? Mr. Reichenbach added that the available VMT data hurt motorcycle advocates when they go to State legislatures. Mr. Killian stated that the South Dakota legislature brings up the VMT data often. South Dakota data have shown up in the national VMT data as zero motorcycle miles traveled; however, by virtue of the Sturgis rally, for 3 weeks, it has one of the highest number of miles traveled. Mr. Shankar stated that because the VMT data are questionable, FHWA is working with States to develop improved processes to report better data. If the data had not been presented to MAC-FHWA, there might not be the push to improve it that is now occurring. If the data are not reported, there is no impetus to improve them. Mr. Halladay volunteered that perhaps the VMT data presented should be accompanied by caveats. Mr. Reichenbach opined that NHTSA puts out falsified data, to which Mr. Halladay responded that the data are what are reported by States; they are not falsified in that respect and the FHWA is working with States to get better data. He suggested footnoting the VMT slide or perhaps removing it from the presentation. He asked if Mr. Shankar could footnote the data somehow to reflect their validity. Mr. Moreland agreed that a footnote was a good idea; a footnote would at least let readers know that what they are looking at related to motorcycle VMT is not necessarily accurate. Mr. Moreland went on to say that people look to NHTSA as the authority on these numbers, so everyone will take them as fact.

Mr. Longthorne summarized some of the findings from the data as follows:

- Increases in motorcyclist fatalities over the past 10 years occurred for all age groups, but were most in the 50+ age group (380 percent increase).
- Increases in motorcyclist fatalities over the past 10 years increased as engine sizes increased (134 percent for 1,001-1,500 cc engines).
- 50 percent of motorcyclist fatalities occur on a weekend.

Mr. Reichenbach reiterated that without knowing what caused crashes, statistics on age and engine size data make older cyclists and large engines look bad. He brought up the issue of graduated

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licensing (tiered endorsements), which Utah already does. Mr. Hennie asked why engine size was a factor; small motorcycles can put out more horsepower and more torque than some larger ones. Mr. Longthorne responded that motorcycle characteristics is a weak area for data. Engine size data are easy to collect. Ms. Bents added that the Crash Causation Study will include both engine size and make and model. Mr. Halladay added to the discussion that statistics can be read in different ways, but there are ways that FHWA can clarify their meaning in terms of levels of confidence or cautionary notes. Indicators we want to see are where countermeasures might work—infrastructure, operation-based, other issues—what do the data tell us with all the cautions and caveats. Mr. Reichenbach emphasized that car drivers, truck drivers, etc. need to be educated to look for motorcycles.

Mr. Moreland asked about any research NHTSA had done regarding reduction in crash-related injuries with other vehicles and how a reduction in injuries or fatalities is related to crashworthiness. He noted that the crashworthiness of motorcycles is increasing, but not at the rate of that for cars. Mr. Shankar added that studies have shown that seat belts, air bags, and other safety measures were responsible for major reductions in car fatalities. He also pointed out that the number of passenger vehicle registrations has increased over the past 10 years; however, the number of fatal crashes has decreased. Mr. Longthorne added that there has been an even greater decrease in the number of injuries incurred in passenger vehicle crashes. Mr. Reichenbach believes that part of the drop in fatalities is also due to the economy. People can't afford to drive on long trips, so fewer passenger vehicles are on the road.

### **Update on the Notice of Proposed Amendments in the *Manual on Uniform Traffic Control Devices* – Dr. Oliver**

Dr. Oliver stated that there were 14,000 responses on the NPA for the MUTCD. FHWA hopes that the manual will go out in 2009. This edition is expected to contain information about motorcycle signage. The 14,000 comments were not all on motorcycle signage. The last MUTCD was issued 5 years ago. Mr. Halladay pointed out that some of the comments received during the comment period are included in the MAC-FHWA meeting packet. Mr. Moreland asked how long it would take a State to implement changes once the manual is published. Mr. Vaughn replied that States will immediately begin to follow the manual. The public should start to see new signage immediately.

### **g. Summary of Discussions and Consensus of Advisory Council**

Ms. Bents

After the lunch break, Ms. Bents reviewed the mission of the MAC-FHWA:

The Motorcyclist Advisory Council to the Federal Highway Administration (MAC-FHWA), coordinates and advises the Secretary of the Department of Transportation, acting through the Administrator of the Federal Highway Administration, on infrastructure issues of concern to motorcyclists, including: (1) barrier design; (2) road design, construction, and maintenance practices; and (3) the architecture and implementation of Intelligent Transportation System technologies.

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The mission does not cover licensing, training, helmets, etc. It is focused on highway infrastructure.

Ms. Bents reviewed the recommendations and action items that the group had brought up so far:

### **Recommendations**

1. Approach States to develop a way for motorcycle riders to notify respective DOT agencies about hazardous road conditions. Mr. Halladay added the group discussed a link on web sites, and/or a telephone number. Current discussion indicated that the web might not be the best way to do it. Perhaps a telephone number could be posted on reader boards on highways so people could call while they are driving. Mr. Halladay noted that there could be several methods to get the information out.

