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# INNOVATOR

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

*Capturing value from Boston's Copley Place development helped fund the Massachusetts Turnpike.*

*Credit: DepositPhotos.com*

# Agencies Capture Value From Transportation Improvements

When public agencies invest in transportation improvements such as a highway interchange or transit station, it creates value in adjoining and nearby property. Powerful **value capture** tools can help agencies access some of that increased value to add to the funding mix for future transportation solutions.

"Improvements that increase accessibility, enhance safety, and reduce travel time can attract new development or economic activities and increase nearby property values," said Thay Bishop, senior program advisor for the Federal Highway Administration's Center for Innovative Finance Support. "Value capture seeks to recover a portion of the value accrued to the property owners and return it to the public sector to fund additional transportation projects."

In Every Day Counts round five (EDC-5), FHWA is encouraging agencies to explore **value capture techniques** such as developer contributions, transportation utility fees, special taxes, tax increment financing, joint development, and advertising and naming rights. Five States—Missouri, Nebraska, Ohio, Texas, and Washington—have already institutionalized the use of value capture techniques to supplement transportation funding.

"We're promoting value capture mechanisms with the hope that State transportation departments, metropolitan and rural planning organizations, and local and tribal governments consider value capture when they think about how to fund highway projects," said Stefan Natzke, FHWA National Systems and Economic Development Team leader. "Depending on the technique, value capture is applicable to urban, rural, and suburban settings. It can generate new funds in a sustainable fashion. And it can be used for things like operations and maintenance."

The EDC-5 team published an **implementation manual** and conducts workshops on steps for using value capture tools to advance transportation projects. The team's **webinar series** delivers information on value capture strategies. Through **virtual peer exchanges**, the team partners with cities, counties, and States that use value capture successfully to share their experiences with agencies that need assistance. The online **value capture clearinghouse** features resources and best practices on innovative funding options. The team is planning two executive roundtables to get feedback from transportation decision makers and practitioners on what they need to implement value capture.

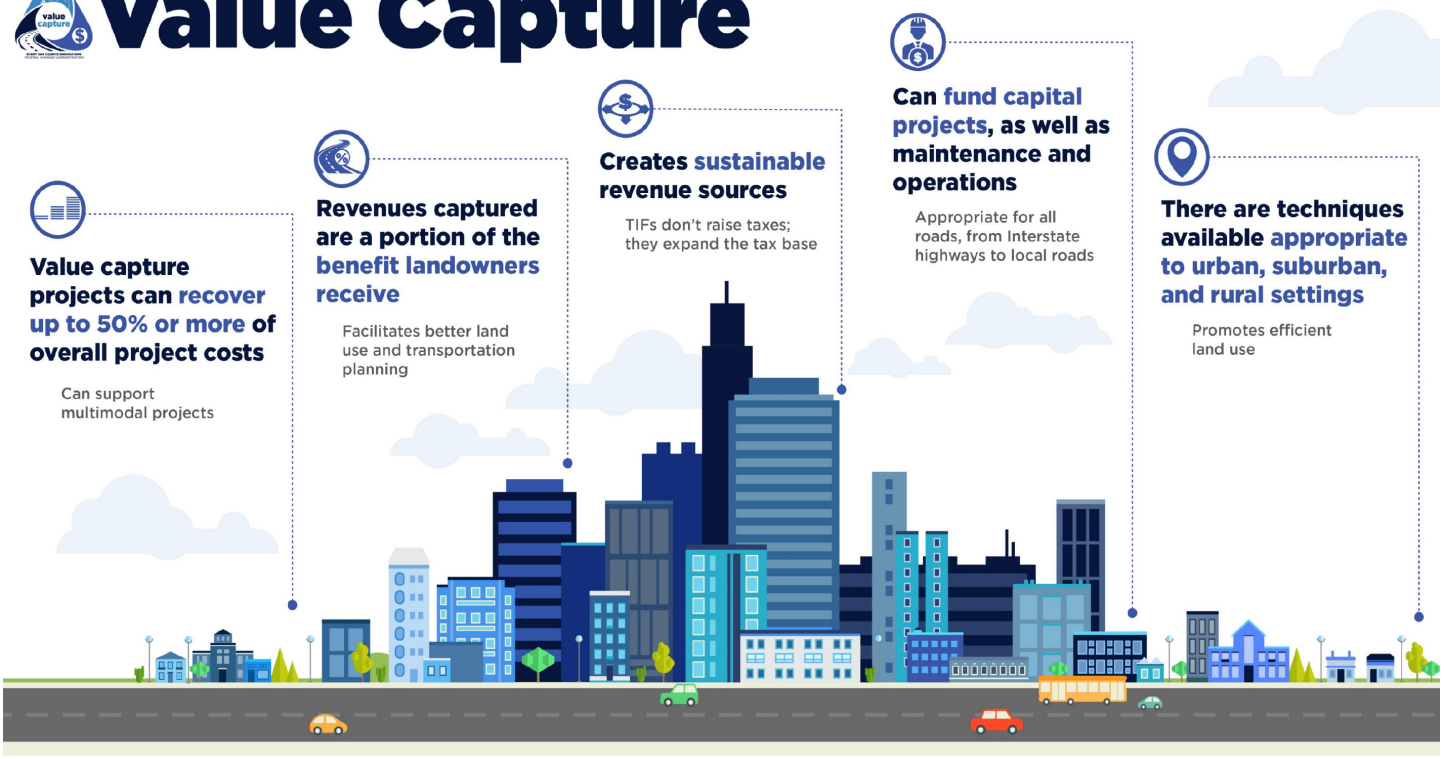
## Meeting Funding Challenges With Value Capture

