National STIC Network Showcase 2023



Category:

Civil Rights, Workforce, and Equity



U.S. Department of Transportation Federal Highway Administration





National STIC Network Showcase

The EDC-7 virtual summit, held in February 2023, included a platform for the State Transportation Innovation Councils (STICs) to showcase homegrown innovations that their members developed and implemented in their state. The purpose of this National STIC Network Showcase was to celebrate and share innovations with a wider audience to expand their potential use and impact. These innovations are saving lives, building sustainable infrastructure, growing an inclusive workforce, saving time, and making our transportation system more efficient. Over 100 innovations were shared by STIC members and are grouped into the following categories.

- Asset Management & Finance
- Maintenance & Emergency Response
- Operations
- Design & Construction
- Technology & Materials
- Planning & Environment
- Safety
- Pavement & Structures
- Civil Rights, Workforce, and Equity

This event also featured short presentations from State and local agencies on some of these homegrown innovations, which are also <u>available on-demand</u>.

Disclaimer

These presentations were created by non-FHWA organizations. The views expressed do not necessarily reflect the official policy of FHWA or the U.S. Department of Transportation (USDOT). The U.S. Government does not endorse products or manufacturers. Trademarks or manufacturers' names appear in this National STIC Network Showcase only because they are considered essential to the objective of the National STIC Network Showcase. They are included for informational purposes only and are not intended to reflect a preference, approval, or endorsement of any one product or entity.

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Public Survey Tool for Emergency Events

OVERVIEW OF INNOVATION

The Municipality of Autonomous Toa Baja in Puerto Rico faced a major rain event in early 2022 that caused flooding, landslides, sinkholes and damage to highways, roads, and bridges. Emergency workers needed improved, real-time data to properly respond to the needs of their communities.

The solution was a public survey tool available via social media and email where residents could report damages. This tool allowed them to pinpoint locations of the damage and upload photos. The information from the survey tool allowed emergency workers the ability to know what was happening in real time and then prioritize their response.

The Municipality developed the public survey tool using Survey 123 from ArcGIS. Annual cost for the license is \$440.

Ejemplo de dato recolectado

Descripción del evento según ciudadano que subió la foto: "Cuando regresé a mi casa el lunes, 7 de febrero nos percatamos que hay un hoyo exactamente frente a mi casa. Es un hoyo hondo donde la carretera cedió. Muy peligroso. Coloqué un zafacón encima para evitar accidentes. Agradezco su ayuda."

Source: Puerto Rico LTAP

BENEFITS

- Increased volume of real time, more accurate data
- Quicker emergency response to more heavily damaged areas during an Event
- Improved communications with residents during emergency events

FIND OUT MORE . . .



Autonomous Municipality of Toa Baja, Puerto Rico

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Keywords: Emergency response; Build a Better Mousetrap; Survey123; Data



Build a P Build

District 11 San Diego: South County Trade Corridors State Route 11 Enrico Fermi Diverging Diamond Interchange

OVERVIEW OF INNOVATION

Starting with policy and planning, multimodal considerations, safety, operational characteristics, geometric design, and completed construction and maintenance, The State Route 11 Enrico Fermi Diverging Diamond Interchange features an unconventional and innovative Diverging Diamond Interchange design.

As part of a larger purpose and transportation system in this corridor, this Enrico Fermi Diverging Diamond Interchange (DDI) will satisfy the increasing demand for California-Mexico trade at existing border crossings.

The efficient delivery of goods and services is critical to the customer's satisfaction – the success of individual businesses and the urban and global economies. Yet to reach the destination, goods distributors face significant challenges across urban and metropolitan environments, regional highway networks, and bottlenecked ports.

This Diverging Diamond Interchange design facilitates the most efficient traffic patterns from Mexico into the United States. Access to border wait times at the different Ports of Entry will reduce congestion and positively impacts the air quality of moving travelers and goods throughout the country.



(EDC

FIND OUT MORE . . .

2021 District 11 Innovation Fair

https://youtu.be/OigDMS6pKqo

Keep San Diego Moving – State Route 11 Corridor

> https://www.keepsandiegomoving.com/SR-11-Corridor/SR11-intro.aspx

Caltrans Innovation EXPO 2022

https://caltrans-innovationexpo.constantcontactsites.com/enrico-fermidiverging-diamond-interchange-with-border-waittime-technologies

South County Trade Corridors (SCTC) Contact Information

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Equity, Operations, Planning, Environment, Structures, Design, Freight/Goods Movement

BENEFITS

Traffic patterns promoted by the DDI will facilitate continuous movement from Mexico into the California State Transportation System, helping to reduce the air quality impact created by the movement of goods and the traveling public.

