



U.S. Department
of Transportation
**Federal Highway
Administration**

Center for
Accelerating
Innovation

Transforming Transportation Through Innovation

Thomas Harman
Director

**FAST
ACT**

EDC 

AID Demo
Accelerated Innovation Deployment

STIC
State Transportation Innovation Councils 



Resist CHANGE and DIE.

**Accept CHANGE and
Survive...**

Lead CHANGE and Thrive!

Our Visit Today



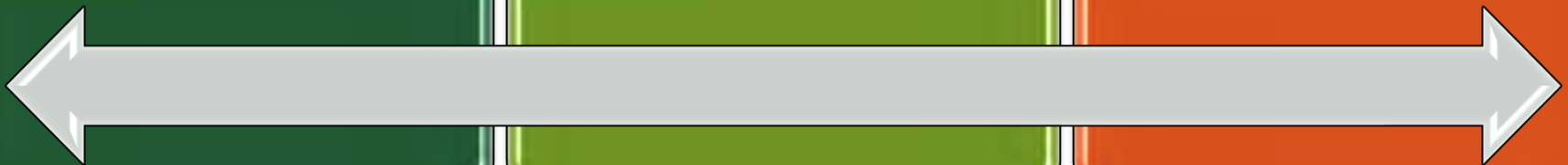
Authorization



Innovation



Opportunities
for
Engagement



Tom's question(s) for our visit today...

“Yes, and if...”

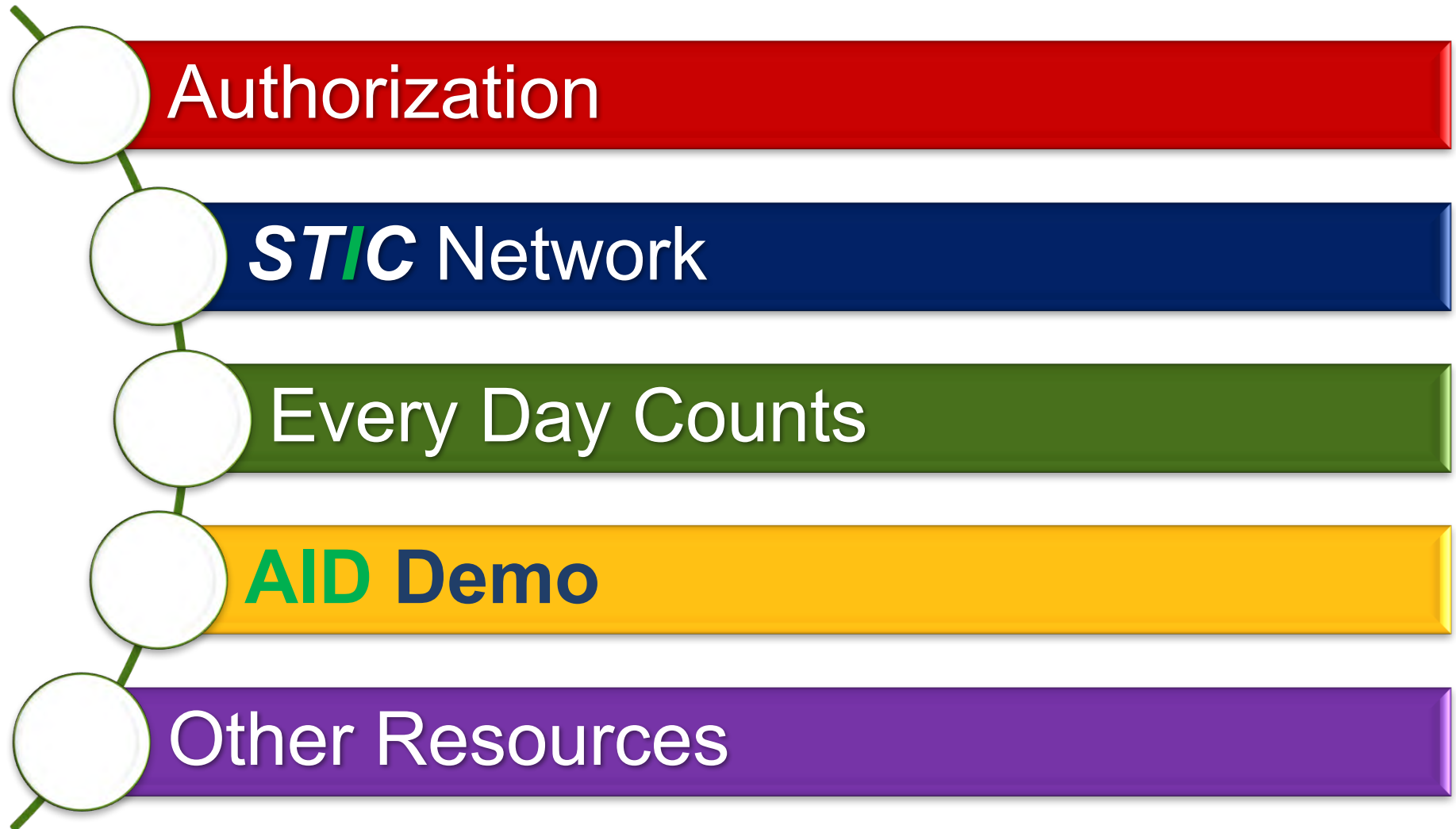
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“...we will *ACCELERATE* innovation”

Where are our opportunities to increase engagement? With Who? How? When?