2. Educate States to require law enforcement personnel to immediately address road debris hazards. Mr. Vaughn said this shouldn't be just law enforcement personnel, hazards such as dropoffs would be reported to State DOT or districts. Mr. Reichenbach suggested changing the wording to "...educate States to require DOT and law enforcement personnel..." Mr. Vaughn added that it should be reworded to say "Educate States on the importance of immediately addressing..."

### **Action Items**

1. MAC-FHWA should develop motorcyclist-specific questions for the next Federal Highway Traveler's Opinion and Perception Survey. Mr. Halladay said Federal Highway could bring this topic back to the group closer to the time the survey was about to be fielded because there isn't enough information currently to develop the questions. FHWA doesn't know how many questions would be allowed to put in. Rather, the action item should be for FHWA to get back to the MAC-FHWA closer to the time the survey is fielded, if it is fielded.

2. Repeat the Motorcyclist Survey in the spring. Mr. Moreland suggested that motorcyclist preparedness could be addressed through comparative data between a spring survey, when riders were starting a new season, and the current summer survey, after they had been riding a while. Mr. Moreland asked that everyone in the MAC-FHWA take a more active role in promoting the survey to riders. The Council could change the background and call it a follow-up survey. It was decided to redo the survey in the spring, before the next MAC-FHWA meeting. May was decided upon so it would appear in conjunction with Motorcycle Awareness Month. Mr. Reichenbach asked if the survey would be electronic again, pointing out that not everyone has a computer. Ms. Bents pointed out that MAC-FHWA has no facility for processing paper data.

3. Prepare a report on results of survey. Mr. Moreland indicated he would do this, but at the national level only.

4. Distribute survey results to State and local highway agencies (through AASHTO) and professional organizations. Mr. Toole said that FHWA could support this activity.

5. Examine Motorcycle Survey data at the State level and provide feedback to States with negative ratings. Mr. Reichenbach asked who in the State would get the data. Ms. Van Kleeck answered the

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State's highway safety officer, DOTs, other agencies. Mr. Reichenbach would like to see the data given to the States' organizations, like ABATE, so they could follow up on it and make sure something is being done. Ms. Van Kleeck asked if the survey could be put on the MAC-FHWA web site. Ms. Bents said the first issue is who would be analyzing the data at the State level. Mr. Halladay responded that the report that comes from Mr. Moreland would be at the national level and could be put on the web site; however, as far as each State getting its own data, there are some issues in terms of validity, number of responses, etc. Whether there should be breakout tables by State should be determined by the Council, but some States had very few respondents. Mr. Reichenbach pointed out that the action item should then say distribute **national** data, so there is no confusion that it might be broken out by State. Mr. Halladay agreed and Dr. Oliver added that the results would not be statistically significant at the State level.

The survey format should be provided to States in case they wanted to run their own survey. Mr. Moreland can do that electronically. The problem will be with how States capture the data. Ms. Bents asked how the information about the survey's availability would be distributed. Mr. Reichenbach said if the survey were sent to his office, American Bikers Aiming Toward Education (ABATE) Florida would take it from there. States could ask Mr. Moreland to send them the format. Ms. Bents reiterated that States not at the MAC-FHWA meeting won't know that the survey is available to them. Mr. Moreland asked for suggestions on how to disseminate the survey so States could post it. Mr. Reichenbach asked if a notice could be on the MAC-FHWA web site advertising the availability of the survey. Mr. Moreland said that would result in the same criticism that the survey was available but not promoted to the motorcycle community. Mr. Hennie responded that ABATE could send it out, but then it would just go to the ABATE lists. Mr. Reichenbach added that what organization contact information Mr. Hennie didn't have, he probably did have. He and Mr. Hennie will work together to compile a list of target organizations.

Mr. Moreland asked if, when he summarized the results from the first survey, he should try to capture those things from the survey that were conclusions and those that needed additional followup—paint, road maintenance, etc. Mr. Halladay stated that the followup issues meshed well with the MAC-FHWA's charter.

6. NHTSA should add footnotes to motorcycle crash reports indicating the limitations of VMT data. Mr. Shankar said the language should come from FHWA as to what should be added to the reports. Mr. Halladay said FHWA could help and said this should be an action item. Recommendations typically involve things more centered around the charter.

The group stated that it needed a recommendation on further research about pavement markings—friction coefficients. Mr. Blosschok stated that when States think of striping, they think of reflectivity, low cost, and durability. Most States do not take traction into consideration. Research on pavement markings would also need to include all different types of products. Mr. Blosschok added that issues brought up to the MAC-FHWA are not simply motorcycle issues; they also affect pedestrians and bicycles (vulnerable users). Mr. Tisdall offered that patterning does not equal traction. Mr. Vaughn added that most of the patterning was for wet weather reflectivity, not for traction. Mr. Blosschok contributed that the striping may have friction at first, but industry needs to develop something that retains friction over time.



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### h. **Public /Private Partnerships**

Mr. Saunders

Mr. Saunders stated that he was presenting today in response to an action item from an earlier meeting. He believed the group specifically wanted to hear about what public/private partnerships (PPPs) mean for the motorcycle user. He was accompanied by Jesse Yung, from the FHWA Office of Operations.

