COLORADO
Department of Transportation
Transportation Systems
Management & Operations

CDOT I-25 Corridor Operations, Metro & South

Consequence Management Plan – 2017 Solar Eclipse

Monday, August 21, 2017

CDOT – Region 1 & 2 / CSP – District 1 & 2 / Douglas County

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1: Purpose and Organization

Purpose

This consequence management plan specifically addresses planning elements related to the Total Solar Eclipse affecting Colorado, specifically Denver metro area, Douglas County and the Monument Hill area on August 21, 2017. It includes planning for events related to the eclipse as well as an emergency or disaster that occurs at the same time as the eclipse affecting response. This plan will also review consequence planning for the potential impact to South bound I-25, and arterial roads, from the mass egress from Wyoming; potential impact is evening rush hour on 08/21/2107 and possible morning rush hour on Tuesday 08/22/2017.

Definitions

Consequence Management - includes measures to protect public health and safety, restore essential services and provide emergency relief to governments, businesses and individuals affected by the consequences of a natural or human-caused hazard.
Incident within the Incident – includes anything that is directly related to the event including transportation routes, spectators / visitors, surge, etc.
Incident outside the Incident – includes any event that occurs outside of the scope of the solar eclipse (i.e. wildfire, flooding, severe weather, etc.).

Solar Eclipse Information

An eclipse of the Sun happens when the New Moon moves between the Sun and Earth, blocking out the Sun's rays and casting a shadow on parts of Earth.

The Moon's shadow is not big enough to engulf the entire planet, so the shadow is always limited to a certain area (see map illustrations below). This area changes during the course of the eclipse because the Moon and Earth are in constant motion: Earth continuously rotates around its axis while it orbits the Sun, and the Moon orbits Earth.

Eclipse Facts:

- Everyone in the continental US, Mexico, and Canada will get to see a least a partial view of the eclipse (over 500 million people).
- The only safe way to look at an eclipse is with a pinhole projector or certified eclipse glasses
- It is not unusual to experience strange things during the eclipse, especially since it will appear to be nightfall in the middle of the day in some places. Animals will think it is night time, and temperatures may drop as much as 10-15 degrees.

Organization

A planning team, for the I-25 North area corridor, has been established for this event including agencies from Albany and Laramie Counties in Wyoming, Larimer and Weld Counties in Colorado, and state agencies for both states. From the planning team, four (4) task forces have been formed to ensure adequate coverage across Northern Colorado for incidents before, during and after the eclipse. Each Task Force has law enforcement, EMS, Fire, traffic management and safety patrol personnel.

The I-25 Metro and South Corridor has not established a formal planning team. CDOT has contacted CSP and Douglas County to assess the potential traffic issues. Douglas County OEM has established an Emergency Operations Plan (EOP) but does not plan on activating their county OEM.

2: Travel Impacts & Advisories

Colorado is expecting to be significantly impacted by traffic related to the 2017 Solar Eclipse because of the unique positioning and timing of the eclipse to the Denver and Front Range metro areas.

Highways expected to be significantly impacted:
I-25 from CO Springs north through Denver metro and into WY
I-76 from Denver metro area NE into Nebraska
Associated parallel routes
To I-25 – US 85, US 287
To I-76 – 14, 34, US 6, 138, 36, I70

For traffic impact forecasting CDOT made several assumptions based upon the best available information from FHWA, and respective states expectations.
Assumptions:

- WY is expecting doubling of population – currently 585,000
- NE is expecting anywhere from 200,000 to 600,000 visitors
- Observe similar traffic impacts for Cheyenne Frontier Days, but in concentrated time (500,000 visitors in 10 days)
- 90% of people will drive / 10% people will fly
- WY – a significant number will come from CO, also UT.

- Through the Denver metro area (which might include traffic from CO Springs, Pueblo, and NM) 65% will use I-25 to go to WY and 35% will use I-76 to go to NE.
- People will attempt to carpool – with an average of 3-4 per vehicle
- Up to 10% of Colorado's front range area could travel to see the totality event either in WY or NE, approximately 500,000 people.