**Joint development** projects are public transportation improvements that are co-located with real estate development. A private developer implements the improvements directly or gives money to a public sector sponsor to offset the costs.

An example is **Copley Place**, a $400 million mixed-use development above the Massachusetts Turnpike in Boston that includes a convention center, retail center, hotels, office buildings, housing units, and parking. The 99-year lease includes air and land rights, and the developer provided funds to cover capital, operating, and maintenance expenses for the turnpike. The development benefitted the local community by reconnecting urban neighborhoods divided by the turnpike and attracting tourists, shoppers, and new residents to the area.

Agencies use **tax increment financing** (TIF) to fund transportation projects by capturing some of the increase in property taxes resulting from infrastructure improvements. TIFs can enhance property values and encourage new development and private-sector investment.

# Value Capture




Credit: FHWA

A new mill and grain loadout facility in Lyman County, SD, necessitated road and bridge improvements to handle increased traffic and freight. The improvements will enhance the value of the business and property and contribute to a competitive farm economy. Maintaining access to the facility will help farmers ship their grain more efficiently. To supplement other funding sources, the county approved a TIF district for the area. The TIF funding is crucial to the success of the road and bridge improvement project, which started this spring.

Many States and municipalities require developer contributions, including **negotiated exactions** and impact fees, as part of the approval process for planned developments. These can include land transfers, cash payments, construction activities, or public services provided by developers.

The Pennsylvania Department of Transportation (PennDOT) and the developer of the 628-acre Chrin Commerce Centre near Easton negotiated an agreement under which PennDOT provided $27.4 million in public improvements, including building a **Route 33 interchange** to facilitate access to the development, and the developer provided 22 acres for the interchange and $13.6 million in infrastructure improvements. Using value capture to finance the private development and public improvements reduced the amount of funding needed from State and local sources.

## MORE INFORMATION

- View an **Innovation Spotlight video** on how agencies use value capture strategies to supplement transportation funding.
- Go to the **value capture clearinghouse** for resources, project profiles, reports, and factsheets.
- @ Contact **Stefan Natzke** of the FHWA Office of Planning, Environment, and Realty or **Thay Bishop** of the FHWA Center for Innovative Finance Support for information and technical assistance.

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# Taking STEPs to Boost Pedestrian Safety

Pedestrian fatalities escalated 53 percent between 2009 and 2018, according to the National Highway Traffic Safety Administration. Crashes with vehicles killed 6,283 pedestrians in 2018, the highest number since 1990.

To help address this national safety problem, the Every Day Counts (EDC) initiative on **safe transportation for every pedestrian** (STEP) is promoting proven safety countermeasures for pedestrian crossings. In EDC round five (EDC-5), 34 States set goals to advance implementation of some or all of what the STEP team calls the "spectacular seven" countermeasures. By early 2020, 12 States have advanced or met their EDC-5 goal. Seven States have institutionalized the use of STEP countermeasures.

The STEP team has helped more than 20 states develop STEP action plans. "State officials creating action plans meet to identify opportunities for strengthening policy and project-level decisions to incorporate the STEP countermeasures," said Becky Crowe, Federal Highway Administration transportation specialist and team co-leader. "The STEP team provides each State with a report summarizing the strategies discussed at the meeting for near-term implementation."