The Federal Government definition of public/private is when the private sector is involved in a project more than at the traditional level of involvement. State DOTs and FHWA have been working with the private sector for decades. Public/private partnerships include the design/build concept for highway facilities.

Why are we interested in doing more PPPs? They have been used extensively in Western Europe, Spain, France, United Kingdom, Australia, Chile, and Mexico. The United States did not use them extensively in the past because highway construction was covered by the fuel tax and other taxes that generated revenue. For a while, the fuel tax became part of an escalating cycle: selling more gas meant getting more money for highway building, which equaled more cars on the highway using more gas, etc. Unfortunately, the revenue from this source is dropping. Concomitantly, costs to build or rebuild have increased significantly. Therefore, in an environment where raising fuel taxes and other revenues to meet needs is not possible, transportation agencies are looking to bring in private capital.. These factors can make PPPs a better way of doing business. PPPs shift risks to the entity most ready to accept them. In a traditional highway design, the State DOT requests a design, selects a designer, then selects a builder, then maintains the project. However, if there is a flaw in the design, the State DOT has to pay for changes and also for any repairs. Under the new design/build/operate/maintain idea, the contractor who designs the project is responsible for building the facility to last and operating and maintaining it. If the contractor doesn't do a good job, there are financial or operational penalties.

Getting a little off topic, an extensive discussion of toll roads ensued. Some of the highlights of that discussion are presented here. Mr. Reichenbach stated that the Florida turnpike is privatized. He asked Mr. Saunders who sets the fees and why does the State DOT repair it? Mr. Saunders replied that the Florida turnpike is part of the State government, but it has to be operated like a business. In Florida, more of the roads are projected to become toll roads. Mr. Reichenbach noted that the Florida turn pikes were 90 percent paid for by the Federal Government, so why would a business get the toll revenue when the State is paying for the road? Mr. Saunders said there are strict restrictions in Federal law dealing with tolling interstates. For the private operators, the interest is not in maximizing the tolls, the interest is in maximizing the revenues. If the increased toll results in reduced traffic and therefore, revenue, there is no point in increasing the toll. Mr. Reichenbach asked if the turnpike is constructed with Federal money, why aren't all tolls the same from State to State? Mr. Saunders pointed out that the toll roads are not controlled by the Federal Government. The authority to toll is controlled by the Federal Government, but the tolls are set locally.

In the interests of keeping on schedule, Ms. Bents directed the discussion back to the topic of PPPs. Mr. Saunders reiterated that what FHWA wants to do is bring private equity to the table to address the increasing gap between what the public sector is able to provide and what we need.

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If a State DOT cannot afford a project now, it won't be able to afford it next week. The sooner projects can be built, the cheaper they are to deliver because costs are spiraling. Mr. Saunders stated that use of PPPs accelerates project delivery. Moreover, the allocation of risk goes to private partners—the person who does the design and construction takes responsibility for it. PPPs are more concerned with life-cycle design because maintenance is an issue for the private sector.

Mr. Moreland asked if PPPs affect liability for crashes or accidents on a roadway owned and maintained by a private entity. Mr. Saunders responded that it might. If the private entity does not do what it is supposed to do, it is liable; therefore, the private entity is likely to do more than what is required. Can the private entity ban use of the road to users it feels are unsafe (such as certain models of vehicles or certain engine sizes)? Mr. Saunders said absolutely not.

Mr. Saunders used data from an examination of PPPs in Australia to discuss budget issues because there are few PPPs in the United States. Comparing a traditional project to a PPP project showed that the traditional project comes in about 24 percent over schedule; the PPP comes in about 2.5 percent early. The private sector project comes in under schedule because as soon as the entity can open its project for traffic, the sooner it can start collecting revenues. There is tremendous incentive to get the project out the door. Traditional projects have a 15 percent cost overrun; for PPPs, overrun was 1.2-1.4 percent because cost is set ahead of time, making overruns minimal. Cost overruns are usually the result of additional requirements after the cost has been set.

Citing information from the Government Accountability Office (GAO), Mr. Saunders stated that the private sector is held to a higher standard in construction and maintenance. The private sector may have the same standards of performance regarding snow removal, filling potholes, road kill removal, etc., as public entities; however, the private sector is commonly held to those standards more closely than public entities and it incurs financial penalties if it doesn't meet them. There is also greater accountability in operations and maintenance. Mr. Saunders cited the Indiana turnpike and the Chicago Skyway as the two most prominent PPPs in the United States. The Skyway is owned by the city of Chicago; if the contractor does not meet the terms of the contract, the city can come in and take it over. Indiana owns and built the turnpike without Federal funds. The only purely private road built with private funds is the Dulles Greenway in northern Virginia. It is now owned by an Australian financial entity.

To obtain a PPP, States need to have enabling legislation, which currently only half do. Particularly in the northeast, about half do not have the enabling legislation; for example, New York, California, and Connecticut cannot even do a design/build. Texas, Florida, Virginia have extensive PPP legislation. Alaska can do one PPP project—a bridge.