Based upon the above assumptions:
CDOT expects that around 100,000 vehicles will travel on I-25 to WY and around 50,000 vehicles will travel I-76 in the four days preceding the event. This traffic will have impacts on Colorado highways, but will be spread out over Thursday through Monday morning, with highest impacts expected Friday evening, Sunday, and Monday AM.

The totality event will occur in western WY starting 1140, along I25 at 1145, western NE at 1150, and central NE on I80 at 1200.

We expect that most travelers will want to return home, due to the event occurring on a Monday, as soon as possible; therefore traffic impacts will be most severe starting Monday at noon into the afternoon and lasting on I-25 into Tuesday late morning or afternoon and lasting on I-76 late into Monday night. Traffic models are showing several hours of bumper to bumper congestion. On I-25 with 100,000 vehicles all returning to CO at the same time, it could take up to 25 hours for that traffic to dissipate (this is equivalent of 200 miles of two lanes of bumper to bumper vehicles). I-76 can expect up to 12 hours of highly congested traffic.

CDOT will be monitoring the situation hourly starting Thursday and through the event and traffic return until conditions return to normal, standing up an incident command center - monitoring traffic volumes, speeds, congestion through our traffic systems cameras and counters throughout the weekend and deploying resources and response as needed. Typical, predicted, and actual traffic volumes will be monitored daily against the highway capacity.

<u>Over-Sized / Over-Weight CMV:</u>

Colorado Oversize/Overweight vehicle operations are prohibited from sundown Friday August 18, 2017 until sunset Tuesday August 22, 2017 on all state highways north of HWY 24 to the KS line (this includes I-70), and all state highways east of HWY 9 to the WY border. This restriction does NOT apply to:

- Permitted LVC combinations;

- Permitted vehicles that are overweight ONLY and are able capable of maintaining a minimum speed of 40 mph on a flat grade. (This includes such permit types as Non-Interstate Overweight Divisible load and Annual Overweight permits.);

· Oversize/Overweight permitted loads where the width of the vehicle/load does not exceed 14', between the hours of 10 p.m. and 6 a.m. Friday August 18, 2017 through Sunday August 20, 2017. Vehicles must meet all lighting requirements as directed in 2 CCR 601-4.;

· Permitted OSOW vehicles operating on non-interstate state highways solely within the boundaries of a local municipality. Operation on local roadways requires the authorization of the local jurisdiction.

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The OSOW Permit unit may be contacted at 303.757.9539. See attachment 1 for OS/OW Colorado Map

Construction and Lane Closures:

No CONSTRUCTION OR LANE CLOSURES ON MAINLINE (*work off mainline that doesn't impede flow of the roadway can continue at this time*) 8:00 p.m. (sundown) 8/18 through 8:00 p.m. (sundown) 8/22 for the following roadways:

a. I-25 US-24 (Colorado Springs) to Wyoming border

b. I-76

c. SH-287

d. SH-71 Limon to Nebraska Border

e. I-70 SH-9 to SH-71

f. Other closures as additional data develops or at the discretion of the Regional Transportation Director

Regional TIMP Plans:

In the event of a Type 3 or higher incident CDOT, along with all partnering agencies will implement the Regional TIMP Plan: I-25 TIMP SH 7 to Wyoming State Line ver; June 2012, see attachment 1

3: HAZARDS & Weather Impacts

Threat, Hazards and Consequences

This section identifies the hazards that are probable, or based on future probability, likely to negatively impact the surrounding area. Weather-Related Hazards and Threats Due to the large number of people expected, the most likely hazards are weather-related. Due to diverse weather patterns, a number of weather-related hazards could affect the event, including but not limited to: Thunderstorms / Heavy Rain

