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) to support the FHWA in the identification of proven, market-ready innovations for potential deployment through the fourth round of the Every Day Counts (EDC) initiative in 2017-2018.

DATES: Responses to this RFI should be submitted by January 31, 2016. 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 Center for Accelerating Innovation at (202) 366-9105 or Julie.Zirlin@dot.gov. Additional information about the EDC initiative is available at http://www.fhwa.dot.gov/everydaycounts/.

SUPPLEMENTARY INFORMATION:

Purpose of the Notice

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 planning, design, construction, operations, and/or maintenance of the Nation's highway system. The FHWA requests information from all sources regarding innovations and processes that have the potential to transform the way

the highway transportation community does business by shortening project delivery time, enhancing roadway safety, reducing traffic congestion, and/or improving environmental sustainability.

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 and processes. This RFI must not be construed as a commitment by the Federal Government to make an award, nor does the Federal 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 Federal Government to form a binding contract or issue a grant. Information obtained as a result of this RFI may be used by the Federal Government for program planning on a non-attribution basis. Respondents should not include any information that might be considered proprietary or confidential.

Background

Since its formation, FHWA has been a leader in technology transfer and innovation deployment. In 2009, FHWA launched the EDC initiative in cooperation with State, local, and industry partners to speed up the delivery of highway projects and create a broad culture of innovation within the highway community. Proven innovations and enhanced business processes promoted through EDC facilitate greater efficiency at the State and local levels, saving time, money, and resources that can be used to deliver more projects.

The EDC initiative is a State-based model to identify and rapidly deploy proven, yet underutilized innovations to shorten the project delivery process, enhance roadway safety, reduce traffic congestion, and improve environmental sustainability. Every 2

years, FHWA works with State transportation departments, local governments, tribes, private industry, and other stakeholders to identify a new set of innovative technologies and practices that merit widespread deployment.

After selecting EDC innovations for the 2-year deployment cycle, transportation leaders from across the country gather at regional summits to discuss and identify opportunities for implementing the innovations that best fit the needs of their respective State highway program. The information gained through the summits is then shared with public and private transportation stakeholders through State Transportation Innovation Councils that select and spearhead deployment of the innovations within the State. The FHWA provides technical assistance and resources to help States implement their chosen innovations and also monitors the national state-of-the practice for each of the promoted EDC innovations.

The EDC initiative has made a significant positive impact in accelerating the deployment of innovations and in building a culture of innovation within the highway community. Since EDC's inception, every State transportation agency has used 8 or more of the 32 innovations promoted through the initiative, and some have adopted over 20. Several of those innovations are now mainstream practices in many States, enhancing the highway system and benefiting travelers. By advancing 21st century solutions, the highway community is making every day count to ensure our roads and bridges are built better, faster, and smarter.

EDC-3 Innovations

The following innovations are being promoted in the third round of EDC (EDC-3) in 2015-2016:

- 3D Engineered Models: Schedule, Cost and Post-Construction;

- Data-Driven Safety Analysis;
- e-Construction;
- Geosynthetic Reinforced Soil-Integrated Bridge System;
- Improving Collaboration and Quality Environmental Documentation (eNEPA and IQED);
- Improving DOT and Railroad Coordination (SHRP2 R16);
- Locally Administered Federal-Aid Projects: Stakeholder Partnering;
- Regional Models of Cooperation;
- Road Diets (Roadway Reconfiguration);
- Smarter Work Zones; and
- Ultra-High Performance Concrete Connections for Prefabricated Bridge Elements.

Information about these innovations as well as those promoted through EDC-1 (2011-2012) and EDC-2 (2013-2014) are available 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 proven, market-ready innovations and processes for potential widespread deployment through EDC-4 in 2017-2018 that address the criteria described below. In addition, FHWA seeks feedback on user experiences with specific, high-value innovations described below under the "Innovations of Interest" section and tentatively identified for accelerated deployment

There is no limit to the number of innovations that may be suggested by an individual or entity. The FHWA is seeking suggestions of broad categories of innovations and respondents should not submit suggestions for unique, proprietary, or patented products.