Mr. Saunders then discussed the Capital Beltway HOT (High-Occupancy Toll) lanes. This is a \$1.6 billion project to add two lanes in each direction to the beltway from the Springfield Interchange to almost the American Legion Bridge (12 miles). The inner two lanes will be reserved for high occupancy vehicles (HOVs) and others willing to pay a variable toll, which will be priced aggressively during peak hours. The HOT lanes will be free for buses, HOVs, and motorcycles because the construction will be paid for with Federal funding (\$400 million and a *Transportation Infrastructure Finance and Innovation Act (TIFIA)* loan). If a roadway is built with Federal funds, it has to comply with Federal law. VDOT has expressed concern about revenue implications if 50 percent of

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the traffic is taken up by carpools, so if traffic flow of HOV lanes becomes congested (around 23 percent use), VDOT will make a contribution back to the private sector to compensate them.

Another project, the I95-395 HOT lanes, will go into construction next year. The project will run from the 14th Street Bridge to Fredericksburg (55 miles). It will have limited access like the Dulles Toll Road and be totally automated. The lanes will also be physically separated with barriers, which will add to the cost of the project.

Mr. Hennie asked if the operating entity, especially if it is owned by a foreign entity, could dictate the rules of the road—require helmet use for cyclists, restrict types of motorcycles, etc. The answer to this question was no; the operating entity was bound by the laws of the State.

Mr. Moreland asked about the downside of longer leases to private entities—collecting tolls today to pay for repairs in the future. Mr. Saunders recommended giving the private entity an annual payment rather than providing all the funds up front. The Federal Government believes how to receive the money is a State's decision to make.

### **i. Motorcycle VMT Update**

Mr. Gillmann

Ralph Gillman, Office of Policy and Government Affairs, Team Leader for the Travel Monitoring Team, presented an update of the VMT data. He stated that the National Household Travel Survey (NHTS) is being done this year (it was last done in 2001). The survey is almost the same as in 2001 and includes questions on motorcycle use, trips, and VMT. The survey has add-on, State-purchased questions as well as a specific question about the frequency of use of motorcycles. Data from the survey will be available this fall.

The Highway Performance Monitoring System, which is an annual survey of State DOTs, is a major source of VMT data. It includes all roads. States are asked to provide the amount of travel on six road and six vehicle types on a summary form. The estimation of motorcycles was optional until this year. Mr. Gillmann pointed out that in the past, there has been a misunderstanding that if the State didn't provide motorcycle data, FHWA put in zero for that State. Instead, FHWA puts in the national average instead of a State figure. *Highway Statistics* is the publication of the national estimate of VMT and includes motorcycles and registration data. Registration data come from a separate data survey through each State's department of motor vehicles. The emphasis for the VMT-1 table is getting the national estimates of travel, particularly for trucks because they cause the major amount of road damage. Now, however, motorcycle VMT data are generating more interest. FHWA is working with States to improve the data—particularly data quality. The National Transportation Safety Board (NTSB) has recommended that FHWA develop guidelines for States to report motorcycle registration and VMT data. VMT held a symposium on the topic in 2007.

There has been a consistent concern about misuse of data. States are concerned that a focus on motorcycle data will detrimentally affect truck data figures—for example, if you set the detection high enough to detect motorcycles, you can also capture ghost vehicles from different-axeled vehicles in other lanes. Staffing and funding are also a concern because people look to DOT to move traffic, not to collect data. In addition, data are also problematic because States also need to



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collect data from local governments and private companies, and the State has no control over what they report.

FHWA's response to NTSB after the symposium was that FHWA would issue a supplement to the *Traffic Monitoring Guide* that specifically addresses motorcycles. FHWA also has a community of practice on motorcycle detection. FHWA did a demonstration for detecting motorcycles in May to show what challenges in motorcycle detection are so vendors could improve their products. He reiterated that now that States know FHWA is interested in motorcycle detection, they will respond, but it takes time for vendors to come up with new products, and for States to buy those products. FHWA is also trying to improve registration data through interagency review teams.

The *Traffic Monitoring Guide* supplement was issued in April. It included data on motorcycle counts and pros and cons of technology.

FHWA awarded a Small Business Innovation Research proposal on motorcycle detection, classification, and characterization. This will also help with motorcycle signal systems for actuated signals. SBIR projects are successful in coming up with innovative technologies. More information is available at [www.fhwa.dot.gov/policyinformation](http://www.fhwa.dot.gov/policyinformation).

In response to Mr. Hennie's question about the SBIR program, Mr. Gillmann stated that the award is in two phases. Phase I is a feasibility study for a new product. Small businesses are asked to propose a new technology. If the product looks feasible, the small business is asked to produce a prototype. Mr. Halladay said almost every Federal agency has a small budget set aside for small business innovation.

Mr. Moreland asked if there is a date when States will be able to collect valid data and give them to FHWA. Mr. Gillman said that FHWA receives data from the States, reviews them, and asks for verification, and that this is a continuously improving process. In the past, FHWA has taken the numbers as is, but the numbers can change with changes in personnel at the State level. Since 1999, FHWA has not published VMT data by State by vehicle type because it is skeptical of the numbers. But aggregated to the national level, the data appear stable. FHWA is trying to improve the quality of the data States collect.