Lightning Tornadoes Hail Flash Flooding Cold-Related Micro-burst / Severe Wind Heat-Related / Dehydration Thunderstorms are quite prevalent during the spring and summer. These often become quite severe, and the frequency of hail damage is quite high. With an average frequency of 6 or more hail days per year, some counties of eastern Colorado are among the most hail prone areas in the entire country. The greatest threat of flooding is flash flooding from localized intense thunderstorms, and lightning has emerged as one of the greatest weather hazards in Colorado and Wyoming. Each year there are several fatalities and injuries from lightning. Unlike tornadoes that are most common in selected areas, lightning can and does occur everywhere. Tornadoes, once thought to be only a small threat to the residents of eastern Colorado, have been found to be quite common with the improvement in severe storm detection in recent decades. Tornadoes are relatively rare in the mountains and western valleys but do occur. Most of these tornadoes are small and short lived, usually classified in intensity as F0 or F1. However, occasional strong tornadoes have been reported including the F3 Berthoud Tornado in June 2015. The number of tornado fatalities remains very low for Colorado, but much of this is due to the low population density of some of the most tornado prone areas of eastern Colorado and improvements in warning technologies.

Triggers for Severe Weather Action:

- National Weather Service issues a warning for the area (Tornado Warning, Severe Thunderstorm Warning with Hail, or Flash Flood Warning)
- Funnel cloud observed by community members or first responders
- Severe weather is observed requiring shelter of people outside
- CDOT TOC personnel will monitor weather closely before and during the event and will rely any pertinent information as needed to maintain safety of the public
- Weather-related messaging will go out via Social Media and emergency notifications, as well as the READY OPS notification system, from CDOT, for local area partners.

Hazards and Threats Consequence management planning for any event of this size must also consider threats from the public, such as terrorist and criminal activity, civil unrest, active shooter and bombing incidents. It must also consider accidental incidents involving the public, such as hazardous materials spills at fixed facilities or in transport. While less likely, human-caused hazards and threats exist in Colorado.

The following additional hazards should be considered:

Active Shooter/Assailant Bombings / Explosions Civil Unrest / Civil Disturbance Hazardous Materials Incidents Special events are desirable targets for pre-planned attacks for many reasons, such as

1 large crowds that make it difficult to detect the threat
2 presence of high-profile individuals

3 national media audience
4 known date, time and location of the event
5 proximity of the event to transportation hubs and major escape routes.

4: Consequence Management

a. Corridor Related Issues

The diversity of hazards and threats that exist, as well as the large geographical area affected, lead to several consequences for consideration. Below are the primary consequences for the solar eclipse from existing known hazards.

- Large influx of people causing surge - Resource depletion of food, facilities and fuel for influx of people
- Heavily congested traffic routes
- Traffic Incident Management Planning (TIMP) group is actively involved in this event
- Increase in Unmanned Aerial Vehicles (UAVs) throughout the county for observation and recreation. This could create challenges during other incidents within the county requiring use of air space.
    - o Considerations have been made for heavy air traffic in the event of a wildfire
    - o Air assets going into heavily congested areas have requested Air Ops support to avoid incidents
- Grass fires due to vehicles pulling off roads into grassy areas
    - o Mowing operations along major roadways has occurred in Northern Colorado as well as Wyoming on major arterials
    - o Wyoming and Colorado will deconflict language on fire restrictions before the event to avoid confusion across county/state lines
- Communications failures due to overload
    - ♣ ARES and RACES are activated for this event and will be in EOCs to provide radio communications support
    - o Cellular systems may not be able to handle the load
- Private land issues – people from out of the area camping on private property may cause conflict with locals
- Colorado State University and University of Northern Colorado move in is the weekend before the event, same time as travelers will be coming through the area, CSU has communicated to everyone that they should arrive early in the weekend instead of later to avoid delays.
- Increased need for coordinated situational awareness and emergency management between Wyoming and Colorado communities, CO State EOC will not be activated, but a normal work day.
- CDOT will conduct daily conference calls, Friday 08/18/2017 through Tuesday 08/22/2017. Calls will be at 13:00 daily with an additional call on Monday 08/21/20107 at 09:00

b. Incident within an incident

Currently the complexity of the Solar Eclipse is a Type 3 Incident which has activated the consequence management plan. Region(s) 1, 2 and 4 have established command in each Region and in Region 4 Unified Command has been established.