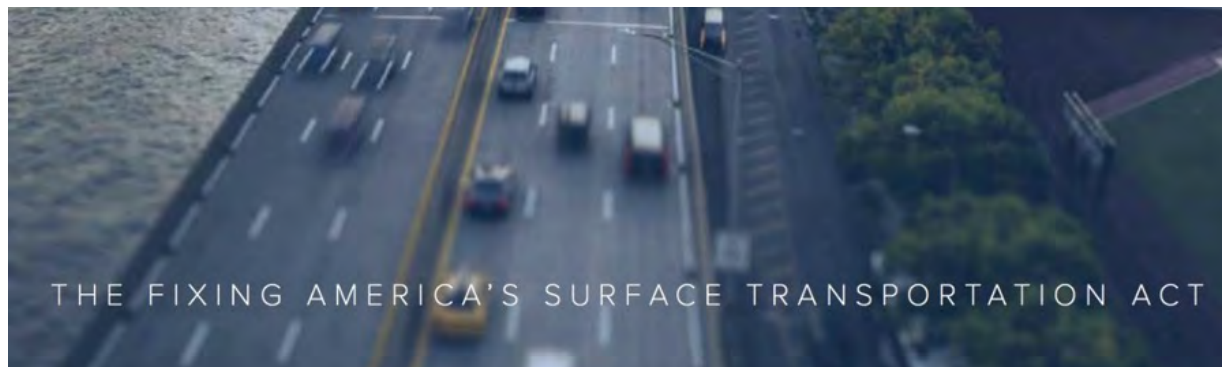
Transforming Transportation Through Innovation





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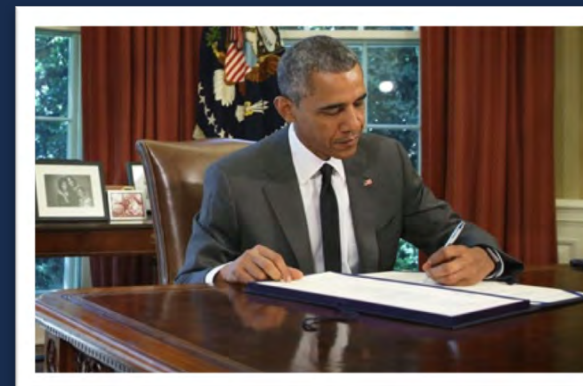
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P.L. 114-94

Fixing America's Surface Transportation Act



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December 4, 2015

Key Highway Facts

\$226.3 B for highways over five years (FY 2016-2020)

- \$225.2 B in contract authority
- \$1.1 B from the General Fund

Builds on the program structure & reforms of MAP-21

Continued focus on **accelerating project delivery**

Adds a new freight formula & expands freight network

Adds a new discretionary program for nationally significant freight & highway projects

Provides a new tribal self-governance option





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Creating a Culture of Innovation



AID Demo
Accelerated Innovation Deployment



Define *Innovation*



1: the introduction of something new

2: a new idea, method, or device





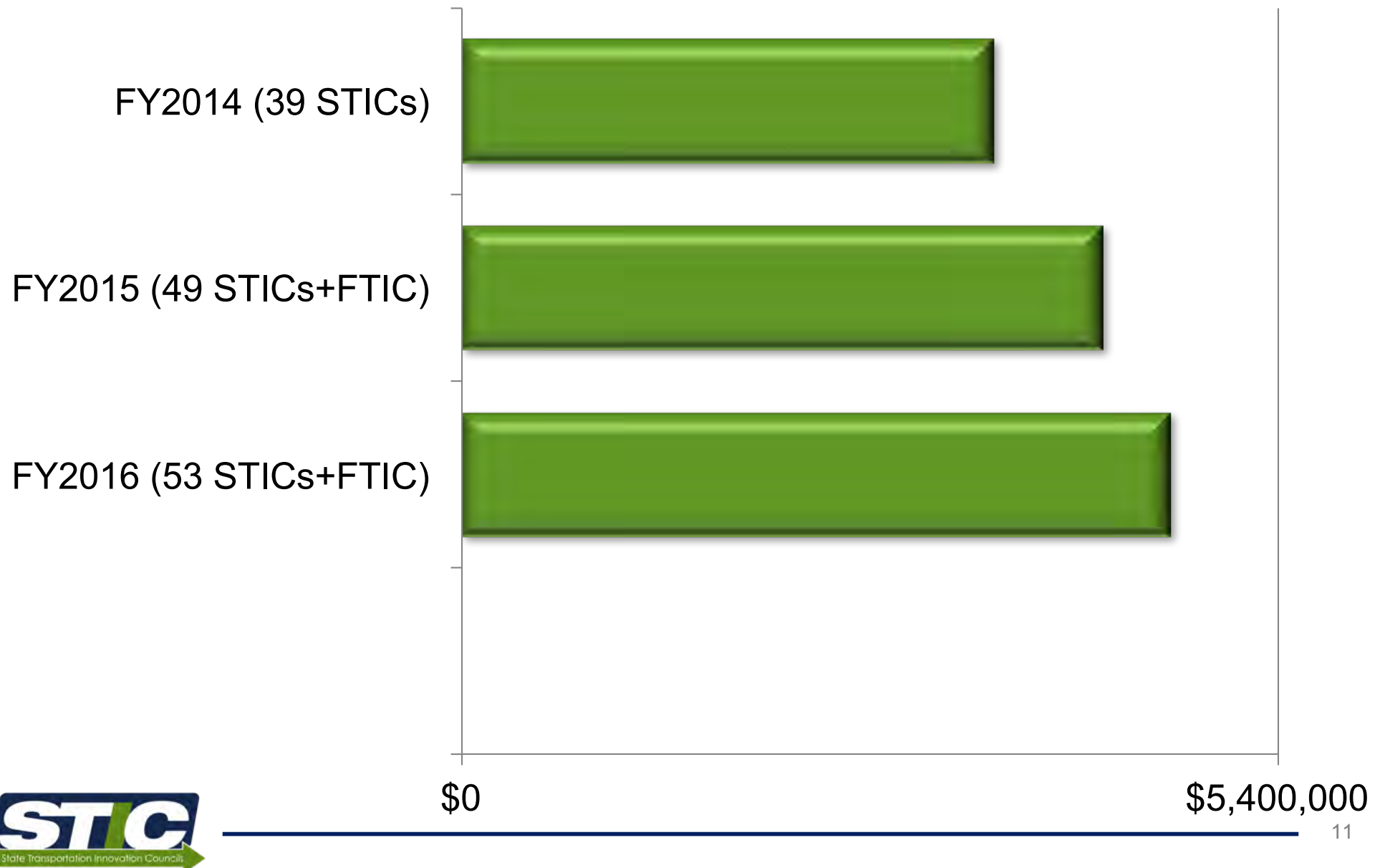
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National STIC Network

