DEPARTMENT OF TRANSPORTATION **[4910-22-P]**

Federal Highway Administration

Every Day Counts Initiative; Request for Information

AGENCY: Federal Highway Administration (FHWA), DOT.

ACTION: Notice.

SUMMARY: This notice is a Request for Information (RFI) and comments will be used to help FHWA identify innovative, market-ready technologies that may be considered under the Every Day Counts (EDC) initiative.

DATES: Responses to this RFI should be submitted by February 15, 2014. The FHWA will consider late-filed responses to the extent practicable.

ADDRESSES: Submit responses by electronic mail to everydaycounts@dot.gov or through https://www.fbo.gov.

FOR FURTHER INFORMATION CONTACT: For questions about the program discussed herein, contact Julie Zirlin, FHWA Office of Accelerating Innovation (202) 366-9105, Julie.Zirlin@dot.gov. Additional information about the EDC initiative is at http://www.fhwa.dot.gov/everydaycounts/.

SUPPLEMENTARY INFORMATION:

Purpose of the Notice

The FHWA requests information from all sources regarding innovations that have the potential to transform the way we do business by shortening project delivery time, enhancing the safety of our roadways, and protecting the environment. The purpose of this RFI is to obtain information from State, local, and industry partners and the public regarding proven processes or technologies that have the potential to provide efficiencies

in the transportation system. This RFI is issued under the FHWA Every Day Counts Initiative.

RFI Guidelines

This is not a solicitation for proposals, applications, proposal abstracts, or quotations. The purpose of this RFI notice is to conduct market research to identify proven innovations. This RFI must not be construed as a commitment by the Government to make an award, nor does the Government intend to directly or indirectly pay for any information or responses submitted as a result of this RFI. Responses to this notice are not offers and cannot be accepted by the Government to form a binding contract or issue a grant. Information obtained as a result of this RFI may be used by the Government for program planning on a non-attribution basis. Respondents should not include any information that might be considered proprietary or confidential.

Background

The FHWA has long been a leader in innovation deployment. The FHWA Administrator Victor Mendez advocates deploying innovation to: 1) shorten project delivery time, 2) accelerate the use of new technologies to make Government more efficient, and 3) construct highways faster, safer, and to a higher quality. To that end, in 2010, FHWA launched EDC – a broad initiative aimed at shortening project delivery and speeding the deployment of proven, underutilized technologies. The EDC initiative has had a significant impact on the transportation system.

The FHWA believes that the EDC initiative is a foundational part of making innovation a cornerstone of our business and that we can identify rapidly deployable innovations to achieve the goal of better, faster, and smarter project delivery. Society and

the highway industry face an unprecedented list of challenges. The public wants greater accountability in how its money is spent. Users and industry want to find ways to make roads safer. We want to preserve the environment for future generations.

EDC 1 and EDC 2 Technologies

The EDC initiative focuses on two pillars for innovation:

- *Accelerating Technology*: Technologies and solutions to improve safety, reduce congestion, produce longer-lasting infrastructure, and keep America moving and competitive in the world market.
- *Shortening Project Delivery*: Innovative practices and methods that increase our ability to deliver timely transportation projects to the public.

The EDC initiative is designed to focus on a finite set of innovations. Teams consisting of FHWA, State, local, and industry partners and State Transportation Innovation Councils work to deploy the innovations and develop performance measures to gauge their success. The following innovations were promoted in the first two rounds of EDC:

- 3D Engineered Models for Construction
- Accelerated Bridge Construction
- Adaptive Signal Control Technology
- Alternative Technical Concepts
- Clarifying the Scope of Preliminary Design
- Construction Manager/General Contractor
- Design Build

- Enhanced Technical Assistance with ongoing Environmental Impact Statements (EISs)
- Flexibilities in Rights-of-Way (ROW)
- Flexibilities in Utility Accommodation and Relocation
- Geospatial Data Collection
- Geosynthetic Reinforced Soil-Integrated Bridge System
- High Friction Surface Treatments
- Implementing Quality Environmental Documentation
- Intelligent Compaction
- Intersection and Interchange Geometrics
- Legal Sufficiency Enhancements
- Locally Administered Federal-Aid Projects
- Planning and Environmental Linkages
- Prefabricated Bridge Elements and Systems
- Programmatic Agreements
- Safety Edge℠
- SHRP2 Traffic Incident Management Responder Training
- Use of In-Lieu Fee and Mitigation Banking
- Warm Mix Asphalt

Details of these innovations can be found at http://www.fhwa.dot.gov/everydaycounts/.

Invitation for Comment

The FHWA invites all sources to respond to this RFI. The FHWA seeks suggestions on innovative, market-ready technologies that meet the criteria described

below and may be considered for EDC3. In addition, FHWA seeks comments on user experiences with ten specific high-value innovations that may be considered for accelerated deployment under EDC3. These innovations are described below under "Innovations of Interest."

