



# COLORADO

## Transportation Commission

2829 W. Howard Place  
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**DATE:** July 29, 2019

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**SUBJECT:** Colorado DOT Analysis & Justification for FHWA - NHTSA 2016-2020 Safety Performance Measure Target Setting Recommendations

### Purpose

In accordance with the FAST Act, FHWA issued Final Rulemaking on April 14, 2016 requiring state DOTs and MPOs to annually establish targets in five areas of safety performance - fatalities, fatality rate, serious injuries, serious injury rates, and non-motorized user fatalities and serious injuries.

### Action

Information only

### Background

Not Applicable

### Details

In 2017 and again in 2018, CDOT set the targets for 2014-2018 and 2015-2019 to meet the requirements of MAP-21, which is to annually set targets for Number of Fatalities, Fatality Rate per 100 Million VMT, Number of Serious Injuries, Serious Injury Rate per 100 Million VMT, as well as Number of Non-motorized Fatalities and Serious Injuries. These targets were five-year rolling averages based on the trend analysis using 2011 - 2017 data and will be assessed again for progress by FHWA in 2020. In 2019, CDOT continues to use the same process and methodology to set new 2020 targets for five-year rolling averages for 2016 -2020 based on the trend analysis of 2013 - 2018 existing data.

The 2015-2019 targets selected incorporate trend analysis of past years, consideration of the transportation safety climate factors and causalities, and actions that CDOT and other safety stakeholder agencies are taking to reduce all crashes. It is also important to note that the targets established are not aspirational targets, such as those established in the 2014 Colorado Strategic Highway Safety Plan. While Colorado and CDOT are still endeavoring to move toward zero deaths and injuries and significantly reduced crashes and still toward halving fatalities by 2030, these targets established are for the purposes of national target setting and are done so with this Moving Toward Zero Deaths vision in mind but also in accordance with the FHWA requirements for target setting.

Colorado has continued to experience increases in population growth and vehicle miles traveled. With the legalization of marijuana, more and more technology causing distractions, steady gas prices, a thriving local economy, and increasing population density in front range counties, there are many factors which play a part in the increased fatal crashes. While none of these factors alone can explain the increase, these and causal and contributing factors all contribute to the increases Colorado is experiencing. It is anticipated that all of these factors will continue to strongly influence crashes through this planning period, leading to continued increases in fatalities.



While the above factors have been and are expected to continue to lead to increases in crashes and fatalities, this analysis looked at influences that could curtail or reduce such crashes. Considering funding and legislation, there were not significant changes that could reduce crashes and fatalities. CDOT has committed another \$11M toward strategic safety projects statewide for the next three years for preventative safety treatments such as six inch striping, cable rail guardrail, and rumble strips. CDOT continues to administer its safety programs as effectively as possible, ensuring selection of the most effective infrastructure and behavioral projects and strategies. However, funding for CDOT administered enforcement programs will be drastically cut in 2019, reducing an important aspect in transportation safety - enforcement. CDOT has begun working directly with local agencies, NACE, and FHWA to develop county-specific safety action plans to address local road crashes. CDOT is currently renewing its Strategic Highway Safety Plan in 2019, with an increased emphasis on accountable implementation over the next 5 years. CDOT continues to work with the automotive and technology industries to use technology to improve transportation safety, and some of those efforts will be seen on the road this year and into the near future. With these leading efforts, CDOT believes that some of the past increasing trends can be reduced, and the targets reflect this.

CDPHE and CDOT coordinated analysis of the crash data through various methods including Loess regression and a polynomial regression line in Excel to create best fit curves. Other models were examined in Excel including straight line, exponential, linear, logarithmic, and power, but the polynomial regression appeared to be the best fit model for the existing crash data. These graphs represent several potential values for future crash numbers in the state. What is interesting is that these models all indicate reducing and flattening trend in fatalities and serious injuries. The trend analysis has shown that the fatality has decreased 2.5% from previous year in 2017 in comparison with 6.6 % increase in 2016 and 11.2% increase in 2015. The serious injuries have increased slightly since 2015.