The **COMPLETE** Network established – April 2016



STIC Incentive Program

Program Coordinator: Sara Lowry



Complete!	STIC Incentive Projects	FY
Alabama	<p>Up to \$100k/ea./FY</p> 	
to		
Wyoming		
D.C.		
Puerto Rico		
Virgin Islands		
Federal Lands (FTIC)		


Examples of STIC Incentive Project

Northeast	Examples: STIC Incentive Projects	2016
CT	Advancing the use of mobile devices for e-Construction in field inspection applications	\$100,000
DE	1. Procurement of an Automated Cylinder End Grinder for the purpose of testing UHPC (\$16,000)...	\$79,854
MA	Develop and implement a statewide Construction Project Documentation (CPD) SharePoint System	\$100,000
ME	1. Establishing Planning and Environment Linkages by incorporating environmental and NEPA-related risks assessments into candidate project screening (\$38,400)...	\$100,000
NH	1. Strategic Highway Research Program (SHRP2) Traffic Incident Management (TIM) Training (\$16,000)...	\$100,000
PA	Local Government Safety Seminar	\$80,000
VA	1. Development of standard Specification and drawings for Carbon Fiber Pre-stressed piles (\$30,000)...	\$100,000
VT	Development of a mapping framework for data integration	\$100,000



MEMORANDUM OF UNDERSTANDING

Signed 5/25/2016

Whereas	Scope of Partnership	2016-
Partnership in EDC	Collaboration on the deployment of the EDC-3 e-Construction innovation is a testament to the impact partnership can have on accelerating the deployment of an innovation when working together. A.I.I. will partner with the FHWA CAI on the EDC initiative and support deployment of selected innovations.	
POC for EDC	<ul style="list-style-type: none"> i. Serve as AASHTO's voice for EDC; ii. Foster EDC pipeline by identifying market ready of potential innovations for future EDC cycles; iii. Provide recommendations for innovations to deploy through the EDC initiative (2-year cycle); iv. Vet and solicit AASHTO member review of proposed innovations; & v. Provide leadership and support for deployment of specific EDC innovation (e.g., e-Construction). 	
Foster EDC pipeline	<i>All will foster the EDC pipeline by evaluating innovations and identifying market ready technologies for potential deployment in future EDC cycles.</i>	Up to \$200k/ FY



NEW AWARD PROGRAM



State Transportation Innovation Council – **STIC Excellence Award**

“This award recognizes a STIC that has made significant impact toward fostering a ***strong*** culture for innovation.”

Process:

- Self-nominating process... no more than 2 pages. 1 to **3** awards. A.I.I. selects winner(s).
- Presented at AASHTO Annual meeting.





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every day counts
An Innovation Partnership with States



“In 2009, the FHWA launched EDC in cooperation with AASHTO to speed up the delivery of highway projects and to address the challenges presented by limited budgets. EDC is a state-based model to identify and rapidly deploy **proven but underutilized innovations** to shorten the project delivery process, enhance roadway safety, reduce congestion and improve environmental sustainability.”

