

## CTR Launches New Traffic Signal Academy

by Dr. Airton G. Kohls

On February 20th, 2012, the Center for Transportation Research at the University of Tennessee will be launching the Traffic Signal Academy to add to its recognized continuing education program. The Academy will offer comprehensive information on many aspects of traffic signal operations with the objective of enhancing the design, application and maintenance ability of the traffic signal community, all through affordable education. Prioritizing the student learning experience, the Center for Transportation Research Traffic Signal Laboratory will serve as a unique learning environment, providing hands-on experience and innovative learning tools. Classes will be offered in a week-long schedule with a flexible structure to meet different students' needs: a 3-day program with a focus on signal timing, technology and communications; a 2-day program with a focus on controller programming, signal maintenance and installation; or a 5-day program that combines the shorter offerings into an immersive week-long signal school.



CTR Traffic Signal Laboratory

### WHY INVEST IN TRAFFIC SIGNAL TRAINING?

Traffic signal operations play an important role in the safe and efficient movement of people, goods and vehicles through our transportation system. The latest National Traffic Signal Report Card considered the overall quality of traffic signal operations in the country to be unsatisfactory. Among the findings, the report card identified the need for routine signal timing updates to reflect change in population growth and traffic patterns. With agencies at all levels facing limited fiscal resources, there is a need for less expensive traffic solutions and optimize available technology while applying innovative concepts can benefit the transportation system as a whole. The Traffic Signal Academy will focus on academic research findings and on state-of-the practice signal timing procedures and policies used around the country to offer reliable information, capable of potentially improving benefit-to-cost ratios by operating new or existing systems with greater efficiency. The Academy will offer a comprehensive discussion of standards, warrants, installation and maintenance guidelines, and strategies to minimize the adverse effects of liability issues. Therefore, investing in traffic signal training, from design to operations to maintenance, demonstrates the necessary commitment to a continuous improvement in the country's transportation system.

### VISION

Provide the opportunity for a better transportation system through continuing education of traffic signal professionals.

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## From the Director

After a long period of inactivity, we're seeing signs that the surface transportation reauthorization logjam may be breaking. As I write this column, the Environment and Public Works Committee plans to mark up the Senate version of the bill on November 9. The committee proposes a two-year bill. I've just received a copy, so I can't yet say what it contains. Last week, I heard John Horsley, Executive Director of AASHTO, predict that the House would follow suit with their version early next year, and that a resolved bill would be signed by the President in late spring 2012. The President has been lobbying hard for a transportation bill lately, so perhaps this timetable will play out. It's high time our leaders took action in this important area, so I hope Mr. Horsley's crystal ball is accurate.

On another note, you'll see some upcoming events from Every Day Counts (EDC) in this issue. To quote Federal Highway Administration (FHWA), which is spearheading the program, "EDC is designed to identify and deploy innovation aimed at shortening project delivery, enhancing the safety of our roadways, and protecting the environment." In Tennessee, FHWA is partnering with TDOT and other stakeholders to identify initiatives that support the EDC mission. At TTAP, we stand behind the EDC activities 100 percent—they fit our purpose perfectly. So, we're participating in the state EDC working group, and will be communicating with you regarding EDC sponsored events and promoting EDC initiatives that are especially relevant to local roadways. I encourage you to keep an eye out for these things. Some of the EDC activities could save your agency time and money—important in these times—and may save lives, which are priceless.

All of us at TTAP were sad to receive the news that Jeanne Stevens, TDOT Director of Long-Range Planning, had decided to move on effective October 31. Jeanne has been a strong supporter of TTAP activities, and had many, many good ideas about how the program could serve the needs of Tennessee's local governments. I feel fortunate both to count her as a friend and to have worked with her these past years. Thank you for everything you did, Jeanne, and best wishes in your new endeavors.

Last time, I wrote that football season was a short 50 days away. Well, it's been here for awhile now, and I wish it was over! My Vols haven't had the best season so far, and the outcome doesn't look great for the remaining games. It's a rebuilding season, and we've had some tough breaks. Oh, well...there's always next season.

I hope that you have a great fall season, and a happy Thanksgiving holiday. If we can help, please don't hesitate to call or email. TTAP looks forward to assisting you.