For States implementing STEP plans, the team supplies enhanced training and on-the-ground assistance. Upcoming workshops will deliver STEP training to metropolitan planning organizations, with case studies applicable to local governments. The team also helps State and local agencies conduct pedestrian safety-focused **road safety audits**, in which multidisciplinary teams identify opportunities to apply STEP countermeasures on corridors or sites.

The team will lead scan tours this year with transportation officials to see successful STEP countermeasure installations and discuss innovations to improve pedestrian safety. "Scan tour participants will consider how the STEP countermeasures can work in various contexts—including urban areas, suburban corridors, and tourist destinations," said Crowe.

## Spectacular Seven Countermeasures

STEP promotes cost-effective countermeasures to help pedestrians cross the road safely:

- **Rectangular rapid flashing beacons** are amber lights that use an irregular flash pattern at midblock or uncontrolled crossing locations.
- **Crosswalk visibility enhancements** include crosswalk lighting, enhanced signing and marking, and curb extensions.
- **Raised crosswalks** are a traffic-calming technique that can reduce vehicle speeds and encourage drivers to yield to pedestrians.
- **Pedestrian refuge islands** provide a safe place for pedestrians to stop at the midpoint of a road before crossing the remaining distance.
- **Pedestrian hybrid beacons** offer stop control for higher speed multilane roads where pedestrian volumes are not high enough to warrant traffic signals.
- **Road diets** reconfigure a road cross-section to safely accommodate all users, reducing the number of lanes pedestrians must cross and creating space for new pedestrian facilities.
- **Leading pedestrian intervals** at signalized intersections allow pedestrians to walk several seconds before vehicles get a green signal to turn.

## STEP Integration

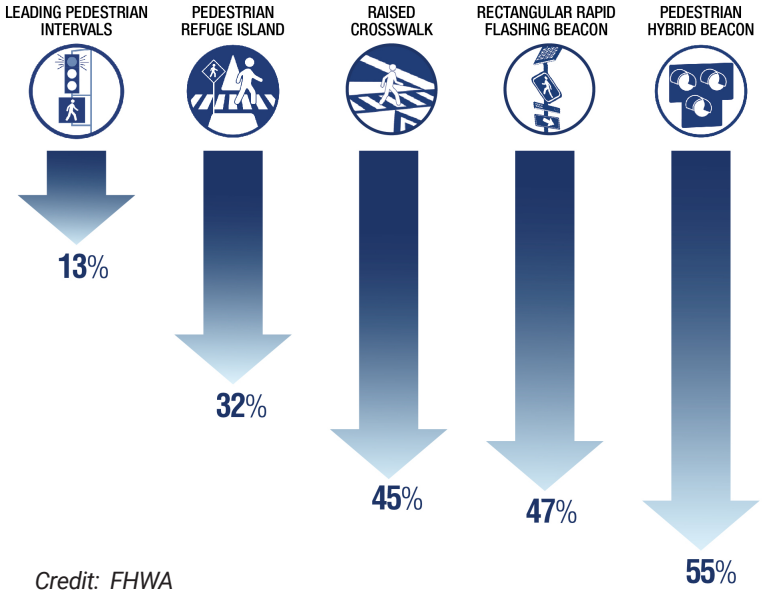
Transportation departments that integrate STEP into plans, policies, and programs provide models other agencies can adapt to their own needs. An example is the Washington State Department of Transportation **Design Manual**, which provides guidance on designing a highway

system that meets multimodal needs and provides engineers with tools to design safer pedestrian crossings. The manual includes guidance on safety strategies such as target speeds for vehicles and the installation of marked crosswalks at uncontrolled intersections and midblock locations.

The Connecticut Department of Transportation (CTDOT) adopted a programmatic approach to address pedestrian safety, including policy, planning, and engineering and design. Pedestrian safety is embedded in Connecticut's **Complete Streets** policy, **Active Transportation Plan**, and **Highway Safety Plan**. CTDOT developed **countermeasure guidance** based on FHWA's **Guide for Improving Pedestrian Safety at Uncontrolled Crossing Locations**.