Q. How many Innovations were implemented under EDC-1?



A. Fourteen (14)

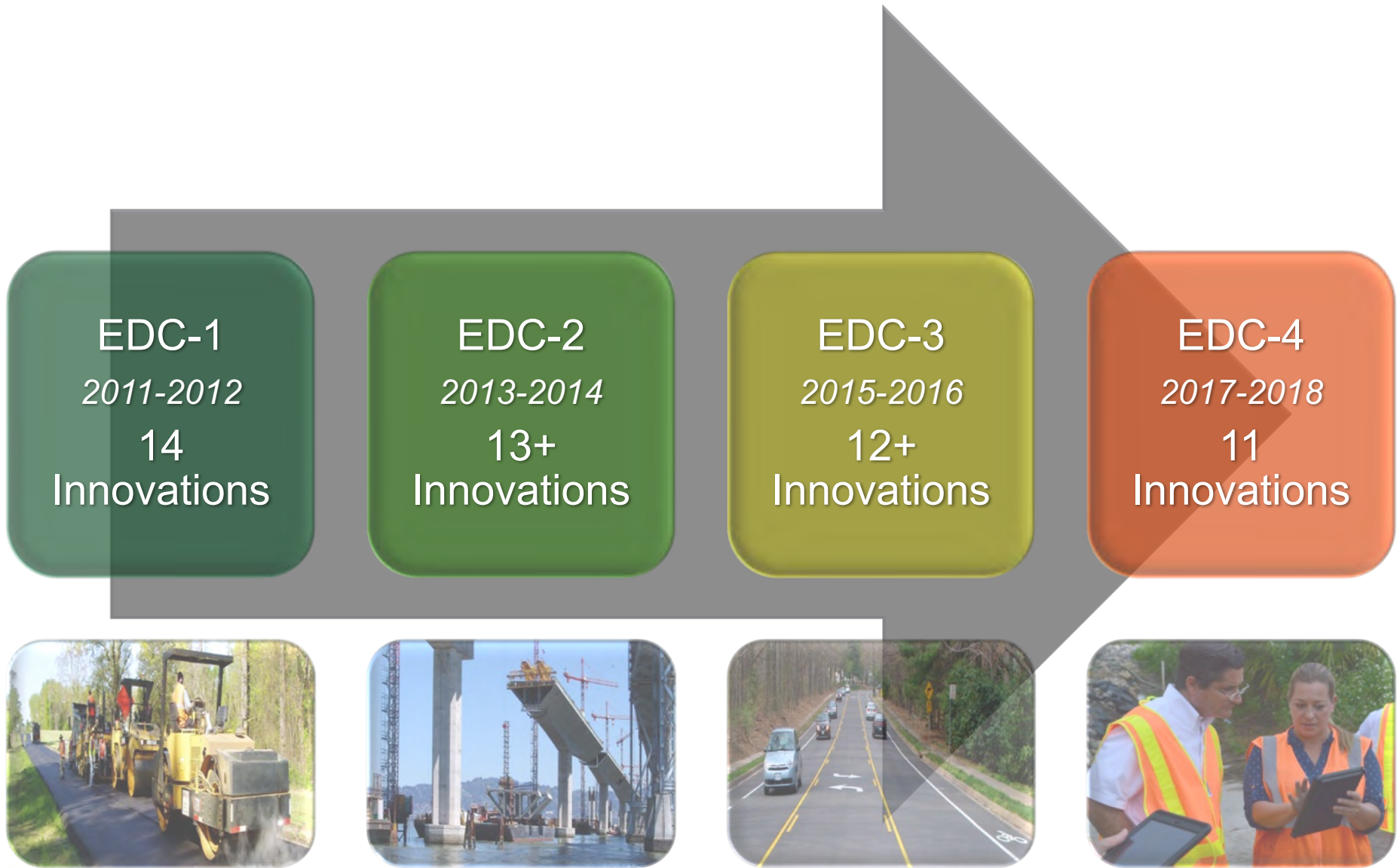
B. Eleven (11)

C. Twelve (12)

D. Fifteen (15)



Heading into Round 4



Q. Name the EDC-1 Innovation that...? **What is the SafetyEdgeSM**



- ✓ Save Lives
- ✓ Is a proven solution that requires minimal cost and time
- ✓ Reduces driver over-correction
- ✓ Lessens potential impact of lane departure



Every Day Counts

Better, Faster, Smarter

EDC-1
(2011-2012)



Adaptive Signal Control Technology



Flexibilities in Right-of-Way



Programmatic Agreements



Clarifying Scope of Prelim Design



Flexibilities in Utility



Safety Edge™



CM/GC



GRS-IBS



Use of In-Lieu Fee & Mitigation



Design-Build



Planning and Environmental Linkages



Warm Mix Asphalt



Enhanced Technical Assistance
Environmental Impact Statements



Prefabricated Bridge Elements and
Systems

Every Day Counts

Better, Faster, Smarter

Measuring Success

- Institutionalized
- Post-Demonstration
- Demonstration
- Pre-Demonstration
- Opt Out of EDC Innovation

IMPACT

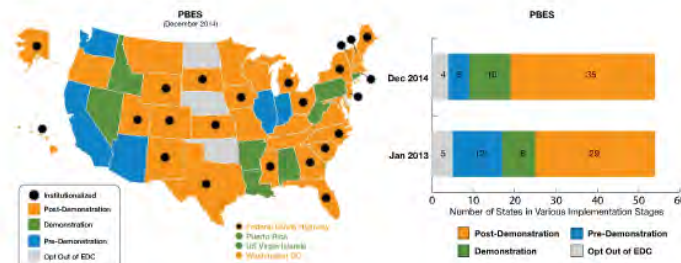
Marketing, Communication,
Partnership, Education,
Demonstration....

Key: 2-yr Implementation Plan

Innovation Deployment Teams

Prefabricated Bridge Elements and Systems

Prefabricated bridge elements and systems, also part of EDC-1, are structures or components built offsite or next to an existing structure. They include features that reduce onsite construction time and mobility impact and improve quality and safety.



