

# ITS and Extreme Weather Events *Low Visibility*

Fog, heavy precipitation, wind-blown snow, dust, smoke, and other conditions can reduce visibility on the road. Low visibility conditions can lead to increased speed variance, and in turn, increased crash risk. Over 38,700 vehicle crashes occur in low visibility conditions each year, with over 600 people killed and 16,300 injured.<sup>1</sup> Intelligent Transportation Systems (ITS) can enhance safety during low visibility conditions by supporting real-time situational awareness, alerts, and safer speeds.

The featured benefits, costs, and lessons learned are based on ITS project evaluations contained in the ITS Databases at: [www.itskrs.its.dot.gov](http://www.itskrs.its.dot.gov). **Click on each example to learn more.**

## BENEFITS



### **Fog Detection and Warning System in West Virginia**

Based on a reduction in annual fog-related crashes and related cost savings, modeling estimated \$2.85 million in benefits over a 10-year service life with a benefit-cost ratio of 1.57.



### **Connected Vehicle (CV) Control and Variable Speed Limit (VSL) in Florida**

Simulation of a head-up display (HUD) and audio warning system in a high-risk area reduced rear-end crash risk under fog conditions by 48.7% and 6.6% in low and high traffic volume conditions, respectively.



### **CV Pilot with Human Machine Interface (HMI) in Wyoming**

HMI technology in vehicles transmitted weather data, recommended speeds, and other information from WYDOT, resulting in a 9.2% reduction in vehicles speeding (traveling 5 MPH or more above the speed limit) in low visibility conditions.

## COSTS



### **Fog Detection System in West Virginia: \$1.03 million**

This system featured roadway weather information systems (RWIS), variable message signs (VMS), fiber optic cables, closed-circuit televisions (CCTV), inductive loop surveillance, environmental sensor stations (ESS), and Highway Advisory Radios (HAR).



### **Dust Detection System in Arizona: \$6.5 million**

This system spanned 10 miles and included overhead message boards, variable speed limit signs, closed-circuit cameras, in-pavement sensors, speed feedback signs, and weather radar.



### **Connected Vehicle Pilot in Wyoming: \$5.76 million**

This pilot instrumented approximately 400 vehicles with onboard units (OBUs), 75 roadside units, and 50 mobile weather sensors.