Respondents should not submit unique, proprietary, or patented products. The FHWA will only review suggestions of broad categories of innovations.

Responses should provide the following information for each innovation and should not exceed 10 pages for each innovation. There is no limit to the number of innovations that may be recommended.

1. Organization name

2. Point(s) of contact, e-mail address, and telephone number

3. Brief description of a proven process or innovation and how it meets the following four criteria:

- *National Impact*: Potential to benefit the transportation system nationally.
- *Readiness*: Whether the innovation is ready to be deployed nationally.
- *"Game Changing"*: How the innovation is transformative in saving time, money or quality.
- *Urgency and Scale*: Potential to shorten project delivery and positively impact the environment, safety, congestion, freight movement, construction techniques, contracting methods, project costs, maintenance, preservation, or emergency response.

4. Location and date when the innovation was successfully applied in a transportation application and a description of the quantifiable performance benefits of the innovation in those applications.

5. List of supporting specifications, guidelines, and /or procedures are available to support successful national deployment.

6. List of agencies that are the champions of this innovation.

Innovations of Interest

1. Accelerated Deployment of Traffic Incident Management Performance Measurement Data Collection Using Available Low-Cost, Web-Based Technology

While the Fiscal Year 2013 Traffic Incident Management (TIM) Self-Assessment (SA) effort reflected a positive overall jump in the national SA score, the TIM SA report pointed to a problem that has the potential to impact further advances in this national indicator and threaten individual TIM program institutionalization efforts. The scores on Performance Management—especially collection time of lane closure, time responders remain at the incident scene, and the number of secondary crashes—have declined. The TIM program professionals and associations identify the inability to establish a systematic collection of performance metrics to be a significant inhibitor to the ability to institutionalize TIM. There is a need to help jurisdictions establish an integrated, multidisciplinary and ongoing TIM Performance Management program in order to institutionalize programs and measure results.

Many TIM partners may not realize that the tools to help collect and transmit performance data exist and make the task immediate and uncomplicated. For example, smartphone technology and systems such as the Traffic and Criminal Software (TraCS), funded by DOT and maintained by the Iowa DOT, make data collection easy to capture. Mobile computing devices, like tablets and smartphones, loaded with Web-

based, secure software like TraCS can also be used in the field and make data collection easy for the responder with instantaneous transmission and automated analysis.

2. Road Project Coordination to Reduce Impacts and Costs

Some States, cities, and regions recognized benefits from coordinating projects between transportation agencies, utilities, and other agencies that need to do construction in the public ROW. These benefits include cost savings, earlier identification of project impacts, greater ability to reduce and manage traffic disruptions from road work, better quality road surfaces, and reduced exposure for workers. Better coordination of projects can be a "win-win" for public agencies, road users, and citizens by reducing the need for additional work zones. For example:

- San Francisco, California, reduced street cuts by 27 percent by coordinating ROW projects.
- Oregon corridor-level transportation management plans ensure that at least one major north-south corridor and one major east-west corridor are left unrestricted for freight and passenger travel at all times.
- Covington, Kentucky, reduced traffic disruptions and saved nearly $18,000 over several months by coordinating planned paving with water main replacement.

Project coordination can be accomplished using different methods and scopes. Coordination may be done within a single urban area, across a corridor, for a whole State, or across a region that includes neighboring States. Using a combination of methods is the most effective way to get the best results. Coordination methods include:

- *Collaboration* – Establishing a formal organization that spearheads coordination across a geographic area and having coordination meetings to discuss the next season's projects or upcoming lane closures.

- *Policy* – Creating incentives or disincentives, such as penalties for working without a permit, higher permitting fees, and strict restoration requirements for disturbing recently repaved or reconstructed streets.

- *Technology* – Using software, such as online project mapping tools, to organize and share data entered by multiple agencies so that schedules can be coordinated.

- *Performance management* – Jointly establishing performance goals for a corridor and working together to monitor and meet them.

One key new tool that will enhance the ability to coordinate projects is the Workzone Impact and Strategy Estimator software, a product of Strategic Highway Research Program 2 (SHRP2) project R11. The tool will help reduce disruption to the transportation network by assisting agencies sequencing and phasing of road projects both during the programming of projects and later during more detailed project planning and design.

3. Traffic Signal Automated Performance Measures

Poor traffic signal performance contributes to 5-10 percent of all traffic delay on the National Highway System (NHS), which contains a fraction of the estimated 311,000 traffic signals in the U.S., valued at $82.7 billion. Best practices for traffic signal operation suggest retiming signals every 3-5 years with ongoing performance monitoring. Several surveys identify phone calls or "complaints" as the primary performance measure for traffic signal operations and maintenance. The 2012 Traffic

Signal Report Card assigned a grade of "F" nationally to agency monitoring and performance measurement practices. The lack of performance measurement adversely effects safety and wastes the time and money of both operating agencies and the traveling public by reducing quality and efficiency.