Q. Name the EDC-1 Innovation that...? **What is Warm Mix Asphalt**

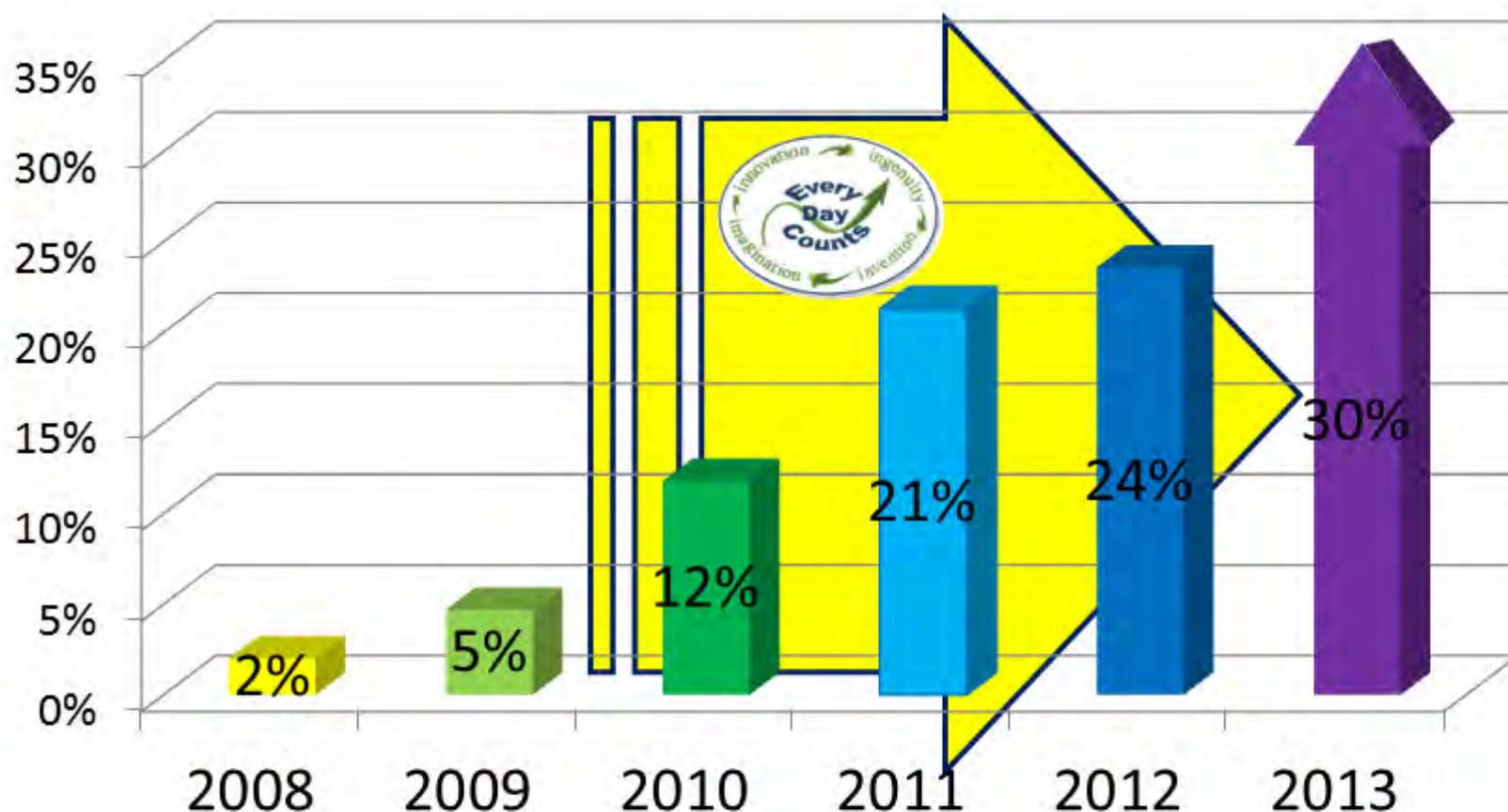
- ✓ Improves Performance
- ✓ Improves Worker Comfort
- ✓ Saves Fuel
- ✓ Reduces Emissions





WMA Usage

Percentage of Total Asphalt Production in US
source: National Asphalt Pavement Association



Every Day Counts



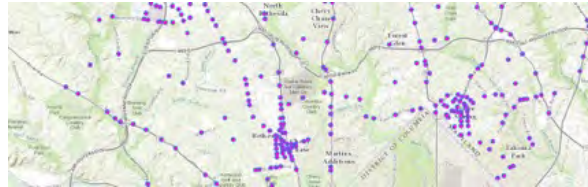
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EDC-2
(2013-2014)



3D Engineered Models for Construction



Geospatial Data Collaboration



Programmatic Agreements



Accelerated Bridge Construction (ABC)



High Friction Surface Treatments



Intersection & Interchange Geo.



CM/GC



GRS-IBS



Locally Administered Federal-Aid Projects



Design-Build



Implementing Quality Environmental Doc



National Traffic Incident Management Responder Training (SHRP2 L12)



Alternative Technical Concepts (ATC)



Intelligent Compaction

EDC-2 HIGH FRICTION SURFACE TREATMENTS

Milwaukee, WI

- IH 94, IH 43, & IH 794

Jan '09 to Sep '11 (~ 3 years)

- **219 Crashes!!!**

✓ **EDC FHST** in Sep '11

Oct '11 to Oct '12

- **2 Crashes**



Marquette Interchange

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EDC-3
(2015-2016)



EDC-3 Overview Video



3D Engineered Models



Data-Driven Safety Analysis



e-Construction



eNEPA and IQED



Geosynthetic Reinforced Soil-Integrated Bridge System



Railroad Coordination



Regional Models of Cooperation



Road Diets



Smarter Work Zones



Stakeholder Partnering



Ultra-High Performance Concrete Connections

Q. Name the EDC-3 Innovation that...? **What is Road Diets**



- ✓ Improves Safety
- ✓ Low Cost Solution
- ✓ Enhances Quality of Life
- ✓ Makes shared spaces more livable and contributes to a community-focused, Complete Streets environment.



Every Day Counts

Better, Faster, Smarter



EDC-3
Highlight

Ultra-High Performance Concrete Connections for Prefabricated Bridge Elements (UHPC)

Benefits

Accelerated Construction. durable and simplified details that facilitate the fabrication and construction efforts needed to connect prefabricated bridge elements.

