



I-70 Mountain Corridor Record of Decision

2020 Reassessment

December 2020



I-70 Mountain Corridor
2020 Reassessment



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- 1 2020 Reassessment Work Plan
- 2 CE and CE Subcommittee Meeting Notes
- 3 Technical Narratives
- 4 Preferred Alternative Tracking Sheet
- 5 CE Future Actions Step 4 Work Plan



Acronyms

AGS	Advanced Guideway System
ALIVE	A Landscape Level Inventory of Valued Ecosystem Components
CDOT	Colorado Department of Transportation
CE	Collaborative Effort
CSS	Context Sensitive Solutions
EJMT	Eisenhower-Johnson Memorial Tunnels
FHWA	Federal Highway Administration
MOU	Memorandum of Understanding
PA	Programmatic Agreement
PEIS	Programmatic Environmental Impact Statement
PPSL	peak period shoulder lane
ROD	Record of Decision
SWEEP	Stream and Wetland Ecological Enhancement Program



INTRODUCTION AND PURPOSE

On June 16, 2011, the Federal Highway Administration (FHWA) signed the Tier 1 Record of Decision (ROD) approving the Preferred Alternative for the I-70 Mountain Corridor Programmatic Environmental Impact Statement (PEIS), marking the end of nearly 20 years of studying and discussing improvements for the 144-mile I-70 Mountain Corridor from C-470 in the west Denver metropolitan area to Glenwood Springs. The Preferred Alternative consists of non-infrastructure components, an Advanced Guideway System (AGS) (transit), and a flexible program of highway improvements (referred to as Minimum and Maximum Programs) that adapt to future trends.

To reach agreement on the Preferred Alternative, FHWA and the Colorado Department of Transportation (CDOT) participated as part of the Collaborative Effort (CE), a consensus-building process to identify a Consensus Recommendation for improvements. The Preferred Alternative selected by the ROD adopted the Consensus Recommendation. The criteria below, outlined in the Consensus Recommendation and described in the ROD (Section D, Basis for the Selection of the Preferred Alternative), informed the CE's recommendation and continue to inform effectiveness criteria:

- The solution should improve safety and mobility for all users.
- The solution should be responsive and adaptive to broader global trends that will affect the way we make travel decisions in the future.
- The solution will meet the Purpose and Need and all environmental and legal requirements.
- The solution should preserve, restore, and enhance community and cultural resources.
- The solution should preserve and restore or enhance ecosystem functions.
- The solution should be economically viable over the long term.

Additionally, the ROD provided an adaptive and incremental framework to implement the Preferred Alternative based on triggers where CDOT and the CE regularly review the current status of all projects and consider the triggers in evaluating the need for additional capacity improvements. As such, the ROD committed to reconvening the CE at least every two years to review progress on the implementation of the Preferred Alternative and to conduct a thorough review of the Preferred Alternative in 2020.

As explained in the ROD, "In 2020, regardless of the status of the triggers, there will be a thorough reassessment of the overall Purpose and Need and effectiveness of the implementation of components of the Preferred Alternative. At that time, the full range of improvements evaluated at Tier 1 may be reconsidered. In addition, the Collaborative Effort stakeholder committee (including the lead agencies) may reconsider the full range of improvements evaluated in the Final PEIS, or pursue a new process because the context in which this Tier 1 decision was made is so changed that none of the alternatives evaluated in



the Final PEIS meets future transportation needs. Global, regional, and local trends such as peak oil, climate change, technological advances, and changing demographics could affect these future transportation needs.”

REASSESSMENT WORK PLAN

For the 2020 Reassessment, the CE, including FHWA and CDOT, developed a Work Plan to conduct this comprehensive review and designated a Reassessment CE Subcommittee to advance the Work Plan and facilitate consensus agreement from the CE. The Work Plan (Attachment 1) outlines five steps to the Reassessment:

- **Step 1:** Reassess the Purpose and Need
- **Step 2:** Assess the effectiveness of the implementation of the Preferred Alternative
- **Step 3:** Clarify uncertainties of the components of the Preferred Alternative
- **Step 4:** Develop a list of potential future actions for continued pursuit of the Preferred Alternative
- **Step 5:** Develop a Reassessment Document






Through the course of the Reassessment, the CE and CE Subcommittee met 10 times from January 2020 through December 2020 in half-day and full-day workshops to progress through the Work Plan.¹ Meeting notes are included in Attachment 2. CDOT, with the support of the CE, retained HDR Engineering and Peak Consulting Group to provide technical support for Steps 1 and 2 of the Work Plan and to complete the documentation in Step 5. Steps 3 and 4 of the Work Plan were led by the CE and the CE contracted with an independent facilitator, CDR Associates, to enable the discussions and consensus on those steps.

Through this process, the CE affirmed the Preferred Alternative and the implementation processes and agreements committed to in the ROD. The CE identified and committed to additional work to implement the Preferred Alternative, improve transportation conditions, and continue the I-70 Mountain Corridor Context Sensitive Solutions (CSS) process and other agreements to protect and enhance the environment and community values along the corridor. Consensus was achieved for each of the steps in the Work Plan (Exhibit 1).

¹ The CE and CE Subcommittee met three times in 2019 to finalize the Work Plan and solicit and review consultant proposals.



Exhibit 1: Summary of Consensus on Work Plan Steps

	Step 1	The CE concluded that the Purpose and Need under which the Preferred Alternative was developed remains valid.
	Step 2	The CE reviewed completed projects in the corridor and reached consensus that most of the implemented components had been effective (noting that some data were incomplete and not enough progress had been made in some areas to assess effectiveness).
	Step 3	Outstanding questions about the Preferred Alternative were identified and resolved.
	Step 4	The CE developed a work plan listing priority actions for continued implementation of the Preferred Alternative and identified subcommittees to champion those efforts.
	Step 5	Documentation of the effort is summarized in this report, and supplementary materials are appended to support future work of the CE in its Future Actions Step 4 Work Plan moving forward.

This document summarizes the conclusions and observations of each of the steps in the 2020 Reassessment effort. The following attachments support documentation of the Reassessment process and outline steps the CE will take for continued implementation of the Preferred Alternative:

- Attachment 1.** Reassessment Work Plan
- Attachment 2.** CE and CE Subcommittee Meeting Notes
- Attachment 3.** Technical Narratives
- Attachment 4.** Preferred Alternative Tracking Sheet
- Attachment 5.** CE Future Actions Step 4 Work Plan

WORK PLAN STEP 1: REASSESS THE PURPOSE AND NEED

The CE reached consensus that the context and the components of the Purpose and Need are still valid based on the current context. After thorough discussion of each of the components of context and Purpose and Need, the CE Subcommittee and CE concluded that:

- The context under which the Purpose and Need was developed remains relevant, recognizing that since the ROD, land use, recreation, and climate change pressures have intensified and technological advances in high-speed transit and operational management strategies are increasingly appropriate to serve person trip demand in the corridor.



- The Purpose and Need remains valid. It identifies persistent transportation needs to increase person-trip capacity, improve mobility and accessibility for people and freight, and reduce congestion and travel delays through the I-70 Mountain Corridor. The Purpose and Need also recognizes the need for transportation solutions in the corridor to provide for and accommodate environmental sensitivity and respect for community values.

Attachment 3 includes technical narratives, which informed the CE conclusions and provide supplemental data supporting the purpose and need evaluation. Additional observations related to both the context and Purpose and Need are documented below.

Observations on Context

The Preferred Alternative was developed with a 50-year vision that remains valid and generally captures the current context influencing the Purpose and Need. Several conditions identified in the PEIS have intensified.

LAND USE AND RECREATIONAL PRESSURES

The challenge of balancing access to and conservation of recreational resources has intensified. Overuse of resources is becoming a more significant issue for protecting the environment and quality of recreational experiences. Additionally, the outdoor recreation economy shapes the Mountain Corridor and continues to put significant pressure on the need for affordable housing for workers supporting the industry.

HIGH-SPEED TRANSIT TECHNOLOGY

High-speed transit technology is evolving rapidly, and most members feel strongly that its application and feasibility for the Mountain Corridor is strengthened by these advances. The increasing common deployment of high-speed technology in operating systems around the world, particularly for areas with similar mountainous terrain, such as the Swiss Alps, is also a positive trend for AGS. Technological advances do improve cost effectiveness, but some members noted that high-speed transit remains expensive to build and requires a stable, ongoing funding source to operate.

CLIMATE CHANGE

The issue of climate change and its threat was documented in 2011 and considered in the context of the PEIS Purpose and Need. However, since the PEIS and ROD, cultural awareness of climate change has increased, and the need for more aggressive solutions to address it is more broadly understood. The CE acknowledges that the concern about climate change is not reflected in current federal government policies, but notes its membership agrees that climate change needed to be documented as a significant issue affecting the current context for the Mountain Corridor.



Observations on Components of the Purpose and Need

The three interrelated needs describing the transportation problems in the Mountain Corridor remain valid, and the PEIS language describing those needs, particularly in relation to the focus on person trips rather than vehicle trips to describe transportation needs, is important and supported. The following observations for each of the components are noted below.

INCREASE CAPACITY

The evaluation of capacity in terms of person trips rather than vehicle trips, as described in the PEIS Purpose and Need, is an important distinction. In the context of person trips, the CE agrees that additional capacity is needed. The issue of suppressed trips and induced demand (that increased capacity is filled up by latent demand) remains a concern, and a multimodal approach “beyond pavement” continues to be needed. The capacity for vehicles in terms of person trips also applies to freight, where capacity should be represented in efficiency/effectiveness of payload delivery, without presuming mode or method. Finally, the CE observed that transit demand in the I-70 Mountain Corridor is underrepresented because 1) comprehensive transit service is not available; 2) data regarding transit use are incomplete; for instance, private transit operators, which provide a significant portion of existing transit service, particularly to/from DEN, do not release ridership data; and 3) transit demand exceeds capacity, as evidenced by crowded transit vehicles that are often over-capacity on mainline I-70 and in local communities/recreational areas.

IMPROVE MOBILITY AND ACCESSIBILITY

The CE agreed mobility continues to be a core transportation need in the Mountain Corridor and noted that mobility should be emphasized as the primary need because it drives the need for increased capacity. The CE reiterated the need to discuss mobility in terms of people not vehicles and noted that other factors beyond capacity affect mobility, such as affordable housing and longer commute times, and the spreading of delays from weekends to weekdays. Finally, the issues with risk and resiliency and how natural disasters - fires, floods, landslides - affect reliability / availability of the highway for all travelers and particularly for corridor communities are important considerations for developing projects.

DECREASE CONGESTION

The CE agrees that congestion inhibits travel in the Mountain Corridor and notes that existing transit service is also affected by congestion, both in terms of inadequate system capacity as well as shared use of the congested highway for services.

ENVIRONMENTAL SENSITIVITY AND COMMUNITY VALUES

In addition to transportation needs, the PEIS Purpose and Need provides additional considerations in developing alternatives and states:



“Alternatives must meet the transportation needs and be developed in a manner that provides for and accommodates the following:

Environmental Sensitivity - Avoid and minimize adverse impacts on and, where possible, enhance environmental resources, including, but not limited to, stream sedimentation, water quality, wildlife crossings, and impacts on wetlands.

Respect for Community Values - Avoid and minimize adverse impacts on and, where possible, enhance air quality, historic resources, noise levels, visual resources, and social and economic values, as well as minimize the transportation system’s footprint on the mountain communities. Consider the possible growth changes and economic effects that might occur, depending on the ease or difficulty of access.

Safety - Improve where possible problematic roadway geometric conditions, such as tight curves and lane drops, and consider the safety characteristics of the modes of travel. Undesirable safety conditions along the Corridor directly affect the project need, specifically the mobility, accessibility, and congestion elements.

Ability to Implement - Consider technical feasibility (that is, overall use of a mode and the feasibility of the technology), as well as affordability of alternatives in terms of capital costs, maintenance and operational costs, user costs, and environmental mitigation costs. Understanding the construction impacts on existing mobility and to the communities along the Corridor is important to evaluating implementation of alternatives.”

The need to measure and document the effectiveness of the Preferred Alternative implementation in providing for and accommodating environmental sensitivity and respect for community values is important and was a topic of much discussion throughout the review of Steps 1 and 2. The ROD requires Tier 2 processes and agreements, including the CSS process, Stream and Wetland Ecological Enhancement Program (SWEEP) Memorandum of Understanding (MOU), A Landscape Level Inventory of Valued Ecosystem Components (ALIVE) MOU, and Section 106 Programmatic Agreement (PA) be followed. The importance of these processes and agreements in meeting the Purpose and Need requirements for projects in the corridor was affirmed in Step 1 and assessed in Step 2.



WORK PLAN STEP 2: EFFECTIVENESS OF THE PREFERRED ALTERNATIVE IMPLEMENTATION

The CE affirmed all of the major components of the Preferred Alternative - non-infrastructure improvements, AGS, and highway improvements - remain relevant and are important and intertwined. The CE agreed all are needed to effectively address the transportation problems in the corridor.

The consultant team developed a tracking sheet showing each of the components of the Preferred Alternative Minimum Program of Improvements, as presented in the PEIS and ROD (Attachment 4).² For each component, the team reviewed and summarized the status of improvements (what had been accomplished); the evaluation was supported by technical narratives (Attachment 3). For components where improvements had been implemented, the consultant provided observations about the mobility and safety effectiveness of the completed or work-in-progress projects associated with each component based on project goals (needs addressed), research and review of “before and after” data, and judgements from Colorado State Patrol, CDOT maintenance, and corridor stakeholders, as applicable. Effectiveness for many of the components of the Preferred Alternative was characterized as “unknown” or “incomplete” because either no progress has been made toward implementation or data were not available to measure effectiveness. Where data were available, a ranking of High, Medium, or Low effectiveness was assigned. The observations and ratings were discussed with and endorsed by the CE and set the stage for the CE evaluation in Step 4 of the Work Plan regarding the actions needed to advance the Preferred Alternative.

The CE generally concluded that implemented improvements have been moderately effective in addressing the corridor Purpose and Need. However, not enough progress had been made toward advancing the Preferred Alternative, especially with regard to the AGS component, and the lack of progress on the AGS component complicated the assessment of AGS’s effect on needs and other components. While funding is a challenge, more tangible action is needed. Much of the “low hanging fruit” has been picked, and there have been no “game changers” to address major mobility and safety challenges in the corridor.

The CE also noted thorough support for the framework that the ROD establishes for considering and evaluating environmental sensitivity and community values in the needs; the adaptive management approach to implementation of projects, which provides flexibility and allows for innovative ideas and new technologies to be advanced; and the CSS process. The CE

² The Maximum Program of Improvements was not evaluated because the triggers have not been met.



noted that the CSS process is especially effective when it is carried through all the life cycles of project development.

Additional observations on how effectiveness is measured and discussion of effectiveness of the non-infrastructure, AGS, and highway components are included below.

Observations on Measuring/Assessing Effectiveness

Effectiveness was characterized broadly in terms of mobility and safety. Several CE Subcommittee members suggested additional measures, such as reliability. Rather than change the categories, the group agreed the disposition status of each component should be categorized for future effort needed: initiate effort, continue existing level of effort, increase effort, or deemphasize effort.

Providing for and accommodating environmental sensitivity and respect for community values is integral to the effectiveness of projects in the Mountain Corridor, and the CSS process, SWEEP MOU, ALIVE MOU, and Section 106 PA are commitments for every Tier 2 project. These values will be measured by reviewing Tier 2 project implementation and documenting lessons learned and process improvements that have occurred since the PEIS and ROD.

Observations on the Effectiveness of the Implementation of Preferred Alternative Components

The Preferred Alternative tracking sheet captures the conclusions of the CE review of the effectiveness of the Preferred Alternative implementation. The CE recorded additional overarching observations related to the main components of the non-infrastructure, AGS, and highway improvements as noted below.

NON-INFRASTRUCTURE RELATED COMPONENTS

Although observations can be made generally, measuring progress for the non-infrastructure components, either qualitatively or quantitatively, is difficult because these actions are not intended to be completed but expected to evolve over time. Usage and effectiveness data are difficult to obtain. Additionally, many of these components are actions that are taken by others (for example, the I-70 Coalition).

The implemented non-infrastructure components were found to be effective in addressing some issues on the corridor but have low effectiveness at addressing core corridor needs on their own. The lower effectiveness of the non-infrastructure components is expected because this category of improvements is not intended to create long-term solutions independently but rather complement AGS and highway improvements in the Preferred Alternative.

The Peak Period Shoulder Lane (PPSL) projects have had a bigger impact because they are broader in scope even though they are interim and stayed mostly within the existing interstate footprint.



ADVANCED GUIDEWAY SYSTEM (AGS)

The feasibility study for AGS has been completed, but little progress has been made to advance the AGS concept, and no progress has been made to advance a functioning system that could trigger evaluation of the Maximum Program. The lack of progress on the AGS is a concern because it is considered a game changer for improving mobility in the corridor but also very costly and could prevent additional, more affordable improvements from moving forward.

The AGS study conclusion that the AGS was not financially feasible “at the time” (e.g., 2014), is dated, and the financial feasibility may be greater now with improvements in technology, greater use of public-private partnerships, and greater political will.

The CE agreed that additional work is needed to assess both technological and financial feasibility of AGS. How to advance AGS was a significant focus of the Step 4 actions developed by the CE.

HIGHWAY IMPROVEMENTS

The CE felt the highway improvements were generally more effective because more effort and funding had been directed to this component of the Preferred Alternative. The CE made several observations about the highway improvements:

- Six-lane capacity is intentionally distinct from a six-lane highway template. (Note: this comment applies to the Maximum Program, which is not triggered at this time.) If the six-lane capacity of the Maximum Program becomes a six-lane highway solution, a redesign of the existing roadway between the Veterans Memorial Tunnels and Eisenhower-Johnson Memorial Tunnels is anticipated, and previous visioning exercises conducted by Clear Creek County and Idaho Springs (in 2014 and 2016) should be honored. (See <https://www.clearcreekcounty.us/684/Interstate-70-Visioning-Plan> for the visioning documents.) The CE also noted that the agreement for the PPSLs as non-infrastructure improvements mean they may not be used for expansion into, nor as a component of, the Maximum Program’s six-lane highway
- Interchange improvements that have not been implemented should be classified as “unknown” in terms of effectiveness.
- Highway projects, particularly large-scale ones like Floyd Hill and West Vail Pass, need to take a deeper look into “not precluding” AGS. Several members noted that the evaluations have been superficial due to the lack of AGS expertise on Project Leadership Teams and Technical Teams.



EFFECTIVENESS OF CSS AND AGREEMENTS

The CE highly supports the CSS process and the significant time that stakeholders have devoted to developing and implementing the Preferred Alternative in a manner that honors the CSS process.

They noted variability in the application of CSS; some projects more effectively used the CSS process and other agreements. The most effective projects in providing for and accommodating environmental sensitivity and respect for community values were those that carried CSS through all the life cycles, included tracking of environmental and community values through those phases, and incorporated best practices and lessons learned from previous projects.

WORK PLAN STEP 3: CLARIFICATIONS TO THE PREFERRED ALTERNATIVE

Through developing the Work Plan and discussing the Preferred Alternative during Steps 1 and 2 of the Work Plan, five aspects of the ROD and Preferred Alternative were identified by the CE for further discussion or clarification: the status of the Eisenhower-Johnson Memorial Tunnels (EJMT) Third Bore, the I-70/US 40 Empire Junction Interchange scope of improvements, the 2025 Triggers, the definition of AGS, and the definition of the Maximum Program highway improvements component. In all cases, the discussions concluded that no changes to the ROD or Preferred Alternative were needed.

EJMT Third Bore

The CE wanted to clarify whether the EJMT third bore is part of the Minimum or Maximum Program of Improvements because the PEIS does not specifically classify the EJMT third bore in either program or as a separate improvement project. After discussion, the CE concluded that the EJMT expansion should be classified in the Minimum Program. This conclusion was based on the relationship of the EJMT improvements to other parts of the Preferred Alternative that are clearly outlined in the Minimum Program, such as the Vail Pass auxiliary lanes and the AGS bore through the Continental Divide. Further, expanding the EJMT would not trigger the Maximum Program and classifying the EJMT expansion in the Minimum Program provides more flexibility to advance this discrete but complex action, such as if tolling could fund its expansion.

I-70/US 40 Empire Junction Interchange

The CE wanted to clarify the scope of improvements for Empire Junction as a “specific highway improvement” in the Minimum Program. Clear Creek County understands that the intent of the interchange reconstruction is to support short-term safety and mobility in the interchange area, but not reconstruction that supports the Maximum Program. This



clarification is important because the design of the Maximum Program highway improvements is unknown and, therefore, how the interchange would interact with Maximum Program improvements cannot be determined. The group agreed that the specific highway improvement for Empire Junction is intended to meet immediate safety and mobility needs and is separate from the Maximum Program. This conclusion is consistent with the PEIS description of specific highway improvements and that they "...are not subject to the parameters established for future capacity components..."

2025 Triggers

The CE wanted to clarify the intent of the following language for the second trigger related to AGS (bolded below for emphasis):

"The specific highway improvements are complete and Advanced Guideway System studies that answer questions regarding the feasibility, cost, ridership, governance, and land use are complete and indicate that an **Advanced Guideway System cannot be funded or implemented by 2025 or is otherwise deemed unfeasible to implement...**"

The group discussed the meaning of "funded" and "implemented" and whether this presented a deadline for AGS. The CE remains committed to getting the AGS built and that in that spirit, the commitment should not expire in 2025. FHWA clarified that the 2025 trigger was not intended to be a trigger to eliminate AGS and that a lot of specific highway improvements are also outstanding, so it is very unlikely that the Maximum Program could be triggered regardless of whether AGS is funded or implemented.

CE members that participated in the Consensus Recommendation suggested that the 2025 language may have been included to ensure that AGS remained a central component of the Preferred Alternative and not get relegated to a back burner to highway improvements.

The group concluded that no changes are needed to the language and agreed that 2025 is not a deadline for AGS.

AGS Definition

The definition of AGS in the ROD, especially related to technology, was raised for potential clarification by some CE members that felt the definition was too loose or vague to accurately describe the intent of the AGS component of the Preferred Alternative. After discussion, the group agreed that the definition in the ROD ("The specific technology for the Advanced Guideway System has not been defined but is intended to represent a modern, "state-of-the-art" transit system.") captures the intention that the AGS be a modern, state of the art transit system that left open the possibility to take advantage of what is "state-of-the-art" at the time it is implemented. The undefined technology provides flexibility to adopt the newest technology, which was the intent of the AGS definition. In the past decade since the ROD, the



open technology language had not restricted any discussions to date and no changes to the definition were recommended.

A related issue was raised regarding the AGS design. The AGS design is kept “wide open” as other large roadway projects move forward. The CE discussed whether more analysis of AGS conflicts beyond an overlay of the alignments was needed to answer the question of whether AGS would be precluded. Even if projects did not rise to the level of precluding the AGS, would significant reconstruction or cost be encountered when AGS was implemented? Did Project Leadership Teams have sufficient expertise to answer questions about how AGS would fit in with highway improvements? The group agreed this was an important topic that should be discussed further in Step 4.

Maximum Program of Improvements

Several clarifications were discussed regarding six-lane capacity in the Maximum Program (i.e., between Veterans Memorial Tunnels and EJMT). Two of the issues were directly addressed by the PEIS. First, the PEIS was intentional in the discussion of six-lane capacity, not lanes. This means people, not cars, and six-lane capacity is not the same as a six-lane highway section. Second, the “general alignment” of improvements along the existing I-70 highway could include – and Idaho Springs and Clear Creek County have conducted visioning exercises to recommend – moving the highway outside of its current footprint. Finally, the PPSL projects, while not envisioned in the PEIS, are non-infrastructure improvements that are separate from and cannot be considered as part of the six-lane capacity in the Maximum Program. This is clarified in the operating agreement for the Mountain Express Lanes (aka, PPSLs).

WORK PLAN STEP 4: FUTURE ACTIONS WORK PLAN

The CE developed and refined the Future Actions Step 4 Work Plan during three workshops held on September 30, November 18, and December 16, 2020 (Attachment 5). The plan (attached) identifies a number of actions around the following topics:

- Travel Demand and Capacity
- CSS Process
- Environmental Impacts and Mitigation
- Outreach and Communication
- Non-AGS Transit Improvements
- Travel Demand Management
- Corridor Management
- Technology
- AGS

Four subcommittees were recommended to champion the Future Actions Step 4 Work Plan and CE members volunteered to serve on these committees. The subcommittees will organize and seek support to begin work in 2021. The subcommittees will report progress at future CE meetings.



CONCLUSION

The Reassessment process confirmed the CE's commitment to the ROD Preferred Alternative as the right solution for the Corridor. The CE renewed its pledge to work collaboratively to advance the Preferred Alternative and to increase efforts on the AGS and non-infrastructure transit elements. The Consensus Recommendation developed by the CE and adopted as the ROD Preferred Alternative has stood the test of time. Its multimodal solution and unique implementation approach provide flexibility to adapt to changing conditions, harness innovative technologies, develop sustainable strategies, and respect the magnificent environment and communities along its route. The CSS process, corridor MOUs, agreements, and mitigation strategies provide a successful framework for developing Tier 2 projects and thinking creatively.

The CE has created a Future Actions Step 4 Work Plan to guide its activities through focused subcommittees. The CE Co-Chairs are working with CDOT and FHWA leadership to support the Work Plan and the recommendations that will come out of the subcommittees.

I-70 MOUNTAIN CORRIDOR REASSESSMENT
Step 5: Documentation of the 2020 Reassessment

ATTACHMENT 1
I-70 Mountain Corridor 2020 Reassessment Work Plan
(amended May 27, 2020)

Collaborative Effort
Record of Decision 2020 Reassessment
Work Plan

As stated in the 2011 Record of Decision (ROD), the Preferred Alternative is “...a multimodal solution and includes three main components identified by the Collaborative Effort Team: 1) Non-infrastructure Components, 2) the Advanced Guideway System, and 3) Highway Improvements” (ROD 2011 pg. 2).

The 2020 Language (ROD 2011 pg. 8)

“In 2020, regardless of the status of the triggers, there will be a thorough reassessment of the overall purpose and need and effectiveness of the implementation of components of the Preferred Alternative.

At that time, the full range of improvements evaluated at Tier 1 may be reconsidered. In addition, the Collaborative Effort stakeholder committee (including the lead agencies) may reconsider the full range of improvements evaluated in the Final PEIS, or pursue a new process because the context in which this Tier 1 decision was made is so changed that none of the alternatives evaluated in the Final PEIS meets future transportation needs. Global, regional, and local trends such as peak oil, climate change, technological advances, and changing demographics could affect these future transportation needs.”

Purpose and Need (Final Programmatic Impact Statement [PEIS] 2011 pg. ES-4)

“The purpose for transportation improvements is to increase capacity, improve accessibility and mobility, and decrease congestion for travel demand (projected to occur in 2050) to destinations along the I-70 Mountain Corridor as well as for interstate travel, while providing for and accommodating environmental sensitivity, community values, transportation safety, and ability to implement the proposed solutions for the Corridor.”

Primary Roles and Responsibilities

The following are the primary roles and responsibilities for the reassessment. Any specific roles and responsibilities for a given step are listed within the steps.

1. The Collaborative Effort’s (CE) highest goal is consensus. A consensus agreement is one that all group members can support, built by identifying and exploring all parties’ interests and by developing an outcome that satisfies these interests to the greatest extent possible.
2. The CE will strive to build consensus around which criteria and key considerations will be used to reassess the overall purpose and need and effectiveness of the implementation of the components of the Preferred Alternative.
3. The CE will strive to build consensus around revisions, if any, to the Preferred Alternative.
4. The FHWA and CDOT commit to fully engaging as partners in this process and being an integral part of reaching consensus. However, lead agencies cannot delegate their responsibilities regarding decision making and NEPA compliance. As equal and participating members of the CE, lead agencies are committed to crafting with all stakeholders decisions that can be supportive.

If consensus is not possible, then the level of support and dissension will be noted and all deliberations and products of the CE will be considered by the lead agencies in their decision making.

5. The CE ROD Reassessment Subcommittee is tasked by the CE to act as the working group, to carry out task specific roles and responsibilities listed within the steps. The CE subcommittee will regularly report to the CE. The CE will provide guidance to the subcommittee at any time while they carry out their specific tasks.
6. The CE subcommittee members are obligated to be transparent and will proactively communicate results to the CE. This includes narratives, listed in the steps below, to be submitted to the CE via email with a 2-week comment period. The subcommittee will work together to address the comments and if some are not solvable, a CE meeting may be called.
7. The obligation of the CE members is to actively participate. They review the narrative summaries distributed by the subcommittee to gain understanding. It is intended that each step leading to the preparation of the reassessment is the time for the CE to build consensus. The CE may call special meetings at any time for discussion to help build consensus.
8. CDOT leads analysis/prepares documentation, with oversight from FHWA.

Step 1: Reassess the Purpose and Need. If this proposed process identifies substantial changes in the I-70 Mountain Corridor that alter the Purpose and Need of the Final PEIS/ROD the work plan does not automatically progress to Step 2. The group will reconvene to determine next steps.

Roles and Responsibilities - CE ROD Reassessment Subcommittee provides input and feedback to evaluation criteria. CE reviews written narrative summary to gain understanding on any changes in context and/or purpose and need.

Deliverables - Written narrative of context evaluation, written narrative of Purpose and Need evaluation, and discussion at CE meetings.

Schedule – List of trends and relevant factors discussion in January 2020, Draft analysis complete in May 2020, and Final analysis complete in September 2020.

Step 1A: Evaluation of context. Determine if the context in which the Purpose and Need statements were developed have changed. Information that may be needed to evaluate the context includes:

1. Population
2. Land use and land use pressures (including demand)
3. Technology
4. Climate change
5. Others

Step 1B: Evaluate current components of Purpose and Need. Determine if the components are still valid using Step 1A context evaluation. The same data sets (listed under each component) must be used as were used in the original PEIS to provide a true comparison.

Component 1: Increase capacity. Information that may be needed to evaluate this component includes:

1. Existing traffic data
2. Person trips

3. Updated traffic projections/Travel Demand Model information
4. Transit ridership
5. Others

Component 2: Improve mobility and accessibility. Information that may be needed to evaluate this component includes:

1. Travel time/reliability
2. Safety data
3. Incident response times
4. Travel Demand Model information
5. Others

Component 3: Decrease congestion. Information that may be needed to evaluate this component includes:

1. Level of Service
2. Crash data, Weighted Hazard Index (WHI) information
3. Travel time/reliability
4. Travel Demand Model information
5. Others

Step 2: Assess the effectiveness of the implementation of components of the Preferred Alternative.

This includes discussion on the Minimum and Maximum Programs of Improvements in the Preferred Alternative and the specific Tier 2 improvements implemented to date, as well as the remaining improvements under the Minimum and Maximum Programs.

Roles and Responsibilities - CE ROD Reassessment Subcommittee provides input and feedback to how effectiveness will be measured. CE reviews written narrative summary to gain understanding on assessment of effectiveness.

Deliverables - Written narrative and discussion at CE meetings.

Schedule - Initial input into Step 2A and Step 2B in January 2020, additional discussion/initial analysis in May 2020, Draft analysis complete in September 2020, and Final analysis complete in December 2020.

Step 2A: Determine how to measure/assess effectiveness.

This will include an evaluation against the Purpose and Need and may include other factors as recommended by the subcommittee. Data collection will be needed such as:

- Travel time before and after implementation of an improvement
- Incident response times before and after implementation of an improvement
- Transit ridership before and after implementation of an improvement
- Person/vehicle capacity of surrounding area before and after implementation of an improvement
- How well have we been providing for and accommodating community values and environmental sensitivity (qualitative)
- Others

Step 2B: Assess the effectiveness of the implementation of the Preferred Alternative to date along with the remaining elements of the Minimum and Maximum Programs of Improvements/Preferred Alternative, timing, and anticipated effects. CDOT leads analysis, with oversight from FHWA. This section is taken directly from the ROD to show the exact components as listed.

Components of the Preferred Alternative.

- 1) Non-Infrastructure Related Components
- 2) Advanced Guideway System (AGS)
- 3) Highway Improvements

Minimum Program of Improvements. The non-infrastructure related components, AGS, specific highway improvements, and other highway projects comprise the Minimum Program of Improvements.

“Non-Infrastructure Related Components – Non-infrastructure-related components can begin in advance of major infrastructure improvements to address some of the issues in the Corridor today. Some of these components require actions and leadership by agencies, municipalities, and other stakeholders beyond the lead agencies. The Tier 1 decision includes non-infrastructure-related components that could be carried out with federal involvement in a Tier 2 NEPA process. Other non-infrastructure components, including those identified below and others not listed, could be carried out without federal involvement and would not require a Tier 2 NEPA process. When entities advance these strategies without federal involvement, for example, if the I-70 Coalition (a coalition of Corridor governments) were to implement travel demand management strategies for increasing overnight stays in the Corridor, Tier 2 NEPA processes would not be required. The non-infrastructure strategies include, but are not limited to:

- Increased enforcement
- Bus, van, or shuttle service in mixed traffic
- Programs for improving truck movements
- Driver education
- Expanded use of existing transportation infrastructure in and adjacent to the Corridor
- Use of technology advancements and improvements to increase mobility without additional infrastructure
- Traveler information and other information technology systems
- Shift passenger and freight travel demand by time of day and day of week
- Convert day trips to overnight stays
- Promote high-occupancy travel and public transportation
- Convert single-occupancy vehicle commuters to high-occupancy travel and/or public transportation
- Implement transit promotion and incentives
- Other transportation demand management measures to be determined

Advanced Guideway System – An Advanced Guideway System is a central part of the Preferred Alternative and includes a commitment to the evaluation and implementation of an Advanced Guideway System within the Corridor, including a vision of transit connectivity beyond the study area and local accessibility to such a system. Additional

information is necessary to advance implementation of an Advanced Guideway System in the Corridor:

- Feasibility of high-speed rail passenger service
- Potential station locations and local land use considerations
- Transit governance authority
- Alignment
- Technology
- Termini
- Funding requirements and sources
- Transit ridership
- Potential system owner/operator
- Interface with existing and future transit systems
- Role of an Advanced Guideway System in freight delivery both in and through the Corridor

Highway Improvements – The Preferred Alternative includes highway improvements to address current Corridor conditions and future demands. These improvements will be planned taking into consideration all elements of the Preferred Alternative and local land use planning. The following safety, mobility, and capacity components are not listed in order of priority, are not subject to the parameters established for future capacity components, do not represent individual projects, and may be included in more than one description. They are listed in two categories: 1) “specific highway improvements” and 2) “other highway projects.” All of the improvements in both categories are included in the Minimum Program of Improvements. The specific highway improvements are called out specifically for the “triggers” for future highway and non-Advanced Guideway System transit improvements.

The specific highway improvements are:

- Six-lane component from Floyd Hill through the Twin Tunnels (milepost [MP] 243 to MP 247) including a bike trail and frontage roads from Idaho Springs to Hidden Valley and Hidden Valley to US 6
- Empire Junction (US 40 and I-70) interchange improvements (MP 232)
- Eastbound auxiliary lane from Eisenhower-Johnson Memorial Tunnels to Herman Gulch (MP 215 to MP 218)
- Westbound auxiliary lane from Bakerville to the Eisenhower-Johnson Memorial Tunnels (MP 215 to MP 221)

The other highway projects are:

- Truck operation improvements, such as pullouts, parking, and chain stations (multiple locations)
- Safety improvements west of Wolcott (MP 155 to MP 156)
- Safety and capacity improvements in Dowd Canyon (MP 170 to MP 173)
- Interchange improvements at the following locations:
 - Glenwood Springs (MP 116)
 - Frisco / Main Street (MP 201)
 - Gypsum (MP 140)
 - Frisco / SH 9 (MP 203)

- Eagle County Airport (part of No Action)
- Silverthorne (MP 205)
- Wolcott (MP 157)
- Loveland Pass (MP 216)
- Eagle & Spur Road (MP 147)
- Georgetown (MP 228)
- Edwards & Spur Road (MP 163)
- Downieville (MP 234)
- Avon (MP 167)
- Fall River Road (MP 238)
- Minturn (MP 171)
- Base of Floyd Hill / US 6 (MP 244)
- Vail West (MP 173) / Simba Run
- Hyland Hills (MP 247)
- Vail (MP 176)
- Beaver Brook (MP 248)
- Vail East (MP 180)
- Evergreen Parkway / SH 74 MP 252)
- Vail Pass (East Shrine Pass Road MP 190)
- Lookout Mountain (MP 256)
- Copper Mountain (MP 195)
- Morrison (MP 259)

Auxiliary lanes:

- Avon to Post Boulevard (Exit 168) (eastbound) (MP 167–MP 168)
- West of Vail Pass (eastbound and westbound) (MP 180–MP 190)
- Frisco to Silverthorne (eastbound) (MP 202.7–MP 205.1)
- Morrison to Chief Hosa (westbound) (MP 253–MP 259)” (ROD 2011 p. 3-5)

Maximum Program of Improvements. “To address long-term needs, additional highway capacity improvements were added to the Minimum Program of Improvements to comprise the Maximum Program of Improvements with the condition that prior to taking action to add capacity, the Collaborative Effort Team must review and consider certain triggers. The Maximum Program is comprised of all of the components of the Minimum Program plus six-lane capacity from the Eisenhower-Johnson Memorial Tunnels to the Twin Tunnels, four additional interchange modifications in the Idaho Springs area, and a curve safety modification project at Fall River Road.” (ROD 2011 p. 7)

For the implementation status of the Preferred Alternative, see the attached table. (Note that this is being finalized and will be provided once a consultant team is selected.)

Step 3: Clarify uncertainties of the components of the Preferred Alternative. This section is not intended to add new information to the PEIS/ROD but rather to clarify questions on existing information.

Roles and Responsibilities - CE ROD Reassessment Subcommittee provides input and feedback on outstanding questions and how they will be evaluated. CE reviews written narrative summary to gain understanding on the questions and how they will be evaluated.

Deliverables - Written narrative to CE and discussion at CE meetings.

Schedule - List of outstanding questions determined in January 2020, Initial analysis complete in May 2020, and Final analysis complete in September 2020. Note this step may be able to be completed in one CE ROD Reassessment Subcommittee meeting and one CE meeting.

Step 3A: Identify outstanding questions regarding the Preferred Alternative, such as:

1. Status of Eisenhower-Johnson Memorial Tunnels 3rd bore (clarify Minimum or Maximum Program)
2. Empire Interchange (clarify what is to be done in Minimum Program)
3. 2025 trigger
4. Clarify and restate the definition of AGS in the ROD
5. Maximum Program highway component definitions, including:
 - a. Future highway expansion needs to be considered independent of the MEXL projects
 - b. Capacity means people, not cars, and six-lane capacity is not the same as six-lane highway cross section
 - c. “Existing highway” could allow moving the highway from its current alignment, such as was considered in Idaho Springs visioning efforts
 - d. If the six-lane capacity of the Maximum Program becomes a six-lane highway solution, a redesign of the existing roadway between the Veterans Memorial Tunnels and Eisenhower-Johnson Memorial Tunnels is anticipated, and previous visioning exercises conducted by Clear Creek County and Idaho Springs (in 2014 and 2016) should be honored
 - e. Meaning of “not preclude” for AGS. Now that more information is known about the AGS alignment, need to consider how future highway projects might conflict with AGS.
6. Others

Step 3B: Evaluate/discuss outstanding questions regarding the Preferred Alternative.

