COLORADO
Transportation Commission

2829 W. Howard Place
Denver, CO 80204

DATE: September 6, 2019

FROM: Charles Meyer, Branch Manager, State Traffic and Safety Engineer
Josh Laipply, Chief Engineer

SUBJECT: Colorado Transportation Crashes Causality

Purpose
The Colorado Transportation Commission has made transportation safety a top priority for Colorado, and as such, has made safety a standing item at its monthly workshop. In August, the Commission requested more information from CDOT staff on the causality of crashes. This discussion item will give the Commission an overview of the common causalities of crashes in Colorado, how CDOT and other agencies analyze those causal factors, and how the analysis is used to plan and deliver programs and projects to address these causal factors of crashes.

Action
Information only

Details
Federal, state, and local agencies in Colorado are responsible for building and operating transportation systems that function as safe as possible. The transportation industry follows the latest standards for roadway safety through incorporation of current design standards, specifications, products, and best practices into their business practices. While agencies do their best to build the safest transportation systems, human error still occurs – by all users, drivers, pedestrians, bicyclists, and others – and this is evident by the annual occurrence of over 100,000 crashes, 600 of them resulting in fatalities and 3000 of them in severe injuries.

Recognizing this, agencies dedicate themselves to study the human interaction of users with the transportation system to prevent these crashes from occurring where known or to build a forgiving transportation system that lessens the severity of crashes where they might occur. This study depends on crash data analysis and system attributes and risk factors analysis. Crash data analysis depends on reliable and accurate crash data collected by law enforcement officers around the state following a national standard, the Model Minimum Uniform Crash Code (MMUCC), that is delivered to agencies via an integrated, timely system. This complete set of data enables transportation safety professionals within federal, state, and local agencies to conduct causality analysis to determine what are the most effective mitigations/strategies, where they would be most effective, and who is responsible for implementing those strategies.

Given the extensive need in Colorado, and all states around the country, for transportation safety improvements and given the recent increases in roadway fatalities across the nation in recent years, a strategic, prioritized approach is necessary to focus agency efforts on where resources can be most effective in reducing the loss and impact to human life, and consideration can be given to increasing resources toward doing so. Further, agencies and a variety of other stakeholders have varying contributions, responsibilities, and influences on transportation safety – and are all necessary as a network of professional to improve safety. The coordinated process to strategically use resources most effectively is known as the Strategic Transportation Safety Plan. This plan process is used nationally by every state to gather stakeholders, get

executive vision and direction, assess transportation safety, determine most effective actions, and implement and monitor those strategies.

Colorado's current strategic safety plan was adopted in 2015, and is currently in the process of being updated. A multi-agency steering committee will be meeting on September 20th to decide on vision and direction, and guide the process to update the STSP. Later in September and October, dozens of safety stakeholders around the state with multiple agencies and transportation safety groups will meet to assess Colorado transportation safety and form teams to develop plans to improve safety over the next 3 to 5 years. This will then be implemented into deliverable, actionable plans for specific focus areas, making up the overall Strategic Transportation Plan for Colorado, anticipated in early 2020.

At the same time, DRCOG, Denver, Boulder, Fort Collins have or are developing region or city-specific transportation safety vision zero plans. The STSP process is coordinating closely with these partners to capitalize on their efforts and align our work.

Next Steps (if applicable)
The Transportation Commissioners will be invited to the regional stakeholder workshops.

Attachments
Power Point presentation on Colorado Crash Causalities and Safety Stakeholders