## TARGET AUDIENCE AND OBJECTIVES

Government employees, consulting engineers, and others involved in traffic signal design, operations and maintenance will benefit from the Traffic Signal Academy. The workshop material will serve as an excellent source of current information for people with different levels of experience in traffic signal operations. More specifically, the objectives for the following groups are:

Consulting Engineers – present current information on standards, state of the art equipment and signal timing practices, and promote consistency in design.

Technicians, Contractors – provide guidelines for efficient installation and maintenance of traffic signal equipment, explore alternatives for established practices, and present the fundamentals of signal engineering.

Decision Makers – describe the relationship between traffic signal timing and transportation policy, demonstrate the importance of continuous funding for maintenance, retiming and capital improvement.

## GUEST SPEAKERS

Students will have the opportunity to learn about traffic signal systems while meeting different equipment vendors during each scheduled offering of the Traffic Signal Academy. Our GUEST SPEAKER for February 21, 2012 is Mr. Donald M. Mass from Peek Traffic.

## CTR TRAFFIC SIGNAL LABORATORY

The Traffic Signal Laboratory is a fully functioning closed-loop traffic control system. It includes a NEMA TS-1 and a NEMA TS-2 cabinet, high performance loop based detection and video detection, and multi-mode fiber and spread-spectrum wireless communication. The laboratory will expose the user to the complexities involved in setting up and maintaining traffic signal cabinets, detection and communication systems.

## PROGRAM DESCRIPTION

### Day 1

A brief introduction to the history of traffic signals will illustrate the evolution of intersection traffic control through the years. The process of justifying the instal-

lation of a traffic signal will be discussed, exemplified and supported by a thorough explanation of the current MUTCD Warrants. Additional information on Part 4 of the MUTCD will be presented, focusing on the design and positioning of signal indications and illustrated with examples and tables. New MUTCD provisions, such as the optional use of “flashing yellow arrow” for permissive only or protected-permissive modes will be discussed. Guidance in the design of pedestrian control features will also be provided.

A description of basic concepts in the traffic signal industry will include the definition of phase, a detailed explanation of the standard NEMA ring-and-barrier diagrams, the treatment of left-turn phases, and a presentation on the operational characteristics of traffic signals. The day will end with a discussion of traffic signal timing objectives, benefits and characteristics and the presentation of basic traffic flow concepts and traffic signal timing strategies.

### Day 2

GUEST SPEAKER – Mr. Donald Mass, a Senior Project Engineer at Peek Traffic will be introducing the National Transportation Communications for ITS Protocol (NTCIP) family of standards. NTCIP addresses problems historically associated with the deployments of management systems, regarding interchangeability (the ability to use multiple brands of a device on the same communications channel) and interoperability (ability to use many different types of devices on the same communications channel). The functionalities of Advanced Traffic Controllers (ATC) – the next generation in advanced transportation control – will be demonstrated and relevant information on communications and coordination will be presented throughout the day.

### Day 3

Isolated signal timing, covering both pre-timed and actuated operation, will be followed by relevant information on coordinated signal timing. A step-by-step signal timing example will provide the opportunity to explore guidelines on the calculation of signal timing parameters for different modes of operation under different scenarios, covering cycle length, change and clearance intervals, vehicular and pedestrian intervals, etc. An overview of analysis procedures and signal timing tools will briefly instruct students

on how to evaluate signalized intersection performance.

Simulation examples will illustrate the functionality of several controller parameters related to current guidelines for detection system design. The concepts of dilemma and indecision zone will be discussed, and low-speed and high-speed detection designs will be covered. A detailed presentation will provide appropriate values used by agencies on Volume Density settings and information on advanced controller features and video detection will be presented. Relevant guidelines and references on Traffic Signal Priority Control, Traffic Responsive Control and Adaptive Traffic Signal Control will be covered. Diamond Interchange Operations will be discussed and controller settings included. Preemption concepts will also be covered.

#### Day 4

Students will become familiar with components of a traffic signal system and with appropriate traffic signal maintenance procedures. The Center for Transportation Research Traffic Signal Laboratory is a unique learning environment that allows the user to be exposed to the complexities involved with setting up and maintaining traffic signal controllers, conflict monitors, load switches, detection and communication systems on both NEMA TS-1 and TS-2 cabinets. Installation and maintenance guidelines of traffic signal supports and indications will also be provided. General information on the design and interpretation of traffic signal plans and a checklist for preventive and responsive maintenance will also be discussed. Appropriate information regarding liability and negligence will be presented in addition to guidelines to reduce exposure to lawsuits.