Step 4: Develop list of potential future actions for continued pursuit of the Preferred Alternative. This section is not intended to add new information to the PEIS/ROD but rather to develop a list of potential future actions for continued pursuit of the Preferred Alternative. This list will be considered during the formal statewide planning process.

Roles and Responsibilities – CE brings forward considerations for future projects and initiatives. CDOT and FHWA will consider list of actions in formal statewide planning process. CE to discuss public involvement for this plan.

Deliverables – Listing of potential future actions for consideration developed at CE meeting.

Schedule – Initial discussion May 2020, prioritization in September 2020, Consensus Recommendation by December 2020. Note this step may be able to be completed in one or two longer CE workshop meetings.

Examples for consideration during Step 4:

- Update and expand on information in past studies (AGS 2014, ICS 2014, RMRA 2010)
- Analyze impact of Front Range Rail with AGS.
- Analyze technologies not studied in the past.
- Review risk & resiliency of the corridor including the potential effects of climate change.
- Program for improving truck movements.
- Analyze the data for change in GHG emissions for each technology assessed in the ROD and updates.
- Others

Step 5: Develop Reassessment Document. This step is intended provide a written summary of all steps above in a complete package. The obligation of the CE members is to actively participate. They review the narrative summaries distributed by the subcommittee to gain understanding. It is intended that each step leading to the preparation of the reassessment document is the time for the CE to build consensus, not to wait for this step to review all information and comment.

1. Develop Reassessment document.

Roles and Responsibilities – CDOT and FHWA prepare Reassessment document. If substantial changes from the ROD are realized, a public involvement process will be included.

Deliverables - Final Reassessment document

Schedule - Reassessment completed in December 2020.

I-70 MOUNTAIN CORRIDOR REASSESSMENT

Step 5: Documentation of the 2020 Reassessment

ATTACHMENT 2

CE and CE Subcommittee Meeting Notes

#	Date	Topic
1	2020-01-14	Kickoff (Reassessment Subcommittee)
2	2020-02-13	Review of Steps 1A and 1B (Reassessment Subcommittee)
3	2020-04-30	Review of Steps 1A and 1B (Full CE)
4	2020-04-30	Review of Steps 1B and 2 (Full CE)
5	2020-05-11	Review of Step 2 (Reassessment Subcommittee)
6	2020-05-27	Completion of Steps 1 and 2 (Full CE)
7	2020-07-15	Review and completion of Step 3 (Full CE)
8	2020-09-30	Review of Step 4 (Full CE)
9	2020-11-18	Review of Step 4 and CE Work Plan (Full CE)
10	2020-12-16	Completion of Step 4 and review of Step 5 documentation (Full CE)



**I-70 Mountain Corridor 2020 Reassessment
Collaborative Effort (CE) Subcommittee Kickoff Meeting Summary**
January 14, 2020, 9 AM to 11 AM
1630 Miner Street, the Majestic Building, Idaho Springs

Overview

These notes summarize the discussion among the I-70 Mountain Corridor 2020 Reassessment Collaborative Effort (CE) Subcommittee for the kickoff of the I-70 Mountain Corridor Record of Decision's (ROD) commitment to "a thorough reassessment of the overall purpose and need and effectiveness of the implementation of components of the Preferred Alternative" with the CE stakeholder committee in 2020 (ROD 2011, page 8). The CE Subcommittee developed a work plan to frame and guide the effort and the full CE approved the work plan in September 2019. The work plan (attached) is divided into five steps and will be completed by the end of calendar year 2020. The consultant team of HDR Engineering, supported by Peak Consulting Group, was retained by CDOT, with support of the CE Subcommittee, to assist the effort through data collection and analysis, facilitation, and documentation.

Attendees are noted in the attached sign-in sheet. Other attachments include the agenda, work plan, schedule, and two handouts provided by participants for discussion at the meeting (pages from the PEIS and email from Clear Creek County to Subcommittee members with observations of potential quantitative measures for environmental and community values).

These notes are updated based on comments received from Clear Creek County (attached) on the draft notes distributed on January 24, 2020.

Welcome and Introductions

Vanessa Henderson, CDOT, welcomed the group. The CE Subcommittee members introduced themselves, and Vanessa asked the HDR team members to introduce themselves and explain their roles in the Reassessment.

Steve Long, HDR, will be the facilitator and will work on evaluating the engineering effectiveness of the Preferred Alternative; Wendy Wallach, HDR, will be the project manager; Chris Primus and Smith Myong, HDR, will lead travel demand and traffic analysis supporting the purpose and need; and Kira Olson, HDR, and Mandy Whorton, Peak Consulting Group, will support project coordination and documentation. Many of the HDR and CE Subcommittee members were involved with the 2010/2011 Programmatic Environmental Impact Statement (PEIS) and 2011 ROD as well as implementation of Tier 2 projects in the corridor.

Steve Long's role as facilitator was clarified. He will help the CE and CE subcommittee work through decisions and keep on track since we have an extremely aggressive and tight schedule to complete this work by the end of 2020. Vanessa reminded the group that the facilitator role was requested by the CE in the final review of the Work Plan (September 25, 2019 CE meeting) and was included in the request for proposals. The HDR team will be involved primarily in Steps 1, 2, and 5. Steve will also facilitate



during Steps 3 and 4, and an HDR team member will be present during those steps to take notes for the Step 5 documentation. However, those steps are primarily being done by the CE and CE Subcommittee. Randy Wheelock, CE co-chair, said, “Thank you for the clarification.” Clear Creek County documented continued concern at the meeting and after that a neutral, professional facilitator is needed to achieve consensus and work through differences in Steps 3 and 4.

Communications

Vanessa asked that communications with the consultant team go through her to make sure that the process is transparent and efficient. Randy Wheelock, Clear Creek County, noted agreement with the coordinated communication but noted that members should bring up any issues to the group. Greg Hall, Vail, noted that the Subcommittee should follow the operating protocols for the CE.

Vanessa reviewed the work plan as an introduction to the purpose of the 2020 Reassessment to reassess the purpose and need as well as the effectiveness of the Preferred Alternative. She reminded the group that the 2020 Reassessment is not a National Environmental Policy Act (NEPA) reevaluation. The work plan outlines the importance of the first step in evaluating the purpose and need because if something comes up in the review that changes the purpose and need, the work plan will need to be reconsidered and a NEPA reevaluation may be required.

Vanessa outlined roles for the work plan steps. The HDR team would be heavily involved in supporting Steps 1 (Reassess the Purpose and Need) and 2 (Assess the Effectiveness of the Implementation of the Preferred Alternative). Step 3 (Clarify Uncertainties of the Components of the Preferred Alternative) is the responsibility of the CE subcommittee with limited involvement from the HDR team. Step 4 (Develop a List of Potential Future Actions for Continued Pursuit of the Preferred Alternative) is a full CE task with support from the Subcommittee, also with limited involvement from the HDR team. The final Step 5 (Develop Reassessment Document) will be led by the HDR team with review and endorsement by the Subcommittee and full CE.

The work plan represents a consensus from the CE regarding the scope of the Reassessment. However, Vanessa pointed out that each step in the work plan includes an “other” category because of the need for flexibility that was desired by the Subcommittee in developing the work plan. These other categories will be discussed and documented at each of the meetings. It is, therefore, critical that members review meeting notes to ensure that the direction is clear regarding additions to the work plan in these “other” categories.

Question: Will CDOT Region 3 be involved?

Answer: Region 3 will be involved as needed and are expected to have the biggest role in Step 2 since they have implemented a number of projects within the corridor since 2011.

Question: Is the purpose of this meeting to get through Steps 1 and 2?

Answer: Yes, the goal is to confirm the data inputs and outputs to support those steps. An additional goal of the meeting is to review and endorse the schedule, including the CE and CE Subcommittee meeting schedule and objectives.



Review of Data Inputs and Outputs

Chris Primus from the HDR team walked through the information needs outlined in the work plan for Steps 1 and 2. As background, Chris described the approach to the travel demand modeling, which will be a foundational source of data to evaluate traffic needs and Tier 2 project performance. He explained that a corridor-specific model was developed for the PEIS to account for the unique trip purposes and demand periods in the I-70 Mountain Corridor. Most travel demand models are built around weekday morning and afternoon commuting periods and not for weekend recreational trips that represent the highest peak travel for the Mountain Corridor. The original model was developed in 2000. It was updated in 2014, and this is the model that the team will use to assess many of the purpose and need components. CDOT also has a new statewide model that was not available during the PEIS. The model improves travel projections across metropolitan transportation organization (MPO) boundaries and provides useful context and updated forecasts for the state outside of the MPO areas. However, the statewide model is also calibrated for weekday commute trips and not the specific characteristics of mountain corridor travel. Vanessa also reminded the group of the desire for an apples-to-apples comparison so using the same assumptions in the travel demand model as the 2011 ROD is important. The group agreed. There were no questions about the modeling approach.

Chris walked the group through discussion of Step 1A and the five information categories in the work plan.

Step 1A: Evaluation of Context

The group reviewed each of information categories outlined in the work plan (underlined below).

Population. This is a straightforward measure of growth both within the corridor communities and growth along the Front Range that may contribute to increased recreation-related trips to the corridor.

Land use and land use pressures (including demand). The team is refining the model to update zones and land use types.

Question: Does land use mean changes in the roadway or changes in the adjacent land uses?

Answer: The land use categories for the model are broad to describe urban, suburban, and rural land uses, each of which is present in the corridor, although urban type uses are not widely distributed.

Question: How is recreational use pressure estimated? How does the model calculate the number of recreational trips vs other trips? Corridor communities have observed a change (increase) in recreation, and land managers are concerned about the pressures that more visitors put on the natural resources. Although the Forest Service has not implemented visitation restrictions widely, it is happening, such as with the reservation system for Hanging Lake.

Discussion: The model doesn't have recreation as a zone for land uses but does have recreational trip purposes. The model has a trip generation component that converts population and use into trip types and characteristics of those trip types (such as overnight stays).



This seems like a limitation since many recreational trips are day trips would not be reflected in the overnight destinations like hotels.

Mandy Whorton stated that the travel demand model was only one component of the data. The context will also consider the reasons that people travel in the corridor, so all of the pressure is not on the travel demand model to have all the answers to why people are traveling. The PEIS noted that recreational trips were a primary driver of peak travel, and we expect this to continue to be true today and into the future but the context will help us understand that.

Technology. We will be looking at the potential for technology to increase throughput (and capacity). Will technological advancements such as automated or connected vehicle technology increase roadway capacity sufficiently to change needs? The assessment will consider this but research into this topic conducted by MPOs suggests throughput only shifts significantly if 75 percent of the cars in the stream are autonomous.

Question: How does rideshare affect travel demand?

Answer: Generally, rideshare shifts the ownership but not necessarily the number of cars in the traffic stream. Shared rides for high occupancy vehicles (HOVs) also have some potential to reduce demand but probably not much in the Mountain Corridor due to the existing high carpooling rate during peak periods.

Question: How will advances in transit technology be evaluated? There have been a number of advancements that affect the Advanced Guideway System (AGS). How do those technological advancements affect the context?

Discussion: We can and will add consideration of evolution in transit technology. Chris asked for clarification regarding the types of advancements and what would move the needle. Increased vehicle capacity? Ridership? Speeds? Grades? The group agreed that last mile technologies have definitely changed and that should be considered. Advancement in pavement-based systems have also occurred so that larger vehicles using a more advanced technology (like a 15-passenger Tesla instead of large buses) may be able to negotiate grades without slowing down other traffic.

Climate change. Climate change was considered in the PEIS, and there was certainly awareness in 2011 but awareness/concern has grown since then. There have been political advancements in the Governor's office and CDOT with risk and resiliency regarding climate change that add to the context. The Colorado Energy Office is also active on this issue with greenhouse gas roadmap study. All of these add to the context.

Question: Climate change is one component of the impacts of development and population growth. What about other environmental issues? Recreation? Land use pressures and management decisions that affect the environment.

Vanessa noted that Clear Creek County provided some thoughts on environmental measures that we would discuss later in the meeting. Mandy noted that the PEIS Preferred Alternative was developed with the understanding that the Mountain Corridor is located in an unique and fragile environment and that



transportation has a major effect on environmental impacts to the surrounding areas. This part of the context has not changed.

The group moved to discussion of Step 1B inputs.

Step 1B: Evaluate current components of Purpose and Need

Component 1: Increase capacity. The group did not have additional questions about the traffic modeling or the information related to existing traffic data or updated traffic projections. There was discussion about person trips and transit.

Person trips.

Question: How is this measured? Is this about the occupancy rates for vehicles? Have those changed?

Discussion: Person trips does account for the fact that the Mountain Corridor has high vehicle occupancy during peak travel times since more people take recreational trips with friends and family rather than the single-occupancy vehicles more common for commuting trips. The PEIS estimated 2.6 average occupancy for peak travel. Mandy noted that another reason the PEIS discussed capacity in person trips was to allow a more accurate comparison of transit ridership with roadway capacity and to understand the effect on roadway capacity from modal shifts to transit.

Transit ridership.

Discussion: Transit ridership should include updates/change in local transit availability as a change in capacity. There is also data regarding transit-oriented development (TOD) trends in Denver that may be applicable to Mountain Corridor demand. Randy said RTD saw early TOD being more attractive when parking was not included. However, later, a lot of TODs have had to add parking, and one of the primary reasons for parking demand is demand to get to the mountains and the need for a car to access the mountains. Another trend that should be considered is the change in terminology and focus from parking to mobility centers.

Component 2: Improved Mobility and Accessibility

There was no specific discussion of the identified measures (travel time/reliability, safety, incident response times, travel demand model information).

Question: Should alternate routes be reconsidered under accessibility? Although the PEIS dismissed alternate routes, would improvements to US 285 in particular help?

Discussion: The travel demand model considers accessibility in destinations. What volume of traffic uses roads in the network to access destinations? – accessibility in the model is about the destinations. The PEIS concluded that the alternate routes would not serve corridor destinations and were not viable.

The group moved on to discussion of Step 2.



Step 2A: Determine how to measure/assess effectiveness

Chris reviewed the data collection categories and noted the categories are similar to those in Step 1 but in the context of the improvements that have been made. For instance, the Eastbound Mountain Express Lane has made a notable difference in travel times. Incident response times have also changed. New transit services are available now that were not available in 2011.

Comment: The peak period shoulder lane projects are interim travel demand management improvements and should not be characterized as capacity projects. They were developed with the knowledge that latent demand will eventually return the peak period shoulder lanes to the poor travel time from before their implementation.

Comment: Truck use in the corridor was never seriously considered. Trucks have a disproportionate effect on travel. Other states have implemented truck bans, and that should be considered in the Reassessment.

Discussion: The PEIS did consider truck use and traffic, and the Colorado Motor Carriers Association (CMCA) is a member of the CE. The CMCA noted that trucks generally avoided peak travel times, and trucks that used the corridor during peak travel were serving corridor communities and travelers, such as grocery and fuel deliveries. The PEIS traffic modeling supported this, showing a much smaller percentage of trucks in the peak periods compared with non-peak travel times. The group noted that in-corridor truck deliveries have only increased with Amazon Prime and increased overnight trips. Shaun Cutting noted that CDOT is always looking at ways to improve truck travel.

Decision: Changes in truck use and trends should be specifically assessed and will be added in the “other” category.

Providing for and accommodating community values and environmental sensitivity (qualitative).

Randy explained that Clear Creek County believes there are data related to community and environmental values that can and should be measured quantitatively. He distributed a document of some thoughts on specific “before and after” measures that should be added to the “other” category as new bullets. The document is included in the meeting notes.

Vanessa said FHWA and CDOT met and believe there are a lot of good ideas in the attachment. However, some of the categories imply a reevaluation of impacts rather than a reassessment of the purpose and need. In review of the purpose and need, there are the three main areas of need but also talks about supplemental needs for environmental sensitivity and community values and the categories that were called out in the purpose and need. Vanessa passed out copies of page 1-9 of the Final PEIS that notes what was considered for environmental sensitivity and respect for community values (which is why those are in the work plan). Vanessa provided an example for the Eastbound auxiliary lane from Eisenhower-Johnson Memorial Tunnels to Herman’s Gulch project where the auxiliary lane was shortened to minimize environmental impacts (avoided fens).

Melinda Urban said FHWA is open to ideas. The Reassessment is a new exercise that doesn’t have a defined process. But the Subcommittee spent a lot of time on the work plan, and FHWA is concerned



getting away from the work plan or greatly expanding the effort may not meet the intention of the Reassessment. She suggested maybe reviewing how environmental impacts had been avoided in the implementation of projects could be quantified.

Cindy Neeley, Clear Creek County, noted that the ROD doesn't say that we are avoiding impacts, it says we are "providing for and accommodating" values, which is a Context Sensitive Solutions (CSS) term. It is intentionally positive framing of making projects better, not avoiding impacts. Avoiding impacts implies a minimum standard, which is not what the county wants to quantify. Because of CSS, the approach to projects is different than just avoiding impacts but how to have better projects. She said the county agrees that the Reassessment is not and should not be a reevaluation of impacts but more of how the CSS process has improved projects to support environmental sensitivity and community values.

The group discussed how the effectiveness of the CSS process might be evaluated. Perhaps a look at how the CSS process had been implemented on projects and some of the successes that have come from the projects in providing for and accommodating values.

Amy Saxton, Clear Creek County, said the county understood the sensitivity about not wanting to redo the PEIS but there do seem to be data that are available since 2011 that are important. Could the data help us understand trends? Holly Norton, History Colorado, said one of the questions she asked her staff was about the implementation of the Section 106 Programmatic Agreement; the staff said that the Programmatic Agreement has been followed and is effective. Mandy suggested maybe the effectiveness of the Programmatic Agreement, Memoranda of Understanding, and CSS process, all of which are part of the implementation requirements for projects, could be assessed. Have they been followed? Are they effective?

Steve Coffin, Clear Creek County consultant, summarized two issues from the discussion. The first is that there are new data that weren't available in 2011 related to environmental conditions that the county feels should be considered. The second is a desire to frame support of community and environmental values positively rather than as avoiding impacts. Steve Long said the discussion had been helpful in defining what is meant by quantitative measurement. His perspective is that quantitative measurement would measure environmental conditions correlated with the implemented components of the Preferred Alternative. That is, we would take broad trend data and try to correlate it to project effectiveness, which seemed problematic. However, reporting measurable data on environmental conditions is certainly possible. Amy said the county is not looking to reevaluate or revisit impacts, but they would like the trends to be documented. Mandy suggested this goal might be better met by adding these categories to Step 1 in the context to introduce these trends into the discussion, where the assessment of effectiveness could focus on the implementation of the agreements and mitigation. This information could then inform discussions in Step 4 in the consideration of future projects and initiatives. This approach had some support. The recommendation is documented in the notes for consideration by the members (see agreements summary at end of notes).

Schedule

Vanessa reviewed the schedule (attached). It is aggressive to be completed by end of 2020. She thanked the group for getting through the first steps on data needs.



She outlined the process for documenting discussion and modifications to the work plan through the meeting notes. Meeting notes will be distributed within two weeks of meetings, and comments will be discussed at the next meeting. Members should “reply all” with any comments or corrections to the notes so that the group can review them.

The group discussed future Subcommittee and CE meetings. Mary Jane Loevlie, Business Representative, offered the Majestic Building for future Subcommittee meetings, and the group agreed that this was a good location for Subcommittee meetings. Vanessa will send out a Doodle poll and schedule the Subcommittee meetings.

The CE meetings are anticipated to be full day meetings. This format was developed in response to the suggestion at the last CE meeting that there be two-day workshops to discuss the details of the 2020 Reassessment. Greg suggested that full CE meetings be on the Wednesdays of the suggested weeks and held in Frisco for consistency. Greg also noted that some time may be needed for other CE business and that should be worked into the schedule and suggested an hour be preserved for other business not related to the 2020 Reassessment. Greg and Randy will schedule the full day CE meetings.

Agreements

The following represent the agreements regarding the information to be included in Steps 1 and 2 of the work plan.

Step 1A: add the following as part of the “other” category:

- Mix of users, including trucks

Step 1B: Environmental sensitivity and community values

- Providing for and accommodating environmental sensitivity and respect for community values are components of the Purpose and Need as presented in the PEIS and ROD.
- Agreements and data related to environmental sensitivity (“avoid and minimize adverse impacts on and, where possible, enhance environmental resources, including, but not limited to, stream sedimentation, water quality, wildlife crossings, and impacts on wetlands”) and community values (“avoid and minimize adverse impacts on, and, where possible, enhance, air quality, historic resources, noise levels, visual resources, and social and economic values, as well as minimize the transportation system’s footprint on the mountain communities. Consider the possible growth changes and economic effects that might occur, depending on the ease or difficulty of access.”) will be reviewed to update changes in these conditions and changes in methodologies for assessing environmental impacts, such as updated noise and environmental justice evaluation procedures, that may provide context for the assessment of the effectiveness of the implementation of the Preferred Alternative in Step 2A.

Step 2A: Add to the fifth bullet [How well have we been providing for and accommodating community values and environmental sensitivity (qualitative)] in the work plan

- Measuring how well we have been providing for and accommodating community values and environmental sensitivity will be accomplished by reviewing how the CSS process, other



agreements from the PEIS (Section 106 Programmatic Agreement, Memoranda of Understanding), and resource-specific mitigation strategies have been implemented on Tier 2 projects and how effective that implementation has been in achieving the objectives of providing for and accommodating environmental sensitivity and respect for community values outlined in the Purpose and Need.



I-70 Mountain Corridor 2020 Reassessment

Collaborative Effort (CE) Subcommittee Kick-Off Meeting January 14, 2020 9:00 am to 11:00am

	Name	Organization	E-mail	Phone	Initials
1.	Vanessa Henderson	CDOT	vanessa.henderson@state.co.us	720-497-6774	VH
2.	RANDY WHEELER	CCC	rwheelock@clear-creek.co.us	970-390-2195	RRW
3.	Steve Coffin	CCC	steve@strategic.com	303-898-8675	SC
4.	Matt Scherr	Eagle county	matt.scherr@eaglecounty.us	970-576-4449	MS
5.	MARY JARED DEVLIN	Business Rep	mjdevlin@co.gov	(303) 903-2427	MJL
6.	Holly Norton	History Co.	holly.norton@state.co.us	303-866-2734	HKN
7.	Greg Hall	Town of Vail	ghall@vail.gov	970-479-2160	GH
8.	Mike Hillman	Idaho Springs	mayor@idahospringslo.com	303-517-4777	MH
9.	DENNIS ROYER	SIERRA CLUB	royer.dennis@yahoo.com	303-518-4313	DER
10.	Gary Frey	Co, TX	gfrey@ms4.com	3986 0164	GF
11.	SHAUN CUTTING	FHWA	shawn.cutting@FHWA.DOT.GOV		SC
12.	Melinda Urban	FHWA	melinda.urban@dot.gov	720-963-3015	MU
13.	Smith Myung	HDR	smith.myung@hdrinc.com		SM
14.	MIKE KELEMAN	CDOT	MIKE.KELEMAN@STATE.CO.US	720-389-5000	MK
15.	Neil Ogden	CDOT	neil.ogden@state.co.us	(720) 497-6928	NO
16.	Cindy Neely	CCC	cneely@yahoo.com	720-201-7161	CEN
17.	MICHAEL HUDSON	COLORADO MAGLEY GROUP	mhuwriter@msa	303-638-2258	MH
18.	Amy Saxton	CCC	asaxton@clearcreekcounty.us	303-679-4238	AS
19.	Ben Kiene	CDOT	benjamin.kiene@state.co.us	3-512-4025	BK
20.	Christiana Lacombe	CDOT	christiana.lacombe@state.co.us	3-512-4099	CL



I-70 Mountain Corridor
2020 Reassessment

Collaborative Effort (CE) Subcommittee
Kick-Off Meeting
January 14, 2020
9:00 am to 11:00am

	Name	Organization	E-mail	Phone	Initials
1.	Kira Olson	HDR	Kira.Olson@hdr.com	308-323-9861	KO
2.	Wendy Wallace	HDR	wendy.wallace@hdr.com	720-545-5205	WW
3.	STEVE LONG	HDR	STEVE.LONG@HDRINC.COM	720-530-9297	SL
4.	Chris Primus	HDR	christopher.primus@hdr.com	303-323-9838	CP
5.	Mandy Whorton	Peak	mandy.whorton@peakconsultingco.com	303 886 6258	M
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I-70 Mountain Corridor 2020 Reassessment

COLLABORATIVE EFFORT (CE) SUBCOMMITTEE

KICK-OFF MEETING

Date/Time: December 18, 2019; 2:00 p.m. to 4:00 p.m.

Location: The Majestic Building
1630 Miner Street, Idaho Springs

Invitees:

Adam Bianchi, USFS	Kelly Galardi, FHWA
Amy Saxton, CCC	Mary Jane Loevlie, Business Rep
Ben Gerdes, Eagle Co	Matt Scherr, Eagle Co
Bentley Henderson, Summit Co	Mike Hillman, Idaho Springs
Brian Duchinsky, Headwaters Gr	Mike Keleman, CDOT
Dennis Royer, Sierra Club	Randy Wheelock, CCC
Gary Frey, CO Trout Unlimited	Shaun Cutting, FHWA
Greg Hall, Vail	Steve Coffin, Steve Coffin Strategies
Holly Norton, SHPO	Vanessa Henderson, CDOT

AGENDA

1. Introductions
 - a. HDR Roles and Responsibilities
 - b. Communication Protocol
2. Work Plan Review/Discussion
 - a. Overview of full Work Plan
 - b. Detailed Step 1 and Step 2 discussion
3. Review of Draft Schedule
 - a. Meeting Scheduling
4. Next Steps/Action Items

Collaborative Effort
Record of Decision 2020 Reassessment
Work Plan

As stated in the 2011 Record of Decision (ROD), the Preferred Alternative is “...a multimodal solution and includes three main components identified by the Collaborative Effort Team: 1) Non-infrastructure Components, 2) the Advanced Guideway System, and 3) Highway Improvements” (ROD 2011 pg. 2).

The 2020 Language (ROD 2011 pg. 8)

“In 2020, regardless of the status of the triggers, there will be a thorough reassessment of the overall purpose and need and effectiveness of the implementation of components of the Preferred Alternative.

At that time, the full range of improvements evaluated at Tier 1 may be reconsidered. In addition, the Collaborative Effort stakeholder committee (including the lead agencies) may reconsider the full range of improvements evaluated in the Final PEIS, or pursue a new process because the context in which this Tier 1 decision was made is so changed that none of the alternatives evaluated in the Final PEIS meets future transportation needs. Global, regional, and local trends such as peak oil, climate change, technological advances, and changing demographics could affect these future transportation needs.”

Purpose and Need (Final Programmatic Impact Statement [PEIS] 2011 pg. ES-4)

“The purpose for transportation improvements is to increase capacity, improve accessibility and mobility, and decrease congestion for travel demand (projected to occur in 2050) to destinations along the I-70 Mountain Corridor as well as for interstate travel, while providing for and accommodating environmental sensitivity, community values, transportation safety, and ability to implement the proposed solutions for the Corridor.”

Primary Roles and Responsibilities

The following are the primary roles and responsibilities for the reassessment. Any specific roles and responsibilities for a given step are listed within the steps.

1. The Collaborative Effort’s (CE) highest goal is consensus. A consensus agreement is one that all group members can support, built by identifying and exploring all parties’ interests and by developing an outcome that satisfies these interests to the greatest extent possible.
2. The CE will strive to build consensus around which criteria and key considerations will be used to reassess the overall purpose and need and effectiveness of the implementation of the components of the Preferred Alternative.
3. The CE will strive to build consensus around revisions, if any, to the Preferred Alternative.
4. Lead agencies cannot delegate their responsibilities regarding decision making and NEPA compliance. However, as equal and participating members of the CE, lead agencies are committed to crafting with all stakeholders decisions that can be supportive. If consensus is not

- possible, then the level of support and dissension will be noted and all deliberations and products of the CE will be considered by the lead agencies in their decision making.
5. The CE ROD Reassessment Subcommittee is tasked by the CE to act as the working group, to carry out task specific roles and responsibilities listed within the steps. The CE subcommittee will regularly report to the CE. The CE will provide guidance to the subcommittee at any time while they carry out their specific tasks.
 6. The CE subcommittee members are obligated to be transparent and will proactively communicate results to the CE. This includes narratives, listed in the steps below, to be submitted to the CE via email with a 2-week comment period. The subcommittee will work together to address the comments and if some are not solvable, a CE meeting may be called.
 7. The obligation of the CE members is to actively participate. They review the narrative summaries distributed by the subcommittee to gain understanding. It is intended that each step leading to the preparation of the reassessment is the time for the CE to build consensus. The CE may call special meetings at any time for discussion to help build consensus.
 8. CDOT leads analysis/prepares documentation, with oversight from FHWA.

Step 1: Reassess the Purpose and Need. If this proposed process identifies substantial changes in the I-70 Mountain Corridor that alter the Purpose and Need of the Final PEIS/ROD the work plan does not automatically progress to Step 2. The group will reconvene to determine next steps.

Roles and Responsibilities - CE ROD Reassessment Subcommittee provides input and feedback to evaluation criteria. CE reviews written narrative summary to gain understanding on any changes in context and/or purpose and need.

Deliverables - Written narrative of context evaluation, written narrative of Purpose and Need evaluation, and discussion at CE meetings.

Schedule – List of trends and relevant factors discussion in January 2020, Draft analysis complete in May 2020, and Final analysis complete in September 2020.

Step 1A: Evaluation of context. Determine if the context in which the Purpose and Need statements were developed have changed. Information that may be needed to evaluate the context includes:

1. Population
2. Land use and land use pressures (including demand)
3. Technology
4. Climate change
5. Others

Step 1B: Evaluate current components of Purpose and Need. Determine if the components are still valid using Step 1A context evaluation. The same data sets (listed under each component) must be used as were used in the original PEIS to provide a true comparison.

Component 1: Increase capacity. Information that may be needed to evaluate this component includes:

1. Existing traffic data
2. Person trips
3. Updated traffic projections/Travel Demand Model information

4. Transit ridership
5. Others

Component 2: Improve mobility and accessibility. Information that may be needed to evaluate this component includes:

1. Travel time/reliability
2. Safety data
3. Incident response times
4. Travel Demand Model information
5. Others

Component 3: Decrease congestion. Information that may be needed to evaluate this component includes:

1. Level of Service
2. Crash data, Weighted Hazard Index (WHI) information
3. Travel time/reliability
4. Travel Demand Model information
5. Others

Step 2: Assess the effectiveness of the implementation of components of the Preferred Alternative.

This includes discussion on the Minimum and Maximum Programs of Improvements in the Preferred Alternative and the specific Tier 2 improvements implemented to date, as well as the remaining improvements under the Minimum and Maximum Programs.

Roles and Responsibilities - CE ROD Reassessment Subcommittee provides input and feedback to how effectiveness will be measured. CE reviews written narrative summary to gain understanding on assessment of effectiveness.

Deliverables - Written narrative and discussion at CE meetings.

Schedule - Initial input into Step 2A and Step 2B in January 2020, additional discussion/initial analysis in May 2020, Draft analysis complete in September 2020, and Final analysis complete in December 2020.

Step 2A: Determine how to measure/assess effectiveness.

This will include an evaluation against the Purpose and Need and may include other factors as recommended by the subcommittee. Data collection will be needed such as:

- Travel time before and after implementation of an improvement
- Incident response times before and after implementation of an improvement
- Transit ridership before and after implementation of an improvement
- Person/vehicle capacity of surrounding area before and after implementation of an improvement
- How well have we been providing for and accommodating community values and environmental sensitivity (qualitative)
- Others

Step 2B: Assess the effectiveness of the implementation of the Preferred Alternative to date along with the remaining elements of the Minimum and Maximum Programs of Improvements/Preferred Alternative, timing, and anticipated effects. CDOT leads analysis, with oversight from FHWA. This section is taken directly from the ROD to show the exact components as listed.

Components of the Preferred Alternative.

- 1) Non-Infrastructure Related Components
- 2) Advanced Guideway System (AGS)
- 3) Highway Improvements

Minimum Program of Improvements. The non-infrastructure related components, AGS, specific highway improvements, and other highway projects comprise the Minimum Program of Improvements.

“Non-Infrastructure Related Components – Non-infrastructure-related components can begin in advance of major infrastructure improvements to address some of the issues in the Corridor today. Some of these components require actions and leadership by agencies, municipalities, and other stakeholders beyond the lead agencies. The Tier 1 decision includes non-infrastructure-related components that could be carried out with federal involvement in a Tier 2 NEPA process. Other non-infrastructure components, including those identified below and others not listed, could be carried out without federal involvement and would not require a Tier 2 NEPA process. When entities advance these strategies without federal involvement, for example, if the I-70 Coalition (a coalition of Corridor governments) were to implement travel demand management strategies for increasing overnight stays in the Corridor, Tier 2 NEPA processes would not be required. The non-infrastructure strategies include, but are not limited to:

- Increased enforcement
- Bus, van, or shuttle service in mixed traffic
- Programs for improving truck movements
- Driver education
- Expanded use of existing transportation infrastructure in and adjacent to the Corridor
- Use of technology advancements and improvements to increase mobility without additional infrastructure
- Traveler information and other information technology systems
- Shift passenger and freight travel demand by time of day and day of week
- Convert day trips to overnight stays
- Promote high-occupancy travel and public transportation
- Convert single-occupancy vehicle commuters to high-occupancy travel and/or public transportation
- Implement transit promotion and incentives
- Other transportation demand management measures to be determined

Advanced Guideway System – An Advanced Guideway System is a central part of the Preferred Alternative and includes a commitment to the evaluation and implementation of an Advanced Guideway System within the Corridor, including a vision of transit connectivity beyond the study area and local accessibility to such a system. Additional

information is necessary to advance implementation of an Advanced Guideway System in the Corridor:

- Feasibility of high-speed rail passenger service
- Potential station locations and local land use considerations
- Transit governance authority
- Alignment
- Technology
- Termini
- Funding requirements and sources
- Transit ridership
- Potential system owner/operator
- Interface with existing and future transit systems
- Role of an Advanced Guideway System in freight delivery both in and through the Corridor

Highway Improvements – The Preferred Alternative includes highway improvements to address current Corridor conditions and future demands. These improvements will be planned taking into consideration all elements of the Preferred Alternative and local land use planning. The following safety, mobility, and capacity components are not listed in order of priority, are not subject to the parameters established for future capacity components, do not represent individual projects, and may be included in more than one description. They are listed in two categories: 1) “specific highway improvements” and 2) “other highway projects.” All of the improvements in both categories are included in the Minimum Program of Improvements. The specific highway improvements are called out specifically for the “triggers” for future highway and non-Advanced Guideway System transit improvements.

The specific highway improvements are:

- Six-lane component from Floyd Hill through the Twin Tunnels (milepost [MP] 243 to MP 247) including a bike trail and frontage roads from Idaho Springs to Hidden Valley and Hidden Valley to US 6
- Empire Junction (US 40 and I-70) interchange improvements (MP 232)
- Eastbound auxiliary lane from Eisenhower-Johnson Memorial Tunnels to Herman Gulch (MP 215 to MP 218)
- Westbound auxiliary lane from Bakerville to the Eisenhower-Johnson Memorial Tunnels (MP 215 to MP 221)

The other highway projects are:

- Truck operation improvements, such as pullouts, parking, and chain stations (multiple locations)
- Safety improvements west of Wolcott (MP 155 to MP 156)
- Safety and capacity improvements in Dowd Canyon (MP 170 to MP 173)
- Interchange improvements at the following locations:
 - Glenwood Springs (MP 116)
 - Frisco / Main Street (MP 201)
 - Gypsum (MP 140)
 - Frisco / SH 9 (MP 203)

- Eagle County Airport (part of No Action)
- Silverthorne (MP 205)
- Wolcott (MP 157)
- Loveland Pass (MP 216)
- Eagle & Spur Road (MP 147)
- Georgetown (MP 228)
- Edwards & Spur Road (MP 163)
- Downieville (MP 234)
- Avon (MP 167)
- Fall River Road (MP 238)
- Minturn (MP 171)
- Base of Floyd Hill / US 6 (MP 244)
- Vail West (MP 173) / Simba Run
- Hyland Hills (MP 247)
- Vail (MP 176)
- Beaver Brook (MP 248)
- Vail East (MP 180)
- Evergreen Parkway / SH 74 MP 252)
- Vail Pass (East Shrine Pass Road MP 190)
- Lookout Mountain (MP 256)
- Copper Mountain (MP 195)
- Morrison (MP 259)

Auxiliary lanes:

- Avon to Post Boulevard (Exit 168) (eastbound) (MP 167–MP 168)
- West of Vail Pass (eastbound and westbound) (MP 180–MP 190)
- Frisco to Silverthorne (eastbound) (MP 202.7–MP 205.1)
- Morrison to Chief Hosa (westbound) (MP 253–MP 259)” (ROD 2011 p. 3-5)

Maximum Program of Improvements. “To address long-term needs, additional highway capacity improvements were added to the Minimum Program of Improvements to comprise the Maximum Program of Improvements with the condition that prior to taking action to add capacity, the Collaborative Effort Team must review and consider certain triggers. The Maximum Program is comprised of all of the components of the Minimum Program plus six-lane capacity from the Eisenhower-Johnson Memorial Tunnels to the Twin Tunnels, four additional interchange modifications in the Idaho Springs area, and a curve safety modification project at Fall River Road.” (ROD 2011 p. 7)

For the implementation status of the Preferred Alternative, see the attached table. (Note that this is being finalized and will be provided once a consultant team is selected.)

Step 3: Clarify uncertainties of the components of the Preferred Alternative. This section is not intended to add new information to the PEIS/ROD but rather to clarify questions on existing information.

Roles and Responsibilities - CE ROD Reassessment Subcommittee provides input and feedback on outstanding questions and how they will be evaluated. CE reviews written narrative summary to gain understanding on the questions and how they will be evaluated.

Deliverables - Written narrative to CE and discussion at CE meetings.

Schedule - List of outstanding questions determined in January 2020, Initial analysis complete in May 2020, and Final analysis complete in September 2020. Note this step may be able to be completed in one CE ROD Reassessment Subcommittee meeting and one CE meeting.

Step 3A: Identify outstanding questions regarding the Preferred Alternative, such as:

1. Status of Eisenhower-Johnson Memorial Tunnels 3rd bore (clarify Minimum or Maximum Program)
2. Empire Interchange (clarify what is to be done in Minimum Program)
3. 2025 trigger
4. Clarify and restate the definition of AGS in the ROD
5. Others

Step 3B: Evaluate/discuss outstanding questions regarding the Preferred Alternative.