The New Jersey Department of Transportation's **Complete Streets Design Guide** includes a toolbox of pedestrian safety improvements tailored to meet multimodal needs. The guide draws on best practices from national design guides, emphasizes context and flexibility in the design process, and describes the benefits and applications of design options. It provides recommendations on STEP countermeasures, including visibility enhancements, refuge islands, and raised crosswalks.

## Potential Reduction in Pedestrian Crashes




*Credit: FHWA*

The Georgia Department of Transportation updated its **Pedestrian and Streetscape Guide** to better integrate pedestrian safety into street design, specifically highlighting the STEP countermeasures. The guide's midblock pedestrian crossing evaluation process helps engineers and planners consider crosswalk placement and additional safety countermeasures. The crossing evaluation provides screening questions to help decision makers collect relevant data.

## MORE INFORMATION

- View an **Innovation Spotlight video** on pedestrian countermeasures that focus on crossing locations.
- See the **STEP playlist** for videos that explain the benefits of **road diets**, **pedestrian hybrid beacons**, **raised crosswalks**, **pedestrian refuge islands**, and **crosswalk visibility enhancements**.
- Visit the **STEP web page** for resources, webinars, and videos to aid STEP deployment.
- Contact **Becky Crowe** of the FHWA Office of Safety or **Peter Eun** of the FHWA Resource Center for information and technical assistance.

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# Innovation Synergy

*Combining Every Day Counts innovations on local projects yields success*

## Value Capture Funds Pedestrian Safety Improvements in Atlanta

Pairing the Every Day Counts (EDC) strategies of **value capture** and **safe transportation for every pedestrian** (STEP) is enhancing quality of life in the Midtown area of Atlanta, GA.

The value capture part of the equation comes from the **Midtown Improvement District** (MID), a self-taxing district created by commercial property owners to augment public resources and catalyze economic growth in the area. Through a special assessment on property owners, the MID generates funds for projects and programs aimed at improving Midtown, a high-density commercial and residential neighborhood.

MID-funded efforts include safety and mobility measures for pedestrians, such as crosswalk enhancements and pedestrian lighting promoted in STEP, and a sidewalk improvement program that has completed more than $1 million in upgrades and repairs at 275 locations since 2014.

A project that wrapped up this spring improved five Peachtree Street intersections. Funding for the $1.6 million in pedestrian and vehicular enhancements included $1.13 million from the MID. At Deering Road and Peachtree Street, the final intersection completed, the work included new sidewalks and Americans With Disabilities Act-compliant ramps, fencing, lighting, gateway landscaping, and crosswalk visibility enhancements.

## Florida County Captures Value, Bundles Projects to Accelerate Construction

Osceola County, FL, used three EDC innovations—value capture, **project bundling**, and **construction manager/general contractor** (CM/GC) project delivery—to advance a **roadway and bridge construction program**. The county generated funding for the program with a value capture technique known as **impact fees**, which assessed fees on new property development to pay for related road construction.

# Maryland Develops Multimodal Guide

The Maryland Department of Transportation State Highway Administration released its new "**Context Driven Access & Mobility for All Users**" to provide guidelines on establishing safe and effective multimodal transportation systems. The guide outlines the growth of pedestrian fatalities in Maryland—up 46 percent between 2009 and 2018—and the relationship between roadway speed and severity of pedestrian crashes.

The guide describes six new context zones and how each relates to multimodal travel, such as pedestrian activity. The six contexts were based in part on national guidance, such as the latest edition of the American Association of State Highway and Transportation Officials **Policy on Geometric Design of Highways and Streets** (Green Book), including zone categories such as Urban Core, Suburban Activity Center, and Rural.

The guide shows how the Every Day Counts **safe transportation for every pedestrian** (STEP) countermeasures can be integrated into each design context. For example, the Suburban Activity Center zone shows how the **pedestrian hybrid beacon** can improve midblock crossings along busy arterials. The guide also references the **STEP countermeasure tech sheets** and other FHWA resources for designing multimodal transportation systems.

"Addressing pedestrian safety through the lens of context provides a means to proactively implement treatments in areas that have traditionally shown a higher propensity for pedestrian crashes," said Jeff Davis, design engineer–cost estimator for the Maryland agency. "This allows us to get out ahead of the problems, rather than solely react to issues as they arise."

The roadway and bridge program was behind schedule and over budget largely because of the cumbersome pace of traditional design-bid-build project delivery. Osceola County devised a plan to bundle projects and accelerate their completion using CM/GC contracting, in which project sponsors hire a contractor to provide feedback on design and constructability during the design phase.

