

STATE OF GOOD REPAIR

CDOT O&M Cost Savings. Routine road maintenance on US 6, US 40 and SH 119 is the responsibility of three local CDOT maintenance patrols. These crews will experience reduced costs for patching, rockfall cleanup and guardrail repairs if the TEAMS Project is constructed. The CDOT estimates annual maintenance cost savings of about \$89,000 per year based on current maintenance expenditures.

Historical Crash Costs. CDOT maintains a crash database which identifies the number and types of crashes (property damage only, injury or fatality) that occur each year on each road segment they are responsible for. In addition to the number of vehicles involved in crashes, the database also indicates the number of people injured or fatally killed in crashes and the number crashes which involved two or more vehicles. Data for US 6 and SH 119 were used for the historical cost analysis as these roads will experience future crash reductions from TEAMS Project improvements. The US DOT provides guidance on the value of a statistical life (VSL) and on its application in analyzing both fatal and non-fatal injuries in the document *Treatment of the Value of a Statistical Life in Department Analyses-2009 Annual Revision*. That document provides a 2009 VSL number of \$6 million and indicates what portion of the VSL should be applied to injury crashes of increasing severity. The CDOT crash data does not note the level of severity for each crash; therefore national rates for the breakdown of injury crashes by severity level were applied to the CDOT data. National rates were obtained from the US DOT document *The Economic Impact of Motor Vehicle Crashes 2000*. This document also provided year 2000 data on the costs of property damage only crashes. Property damage only costs were inflated by 2.88 percent per year to account for inflation based on historical CPI data obtained from the Bureau of Labor Statistics. The inflated costs were applied to the total number of vehicles involved in property damage only crashes. The costs of injury crashes at each level of severity, including fatal, were applied to the number of people injured or killed in crashes.

Current Congestion Costs and Future Reduction Savings. Congestion and the resulting traffic delays on US 6 and SH 119 are due to road closures, crashes and heavy traffic during peak periods. CDOT data on the average daily traffic on these roads, number of closures, average closure time, number of crashes, average delay times and periods of peak traffic activity were used as inputs into a CDOT congestion model. The outputs of that model included the number of vehicles affected by each type of delay (closures, crashes and heavy traffic) and the total annual hours of delays. The US DOT provided guidance on the value of travel time in the document *Corporate Average Fuel Economy for MY 2011 Passenger Cars and Light Trucks*, March 2009. As stated in that document, the 2007 value of travel time per vehicle was \$24.64 per hour. This dollar amount was inflated at an annual rate of 2.88 percent based on historical (1990 - 2009) CPI data obtained from the Bureau of Labor Statistics in order to estimate the value of travel time in 2008 and in future years. The current cost of congestion was estimated by applying the 2008 value of travel to the outputs of the congestion model.

CDOT made assumptions as to how much of the current congestion would be alleviated by TEAMS Project improvements. Due to the ITS system, all delays related to road closures

would be eliminated. The widening of a portion of SHW 119 would eliminate crash related delays on that portion of the road and the ITS system would reduce crash related delays by 10 minutes on the remaining portions of SH 119 and on US 6. TEAMS Project improvements would eliminate congestion due to heavy traffic. The savings of future congestion reduction due to the TEAMS Project was estimated by applying the inflated value of travel time amounts to congestion model outputs of number of vehicles that will avoid delays and the number of hours of delays that will be eliminated.