Step 4: Develop list of potential future actions for continued pursuit of the Preferred Alternative. This section is not intended to add new information to the PEIS/ROD but rather to develop a list of potential future actions for continued pursuit of the Preferred Alternative. This list will be considered during the formal statewide planning process.

Roles and Responsibilities – CE brings forward considerations for future projects and initiatives. CDOT and FHWA will consider list of actions in formal statewide planning process. CE to discuss public involvement for this plan.

Deliverables – Listing of potential future actions for consideration developed at CE meeting.

Schedule – Initial discussion May 2020, prioritization in September 2020, Consensus Recommendation by December 2020. Note this step may be able to be completed in one or two longer CE workshop meetings.

Examples for consideration during Step 4:

- Update and expand on information in past studies (AGS 2014, ICS 2014, RMRA 2010)
- Analyze impact of Front Range Rail with AGS.
- Analyze technologies not studied in the past.
- Review risk & resiliency of the corridor including the potential effects of climate change.
- Program for improving truck movements.
- Analyze the data for change in GHG emissions for each technology assessed in the ROD and updates.
- Others

Step 5: Develop Reassessment Document. This step is intended provide a written summary of all steps above in a complete package. The obligation of the CE members is to actively participate. They review the narrative summaries distributed by the subcommittee to gain understanding. It is intended that each step leading to the preparation of the reassessment document is the time for the CE to build consensus, not to wait for this step to review all information and comment.

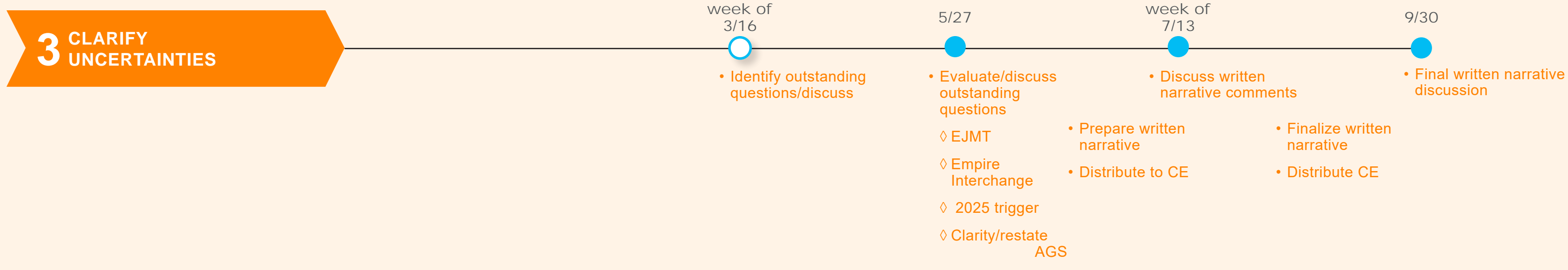
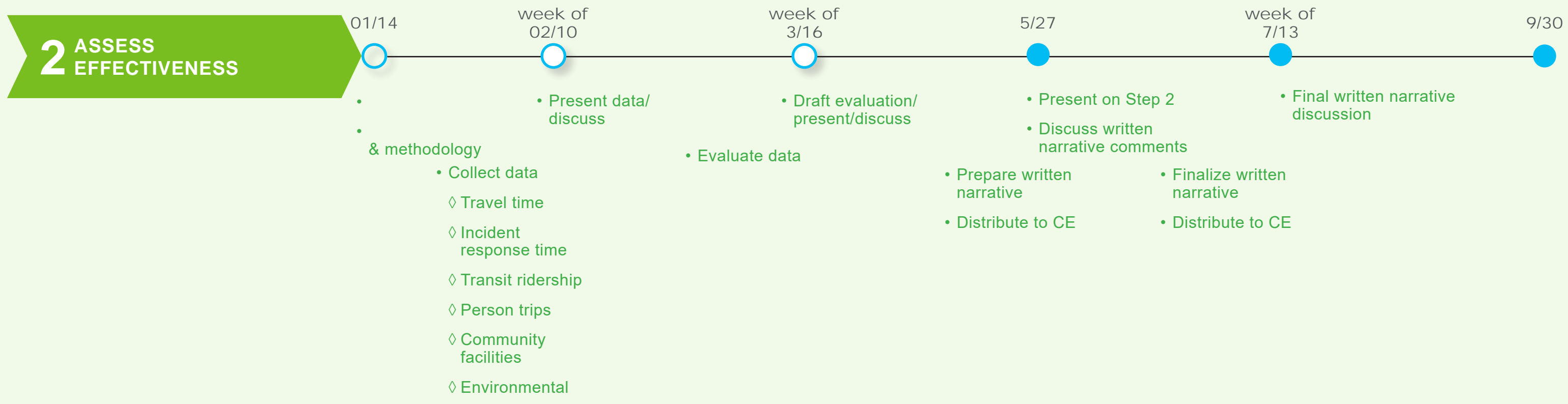
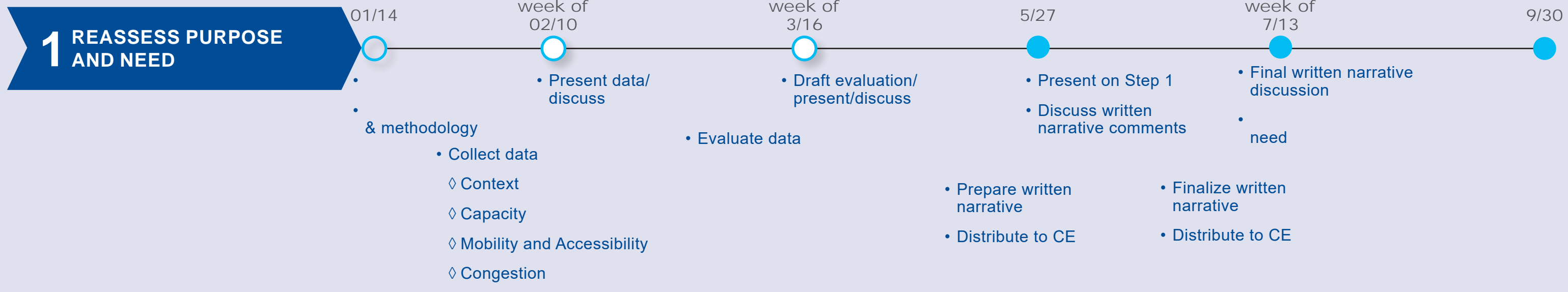
1. Develop Reassessment document.

Roles and Responsibilities – CDOT and FHWA prepare Reassessment document. If substantial changes from the ROD are realized, a public involvement process will be included.

Deliverables - Final Reassessment document

Schedule - Reassessment completed in December 2020.

2020 JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC



○ SUB
● CE (suggest full day workshops for 5/27, 7/13, and 9/30 for Step 3 and Step 4)

From: Randy Wheelock <rwheelock@clearcreekcounty.us>

Date: December 16, 2019 at 8:56:58 PM MST

To: Steve Coffin <steve@stevecoffinstrategies.com>, "shaun.cutting@dot.gov" <shaun.cutting@dot.gov>, "kelly.galardi@dot.gov" <kelly.galardi@dot.gov>, "Henderson - CDOT, Vanessa" <vanessa.henderson@state.co.us>, Mary Jane Loevlie <maryjane@shotcretetechnologies.com>, Bentley Henderson <Bentley.Henderson@summitcountyco.gov>, Gary Frey <GBFrey@msn.com>, "holly.norton@state.co.us" <holly.norton@state.co.us>, "abianchi@fs.fed.us" <abianchi@fs.fed.us>, "ben.gerdes@eaglecounty.us" <ben.gerdes@eaglecounty.us>, "matt.scherr@eaglecounty.us" <matt.scherr@eaglecounty.us>, "Michael Hillman, Mayor" <mayor@idahospingsco.com>, Dennis Royer <royer_dennis@yahoo.com>, "greywolf@buffalomtn.com" <greywolf@buffalomtn.com>, Amy Saxton <asaxton@clearcreekcounty.us>, Greg Hall <GHall@vailgov.com>, "Keleman - CDOT, Mike" <mike.keleman@state.co.us>

Subject: Clear Creek County Comments to 2020 Reassessment Work Plan

Hello 2020 Reassessment Subcommittee members,

Attached are Clear Creek County observations regarding "quantitative" vs "qualitative" environmental and community value analysis opportunities for the 2020 Work Plan and scope of work. Although we needn't dissect the documents thoroughly on such short notice, we'd like to generally discuss them on Wednesday during the Step 2 portion of the agenda. We've briefly discussed the matter up a few times, and wish to make sure that the scope is clarified as our contracting team embarks on their work.

Thanks,

Randall P. Wheelock
Clear Creek County Commissioner, District 3
P.O. Box 2000
Georgetown, CO 80444
(970) 390-2195 (cell)
rwheelock@co.clear-creek.co.us

Under CO Open Records Act, all messages sent to or by me from this account may be subject to public disclosure, unless the word "private" or "confidential" is in the subject line.

TO: the 2020 Reassessment Subcommittee of the Collaborative Effort
FR: Clear Creek County
DT: 12/18/2019
RE: Comments on each of the elements of Section ES.32 of the Final PEIS

Examples of Environmental Impacts Listed in the ROD:

Air quality: This is an area that was mentioned but not measured as part of the PEIS/FEIS as no impact was “assumed” on all projects, so there is not a “before and after” to review for completed projects. However, as part of the 1041 permit for WBPPSL, the County and CDOT have cooperated to install 3 non-regulatory monitors along the corridor. It is too soon to be certain, but early results are showing high levels of ozone and are concerning. This should be noted in the reassessment. A recommendation on handling air quality monitoring should be a part of the development of recommendations in Step 4 of the reassessment process.

Water Resources: Water quality was monitored before, during and after ROD projects by CDOT and other agencies. Improvements on all completed projects were made to drainage and sediment control. The results of those activities should be quantifiable. The extensive records regarding water quality that have been assembled by the Upper Clear Creek Watershed Association (UCCWA) should be included in the data review to assist in proving “before and After” data. The EJMT to Herman Gulch project was altered from an auxiliary lane to an extended acceleration lane to protect fens.

Wildlife: This was a topic that was studied as part of the PEIS and warrants a “before and after” using data that is collected on an ongoing basis for vehicle animal collisions and guard rail modifications to permit animal crossings.

Fish and Fishing Streams: The ROD projects impacted fishing streams in a number of ways that should be documented. Trout Unlimited and CPW have also taken on projects in the Clear Creek Watershed in the years since the PEIS Technical Reports were written. Reports on the projects and their outcomes should be included in the Reassessment report.

Regulated Materials: Regulated Materials relate primarily to the impacts of the materials generated by historic mining and processing activity and the fact that I-70 cuts through the Colorado Mineral Belt. Disturbing those materials can have significant effects on water quality (as was experienced during the construction of the EB PPSL). Extensive data regarding the mines and mill sites in the I-70 corridor is on file in CCC and was provided to CDOT during the PEIS process. The issue that should be examined is, “How was that data and knowledge used during construction?”

Examples of Community Values:

Noise: the FEIS indicated that noise levels in many areas of Clear Creek County already exceeded federal levels. All completed ROD projects used noise monitors and projected noise increase. A “before and after” is possible. However, the CDOT approach is to analyze the incremental increase in noise that may be attributable to any given project – and they will usually find that it is negligible. The reassessment should assure that the cumulative impacts are identified and addressed. By their 1041 permit, CDOT is required to perform continuing noise monitoring. That data and any findings/conclusions should be included in the Reassessment process to determine noise increases overall. Construction noise should also be assessed. During the EB PPSL project through IS, the noise and light pollution disrupted sleep patterns for residents. The contractor ended up offering hotel vouchers to residents closest to the construction zone.

Visual: Visual Conditions may be evaluated quantifiably by updating CDOT’s Sign Inventory. There was a commitment to reduce visual clutter and assure that signage is used most effectively. A review of the set of viewscape maps prepared by THK would demonstrate if there have been changes to the views from the highway.

Historic Properties: Historic inventories required as part of the Programmatic Agreement were completed and should be noted. No historic structures have been directly impacted. Indirect impacts, visual and noise, on structures within the Area of Potential Effect should be examined.

Recreation Resources: The “before and after” should include the quantity of improvements made to recreational amenities in Clear Creek including the Clear Creek Greenway, parks, picnic areas and fishing or rafting access. Should the analysis include an evaluation of the increase in rec demand in general in the corridor? Skiing, rafting, hiking etc. Is there value in this for this exercise?

Socio Economic: Sales tax revenue statistics are available for “before, during and after” comparisons of economic impacts in Clear Creek and corridor communities. Induced growth and land use were specifically mentioned in the Final PEIS. Should we expand this section to include anything on those issues?

Environmental Justice: The most recent CATEX for WBPPSL for the first time identified low income and minority populations by local census blocks in Clear Creek County ending the general policy of examining only large aggregates . A base for determining further impacts may have been established.

1.6 What is the purpose and need for transportation improvements in the Corridor?

The purpose for transportation improvements is to increase capacity, improve accessibility and mobility, and decrease congestion for travel demand (projected to occur in 2050) to destinations along the Corridor as well as for interstate travel, while providing for and accommodating environmental sensitivity, community values, transportation safety, and ability to implement the proposed solutions for the Corridor.

There is a need to address the transportation problems in the Corridor. The three interrelated need statements below specifically describe the need:

- **Increase capacity** – There is insufficient capacity to accommodate the current and projected demand for person trips in the Corridor. Person trips are used to portray the future demand, rather than vehicle trips, so that all potential modes of travel are examined similarly. Lack of capacity leads to slower travel times and congested conditions, as discussed in the two need statements that follow. It also means that person trip travel demand cannot be adequately accommodated. The inability to adequately accommodate person trip demand results in a need to increase person trip capacity.
- **Improve mobility and accessibility** – Mobility along the I-70 Mountain Corridor is defined as the ability to travel along the Corridor safely and efficiently in a reasonable amount of time. The mix of vehicle types, particularly slow-moving vehicles, directly affects mobility in this Corridor. Slow moving vehicles (trucks, buses, and recreational vehicles) make up about 10 percent of weekday traffic.

Accessibility is related to mobility and is defined as the ability to access destinations served by the Corridor safely, conveniently, and in a reasonable amount of time.

Currently, there are long travel times to traverse the Corridor or reach Corridor destinations during peak weekend conditions. Future increases in person trip demand will result in more congestion, more delay, and increased travel times for weekends and weekdays. Long travel times affect all types of Corridor users, and result in a need to improve mobility and accessibility in the Corridor.

The relationship of capacity and congestion is not direct. Lack of capacity may lead to congested conditions but increased capacity will not necessarily reduce congestion as the additional capacity can also result in more people traveling. As a result, both increased capacity and decreased congestion are addressed as needs for the Corridor.

- **Decrease congestion.** Severe congestion occurs on the Corridor during typical peak weekend conditions and is projected to worsen on weekends and to occur on weekdays in the future. Congestion is defined by a poor Level of Service and is measured over the course of a day at a specific location by the number of hours at the worst level of service (Level of Service F – see box).

Many factors can cause congestion, including, but not limited to:

- High volumes of traffic,
- Deficient roadway geometrics,
- Inadequate interchanges,
- Slower-moving vehicles in areas of steep grades,
- Unsafe conditions or actual crashes, and
- Poor road conditions.

Existing and future travel delay results in a need to decrease congestion along the Corridor. Delays are forecast to increase with higher person trip demand.

Safety plays a strong role in mobility, accessibility, and congestion. As such, in areas where safety problems currently exist, improving safety is inherent in the project needs.

Levels of Service are measurements that characterize the quality of operational conditions within a traffic stream and their perception by motorists and passengers. The six levels of service are designated by the letters A through F, with A representing the best operating conditions (light, free-flow traffic) and F the worst (stop-and-go traffic). Roadways operating at Level of Service E are generally considered to be at or near capacity, at which point traffic flow is interrupted by minor disturbances.

The project purpose and specific needs form the basis for developing and evaluating alternative transportation solutions for the Corridor, as they are measurable and apply throughout the Corridor. However, addressing transportation needs in the Corridor requires careful consideration of the physical, environmental and community constraints and requirements created by the mountain and valley terrains of the Corridor. The protection of the narrow mountain valleys, existing historic communities, and extensive natural resources is critical to the State of Colorado and the communities in the Corridor, and these resources (along with natural hazards) define critical constraints for transportation solutions in the Corridor. Alternatives must meet the transportation needs and be developed in a manner that provides for and accommodates the following:

- **Environmental Sensitivity** – Avoid and minimize adverse impacts on and, where possible, enhance environmental resources, including, but not limited to, stream sedimentation, water quality, wildlife crossings, and impacts on wetlands.
- **Respect for Community Values** – Avoid and minimize adverse impacts on and, where possible, enhance air quality, historic resources, noise levels, visual resources, and social and economic values, as well as minimize the transportation system’s footprint on the mountain communities. Consider the possible growth changes and economic effects that might occur, depending on the ease or difficulty of access.
- **Safety** – Improve where possible problematic roadway geometric conditions, such as tight curves and lane drops, and consider the safety characteristics of the modes of travel. Undesirable safety conditions along the Corridor directly affect the project need, specifically the mobility, accessibility, and congestion elements.
- **Ability to Implement** – Consider technical feasibility (that is, overall use of a mode and the feasibility of the technology), as well as affordability of alternatives in terms of capital costs, maintenance and operational costs, user costs, and environmental mitigation costs. Understanding the construction impacts on existing mobility and to the communities along the Corridor is important to evaluating implementation of alternatives.

February 10, 2020

Hi Vanessa,

These are Clear Creek's comments on meeting notes from CE subcommittee 1/14/2020, in the order in which they appear in the document. Following are also our comments on the Reassessment process generated by the meeting and the notes.

Page 1, Welcome paragraph: It should be clarified that Vanessa is kicking off the Reassessment Contract Work, not the 2020 Reassessment itself. Steve Long is not a facilitator. He is the consultant principal in charge of the technical contractual work of Steps 1,2 and 5. He does not facilitate or manage the Subcommittee and its conversations.

Page 2, Review of Data: "Chris" should be better identified by name and as a member of the contractor team. In addition, the language that reads, "He explained that a corridor-specific model was developed for the PEIS to account for the unique accounted for the unique trip purpose and demand periods" needs to be clarified.

Page 8, Agreements: We are not of the opinion that agreements were actually reached in the meeting. It is not that there were fundamental disagreements, but rather that closure was not reached in resolving any of the differing suggestions before moving on in the conversations. Examples are:

- Step 1A. Mandy's suggestion is suggested accurately, however suggestions made by others to place environmental considerations in Step 1B and Step 2A were equally supported.
- Step 1B should include "providing for and accommodating environmental sensitivity and community values" as a continuing part of the Purpose and Need.
- Step 2A should include the addition of the following statement: "How have projects provided for and accommodated environmental sensitivity and community values?" This is different than minimizing or mitigating the direct impacts of a project. Both suggestions were made.

In addition, we recommend the following as discussion items for the next meeting. They are not recommended changes to the notes:

Page 1, Communications: “Co-Chair Greg Hall indicated the CE protocols should be followed.” CE protocols state that the co-chairs are the meeting organizers and points of contact for the CE. Therefore, they share leadership responsibility with the agencies for this process. They should review the interim work product prior to Subcommittee meetings, share responsibility for creating Reassessment Subcommittee agendas, and should be made aware of Reassessment communications of other CE members with CDOT, including those forwarded on to the Contractor. We recommend regularly established contact between the co-chairs and lead agencies for that purpose.

Step 1A:

- Page 4, Second Question: The question “How will advances in transit technology be evaluated?” was not answered. Chris asked for specifics. The discussion then went off topic and this question should be revisited.
- Page 4, Climate change: It is not clear from this paragraph how climate change is going to be considered. This merely says a lot has happened on climate change since 2011. How will that inform the process? Will climate change will have a more significant role coming out of the Reassessment than it did in 2011?

Step 4: Schedule: We believe that once Steps 1-3 are complete, they inform Step 4 as the actual outcome of the process is a set of recommendations which will improve our progress in implementing the ROD. That is a bigger job than can be accomplished in a one-day full CE meeting which is also packed with other tasks. We should discuss this further to enable sufficient time for both the subcommittee and the full CE to fully develop recommendations.

Thanks,

Randy Wheelock
Clear Creek County Board of County Commissioners, Chair
Collaborative Effort, Co-Chair



**I-70 Mountain Corridor 2020 Reassessment
Collaborative Effort (CE) Subcommittee Meeting #2 Summary**
February 13, 2020, 9:00 AM to 11:30 AM
1630 Miner Street, the Majestic Building, Idaho Springs

Overview

These notes summarize Meeting #2 of the I-70 Mountain Corridor 2020 Reassessment Collaborative Effort (CE) Subcommittee. The primary focus of the meeting was the review of the HDR team's data collection to date to support Steps 1A, 1B, and 2A of the I-70 Mountain Corridor Record of Decision's (ROD) 2020 Reassessment Work Plan. (Only Step 1A and part of Step 1B were covered in the meeting, and a follow-up meeting in April was recommended and agreed upon to continue review of Step 1B and Step 2A data collection.)

Welcome and Introductions

Vanessa Henderson, CDOT, welcomed the group, and self-introductions followed. Attendees are noted in the attached sign-in sheet.

Kick-off Meeting Follow-Up

The group discussed Clear Creek County's comments on the kick-off meeting notes, including requests for clarifications to the notes and other items for discussion (attached).

Clarifications to Kick-Off Meeting #1 Notes

Page 1 of the meeting notes have been revised to clarify that Vanessa kicked off the contract work, not the 2020 Reassessment itself. Also, on page 1, the County noted that Steve Long is not the facilitator of the committee but rather the consultant principal in charge. Vanessa said that Steve was the facilitator and noted that the facilitator role was requested by the CE in the final review of the Work Plan (September 25, 2019 CE Meeting). The group discussed the facilitator role and reaffirmed that it would be important to help manage the discussions and schedule. In addition, in Steps 3 and 4, the CE and CE Subcommittee would be leading the efforts; however, Steve will still be the overall facilitator to keep the discussions on track. Randy Wheelock, CE Co-Chair, stated that it is important the facilitator be neutral and listen to and encourage participation from all the CE and CE subcommittee members. The group agreed. Steve acknowledged this and agreed that was his role. The notes will be supplemented to clarify Steve's role as the facilitator. After this second meeting, Clear Creek County requested a copy of the consultant scope of work and sent additional comments about Steve's role as facilitator. The county continues to believe that a trained, neutral facilitator is needed to achieve the CE goal of consensus, resolve possible differences of opinion about the outcomes of the Reassessment analysis, and manage meeting time and agreements effectively. They also are concerned that HDR is responsible for developing the analysis so is not impartial to the discussion. Greg Hall, co-chair of the subcommittee, said that he shared these concerns and asked that the topic be formally discussed at the next meeting.



Page 2 of the meeting notes will be revised to clarify Chris Primus's role with the consultant team and correct the sentence about the corridor-specific model (removing the extra words "for the unique accounted").

The Agreements section on Page 8 will be clarified regarding the resolution of suggestions about how environmental sensitivity and respect for community values should be addressed (and in which Step of the work plan). The group agreed that including these components in Steps 1B and 2A was appropriate but the suggestion by Mandy Whorton, Peak Consulting Group, to include these in 1A was not applicable. Vanessa let the group know that this was how the HDR team agreed that it fit best in Steps 1B and 2A as well and that was how the presentation for this meeting was prepared. The meeting notes will be revised accordingly.

The group discussed the process for reviewing and clarifying meeting notes. At the kick-off meeting, it was discussed that review of the meeting notes would be critical to keeping tasks on schedule. Mandy said that it was important that members were comfortable with the discussion and follow-up documented in the notes. She thanked Clear Creek County for providing corrections and asked for direction from the group of how meeting notes should be revised. The group agreed that documenting the changes in tracked changes would be most helpful. Vanessa will distribute the revised kick-off meeting notes with the notes from this meeting. Clear Creek County noted that the meetings needed to be managed to provide an opportunity for facilitated discussion and agreement on meeting outcomes at the end of each meeting rather than rely on the meeting note review for consensus.

Other Discussion Items

Clear Creek County requested several follow-up items for discussion that did not require revisions to the meeting notes.

Communications

The group discussed the role and shared responsibilities of CDOT and the CE Co-Chairs in the organization of meetings and meeting agendas. Randy requested that he and Greg Hall, Vail, as Co-Chairs of the CE, be involved in the agenda setting. Vanessa said that she could set up a call with the Co-Chairs a week or so ahead of the meetings to discuss and confirm the agendas. The group also requested that meeting materials be provided ahead of the meeting for review by the entire CE Subcommittee. Vanessa said that due to the aggressive schedule and amount of information to get through by the end of the calendar year, materials for this meeting were not finalized until the day before. The group said that they understood but would appreciate having the materials when CDOT did, even if that was less than 24 hours in advance. Vanessa said she would share materials as soon as they were finalized and although materials may sometimes be distributed less than 24-hours in advance, the group agreed sharing materials in advance is still preferable.



Topics for Additional Discussion

How transit technology would be included in the 2020 Reassessment was not fully discussed in the kick-off meeting. The group agreed that it should be revisited, and follow-up is intended. (This topic was addressed later during the meeting, and the group recommended additional discussion topics for the next meeting in March.)

It is not clear how climate change will be considered. Although it was acknowledged that climate change was part of the PEIS and ROD and that the interest and awareness are higher now than when the PEIS and ROD were completed, it is not clear how it will be revisited in the Reassessment. Shaun Cutting, FHWA, stated the direction from the current federal administration limits FHWA's ability (and charge) to evaluate climate change in federal documents. However, this Reassessment is not looking at comparing alternatives, so this "restriction" does not limit this group or the 2020 Reassessment effort from considering and responding to what Clear Creek County views as a major issue. (The discussion of climate change was expanded upon in the review of data later in the meeting.)

Schedule

Clear Creek County is concerned that a full-day workshop with the CE is not enough time to accomplish Step 4. Vanessa said that in preparation for this meeting, it was clear that more meetings would be needed to get through the data review and prepare for the CE and CE Subcommittee work in Steps 3 and 4. She suggested an additional April CE Subcommittee meeting, which the group agreed to. Vanessa will send out a Doodle poll with dates for the April CE Subcommittee meeting. Amy Saxton, Clear Creek County, suggested a June meeting for a full CE meeting as well. Vanessa said she would not be available in June but was open to a June meeting if the group desired. She also suggested waiting to schedule another full CE meeting to see how things progress, which the group agreed to.

Schedule Status

Steve Long provided an update on the Reassessment contract schedule and work progress. The HDR team has been collecting data and has some initial observations for discussion with the group. Steve asked the group to consider any holes or additional data needs during the presentation that the consultant team should be prepared to address in the upcoming evaluation of data. The remainder of the meeting was dedicated to the review and discussion of data collection.

Review of Data Collection to Date

Steve said that Chris Primus, HDR, and Wendy Wallach, HDR, would lead the data review and outlined the organization. Each topic in Step 1 of the Work Plan would be addressed, first by summarizing the PEIS conclusions, then presenting updates and/or new information, and finally some observations from the consultant team for discussion about how the changes in context or needs might affect the Reassessment.

Step 1A: Evaluation of Context

Step 1A of the work plan outlines the following topics for the evaluation of context: population; land use and land use pressures, including recreation; technology; and climate change. No other categories were



recommended for detailed discussion based on the review of data needs during the kick-off meeting; however, recreation was identified as a particular area of interest for land use context, both in terms of land use pressures and travel demand and is included as a sub-section under the land use topic.

Step 1A – Population

Chris summarized the population and employment projections from the PEIS travel demand model and compared those to the current projections. As reflected in the attached presentation, 2035 population projections for the Denver metro area from the PEIS are very similar to the current population and projections. Employment is slightly higher than PEIS projections for the Denver metro area, probably due to very low unemployment in the region. The 2035 projections for the corridor communities are different. The PEIS overpredicted both population and employment growth in the corridor communities (which are defined by the three primary counties of Clear Creek, Summit, and Eagle). Chris explained that the differences in projections mean that there are likely more regional and less local trips in the corridor.

Question: What are the data sources for population and employment projections, and are they the same now as during the PEIS?

Answer: The current projections come from CDOT’s statewide travel demand model, which comes from the state demographer and Department of Local Affairs, which are the same sources used by the PEIS travel demand model.

Step 1A – Land Use, including Recreation

Wendy explained that the PEIS recognized the relationship between transportation and land use and predicted changes in land uses in the corridor depending on the types of transportation alternatives implemented. Highway improvements were expected to distribute growth based on existing trends of dispersed growth in rural areas, while transit alternatives were expected to concentrate growth in populated areas (around stations). The Preferred Alternative, as a mix of both highway and transit improvements, was expected to balance the growth and put pressures both on urban and rural areas to manage growth.

For recreation-based land uses, the PEIS noted that recreational land uses in the I-70 Mountain Corridor heavily influence economic development and travel demand trends. Recreation and tourism account for a higher percentage of jobs along the corridor compared to the rest of the state, and the I-70 Mountain Corridor contains hundreds of recreational destinations. The PEIS projected that transportation improvements associated with the Preferred Alternative would induce more recreational travel to the I-70 Mountain Corridor as suppressed trips were induced due to improved access and travel conditions.

Question: What is meant by the differences in alternatives and land use pressures? What is the basis for these conclusions?

Answer: The PEIS summary documents what the PEIS concluded about how land use could be affected by different transportation options. Observations about how land use pressures may be affected are contained later in the presentation.



Comment: Corridor communities are observing increased recreational travel, particularly day trips. They are also observing more weekday recreational trips, especially on the east side of Eisenhower-Johnson Memorial Tunnels (EJMT).

Discussion: The PEIS projected increased recreational travel as travel conditions improved, and the increased volumes support that more trips are occurring as projected. (Data related to traffic volumes are included later in the presentation.)

Wendy continued with presentation of updated information from the 2019 Colorado Parks and Wildlife's Statewide Comprehensive Outdoor Recreation Plan (SCORP). The SCORP documented a doubling of economic revenue in outdoor recreation since 2012, indicating a very strong economic sector and interest in outdoor recreation but also the pressure that increased visitation puts on recreational sites and activities. The SCORP management priorities balance providing recreational opportunities with stewardship and land conservation to protect the quality of recreational resources and experiences. Wendy noted that collaborative approaches would be needed to balance competing interests.

Comment: Randy said the US Forest Service is going through a similar exercise to balance priorities of access and land conservation for the Arapahoe and Roosevelt National Forest. Overuse of resources is becoming a more significant issue for protecting the environment and quality of recreational experiences.

Comment: Recreational jobs are a large component of corridor community economies. Clear Creek County's economy is tied to recreation and a lot of the jobs and businesses are in this sector. The growing recreation economy has multiple facets that need to be considered and are directly related to transportation and affordable housing. As housing in the corridor communities becomes increasingly expensive and recreational jobs do not pay enough to afford housing, a commuting pattern where corridor community residents commute out for better paying jobs and workers commute from outside areas into corridor communities for lower paying jobs has developed.

Comment: Outdoor recreation is now the biggest industry in Colorado. Mary Jane Loevlie, Idaho Springs Business Representative, noted that the Outdoor Recreation Industry Office is now a department within state government, recognizing the importance of the industry to the state. Their website also contains data related to the industry that could be valuable to the Reassessment context.

Comment: Cindy Neeley, Clear Creek County, said the context should include a review of planned housing developments in corridor communities. The issue of affordable housing and access to jobs is important to corridor communities, and transportation is a key factor to addressing the disparities.

Chris provided an overview of how the travel demand model accounts for recreational travel. Some of the inputs include gaming devices, hotel beds, camping sites, skier visits, air passengers, second homes, and local recreation in the travel area.

Question: Gary Frey, Trout Unlimited, asked if there are tipping points for recreational access and use and sustaining the resources? How will the Reassessment address this?



Discussion: The SCORP details these pressures and we are seeing changes in management approaches, such as the reservation system at Hanging Lake and busing at National Parks to provide equitable recreational opportunities more sustainably. Although the federal land management initiatives are not currently weighted to conservation or reduced use of public lands, locally this is recognized and important. Transportation strategies play an important role in helping to manage land use strategies and pressures, as federal land management agencies have limited jurisdiction to make changes to address land use pressures.

Question: How are recreational day trips accounted for in the travel demand model? What about heritage tourism or other special uses or attractions?

Answer: Generally, day trips would be covered under retail employment, which generates trip attractions. Attractions to activities such as trail heads, are also included. Travel demand is related to destinations, and the trends of outdoor recreation travel, which were a key driver in the PEIS, continue to be a large component of travel today. In the evaluation of the data, the team will be looking at traffic projections as well as trends since the PEIS to see how well the model projected. If necessary, some sensitivity analysis could be conducted if there are concerns about underrepresenting recreational trips.

Step 1A – Technology.

The PEIS included non-infrastructure strategies related to technologies based on the belief that technology may be used to change behaviors or increase capacity without additional infrastructure. Relevant examples include how connected or autonomous vehicles (CV/AVs) may be able to increase capacity with more cars on the road (at closer spacing), improved information related to road or weather conditions that may discourage travel in poor conditions, and variable speed limits that may improve travel times by harmonizing travel speeds.

Chris reviewed CV/AV technology advances since the PEIS and adoption trends in the past ten years since the PEIS. CV/AVs have the potential to change travel, and throughput and travel demand could be increased. Transit AVs could potentially provide first and last mile service. To realize the effects of CV/AVs, researchers suggest an 85 percent adoption rate would be needed (most of the cars on the road would need to be connected). The timeframe for this penetration is beyond 2050, even under aggressive projections.

Comment: Randy met with Panasonic representatives recently and they confirmed the long timeframe (beyond 2050). They also noted that the I-70 Mountain Corridor would lag other corridors in CV/AV adoption because of the challenging weather conditions.

Comment: Mary Jane noted that CV/AVs would not increase travel demand because the travel demand is already there. At best, they might serve the unmet demand from suppressed trips.

Comment: Greg Hall, Vail, noted that social media technology has the potential to change travel preferences, particularly with use of mapping apps that suggest destinations for users. Technology might also help driving become safer and limit effects of distracted driving.



Comment: Transit technology and connected transit have a lot of opportunity, and several members of the committee expressed strong concern that the discussion omitted any analysis or discussion of developments with high-speed transit technology. Because high-speed transit is one of the main components of the Preferred Alternative, the analysis should be done and presented for discussion at the next meeting. Some of the factors that need to be updated include advancements in transit vehicles, speeds, costs, and deployment of newer technologies. The group agreed that transit technology should be discussed in detail at the next meeting.

Step 1A: Climate Change.

The PEIS acknowledged the 2007 Governor's Climate Action Plan and CDOT's 2009 Air Quality Policy Directive related to mobile source air toxics and greenhouse gases. It also noted how climate change could affect the I-70 Mountain Corridor resources, particularly related to the mountain pine beetle infestation, which was a significant issue for forest health and fire risk when the PEIS was completed.

Since the PEIS, awareness of climate change has grown, both globally and in the state. CDOT recognizes the effect of weather events, especially flooding and fires, on infrastructure and conducted the I-70 Corridor Risk and Resilience Pilot in 2017. The resilience approach is a proactive plan for addressing vulnerable infrastructure. Much of the I-70 Mountain Corridor has been identified as critical for infrastructure vulnerability in the risk and resiliency review.

The awareness and concern about climate change are not reflected in current federal government policies. The lack of support or action at the federal level does not limit Colorado from taking independent actions, although Shaun noted that Colorado and other more progressive states such as California are finding themselves in conflict with FHWA nationally, and this is an evolving divergence in positions with uncertain resolution.

Question: Did risk and resiliency look at evacuations? This is an important issue for the I-70 Mountain Corridor where there are no redundant routes.

Answer: Risk and resiliency looked primarily at protecting transportation infrastructure by building or retrofitting more resilient structures and roadways. The PEIS, however, acknowledged the issue of limited alternate routes, and as events have required road closures (such as for avalanche and rockfall), long detours have highlighted the problem. This can be acknowledged in the updated context in the Reassessment.

Question: How might the highway have been built differently if it were being designed today with resiliency in mind?

Answer: It is likely that the relationship of streams and creeks and the highway alignments would be considered differently, and some design standards, such as for floodplains and scour, might be more conservative. The redesign of US 36 and US 34 after the 2013 floods did realign the roads away from the creeks and into the hillside to reduce future flooding risks, for example.

Comment: It seems like we are reacting to the effects of climate change, not planning for it or taking proactive steps to slow climate change. Transportation is in the top three contributors of climate change



and it is important to be proactive. The PEIS included a proactive and adaptive approach, which is why the Preferred Alternative had a 50-year vision and included AGS and non-infrastructure improvements in that vision.

Comment: The data review feels highway centric. The next meeting should focus much more on transit.

Discussion: The group agreed that the next meeting would include an expanded and focused transit discussion. The group also agreed that an April meeting would need to be scheduled because data collection was ongoing and not all topics, including transit, could be covered in the time for this meeting.

Step 1B: Purpose and Need Components

Chris summarized the traffic data collection and travel demand modeling updates completed to date. He noted that the updates to the PEIS model were proceeding but model runs were not available yet. These would be available and presented at the next meeting.

Step 1B: Existing Traffic Data

Chris showed several charts detailing traffic volumes from 2010, 2015, and 2019 for the seven locations along the I-70 Mountain Corridor detailed in the PEIS (from west to east): No Name Tunnels, Wolcott, Dowd Junction, Copper Mountain, EJMT, Veterans Memorial Tunnels (VMT), and east of Genesee. The traffic volumes were presented for average summary Sunday (August), average winter Saturday (early April), and average summer Thursday; average daily traffic includes the number of vehicles that pass through the location in both directions on the given day. The observed trends are expected, with volumes increasing in all locations from 2010 to 2015 to 2019. Some anomalies exist between 2015 and 2019, which are likely related to issues with the traffic recorder (such as at Dowd Junction) rather than a variation in the trend.

Chris also presented data related to heavy vehicles. The percentage of trucks is higher on the west end of the corridor and lower on the east end. This is partly because overall traffic volumes are higher in the eastern segments, so trucks represent a smaller proportion or percentage of the overall traffic stream.

The spreadsheet of referenced traffic volumes is included as an attachment to these notes per member requests.

Finally, Chris presented travel times on the eastern and western portions of the corridor – between C-470 and Silverthorne (east) and Silverthorne and Glenwood Springs (west). Travel time data were compiled from INRIX, a private company that collects data on congestion, traffic incidents, and weather-related road conditions from anonymous GPS and cell phone data points across the world. CDOT has had a subscription with INRIX since 2011 and uses the data to evaluate actual travel times and conditions on Colorado's major roadways, including I-70.

In the eastern portion of the corridor, travel times for a winter Saturday westbound and a summer Sunday eastbound were compared. In the westbound direction, travel times are markedly higher in 2019 – at more than double free-flow travel times – than in 2012 or 2015. In the eastbound direction, travel times grew between 2012 and 2015 but dropped in 2019 (still above 2012 times but lower than 2015). Although, as noted earlier, traffic volumes increased through this area, the implementation of the



Mountain Express Lane in the eastbound direction between US 40 and Floyd Hill, just past the VMT, likely contributed to this reduction in travel time.