Mr. Halladay noted that data come from the States and are discussed with the States. The process takes a long time and is one of continuous improvement. The *Travel Monitoring Guide* gives succinct guidelines to States on how to factor motorcycles' VMT by day of week and seasonal adjustment. This is more than has been done in the past, but it is still a process of continuous improvement.

Mr. Moreland then asked if there was a target date when FHWA would be confident of the numbers it reports. Mr. Gillmann replied that there is no set date. Mr. Halladay added that this is the first year that motorcycle data were asked for specifically and the first year that the new guidelines were out. FHWA faces the same data quality issue with roadway inventory data. States were encouraged to collect roadway inventory data so they would know where the guardrails, shoulders, markings, signs, etc., are and then relate crashes to those characteristics on the roadway. States are required to report on all public roads by FY 2009. FHWA continues to work on determining quality levels and rate of improvement of the data.

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### **j. Pavement Stitching for Motorcycle Safety in Texas** Mr. Blosschok

Mr. Blosschok now works for Vertex Engineering and reports to the North Texas Tollway Authority. When he was a member of the MAC-FHWA, the group was looking at infrastructure issues of (1) surface friction, (2) ride quality (such as is affected by open joints on bridges), (3) motorcycle-specific warning signs for dropoffs. Another ride quality issue, particularly in Texas, is center lane rumble strips, as are raised pavement markers (RPMs). Mr. Blosschok noted that in Dallas, the RPMs are particularly massive.

Throughout the nation, many roads are constructed of concrete slabs about a foot thick that, over time in challenging soil conditions, can drift apart, making a joint. At some point, this joint gets big enough and deep enough to capture a motorcycle wheel. It was this type of condition that, in 2001, caused a motorcycle fatality on I-610 around Houston. I-610 is owned by TxDOT.

Pavement stitching is called that because it involves a metal bar that looks a little like a staple. It is cheaper than full-depth repair of the concrete. Stitching involves placing a reinforcing bar into a 5-inch deep cut in the concrete with the ends in holes cut at either end, which keeps the slabs from moving left to right. The bar acts as a staple to hold the slabs, and the gap between them is filled with material. Stitching occurs every 3 feet along the joint.

Another method of making the ride safer for motorcycles is pavement joint repair. Here, product is applied to the separated pavement and smoothed over. It is cheaper than stitching, but if the slabs continue to separate, stitching is done.

Mr. Blosschok asked Mr. Vaughn for the specifications for the motorcycle logo sign, saying it could be used on a road with separated joints to warn motorcyclists of a potential danger.

Another issue facing motorcyclists is possible impact with guard rail systems. A new design called an attenuator, which is being used in Europe, cushions bodies somewhat from the metal barriers in case of a slide-out. Yellow plastic sand barrels are also being used, as are water-filled barriers, which can reduce the severity of the crash.

Mr. Tisdall brought up the subject of retrofitting rebar into concrete roadways, which requires milling the pavement to get it level again, and thus creating another hazard for riders. Mr. Blosschok suggested that the rebar is used more for faulting. Pavement stitching is used more to prevent right-left separation. Faulting is a pavement edge dropoff, which is also taken seriously.

Mr. Blosschok also stated that NTTA is working with the city of Dallas to explain that although the large RPMs are a good channeling device, NTTA can show data from FARS that they are hazardous to any two-wheeled vehicle.

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### k. Awareness

Ms. Bents directed the group to Awareness issues, many of which were represented by handouts in the meeting packet.

Dr. Oliver pointed out the purple handout in the packets dealing with vehicle-to-vehicle communication in Honda vehicles. Vehicle infrastructure integration is one of the key aspects of ITS. Work has already been done on car-to-car communications. The focus is on how motorcycles talk to each other and to the infrastructure. This will allow vehicles to talk to roadsides and to each other and to know about issues down the road.

Mr. Vaughn said that one of the things that was important to him when he began working with the group was the awareness issue. There was a lack of awareness of motorcycle issues and design, maintenance, construction, and operations of DOTs. The MAC-FHWA put together a resolution that was passed by the American Association of State Highway and Transportation Officials to make motorcycle issues a part of its various standing committees. In Hartford, the Standing Committee on Design brought a resolution to the Standing Committee on Highways for passage to be part of the authorization recommendations. The resolution included the word motorcycles when addressing safety and maintenance issues. Through efforts of MAC-FHWA in DOTs, motorcycles are being considered in the everyday work they do. Collecting data and information is good, but the awareness issue is like the environment issue—until it became ingrained in our everyday business there wasn't much done with it.

Mr. Halladay stated that as a result of conversations during the last couple of meetings regarding ITS, FHWA has developed a technical paper that will be presented at the ITS World Congress in New York. The paper's major message is that motorcycles as a distinct vehicle class need to be brought more prominently into the ITS architecture. There should be a migration path to motorcycles. There needs to be awareness in the ITS community about desire, need, and requirements for safety for motorcycles. Safety technologies such as airbags are coming into the motorcycle environment, but the ITS community must recognize the need for greater integration of motorcycle safety issues. That will be part of the message next week. There are several other motorcycle-specific presentations on the agenda in New York City for the World Congress.

