

Improving Safety through Pennsylvania's Intersection Safety Implementation Plan (ISIP)

Introduction

According to the 2012 Pennsylvania Strategic Highway Safety Plan (SHSP), nearly 40 percent of all traffic crashes in the State occur at intersections. These crashes account for approximately one-quarter of the total fatalities and major injuries¹. In Pennsylvania, intersection safety has been a safety priority since 2006 and has been included in previous iterations of the SHSP. One of the top strategies identified in the SHSP for improving intersection safety is the Intersection Safety Implementation Plan (ISIP).

The development of the ISIP began in 2009 when the Federal Highway Administration held a workshop assembling safety personnel from the Pennsylvania Department of Transportation (PennDOT) and Local Technical Assistance Program to identify safety initiatives in the intersection emphasis area of the SHSP. The results of the workshop led to a consensus on a set of countermeasures, deployment levels, and costs. PennDOT released the ISIP in February 2010. The plan included expanding the traditional approach of implementing moderate-cost improvements at the highest crash locations to include the addition of a systemic approach of deploying a large number of low-cost countermeasures at intersections with crashes above a defined threshold.

Process and Results

Although PennDOT developed and released the ISIP in 2010, the plan was not implemented until 2014, when one-third of the Highway Safety Improvement Program (HSIP) funding was set aside for intersection and roadway departure improvements. PennDOT was successful in developing and implementing the ISIP because the plan was ingrained in the HSIP policies and procedures for funding. The central office reviewed HSIP applications. Then, it was the responsibility of the districts to deliver the projects. Because PennDOT is a decentralized agency, it provided the districts with guidance on implementing the countermeasures outlined in the ISIP. Using the systemic approach allowed PennDOT to complete projects that were low-cost, improved safety quickly, and had limited right-of-way impacts.



Signage and pavement marking upgrades.
Source: PennDOT.

¹ PennDOT. 2012. *Strategic Highway Safety Plan*. Pennsylvania Department of Transportation, Harrisburg, Pennsylvania.

Countermeasures

Below are some examples of systemic countermeasures implemented for signalized and stop-controlled intersections identified in the ISIP that had the highest deployment levels, along with the associated construction costs:

- Basic Set of Sign and Pavement Marking Improvements:
 - State intersections: 1,072 intersections for \$8.58 million.
 - Local intersections: 114 intersections for \$910,000.
- Basic Set of Sign and Signal Improvements:
 - State intersections: 353 intersections for \$10.59 million.
- Change of Permitted and Protected Left-Turn Phasing to Protected-Only:
 - State intersections: 276 intersections for \$1.38 million.
- Pedestrian Enhancements:
 - State intersections: 477 intersections for \$14.2 million.
- Speed Reduction Enhancements:
 - State intersections: 535 intersections for \$8.02 million.

The current ISIP has identified improvements for over 3,000 intersections representing an investment of \$56 million—or approximately \$11 million annually over five years—to fully implement the plan. These figures will change when the State officially updates its ISIP. PennDOT recently awarded more HSIP funds for future ISIP projects.

Expected Outcome

Because of the successful countermeasure implementation at the intersections identified by the ISIP, the project lists for the district offices are becoming short. The local agencies and districts are currently looking to identify new priority locations and best practices for updating the project list. PennDOT will begin evaluations of the ISIP improvements once three years of after data are available. Since Pennsylvania has its own regional safety performance functions for segments and intersections, the State is also exploring the methodologies in the Highway Safety Manual for prioritizing sites for implementation.



Signage upgrades include doubling up the intersection warning signs, adding cross street names, and yellow flags above the signs. Source: PennDOT.

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