Requested Information

Responses for each suggested innovation or process should provide the following information:

1. Innovation category or name.
2. Point(s) of contact, title and organization name (if applicable), e-mail address, and telephone number.
3. Brief description of the proven innovation or process.
4. Brief description of how the innovation addresses the following areas:
   - *National Impact***:** How will it benefit the transportation system nationally?
   - *Game Changing***:** How is it transformative in saving time, money, or improving quality?
   - *Urgency and Scale***:** How will it shorten project delivery and positively impact the environment, safety, congestion, freight movement, construction techniques, contracting methods, project costs, maintenance, preservation, or emergency response?
5. Example(s), including 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.

6. List of any supporting specifications, guidelines, and/or procedures available to support technology transfer and national deployment.

7. List of agencies or entities that are "champions" for or regularly use the innovation.

Innovations of Interest

The FHWA seeks feedback on user experiences with the following high-value innovations described below that are tentatively identified for accelerated deployment:

1. Traffic Incident Management (TIM) Performance Management

Insufficient TIM related data collection (e.g., time of lane closure, time responders remain at the incident scene, and the number of secondary crashes) remains an issue in many States and metropolitan areas. Data that would provide valuable information for decisionmaking and measuring results both nationally and in local jurisdictions simply is not being collected in many areas. The inability to establish a systematic collection of performance metrics is a significant inhibitor to institutionalizing TIM.

This innovation will help jurisdictions establish an integrated, multidisciplinary and ongoing TIM Performance Management program in order to institutionalize programs and measure results. There are tools to help collect and transmit performance data that can make the task immediate and less complicated. For example, smartphone technology and systems such as the Traffic and Criminal Software (TraCS), can make data collection easy to capture. The responder can use mobile computing devices loaded with web-based, secure software like TraCS in the field to collect data. The use of these

same technologies can provide other benefits such as instantaneous transmission, automated analysis, and sharing of real time information, including pictures and video, that will not only enhance mitigation of traffic incidents, but enhance traveler information.

2. Automated Traffic Signal Performance Measurement System

The Automated Traffic Signal Performance Measurement System helps agencies monitor how effectively traffic signals are meeting mobility, safety, and reliability goals. The system extracts high resolution data from existing traffic signal system infrastructure and allows it to be packaged in a flexible format to depict measures of system health, performance and quality of service. The measures provide information to promote quick decisionmaking in support of operations and maintenance objectives. The information produced by the system supports the needs of agency professionals involved in the day-to-day management of signal systems, leadership, legislators, first responders, and other mobility partners. In addition, signal timing performance can be used to model or track how an asset degrades over time and to identify the maintenance needed to sustain good, basic service. This technology can assist virtually all agencies that design, manage, operate, or maintain traffic signals to improve safety and performance.

3. Road Weather Management – Weather Savvy Roads

Adverse weather conditions can dramatically impact the safety and operation of our Nation's roads. Inclement weather can result in increased crash risk, weather-related hazards, travel time delay and unreliability, decreased capacity, disrupted access, and increased operating and maintenance costs. Advances in Road Weather Management can benefit transportation agencies in deciding how to respond.

Several States have implemented Weather Responsive Traffic Management (WRTM) strategies. The WRTM includes a variety of advisory, control, and treatment strategies that incorporate traditional and advanced Intelligent Transportation Systems (ITS) data collection, processing, and decision-support tools to create actionable road weather information. These strategies can significantly improve an agency's ability to warn travelers of weather conditions and apply traffic control strategies to enhance safety, minimize delay, and maximize throughput.

Further enhancing an agency's ability to respond, Integrated Mobile Observations (IMO) weather sensors placed on State fleets provide vehicle-based data for better weather impact predictions in real time. This data can be integrated and processed to inform decisions by traffic operators, maintenance managers, and travelers. Pathfinder documents the collaborative benefits of DOTs, the National Weather Service (NWS), and private service providers to develop consistent messages for the traveling public. Pathfinder considers the weather, road surface, average traffic volumes, and effectiveness of mitigation efforts. This enables the NWS and local operating agencies to coordinate their efforts, directing the most impactful and actionable messages to the traveling public in the context of the local transportation system.