 The novel DDI design also promotes intersection safety for pedestrians and bikers while meeting the conflicting demands for increasing capacity, decreasing congestion, and minimizing the cost of multiple infrastructures.

DISTRICT 11 Wrong Way Driver Offramp Enhancement Package



District 11 took the lead for the wrong-way prevention pilot project initiated after a series of Wrong Way (WW) collisions in 2015 in the San Diego and Sacramento regions that had resulted in several fatalities.

This pilot focused on three areas of enhancement measures:

- Replace traditional one-way markers on exit ramps with red-clear retroreflective markers on lane & channelizing lines. Install red-yellow retroreflective markers along the left edge line and one-way red retroreflective markers along the sides of Type V (through) arrows. In addition, add dashed yellow extension lines to guide motorists to the entrance ramp when it is adjacent to an exit ramp.
- Place additional retroreflective markers on edge lines. With the left edge line, we decreased the spacing of the red-yellow retroreflective markers in the first 480' from the exit terminus. With the right edge line, we reduced the spacing of the one-way red retroreflective markers for 360' starting 120' from the exit terminus.
- Install Blinking LED bordered Wrong Way signs with a wrong way detection system or 24/7 operation.

The pilot project was successful and is currently part of the Caltrans standard wrong-way package at freeway exit ramps.



District 11

BENEFITS

- Red retroreflective pavement markers (backside) resulted in a 44% to 64% reduction in reported wrong way events.
- Blinking LED wrong way signs resulted in a 60% reduction in reported wrong way events



FIND OUT MORE . . .

Wrong Way Pilot Projects

Wrong Way Pilot Projects | Caltrans

District 11 Traffic Safety and Operations Division

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Safety, Operations, Design, Construction, Maintenance, Planning, Equity

Public Involvement Management Application

CIOWADOT

OVERVIEW OF INNOVATION

A powerful virtual tool facilitates management and coordination of public engagement and agency communications for thousands of active and completed transportation projects.

Across the state, Iowa DOT manages approximately 4,000 active transportation projects at any given time. However, the agency only has two staff members devoted to coordinating public and stakeholder involvement throughout the development and construction process.

To provide its Public Involvement staff with the right tools for this important work, Iowa DOT developed the Public Involvement Management Application, or PIMA, in 2015 to manage registrations for public meetings. Since that time the app has expanded to also manage stakeholder contact information, track project feedback and agency responses, collect and report project-specific data and analytics, and more.

Iowa DOT is part of multi-state PIMA consortium that also includes Maine, Wisconsin, Massachusetts, and Texas. Representatives from these states meet monthly to discuss the app's usage and potential improvements. The consortium's no-cost sharing agreement gives member states full access to all updates and improvements while allowing each state to implement the features that support their particular needs and stakeholders.

SHARE YOUR FEEDBACK ON PROJECTS & STUDIES

We are committed to improving our transportation system through your participation and feedback. Public hearings, meetings, and notices allow you to take part in the planning process and help you better understand the highway projects and studies that affect your community. We provide auto-translation tools on this website if you have limited English skills. Iowa DOT does not guarantee the accuracy of auto-translation tools. For more information, see the disclaimer below. If you need more help, please email the project contact listed on each project web page.



Source: Iowa DOT

BENEFITS

PIMA gives a two-person staff the power to successfully manage details and communications regarding thousands of transportation projects across Iowa. By sharing the costs and benefits of developing and maintaining the application, the multi-state PIMA consortium maximizes the app's potential. Recent and in-progress improvements include a dashboard that shows the equity of transportation projects as well as an extension that allows access via cell phone.

FIND OUT MORE . . .

Iowa DOT's Public Involvement Website https://www.news.iowadot.gov/pim/

YouTube Video <u>https://www.youtube.com/watch?v=90</u> eQ1td5ORs

FHWA's Innovator Newsletter Article https://www.fhwa.dot.gov/innovation/ innovator/issue80/page_05.html

Iowa DOT Office of Public Involvement

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Planning, Technology, Equity, Design, Construction

Construction Partnering and Work Zone Safety

OVERVIEW OF INNOVATION

When a state's Department of Transportation adopts a new practice for construction partnering or work zone safety, it is often not shared with other state DOTs. So, to ensure that the newly adopted practices and their benefits are shared, The Idaho Transportation Department Led a 5-State peer exchange in 2021.