In the western portion of the corridor, travel times have also increased but not as dramatically. In this portion of the corridor, travel patterns reflect more of a traditional commuting pattern.

Comment: It would be interesting and useful to look at truck volumes, not just percentages. (Volumes are shown in the attached spreadsheet.)

Question: How are Uber and Lyft factored into the model?

Answer: They are included as part of the volume but not categorized separately. The PEIS model also did not include these services.

Question: How is income disparity factored in?

Answer: Households are divided into income brackets to account for the income disparity and differences in travel pattern.

Question: What about people from outside of Colorado?

Answer: The model accounts for these external trips. It also accounts for out-of-state travel with air travel. Hotel occupancy is another way to measure out-of-town travel.

Comment: Miller Hudson, Colorado Maglev Group, stated that the PEIS transit ridership projections were poorly done. At the time of the PEIS, Miller represented Colorado Intermountain Fixed Guideway Authority (CIFGA), and they accepted the results because the recommendation to include AGS was supported despite the flawed ridership modeling. He said the ridership projections should be updated according to standard practices.

Next Meeting and Follow-Up Topics for Discussion

As noted previously, the group agreed to continue the review of data collection at the next meeting, which would be accommodated by adding a meeting in April. The topics for discussion include:

- Focused discussion of trends in high-speed transit technology and feasibility
- Review of travel demand projections for the travel demand model and follow-up on
 - How the model projects recreational trips, including day trips
 - Truck volumes
 - Traffic patterns and volumes east and west of EJMT
- Additional information regarding the economic impacts of tourism and outdoor recreation, including recreational jobs
- Additional information regarding trends in affordable housing and effects on commuting patterns and corridor community land uses



Agreements and Action Items

In addition to preparing for discussion of the topics noted above, the following were agreements or actions for the CE Subcommittee moving forward.

- Vanessa will set up a conference call with CE Co-Chairs to discuss future Subcommittee meeting agendas approximately one week before meetings.
- Vanessa will distribute meeting materials when they are finalized in advance of future CE Subcommittee meetings. It is anticipated that materials will be available no more than one day in advance of meetings.
- Vanessa will set up an April 2020 meeting to accommodate the continued data review.
- Amy and Vanessa will coordinate a June 2020 meeting as appropriate.



I-70 Mountain Corridor 2020 Reassessment

COLLABORATIVE EFFORT (CE) SUBCOMMITTEE

MEETING #2 AGENDA

Date/Time: February 13, 2020; 9:00 a.m. to 11:30 a.m.

Location: The Majestic Building
1630 Miner Street, Idaho Springs

Invitees:

Adam Bianchi, USFS	Kelly Galardi/Melinda Urban, FHWA
Amy Saxton, CCC	Mary Jane Loevlie, Business Rep
Ben Gerdes, Eagle Co	Matt Scherr, Eagle Co
Bentley Henderson, Summit Co	Mike Hillman, Idaho Springs
Brian Duchinsky, Headwaters Gr	Mike Keleman, CDOT
Dennis Royer, Sierra Club	Randy Wheelock, CCC
Gary Frey, CO Trout Unlimited	Shaun Cutting, FHWA
Greg Hall, Vail	Steve Coffin, Steve Coffin Strategies
Holly Norton, SHPO	Vanessa Henderson, CDOT

AGENDA

1. Introductions
2. Kick-Off Meeting Follow-Up
3. Schedule Status
4. Review Summary of Data Collection to Date
 - a. Work Plan – Steps 1 and 2
5. Next Meeting Topics
 - a. March 18, 2020; 9:00 a.m. to 11:30 a.m.; Clear Creek County Board of County Commissioners Room



I-70 Mountain Corridor 2020 Reassessment

Collaborative Effort (CE) Subcommittee Kick-Off Meeting February 13, 2020 9:00 am to 11:30am

	Name	Organization	E-mail	Phone	Initials
1.	Vanessa Henderson	COOT	vanessa.henderson@state.co.us	701 497-6934	VH
2.	MARY JANE LOEVLIE	Bus. Lias			
3.	Gary Frey	CTU	gary.frey@ctusa.com	319 860 0106	
4.	RANDY WHIRLWIND	CCC			
5.	Shawn Cully	FHWA			SC
6.	Greg Hall	TOV			
7.	DENNIS ROYER	SIERRA CLUB	royer_dennis@yahoo.com	2-518-4313	DER
8.	Matt Scherr	Eagle County	matt.scherr@eaglecounty.us	970.376.4449	MS
9.	Miller Hudson	COLORADO MAPLE	mhwriter@msi	303 638-2258	
10.	Cindy Neely	CCC	cneely@yahoo.com	470-201-7161	CN
11.	Amy Saxton	CCC	asaxton@clearcreekcounty.us	3-877-0579	AS
12.	Neil Ogden	CDOT	neil.ogden@state.co.us	720 497 6928	NO
13.	Julie George	CDOT	julie.george@state.co.us	720-233-4662	JG
14.	Kira Olson	HDR	Kira.Olson@hdr.inc.com	303-323-9869	KO
15.	DON STANTON	TRANSP. COMMISSION (Jetta)	skylab207@comcast.net		DS
16.	Mandy Whorton	Peak	mandy.whorton@peakconsulting.co.com	303-866-6258	MW
17.	Steve Coffin	Steve Coffin Strategies	steve@stevecoffinstrategies.com	3-518-2675	SC
18.	Steve Long	HDR	steve.long@hdrinc.com		SL
19.	Wendy Wallack	HDR			
20.	Chris Primus	HDR			



COLORADO

Department of Transportation

I-70 Reassessment Summary of Data Collection

February 13, 2020



1. Introductions
2. Kick-off Meeting Follow Up
3. Schedule Status
4. Review Summary of Data Collection to Date
 - Work Plan - Steps 1 and 2
5. Next Meeting

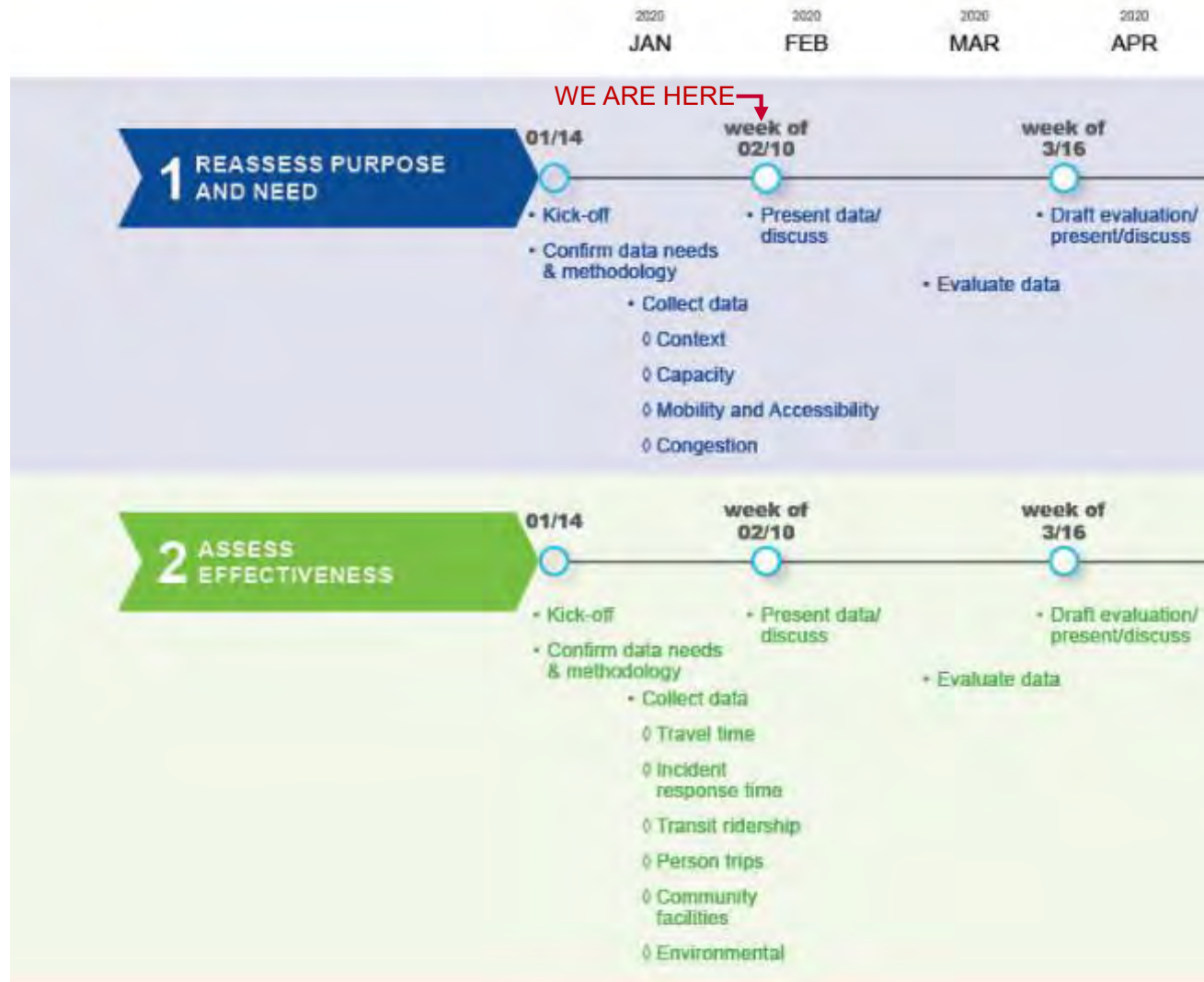


- Discussion of comments on January 14, 2020 CE Subcommittee kick-off meeting notes
- Acceptance of meeting minutes with agreed upon changes



Schedule Status

Meeting #2 Presentation of Data





Summary of Data Collection to Date

Format for Discussion of each Component on Steps 1 and 2

- PEIS Summary
- Updated Conditions
- New Information
- Observations/Discussion



Step 1A: Evaluation of Context

- Population
- Land Use and Land Use Pressures, including recreation
- Technology
- Climate Change

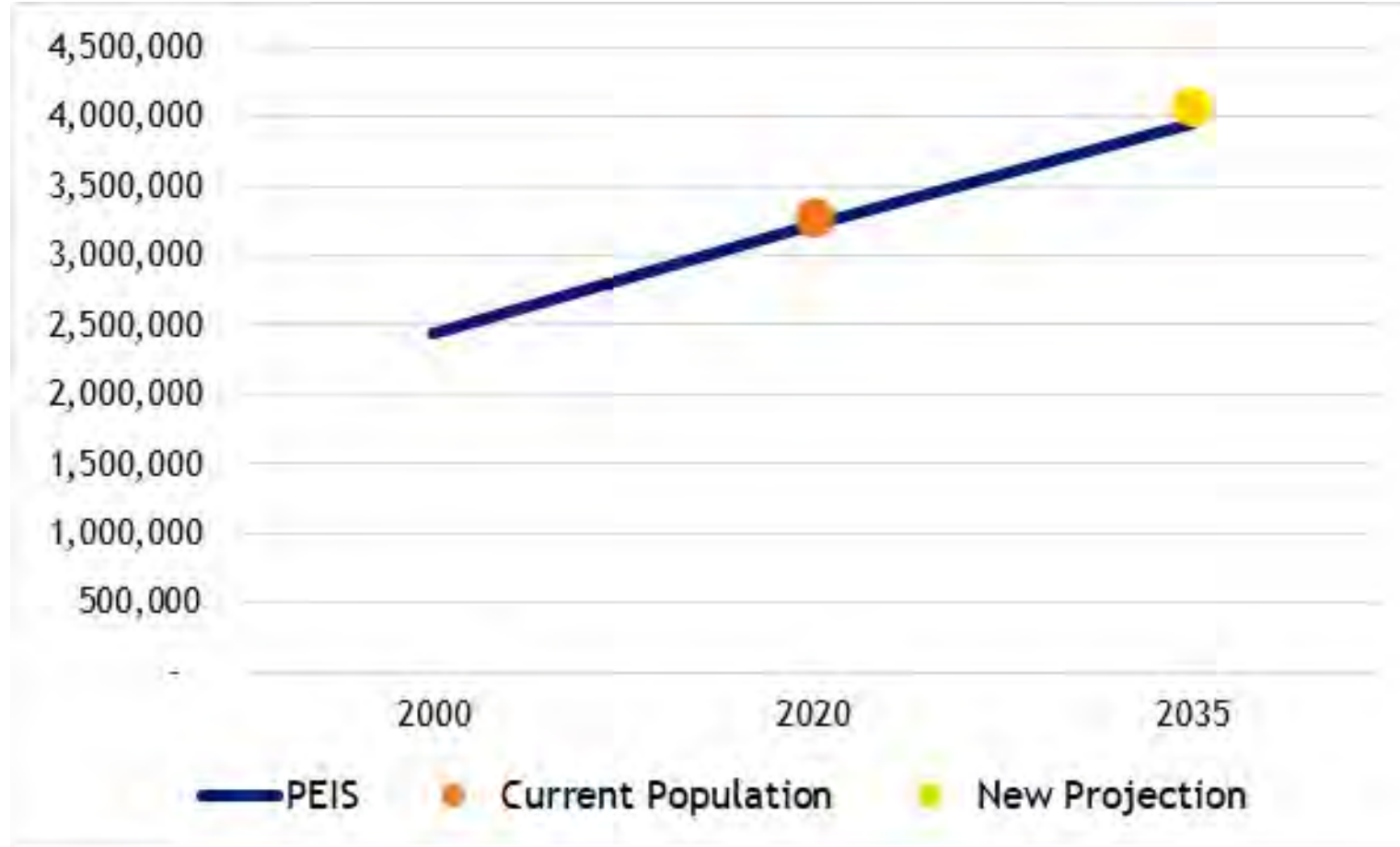


Step 1A: Evaluation of Context Population





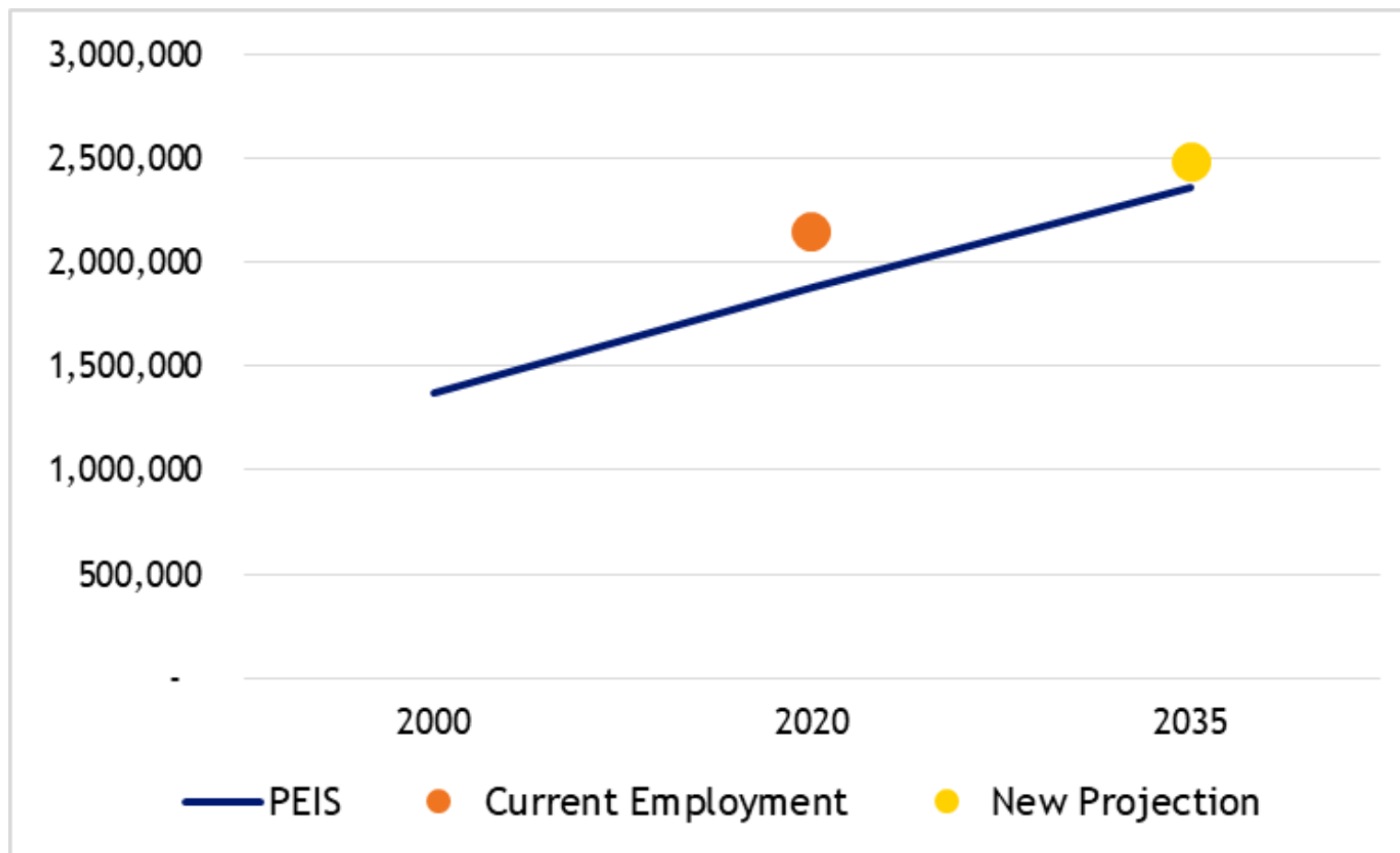
Step 1A: Evaluation of Context Denver Metro Population



Source: I-70 Mountain Corridor PEIS 2011, DOLA 2019, and CDOT Statefocus model 2019.



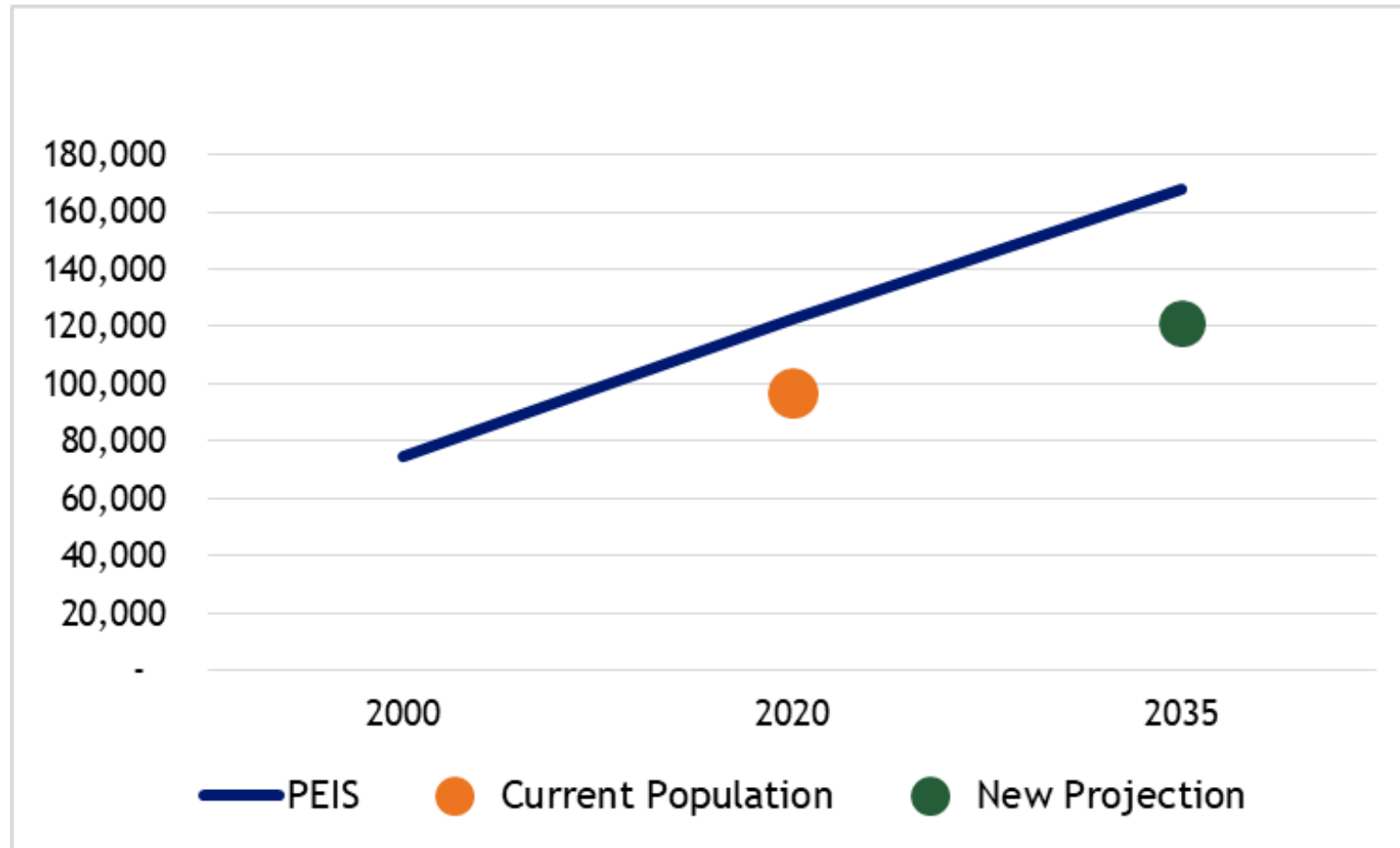
Step 1A: Evaluation of Context Denver Metro Employment



Source: I-70 Mountain Corridor PEIS 2011, DOLA 2019, and CDOT Statefocus model 2019.



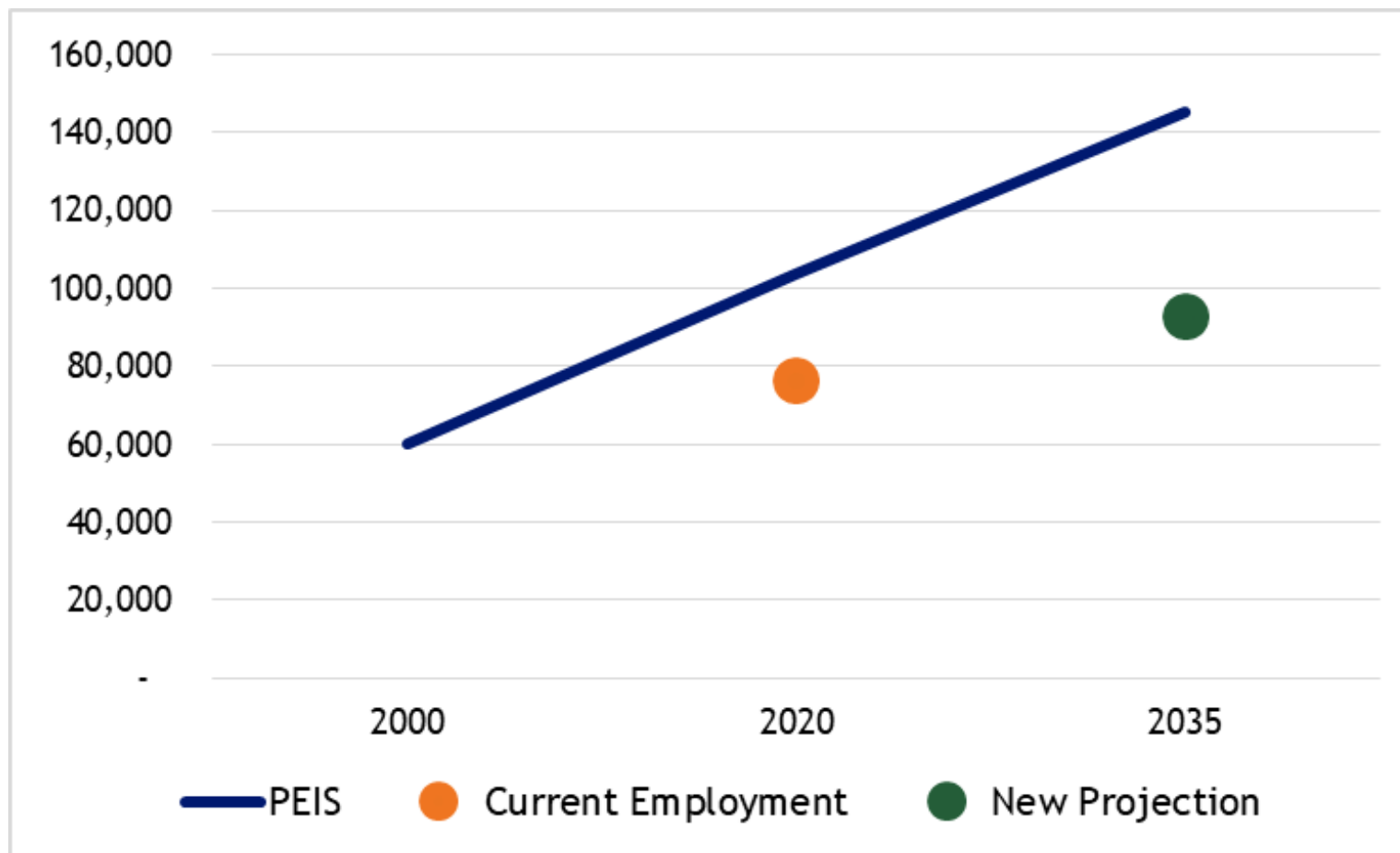
Step 1A: Evaluation of Context I-70 Corridor Population



Source: I-70 Mountain Corridor PEIS 2011, DOLA 2019, and CDOT Statefocus model 2019.



Step 1A: Evaluation of Context I-70 Corridor Employment



Source: I-70 Mountain Corridor PEIS 2011, DOLA 2019, and CDOT Statefocus model 2019.



Step 1A: Evaluation of Context Land Use and Land Use Pressures





Step 1A: Evaluation of Context Land Use and Land Use Pressures

PEIS Summary

- Transit alternatives are expected to concentrate induced growth in areas of existing or planned urban development;
- Highway alternatives are expected to distribute growth based on existing trends, resulting in more acres of developed land in rural areas; and
- The Preferred Alternative induces growth similar to the Transit alternatives under the Minimum Program; if the Maximum Program is implemented, growth patterns are expected to distribute growth equally, resulting in increased pressure in both urban and rural areas



Step 1A: Evaluation of Context Land Use and Land Use Pressures - Recreation

PEIS Summary

- Recreation and Tourism jobs account for a higher percentage of total jobs along the Corridor compared with the rest of the state
- 700 recreation sites are located within 3 miles of the I-70 highway corridor, and the corridor provides primary access to hundreds more sites outside study area
- The travel demand model shows higher numbers of induced tourism or recreation trips for the Preferred Alternative and likely induces increased visitations to National Forests



Step 1A: Evaluation of Context Land Use and Land Use Pressures - Recreation

Updated Conditions

Doubling of economic revenue since 2012 from recreation opportunities but Colorado Parks and Wildlife recognizes the increased pressure on recreation sites and activities. (*SCORP, 2019*)

2019 Priorities balance recreation opportunities, with stewardship supported by land conservation.

1. Sustainable Access and Opportunity
2. Coloradans and visitors enjoy and care for natural and cultural resources and commit to stewarding them for future generations
3. Land, Water and Wildlife Conservation Goals



Step 1A: Evaluation of Context Land Use and Land Use Pressures - Recreation

Observations/Discussion

- Continued increase in recreation and land use pressures
- Collaboration will be needed to address these pressures
- Evolving use of Land Management and Mitigation Strategies
 - Off-peak use incentives
 - River access “hot spots”
 - Funding partnership for forest management



Step 1A: Evaluation of Context Land Use and Land Use Pressures - Recreation

Travel Model

- Travel model accounts for recreation travel:
 - Gaming devices
 - Hotel beds
 - Camping sites
 - Skier visits
 - Air passengers
 - Second homes
 - Local recreation



Step 1A: Evaluation of Context Technology





PEIS Summary

One of the non-infrastructure strategies included in the Preferred Alternative addressed new technology:

“Use of technology advancements and improvements to increase mobility without additional infrastructure”



Step 1A: Evaluation of Context Technology

New Information

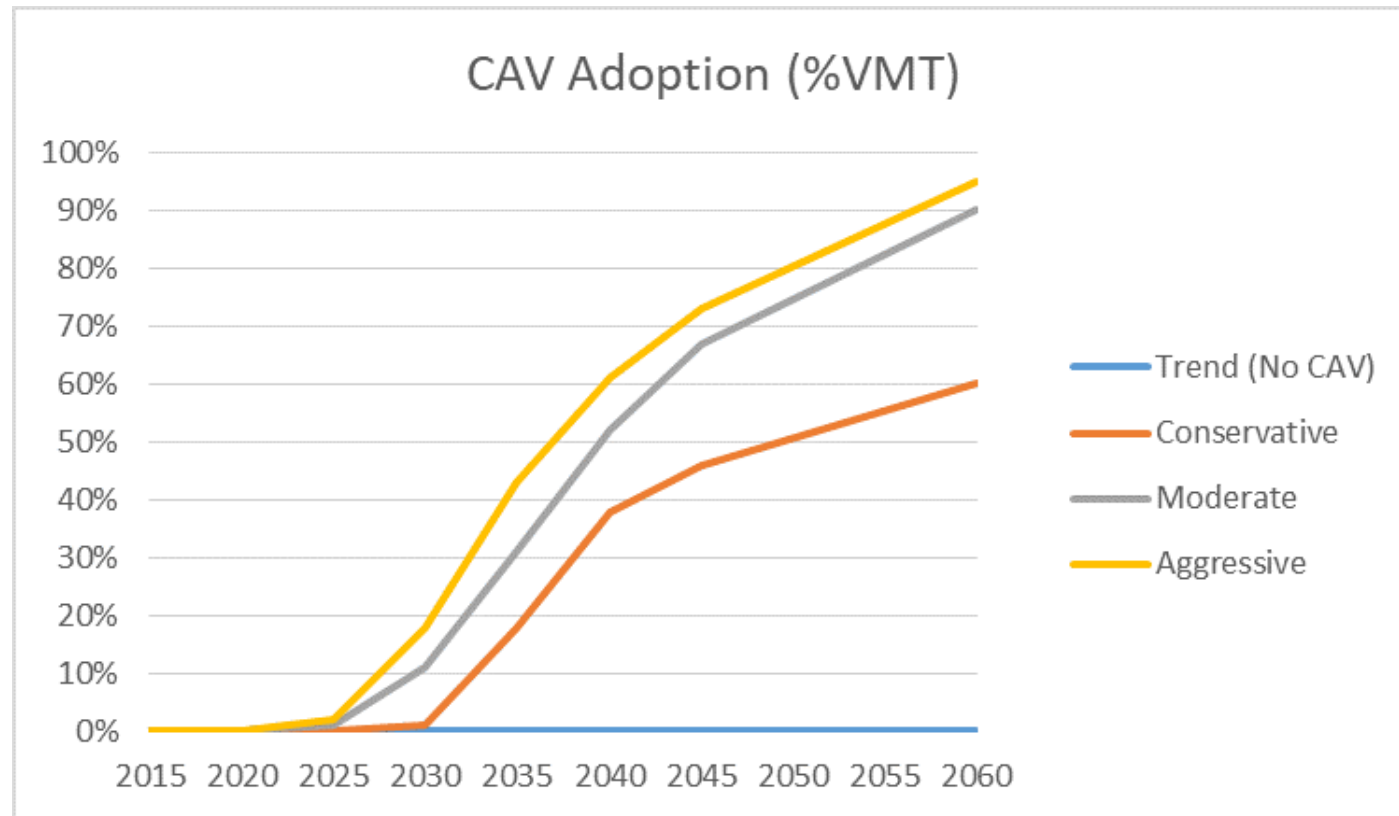
- New Automobile and Transit Vehicle Technology:
- Connected Vehicles (CVs): Communicate wirelessly with other vehicles and infrastructure
- Autonomous Vehicles (AVs): Automated driver assistance features, up to driverless vehicles
- Evolution of Connected and Autonomous Vehicles from 2011 to today
- Today
 - AV features are offered on many new models
 - Autos are equipped with data modems
 - Fully autonomous automobile and transit vehicle tests continue



Step 1A: Evaluation of Context Technology

Uncertainties

- Very high CAV saturation levels are likely required before CAVs will reduce congestion
- Rate of deployment of technologies
- Challenge with AVs and weather
- Viability of fully autonomous vehicles



Source: HDR



Observations/Discussion

- Potential for Technology to Improve Safety
 - CVs can avoid accidents by communicating with nearby vehicles and be informed of road conditions
 - AV technologies improve safety through automated braking, lane keeping assistance, etc.
- Potential for Technology to Increase Mobility
 - Platooned CAVs could increase throughput; timeframe and effectiveness uncertain
 - Fully autonomous AVs could increase travel demand
 - Transit AVs could provide First and Last Mile service



Step 1A: Evaluation of Context Climate Change





Step 1A: Evaluation of Context Climate Change

PEIS Summary

Global Climate Change - PEIS

- The Governor's Climate Action Plan, adopted in November 2007, includes measures to adopt vehicle CO2 emissions standards and to reduce vehicle travel through transit, flex time, telecommuting, ridesharing, and broadband communications.
- In 2009, CDOT issued an Air Quality Policy Directive in concert with a number of agencies, addressing unregulated Mobile Source Air Toxics (MSATs) and greenhouse gases.



Step 1A: Evaluation of Context Climate Change

Updated Conditions

Global Awareness

- The UN Intergovernmental Panel on Climate Change (IPCC), updated 2013
- Transportation System Resilience, Extreme Weather and Climate Change USDOT, 2014
- National Climate Assessment, 2014
- Paris Agreement, 2016

Local

- I-70 Corridor Risk and Resilience Pilot, 2017
- Polis Administration's: Roadmap to 100% Renewable Energy by 2040 and Bold Climate Action, 2019

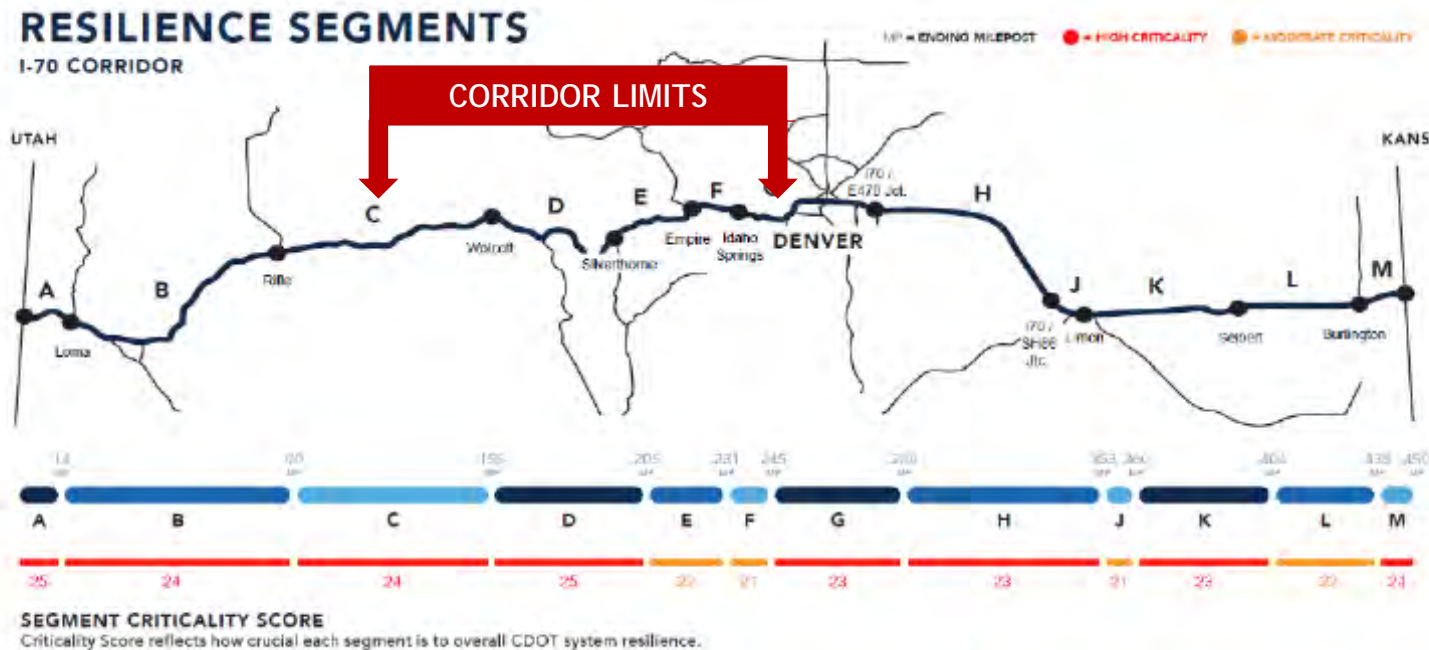


Step 1A: Evaluation of Context Climate Change

Observations/Discussion

Building Climate Resilient Transportation

- Increasing awareness
- Increasing frequency of severe weather events
- Proactive inventory and plan to address vulnerable infrastructure





Step 1B: Evaluate Components of the Purpose & Need





Step 1B: Evaluate Components of the Purpose & Need - Summary of Data Collection to Date

Evaluate Current Components of Purpose and Need

- **Component 1: Increase Capacity**
 - Existing Traffic Data
 - Truck Traffic
 - Person Trips
 - Updated Traffic Projections
 - Transit Ridership
 - Others
- **Component 2: Improve Mobility and Accessibility**
 - Travel Time/Reliability
 - Safety Data
 - Incident Response Times
 - Travel Demand Model Information
 - Others
- **Component 3: Decrease Congestion**
 - Severe Hours of Congestion
 - Crash Data, Weighted Hazard Index (WHI) Information
 - Travel Time/Reliability
 - Travel Demand Model Information
 - Others



Step 1B: Evaluate Components of the Purpose & Need

Travel Demand Model Update Status

- Updating original I-70 Mountain Corridor Model
- Using new 2035 socio-economic population and employment projections from statewide model
- Updating input datasets:
 - Roadway and transit networks
 - Households, campsites, hotel beds, gaming devices, second homes, etc.
- Calibrating and validating for base year (2015)
- Perform 2035 model runs
 - Person trips, traffic volumes, transit activity, travel times, etc.