Triggers to increase complexity:

- Major closures which results in ques longer than 4 hours.
- Regions 1, 2,4 have combined major level of service issues
- Increased risk to public safety on roadways.
- Multiple motor vehicle accidents.
- Major sheltering operation deployed within the impacted counties.

Level 1 Incident Complexity

- Each Region with transfer command from current Incident Commander to newly appointed from the RTD.
- HQ will establish a Command and General Staff and work out of the Traffic Operations Center.

5: Conclusions

An After-Action Review (AAR) will take place following this event for consequence management planning. An improvement Plan will be developed as part of that process.

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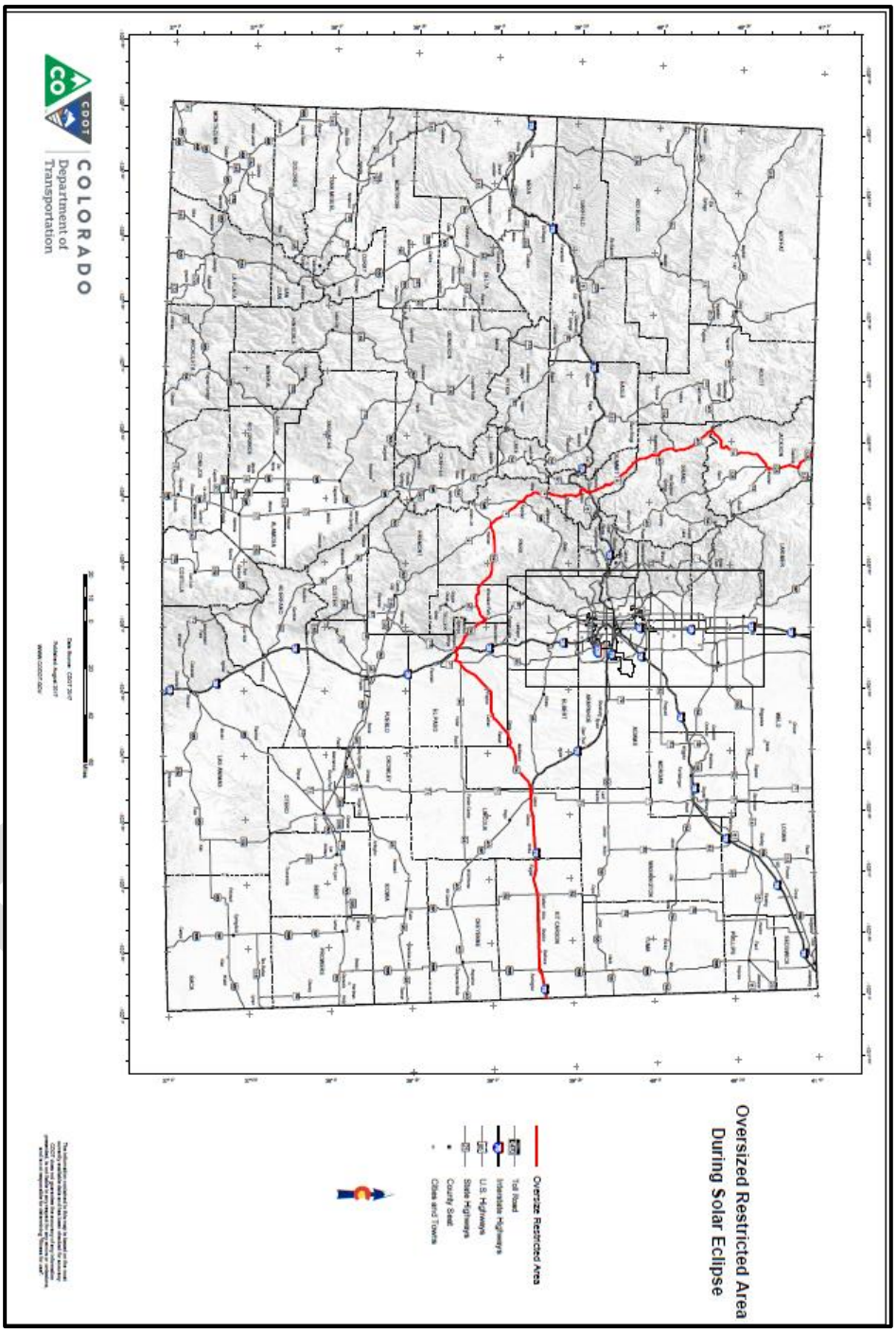
CMP ATTACHEMNT 1

