

Progress Made - Q2 2016 (April - June 2016)

SAFETY

Crash Frequencies - Colorado-specific Safety Performance Function crash predictive models have been updated for all Colorado highway segments. A statewide level of service of safety (LOSS) network screening for state highway locations and intersections was also conducted along with this update. The LOSS screening identifies segments across the state where crash frequency is higher than expected using the most recent available crash data. The highway segments and intersections where crash frequency is higher than expected are anticipated to be less than in the past due to CDOT's continuing safety improvement efforts. The LOSS network screening information is shared with the CDOT Regions, which use the information to design and construct projects intended to address the identified problems. CDOT has been using LOSS methodologies for more than 10 years. Previously, CDOT used accident rate and weighted hazard index calculations to evaluate highway safety.



The frequency of crashes such as this one is incorporated in a statewide level of safety service network screening for locations on the state highway system. (CDOT photo, July 2015)

Evaluating for Safety - Beginning in January 2016, CDOT implemented a Transportation Systems Management and Operations (TSM&O) [evaluation](#) for all CDOT projects. A safety assessment included in the evaluation is intended to examine the safety history of the planned project location to determine if needed and appropriate safety improvements can be included in conjunction with the primary improvement work. The safety assessment helps to find safety problems distinctive to the planned location or highlight options to incorporate safety improvements specific to the location.

Besides safety, the TSM&O evaluation includes assessments for operations and intelligent transportation systems. Including these assessments in project design is part of CDOT's effort to optimize limited resources by making the right transportation improvement decisions. The evaluation is required for all projects with a design scoping review on or after February 1, 2016.

Safety Summit - More than 200 safety stakeholders from around Colorado attended the state's second Safety Summit in May 2016. For three days, these stakeholders discussed how to improve traffic safety for aging road users, teen drivers, pedestrians, bicyclists, and motorcyclists; how to address impaired driving especially drugged driving, occupant protection, and distracted driving; what are new and innovative initiatives for law enforcement; and ways to improve rural and urban roadways. A key part of the summit was a discussion on how to reach Zero Deaths through self-driving and connected vehicles. Stakeholders examined what they had learned at the Summit and identified ways to apply these lessons to the state's Strategic Highway Safety Plan, in addition to taking new and innovative ideas to apply to their respective programs and agencies and improve safety statewide.

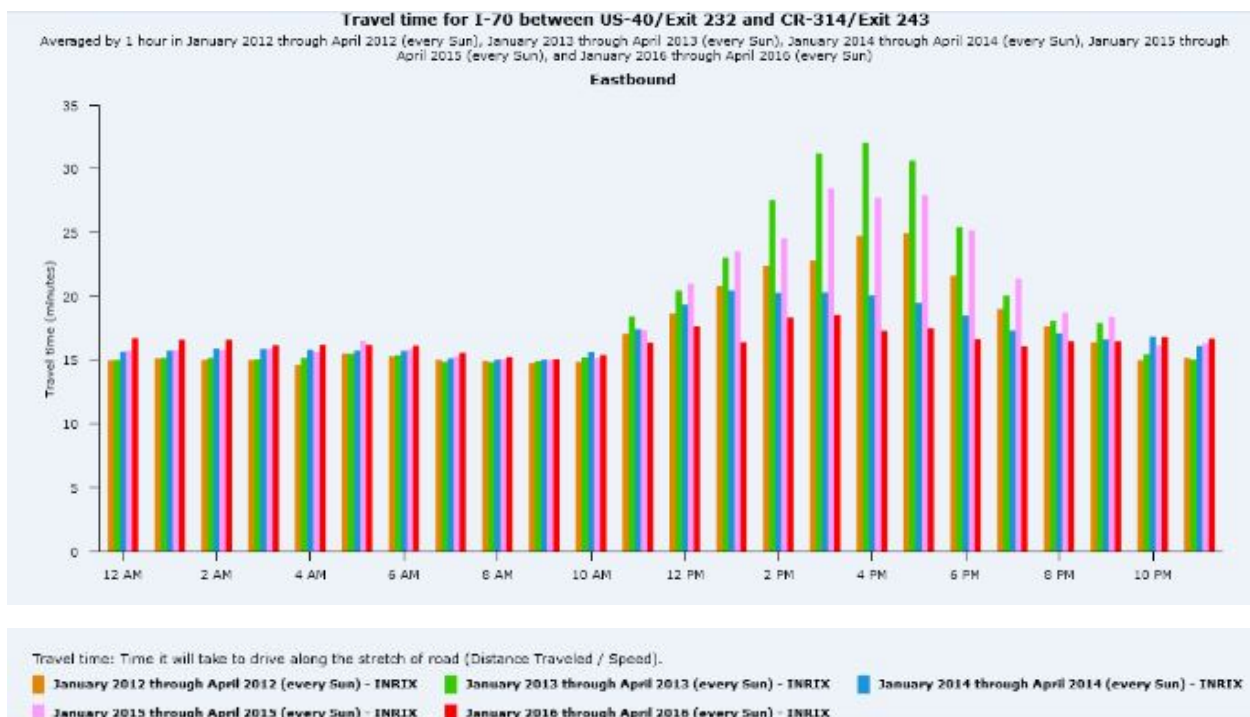
MOBILITY

Biking and Walking - The Transportation Commission in May reinforced its support of biking and walking by approving an updated policy entitled "Elevating Bicycle and Pedestrian Opportunities in Colorado." The policy requires CDOT to include the needs of pedestrians and bicyclists in planning, programming, design, construction, operation, and maintenance. CDOT also is required under the policy to provide education to motorists, bicyclists, and pedestrians. A decision to **not** accommodate bicyclists and pedestrians must be based on one or more of the following criteria and must be documented before the final decision is made:

1. Bicyclists and pedestrians are prohibited by law from using the roadway;
2. The cost of establishing bikeways or walkways would be excessively disproportionate to the need or probable use. (Excessively disproportionate is defined as exceeding 20 percent of the cost of the larger transportation project.); or
3. Where scarcity of population or other factors indicate an absence of need.

The policy's intent is to improve opportunities for travel by bike or on foot on or along state highways throughout the state, thereby increasing mobility.

I-70 Traffic Flow, Speeds - From January 1 through April 17, 2016, the use of the I-70 Mountain Express Lane (MEXL) for eastbound traffic has improved corridor speeds for Sunday homeward-bound travelers during peak times, making travel times more consistent throughout the day. Average peak hour speed through this section on I-70 was faster on the MEXL at 62 mph compared to 50 mph on the General Purpose Lanes (non-tolled). CDOT has observed that more vehicles use the lane on Sundays compared to Saturdays. The chart below compares travel times in minutes of all lanes through this 11-mile section of I-70. The red bar in the chart represents Sundays from January through April 17, 2016 on the MEXL lane. The data was derived from INRIX, a traffic data analysis system that uses data from smartphones, cameras, and other sensors and that operates in more than 40 countries.



Opened in late December 2015 at a cost of \$72 million, MEXL operates from US 40/Exit 232 and County Road 314/Exit 243 on the shoulders for eastbound traffic during peak periods (Saturdays, Sundays, and holiday Mondays) during the winter ski and the summer tourist seasons. I-70 traffic volumes are usually higher in the summers. Use of the peak period shoulder lanes is permitted for only 72 days a year under an agreement with the Federal Highway Administration.

Between January 1 and April 17, 2016, the I-70 MEXL was open for 33 different days for 304 total hours of operation. When this lane is closed, it serves as a shoulder on I-70. Over those 33 days in which the lane was open, total corridor volume of vehicles traveling eastbound through this section of I-70 was 1,063,032. This number includes both the Express Lane volumes and the General Purpose (non-tolled) Lane volumes. During the same time period,

43,230 vehicles used the MEXL. The average number of vehicles per day using the MEXL is 1,271.

CDOT obtains the lane-use and travel speed data about MEXL from Intelligent Transportation Systems (ITS). One device is called a MVRD, Microwave Vehicle Radar Detectors. These units are installed along the corridor to measure traffic volume, speed, and occupancy of the lanes. Additionally, TTI units (Travel Time Indicators) are used to track vehicle travel times across segments spanning from one TTI location to the next. The Colorado Traffic Management Center in Golden and the Joint Operations Center at the Eisenhower-Johnson Memorial Tunnel also have real-time observation capabilities of traffic on the MEXL via several closed circuit television cameras. Additionally, CDOT can use the cameras at the Joint Operations Center to report on any incidents in the MEXL.



The MEXL lane on the left is closed during non-peak times, and reverts to use as a shoulder.

ECONOMIC VITALITY

Highway Improvements Coming - This year, the state budget included dedicated funding for infrastructure development. Specifically, state House Bill 16-1416 allocated SB 228 funds for the current and following fiscal years. For the current year, the legislature appropriated \$198 million and for fiscal year 2016-2017, \$158 million. The Transportation Commission has not yet programmed these funds into specific projects, but is expected to direct the SB 228 funds to projects that will help relieve congestion and improve the reliability of travel times. Reducing congestion improves travel times, saving everyone time and money. Passed in 2009, SB 228 permits a five-year block of transfers to transportation if personal income growth reaches or exceeds 5 percent.

MAINTAINING THE SYSTEM

Models More Accurate - CDOT's Pavement Management Program and the CDOT region pavement managers improved the deterioration models for all asphalt pavements across the state. The team reviewed empirical historical pavement distress data and expert anecdotal experience on the rate at which asphalt (under various traffic loads and climate conditions) deteriorates. The team concluded that many asphalt pavement types were performing better than their deterioration models by one to three years. The new models will improve the accuracy and quality of Pavement Management's predictive analysis and project recommendations. The result of these improvements will be seen in the forthcoming 2016 pavement condition reports, which are scheduled to be completed this fall.

In addition, CDOT ended FY 2016 with 90 percent of advertised resurfacing projects in the CDOT Regions matching recommendations in the Surface Treatment Program's Pavement Management System. This exceeds the CDOT goal of 80 percent.