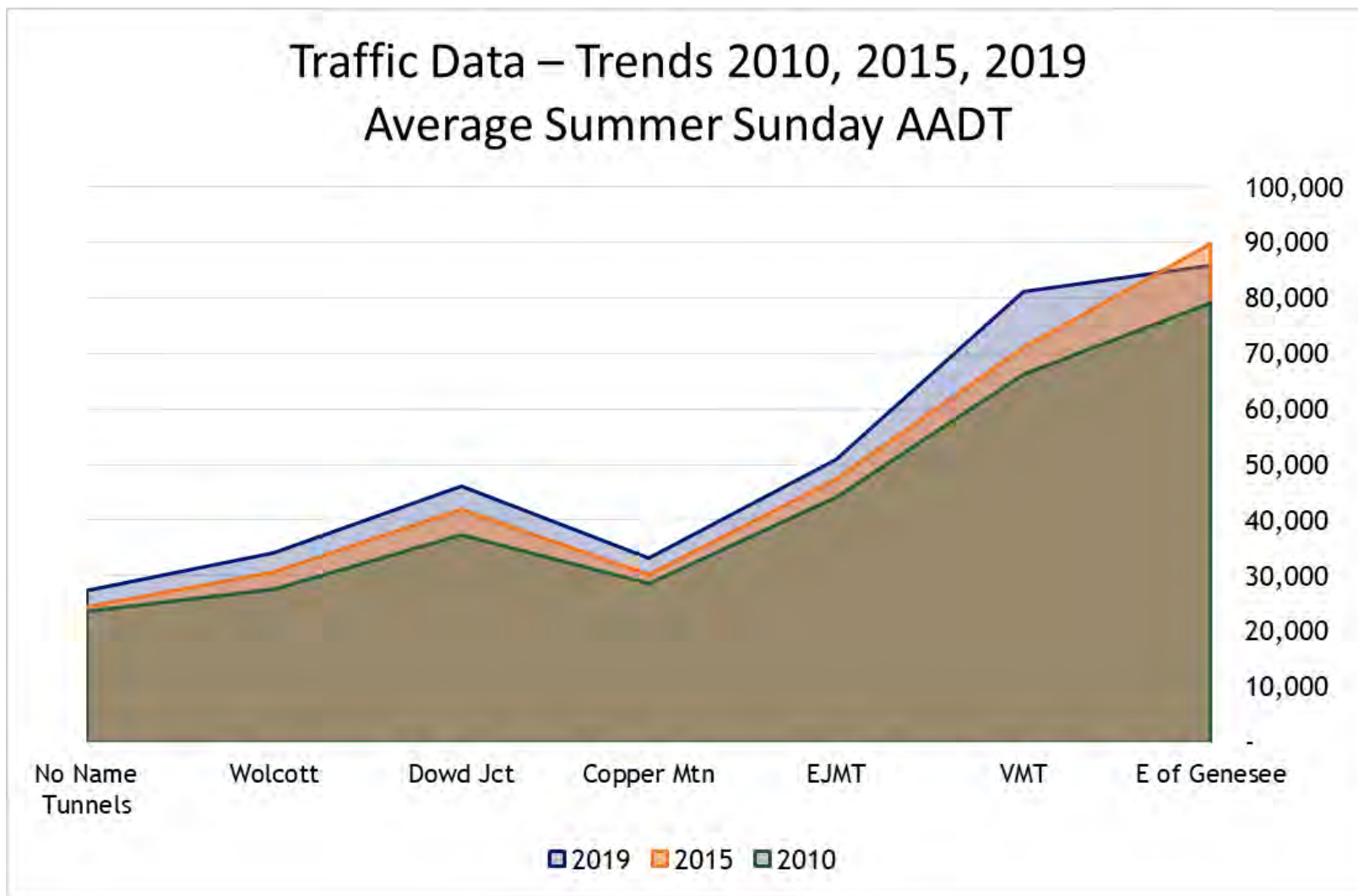
Step 1B: Evaluate Current Components of P&N Component 1: Existing Traffic Data





Step 1B: Evaluate Current Components of P&N

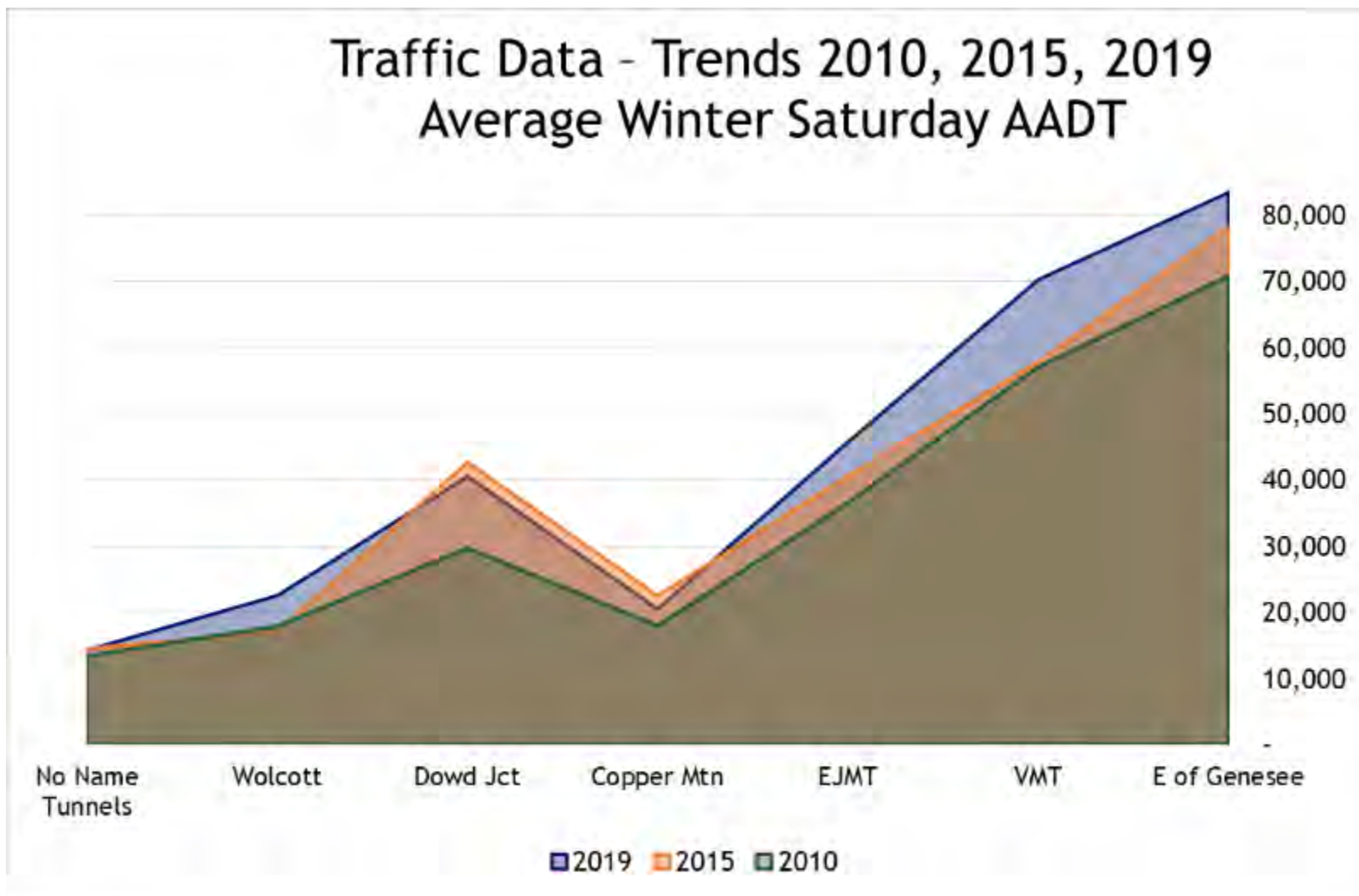
Component 1: Existing Traffic Data





Step 1B: Evaluate Current Components of P&N

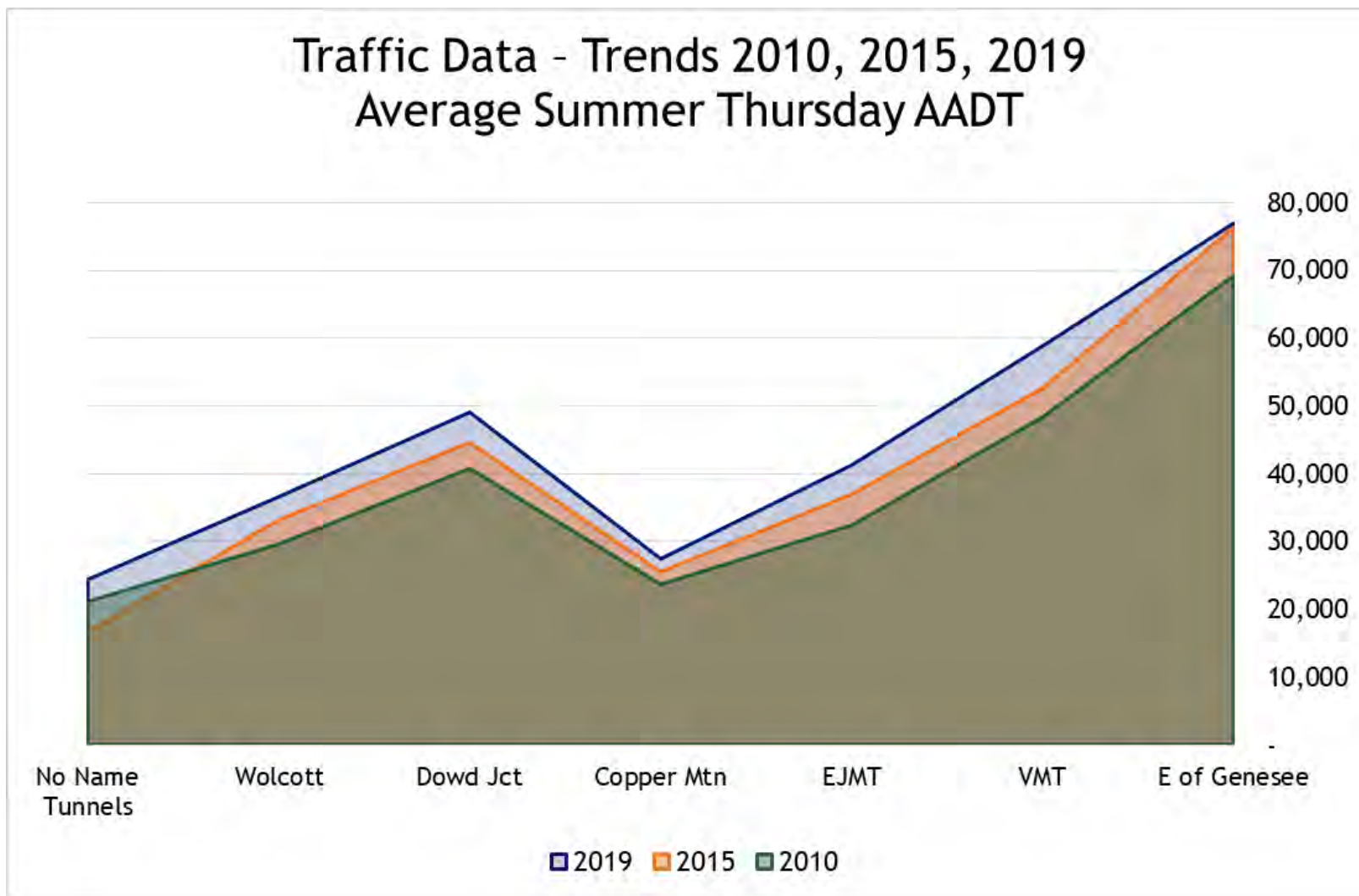
Component 1: Existing Traffic Data





Step 1B: Evaluate Current Components of P&N

Component 1: Existing Traffic Data





Step 1B: Evaluate Current Components of P&N

Component 1: Heavy Vehicle Traffic

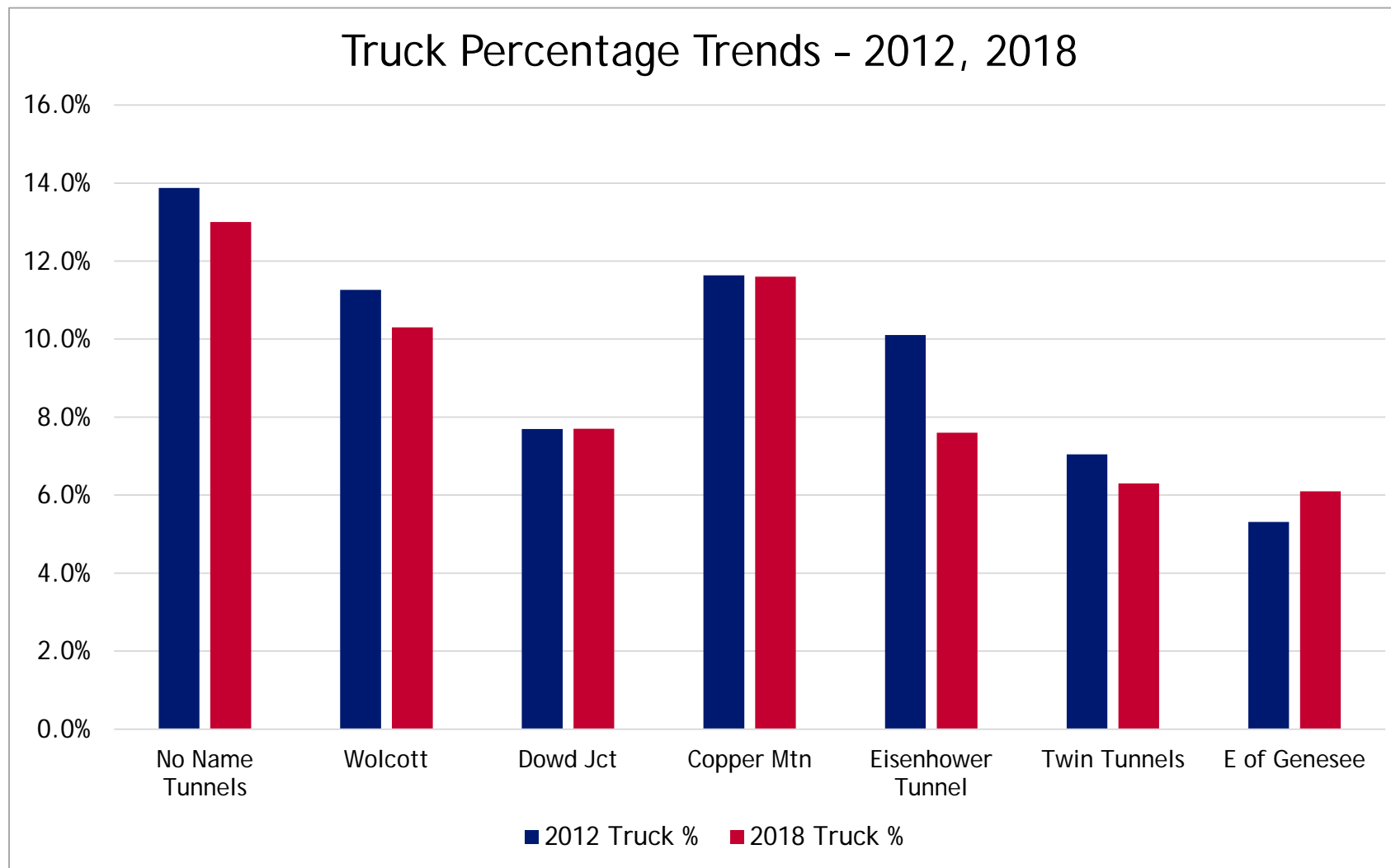
PEIS Summary

- Weekends:
 - 7 to 8% of person trips in Eagle and Garfield counties
 - 3 to 4% of person trips in Clear Creek, and Summit counties
- Weekdays:
 - 12 to 14% of person trips in Glenwood Canyon
 - 9 to 10% of person trips in Clear Creek
 - 9% of person trips between EJMT and Silverthorne
 - 8% of person trips in remaining Eagle county, and Jefferson counties
- Heavy Vehicle Strategies included in the Preferred Alternative
 - Programs for improving truck movements
 - Shift freight demand by time of day and day of week
 - Use of technology advancements
 - Traveler information
 - Auxiliary lanes



Step 1B: Evaluate Current Components of P&N

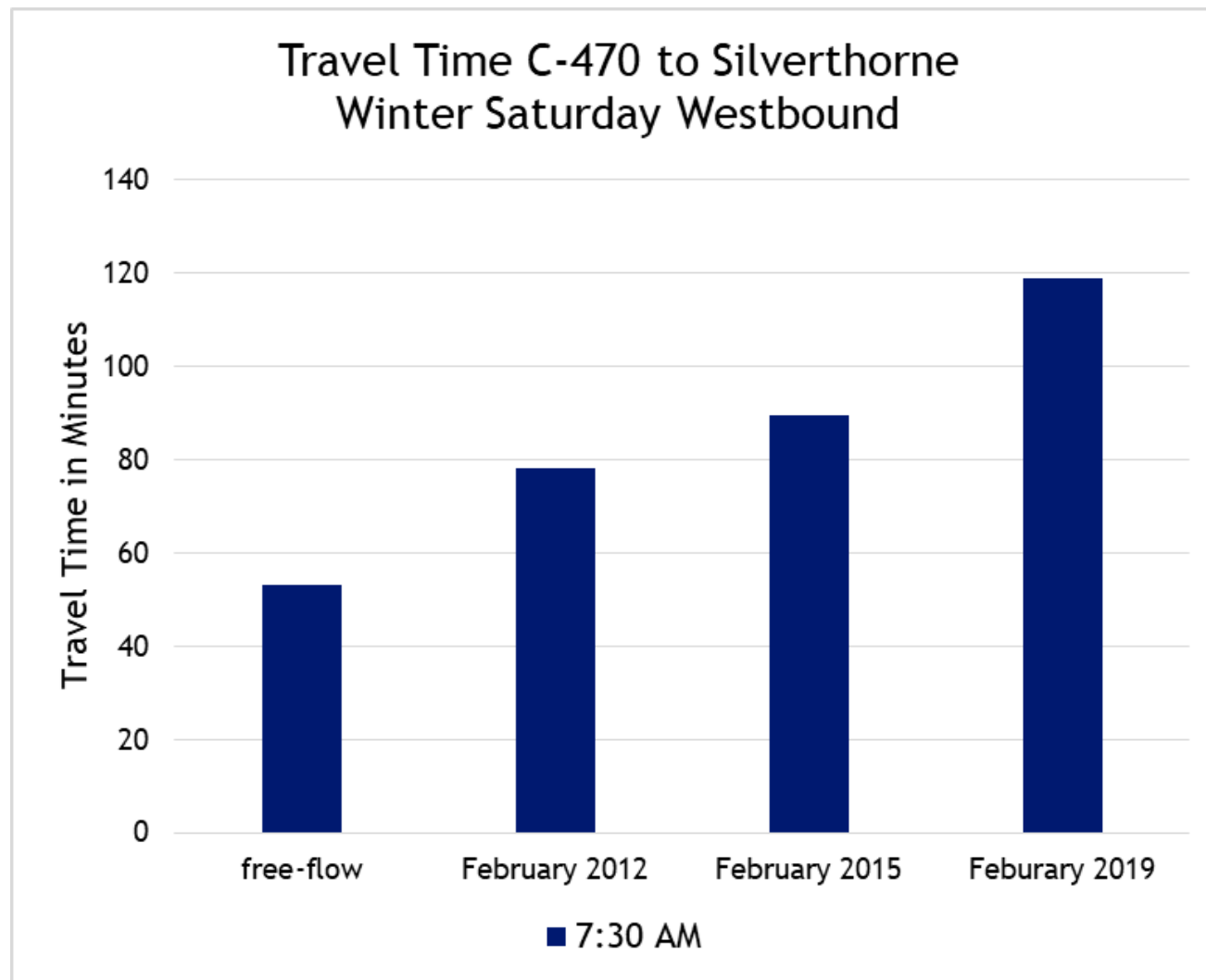
Component 1: Heavy Vehicle Traffic





Step 1B: Evaluate Current Components of P&N

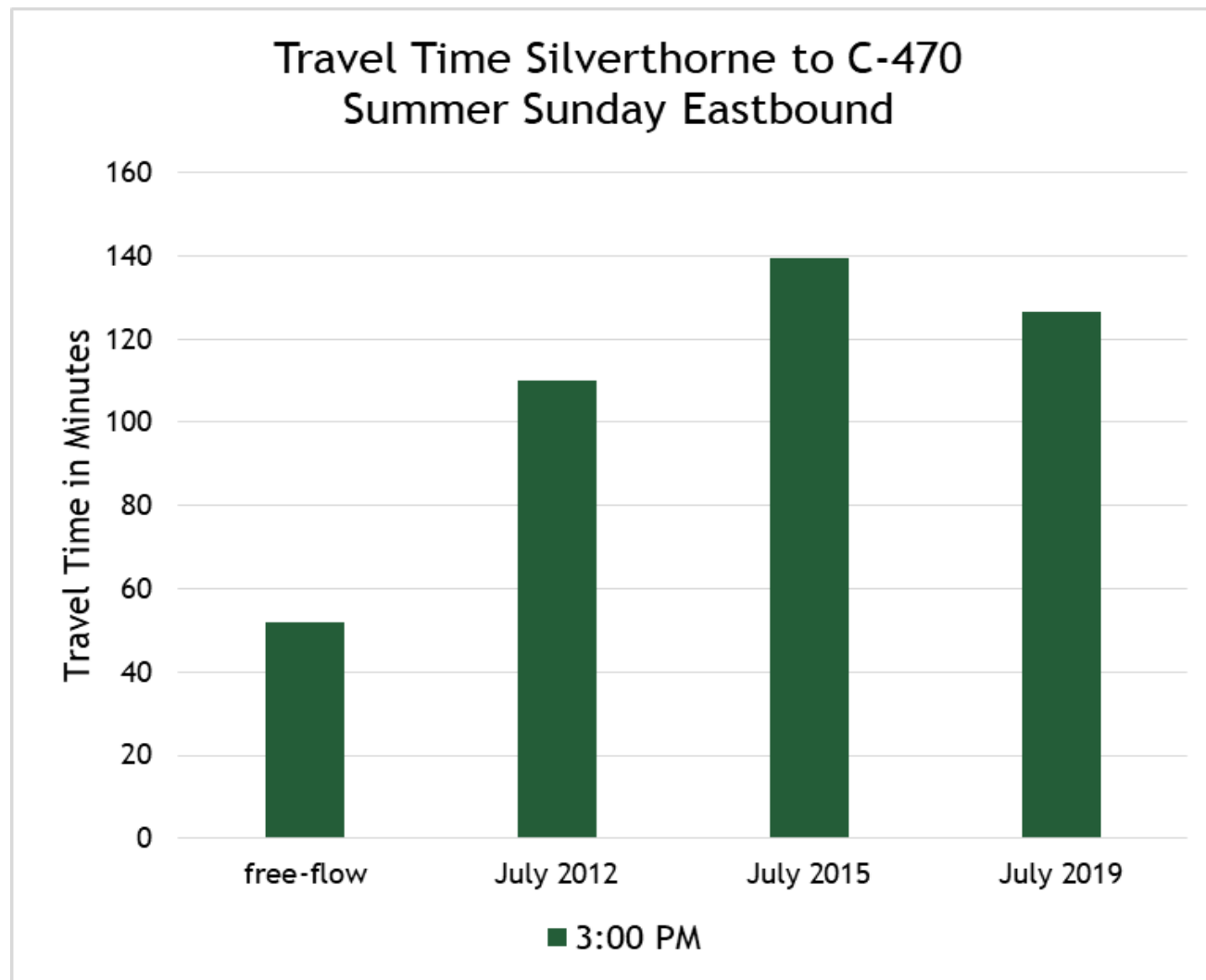
Component 1: Existing Traffic Data





Step 1B: Evaluate Current Components of P&N

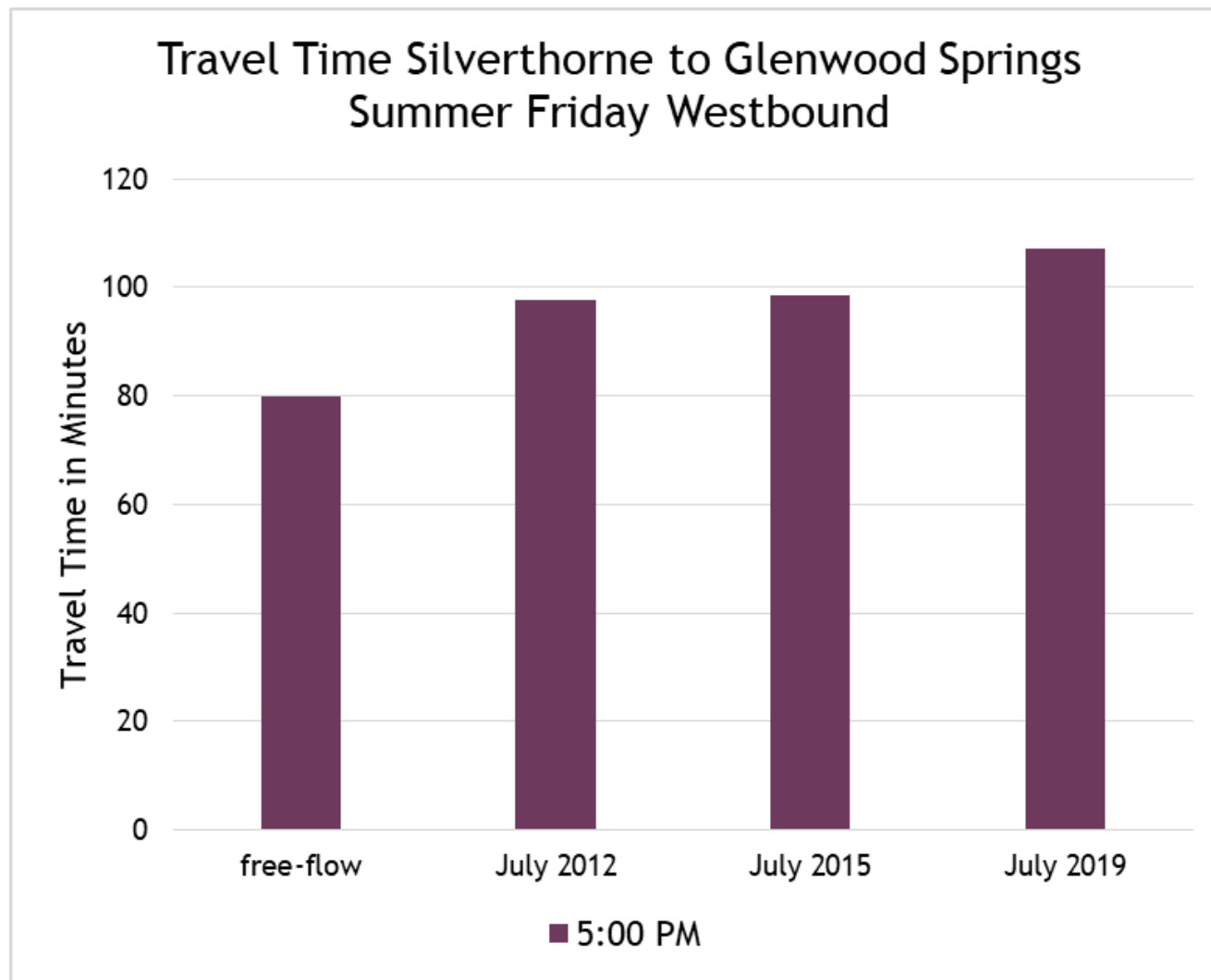
Component 1: Existing Traffic Data





Step 1B: Evaluate Current Components of P&N

Component 1: Existing Traffic Data





Step 1B: Evaluate Current Components of P&N

Component 1: Existing Traffic Data

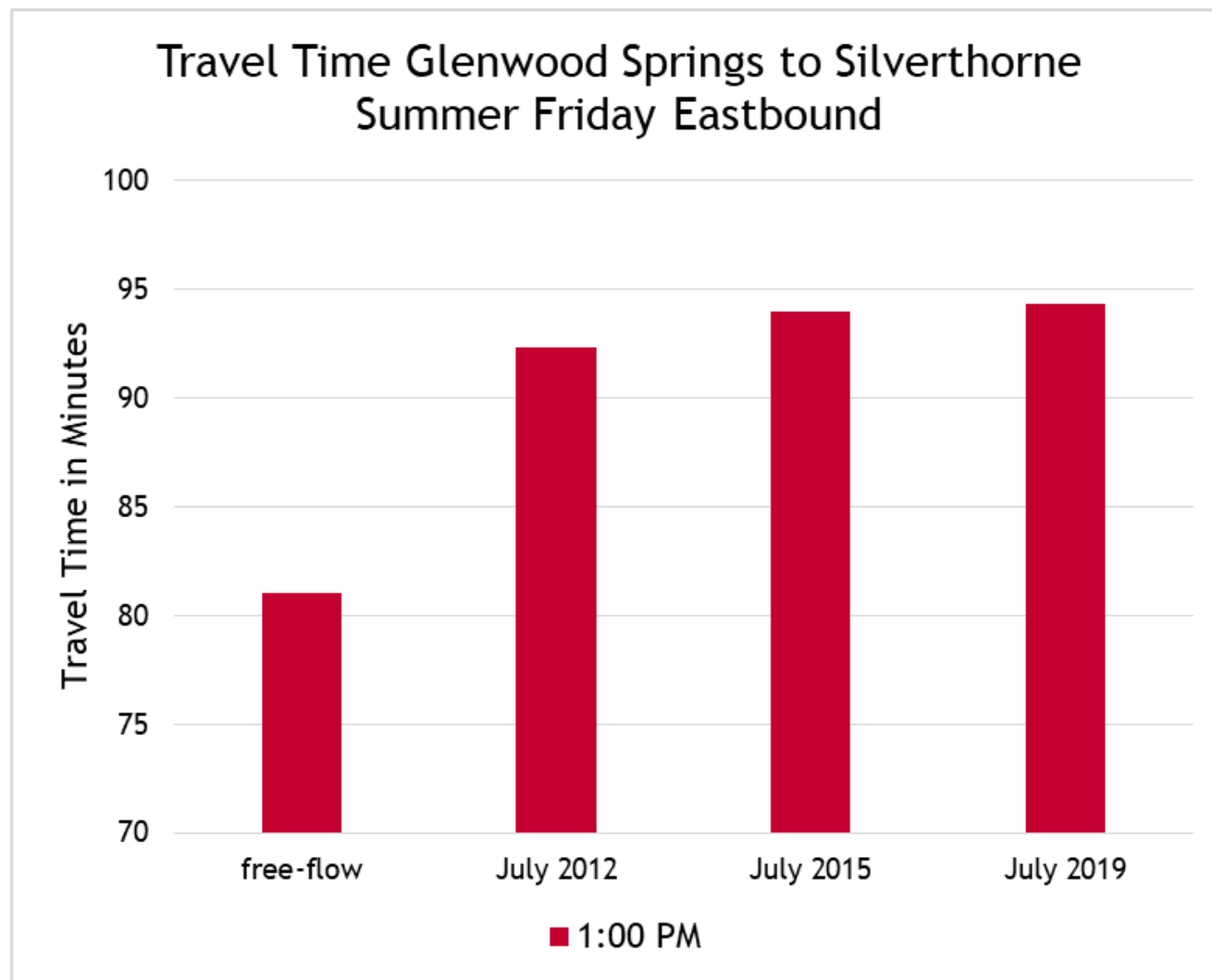


Table 1. 2019 Traffic Volumes on the I-70 Corridor

Station ID	Location	Winter Saturday ADT	Summer Thursday ADT	Summer Friday ADT	Summer Saturday ADT	Summer Sunday ADT
000107	East of Genesee	83,393	76,965	89,982	90,937	85,856
000120	Twin Tunnels	70,236	58,860	75,442	79,730	81,147
000106	Eisenhower Tunnel	45,702	41,276	52,157	51,342	50,928
000119	Copper Mountain	20,489	27,457	33,041	30,767	33,174
000126	Dowds Junction	40,529	49,086	54,112	45,852	46,131
000011	Wolcott	22,529	36,606	39,583	32,588	34,140
000105	No Name Tunnels	14,272	24,397	27,467	25,097	27,334

Source: CDOT OTIS

Notes:

- Average traffic counts for years 2019, 2015, and 2010 followed the same methodology of the PEIS as outlined below, except as noted.
- In the PEIS, the year 2000 ATR counts were used to determine the model day hourly and total vehicle trips. The following calendar days were assumed to be representative of the model days:
 - Winter Saturday: Average of the first two Saturdays in February
 - Summer Thursday: Average of the first two Thursdays in August
 - Summer Friday: Average of the first two Fridays in August
 - Summer Saturday: Average of the first two Saturdays in August
 - Summer Sunday: Average of the first two Sundays in August
- 2019 traffic counts were unavailable at Station ID 000126 - Dowd Junction for sampling dates in 2019. The counts shown represent interpolated averages from previous years and adjusted to year to year growth at other sampled stations.

Table 2. 2015 Traffic Volumes on the I-70 Corridor

Station ID	Location	Winter Saturday ADT	Summer Thursday ADT	Summer Friday ADT	Summer Saturday ADT	Summer Sunday ADT
000107	East of Genesee	78,213	76,367	88,594	90,279	89,781
000120	Twin Tunnels	57,757	52,604	67,324	70,109	71,067
000106	Eisenhower Tunnel	40,586	36,950	47,655	46,713	47,395
000119	Copper Mountain	22,505	25,521	31,455	28,670	30,184
000126	Dowds Junction	42,664	44,624	49,193	41,684	41,938
000011	Wolcott	17,041	33,188	31,076	24,883	30,667
000105	No Name Tunnels	14,523	16,659	24,543	21,343	24,394

Source: CDOT OTIS

Notes:

- Average traffic counts for years 2019, 2015, and 2010 followed the same methodology of the PEIS as outlined below, except as noted.
- In the PEIS the year 2000 ATR counts were used to determine the model day hourly and total vehicle trips. The following calendar days were assumed to be representative of the model days:
 - Winter Saturday: Average of the first two Saturdays in February
 - Summer Thursday: Average of the first two Thursdays in August
 - Summer Friday: Average of the first two Fridays in August
 - Summer Saturday: Average of the first two Saturdays in August
 - Summer Sunday: Average of the first two Sundays in August
- Data is unavailable at Wolcott for the first two Saturdays of the month for Wolcott, therefore, averages included in this table for Winter Saturday for Wolcott are for the last two Saturdays of the month.
- Data is unavailable for No Name Tunnels for July and August, therefore the averages included in this table for Summer Sunday are for the middle weeks of June.

Table 3. 2010 Traffic Volumes on the I-70 Corridor

Station ID	Name	Winter Saturday ADT	Summer Thursday ADT	Summer Friday ADT	Summer Saturday ADT	Summer Sunday ADT
000107	East of Genesee	70,789	69,244	85,994	86,083	79,113
000120	Twin Tunnels	57,050	48,360	64,174	67,235	66,242
000106	Eisenhower Tunnel	36,576	32,419	42,660	41,841	44,098
000119	Copper Mountain	17,981	23,687	28,602	26,439	28,591
000126	Dowds Junction	29,699	40,775	44,020	37,009	37,346
000011	Wolcott	17,915	29,605	32,098	26,139	27,564
000105	No Name Tunnels	13,438	21,144	24,063	21,184	23,581

Source: CDOT OTIS

Notes:

- Average traffic counts for years 2019, 2015, and 2010 followed the same methodology of the PEIS as outlined below, except as noted.
- In the PEIS, the year 2000 ATR counts were used to determine the model day hourly and total vehicle trips. The following calendar days were assumed to be representative of the model days:
 - Winter Saturday: Average of the first two Saturdays in February
 - Summer Thursday: Average of the first two Thursdays in August
 - Summer Friday: Average of the first two Fridays in August
 - Summer Saturday: Average of the first two Saturdays in August
 - Summer Sunday: Average of the first two Sundays in August
- Data is unavailable for Eisenhower Tunnel for the 2nd Saturday in February, therefore the average of the first and third Saturday is included in the Winter Saturday figure.
- Data is unavailable for Eisenhower Tunnel for the full first weeked in August, therefore, the average of the second and third weekends is included in the Summer Sunday figure.

From: [Randy Wheelock](#)
To: [Henderson - CDOT, Vanessa](#); abianchi@fs.fed.us; adam.bianchi@usda.gov; [Amy Saxton](#); [Ben Gerdes](#); [Bentley Henderson](#); [Gary Frey](#); [Greg Hall](#); [Brian Duchinsky](#); [Holly Norton - HC](#); [Galardi, Kelly \(FHWA\)](#); [Mary Jane Loevlie](#); [Matt Scherr](#); [Mike Hillman](#); [Melinda Urban](#); [Mike Keleman - CDOT](#); [Dennis Royer](#); [Shaun Cutting](#); [Steve Coffin](#)
Cc: [Wendy Wallach](#); [Steve Long PE](#); [Neil Ogden - CDOT](#); [Mandy Whorton](#); [Chris Primus](#); ccneely@yahoo.com
Subject: RE: 2020 Reassessment - February CE Subcommittee Meeting Notes for Review
Date: Wednesday, March 11, 2020 7:01:00 AM

Hi Vanessa,

Following are Clear Creek's comments on your notes from our February meeting:

- Page 1 of the Feb. 13 minutes summarize the discussion about Steve Long facilitating all of the Reassessment steps. It states that the CE will be leading Steps 3 and 4 but that "Steve Long will be the overall facilitator to keep the discussions on track. Randy Wheelock... stated that it is important that the facilitator be neutral and listen to and encourage participation from all the CE and CE subcommittee members. The group agreed. Steve acknowledged this and agreed that was his role. The notes (referring to the minutes of the January 14 meeting) will be supplemented to clarify Steve's role as the facilitator." Pages 1 and 2 of those January 14 minutes were then amended to reflect this discussion and state on page 2 that "Randy Wheelock, CE co-chair, replied that he was satisfied with the clarification..." Instead, it should say that "Randy Wheelock, CE co-chair, said "Thank you for the clarification." That is what I said, and after having stated our position clearly chose not to continue the debate, since others shared our opinion, and we expected a facilitated resolution of the difference. Instead we just moved on.

We continue to have concerns about HDR (Steve Long) facilitating Steps 3 and 4 and will be raising this for further discussion at the next subcommittee meeting. We anticipate those steps will require professional facilitation and conflict resolution by a neutral 3rd party trained and experienced in those functions to achieve the CE goal of consensus and resolve possible differences of opinion about the outcomes of the Reassessment analysis itself. Because (1) that supporting technical analysis will have been created to that point by HDR themselves, and because (2) they are not trained facilitators, they are not the right party to perform the needed impartial, skilled facilitation.

That is also why we requested a copy of the HDR scope of work and contract, which we have still not received.