#### Day 5

After a brief review of traffic controller history, students will experiment with controller parameters on a realistic simulation environment and will be presented with information on how to navigate traffic signal controller menus, including programming instructions and interactive examples on timing parameters, detection, coordination and advanced functions. The “hands-on” experience will benefit the student with valuable information on different controller settings and their implication on traffic.

#### Fees

\$475 - 3 day session (Day 1, 2 and 3 of Program Description)

\$325 - 2 day session (Day 4 and 5 of Program Description)

\$750 (discounted) - 5 day session (Day 1 through 5 of Program Description)

The workshop registration includes course materials and break refreshments. Attendees are responsible for meals (including lunch) and lodging.



#### WEBSITE

Go to <http://ctr.utk.edu/TrafficSignalAcademy/> for additional information on registration, lodging, learning tools, information on area hotels and restaurants, and more.

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## 2011 Traffic Signal Operations Self Assessment

*Adapted from the ITE/National Transportation Operations Coalition Website*

The 2011 Traffic Signal Operations Self Assessment is part of the 3rd National Traffic Signal Report Card, a National effort to bring more attention to the need for **additional investment in traffic signal operations**. Traffic signal systems are historically under funded and are one of the first areas to be cut in tight budget times. However, investment in traffic signal operations is one of the most cost effective means to improve transportation system efficiency. The first and second National Traffic Signal Report Cards were released in 2005 and 2007 respectively and received extensive media attention. While the National score moved from a D- to a D, media coverage and press materials focused on the need for additional resources to support traffic signal operation. The Traffic Signal Operations Self Assessment is intended for any agency with responsibility for the operation and maintenance of traffic signals and can be completed in about one hour with input from key staff responsible for traffic signal operations. No data collection is required. The self-assessment

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gives agencies a tool to help them understand opportunities for improving their own policies and practices.

### **Purpose of the Self Assessment**

The *2011 Traffic Signal Operations Self Assessment* is designed to benefit participating agencies on several levels. The objective of the self assessment is to provide a benchmarking tool for agencies to evaluate how their programs and practices support achievement of management and operations objectives and the expectations of system users and decision makers, more specifically by:

- Giving the traffic professional a guide for defining “good or best practice”;
- Highlighting improvement opportunities for your system or region;
- Serving as an objective tool to communicate traffic signal operation needs to management and policy makers;
- Presenting results in an easy-to-understand format that supports the need for additional resources and investment in traffic signal operations.

Your agency benefits by:

### **Identifying strengths and opportunities**

The self assessment is designed to assist traffic professionals in assessing their own organization’s performance in creating and maintaining good traffic signal operation. The self assessment is a subjective and qualitative tool. The quantitative “score” should be viewed as an indicator of overall performance. Completion of the self assessment will help identify strengths in your system and opportunities for improvement and the process of conducting the self assessment will be educational to agency staff.

### **Providing a benchmark for performance**

The self assessment is designed to describe the benchmark for traffic signal operation practice. Each question is followed by a short description that illustrates outstanding practice. This provides your agency with a target to improve your own traffic signal operation. It is not anticipated that any agency will have a perfect score.

### **Increasing national awareness of the need for improved traffic signal operation**

Completion of the self assessment supports the national initiative to raise awareness and bring attention to the need for improved management and operation of traffic signals. Some agencies experience strong funding support when elected leaders recognize the value of good traffic signal operation in reducing congestion. However, this level of recognition is not widespread. A high visibility press event to release the National Report Card will help to gain greater recognition of the role traffic signal operation can play.

### **Increasing local awareness of the need for improved traffic signal operation**

Many agencies could benefit from additional attention to and investment in traffic signal operation. Completing the self assessment provides your agency with objective results to compare with national findings.

To complete the self assessment and for additional information go to <http://www.ite.org/selfassessment/>. If you have any questions, please contact Douglas Noble, ITE Senior Director, Management and Operations, at [dnoble@ite.org](mailto:dnoble@ite.org) or 202-785-0060 ext. 148, or Marianne Saglam, ITE Media Production Senior Director, at [atmsaglam@ite.org](mailto:atmsaglam@ite.org) or 202-785-0060 ext 123.

## **EDC-Exchange Brings Every Day Counts Initiatives to Local Agencies**

by Matthew Cate, P.E.