Traffic Signal Automated Performance Measures allow agencies to maximize the effectiveness of signal systems and improve the management of traffic signal assets by proactively monitoring performance and making low cost modifications to the detection, communications, and control systems of intersections.

Monitoring and evaluation of traffic signal systems is critical to improving safety and efficiency. The measures that are currently available enable the effectiveness of signal progression along a given corridor to be monitored using six metrics: Delay, Speed, Approach Volumes, the Purdue Phase Termination Chart, Split Monitor, and Turning Movement Volume Counts. Other measures will be incorporated in the near future.

Adaptive Signal Control Technology (ASCT), included in EDC1, provided the ability to monitor and improve traffic signal performance. Implementing performance measurement before installing ASCT reduces the risks and improves the likelihood of successful implementation. But Traffic Signal Automated Performance Measures would be applicable to all signalized intersections, not just the most challenging locations that are difficult to operate with traditional approaches, where ASCT is typically implemented.

4. Intelligent Transportation Systems) for Work Zones

Travel through and around work zones can be frustrating and hazardous to the traveling public and highway workers. Unexpected congestion can have serious consequences for road users. Delays can significantly affect freight shipments and other types of travel. Serious crashes happen at congested approaches to work zones, often resulting in catastrophic loss of life. There have been several recent catastrophic crashes involving commercial vehicles where the commercial vehicle operator did not react soon enough and rear ended stopped vehicles at the end of a queue caused by a work zone, or conversely, where passenger vehicles rear ended a stopped commercial vehicle.

Several Intelligent Transportation Systems (ITS) have been developed in the last few years to address safety and mobility issues that often occur in work zones. Systems are available to do the following: determine travel time through the work zone and advise the public of travel conditions in real time; alert vehicles to a slow moving or stopped queue of vehicles so they can be prepared to stop safely (especially beneficial for commercial motor vehicles); adjust speed limits or merging in response to current traffic conditions; and provide early detection of incidents, reducing the likelihood of secondary crashes.

Several deployments of the various systems demonstrate that they provide both safety and operational benefits. The technologies have advanced to a point where they are accurate and the results are dependable. Options are available that allow systems to be scaled to the project and to make use of permanent ITS when available.

5. E-NEPA

From EDC to the recent Presidential Memorandum *Speeding Infrastructure Development through more Efficient and Effective Permitting and Environmental Review*

to the Moving Ahead for Progress in the 21st Century Act, shortening the time for the National Environmental Protection Act (NEPA) project approval has been a consistent focus of FHWA. Interagency collaboration is a critical part of this process and a necessity for timely environmental reviews and approval of surface transportation projects**.** By improving the ability for concurrent agency reviews during the environmental review process, issues can be more quickly and clearly raised and dealt with in real time and in a transparent manner, building trust and consensus amongst the different parties. By enabling multiple agencies to interact and collaborate on an ongoing basis, especially with agreed-upon review timeframes, the product and outcome of NEPA review processes can be improved and delivered in a shorter time period, significantly accelerating project delivery.

The e-NEPA, a real-time electronic collaboration tool, provides an online workspace and collaboration forum for EIS and environmental assessment projects. It will reduce administrative workloads required to collaborate, maintain records, and create an administrative record. In addition, e-NEPA will allow State DOTs to share documents, track comments, schedule tasks with participating agencies and perform concurrent reviews for their EIS and EA projects.

6. Strategies for Improving DOT and Railroad Coordination (SHRP2 R16)

Each year construction of hundreds of public agency highway projects cross over, under, or parallel to railroad ROWs, requiring extended coordination between these public agencies and railroads. Although most go smoothly, delays in development or construction do occur. Railroads must carefully evaluate public transportation agency projects in terms of safety, engineering, and operational impacts both during

construction and for decades later. For public agencies, delays while waiting on railroad reviews and agreements can increase project costs and extend renewal needs for users.

The collection of model agreements, sample contracts, training materials, and standardized best practices developed through SHRP2 will allow public agencies and railroads to identify and circumvent sources of conflict. The tools reflect research that takes into account the perspectives, processes, budgets and funding, and acknowledged best practices of both railroads and public agencies. The report, *Strategies for Improving the Project Agreement Process Between Highway Agencies and Railroads,* outlines recommended practices and offers eight different model documents to expedite negotiations.