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MOVING TOWARDS ZERO DEATHS

Transportation Commission Meeting

Crash Causalities

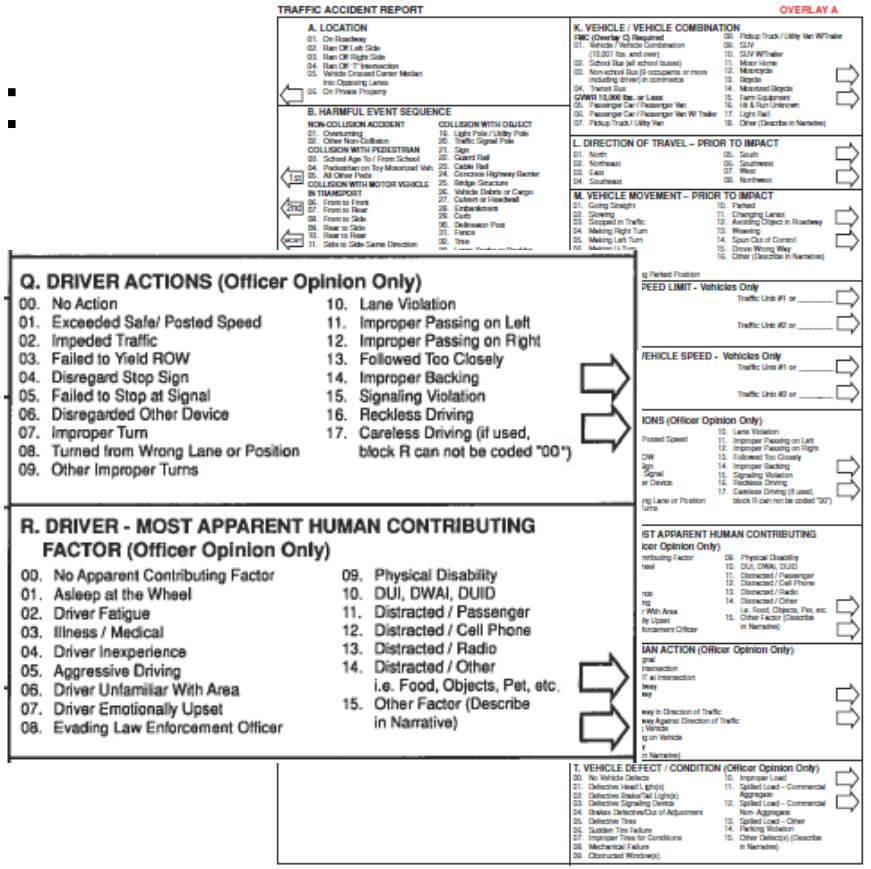
September 18, 2019

Colorado Crashes

- Causalities
- Crash Results
- Mitigation
- Stakeholders

Causal and Contributing Factors

- Crash Data Collection
  - Causal Factor > Driver Contributing Factor > First Harmful Event
- Causalities Different for:
  - Severity of crash
  - Facility Type
- Consistent year to year



TRAFFIC ACCIDENT REPORT

OVERLAY A

Q. DRIVER ACTIONS (Officer Opinion Only)

00. No Action
01. Exceeded Safe/ Posted Speed
02. Impeded Traffic
03. Failed to Yield ROW
04. Disregard Stop Sign
05. Failed to Stop at Signal
06. Disregarded Other Device
07. Improper Turn
08. Turned from Wrong Lane or Position
09. Other Improper Turns
10. Lane Violation
11. Improper Passing on Left
12. Improper Passing on Right
13. Followed Too Closely
14. Improper Backing
15. Signaling Violation
16. Reckless Driving
17. Careless Driving (if used, block R can not be coded "00")