Simplified Connection Details. significant simplification to the design of the component connections.

Improved Long-Term Performance. provides better long-term performance



steel fiber-reinforced, cementitious-based material

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EDC by Name

§1444 Every Day Counts Initiative.

(a) IN GENERAL.—It is in the national interest ...—

- (1) to identify, accelerate, and deploy innovation aimed at shortening project delivery, enhancing the safety of the roadways of the US, and protecting the environment;
- (2) to ensure that the planning, design, engineering, construction, and financing of transportation projects is done in an efficient and effective manner;
- (3) to promote the rapid deployment of proven solutions that provide greater accountability for public investments and encourage greater private sector involvement; and
- (4) to create a *CULTURE OF INNOVATION* within the highway community.

(b) EVERY DAY COUNTS INITIATIVE.—...to identify and deploy proven innovative practices and products that—

- (1) accelerate innovation deployment;
- (2) shorten the project delivery process;
- (3) improve environmental sustainability;
- (4) enhance roadway safety; and
- (5) reduce congestion.

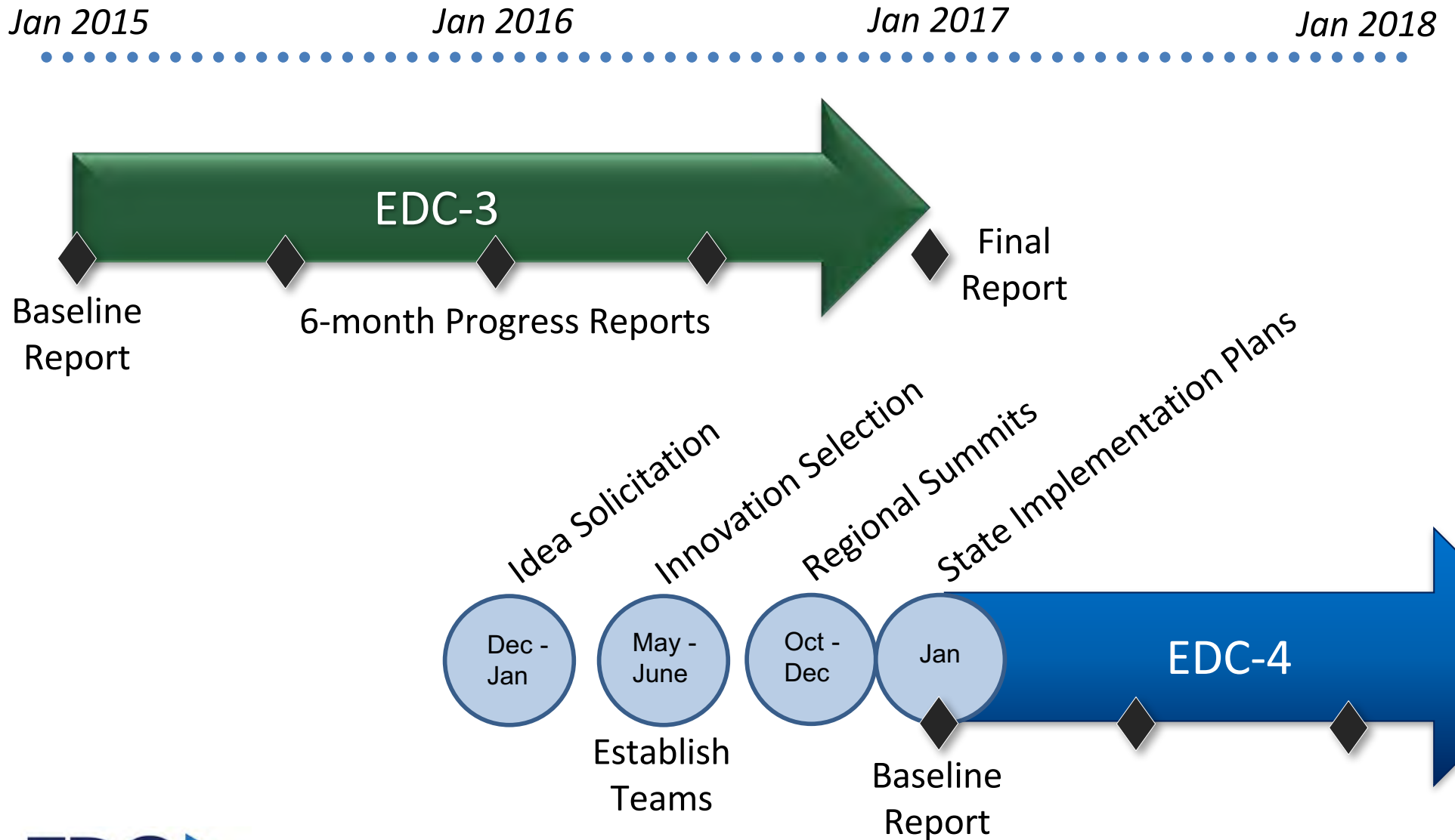


EDC-4
2017-2018
11
Innovations

(c) INNOVATION DEPLOYMENT.—

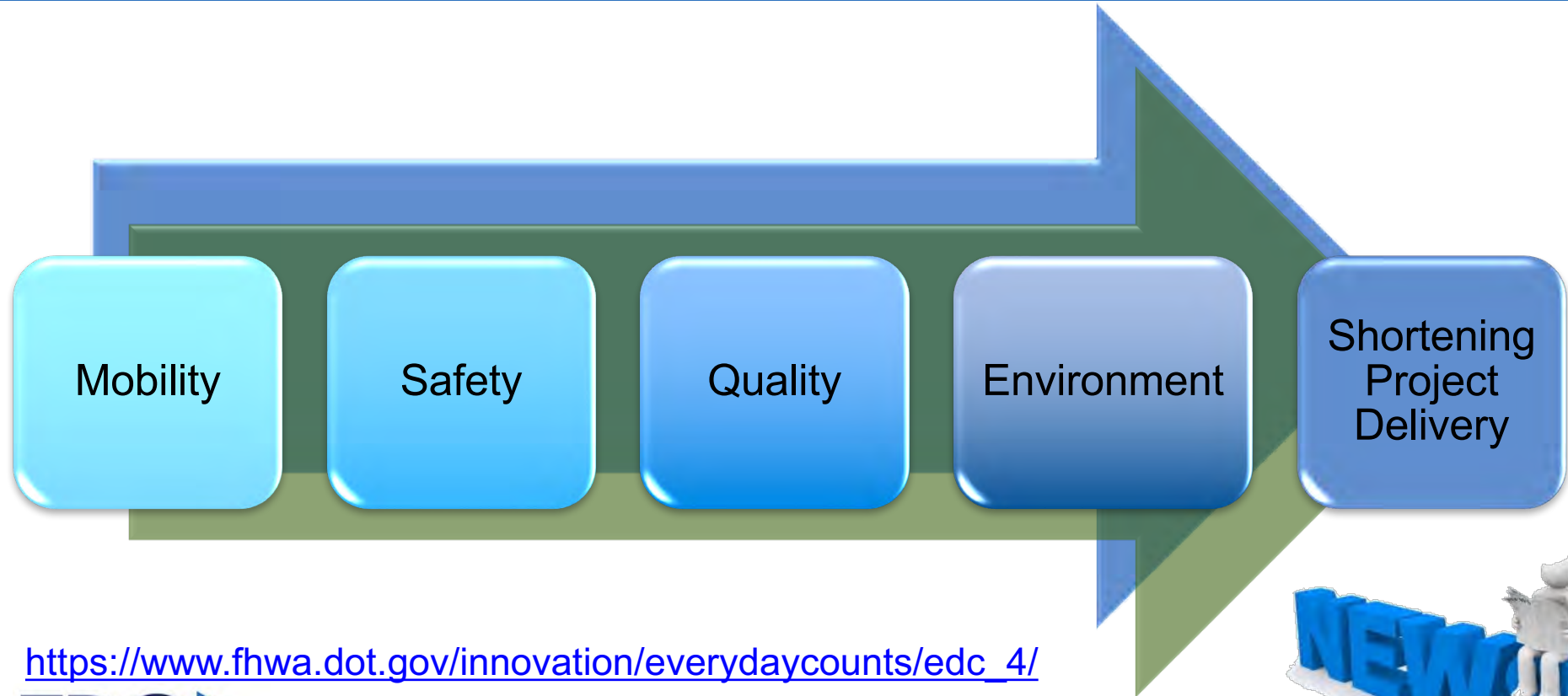