- Page 2 of the Feb. 13 minutes explain that the Jan. 14 meeting ran long and "the group did not have time to fully resolve direction so the agreements, action items, and decisions in the meeting notes require careful review." The point that Clear Creek raised in their comments to the Jan. 14 minutes was different than that. Instead, Clear Creek said that there should be time set aside at the end of every meeting to summarize the conclusions reached at the meeting. The minutes should reflect that and not just that the meeting ran long so everyone should be sure to read the minutes carefully. That is one of the jobs of a facilitator – to summarize the conclusions reached at the end of every meeting. So for the completion of steps 1 & 2, Steve Long should lead a discussion at the end of each meeting to achieve consensus on the outcomes of the meeting.
- Page 6 of the Feb. 13 minutes summarize the discussion about technology. You will recall that several CE members expressed strong concern that the discussion did not include any analysis or discussion of developments with high-speed transit technology, focusing instead only on connected or autonomous vehicles. The minutes do not accurately reflect the strong concern that was expressed, instead simply saying that "Transit technology and connected transit have a lot of opportunity. The reassessment needs to take a closer review of updates on high speed transit and improved transit technologies from the time of the AGS study... The group agreed that transit technology should be discussed in detail at the next meeting." To be true to the comments made and to create an accurate record, language should be included to the effect that, "Several members of the subcommittee expressed strong concern that the discussion omitted any analysis or discussion of developments with high-speed transit technology and because high-speed transit is one of the main components of the Preferred Alternative, that analysis should be done and

discussed at the next meeting.”

- On page 7 of the Feb. 13 minutes, second paragraph, second sentence, the word “at” is missing. It currently reads “The lack of support or action the federal level...” It should say “at the federal level”
- Please paginate the pages, as it makes them easier to reference in our comments and discussions.
- Please include Cindy Neely in your address lines for future Reassessment communications. Because she is our consultant through this process, we would like her to remain informed in timely fashion. ccneely@yahoo.com.

Thanks,

Randall P. Wheelock
Clear Creek County Commissioner, District 3
P.O. Box 2000
Georgetown, CO 80444
(970) 390-2195 (cell)
rwheelock@co.clear-creek.co.us

Under CO Open Records Act, all messages sent to or by me from this account may be subject to public disclosure, unless the word "private" or "confidential" is in the subject line.

From: Henderson - CDOT, Vanessa [vanessa.henderson@state.co.us]
Sent: Wednesday, February 26, 2020 3:36 PM
To: abianchi@fs.fed.us; adam.bianchi@usda.gov; Amy Saxton; Ben Gerdes; Bentley Henderson; Gary Frey; Greg Hall; Brian Duchinsky; Holly Norton - HC; Galardi, Kelly (FHWA); Mary Jane Loevlie; Matt Scherr; Mike Hillman; Melinda Urban; Mike Keleman - CDOT; Dennis Royer; Randy Wheelock; Shaun Cutting; Steve Coffin
Cc: Wendy Wallach; Steve Long PE; Neil Ogden - CDOT; Mandy Whorton; Chris Primus
Subject: 2020 Reassessment - February CE Subcommittee Meeting Notes for Review

Hi Everyone -

Attached are the meeting notes from our meeting this month. Please review these and provide your comments back to the group by [COB Wednesday, March 11th](#).

Also, I sent out a meeting invite for the additional meeting in April earlier this afternoon, so you should have that in your inbox from me as well. The best date/time for the majority of people (sorry, Holly and MJ!) is April 24th from 10 until 12:30 and it will be held in Georgetown in the Board of County Commissioners room.

Thanks again for everyone's participation this month!
Vanessa

Vanessa Henderson
I-70 Mountain Corridor Environmental Program Manager



P 720.497.6924
425A Corporate Circle
Golden, CO 80401

vanessa.henderson@state.co.us | <https://www.codot.gov/>



**I-70 Mountain Corridor 2020 Reassessment
Collaborative Effort (CE) Subcommittee Meeting #3 Summary**
April 30, 2020, 8:30 AM to 12:00 PM
WebX Conference Call Video Meeting

Overview

These notes summarize Meeting #3 of the I-70 Mountain Corridor 2020 Reassessment Collaborative Effort (CE) Subcommittee. The focus of the meeting was the remaining review of the HDR team's data collection to support Steps 1A and 1B of the I-70 Mountain Corridor Record of Decision's (ROD) 2020 Reassessment Work Plan. Specific topics deferred from Meeting #2 were included in the review, as well as discussion of the subcommittee's conclusions regarding Step 1 and the validity of the Programmatic Environmental Impact Statement (PEIS) Preferred Alternative Purpose and Need.

Welcome and Introductions

Steve Long welcomed the group and explained the WebX platform and features for the virtual meeting. He reviewed the agenda and purpose of the meeting. Steve did a roll call of the meeting participants. Subcommittee members present included:

- Randy Wheelock, Clear Creek County (CE Co-Chair)
- Greg Hall, Vail (CE Co-Chair)
- Amy Saxton, Clear Creek County
- Adam Bianchi, US Forest Service
- Mary Jane Loevlie, Business Representative
- Gary Frey, Trout Unlimited
- Holly Norton, Colorado State Historic Preservation Office
- Matt Scherr, Eagle County
- Bentley Henderson, Summit County
- Dennis Royer, Sierra Club
- Melinda Urban, Federal Highway Administration (FHWA)
- Shaun Cutting, FHWA
- Mike Keleman, Colorado Department of Transportation (CDOT)
- Vanessa Henderson, CDOT
- Becky English, alternate for Brian Duchinsky

Other meeting participants included Cindy Neely and Steve Coffin, consultants to Clear Creek County; Miller Hudson, interested party; Neil Ogden, CDOT; and Stephanie Gibson, FHWA. The HDR consultant team present included Steve Long, Wendy Wallach, Chris Primus, Kira Olson, and Mandy Whorton (Peak Consulting Group).



Review and Approval of Meeting #1 and #2 Meeting Notes

Vanessa Henderson went through changes to the meeting notes. The subcommittee agreed with revisions to Meeting #1 with no further comments. The subcommittee discussed February notes and agreed with revisions regarding facilitation and transit discussions provided by Clear Creek County, and the revised notes were accepted. The group discussed the need for facilitation separately.

Facilitation for the 2020 Reassessment Work Plan

Randy Wheelock, Greg Hall, and Vanessa Henderson met several times since Meeting #2 to discuss the co-chairs' concerns with the need for third-party facilitation of the subcommittee's work, particularly as it relates to Steps 3 and 4 of the Work Plan, which are led by the subcommittee and not the consultant team. They agreed that the topic was important and should be discussed by the full subcommittee outside of comments on previous meeting notes.

The co-chairs reiterated their respect for Steve Long and his role as principal in charge for the consultant team but expressed ongoing concerns that the subcommittee and CE will need a trained and neutral facilitator, especially in determining the next steps for implementation of the Preferred Alternative (Step 4). Vanessa said she understood the concern and was open to alternative approaches, such as shared facilitation, but explained that CDOT had no money for third-party facilitation. Randy said he felt strongly that a third-party facilitator was needed. He said based on other efforts he had been involved in recently that he thought that the cost of the facilitator would be in the \$50,000 range and asked if CE members might be able to pool money to procure those services. Randy offered to contact a couple of firms to get an estimate to bring to the group before Step 4 is initiated. The subcommittee agreed this should be discussed with the CE at the May meeting.

The group agreed that considering time and budget constraints, it was appropriate for Steve to facilitate Steps 1 and 2 and offered some recommendations on time management and discussions moving forward. The subcommittee also suggested real-time discussion and documentation of key agreements or decisions, rather than waiting for review of meeting notes.

Step 1A: Data Related to Context

Chris Primus, HDR, continued the review of data related to context (Step 1A of the Work Plan), including a more detailed review of transit technologies and land use and housing that was requested after Meeting #2.

Step 1A – Transit Technologies

In response to the request from Meeting #2, Chris provided a detailed review of transit technologies overall, with a focus on high-speed transit technologies. Chris reviewed high-speed and maglev technology advances since the Advanced Guideway System (AGS) technology evaluation, including status of implementation. Subcommittee members noted that transit technology advances made the AGS more feasible and potentially cost effective. Several additional projects were referenced to be included in the context.



Mary Jane Loevlie noted that there are additional maglev projects involving freight and noted that the German company, Vogel, is using Transrapid technology. She also said Acela technologies have advanced.

Greg Hall mentioned the Hyperloop test track in Nevada had been completed and noted that the I-70 corridor was included in Colorado's Hyperloop study.

Mary Jane asked if grades were still a limitation of steel wheel on steel rail technologies. Chris said vertical grades are still a limitation for traditional rail technologies.

Becky English noted that electric multiple unit (EMU) technologies in Europe have advanced, and projects implemented in the Alps have overcome some of the issues with vertical grades.

The group also noted that tunneling technologies have improved since the PEIS and ROD, potentially reducing the complexity and cost of AGS implementation.

Becky asked if rapid speed might be a better fit than high-speed in the corridor. Mary Jane said the AGS study classified speeds as low, medium, and high. Chris stated that the presentation was focused on high-speed technologies of 157 mph and higher.

Step 1A – Land Use

Chris provided additional information on corridor housing and employment trends. The number of occupied housing units have been fairly consistent or even decreased slightly in Summit and Eagle counties, while employment has increased substantially since 2010. The increase in employment but not in housing has resulted in increased commuting for jobs within corridor counties. Since 2010, the trends of workers commuting to jobs from outside county boundaries has increased in all of the corridor counties, most notably in Eagle and Summit counties as projected by the PEIS but also in Clear Creek County and to a lesser degree in Garfield County.

Another explanation of the housing availability is the increase in short-term rentals and transitions from primary to secondary homes, which have both grown faster than new resident-occupied inventory.

Mountain Corridor economies are heavily influenced by outdoor recreation jobs and spending. Throughout the Mountain Corridor, the availability of resident housing for corridor employment has intensified and remains an issue for corridor communities and economies.

Step 1A – Climate Change

Although no new information was presented regarding climate change, the group discussed the observation that challenges related to climate change have continued to be documented but there is no guidance from FHWA on applying metrics.

Mary Jane noted that climate change has a direct effect on resiliency, access, and alternate routes. While highway closures related to natural disasters were identified in the PEIS context, these issues have become more frequent and concerning over the past decade.



Amy Saxton noted that even though climate change may have been as big a threat 10 years ago, the cultural response and awareness has changed. She suggested that because there is more societal awareness of climate change effects today, the context of how we view the threats have changed.

Randy expanded that in addition to cultural awareness, there is an understanding that more action is needed to address climate change and its effects. We were on the right track in 2010 and need to continue to develop aggressive solutions.

Holly Norton, Gary Frey, and Dennis Royer agreed that the context needs to reflect increasing urgency for climate change action.

There was broad agreement from the subcommittee that climate change needed to be documented as a significant issue affecting the current context for the Mountain Corridor.

The group agreed that the issue of climate change and its threat was documented in 2010 and considered in the context of the PEIS purpose and need and how solutions for the Mountain Corridor met those needs. Since the PEIS, cultural awareness of climate change has increased, and there is a broader understanding of the need for more aggressive solutions to address it. Some of the specific issues that affect transportation in the corridor include wildfire and its effects on resiliency, recreation, and community access. The context for how we look at climate change has intensified with better understanding of the connection of transportation and climate change. While the increased understanding may not have changed the purpose and need, the increased awareness has increased the urgency to act and may necessitate more actions to address it.

Stephanie Gibson noted that while this issue is important to the CE members, NEPA documents from FHWA cannot discuss climate change, and FHWA currently does not acknowledge this urgency to act at the federal level.

The group acknowledged the federal position on climate change but agreed that the Reassessment is not a NEPA action and could and should discuss climate change.

Gary raised that there are many other environmental issues that need to be considered beyond climate change. Vanessa agreed and said that Step 1A of the Work Plan specifically discussed those things that influenced the purpose and need (capacity, safety, access), while environmental sensitivities, including stream health, is addressed in measures of effectiveness in Step 2A, which will be discussed in Meeting #4 in the afternoon.

Step 1A – Conclusions about Context

The subcommittee discussed the changes to the context and whether the PEIS context in which the purpose and need was developed is still valid. The group agreed that the context is still valid with the additional observations raised in Meeting #2 and this meeting.

The subcommittee requested that this consensus conclusion be documented separately and sent out for review and formal agreement by the subcommittee.



Step 1B: Purpose and Need

Chris presented updated traffic, transit, and safety data related to the PEIS purpose and need components.

Step 1B: Travel Model Review

Chris provided additional information on the travel demand model used in the PEIS and updated for the Reassessment, which was requested in Meeting #2. The model is a key data source for review of the purpose and need components. There were no comments about the travel model from the subcommittee.

Step 1B: Purpose and Need Components 1: Increase Capacity

Chris reviewed traffic data from traffic counters in the corridor and summarized the traffic data collection and travel demand modeling results. Traffic volumes have increased as expected in the peak periods. Truck traffic volumes are approximately 40 percent lower on weekends than on weekdays, supporting the PEIS conclusion that freight operators avoid traveling in the peak periods when possible. PEIS projections for both weekday and weekend travel demand were generally validated by the updated model, although 2035 projections of traffic volumes west of the Eisenhower-Johnson Memorial Tunnels (EMJT) are somewhat lower in the updated model compared to the PEIS projections.

Question: How does the model account for person trips and vehicle occupancy?

Answer: The model has vehicle occupancy by trip types, which vary by weekday and weekend. The PEIS model and the updated model have work trips with the same assumed vehicle occupancies (i.e., the vehicle occupancy was not revised in the updated model), such as 1.1 for commute trips (people commuting to work). Shopping and recreation trips have a higher occupancy. For weekend peak periods when recreation trips dominate, the average occupancy in both the PEIS and updated model is 2.6. The peak period has both more traffic volume and more person trips.

Step 1B: Transit Ridership

Several transit services have launched since 2011. CDOT is operating regular Bustang regional bus service and launched a partnership with several ski resorts to provide weekend Snowstang service. The Amtrak Winter Park Express Ski Train service was relaunched and many private shuttles are operating to serve ski and gaming destinations.

Bustang and existing local transit ridership is rising and CDOT is planning mobility hubs across the state, including in the Mountain Corridor, to improve transit service and user experience.

The AGS study projected ridership of 4.6 to 6.2 million, assuming a connection to a front range high-speed transit system, including Denver International Airport. The AGS was found to be technically feasible but not financially feasible as of 2014 when the AGS study was completed.

Improvements and options for first and last mile service with micro transit, rideshare, and potential autonomous vehicles are likely to increase transit ridership.



The subcommittee members offered several observations and comments.

Mary Jane and Randy noted that Clear Creek Transit has increased services and is developing mobility centers.

Randy requested, and others strongly supported, that the conclusion about AGS financial feasibility be clarified that funding has not been identified but not that it is financially infeasible. Funding for many transportation priorities has not been identified but when there is political will, this changes.

Greg Hall noted that Winter Park has increased local transit service, which was funded by a local tax increase.

Becky English noted that first and last mile services present local small business opportunities.

Question: Do CDOT mobility hubs include electric vehicle (EV) charging stations?

Answer: Yes, this is part of CDOT's planning though specific amenities may vary by station.

Question: What is the volume for private transit operators? There seem to be a lot on the highway.

Answer: Yes, they are prevalent in the corridor, but ridership numbers are hard to define (private companies do not release these data) and thus not included in the presentation. They are included in the travel demand model, however.

Step 1B: Component 1, Increase Capacity, Conclusions

The group considered whether the need to increase capacity is still valid.

Mary Jane noted that transit data are incomplete (related to Clear Creek Transit, ridership on private shuttles, and information on connected vehicles) but additional data would further confirm the purpose and need for a multimodal solution.

Randy stated that increased transit ridership is an important trend, substantiating that travelers are looking for additional options and alternatives to auto travel and that conclusions about capacity needs not be interpreted to mean more pavement.

Steve Coffin summarized the charge of the subcommittee to determine if capacity is still a component that should be part of the purpose and need?

Amy stated agreement that the data support the need for increased capacity and added that capacity needs to be considered in the context of non-infrastructure components and transit, which have value beyond serving more vehicles.

Gary and Dennis Royer stated more work was needed to assess the role of the highway and future transit in meeting capacity needs.



Mandy provided the wording from the PEIS purpose and need (below) for review.

Increase capacity – There is insufficient capacity to accommodate the current and projected demand for person trips in the Corridor. Person trips are used to portray the future demand, rather than vehicle trips, so that all potential modes of travel are examined similarly. Lack of capacity leads to slower travel times and congested conditions, as discussed in the two need statements that follow. It also means that person trip travel demand cannot be adequately accommodated. The inability to adequately accommodate person trip demand results in a need to increase person trip capacity.

Greg noted that the text as written captured the need to think beyond pavement well and suggested it did not need to be revised.

Dennis suggested it would be clearer if the title included “person trips” – Increased Person Trip Capacity.

The group agreed that the capacity component remains a valid need as presented in the PEIS. The group also agreed that the implementation would need to review the success at meeting person trip capacity when looking at Step 2.

As with Step 1A, the subcommittee requested that its conclusions be documented separately and formally reviewed by members.

Break and Next Steps

The group agreed that good progress had been made toward completion and consensus agreement for Step 1. The morning session was adjourned with a plan to review the other two components of the Purpose and Need in Step 1B after the break and then proceed with the review of Step 2.



COLORADO

Department of Transportation

I-70 Reassessment CE Subcommittee Meeting Step 1A/1B Data Presentation

April 30, 2020



Agenda

1. WebEx Guidelines and Introductions
2. Purpose of Meeting
3. Meeting Notes
4. Schedule
5. Reassessment Documentation
6. Recap of Work Plan
7. Step 1A Topics
 - Transit Technology
 - Recap of Step 1A Topics to Date
8. Step 1A Discussion/Wrap-up
9. Step 1B Topics
 - Travel Model Brief Review
 - Step 1B Components
10. Step 1 Purpose and Need Reassessment Discussion
11. Meeting Wrap-up and Open Discussion



WebEx Guide

Ability to zoom in and out of the PowerPoint that is presenting



Participant list (once opened)

Click to raise your hand

Chat box (once opened)

Mute button (click and turns red when it's muted)

Turn video camera off/on

Click to see meeting participants

Click to open chat box

Click to leave meeting

Write chat response here

The screenshot shows a WebEx meeting window with a participant video feed at the top left. Below the video is a toolbar with icons for mute, video, chat, and hand raise. On the right, there is a participants list and a chat window. Callouts with colored boxes and lines point to these specific features: a blue box points to the zoom controls on the left; a purple box points to the mute button; an orange box points to the video camera icon; a green box points to the participants icon; a yellow box points to the chat icon; a blue box points to the hand raise icon; a red box points to the chat input field; a cyan box points to the chat window; a pink box points to the participants list; and a blue box points to the hand raise icon in the participants list.



- We will stop after each slide for discussion
 - Use the chat option during the slide discussion or the presenter will ask for comments at the end of each slide
- In case of technical difficulties, text Kira Olson at
 - 970-310-1898



- Roll Call



Purpose of the Meeting

- Finish data presentation of Step 1A and Step 1B
- Wrap up Step 1



- a) Approval of January Meeting Notes
- b) February Meeting Notes Discussion



Schedule

We are here





Reassessment Documentation

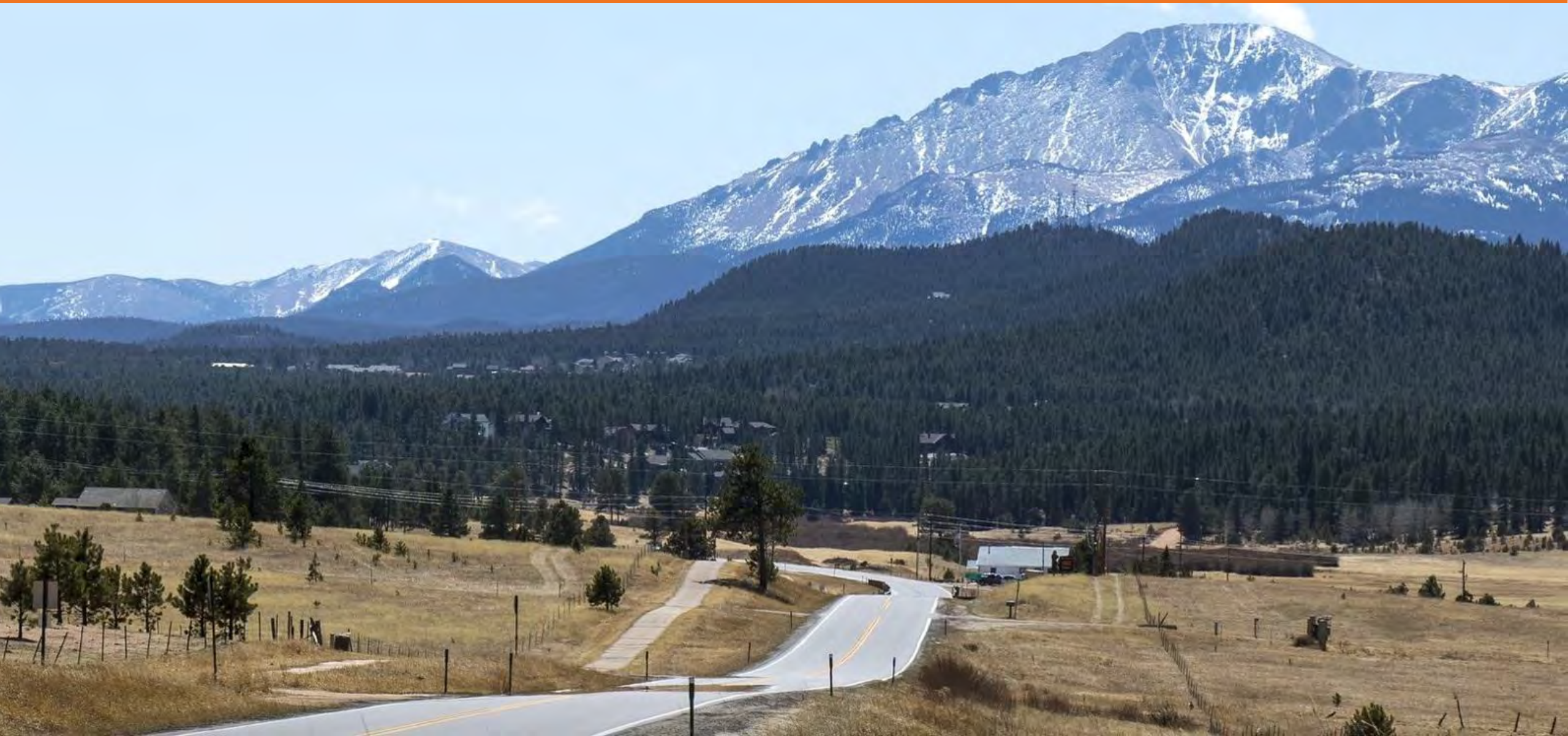
- PowerPoint Presentations
- Documentation of Steps 1 and 2
 - Narratives
 - Technical Memos
 - Land use, technology, climate change, safety
- Notes from Steps 3 and 4 workshops
- Documentation of Steps 1-5
 - Executive Summary with attachments



- Reassess Purpose and Need
 - Step 1A: Evaluation of Context
 - Step 1B: Evaluate Current Components
- Assess Effectiveness of Implementation
 - Step 2A: Determine how to measure effectiveness
 - Step 2B: Assess Effectiveness of Implemented Components



Step 1A: Evaluation of Context





Step 1A: Evaluation of Context Transit AGS Vendors

Company	Company Status	Technology Type	Technology Status
American Maglev	Open	Maglev	Maglev trains have been tested on full-scale test track in Georgia
Flight Rail	Open	Elevated high-speed rail system	Tested a 1/6 scale working prototype
General Atomics	Open	Maglev	Tested a full scale working maglev system in California
MagneMotion	Acquired by Rockwell Automation	Maglev	No updates on Rockwell Automation Website
Own Transit Group	Open	High speed rail	Patented new HSR technology
PPRTC	Open	Public Personal Rapid Transit	Website mentions advocacy, not implementation
skyTran	Open	Maglev	Began construction on second full-scale test platform and will soon launch first commercial pilot
Swift Tram	Open	Small scale, automated guide way transit system	Completed conceptual designs
Talgo	Open	High speed rail	Implemented several HSR projects worldwide, including Spain and Uzbekistan
Transrapid	Possibly closed	N/A	No website found

Source: online research (each provider's website), accessed February 2020)



Step 1A: Evaluation of Context Transit Technology

Maglev Technology

Country	Train Line	Speed	Status
South Korea	Incheon Airport Maglev	68 mph	Opened 2016
China	Changsha Maglev Express	62 mph	Opened 2016
China	Beijing Metro Line	62 mph	Opened 2017
Japan	Chūō Shinkansen, Tokyo-Nagoya	314 mph	Construction began in 2014, expected to open in 2027
China	Qingyuan Maglev	75 mph	Under construction, opening in 2020
China	Fenghuang Ancient Town Maglev	62 mph	Construction began in 2019, expected opening 2021

Maglev Updates

- A Poland-based company is developing a hybrid rail/maglev technology that can run on existing, updated infrastructure at speeds up to 257 mph. (Maglev.net, 2020)
- China has unveiled a prototype of a new magnetic levitation (maglev) train designed to reach speeds of up to 600 km/h. (Cnn.com, 2019)



1. Shanghai Airport Maglev



2. Nagoya Linimo Maglev Metro



3. Daejeon Museum Maglev



4. Incheon Airport Maglev



5. Changsha Airport Maglev



6. Beijing S1 Metro Maglev Line



Maglev systems

Source: Maglev.net

1. Qingyuan Tourist Maglev



2. Fenghuang Tourist Maglev



3. Tokyo-Nagoya Chuo Shinkansen



1. Miyazaki Pref. Yamanashi Test Track



2. San Diego Test Track by General Atomics



3. Sengenthal Test Track by TS Bögl





Step 1A: Evaluation of Context Transit Technology

Maglev in the US

The three projects listed below were eligible for the 24 million in FRA Magnetic Levitation Deployment Grants Program (FY 2019):

- **The Baltimore-Washington Maglev Project**
 - Currently in planning phase and NEPA is on hold; project completion set for 2028
 - First segment of the Northwest Rail Maglev Project, which is planned to extend from Washington to NYC
- **Atlanta-Chattanooga high-speed-rail corridor**
 - 2016 Study released with possible routes for maglev or steel wheel
- **Pennsylvania High Speed Rail**
 - The proposed Pennsylvania High-Speed Maglev project is an approximately 54-mile line connecting Pittsburgh International Airport, Downtown Pittsburgh, Monroeville, and Greensburg (but research for this study did not find any indication that funds were sought)

(Dot.ga.gov, Railroads.dot.gov, Bwmaglev.info, accessed 2020)



Hyperloop Systems

Technology

- Hyperloop systems: Maglev vehicles are accelerated in vacuum pipelines.
- Feasibility for passenger transport yet to be determined

Providers

- Virgin Hyperloop One, TransPod, Hyperloop Transportation Technologies

Planned Test Tracks and Studies

- Saudi Arabia, India, Canada, France, Abu Dhabi, France, China

(Builtin.com, 2020, Nytimes.com, 2019)



Hyperloop Systems

Hyperloop Developments in US

- Completion of a feasibility study in October 2019 for I-70 in Missouri.
- \$5 million in initial funding for a route connecting Cleveland and Chicago in June 2019.

Hyperloop Status in Colorado

- Hyperloop feasibility study completed by engineering firm AECOM and CDOT.
- Hyperloop no longer being pursued by CDOT.

(Hyperloop-one.com, 2018, Crainscleveland.com, 2019)



Step 1A: Evaluation of Context New Transit Technology

Passenger Rail Technology Advancements

- 3D printing to create a discontinued part for a rail vehicle.
- Grade Crossing Monitoring system uses Light Detection and Ranging (LIDAR) to detect an object on track, as well as its size, location and direction of travel.
- Hydrogen and lithium-ion batteries to power trains
- Digitalization: Smart on-board monitors allow for the real time data analysis for operations and maintenance.

(Masstransitmag.org, 2019, Transport-exhibitions.com, 2017)



Step 1A: Evaluation of Context High Speed Transit

In the period 2010-2020, at least 29 steel wheel high speed rail projects were implemented worldwide. 40% were in China, 40% were in Europe, the remainder in other Asian countries, Africa, and the Middle East. Seven implemented projects had speeds of 250 km/h, 22 were 300-350 km/h.

- HSR (or higher speed rail) implemented or studied in Florida, California, and Texas

(online research, accessed 2020)



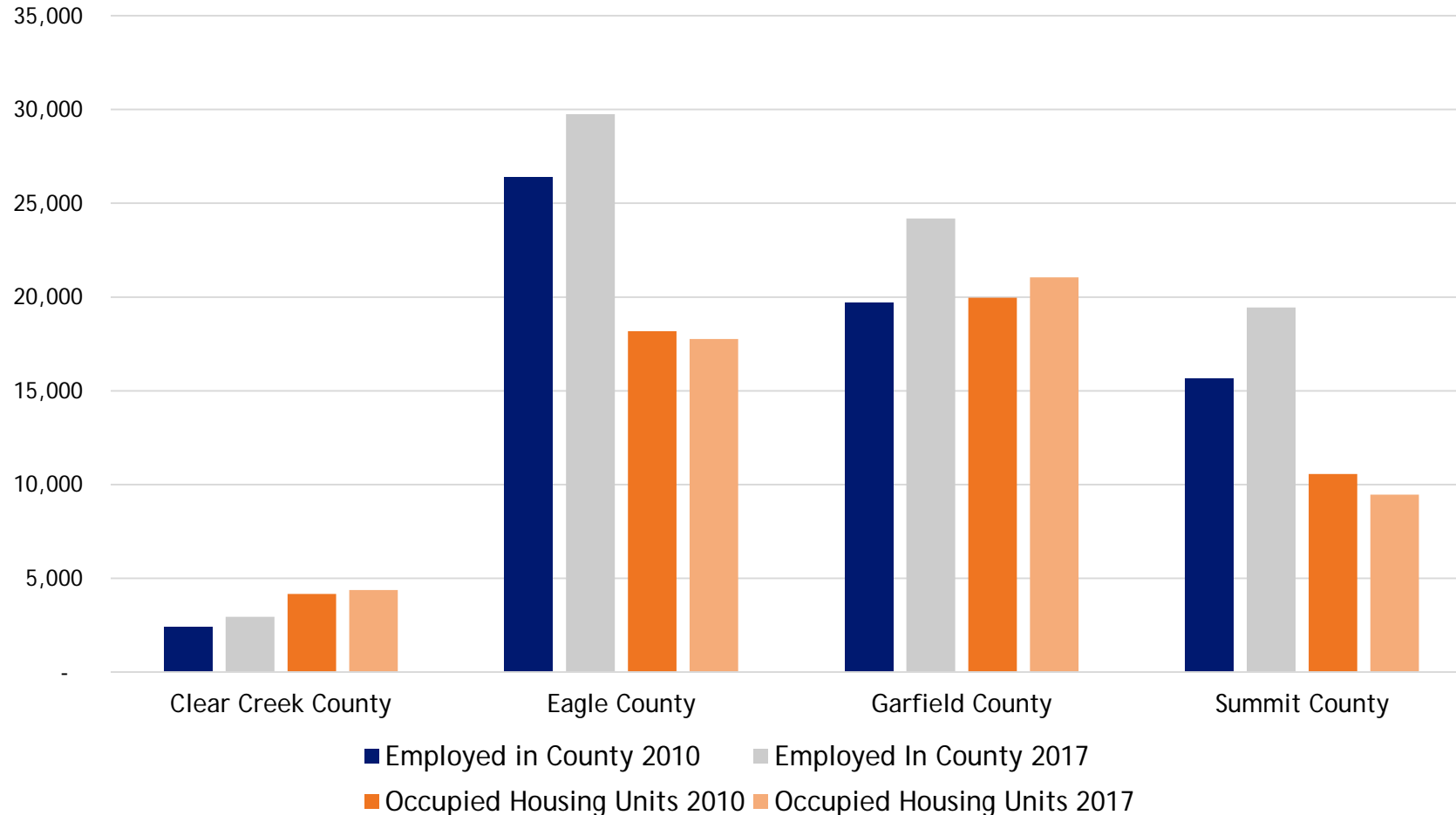
Step 1A: Additional Information

- Land Use
- Recreation



Step 1A: Context Land Use Occupied Housing and Employment

Comparison of Housing and Employment between 2010 and 2017

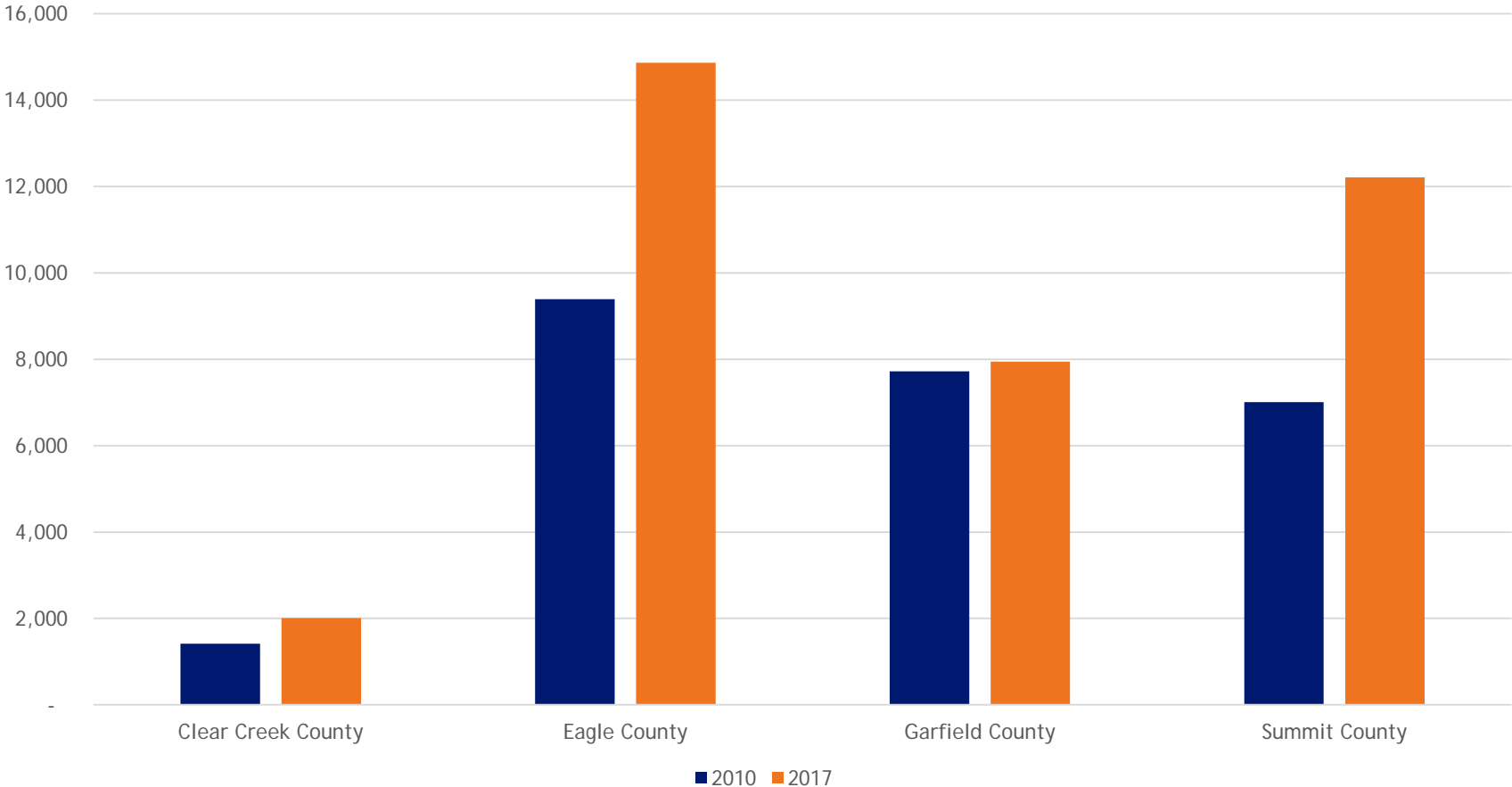


(U.S. Census, American Community Survey, 5-Year Estimates, 2010 and 2017 and LEHD On the Map 2010 and 2017)



Step 1A: Context Land Use Residence of Employees

Comparison of Number of Workers Living Outside County of Employment



(U.S. Census, LEHD On the Map 2010 and 2017)



Step 1A: Context Land Use Component 1: Recreation Trips

Outdoor Recreation Economy

- 229,000 Direct Jobs
- \$28.0 Billion in Consumer Spending
- \$9.7 Billion in Wages and Salaries
- \$2 Billion in State and Local Tax Revenue

Existing year data downloaded April 2020

Source: <https://outdoorindustry.org/state/colorado/>



Step 1A: Evaluation of Context Recap of Observations to Date

Step 1A

- Population (projected is less than prior forecasts)
- Land Use and Land Use Pressures, including recreation (development growth has continued; employment has grown but occupied housing has dipped; recreation has increased)
- Technology (CAV & AGS technologies have continued to advance)
- Climate Change (Challenges related to climate change have continued to be documented however no guidance on applying metrics from FHWA)



Step 1A: Evaluation of Context Discussion

Step 1A Observations/Discussion



Step 1B: Evaluate Purpose and Need Components Travel Model Review



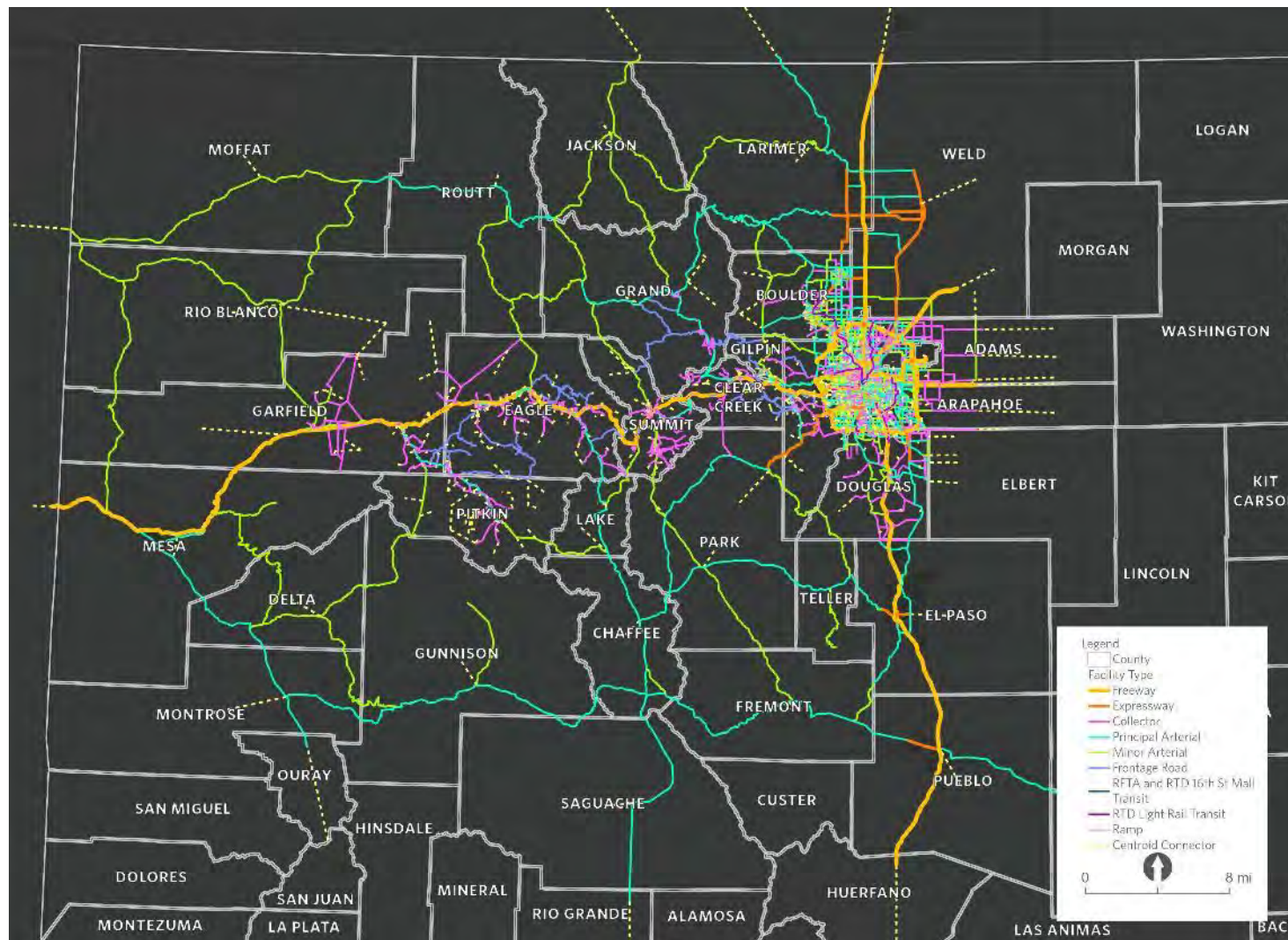


Step 1B: Purpose and Need Components Travel Model Review

- Model Developed by CDOT for I-70 Mountain Corridor
 - Extensive Research and Development
 - Peer Reviewed
- Recreation Trip Focus