**What is EDC-Exchange?** EDC-Exchange is a series of “dynamic webinars”. The in-person learning sessions will describe effective project development and delivery practices, tools and “market ready” technologies that local transportation agencies can readily implement into their programs. FHWA national subject matter experts, in conjunction with local experts from FHWA’s Tennessee Division Office and TDOT, will provide information and materials and facilitate discussions designed specifically for local transportation managers and decision makers.



**How will attendees participate in EDC-Exchange?** Attendees in seminar rooms across the country will interact with webinar presenters by text chat, polls, surveys, or voice calling in questions to the subject matter experts who will then respond during the program. The audience will also have the additional benefit of local, state and FHWA experts in the room with them to facilitate the discussion and answer questions geared to the local level.

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**What will be discussed at the EDC-EXCHANGE?** What is the schedule? FHWA subject matter experts will deliver training modules developed and targeted specifically for local transportation agencies to seminar rooms across the country. Staff members from TTAP, FHWA and TDOT will also be available at the individual seminar room locations to facilitate on-site discussions.

The first EDC-Exchange is scheduled for Thursday, December 15, 2011, with subsequent events scheduled bimonthly on the 3rd Thursday of the month through August 2012 as shown on the right. Each session will be presented from 1:00 pm to 4:00 pm Eastern (12:00 pm to 3:00 pm Central). See the table for the schedule.

For more information on the Every Day Counts program and its individual initiatives, visit the FHWA website at <http://www.fhwa.dot.gov/everydaycounts/>.

| Exchange No. | Topic   | Date              |
|--------------|---|-------------------|
| 1            | Construction Manager/ General Contractor                    | December 15, 2011 |
| 2            | Geosynthetic Reinforced Soil (GRS) Integrated Bridge System | February 16, 2012 |
| 3            | Flexibilities in Right-of-Way                               | April 19, 2012    |
| 4            | Use of In-Lieu Fees and Mitigation Banking                  | June 21, 2012     |
| 5            | Adaptive Signal Control Technology                          | August 16, 2012   |

**Where will EDC-EXCHANGE occur?** Each EDC-Exchange will be delivered to two or more easily-accessible sites across the state by broadband internet technology. Each location will provide a “classroom” setting where city, county, and state professionals can come together to participate in an EDC discussion. The first EDC-Exchange event on December 15 will be hosted at TDOT’s headquarters in the James K. Polk Building in downtown Nashville and at the National Transportation Research Center (NTRC) in Knoxville. Locations for subsequent EDC-Exchange events will be announced at a later date.

**What happens after each EDC-EXCHANGE presentation?** FHWA will host and manage an online “community of practice” forum (located on the EDC website) to field follow up questions and share additional information after the initial broadcast. After 30 days, all questions and corresponding answers will be moved to the EDC website on the specific topic/initiative’s page.

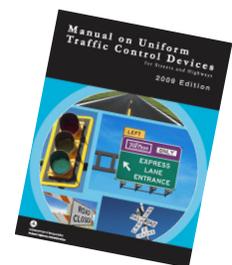
**What if someone can’t attend the EDC Exchange?** All SME presentations will be captured and access will be provided via the EDC website as soon as possible after the event.

**Do you want to participate in an EDC-Exchange event?** If you have an interest in one or more of the targeted EDC initiatives, please contact TTAP for additional information at 1-800-252-7623 or [TTAP@utk.edu](mailto:TTAP@utk.edu). While many agencies will receive an invitation to these events, anyone who wants to learn more about these initiatives or share their own experiences is welcome. Advance registration is requested for all participants.

## Proposed Changes to MUTCD May Provide Relief for Roadway Agencies

by Matt Cate, P.E.

As you probably know by now, the Federal Highway Administration (FHWA) has proposed a significant change to the 2009 Edition of the *Manual on Uniform Traffic Control Devices (MUTCD)*. On August 31, a Notice of Proposed Amendments (NPA) was published in the Federal Register. In the NPA, FHWA proposes to eliminate or revise 50 of the 58 existing compliance dates listed in Table I-2 of the *MUTCD*. It is also important to realize that the NPA alters only the compliance dates for the affected rules. The rules themselves will not be changed as a result of this revision.



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Perhaps the most significant news is the proposed elimination of both the 2015 and 2018 compliance dates for minimum retroreflectivity of most regulatory, warning, and guide signs. Also proposed for revision is the compliance date for the use of a management or assessment technique to ensure that the retroreflectivity of all traffic signs remains at or above the levels set in Table 2A-3. This compliance date would be changed from January 22, 2012, to two years after the final effective date of the revised MUTCD (likely sometime in 2014).