Ms. Van Kleeck asked if all the papers from the upcoming conference are going to be published. Mr. Halladay responded that they would in some format, maybe a CD ROM or on a cost-to-access site. There may be three sessions on motorcycles, some of which will be very technical and involve manufacturers—Yamaha and Honda.

Mr. Hennie asked who was doing the black box feasibility study. Dr. Oliver responded that NHTSA is doing it. Mr. Cosby stated that the project is in startup. NHTSA is just seeing if it can actually be done and if the instrumentation can be put on a motorcycle and what would have to be adapted for that vehicle. For example, lane visualization, comparison of the angle between the rider and the motorcycle are different from those of a car. NHTSA will have to go back and look at some other studies, such as photographic analysis, and make sure that what it is collecting is what it needs to collect as far as data are concerned.

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Ms. Van Kleeck stated that the Motorcycle Safety Foundation has been working with the Marines and Navy to offer a course on sports bike riding. Anyone in the Marines or Navy who rides a sports bike is required to take the 7- hour course. An article about the Marine course is included in the meeting packet. Ms. Bents added that Mark Brown from BikeSafe has also been working closely with the military in North Carolina.

Mr. Reichenbach asked if the MAC-FHWA had done anything on requiring in all States “Watch for Motorcycles” signs to be posted all the time. He said he has asked the group three times to make the recommendation but hasn’t seen it yet. Kentucky has the notice up all the time. Mr. Hennie believed the MAC-FHWA did make a recommendation to that effect early on. The reader boards with that message were used to promote Motorcycle Awareness Month. Mr. Halladay added that keeping them up all the time may deflate the message. Mr. Kiphart added that the message on highway screens in Nevada changes every month. He said that if the board is inactive, the Nevada DOT puts a message on it, but the messages are not all on motorcycle safety.

Mr. Vaughn reported that Alabama used highway safety money for a capital project rather than an educational project. The State built a motorcycle safety course at the DOT facilities. The Alabama Motorcycle Safety Association conducts a course at the facility three or four times a year.

Mr. Reichenbach added that Florida gave ABATE more than \$1 million over 3 years toward placing notices in buses and other awareness activities. The number of motorcycle deaths in Florida has actually stayed the same so maybe this awareness campaign contributed to that. Florida ABATE has its own safety program where it goes into schools and teaches safety awareness. Other State groups should ask their legislatures for motorcycle funding as well.

Ms. Bents then reviewed the recommendations and action items to reflect revisions requested earlier. These are included below.

## **1. Public Comments**

There were no public comments.

## **m. Summary of Action Items and Plans for Next Meeting**

Ms. Bents

The next meeting was set for Tuesday/Wednesday May 5 and 6, 2009.

Ms. Bents announced the conclusion of the formal presentations. Ms. Bents announced that this was the last appearance for Mr. Halladay as the designated Federal member. He is retiring from the FHWA the end of the year, but the work of the group will go on.

Mr. Reichenbach asked when a copy of the minutes would be available. Ms. Bents answered that it gets posted on the web, so it will be a few weeks. Recommendations and action items are sent to FHWA right away. The report is reviewed, edited, and posted with the presentations—it should be out in about a month.

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**n. Closing**

Mr. Halladay

Mr. Halladay reflected on the MAC-FHWA organization and process. He said that he found it most interesting to see the power of a diverse group of people. He stated his appreciation of the working environment that the MAC-FHWA represents. The messages are starting to get through—to State DOTs, and local and international transportation groups. These are good networks, and as the new FHWA Associate Administrator for Safety, Joe Toole will certainly work to sustain interaction with the group and move forward. He thanked the group for the opportunity to work with them over the past 2 ½ years.

Mr. Vaughn reminded the group that the *Federal Register* said Mr. Halladay, as the Designated Federal Official, had the authority to adjourn meetings if continuing was not in the public interest; but on behalf of the group, he was glad that didn't happen. He thanked Mr. Halladay for his leadership.

Mr. Halladay responded that it was the power of the group's memberships that keeps things moving forward.

The meeting was adjourned.

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A review of the status of previous recommendations and action items is summarized below.