At the peer exchange, state DOT employees from Idaho, Arizona, Nevada, Utah, and Washington State, along with employees from the Federal Highway Administration, were able to share new practices regarding construction partnering and work zone safety.



FIND OUT MORE . . .

Peer Exchange Event Program

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Monica Crider (208) 334-8502, monica.crider@itd.idaho.gov

Safety, Partnering, Construction

Source: The Idaho Transportation Department

BENEFITS

Though interstate collaboration, this innovation increased work zone safety and construction partnering efficiency.



Temporary Traffic Signal with Bicyclist Button

OVERVIEW OF INNOVATION

Temporary traffic signals are often used in work zones where only direction of traffic can move at a time. However, though these signals work well for vehicles, they often neglect other road users such as bicyclists and pedestrians.

To address this issue in a work zone along a popular biking route, ITD employees decided to use a temporary traffic signal with a button that allows bicyclists and pedestrians to safely move through the work zone.

This innovation not only increased safety for all road users, but it addressed equity issues by allowing those not in vehicles to navigate through the work zone.



Source: The Idaho Transportation Department

BENEFITS

By employing a temporary traffic signal with a bicyclist button, ITD was able to increase safety for all road users and address equity issues by allowing those not in vehicles to navigate through the work zone.

FIND OUT MORE . . .

<u>Justification for the Innovation</u> <u>Render of the Signal in Use</u> <u>Diagram of the Signal</u>

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Safety, Equity, Mobility, Bicyclist, Signal



Idaho Career Opportunities – Next in Construction (ICONIC) Workforce Development Program

OVERVIEW OF INNOVATION

As one of the fastest growing states in the nation, Idaho has been facing a severe shortage of skilled workers in the highway construction industry. To help fill this need, ITD partnered with local schools and community organizations to launch a training program called "Idaho Career Opportunities – Next in Construction (ICONIC)."

ICONIC delivered a five-week training program that taught and certified students in multiple specialties pertaining to highway construction. Some of these specialties included forklift operation, flagging, and Hazardous Waste Operations Emergency Response. 15 Students graduated from the ICONIC program.

The ICONIC program also increased the presence of under-represented groups in the field of highway construction. Of the student body, 40% were female and 60% were from minority groups.

This ICONIC program was nominated for and won a STIC Award in 2022.

BENEFITS

Source: The Idaho Transportation Department

The ICONIC Workforce Development Program helped address the severe shortage of skilled workers and increase the presence of underrepresented groups in the highway construction industry.

FIND OUT MORE . . .

STIC Excellence Award Application

Jessika Phillips (208) 908-2190, jessika.phillips@itd.Idaho.gov

Safety, Workforce, Employees, Development, Equity, Representation





Signals and Lighting Training Facilities

OVERVIEW OF INNOVATION

MoDOT Signals and Lighting Training Facility is a safety improvement innovation to train lighting and signal workers in a safe environment. A complete sign and lighting intersection was created on a MoDOT parking lot. The training facility is beneficial to help build confidence in workers when placed in actual conditions by training them to complete tasks in a calm, quick and efficient manner.



BENEFITS

This innovation saves time and increases safety by creating the ability to train staff in safe conditions before working in live intersections. Money is saved using MoDOT's own products during training that have been recycled.



FIND OUT MORE . . .

Missouri Department of Transportation Innovations Showcase

<u>SigningSignalsTrainingLotProductivityHando</u> <u>ut_KC.pdf (modot.org)</u>

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Workforce Development, Traffic, Lighting, Safety training

Virtual Public Involvement

OVERVIEW OF INNOVATION

North Jersey Transportation Planning Authority (NJTPA), one of New Jersey's three MPOs, has used several innovative forms of virtual public involvement (VPI) to increase public participation in the long-range planning process. These strategies include approaches to promote engagement with populations that are difficult to reach and that historically have been less likely to be involved in the transportation planning process. New Jersey MPOs are also engaging members of the transportation community in conversation on emerging topics through virtual meetings.