Of the five measures, three must be identically set for NHTSA's Highway Safety Plan and FHWA's Highway Safety Improvement Plan - Number of Fatalities, Fatality Rate per 100 Million VMT, Number of Serious Injuries. This was done through collaborative statistical analysis by CDOT's HSO and Traffic and Safety Engineering Branch. The current proposed targets are as follows and will be finalized upon reporting to NHTSA in June and FHWA in August of 2018.

#### Colorado 2020 Safety Targets 5-year Averages 2016-2020

Fatalities - 618

Fatality Rate - 1.143

Serious Injuries - 3271

Serious Injury Rate - 6.075

Non-motorists fatalities and serious injuries (pedestrian and bicyclists) - 670

#### Challenges/Considerations in the data analysis:

2018 injury crash data is still being finalized and it is unclear if this number may still increase as more data comes in. Due to vendor data issues with local agencies transmitting data to DOR, injury data is not available for agencies such as Colorado Springs and Grand Junction. The predictions should take into account that 2016, 2017, and 2018 may increase in numbers over what is currently shown.



Predicting VMT is challenging and creates another variable that could impact rates. CDOT has taken the best prediction of VMT and established rate targets above based upon that.

Key Benefits (if applicable)

Information Only

Options and Recommendations (if applicable)

Not Applicable

Next Steps (if applicable)

Not Applicable

Attachments

None





**COLORADO**  
Department of Transportation

MOVING TOWARDS  
**ZERO**  
DEATHS

# Transportation Commission Meeting

# Safety Performance Measures

August 14, 2019



# National Safety PM

- Purpose
- Process and Requirements
- Trends / Statistical Analysis
- Relationship to other targets
- National Safety PM Progress
- 2016-2020 Targets



# Why Targets?

- Vision
- Aspirational / Objectives
- Long term / short term
- SMART - Measurable, Accountable, Realistic
- Federally Required



# Background and Process

- FHWA issue Final Rule effective April 14, 2016 (Final Rule FHWA-2013-0020); Now codified in 23 CFR 490
- 5 Measures - to be collaboratively set, top 3 identical for FHWA and NHTSA
  - Fatalities
  - Fatality Rate
  - Serious Injuries
  - Serious Injury Rate
  - Non-motorized Fatalities
- Definitions
  - VMT, serious injury defined
  - 5 year averages
  - Target - 2016-20 five year average
  - Baseline - 2014-18 five year average
- Compare actual to target, then to baseline;
- Must meet or show significant progress compared to baseline in 4 out of 5
- Consequences - full use of HSIP obligation authority, HSIP improvement plan



# Factors/Analysis

- Vision/Goals
- Trends Analysis
  - Crashes
  - VMT
- Factors: funding, population growth, vehicle registration
- Programs
  - Engineering
  - Education
  - Enforcement
  - Legislation



# Other Targets

- Governor's Goals
  - 2% (2500) reduction in crashes annually
- 2014 Strategic Highway Safety Plan
  - 2.5% reduction annually for fatalities and rate
    - Target in 2018: 428
    - Actual: 632
  - 2.9% reduction annually for serious injuries and rate
    - Target in 2018: 2655
    - Actual: 3225
- 2020 Strategic Transportation Safety Plan
  - Targets to be determined



# Safety PM Status

- Table of 2018, 2019, 2020 targets and actuals

	<b>Actual</b>	<b>Target</b>		
<b>Target</b>	<b>2014 - 2018</b>	<b>2014 - 2018</b>	<b>2015 - 2019</b>	<b>2016 - 2020</b>
Fatality	584	610	644	618
Fatality Rate	1.125	1.2	1.21	1.143
Serious Injuries	3122	3350	2909	3271
Serious Injury Rate	6.033	6.79	5.575	6.075
Non-motorized Users Fatalities and SI	576	586	514	670



MOVING TOWARDS  
**ZERO**  
DEATHS

# Discussion