### Meeting 1 – October 24, 2006

#### **Recommendations**

- 1) Prepare a brochure that can be distributed to government agencies urging them to consider motorcyclists' concerns during road design, construction, and maintenance activities.  
*Status: Presented at the May meeting; distributed in December, 2007.*
- 2) Encourage State departments of transportation to create web sites that allow motorcyclists to report roadway hazards. A model for this is the Roadhazard.org site created by ABATE in the Midwest. The web sites would be monitored by State and local highway officials who could schedule repairs, improve signage, etc.  
*Status: Texas has begun implementation. South Dakota is providing a quick response to items identified on the Abate site. Other States and localities are creating reporting mechanisms.*
- 3) Examine the skid resistance of intersection markings. The use of thermoplastics, especially for broad, horizontal intersection lines, creates slippery surfaces for motorcyclists who are stopped on top of them.  
*Status: Mark Bloschock presented information on skid resistant materials, May, 2007.*
- 4) Continue FHWA initiatives to improve retro-reflectivity of signs and roadway markings. Also consider the use of wider lane markings in order to increase their visibility.  
*Status: Council proposed a formal recommendation on line visibility. The FHWA has a new rulemaking proposal coming that includes minimum levels of retroreflectivity.*
- 5) Reduce hazards associated with milled surfaces, parallel paving lane joints, drop offs at shoulders and bridge surfaces, parallel grids on bridges, steel plates, potholes and other uneven roadway surfaces.  
*Status: The proposed brochure addresses this issue.*
- 6) Conduct a review of barrier designs used internationally, and identify those that are most forgiving when impacted by motorcyclists.  
*Status: Presentation made by Nick Artimovich, May, 2007.*
- 7) Consider signage targeted to motorcyclists to warn of especially hazardous conditions for them. These could include subjects such as uneven pavement surfaces and crosswinds.  
*Status: Don Vaughn drafted and submitted a resolution approved by the Council to AASHTO and SASHTO where they were approved, summer, 2007.*
- 8) Examine the use of various sealants on road surfaces. Tar snakes (excess tar left on the surface) and other materials present slippery surfaces for motorcyclists.  
*Status: Mark Bloschock provided a presentation on two commercially available products, May, 2007.*
- 9) Extend future meetings to at least 1 ½ days.  
*Status: Adopted.*

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- 10) The Council was also interested in exploring ways in which they could better interact with groups such as AASHTO to ensure that motorcyclists' perspectives are considered during the development of recommendations and standard practices.

*Status: A formal recommendations was submitted to AASHTO highlighting the need for formal guidelines on enhancing motorcyclist safety.*

### **Action Items**

Council members assumed responsibility for support activities as described below:

- 1) Mr. Hennie volunteered to provide examples of highway signs targeted for motorcyclists.  
*Status: Kathy Van Kleeck provided an exemplar photo from Maryland.*
- 2) Mark Bloschock will consult with highway designers and engineers to review whether new entrance ramps are getting shorter than in older designs.  
*Status: (Nov 2007 update): Recent changes to geometric design standards relate mainly to sight distance, which have little to no impact on designs of ramp length.*
- 3) Mark Bloschock will bring a sample of a Tyregrip product that is used on surfaces such as steel plates to provide some traction for tires.  
*Status: Mr. Bloschock provided a detailed PowerPoint presentation on two products.*
- 4) The next Council meeting is tentatively planned for the spring of 2007.  
*Status: Held on May 9 and 10, 2007.*

### **Meeting 2**– May 9 -10, 2007

#### **Recommendations**

- 1) There should be a Web based survey to identify rider safety issues; enthusiasts groups could assist in this effort to increase participation.  
*Status: Ed Moreland reported that planning is underway, and results should be available for the May 2008 meeting.*
- 2) Pavement surfaces and markings should include skid resistance at junctions, school zones, and crosswalks.  
*Status: This is covered by the new brochure.*
- 3) The Council supports improved pavement markings w/regard to line width, retroreflectivity, and skid resistance, and urges that research in these areas be conducted.  
*Status: There is no current research, but future rulemaking on lane marking is expected to cover this topic.*
- 4) Motorcycles should be included with recommendations for pedestrian and bicycle safety as vulnerable roadway user groups.  
*Status: Under consideration, and being advanced with AASHTO and others as various guidance materials and other documents are advanced.*



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- 5) All safety research should consider motorcyclists.  
*Status: Brochure, AASHTO Resolution, SASHTO Resolution and new recommendations to ITS cover this topic.*
- 6) The conspicuity of raised medians should be increased with reflective paint.  
*Status: Change the wording to remove "with reflective paint." This is related to issue #3 above, and may be considered as part of future updates of the MUTCD.*

### **Action Items**

- 1) Bob McClune will draft a resolution from the Council to AASHTO on Pavement Markings.  
*Status: Superseded by AASHTO recommendation.*
- 2) FHWA will develop a presentation on what is being done about ITS development with regard to motorcycle safety. They and the Council will also explore opportunities to present motorcycle safety issues at ITS conferences.  
*Status: Presentation, December, 2007.*
- 3) Don Vaughn will submit a revised letter of endorsement from the MAC-FHWA to have motorcycle- focused placards included in the MUTCD.  
*Status: Included in resolution, approved in summer, 2007.*
- 4) Ed Moreland will edit Don's original letter recommending that motorcycle-related global issues and standard signs become a permanent part of the MUTCD.  
*Status: Complete.*
- 5) Don Vaughn will draft a resolution from MAC-FHWA to the chair of AASHTO standing committee on highways recommending that a formal motorcycle guidelines document be created. The package will include the FHWA motorcycle safety pamphlet.  
*Status: Submitted and adopted by AASHTO and SAASHTO, summer, 2007.*
- 6) Mr. Jeff Hennie, Darrel Killion, Steve Zimmer, and Ed Moreland will explore developing a web-based survey.  
*Status: Underway.*
- 7) FHWA will invite an MUTCD expert to attend the next meeting.  
*Status: Presentation, December, 2007.*
- 8) Kathy Van Kleeck will send a photograph of a motorcycle caution sign.  
*Status: Complete – a Maryland sign was provided.*
- 9) FHWA will email a final draft of the motorcycle awareness pamphlet to the Council for review and comment.  
*Status: Brochure complete.*