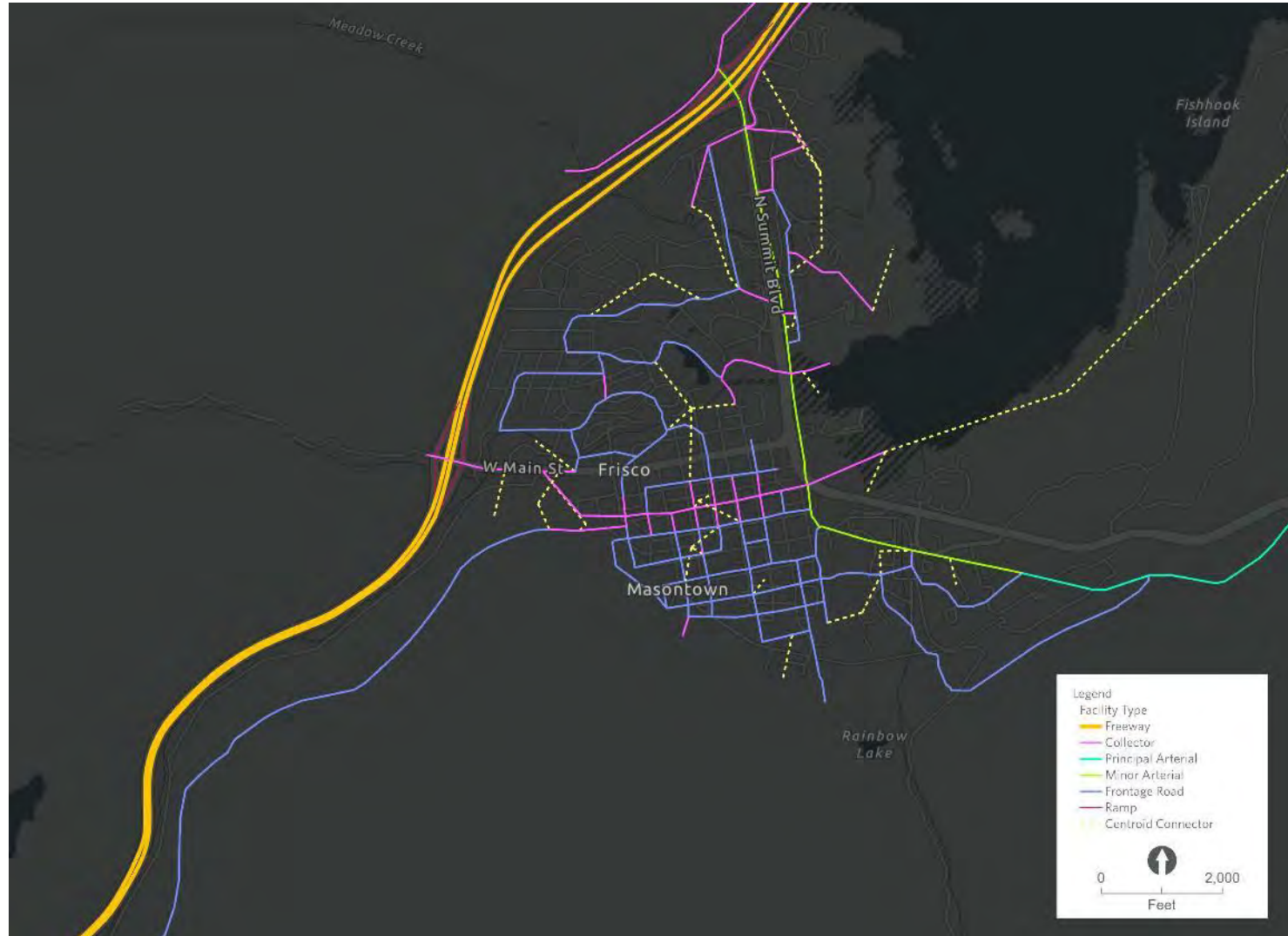
Step 1B: Travel Model Review Model Road System





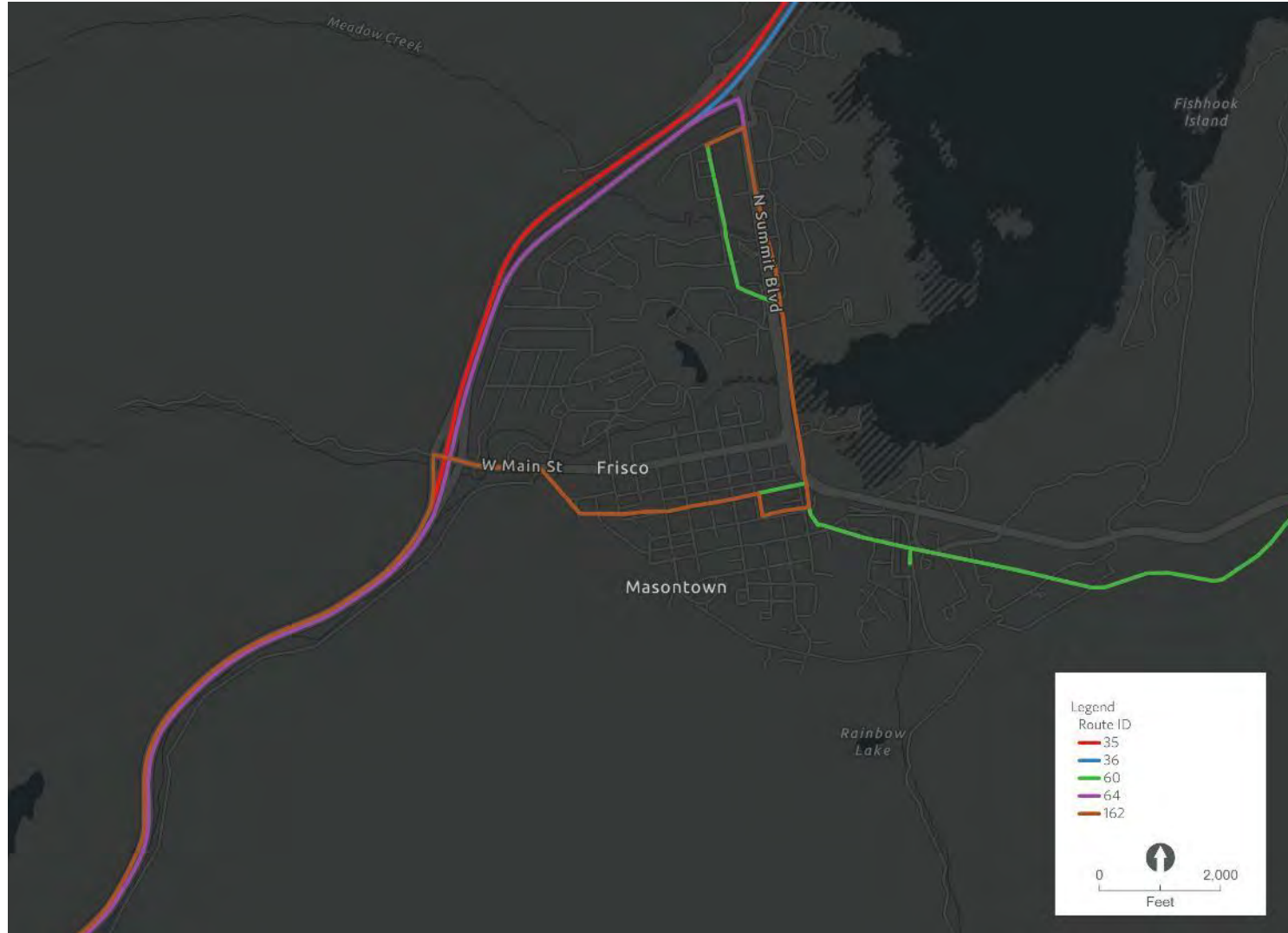
Step 1B: Travel Model Review

Model Road System: Frisco Area



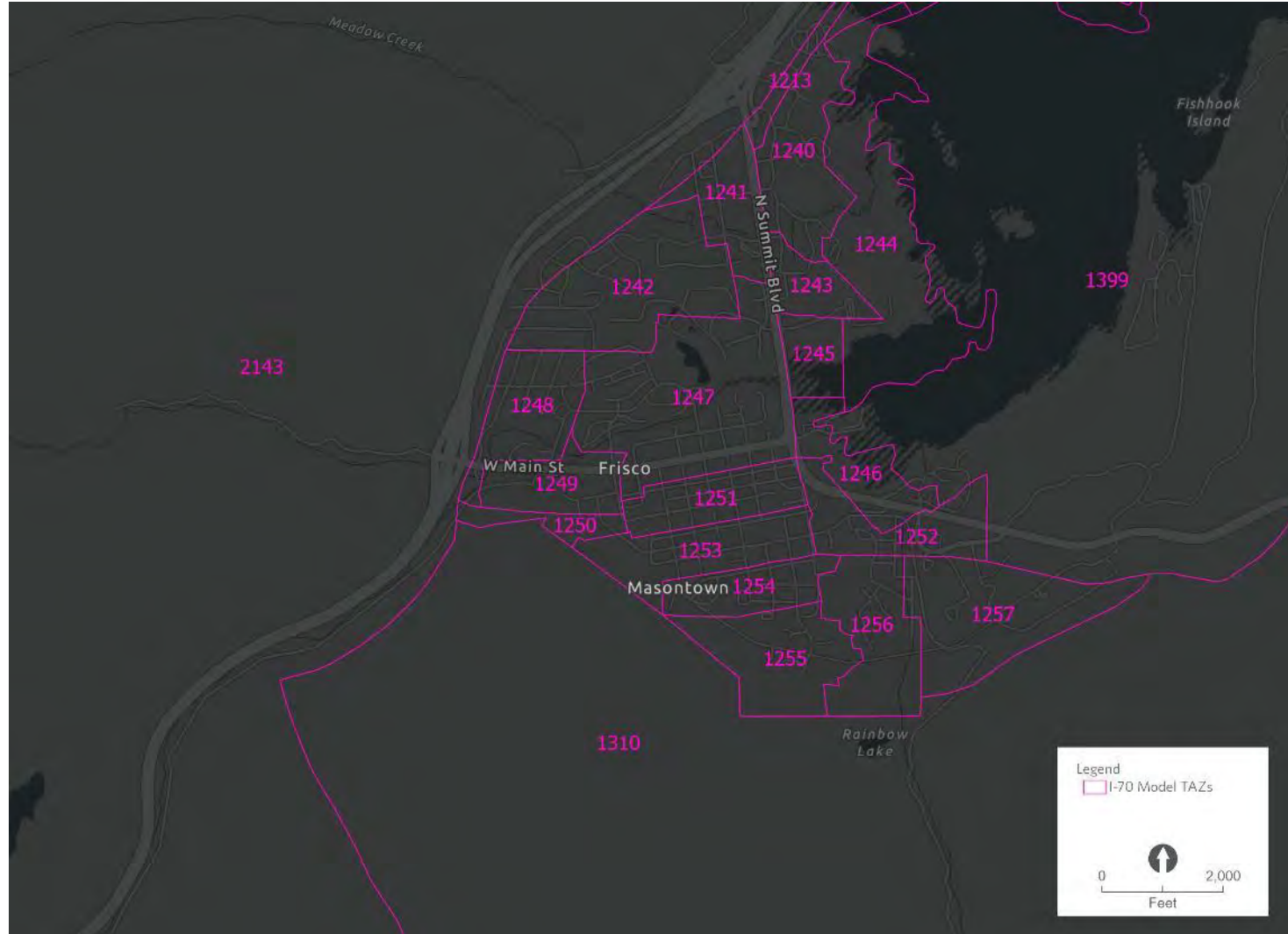


Step 1B: Travel Model Review Model Transit System: Frisco Area



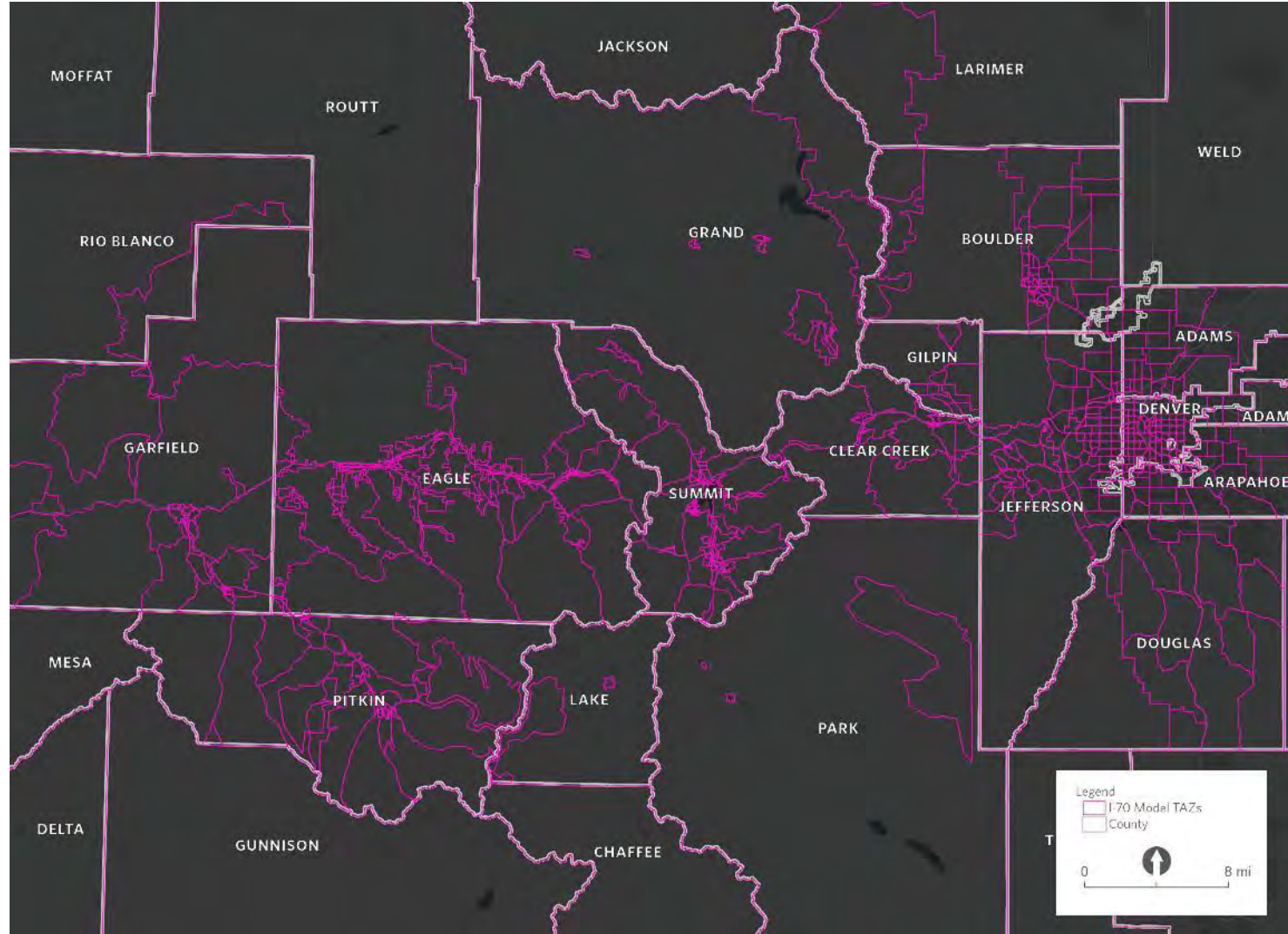


Step 1B: Travel Model Review Model Zone System: Frisco Area





Step 1B: Travel Model Review Model Zone System





- Updated I-70 Mountain Corridor Model with new data
 - 2015 and 2035 population and employment projections
 - Updated recreational trip indicators
- Model runs performed



Step 1B: Evaluate Current Components

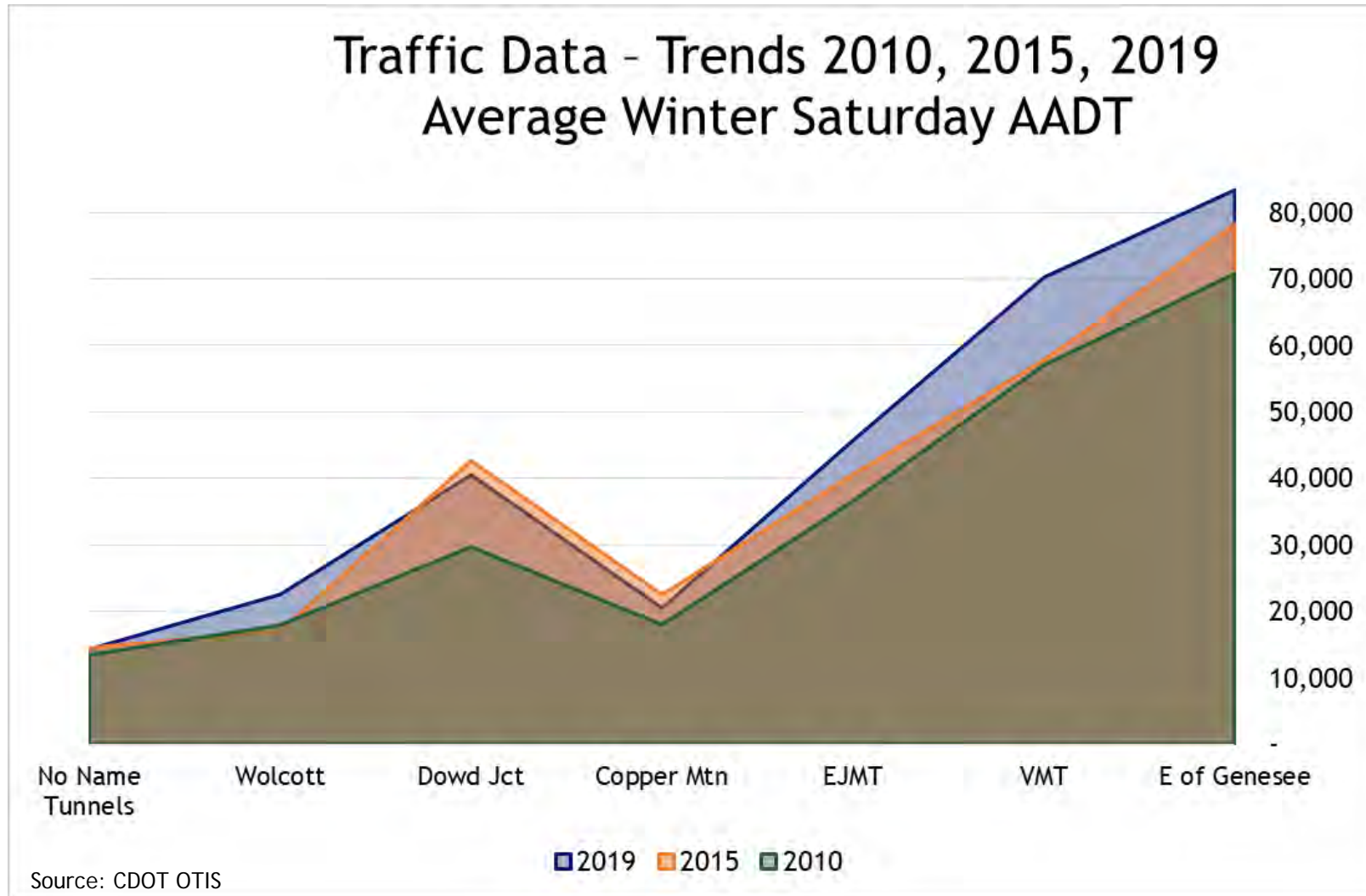
Component 1: Increase Capacity





Step 1B: Evaluate Current Components of P&N

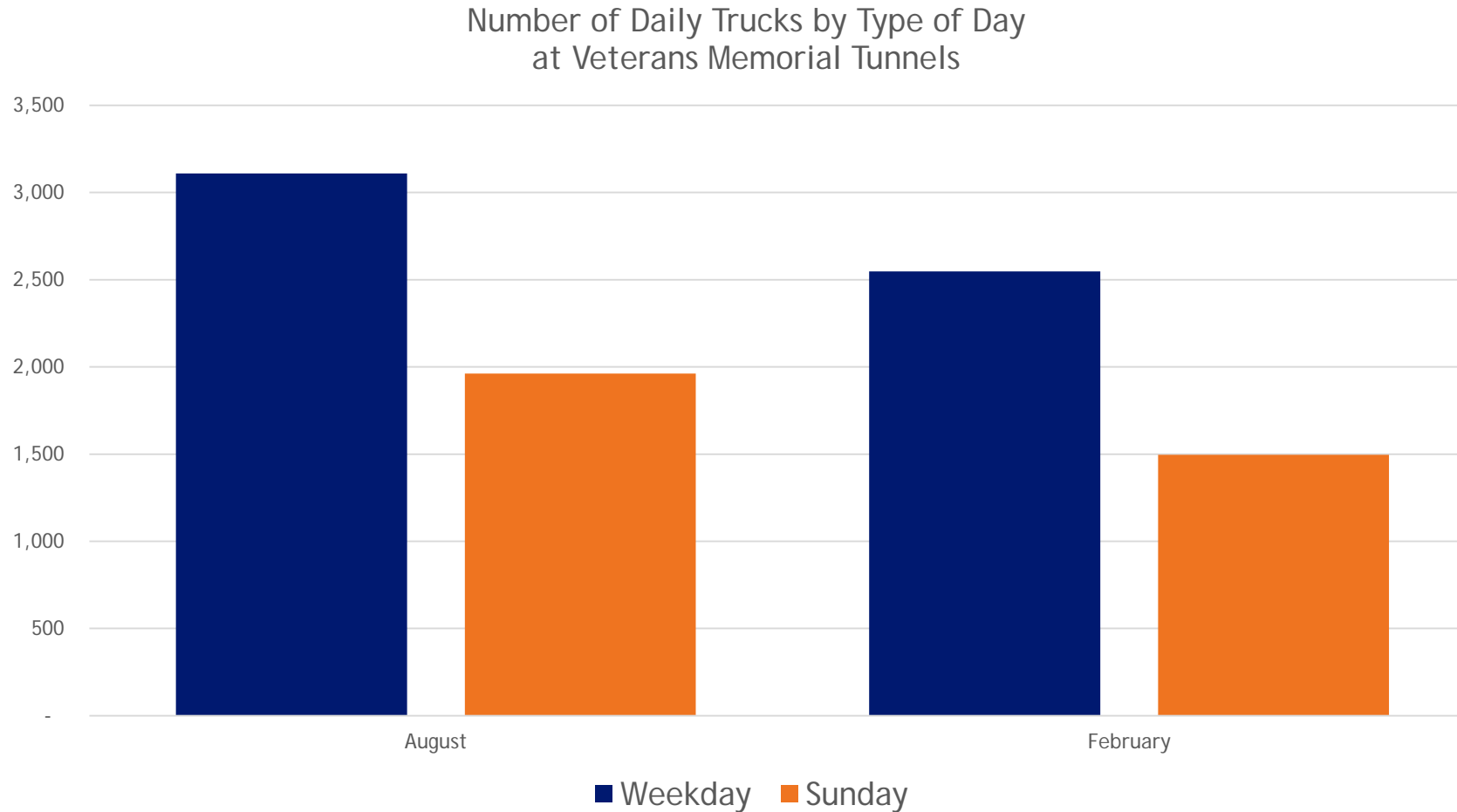
Component 1: Existing Traffic Data





Step 1B: Evaluate Current Components of P&N

Component 1: Truck Traffic

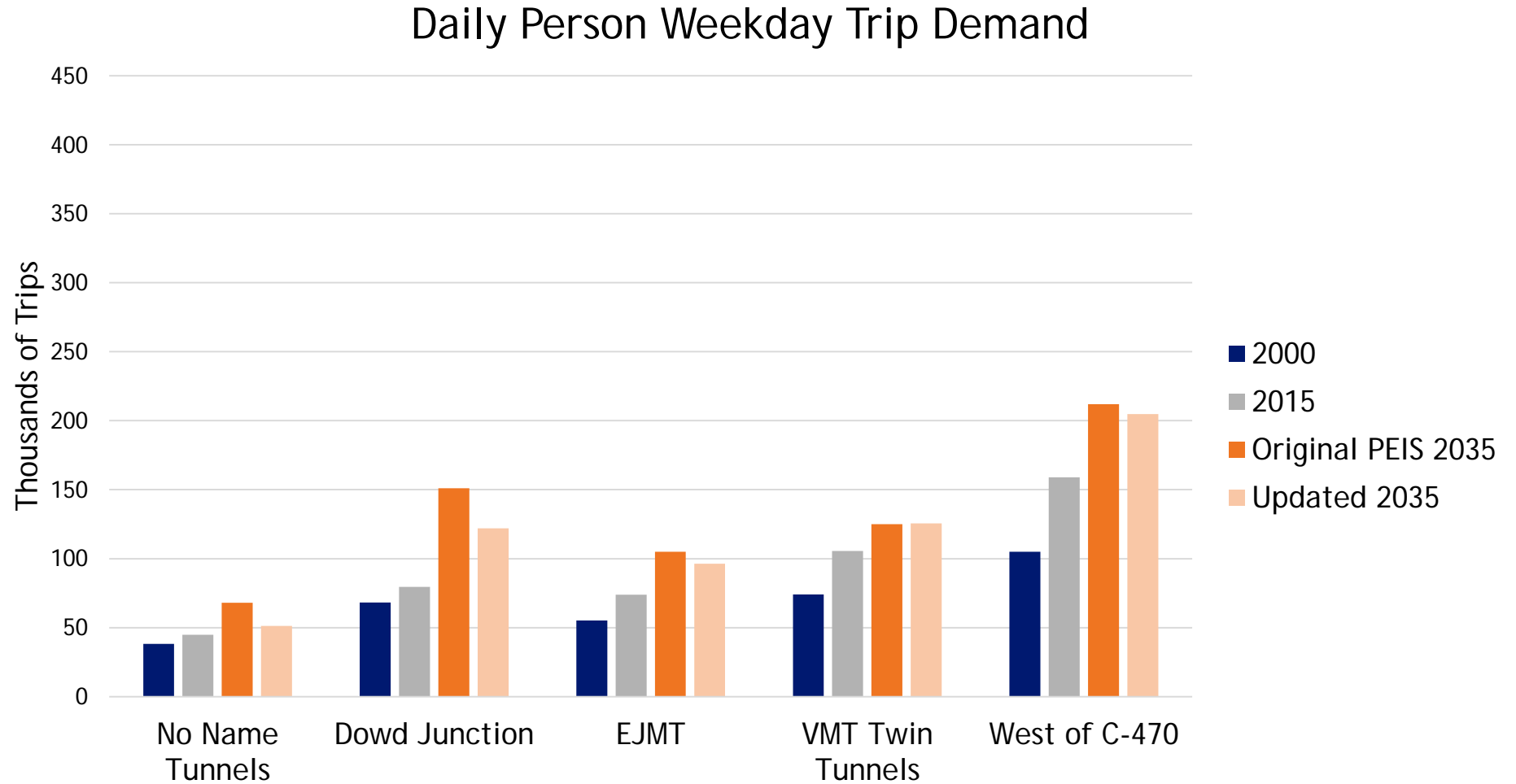


Source: CDOT Transportation Data Management System, 2018



Step 1B: Evaluate Current Components of P&N

Component 1: Person Trips



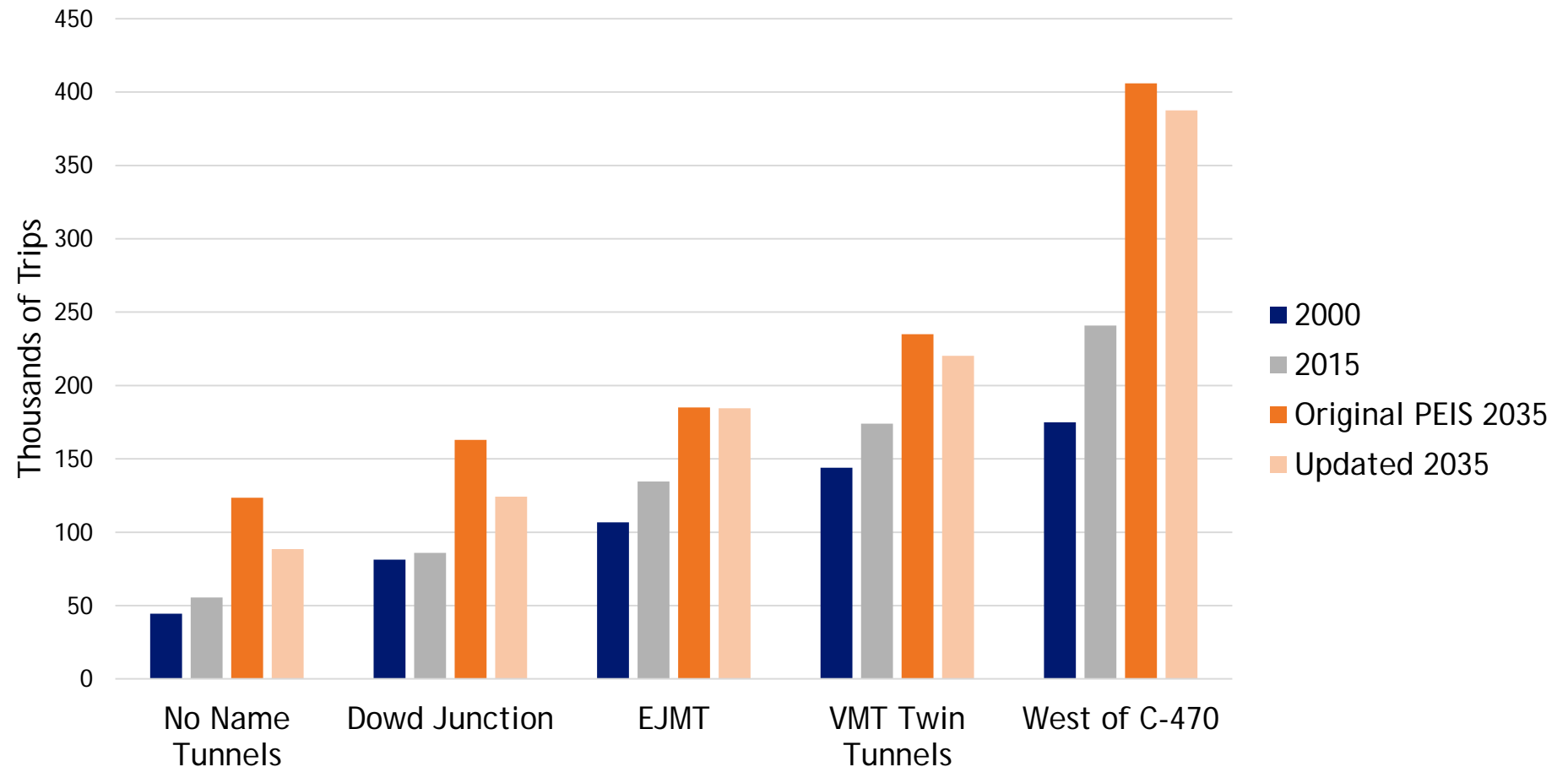
Source: PEIS and updated I-70 Mountain Corridor Travel Demand Model



Step 1B: Evaluate Current Components of P&N

Component 1: Person Trips

Daily Person Weekend Trip Demand



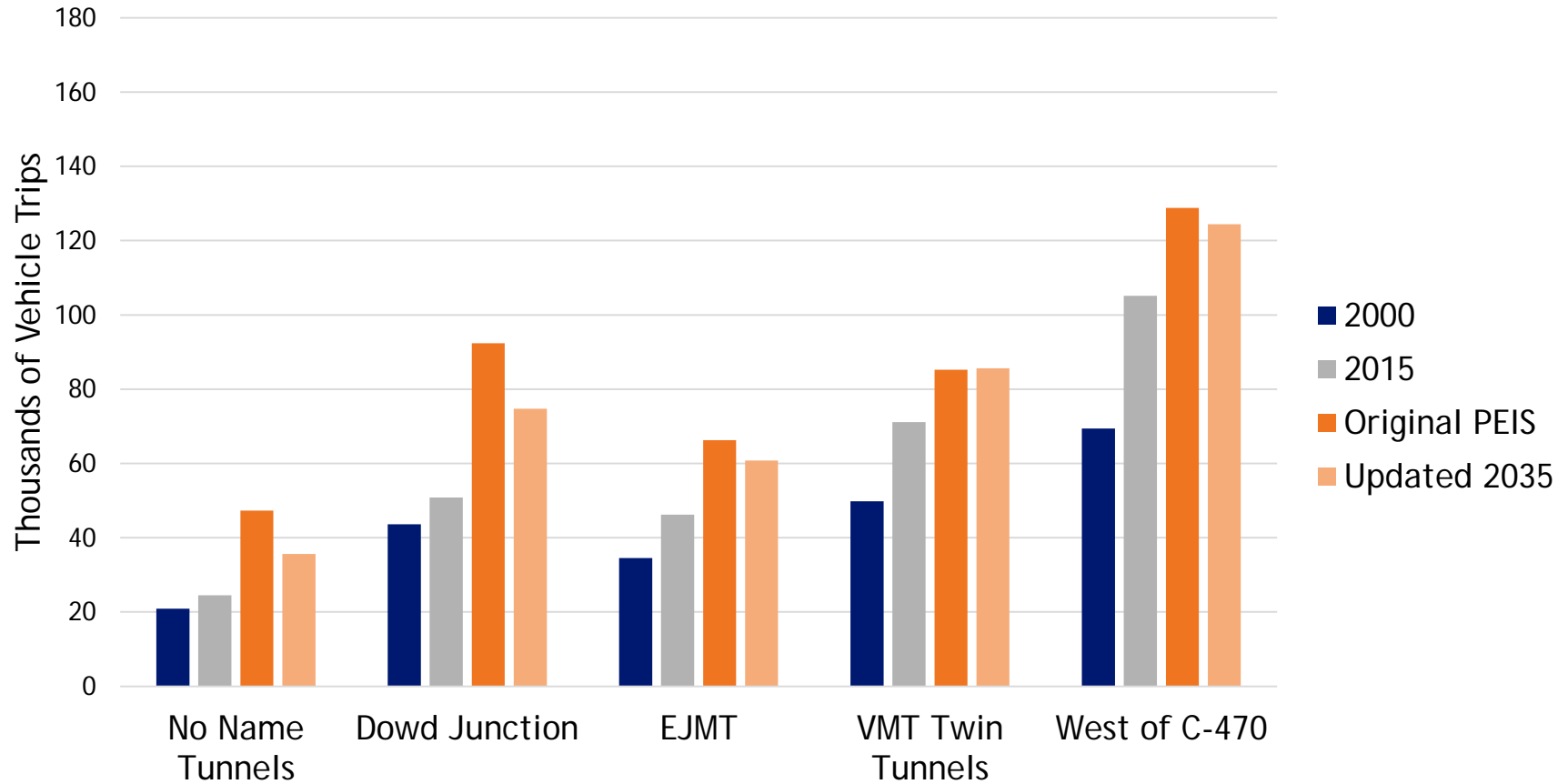
Source: PEIS and updated I-70 Mountain Corridor Travel Demand Model



Step 1B: Evaluate Current Components of P&N

Component 1: Traffic Projections

Daily Weekday Vehicle Trips



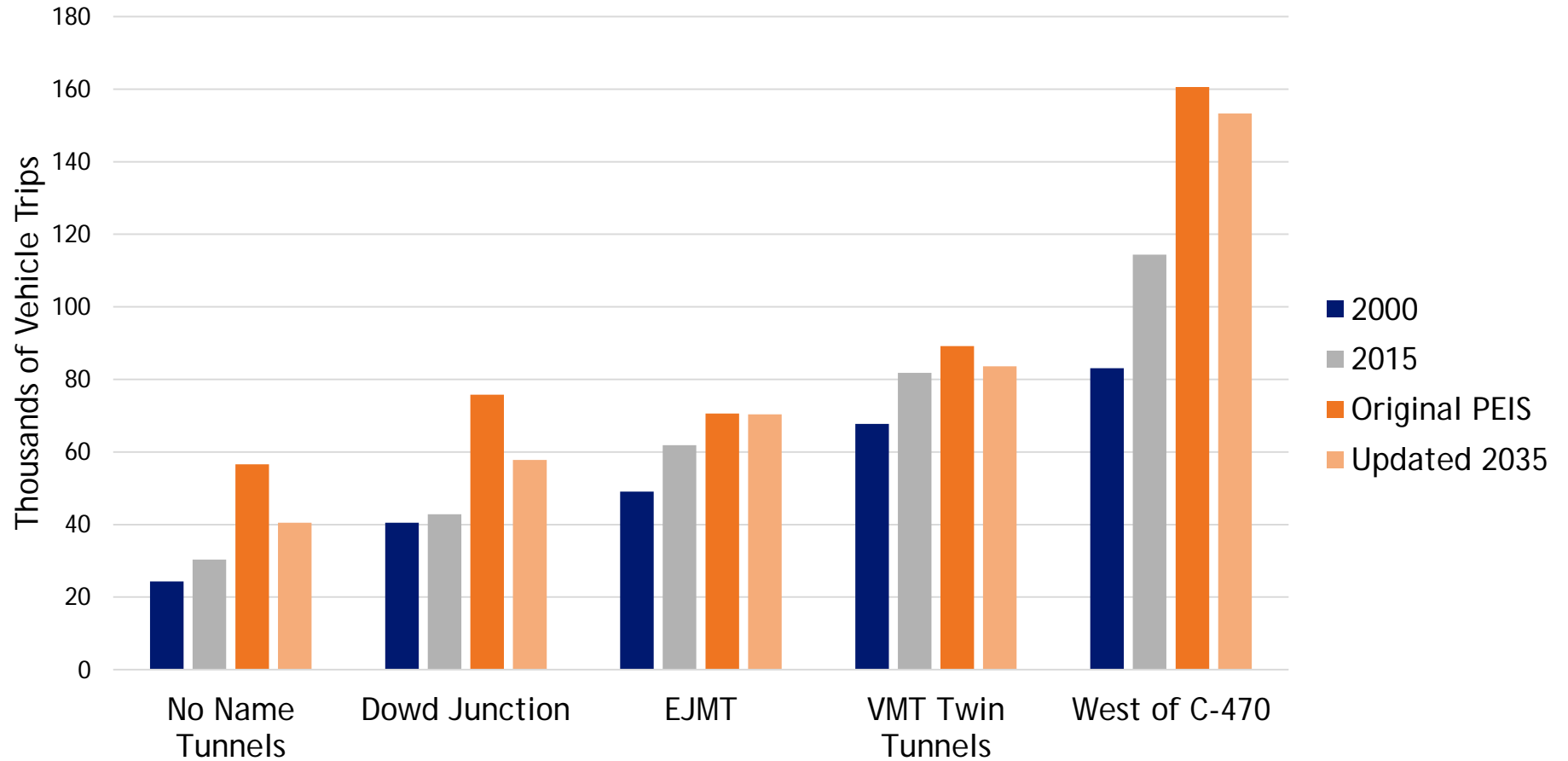
Source: PEIS and updated I-70 Mountain Corridor Travel Demand Model