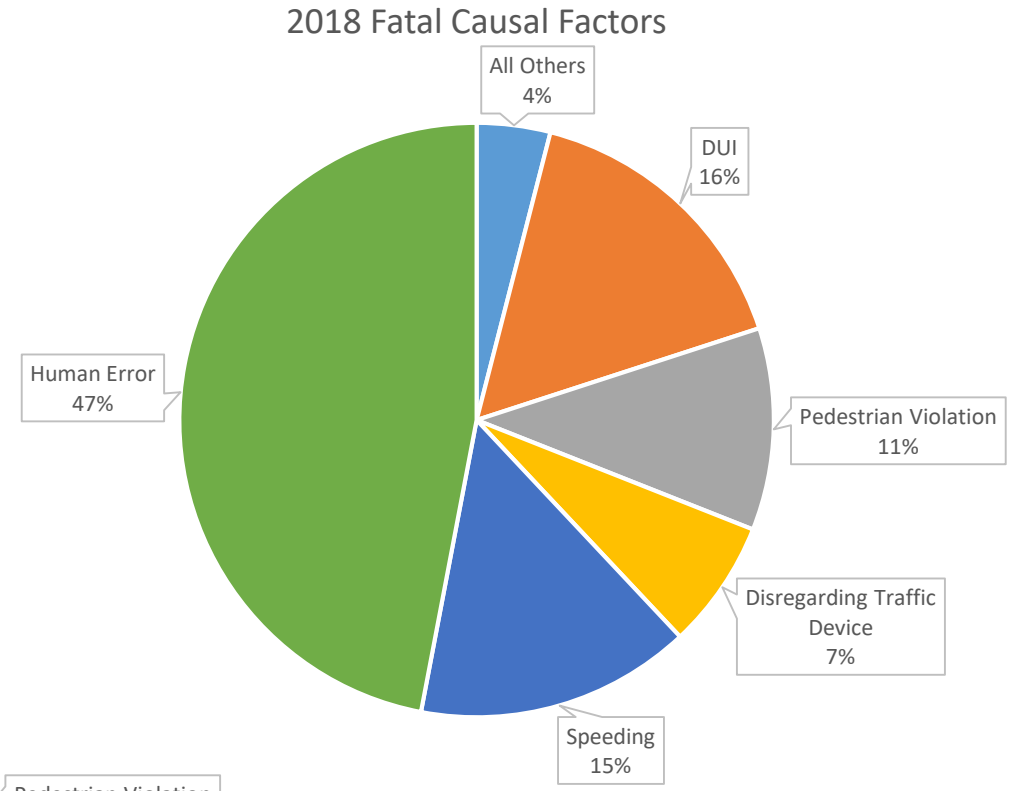
R. DRIVER - MOST APPARENT HUMAN CONTRIBUTING FACTOR (Officer Opinion Only)

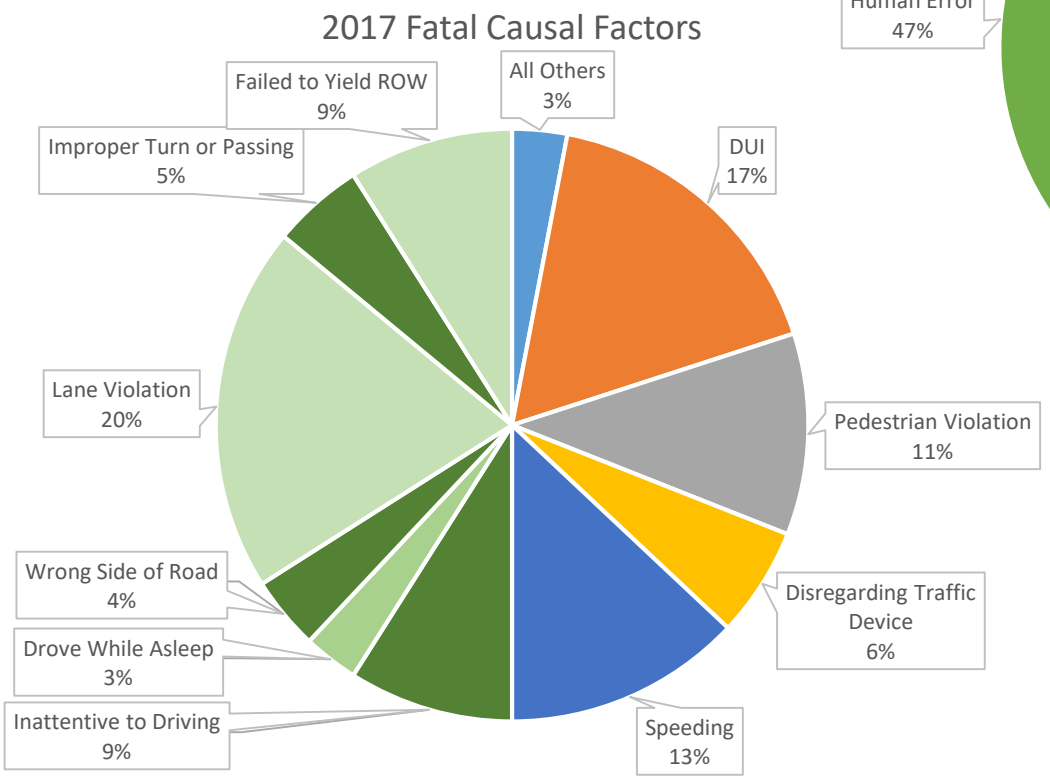
00. No Apparent Contributing Factor
01. Asleep at the Wheel
02. Driver Fatigue
03. Illness / Medical
04. Driver Inexperience
05. Aggressive Driving
06. Driver Unfamiliar With Area
07. Driver Emotionally Upset
08. Evading Law Enforcement Officer
09. Physical Disability
10. DUI, DWAI, DUID
11. Distracted / Passenger
12. Distracted / Cell Phone
13. Distracted / Radio
14. Distracted / Other i.e. Food, Objects, Pet, etc.
15. Other Factor (Describe in Narrative)