To gather public input for its long-range transportation plans, online ads geo-targeted to the region invited people to participate in an online survey covering the Plan's seven focus areas. The campaign reached 1.6 million people over six weeks and received a robust response. NJTPA has used a broad range of engagement tools. The agency held focus groups with traditionally underserved demographic groups, created a young adult advisory group, held online meetings to engage broad audiences, and held an innovative online contest for children ages 5-15 to engage this hard-to-reach segment.

NJTPA also created its Tuesday Symposium series to engage planning and transportation professionals, advocates, and other interested parties. The series focused on various emerging issues and equity themes in transportation.

The Delaware Valley Regional Planning Commission (DVRPC), another New Jersey MPO, convenes its Futures Group, a collaborative, transdisciplinary group of subject matter experts and interested stakeholders to discuss emerging trends and forces affecting the region. A subset of the larger Futures Group conducts an exploratory scenario planning exercise as part of the Long-Range Planning process.



Source: NJTPA, Public Engagement

BENEFITS

VPI has proven effective in saving time and reducing costs through engagement with affected populations early and on a continuing basis in the planning process.

NJTPA has devised VPI strategies to explore inclusion, opportunity and equity issues in transportation planning processes.

Dialogue within the Futures Group benefits both DVRPC and the group's participants who are able to take what they learn back to their organizations.



FIND OUT MORE . . .

NJ STIC Virtual Public Involvement in NJ https://www.njdottechtransfer.net/VPI

NJTPA Plan 2050: Transportation. People. Opportunity, Public Engagement <u>https://www.njdottechtransfer.net/NJTPA-</u> <u>Plan-2050</u>

DVRPC's Futures Group https://www.dvrpc.org/plan/futuresgroup

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Equity, Planning

GTFS-ride: Easing the use of transit ridership data with a common data standard

OVERVIEW OF INNOVATION

- Transit ridership data is needed to set policy, develop plans, and prioritize investments but is not easily available and/or not in a useful standard format. Transit agencies vary widely in their ability to provide sufficient quantities of high-quality ridership data, and the data that does exist is often of little use due to a high level of aggregation, broad scope, sparsity, errors, and lack of standardization.
- These inconsistencies in the availability, format, and quality of ridership data make it very difficult (if not impossible) for entities with an interest in multi-agency transit networks to make effective and informed decisions. Regional governments, researchers, policymakers and transit agencies themselves don't have an easy way to collect, store, share, report, and analyze their ridership data.
- GTFS-ride provides a comprehensive (yet flexible) public transit ridership data standard. It was designed to improve the processes of ridership data collection, management, reporting, and analysis. Web-based software tools have been developed to support the core functionality of GTFS-ride.

BENEFITS

- Link ridership data to GTFS data accurately
- Identify the most productive route(s)
- Find the busiest/idlest stops in the system
- Integrate with common transit analysis software
- Simplify reporting to the National Transit Database



FIND OUT MORE . . .

GTFS-ride: http://gtfsride.org/

GTFS-ride Github: <u>https://github.com/ODOT-</u> PTS/GTFS-ride

Zephyr Foundation <u>https://zephyrtransport.org/projec</u> ts/5-transit-ridership-standard/

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Keywords: transit, bus, data, ridership, GTFS, GTFS-ride, analysis, data standard, route, stop, integration

Develop a DOT Specific UAS Simulator and Flight Proficiency Exam



OVERVIEW OF INNOVATION

Most state DOT Unmanned Aircraft Systems (UAS) commercial operations are governed by CFR 14 Part 107. This regulation requires pilots pass a knowledge test but does not require a demonstration of minimum flight proficiency to operate in the national airspace. This project addresses this limitation by developing a computer-based flight proficiency simulator based on the National Institute of Standards and Technology (NIST) Basic Maneuvering Test (BMT). The simulator realistically recreates environmental conditions, UAS physics, stick control and field conditions of the BMT. A "drone rodeo" was hosted to evaluate if the simulator BMT performance data is simulator to traditional inperson methods. Twenty-four Part 107 pilots completed the BMT in-person and with the simulator. At 95% confidences, the pilots scores ad times were statistically the same. The significant percentage of the SCDOT pilots completed the BMT under proctored conditions. Based on their performance and similar nationally recognized organization's certifications, the research team recommends that the SCDOT require a minimum score of 80% on the BMT with a maximum duration of 5 minutes per maneuver before flight privileges are granted. In addition to the NIST scenarios develop, a bridge inspection scenario was developed to support this common use for UAS.