The bundled projects included 11 roadway segments with 13 bridges. The county engaged six construction managers for the projects, matching the type of work to the expertise of each firm. The construction managers worked with the designers to produce construction drawings, and teams met regularly to review plans and discuss costs. The construction managers also provided input on project phasing and maintenance-of-traffic plans.

As a result of bundling and CM/GC, the 11 roadway projects were all ready to begin construction within a year. About $350 million was spent in the first year of construction. Using the CM/GC process saved about $105 million, a 23 percent reduction. Nine out of every 10 construction dollars went to local contractors, boosting the local economy.

The county has since changed its value capture approach to **mobility fees** that may be used for a wider range of transportation system improvements in the future, including roads, transit systems, bikeways, and sidewalks. The fee structure was designed to encourage denser land development.

## MORE INFORMATION

@ Contact **Stefan Natzke** of the Federal Highway Administration Office of Planning, Environment, and Realty or **Thay Bishop** of the FHWA Center for Innovative Finance Support for information on value capture.

@ Contact **Becky Crowe** of the FHWA Office of Safety or **Peter Eun** of the FHWA Resource Center for information on STEP.

@ Contact **Romeo Garcia** of the FHWA Office of Infrastructure or **David Unkefer** of the FHWA Resource Center for information on project bundling and Unkefer for information on CM/GC.

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# EDC Outtakes

### Safe Transportation for Every Pedestrian

In EDC Outtakes—a series of short interview videos—State and local practitioners and Federal Highway Administration staff offer insights on Every Day Counts innovations. **In this edition**, Carl Langford, Safety and Neighborhood Traffic Engineer for the City of Phoenix, Arizona, explains what drivers can expect when a pedestrian actuates a pedestrian hybrid beacon. PHBs are one of 7 **STEP** countermeasures.

# FHWA Incentives Support Innovative Highway Projects

Transportation departments and local governments in 10 States will use more than $8 million in **Accelerated Innovation Deployment (AID) Demonstration** program grants as an incentive to accelerate the use of innovation in highway transportation projects.

"These funds will help support our State and local partners across the country in their efforts to deliver more resilient roads, bridges, and highways for the traveling public," said Federal Highway Administrator Nicole R. Nason. "The grants will help advance innovative transportation solutions to improve safety and mobility on America's roadways."

Since the 2014 launch of the AID Demonstration program, the Federal Highway Administration has awarded more than $74 million for 102 grants to help Federal, State, local, and tribal government agencies accelerate the use of innovative practices and improve safety. The program provides grants of up to $1 million to support the cost of deploying an innovation on any phase of a highway project between project planning and delivery.

The **Alabama Department of Transportation and Baldwin County Highway Department** will use AID Demonstration funds to deploy accelerated bridge construction (ABC) and Northeast Extreme Tee beams with **ultra-high performance concrete connections** on bridge retrofit projects. Combining the innovations will shorten construction time from 14 to 6 weeks.

The **Arkansas Department of Transportation** (ArDOT) will increase the number of continuously operating reference stations on its global navigation satellite system (GNSS) network to support **three-dimensional engineered modeling** and **e-Construction** goals. This will enable ArDOT to expand the use of real-time GNSS information in the survey, environmental, and construction phases of projects to locate topographic features and perform construction staking, verification, and inspection.

The **Colorado Department of Transportation** will implement snowplow signal priority technology to improve traffic flow during and after snow removal operations. The snowplow signal priority system enables plows to request extended green or early green phases at traffic signals along snowplow routes via dedicated short-range communications.

The **Florida Department of Transportation and city of Orlando** will use AID Demonstration funds for a pilot project that is part of a larger project to intelligently manage transportation flows around the city's downtown. The pilot will advance the design and implementation of real-time performance measures and connected vehicle technologies.

The **Illinois Department of Transportation and city of Jerseyville** will use compacted concrete to improve road surface conditions on Hollow Avenue, a major route for school buses and business traffic. Using compacted concrete—which allows pavements to be reopened to traffic faster than traditional concrete—will enable Jerseyville to limit the road closure to the summer months while producing a paved surface that is durable under heavy loads.

The **Iowa Department of Transportation and city of Dubuque** are collaborating on the Smart Traffic Routing With Efficient and Effective Traffic Signals (STREETS) project to develop a next-generation traffic management and control system. The agencies will use AID Demonstration funds on a project to link operations components on 11 corridors, allowing them to act as one integrated system.