- (1) IN GENERAL.—At least every 2 years...

EDC-3 to EDC-4



every day counts

An Innovation Partnership with States



https://www.fhwa.dot.gov/innovation/everydaycounts/edc_4/

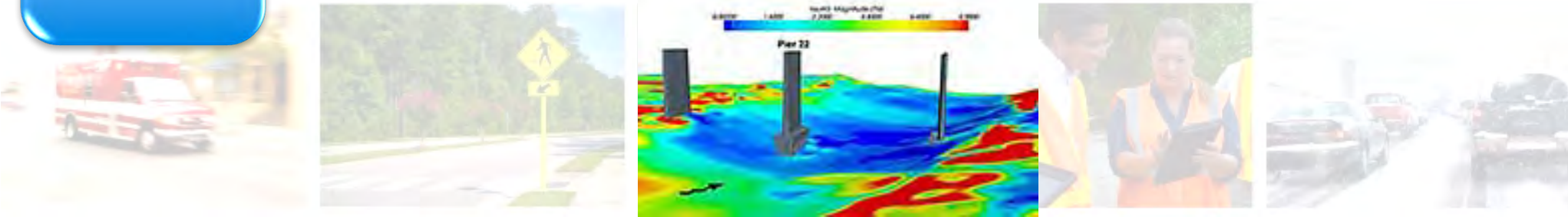




Safe Transportation for Every Pedestrian (*STEP*)

- Pedestrians 16% of roadway fatalities
- 6 cost-effective countermeasures with known safety benefits
- Including: Road Diets
 - Save Lives





Collaborative Hydraulics: Advancing to the Next Generation of Engineering (CHANGE)

- Current modeling applies several simplifying assumptions... overly conservative or inaccurate results.
- AHMT offers planners...to...designers more accurate modeling technology through 3D visualization
 - Save Money, Improved Performance



Ultra-High Performance Concrete (UHPC) Connections for PBES

- Address a key challenge in PBES
 - Improved performance
 - Faster construction
 - Save money / time





Pavement Preservation (When, Where, and How)

- at the right time (when), on the right project (where), with quality materials and construction (how) is a critical investment strategy to help meet pavement performance expectations.





e-Construction and Partnering: *A Vision for the Future*

- Today, highway agencies can take advantage of e-Construction technologies to enhance partnering among the project team to improve communications and workflow for the efficient delivery of projects in the electronic age

