

# DamageWise Program Implementation Pays Off for Indiana



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**R**oadway infrastructure elements, such as guardrails, signs, and bridges, routinely sustain damage from motor vehicle crashes. Recovering the costs of repairing damage to state property from the parties responsible requires efficient business processes and public agency collaboration. Indiana Department of Transportation's (DOT's) implementation of the DamageWise program increased collections for repairs to damaged state property from \$1.6 million in Fiscal Year (FY) 2010 to \$7.3 million in FY 2018. The amount invoiced in FY 2018 was \$9.0 million—an 81% collection rate.

## Problem

Indiana DOT maintains approximately 11,000 miles of state roads. About 60,000 motor vehicle crashes per year occur on state-maintained roads; in approximately 4,000 instances, these crashes cause damage to state property. Indiana DOT incurs significant financial losses to repair the damage if the responsible parties cannot

be identified, if invoices do not reflect the fully loaded cost of the repair, or if collection processes are not timely and efficient.

## Solution

In 2009, Indiana DOT initiated a research project through Purdue University to examine business processes related to the repair of state property damaged by motor vehicle crashes. The research was conducted between October 1, 2009, and July 31, 2011, and cost \$120,000. A review of the business processes of relevant parties—including law enforcement agencies, district maintenance departments, and collection departments—found several manual processes and often ambiguous linkages between crash reports, work orders, and damage invoices. Also conducted was a survey of other states to identify performance metrics and best practices. The Purdue–Indiana DOT research team recommendations focused on improving the efficiency and collaboration between public safety agencies and Indiana DOT when vehicle crashes damage state

Above: Fort Wayne, Indiana.

property and are summarized in the final technical report (1).

## Concurrent Research Implementation

Based on early research recommendations from the research team, in FY 2011 Indiana DOT initiated a statewide system called DamageWise. Deployment and implementation of DamageWise required cross-cutting team participation from district maintenance crews and supervisors, central office finance personnel, and information technology departments, as well as interagency partnerships with public safety and law enforcement colleagues. The DamageWise team was led by the DOT's deputy commissioner of finance and included district traffic engineers, district maintenance service directors, central office accounting staff, and unit foremen. A summary of the implementation activities is listed below.

### LAW ENFORCEMENT PARTNERSHIP

The research team recommended that Indiana DOT implement a damage-tagging procedure that documents the investigating law enforcement agency, the crash date and time, and the crash report identification number. A highly visible, weather-resistant tag is attached to the damaged infrastructure at the time of the crash by the investigating officer and provides documentation to match the responsible party with the damage (see photo above).

A training and outreach program was developed to introduce this process to Indiana's law enforcement agencies. The Roadway Damage Tag kits provided to law enforcement agencies include all the materials needed to tag damaged property efficiently at the time of the crash (see photo at right).

### DISTRICT MAINTENANCE ACTIVITIES

When maintenance crews identify damaged infrastructure and initiate a work order to repair damage, the identifying information from the damage tag is included, allowing the repair cost to be matched efficiently with the responsible party identified in the crash report.



Photo courtesy Indiana DOT

Law enforcement official applying damage tag to infrastructure damaged by motor vehicle crash.

### FINANCIAL CLAIM TRACKING

The study also recommended that the damage collection process be more timely and include the fully loaded cost of the repairs. As a result, Indiana DOT implemented business processes that track damaged assets from field investigation through collection of repair costs from responsible parties.

### Application

The DamageWise team integrated cost recovery activities into field employees' regular duties through a software program that is convenient, intuitive, and available for field use on portable wireless devices. DamageWise includes a range of policy and procedure changes designed to more effectively associate vehicle crash reports with crash-damaged infrastructure, ensure that invoices reflect the fully loaded repair

cost, reduce the time it takes to produce invoices, and improve the documentation sent to responsible parties.