# AID Demo
Accelerated Innovation Deployment

The **Michigan Department of Transportation** (MDOT) will use ABC and **prefabricated bridge elements and systems** to accelerate construction and reduce traffic delays during the Second Avenue Network Arch Superstructure project, part of the Interstate 94 modernization project in Detroit. MDOT estimates that erecting a network arch instead of a conventional structure will save $2 million in user delays.

The **Minnesota Department of Transportation and city of Winona** will construct a **road diet** to improve safety, mobility, and access for drivers and bicyclists along Broadway Avenue. The road diet will reconfigure the four-lane road to three lanes with a two-way center turn lane and bike lanes on both sides.

The **New York State Department of Transportation** (NYSDOT) will advance implementation of its Integrated Incident Management System (IIMS), an application that enables real-time, geotagged incident data collection and distribution. NYSDOT will deploy and evaluate IIMS in Broome and Tioga counties to support multiagency **traffic incident management** operations and develop a blueprint for statewide IIMS deployment.

The **North Dakota Department of Transportation** will install autonomous technology on an attenuator truck to increase safety for workers performing maintenance activities. The technology eliminates the need for a driver on the truck outfitted with an impact attenuator—or crash cushion—that travels behind mobile work crews to deflect vehicles that could hit people or equipment.

## MORE INFORMATION

- View the **AID Demonstration map** for details on projects awarded incentives to deploy innovations.
- Go to **Grants.gov** to apply for AID Demonstration funding (search for Opportunity Number FHWA-2016-21063). Refer to the **revised AID Demonstration Notice of Funding Opportunity** for selection criteria and application requirements.
- @ Contact **Fawn Thompson** of the FHWA Center for Accelerating Innovation for information on the AID Demonstration program.

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# Making Innovations Everyday Practice

**State Transportation Innovation Council (STIC) Incentive** funds are helping STICs mainstream new technologies and practices that enhance transportation programs, including innovations such as **unmanned aerial systems** (UAS), **crowdsourcing**, and **safe transportation for every pedestrian** (STEP).

## Unmanned Aerial Systems Enhance Arizona Communication Efforts

The Arizona Department of Transportation (ADOT) used STIC Incentive funds to advance UAS technology to showcase projects and **communicate virtually** about the agency's innovation use. ADOT's video crew flies the drones to capture aerial footage and photographs to use in agency videos and social media outreach and supply to news media. For the Loop 202 South Mountain Freeway project in Phoenix, the video crew used UAS to shoot footage for an **aerial tour video** and **media B-roll** and snap **photos** to share with news media. A **social media post** featuring the aerial tour garnered 79 comments and 140 likes.

ADOT's communication team has two certified drone pilots. The use of UAS is now part of the team's everyday workflow, keeping the video crew out of harm's way on construction sites and providing a more cost-effective way to capture aerial footage than by helicopter or airplane. For information, contact **John Dougherty** of ADOT.

## New Jersey Service Patrols Use Crowdsourcing to Alert Motorists

As part of its safety focus, the New Jersey Department of Transportation (NJDOT) deployed technology to alert motorists to the presence of Safety Service Patrol vehicles and boost awareness of the State's "Move Over" law. In a field test, NJDOT installed devices on 32 road service trucks. The devices use Global Positioning System location and wireless communication technology to relay vehicle locations to Waze, a crowdsourcing application. The devices triggered transmission of a standard message to Waze: "NJDOT Responder Ahead. Slow Down. Move Over."

NJDOT determined that the devices successfully communicated with Waze an average of 76 percent of the time and that the average time lapse from when a device was activated to when the message appeared on Waze was 2 minutes and 41 seconds. Twelve devices experienced technical problems attributed to harsh weather conditions, so the supplier designed an improved enclosure for the device that NJDOT is testing this year. For information, contact **Salvatore Cowan** of NJDOT.

*The Arizona Department of Transportation's communication team used UAS to obtain aerial photos of the South Mountain Freeway project safely and cost-effectively.*

*Credit: Arizona Department of Transportation*

## North Carolina Collaborates on Pedestrian Safety

The North Carolina Department of Transportation (NCDOT) is helping communities put the STEP initiative into action with a STIC Incentive project to create a tactical materials library and deployment selection tool for pedestrian and bicycle safety countermeasures. The tool will help communities identify STEP countermeasures for specific locations and safety concerns.