Most Common

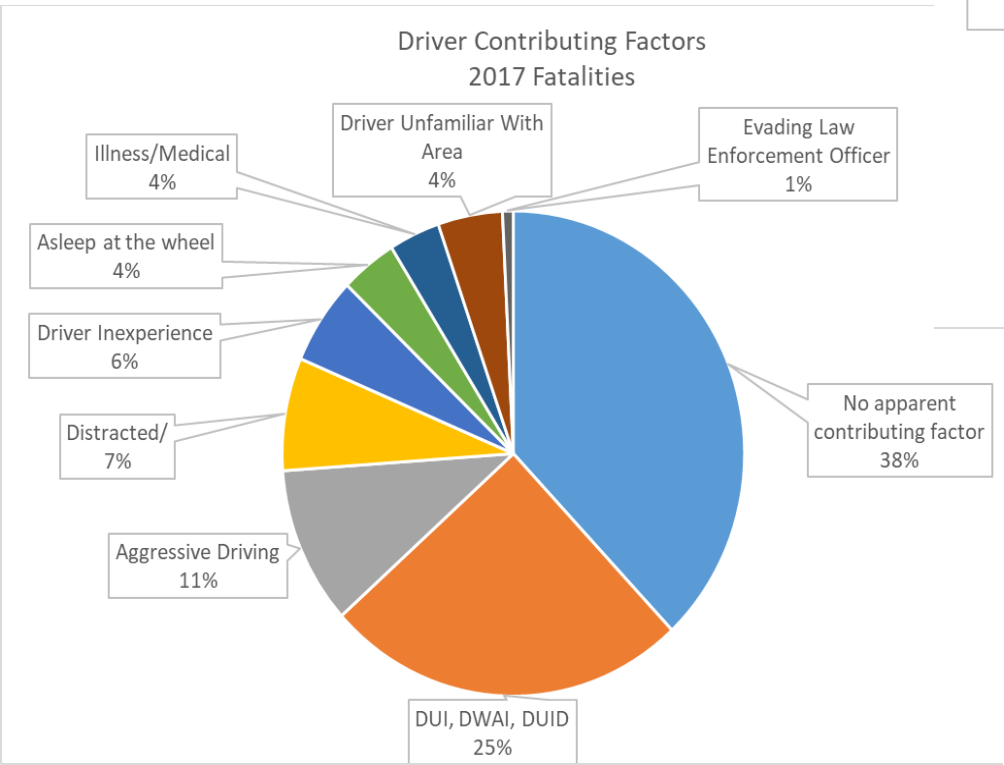
- Causal Factors
  - Driver Error – 50%
    - Lane violation
    - Failure to Yield ROW
    - Inattentive
    - Traffic Control Device Violation
    - Turn Lane or Passing Violation
    - Wrong Side of Road
    - Asleep
  - DUI – 16%
  - Speeding – 15%
  - Pedestrian – 11%
- Contributing Factors
  - DUI/DWAI/DUID – 30%
  - Aggressive – 16%
  - Distracted – 9%
  - Inexperience – 5%
  - Fatigue/Asleep – 4%