4. Strategic Use of Freeway Shoulders for Part-Time Travel

Part-time shoulder use is a relatively low-cost congestion management strategy whereby either the left or the right shoulder of a freeway is open to travel on a daily or repeated (e.g., peak period) basis. Part-time shoulder use can be a cost-effective solution to improve freeway operations and safety by smoothing traffic flow and providing additional capacity when it is needed most, while preserving shoulders as refuge areas for

the majority of the day. In some cases, shoulder use applications may serve as an interim solution to relieve congestion bottlenecks while agencies further evaluate, plan, and acquire the necessary resources for adding general use travel lanes. Various shoulder use deployment options are available, including restricting shoulder use to authorized transit buses or allowing use by all vehicles either during fixed time periods or in a flexible manner to accommodate planned or unplanned events that trigger heavy congestion.

Part-time shoulder use supports Performance-Based Practical Design, an approach currently being advanced by many States. It preserves and maximizes existing capacity, is low cost relative to freeway widening, and can be implemented quickly with fewer environmental impacts than traditional capacity expansion. When combined with technology applications such as variable speed limits or lane control signals, part-time shoulder use can be further operated to enhance corridor mobility and safety.

5. Safety Improvements at Uncontrolled Crossing Locations

Pedestrian Hybrid Beacons (PHB) and medians/pedestrian crossing islands are evidence-based treatments that can improve pedestrian safety at uncontrolled crossing locations (i.e., no traffic signal or stop sign). The PHB is a great intermediate option between the operational requirements and effects of a rectangular rapid flash beacon and a full pedestrian signal because it provides a positive stop control in areas without the high pedestrian traffic volumes that typically warrant the installation of a signal. The beacon head is "dark" until a pedestrian wants to cross the street and pushes an easy to reach button that activates the beacon. In addition, alternating red signal heads allow drivers to proceed once the pedestrian has cleared their side of the travel lane, thus improving vehicular traffic flow. There are other treatments that can improve pedestrian

safety at uncontrolled locations. For example, medians and pedestrian crossing islands allow pedestrians a safe place to stop at the mid-point of the roadway before crossing the remaining distance. These treatments also enhance the visibility of pedestrian crossings, can reduce the speed of approaching vehicles, and can be used for vehicle access management (i.e., allowing only right-in/right-out turning movements).

6. Creating Safe Bicycle Networks

Interest in bicycling as a mode of transportation is growing across the country. Unfortunately, recent years have evidenced an increase in the number of bicyclist fatalities. There is significant interest across the country in reversing this safety concern by promoting the development of safe and comfortable bike transportation networks that allow people of all ages and abilities to safely and conveniently get where they want to go. There are numerous resources that support different aspects of bike network creation from planning to design, construction, and maintenance. These resources create a menu of options that States and communities can use to create safe and comfortable bike networks in all land use settings. Selection of appropriate bike facilities hinges on local context and constraints, and this menu-based approach allows communities to create bike networks that meet their unique needs.

7. Mainstreaming Bicycle and Pedestrian Data Collection

This innovation brings bicycle and pedestrian planning to the same level of comprehensive attention and understanding as is available for motorized modes. Bicycle and pedestrian planners use data, including bicycle and pedestrian counts, to evaluate and prioritize investments as part of a performance-based framework that supports network

outcomes. The net effect is to make investments in bicycling and walking more cost-effective and beneficial to the public as interest in these modes is increasing.

The FHWA is extending its Traffic Monitoring Analysis System to receive bicycle and pedestrian data submissions from jurisdictions with count programs. This database is of great importance in observing trends in bicycling and walking, in facilitating further research on factors related to demand for bicycle and pedestrian travel, and in evaluating safety risk exposure of bicyclists and pedestrians.