The DamageWise team coordinated with Indiana DOT information technology staff, Indiana State Police (ISP), and vendors to ensure that the ISP State Crash Report System interfaced with DamageWise. Indiana DOT Traffic Management Center personnel coordinated with ISP and local law enforcement agencies to conduct training and to solicit participation in the overall program. Indiana DOT district employees were assigned to oversee program activities, including identification, assessment, and submission of repair estimates to the accounting department.

A statewide DamageWise program coordinator assists with coordination, training, identification, and management

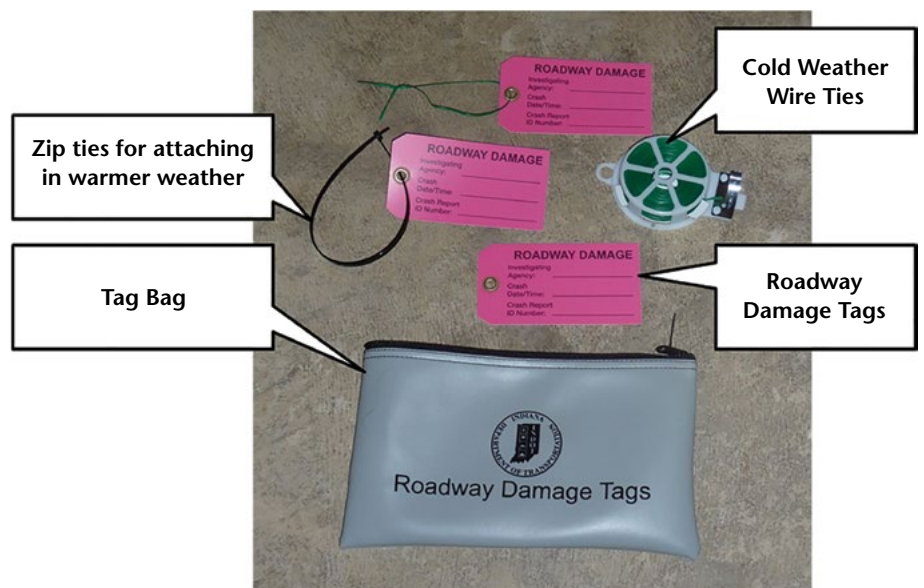


Photo courtesy Indiana DOT

Public safety tagging package, which costs \$10.31 per bag.

of the process across the inter- and intra-agency partnerships that are critical to the success of DamageWise. In recognition of the collaborative effort required by DamageWise, in 2015 the program began distributing 75% of its roadway asset collections for claims less than \$50,000 and 100% of collections for damage to mobile assets (e.g., trucks and attenuators) to the respective Indiana DOT districts who completed the repairs to the damaged property. This return rate was later increased; in 2018, 90% of the collections were distributed back out to the districts. Additional information about deployment and performance metrics of the DamageWise program can be found in a 2017 TRB paper by the authors of this article (2).

### IMPLEMENTATION COSTS

The implementation costs of DamageWise totaled \$826,000 over the first 3 years. This included the following: the implementation of software in 2011 (\$140,000), a software enhancement in 2013 (\$211,000), iPads (\$42,000), and training and testing costs from FY 2011 through FY 2013 (\$433,000).

### ONGOING COSTS AND BENEFIT-COST RATIO

The ongoing costs for the DamageWise program are estimated to be \$889,300 in FY 2018. These costs include approximately \$858,300 in salaries for the central office and district personnel who administer the program and maintain the systems. Equipment replacement costs are estimated at \$21,800 per year. Additional annual expenses include \$5,100 for procurement costs and \$4,100 for DamageWise kits. Adjusting the FY 2018 collections by the FY 2010 pre-DamageWise collections (\$7.3 million versus \$1.6 million) and applying the overhead costs (\$889,300) resulted in a benefit-cost ratio of 6.4 for the DamageWise program in FY 2018.

### Agency Benefits

Continuing success is documented by key performance measures and is dependent on partnerships that were established during the development and implementation of the DamageWise program. The col-

laboration with law enforcement agencies to tag damage when it occurs is critical to linking the damage to the responsible parties. Indiana DOT district personnel are essential partners in identifying the damage and initiating work orders for the repairs. Central processes to link the crash reports to the work orders, submit invoices, and follow up on the claims process involve coordinated efforts of Indiana DOT information technology and accounting personnel, as well as collaboration with Indiana's Attorney General Office.