CDOT Over-Sized / Over- Weight Map



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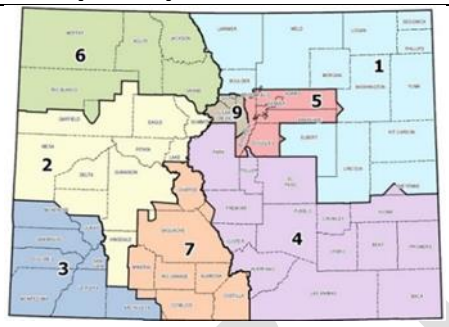
CMP ATTACHMENT 2

CDOT Consequence Management Conference Call Information Sheet

Solar Eclipse Operations Conference Call

Call in #1-877-820-7831
Passcode 118127#
Moderator 9147541#



Date: _____

Time: _____

Prepared by: _____

Distribution list: cr.bou-ops@noaa.gov, cr.pub@noaa.gov, cr.gjt-mets@noaa.gov, caic@state.co.us, cdot_oem_Ops@state.co.us,

THE PURPOSE of the call is to obtain an update on the Solar Eclipse, obtain the status of CDOT resources, and determine appropriate Public Information messaging.

Reminder to everyone to mute your phones until it is your turn to speak.

Agenda

NWS Boulder	Comments:	
Weather agencies can drop off the call at this point.		
	Event Coordinator	Concerns
Maint Sect 1	Tom Aguilar	
Maint Sect 4		
Maint Sect 5		
Maint Sect 9		
Permits	Danny Wells	
Traffic Flow	Charles Meyer	
Task Force Status	Kevin Devine	
CTMC	Bill Miederhoff	
CSP	Rob Marone Jeff Goodwin	

Any need to change the Incident Level?

Next conference call?

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CMP ATTACHMENT 3

CDOT Consequence Management Conference Call Information

CDOT Daily Consequence Management Conference Call Agenda:

Solar Eclipse Conference Call

Conference Call # 1-877-820-7831
Participant Code # 118127

We will start promptly at 1:00pm. Please invite anyone else that would benefit from this.

Be prepared to brief on the following:

- National Weather Service- Weather Forecast for Day of Eclipse

Each Region 1,2,3 & 4

- PIO Update- Stacia, Michelle, Tracy and Jered.
- Status of Construction/lane closure projects. RTD's/Engineers
- Current Conditions of roads/traffic – Maintenance
- Any additional resources needed?
- Can you sustain for 24 hours?

Statewide:

- Permits Status- Danny Wells
- Statewide traffic flow/impact – Charles Meyer
- Task Force Status – Kevin Devine/Tim Keeton
- TOC Update – Bill Miederhoff/Rod Mead
- CSP Updates – Rob Marone/Jeff Goodwin

Any other questions or concerns?

Also, another invite will be sent out for a Monday (Aug 21st) 9:00am conference call.