Source: Clemson University

BENEFITS

Drone flight proficiency is a skill that requires continual practice. The simulator developed in this project provides a convenient way to practice, teach and assess UAS flight skills. This software is available at no cost to all state DOTs.

To date, 24 state DOTs have requested licenses and made this simulator an important part of their drone program.

FIND OUT MORE . . .

Little Arm Studio: https://www.zephyr-sim.com/

Clemson University – Department of Construction, Development, and Planning: <u>http://www.clemson.edu/degrees</u> <u>/construction-science-and-</u> <u>management</u>

Eric Stuckey (SCDOT) 803-737-1003 <u>StuckeyEC@scdot.org</u> Joe Burgett (Clemson University) 864-722-2026 <u>jmburg@clemson.edu</u>

UAS, UAV, Drone, Simulator

Strategic Deployment of Drone Technology and Software to Support SCDOT Operations



OVERVIEW OF INNOVATION

A recent FHWA publication found that all 50 state DOT's are using Unmanned Aircraft Systems (UAS), commonly referred to as "drones," in some capacity. As the cost of UAS equipment can be relatively low, the greatest challenge limiting the benefit that this technology can provide is the lack of education and training. By partnering with Clemson University, this project aggressively addressed this challenge and made meaningful drone deployment a viable option for employees across the SCDOT. The project leveraged Clemson University's nationally recognized School of Construction Management to develop a drone training program tailored to the SCDOT's needs. The course was structured so Clemson students and SCDOT employees could work shoulderto-shoulder as they learned leading edge drone workflows. The program participants came from a wide range of SCDOT offices including (among others) Construction, Communications, IT Services, Preconstruction Engineering, Planning, Traffic Engineering, Survey and Maintenance. Through its professional studies program, Clemson University has made this course available fully online to any state DOT.



Source: Clemson University

BENEFITS

This project created an in-person and online drone course for SCDOT employees. During the class, students earn their FAA Part 107 drone license, flight skills (in-person and with a simulator), and how to create 3D maps/models with drone data. It is an excellent way for employees to gain the skills and knowledge to operate a UAS to benefit their department.

The course is available online for all state DOT employees.

FIND OUT MORE . . .

Overview video of the course: <u>https://www.youtube.com/watch</u> ?v=YIkoQI64D3w

Clemson University – Department of Construction, Development, and Planning: <u>http://www.clemson.edu/degrees</u> <u>/construction-science-and-</u> <u>management</u>

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UAS, UAV, Drone, Class, Course, Professional Development

WSDOT Diversity, Equity, & Inclusion (DEI) Plan

OVERVIEW OF INNOVATION

The Washington State Department of Transportation is deeply committed to actively combatting racism and strengthening our anti-racist, diversity, equity, and inclusion efforts to guarantee that our transportation system serves all Washingtonians, and we have a plan.

Our mission is to provide safe, reliable, and cost-effective transportation options to improve communities and economic vitality. To achieve this, diversity, equity, and inclusion must be at the center of all aspects of our work.

To create the DEI Plan, we formed an agency-wide workgroup made up of employee volunteers from all disciplines. Through their efforts, as well as extensive collaboration with both internal and external key partners, we have focused our diversity, equity and inclusion planning efforts on the following areas:

- Internal Workforce
- Learn and Grow
- Diversity Advisory Groups
- Data Informed Decisions
- Community Engagement
- Healthy Environment for All Act
- External Workforce and Contracting

WSDOT

FIND OUT MORE . . .

360-705-7095

Planning

WSDOT Office of Equity & Civil Rights
Formerly the Office of Equal Opportunity
WSDOT DEI Plan
Equity Readiness Assessment
Secretary's Executive Order
Equity Study
Earl Key
Senior Director of Transportation Equity Office of Equity & Civil Rights
KEYE@wsdot.wa.gov

Diversity, Equity, Inclusion, Civil Rights,

BENEFITS

The DEI plan is improving our decision-making practices, enhancing access and creating a culture of belonging for the community we serve and our employees.

We have made great strides and will continue working to create a more inclusive work culture, diversify our spending, create business and career opportunities for under-represented individuals and business owners, and enhance community engagement. The plan is a blueprint for the work we still have ahead of us.