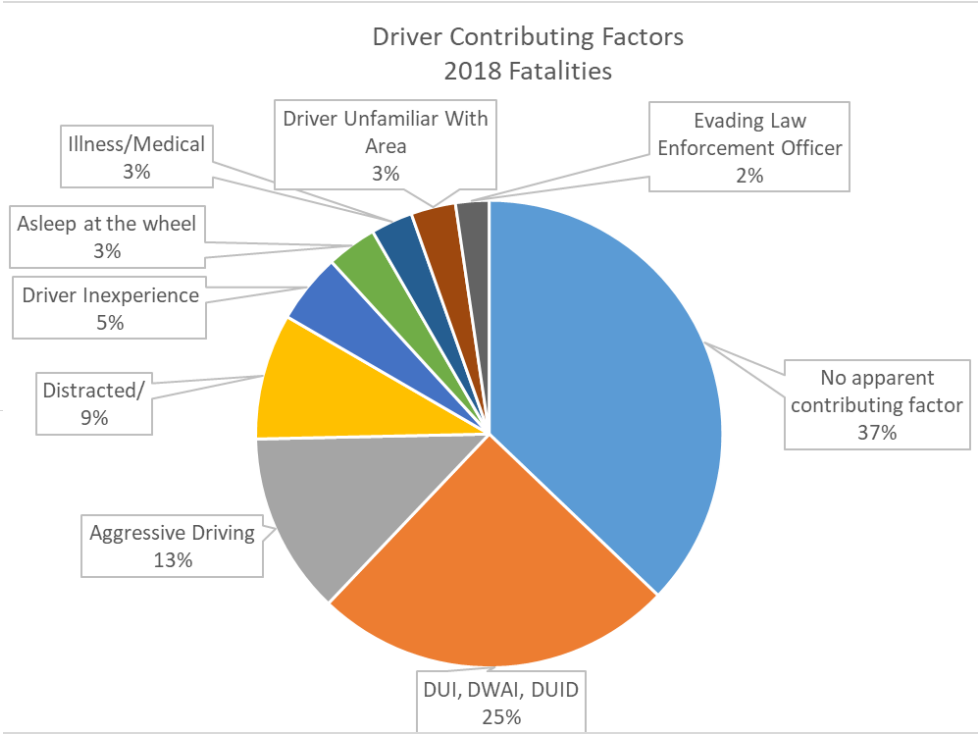
Fatality Causal Factors by Year





Fatality Contributing Factors by Year





Results of Crashes

- Harmful Event/Results –
  - Collision (rear end, broadside), fixed object, overturn, vulnerable users, etc.
- Location- intersection, run off road, median, etc.

- Analysis
  - Statewide and Regional Trends
  - Regional crash tree diagrams
  - Regional corridor analysis
  - LOSS / Pattern Listings and Mapping