8. Integrating NEPA and the Permitting Processes

Transportation projects require multiple Federal permits, approvals, and reviews, including consideration under the National Environmental Policy Act (NEPA), to ensure that they are developed utilizing a safe and responsible approach and impacts to the environment and communities are sequentially avoided, minimized, and mitigated. The NEPA process is a framework for meeting environmental requirements, such as those under the Endangered Species Act, the General Bridge Act, the National Historic Preservation Act, and the Clean Water Act. Synchronizing NEPA and other environmental and regulatory reviews helps to advance transportation projects. The recently released 2015 Red Book provides best practices, tools, and strategies for synchronization. The Red Book provides a "how-to" on environmental review integration for practitioners at Federal agencies that conduct environmental reviews or manage permit applications, and for Federal, State, and local agencies that fund or develop transportation projects. It leverages proven techniques and lessons learned that can support more efficient and concurrent review processes.

9. Construction Partnering

There are new opportunities for construction partnering with increased use of information technology such as 3D modeling and e-Construction. Construction partnering is a project management process where State agencies, contractors, and other stakeholders create a team relationship of mutual trust. Together, they promote recognition and achievement of mutual and beneficial goals, communicate openly, and resolve problems. The result is successful completion of a quality project that is built on time, within budget, with safety as the number one priority—and is profitable to the contractors.

As new technologies and methods have emerged, State agencies and contractors now look to the digital jobsite as a means to improve efficiency and project performance while reducing construction waste in the delivery of projects. Enhanced communication, coordination and collaboration among stakeholders are vital to delivery of digital projects today. As a result, project success greatly relies on creating an environment where construction partnering is accepted as a better way of doing business.

10. GeoTechTools: Improved Decision Making in Project Delivery (SHRP2 R02)

A significant portion of all construction claims are related to geotechnical issues. Project constraints such as construction schedule, right-of-way or environmental concerns, and conditions such as soft or unsuitable ground can result in higher project costs and project delivery delays. Proactive and better informed decisionmaking regarding geotechnical solutions can assist agencies in addressing issues that pose a risk for claims or change orders in construction and delays in project delivery.

The second Strategic Highway Research Program (SHRP2) R02 project developed GeoTechTools, which contains a technology selection system to aid project

managers, planners, resident engineers, consultants, and contractors in identifying potential solutions to project delivery issues. A vast amount of critically important information on geotechnical solutions has been collected, synthesized, integrated, and organized into the web-based GeoTechTools product. Users save considerable time and effort on researching applicability of a solution, design guidance, specifications, quality assurance requirements, and cost estimating resources. The consistent and comprehensive tools provided in the GeoTechTools product allow any user to better identify and mitigate risk, leading to better informed decisions in all phases of project delivery.

11. Enhanced Geotechnical Characterization for Rapid Project Delivery

The uncertainty of ground conditions at a project site is reduced by performing geotechnical characterization of the site. An inaccurate understanding of ground conditions may lead to wastefully conservative design, time consuming redesign, construction claims, change orders, or cost and schedule overruns. The importance and value of using reliable in situ test methods and reducing subsurface condition uncertainty for construction is captured in NCHRP Synthesis Report 484 (2015). The value of site characterization for design is demonstrated in new reliability-based design methods such as AASHTO Load Resistance Factor Design (LRFD) Bridge Design Specifications (2014). A suite of proven subsurface investigation methods is available to establish a new game-changing standard of practice consistent with the revisions being made to the AASHTO Manual on Subsurface Investigation and the FHWA Geotechnical Engineering Circular #5: Geotechnical Site Characterization. This effort will focus on implementing the mainstream practice of targeted technologies for more reliable and cost-effective

subsurface investigation programs for rapid project delivery with less risk of contract delay and escalation.

Collectively, the technologies represent seven of the most transformative and complimentary advancements within subsurface investigation practice. Their implementation nationally will reduce project delivery costs and risks and improve long-term performance.