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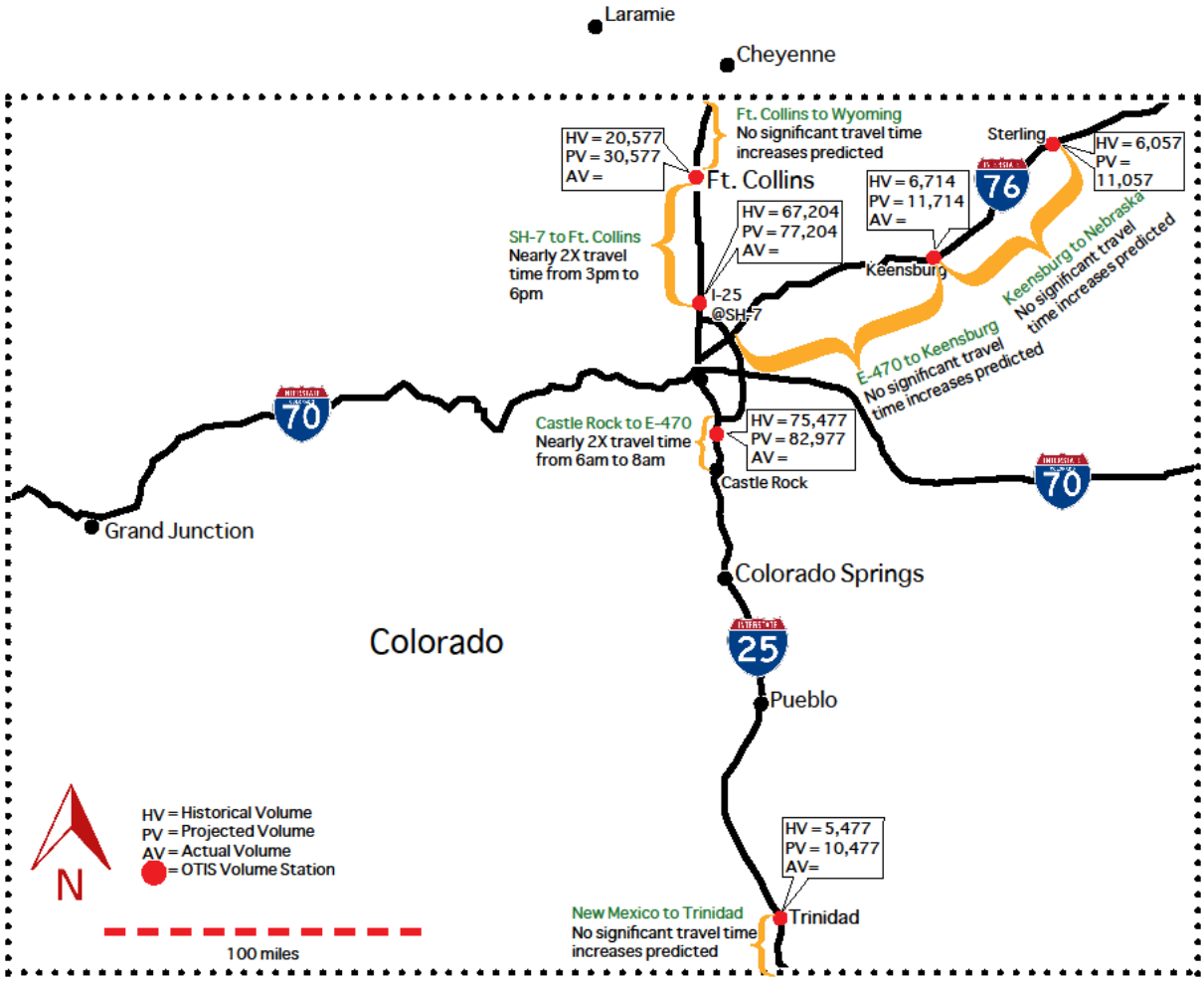
CMP ATTACHMENT 4
CDOT Traffic Volume Analysis

SOLAR ECLIPSE HISTORICAL AND PREDICTED OUTBOUND VOLUMES
THURSDAY AUGUST 17TH, 2017



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Predicted Travel Time Impact based on predicted V/C

August 17th, 2017

V/C Legend		Travel Time Impact
Less than 0.32		0% higher than historical
0.33 to 0.55		10% higher than historical
0.55 to 0.65		25% higher than historical
0.65 to 0.75		50% higher than historical
0.75 to 0.85		75% higher than historical
.85 to 1.00		100% higher than historical
1.00 to 1.25		125% higher than historical
1.25 to 1.50		150% higher than historical
1.50 to 1.75		175% higher than historical
1.75 to 2.00		200% higher than historical
Greater than 2.00		300% higher than historical

I.e. if the V/C Ratio is 0.90, then the predicted travel time will be 2X (or 100%) higher than the historical travel time

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NAVJOY Consulting Services, Inc.