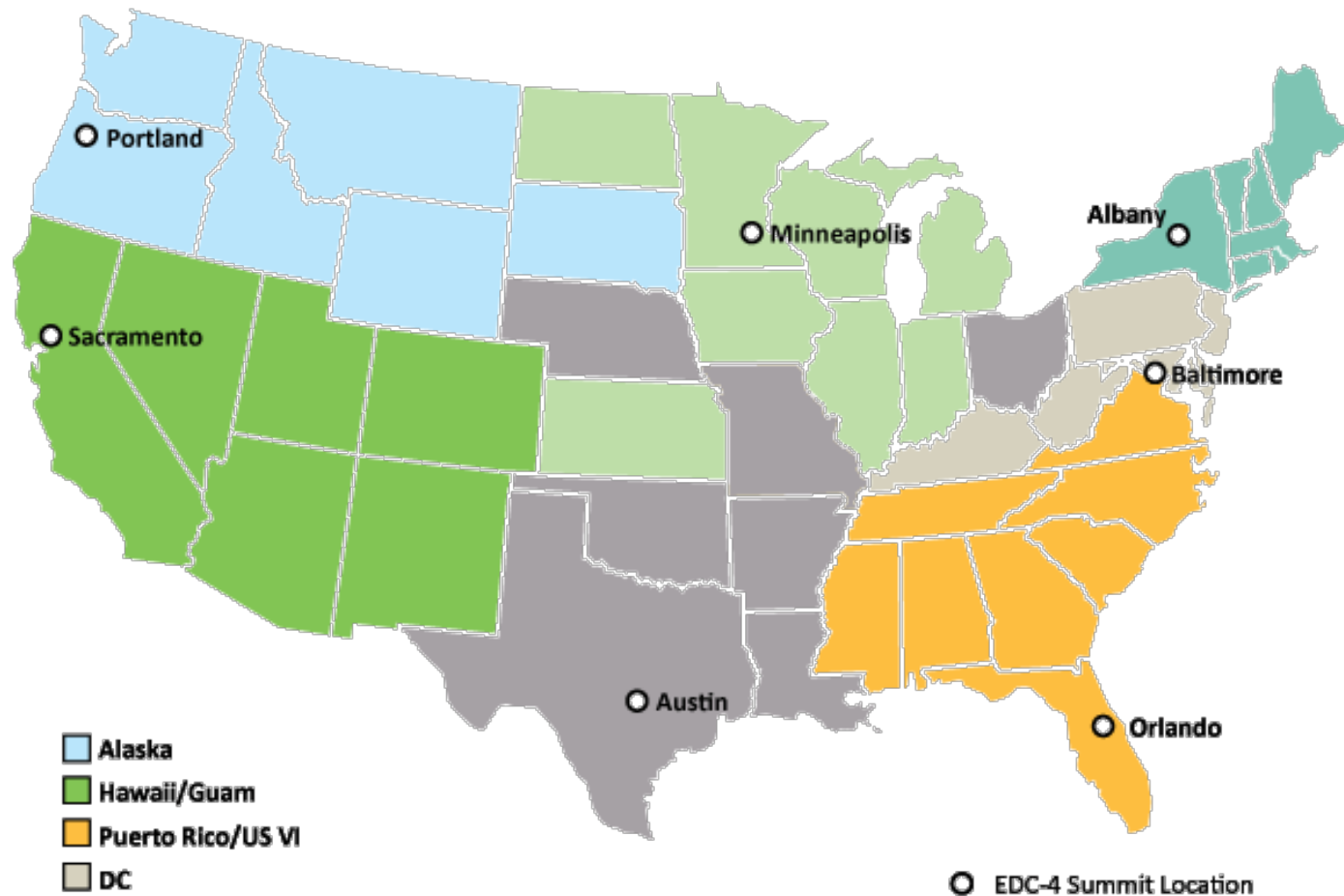
EDC-4 Innovations



Program Area	New EDC	EDC-3 Cont...	Total
Mobility	3		3
Safety	1	1+	2
Infrastructure			
Quality	1	1	
Shortening Project Delivery	1	1	4
Environment	2		2
TOTAL	8	3+	11

EDC-4 Regional Summits

https://www.fhwa.dot.gov/innovation/everydaycounts/edc_4/summit.cfm





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MAP-21 to FAST Act

Q. What is the total INNOVATION INVESTMENT that occurred from August 2014 to May 2016 for the 61 AID Demo grants awarded?

A. \$ 27,897,211

B. \$ 42,527,000

C. \$ 43,012,594

D. \$ 61,000,000





Accelerated Innovation Deployment (AID) Demonstration

AID Demonstration

- Continuing in FY16 with **new NOFO**
- Opened September 1st 2016
- Up to \$10M/year (\$50M over FAST Act)
- Reminders
 - Funds are used to pilot an innovation for a project
 - Activity must be eligible under 23 CFR for federal-aid
 - 20% match is required



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Increased Federal-share for Project-level Innovation

Increased Federal-share for Project-level Innovation

https://www.fhwa.dot.gov/innovation/resources/increased_federal_share.cfm

§ 120(c)(3) title 23 U.S.C. provides...

- ...the option of an increased Federal share for projects using innovative project delivery methods.
- Established by MAP-21 / amended FAST Act
- ...builds off EDC initiative
- The increased Federal share (**up to 5%**) for innovative techniques incentivizes use of innovations to help deliver projects more efficiently and to deploy rapidly proven solutions that make a difference.



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Get Connected



<https://www.fhwa.dot.gov/innovation/resources/>

Questions / Discussion



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And now our next speaker...