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**Meeting 3** – December 5-6, 2007

***Recommendations***

- 1) The Council should respond with written comments to the Notice of Proposed Amendment (NPA) to the MUTCD, regarding motorcycle-related signage.  
*Status: Complete, May 2008.*
- 2) The Council should notify and encourage interested parties to comment on the NPA.  
*Status: Complete, May, 2008.*
- 3) USUSDOT should report to the MAC-FHWA on topics raised regarding the amount of funding and specific ITS projects related to motorcycle safety.  
*Status: Presentation, May, 2008.*
- 4) USUSDOT should include motorcycle issues in agreements with ITS developers, consistent with TEA21 and SAFETEA-LU provisions.  
*Status: Ongoing.*
- 5) Conspicuity of raised medians should be revisited.  
*Status: Research program pending.*

***Action Items***

- 1) Kathy Van Kleeck will monitor the Federal Register and notify Fran when the NPA is published.  
*Status: Complete.*
- 2) Mr. Hennie, Don and Gerry will review the NPA and make recommendations to the MAC-FHWA.  
*Status: Complete.*
- 3) Mr. Hennie, Don and Gerry will draft a response on behalf of the MAC-FHWA.  
*Status: Complete.*
- 4) Each MAC-FHWA member will notify his/her constituency about the NPA and suggest a response.  
*Status: Complete.*
- 5) FHWA will keep track of brochure distribution.  
*Status: Presentation in May, 2008.*
- 6) Ed, Darrell and Gerry will attempt to bring survey results to the next meeting.  
*Status: Update provided, May, 2008. Survey planned for summer, 2008.*

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- 7) Another ITS discussion is requested for May, 2008.  
*Status: Presentation, May 2008.*
- 8) If possible, the next meeting should be held in conjunction with a demonstration of VMT-measurement technology.  
*Status: Complete.*
- 9) Dr. Oliver will prepare an appropriate announcement on the availability of the brochure.  
*Status: Public Relations office consulted. Effort is ongoing.*

### **Meeting 4 – May 6-7, 2008**

#### ***Recommendations:***

- 1) The Motorcyclist Advisory Council to the Federal Highway Administration affirms its support and recommends to the Secretary the continued use of High Occupancy Vehicle (HOV) lanes by motorcyclists as prescribed in TEA 21.  
*Status: Complete*
- 2) The MAC-FHWA recognizes the current interest in Public Private Partnerships (PPPs) for highway operations. Where these partnerships go forward, the Council expresses its endorsement of guaranteed full access for motorcycles to all PPP roadways in conformance with applicable Federal and State laws.  
*Status: Complete*
- 3) The MAC-FHWA encourages the Secretary of Transportation to include the broader use of motorcycles as a means of reaching Departmental goals to reduce congestion and fuel consumption.  
*Status: Acknowledged*
- 4) Suggest that the Bike Safe program recommend to participants that road condition feedback be provided to State highway agencies.  
*Status: BikeSafe has adopted this policy and includes reported information on road conditions on its web site.*

#### ***Action Items:***

- 1) Circulate the letter from the MAC-FHWA regarding the motorcycle NPA to the MUTCD for signature and submit it to the docket by July 31, 2008.  
*Status: Complete*
- 2) Launch the survey of motorcyclists' views of roadway infrastructure condition and performance and provide a status report at the 5th MAC-FHWA meeting.  
*Status: Complete*
- 3) Provide a presentation on Private Public Partnership (PPP) plans and perceptions at the next meeting.

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*Status: Presentation provided at November 13, 2008 meeting*

- 4) Send a letter of commendation to the North Carolina State Highway Patrol for their initiative and leadership in being the first State to adopt the Bike Safe program in the U.S.

*Status: Complete*

**Meeting Five** - November 13, 2008

### ***Recommendations:***

- 1) States should develop a way for motorcyclists to notify respective DOT agencies of hazardous road conditions.
- 2) States should educate DOT and law enforcement personnel on the importance of immediately addressing road debris hazards.
- 3) FHWA and road marking providers should conduct research on increasing friction of pavement markings.

### ***Action Items:***

- 1) FHWA will request MAC-FHWA to develop motorcyclist specific questions for the next Traveler Opinion and Perception Survey (TOPS). *FHWA*
- 2) Repeat the Motorcyclist Survey in May for comparison data. *Ed*
- 3) Prepare a report on national level results of Motorcyclists Survey. *Ed*
- 4) Distribute the MC Survey results to State and local highway agencies and professional organizations. *FHWA*
- 5) Make survey format available to State level users. *Ed, Jeff, & Doc*
- 6) NHTSA should add footnotes to motorcycle crash presentation of November 13, 2008 indicating limitations of VMT data. *FHWA to provide language to NHTSA.*