With railroad volumes projected to continue to grow, pressures for more project coordination activity will continue to increase. Cementing mutual understanding and streamlining the process involved will save money and time for both railroads and public agencies. In turn, road users will see the positive results of more rapid highway renewal on facilities and budget. The model agreements also lay out standardized construction and operational needs, thereby enhancing safety for workers and reducing delays for users.

7. Electronic Project Document Management Tools (e-construction)

The administration of a project through the design and construction process requires significant communications and documentation of events. This has traditionally required writing and mailing letters through a Post Office or an internal mail system, keeping project journals, maintaining large file cabinets and file rooms, using physical signatures on paper, and taking notes at in-person meetings. With the advent of

enhanced electronic project management tools, different modes of meeting, communicating, and assuring a secure version approval process, we are now accelerating the decisionmaking process. Some additional benefits noted by State DOTs using this technology are improved communications and partnering, decreased cost of printing and mailing services, opportunity to perform parallel work activities.

8. Geotechnical Solutions for Soil Improvement, Rapid Embankment Construction and Stabilization of the Pavement Working Platform (SHRP2 R02)

The Geotechnical Solutions are a Technology Catalog with detailed information on 46 geoconstruction and ground improvement techniques. In addition, the product contains a Technology Selection system to aid in identifying potential technologies for ground modification based on user-defined project conditions. The geotechnical solutions are on a Web site developed as part of the research under the SHRP2 R02 project. The scope was aimed at identifying design and construction solutions for risk elements that may be encountered in project delivery related to: (a) construction of new embankments and roadways over unstable soils, (b) widening and expansion of existing roadways and embankments and (c) stabilization of geotechnical pavement components and of working platforms. The R02 research team is deploying the product world-wide by promoting it to subject matter experts. Deployment efforts have been targeted at experienced users of the geotechnologies. While the technologies are mature, the Web sites' technology selection system and technology catalog provide a significant resource for critically important information that assists in the design and construction of ground improvement techniques.

9. Ultra High Performance Concrete for Advanced Connection Technology for Prefabricated Bridge Elements and Systems

Ultra-High Performance Concrete (UHPC) has proven to be a technology that can facilitate simplified, effective-use prefabricated bridge elements and systems (PBES). The proliferation of PBES concepts over the past 4 years has led to recognition among owners and specifiers that robust connection systems are a key part of any successful bridge construction project. The UHPC is a steel fiber reinforced cementitious composite possessing exceptionally high mechanical strengths and durability properties. Field casting of UHPC into the interstitial spaces between prefabricate components engages a strong connection concept, freeing the owner from concerns regarding the short- and long-term performance of the connection. Research and development on this topic over the past 5 years addressed specific connection concepts that are most relevant to the highway bridge community.

10. Road Diet (Roadway Configuration)

The classic roadway reconfiguration, commonly referred to as a "road diet," involves converting an undivided four-lane roadway into three lanes, made up of two through lanes and a center two-way left-turn lane. The reduction of lanes allows the roadway to be reallocated for other uses such as bike lanes, pedestrian crossing islands and parking. Road diets have multiple safety and operational benefits for drivers as well as nonmotorists. Midblock locations can benefit from road diets because they tend to experience higher travel speeds, contributing to increased injury and fatality rates. More than 80 percent of pedestrians hit by vehicles traveling at 40 mph or faster die, while less than 10 percent die when hit by a vehicle traveling 20 mph or less. When appropriately

applied, road diets generated benefits to users of all modes of transportation, including bicyclists, pedestrians and motorists. The resulting benefits include reduced vehicle speeds, improved mobility and access, reduced collisions and injuries and improved livability and quality of life. When modified from four travel lanes to two travel lanes with a two-way left-turn lane, roadways experienced a 29 percent reduction in all roadway crashes. The benefits to pedestrians include reduced crossing distance and fewer midblock crossing locations, which account for more than 70 percent of pedestrian fatalities.

Road diets can be low cost if planned in conjunction with reconstruction or simple overlay projects, since a road diet mostly consists of restriping. The reduction of lanes allows the roadway to be reallocated for other uses such as bike lanes, pedestrian crossing islands, and parking. Road diets have multiple safety and operational benefits for vehicles as well as pedestrians, such as:

- Decreasing vehicle travel lanes for pedestrians to cross, therefore, reducing the multiple-threat crash for pedestrians (when one vehicle stops for a pedestrian in a travel lane on a multilane road, but the motorist in the next lane does not, resulting in a crash),
- Providing room for a pedestrian crossing island,
- Improving safety for bicyclists when bike lanes are added (such lanes also create a buffer space between pedestrians and vehicles),
- Providing the opportunity for on-street parking (also a buffer between pedestrians and vehicles),
- Reducing rear-end and side-swipe crashes, and

- Improving speed limit compliance and decreasing crash severity when crashes do occur.

Issued on: December 27, 2013.

Victor M. Mendez
FHWA Administrator

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