NCDOT also used STIC Incentive funds to develop training on collaborative approaches to advance complete streets as part of its effort to implement its updated **Complete Streets Policy** and **Complete Streets Implementation Guide**. NCDOT delivered six workshops that brought together participants from municipalities, regional agencies, advocacy groups, health departments, and private industry to discuss complete streets strategies and opportunities for coordinating on project development.

In their workshop feedback, participants requested resources on topics such as methods to quantify the economic and health effects of complete streets projects and more training on how to accomplish complete streets goals through roadway design. NCDOT plans to use the input to revise policies and design criteria and develop future training. For information, contact **Ed Johnson** of NCDOT.

## MORE INFORMATION

- ▶ See more projects on the **STIC Incentive projects** web page.
- @ Contact your **State EDC coordinator** for assistance on STIC Incentive funding applications.
- @ Contact **Sara Lowry** of the Federal Highway Administration Center for Accelerating Innovation for information on the STIC Incentive program.

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# States innovate!

## Florida Accelerates Safety Projects

The Florida Department of Transportation (FDOT) developed a **design-build push-button (DBPB) contract** to accelerate the construction of traffic safety improvements. The DBPB approach combines **design-build** contracting (in which design and construction teams collaborate and construction activities can start before design is final) with push-button contracting (in which preapproved contractors can start work quickly because contractual paperwork is in place). FDOT designed the DBPB contract, for which it received a **National Roadway Safety Award**, for safety improvements that are too large for in-house maintenance teams but not appropriate for major 5-year work plans, such as installation of pavement markings, turn lanes, and traffic signals. In the first year of the program, FDOT estimated that about 55 crashes were avoided by reducing safety improvement implementation time from 3 years to 310 days.

## Utah Report Highlights Innovation Deployment

The Utah Department of Transportation (UDOT) **Innovation & Efficiencies Report** provides a snapshot of activities that align with its mission: "Innovating transportation solutions that strengthen Utah's economy and enhance quality of life." The report highlights UDOT's use of **State Transportation Innovation Council (STIC) Incentive** and **Accelerated Innovation Deployment (AID) Demonstration** funding as a catalyst for innovation. Utah is using STIC Incentive funds to deploy e-ticketing for asphalt delivery ticket collection and quantity calculation, piloting seven projects with more projects planned for this year. UDOT used AID Demonstration funds to advance digital delivery of model-based design and construction. The agency created a repeatable process to use the same model from design to construction and has delivered 11 projects so far with the model as the legal document.

# INNOVATOR

INNOVATOR, published by the FHWA Center for Accelerating Innovation, advances the implementation of innovative technologies and accelerated project delivery methods in highway transportation.

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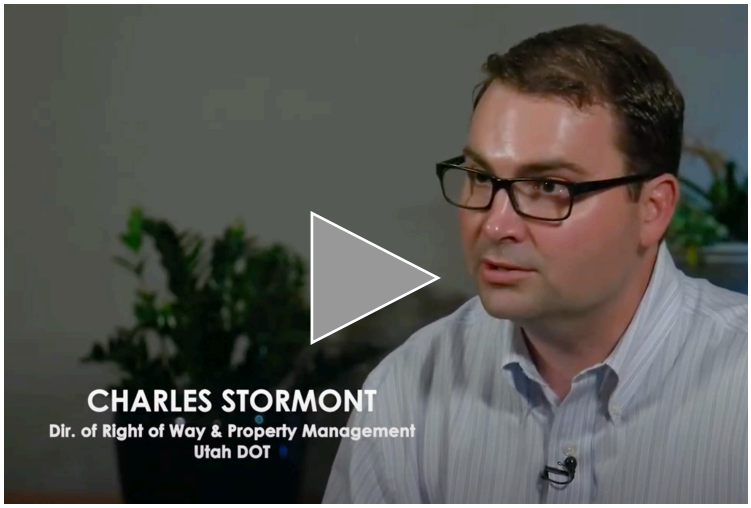
# EDC Outtakes

## Value Capture

In EDC Outtakes—a series of short interview videos—State practitioners and Federal Highway Administration staff provide insights on Every Day Counts innovations. In **this edition**, Charles Stormont, Director of Right of Way and Property Management for the Utah Department of Transportation, discusses a successful project involving **value capture**. This EDC innovation promotes a variety of mechanisms to derive monetary value from transportation improvements to help defray the cost of their implementation.

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