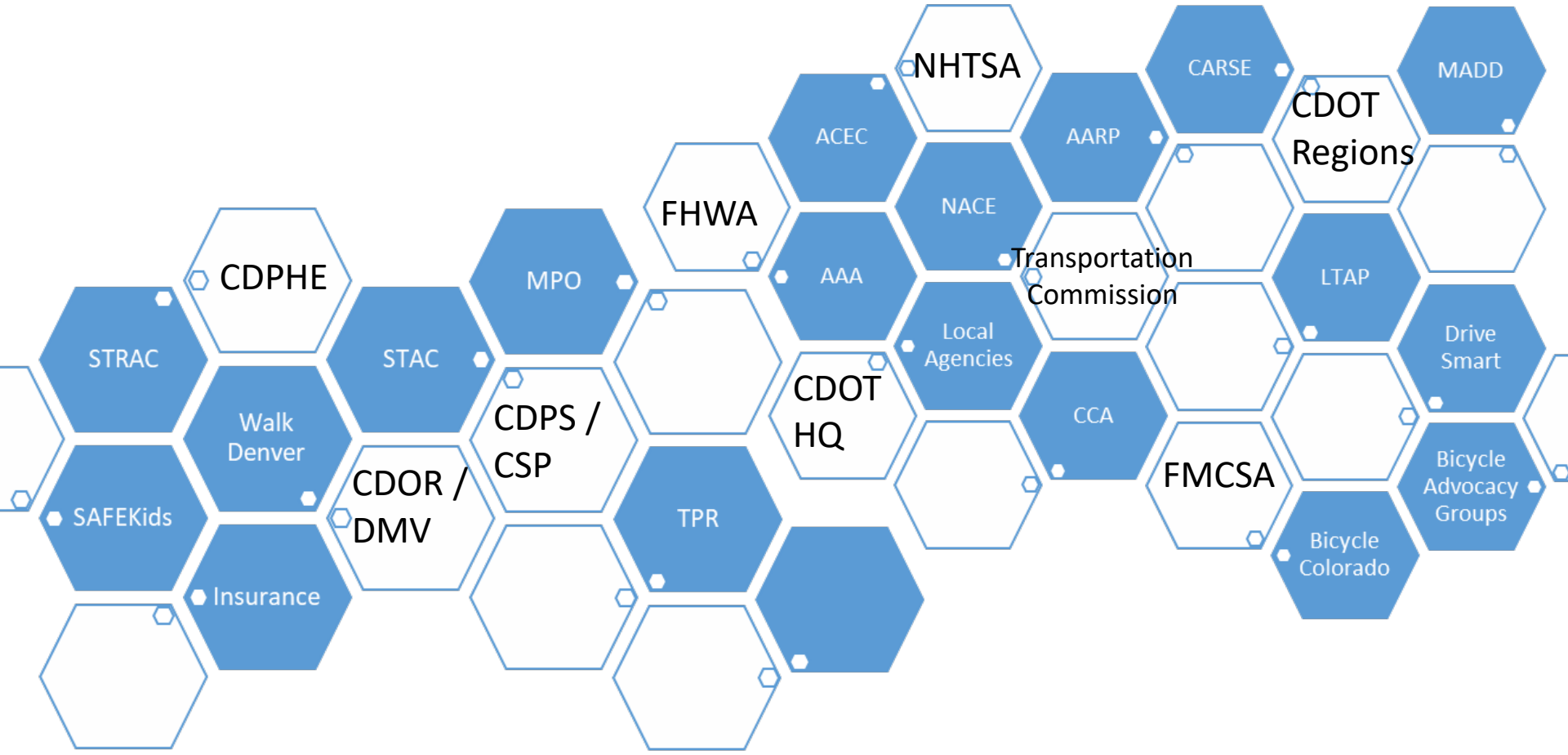
Mitigations

- Depending on Patterns of Causal, Contributing Factors and Harmful Events
  - Education
  - Enforcement
  - Engineering
- Prevention / “Forgiving Roadway” - standards, specifications, design manual
- Risk analysis - factors analysis, likelihood/ consequences, examples - wildlife fencing, rumble strips, cable rail, guardrail, safety edge
- Hot spot mitigation

Stakeholders

- Engagement
  - Partnerships day to day
    - HQ Programs – campaigns, targeted enforcement, Local Safety Liaison
    - Regional partnerships
  - Strategic engagement and planning process
    - SWP
    - STSP
- Federal, state, local, agencies, citizens
- Enforcement, Education, Engineering

Stakeholders



Stakeholder Outreach

- Schedule of STSP meetings
  - Sept 20th – Agency Steering Committee
  - Sept 23rd - Region 3 East Workshop – Silverthorne
  - Sept 24th - Region 3 West Workshop – Grand Junction
  - Sept 25th - Region 5 West Workshop – Durango
  - Sept 26th - Region 5 East Workshop – Poncha Springs
  - Sept 30th – Region 4 Workshop – Greeley
  - Oct 1st - Region 1 Workshop – Denver
  - TBD - Region 2 Workshop – Pueblo

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Discussion