12. Advanced Hydraulic 3D Modeling

Rivers, streams, and coastal waterbodies exhibit complex hydraulic characteristics that affect bridge and culvert design and operation, scour formation, stream stability, and overall infrastructure resiliency. Advanced Hydraulic 3D Modeling tools simulate hydrologic, hydraulic, and scour conditions at any aspect of transportation systems. These tools significantly increase the detail and accuracy of hydraulic related project planning, permitting, design, and simulation activities. Designers can use the tools to more accurately apply the safest and most cost effective transportation design to accommodate the hydraulic conditions of the structure. Use of this technology can also reduce costs of materials and quantities during a project's construction and operation.

13. Nondestructive Evaluation (NDE) Applications for Condition Assessment of Bridges, Pavements, and Tunnels

The management of our Nation's highway infrastructure assets including bridges, pavements, and tunnels presents ongoing planning, operational, preservation, and economic challenges for Federal, State, tribal, and local transportation agencies. Data-driven condition information is an important part of managing and maintaining these assets in a state of good repair. Advancements in NDE applications over the last decade

from hand-held tools to automated platforms can provide owners with more efficient, reliable, and cost-effective approaches to complement current inspection and evaluation practices.

Each NDE technology detects a specific type of defect. The defects identified range from those found at an early stage to the on-set of deterioration, providing infrastructure owners with information to develop cost-effective preservation and maintenance strategies. This can result in lower life-cycle structure costs, which are a savings for the owner and the user.

14. Surface Treatments for Extended Life

The condition of pavements and bridges across the country vary considerably, with many State DOTs struggling to maintain current service levels. A balanced approach that takes into consideration timing, desired level of service, and available funding is paramount to keeping our Nation's infrastructure in a "state of good repair." There are several surface treatments for pavements and bridges that can be used to reach this goal.

Pavements

Whether a highway pavement is constructed using concrete or asphalt, the structure will deteriorate over time. Many factors affect the performance of these pavements including loads (traffic), climatic conditions, and material quality. There are surface treatments available that extend the overall service life of both pavement types. The use of the right pavement surface treatments at the right time can improve the condition level and extend the performance of the pavement structure. For example, by

maintaining and improving smoothness and ride at an acceptable level of service, a pavement structure can save the tax payers money and time and enhance safety.

Bridges

The decks or slabs of bridges are vulnerable to the effects of mechanical wear from traffic, and environmental conditions such as rain, snow and ice. Consequently, decks and slabs require more maintenance and repair than any other component of the bridge. The most common bridge deck and slab material is concrete and its main cause of deterioration is corrosion of the reinforcing steel. Surface treatments such as deck washing, using crack sealers, fillers, waterproofing membranes and overlays can protect and enhance service life of bridge decks.

15. The Maintenance Innovation Toolbox (MIT)

The MIT includes the following three highway maintenance items that have been proven and tested in the hands of highway maintenance workers to save time and money, while enhancing safety and operations efficiencies:

Indefinite Delivery / Indefinite Quantity (ID/IQ) or Job Order Contracting – This is a unique indefinite quantity type of contract that enables facility owners to accomplish a large number of repairs and maintenance with a single, competitive bid contract. After the ID/IQ is established, this contracting method saves time in the procurement process when an immediate need is identified.

Strobe Lights for Increased Visibility of Snow Plow Operations – With the increased use of wing plows and tow plows, it is even more important to ensure that plowing operations are being seen by motorists. With the installation of different color strobe lights (e.g., green, amber, blue, etc.), trailing and passing vehicles can more

distinctly see the plowing operations that extend beyond the truck body, enhancing safety for both motorists and plow operators.

Automatic Vehicle Location (AVL) and Telematics for Maintenance Forces – The use of AVL on highway maintenance vehicles enables equipment managers to know where the highway equipment fleet is located for deployment where and when needed. By coupling AVL with Telematics to report engine and drivetrain diagnostics, an equipment fleet manager has the optimum combination of tools to efficiently and effectively manage the maintenance force.

Issued on: December 4, 2015

_____

Gregory G. Nadeau
FHWA Administrator

[FR Doc. 2015-31112 Filed: 12/9/2015 8:45 am; Publication Date: 12/10/2015]