So what does this mean to your agency? First, remember that a compliance date sets a deadline for the use of new or revised traffic control devices as described in the *MUTCD*. All existing devices should be modified or replaced prior to this date. All new devices placed after the revision should meet the new standard. Where changes to the *MUTCD* are not accompanied by a compliance date, existing traffic control devices may remain in use until the end of their useful service life. However, all new devices should still comply with the standards set by the current edition of the Manual.

Taken in terms of retroreflectivity, the proposed changes provide two forms of relief for agencies struggling to comply with the new nighttime visibility standards. Elimination of compliance dates for individual signs to meet the retroreflectivity standards of Table 2A-3 means that existing signs that are otherwise serviceable are allowed to remain in use until they would have been replaced due to damage, theft, fading, or other MUTCD compliance issues. Again, remember that

all new signs must meet the retroreflectivity standards set by Table 2A-3 now and must remain above these levels at all times. Once a sign has been upgraded it cannot be allowed to remain below these minimum levels.

With the mixture of old and new signs that many agencies will maintain for years into the future, the sign retroreflectivity management system is perhaps even more important now than when all three compliance dates were in effect. If an existing, non-compliant sign is left in service for several more years, a management or assessment system will allow the responsible agency to demonstrate that the sign was in service prior to adoption of the retroreflectivity rule. Additionally, the same system will allow agencies to demonstrate that these signs are being phased out and that new signs are being maintained in an appropriate fashion.

While changes to the retroreflectivity compliance dates may generate the highest level of interest in the short term, it is important to remember that they represent only three of 50 total revisions to Table I-2. An additional 44 compliance dates would be eliminated and three more dates would be revised. Only eight key safety-related compliance dates remain unchanged from the original 2009 *MUTCD*. A summary of these changes can be found at the end of this article. For complete details of the Notice of Proposed Amendments, including a revised version of Table I-2 (Compliance Dates), visit FHWA's *MUTCD* website at [http://mutcd.fhwa.dot.gov/knowledge/09mutcdproposedrev/compliance\\_dates/index.htm](http://mutcd.fhwa.dot.gov/knowledge/09mutcdproposedrev/compliance_dates/index.htm).

## Summary of Proposed Revisions to the MUTCD

Key compliance dates proposed for **elimination** from Table I-2

- Section 2A.08: Minimum retroreflectivity levels for regulatory, warning, and guide signs (January 22, 2015, and January 22, 2018)
- Multiple sections: Increased sizes for regulatory, warning, and guide signs
- Section 4E.07: Use of countdown pedestrian signals
- Sections 3B.04, 3B.05: Use of dotted lane markings for dropped and auxiliary lanes

Key compliance dates proposed for **revision** in Table I-2

- Section 2A.08: Use of a management or assessment method designed to maintain regulatory and warning sign retroreflectivity at or above minimum levels (2 years from effective date of this revision to the *MUTCD*)
- Section 4D.26: Yellow change and red clearance intervals (5 years from effective date of this revision to the *MUTCD* or when timing adjustments are made to intersection/corridor)
- Section 4E.06: Pedestrian intervals and signal phases (5 years from effective date of this revision to the *MUTCD* or when timing adjustments are made to intersection/corridor)
- Sections 8B.03, 8B.04: Retroreflective strips on railroad crossbuck signs and supports (December 31, 2019)

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**Proposed Changes to MUTCD May Provide Relief for Roadway Agencies**, continued from page 7

Compliance dates ***unaffected*** by proposed changes:

- Section 2A.19: Crashworthiness of sign supports on roads with posted speed limit of 50 mph or higher (January 17, 2013)
- Section 2B.40: Number and location of One Way signs (December 31, 2019)
- Sections 2C.06 – 2C.14: Revised requirements for use of horizontal alignment warning signs (December 31, 2019)
- Sections 2E.31, 2E.33, 2E.36: Plaques for left-hand exits (December 31, 2014)
- Section 6D.03: Requirements for all workers on ROW to wear high-visibility apparel (December 31, 2011)
- Section 6E.02: Requirements for all flaggers to wear high-visibility apparel (December 31, 2011)
- Section 7D.04: Requirements for all adult crossing guards to wear high-visibility apparel (December 31, 2011)
- Section 8B.04: Use of Stop or Yield signs at passive grade crossings (December 31, 2019)