Annual summaries of key performance indicators document the successful deployment and implementation of DamageWise throughout Indiana DOT. One measure is the number of days from the crash incident until an invoice is submitted to the responsible party. In 2010, the average crash-to-billing time was 227 days, which often led to challenges from the responsible parties and resulted in disputed claims. Following the implementation of DamageWise, the average crash-to-billing time dropped by 83% in FY 2015 to 38 days. In FY 2018, the elapsed time from crash to billing was less than one month.

Indiana DOT collected \$1.6 million to cover repair costs in FY 2010 and collections have steadily increased to \$7.3 million in FY 2018 (Figure 3). Indiana DOT has worked closely with the Indiana Attorney General

Office to ensure that those invoices are collected. The amount invoiced in FY 2018 was \$9.0 million—an 81% collection rate.

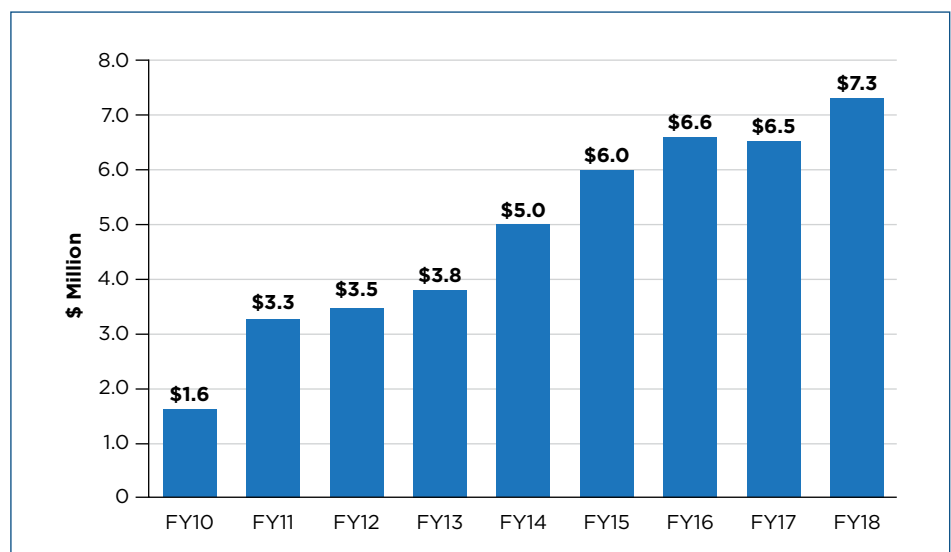
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### REFERENCES

1. Farnsworth, G. D., T. M. Brennan, and D. M. Bullock. Recovering Full Repair Costs of Indiana DOT Infrastructure Damaged by Motor Vehicle Crashes. Publication FHWA/IN/JTRP-2011/11. Joint Transportation Research Program, Indiana Department of Transportation and Purdue University, West Lafayette, Indiana, 2011. <https://doi.org/10.5703/1288284314624>.
2. Brassard, D. L., D. K. Horton, and D. M. Bullock. Applying Lean-Engineering Principles to Agency Business Processes to Improve Collections Associated with Infrastructure Damaged by Motor Vehicle Crashes. *Transportation Research Record: Journal of Transportation Research Board*, No. 2670, Transportation Research Board, Washington, D.C., 2017, pp 42-49. <https://doi.org/10.3141/2670-06>.

Suggestions for Research Pays Off topics are welcome. Contact Stephen Maher, Transportation Research Board, Keck 486, 500 Fifth Street NW, Washington, D.C., 20001; 202-334-2955; smaher@nas.edu.



**FIGURE 3** Annual collections before DamageWise (FY 10) and after DamageWise was fully implemented (FY 11–FY 18). (FY = Fiscal Year.)