Step 1B: Evaluate Current Components of P&N

Component 1: Traffic Projections

Daily Weekend Vehicle Trips



Source: PEIS and updated I-70 Mountain Corridor Travel Demand Model



Step 1B: Evaluate Current Components of P&N Component 1: Transit Ridership

New transit launched since 2011:

- CDOT Bustang and Snowstang
- Re-launch of Amtrak Winter Park Express Ski Train
- New Ski Shuttles (Fresh Tracks Transportation, Peak 1 Express Shuttle, Summit Express)
- New Casino Buses/Shuttles (Casino Shuttle by Ramblin Express, Black Hawk & Central City Tramway)



Step 1B: Evaluate Current Components of P&N

Component 1: Transit Ridership

New Information

- Ridership
 - Ridership is on the rise for Bustang, RFTA, ECO, Vail Transit and Summit Stage.
- Mobility Hubs
 - CDOT in early planning stages to identify mobility hubs across state
- High-Speed Transit
 - AGS/ICS/RMRA (2014) - concluded that fixed guideway options are technically feasible but not financially feasible as of 2014. Annual ridership was 4.6 to 6.2 million, assuming a connection to a front range high speed transit system including DIA
- First & Last Mile Technology
 - Micro Transit: Fixed or flexible on-demand shared service - vans, shuttles, buses
 - Ridesharing: Lyft and Uber
 - Tests of driverless vehicles continue



Step 1B: Evaluate Current Components of P&N

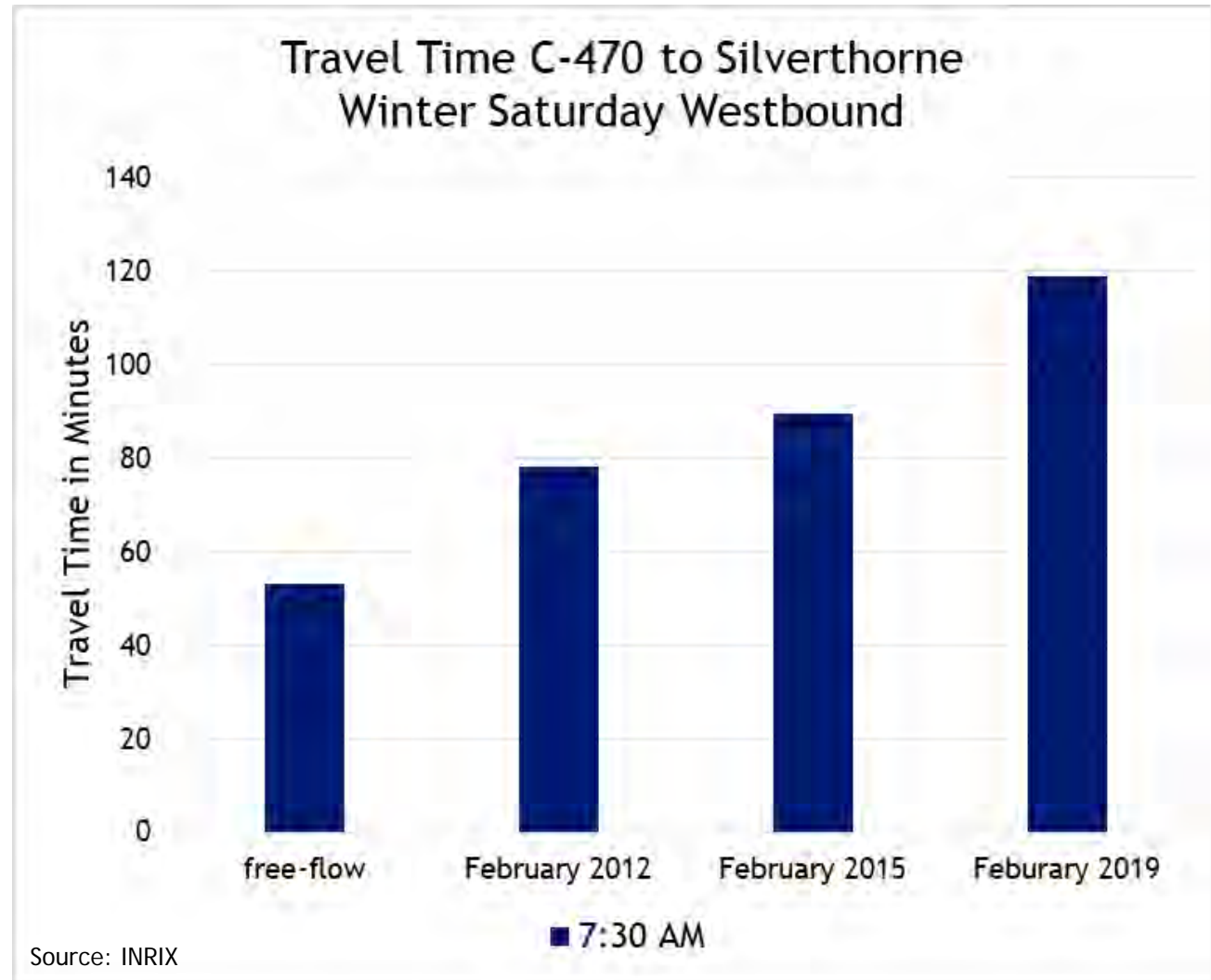
Component 2: Improve Mobility and Accessibility





Step 1B: Evaluate Current Components of P&N

Component 2: Travel Time

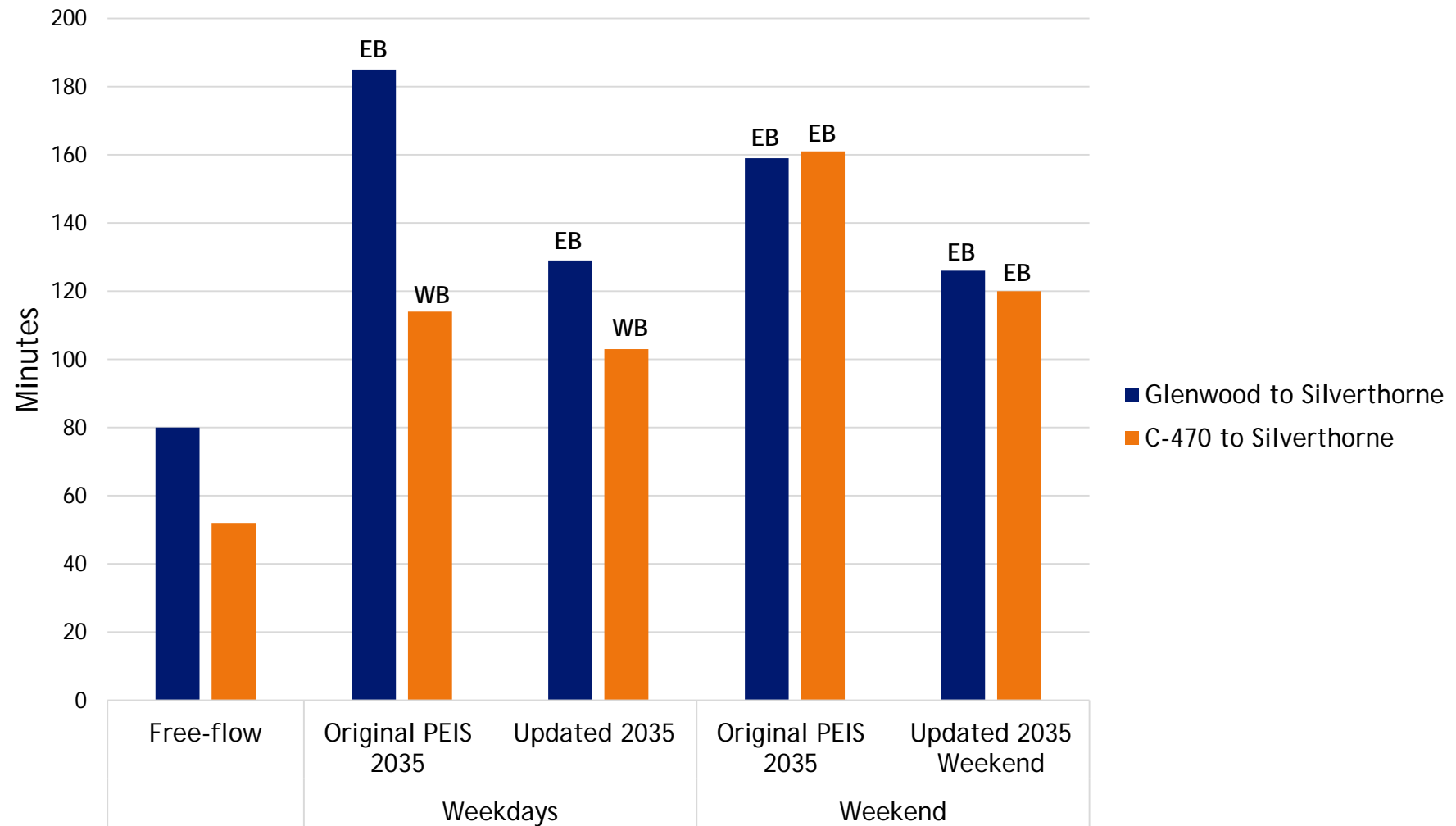




Step 1B: Evaluate Current Components of P&N

Component 2: Travel Time

Travel Time - Peak Period Direction 2035





Step 1B: Evaluate Current Components of P&N

Component 2: Safety Data

PEIS Summary

- **6** I-70 segment locations identified with notable safety deficiencies (2001 to 2005)
- **25** interchanges identified for needed improvements
- **4** curves identified for potential safety modifications
- **12** auxiliary lanes identified for safety and other needs



Step 1B: Evaluate Current Components of P&N

Component 2: I-70 Segment Safety Data

- WHI: Weighted Hazard Index
 - CDOT's former method
 - WHI factors crash frequency and severity and traffic volumes in a computational comparison with crash rates of other, similar highways
 - WHI > 0 indicates poor performance
- LOSS: Level of Service of Safety
 - CDOT's current method
 - LOSS considers crash frequency and severity and traffic volumes in a graphical comparison with crash rates of other, similar highways
 - LOSS ratings I - IV
 - LOSS I: Low potential for crash reduction
 - LOSS II: Low to moderate potential for crash reduction
 - LOSS III: Moderate to high potential for crash reduction
 - LOSS IV: High potential for crash reduction



Step 1B: Evaluate Current Components of P&N

Component 2: I-70 Segment Safety Data

Location	2001 - 2005 PEIS Weighted Hazard Index (WHI)	2011-2018 Level of Service of Safety (LOSS)	Observation
West of Wolcott Curve	WHI 2.01	LOSS II	Curve correction project appears to have alleviated safety issues
WB, West side of Vail Pass	WHI 4.78	LOSS IV	Still a high crash location
EB, EJMT to Herman Gulch	WHI 2.56	LOSS II / LOSS III	EB auxiliary lane project together with ramp metering appear to have alleviated safety issues
WB, Morrison to Chief Hosa	WHI 3.01	LOSS IV	Still a high crash location
Loveland Pass interchange	WHI 4.53	LOSS IV	Still a high crash location
Base of Floyd Hill	WHI 2.74	LOSS IV	Still a high crash location

Source: PEIS Safety Technical Report & I-70 PEIS Reassessment Project Team



Step 1B: Evaluate Current Components of P&N

Component 2: Incident Response Times

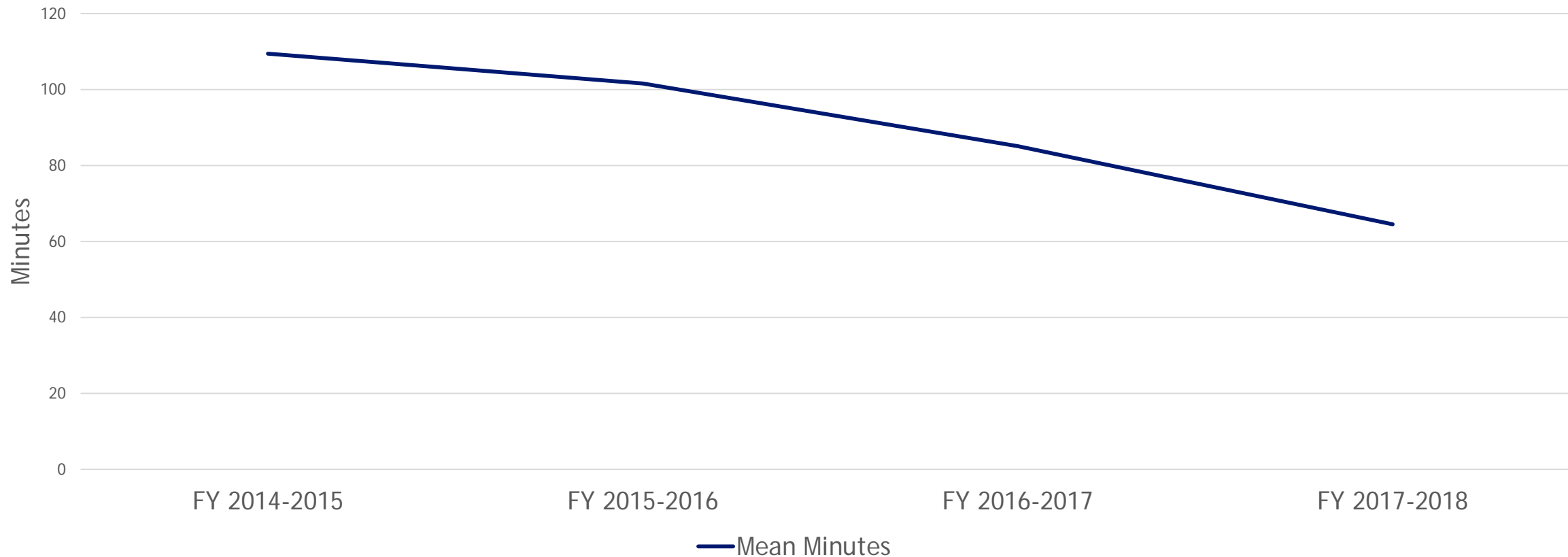
- CDOT has updated Traffic Incident Management Plans for the corridor counties
 - Clear Creek County August 2018, Eagle County July 2019, Summit County July 2019
- CDOT created a position of a full-time corridor operations manager for the I-70 Mountain Corridor since 2011
- CDOT has prepared a Winter Operations Plan for the I-70 Mountain Corridor.
- Effectiveness of Improvement Implementation
 - Eastbound PPSL improves the ability of emergency response providers to get to incidents during peak period times of severe congestion.



Step 1B: Evaluate Current Components of P&N

Component 2: Clearance Times

I-70 Closure Duration from Vehicle Incidents



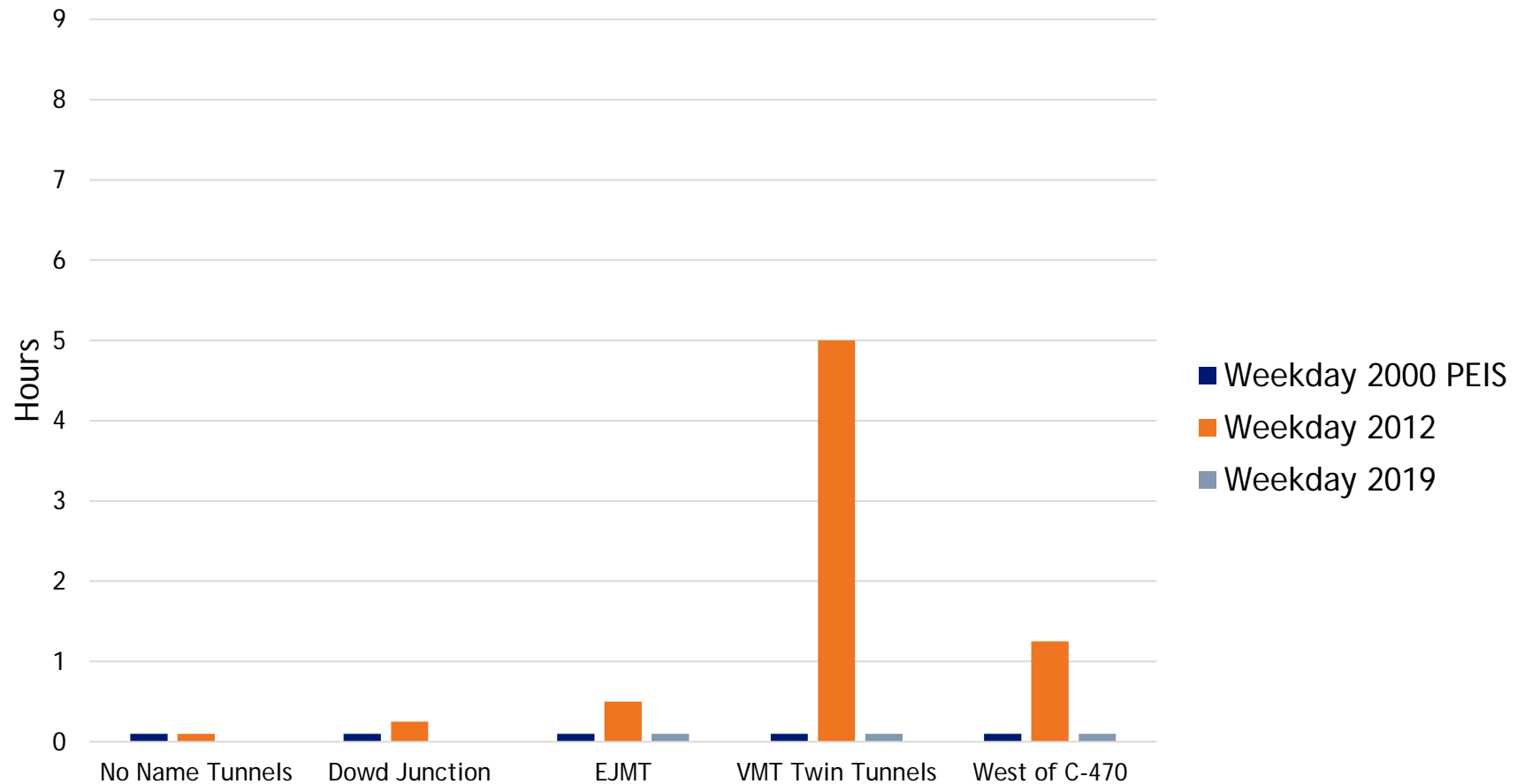
Source: CDOT COGNOS Data Reporting System



Step 1B: Evaluate Current Components of P&N

Component 3: Level of Service

Daily Hours of Congestion: Weekday



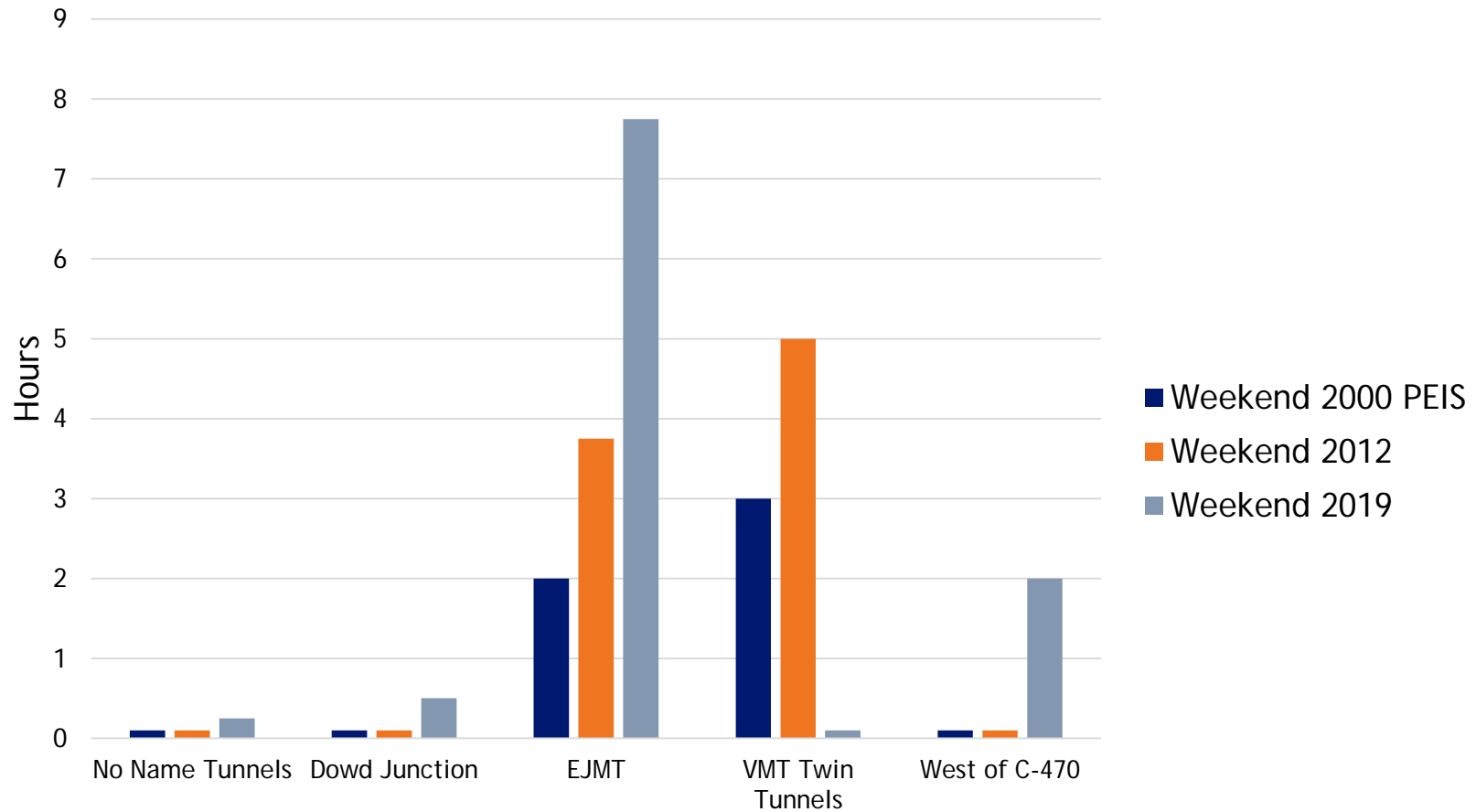
Source: INRIX. Note: 2019 data for No Name Tunnels and Dowd Junction unavailable



Step 1B: Evaluate Current Components of P&N

Component 3: Level of Service

Daily Hours of Congestion: Weekend



Source: INRIX



Step 1B: Evaluation of Components Recap of Observations to Date

Step 1B

- Increased Capacity
 - Existing traffic data shows traffic growth since 2011
 - Person Trips and traffic projections are on track with prior projections (The new 2035 slightly less than original 2035 projections)
 - Transit Ridership has grown due to new services in the corridor



Step 1B: Evaluation of Components Recap of Observations to Date

Step 1B

- Improve Mobility and Accessibility
 - Travel time have worsened since 2011 with the exception of impacts of the MEXL. Projected to worsen into the future similar to past forecasts
 - Safety data - Crash history has exhibited similar trends with the exception of some spot location improvements
 - Incident response times - Operational improvements indicate that response times have improved based on clearance times data



Step 1B: Evaluation of Components Recap of Observations to Date

Step 1B

- Decrease Congestion
 - Level of Service - In areas where improvements have been made, hours of congestion have significantly reduced otherwise they are increased.



Step 1B: Evaluation of Components

Step 1B Observations/Discussion



Step 1: Reassess Purpose and Need

Step 1. Observations and Recommendations Discussion



Morning Meeting Wrap-up Discussion

Summary and Outstanding Questions



**I-70 Mountain Corridor 2020 Reassessment
Collaborative Effort (CE) Subcommittee Meeting #4 Summary**
April 30, 2020, 1:00 PM to 4:30 PM
WebX Conference Call Video Meeting

Overview

These notes summarize Meeting #4 of the I-70 Mountain Corridor 2020 Reassessment Collaborative Effort (CE) Subcommittee. The focus of the meeting was the remaining review of Step 1B and review of Step 2 of the I-70 Mountain Corridor Record of Decision's (ROD) 2020 Reassessment Work Plan. The review of the second two components of 1B were deferred from the morning Meeting #3 and added to the Meeting #4 agenda.

Welcome and Introductions

Steve Long re-welcomed the group and did a roll call of the meeting participants. Subcommittee members present included:

- Randy Wheelock, Clear Creek County (CE Co-Chair)
- Greg Hall, Vail (CE Co-Chair)
- Amy Saxton, Clear Creek County
- Adam Bianchi, US Forest Service
- Mary Jane Loevlie, Business Representative
- Gary Frey, Trout Unlimited
- Holly Norton, Colorado State Historic Preservation Office
- Matt Scherr, Eagle County
- Bentley Henderson, Summit County
- Becky English, Sierra Club (alternate for Dennis Royer)
- Melinda Urban, Federal Highway Administration (FHWA)
- Shaun Cutting, FHWA
- Mike Keleman, Colorado Department of Transportation (CDOT)
- Vanessa Henderson, CDOT

Other meeting participants included Cindy Neely and Steve Coffin, consultants to Clear Creek County; Neil Ogden, CDOT; and Stephanie Gibson, FHWA. The HDR consultant team present included Steve Long, Wendy Wallach, Chris Primus, Kira Olson, and Mandy Whorton (Peak Consulting Group).

Step 1B: Component 2: Improve Mobility and Accessibility

Chris Primus provided data related to travel times, safety, and incident response times. Travel times in the peak periods have continued to increase, and the travel demand model projects very similar trends to the Programmatic Environmental Impact Statement (PEIS) in terms of increased travel times by 2035 in the peak period. On weekdays, as noted previously, the PEIS projected much higher travel times west



of the Eisenhower-Johnson Memorial Tunnels (EMJT) than the updated model projections. Weekday projections were also lower in the updated model east of EJMT, but the differences were much less.

Crash data show that the locations identified as safety concerns in the PEIS remain concerns today, except in locations where safety improvements have been implemented (west of Wolcott Curve and eastbound EJMT to Herman Gulch).

CDOT has implemented numerous operations plans to improve traffic incident management. While specific data on incident response times were not available, durations of I-70 closures due to vehicle incidents has decreased, indicating the incident management plans are helping.

Mandy Whorton provided the PEIS language describing the need to improve mobility and accessibility:

Improve mobility and accessibility – Mobility along the I-70 Mountain Corridor is defined as the ability to travel along the Corridor safely and efficiently in a reasonable amount of time. The mix of vehicle types, particularly slow-moving vehicles, directly affects mobility in this Corridor. Slow moving vehicles (trucks, buses, and recreational vehicles) make up about 10 percent of weekday traffic.

Accessibility is related to mobility and is defined as the ability to access destinations served by the Corridor safely, conveniently, and in a reasonable amount of time.

Currently, there are long travel times to traverse the Corridor or reach Corridor destinations during peak weekend conditions. Future increases in person trip demand will result in more congestion, more delay, and increased travel times for weekends and weekdays. Long travel times affect all types of Corridor users, and result in a need to improve mobility and accessibility in the Corridor.

The subcommittee reviewed the statement and agreed that the need remains and had several observations.

Amy Saxton noted that the first paragraph in the PEIS description is too vehicle focused and that the reassessment needs to consider person trips not just vehicles.

Greg Hall noted that (lack of) affordable housing is also a factor changing and affecting mobility due to longer commutes.

Mary Jane Loevlie noted that delays extend to weekdays, and that both Fridays and Mondays are almost as bad as weekends.

Randy Wheelock observed that the need for mobility drives the need for capacity. Mobility is at the heart of the other needs and perhaps should have been the first component.

As with other agreements, the subcommittee requested that its conclusions be documented separately and formally reviewed by members.



Step 1B: Component 3: Decrease Congestion

Chris provided data for measured hours of congestion in 2000 (PEIS baseline), 2012, and 2019. Weekday congestion was notably higher in 2012, particularly at the Veterans Memorial Tunnels, and by 2019 returned to levels similar to the 2000 baseline. In the weekend period, congestion in 2019 was substantially higher than in 2000 or 2012 at EJMT and west of C-470. It was somewhat higher at the No Name Tunnels and Dowd Junction. However, at the Veterans Memorial Tunnels, congestion decreased to almost nothing in 2019, compared to 3 and 5 hours of congestion in 2000 and 2012, respectively. The congestion reduction at this location was directly related to the opening of the Twin Tunnels (Veterans Memorial Tunnels) and Eastbound Peak Period Shoulder Lane (PPSL) projects. Generally, in areas where improvements have been made, levels of service are better, and hours of congestion have significantly reduced; otherwise, they are increased.

Greg noted that level of service for transit is also an issue. The capacity of transit is not adequate to meet demand – transit vehicles are crowded/over-capacity. Greg said this should be noted, and Amy and Randy agreed.

Step 1 Conclusions regarding Context and Purpose and Need

After thorough discussion of the context and purpose and need and review of updated data, the subcommittee agreed that the context and all components of the purpose and need are still valid. Randy and Cindy Neely suggested that the meeting should document this broad conclusion and also document the subcommittee's observations. The group agreed that the actions and decisions should be summarized separately from the meeting notes so that it is clear that these steps have been completed and that the subcommittee reached consensus.

Gary Frey and Becky English raised objection with the statement about consensus in the Work Plan, specifically item 4 of the operating protocols in the Work Plan that "Lead agencies cannot delegate their responsibilities regarding decision making and NEPA compliance. However, as equal and participating members of the CE, lead agencies are committed to crafting with all stakeholders decisions that can be supportive. If consensus is not possible, then the level of support and dissension will be noted and all deliberations and products of the CE will be considered by the lead agencies in their decision making." They noted that if the lead agency is only obliged to "consider" input, this is not consensus.

Stephanie Gibson said that FHWA cannot abdicate its responsibilities for decision making under NEPA, which is why this language was included. Gary responded that since the reassessment is not a NEPA document, he did not understand why that statement is included. He asked why the agencies should have a higher authority in this process?

Randy said the wording was clear that the lead agencies were "equal and participating members of the CE." Mary Jane said the CE process was developed to give a voice to stakeholders. Randy reminded the group of an edit that had been suggested at the CE that "The FHWA and CDOT commit to fully engaging as partners in this process and being an integral part of reaching consensus." Vanessa Henderson commented that the CE had selected the language about consensus from the CE operating protocols,



and while the language Randy offered was helpful, the CE had agreed when it initially discussed the issue that it did not present a significant enough change to revise the Work Plan.

Gary and Becky, on behalf of Trout Unlimited and Sierra Club, do not agree that FHWA and CDOT have the authority to make decisions without consensus and buy-in from stakeholders. Shaun Cutting clarified that FHWA is at the table and intends to get consensus but if there is a problem, members need to speak up. FHWA is absolutely committed to consensus or wouldn't agree to this process. Neither NEPA nor other agreements require FHWA to participate in the CE process. Groups and/or individuals can disagree with decision and challenge FHWA, but the agency has not just the authority but the responsibility to make decisions about transportation projects. Mary Jane said she agreed.

Cindy, as one of the original members of the CE, asked to provide some context. She said nothing had changed with the roles of the agencies. It was always recognized that FHWA has responsibility for the interstate and that their participation in the consensus process was their choice; she agreed with Shaun that FHWA did not need to be at the table but was there to work collaboratively for the benefit of the entire CE membership. The original Russ George (CDOT) and David Nicol (FHWA) letter (November 2007) framed the question about what the CDOT and FHWA would do if there was consensus among the CE, and they stated that they agreed to be part of the process and adopt the CE recommendations. Nothing has changed in substance in the relationships. In this statement (and in the PEIS), the lead agencies are making clear what happens if there is not consensus, which was not explicit in the George and Nicol letter but had the CE failed to reach consensus, FHWA and CDOT would have been obliged to make a decision. They have the responsibility to do their job if consensus cannot be reached.

Gary asked if there was a relationship between items 4 and 6 in the Plan's Primary Roles and Responsibilities in the Work Plan? He said if the lead agencies have more power than the rest of the group, it was not possible to be transparent and was not consistent with item 6 of the same protocols that "the CE subcommittee members are obligated to be transparent". If they could act without consensus, this is not transparent since they don't have to support the decisions of the subcommittee.

Randy said that the process was working from his perspective and the group had worked toward consensus. The group agreed that documentation will be provided of the subcommittee decisions and consensus, which will provide an opportunity for any member to express concerns. He asked that the discussion of the Work Plan process be discussed offline so that the rest of the agenda items could be advanced. Trout Unlimited and Sierra Club agreed to discuss offline. Randy will set up a Zoom call with interested participants, which will include Trout Unlimited and Sierra Club. Randy requested CDOT and FHWA also participate.

Step 2A: Assess Effectiveness (Environmental and Community Values)

Wendy Wallach reviewed the other components supporting the measures of effectiveness of the Preferred Alternative. These are included in the purpose and need as performance criteria that alternatives must meet in addition to the transportation needs: environmental sensitivity, respect for community values, safety, and ability to implement. The Work Plan specifically addresses the need to measure the effectiveness of the Preferred Alternative in providing for and accommodating environmental sensitivity and respect for community values.



For environmental sensitivity, the objective of this measure was to protect and enhance natural and biological resources. Two memoranda of understanding were developed and included as requirements for Tier 2 projects to provide for and accommodate environmental sensitivity: The Stream and Wetland Ecological Enhancement Program (SWEET), which focuses on water quality and stream and aquatic resource health, and A Landscape Level Inventory of Valued Ecosystem Components (ALIVE), which focuses on wildlife connectivity.

Several agreements accommodate respect for community values in Tier 2 processes. These include the Context Sensitive Solutions (CSS) process, I-70 Mountain Corridor Section 106 Programmatic Agreement, I-70 Mountain Corridor Aesthetics Guidance, I-70 Mountain Corridor Design Criteria and design criteria exceptions process.

These agreements have been implemented on all Tier 2 projects.

Gary stated that SWEET worked well on Twin Tunnels and is hopeful for Floyd Hill to have similar results.

Greg stated that these agreements have worked well on interchange and local projects in the Vail area but West Vail Pass has been less successful, in part because the expectations of “enhancement” is different. Vail Pass is a significant resource and the changes to design and aesthetic guidance should be a very high bar. Additionally, players have changed in Eagle County so there is less understanding of the agreements. He observed that for this project, although it appears a lot of work was invested in developing design criteria, there are too many criteria, and the perception is either that the criteria were not very well thought out or that the process is not being taken seriously. For example, the criteria state that uphill retaining walls should be not higher than 12 feet, and the exception requested 75-foot-high walls.

Vanessa explained the Vail process was different than projects in Clear Creek County because there was very low level of design (5 percent), and the team was trying to move forward with parameters for the next phases with not enough information about the requirements or design to try to minimize impacts or meet criteria.

Randy asked if the environmental sensitivity should be moved back to 1B. Cindy noted that it is already there in the purpose and need. Mandy pulled up the language from purpose and need to show how environmental sensitivity and community values were used to influence alternatives (as additional criteria to transportation needs).

Greg stated that it could be reasoned that these agreements had been effective since each of the projects implemented since 2010 has reached consensus on implementation, demonstrating that the Context Sensitive Solutions (CSS) process is working and has not delayed projects. For example, the Eastbound and Westbound Peak Period Shoulder Lane (PPSL) projects were something different than imagined in the PEIS and ROD, but the CSS process worked to allow it to move forward as an interim project.



Step 2B: Effectiveness of Implementation

Steve reviewed the status of transportation funding for context to implementation of the Preferred Alternative. The group observed that most of the funding measures had failed, which did affect CDOT's ability to implement transportation improvements on the Mountain Corridor and elsewhere. However, they noted that the lack of funding was not a good way to judge the effectiveness of the Preferred Alternative since there was no way to determine how effective the major components of the Preferred Alternative, such as the Advanced Guideway System (AGS), might be since they had not been implemented.

Chris presented a table the HDR team prepared to track the implementation of the Preferred Alternative. Where progress had been made or components were implemented, the table included discussion of the project benefits. For many projects, no "hard" data are available to quantify effectiveness; however, in these cases, the team provided some observations about effectiveness as well as which purpose and need component the project supported.

Chris reviewed travel times for the eastbound PPSL as an example of quantifiable data for "before and after" implementation. In this case, the team was able to quantify that 750 to 900 cars were diverted from the general-purpose lanes, which has improved travel times for all eastbound travel up to 9 minutes.

The group expressed disappointment about how many projects are "in progress" but not complete. This observation generally applied to the non-infrastructure improvements, which Vanessa noted are not meant to be completed because there is always room to do more.

Cindy, Randy, and Amy said that they would like to see a rating system as well as a quantification of how much has been done for the in-progress projects.

Wendy agreed that the team needed to think more about how to present the information to the group and asked for suggestions. Randy said the effort was headed in the right direction, but more quantification would help the subcommittee in making recommendations for priorities in Step 4.

Steve said that the team could add numbers or other quantification to the ratings. Chris agreed but noted that quantification would rely on a lot of assumptions.

Amy suggested a rating system by category that could be correlated to data.

Mary Jane suggested reordering the table based on priorities. Vanessa said that the table followed the ordering in the Preferred Alternative and suggested it not be revised. The group agreed to keep the same order but asked that priorities be included in the discussion.

The group expressed concern that the AGS showed many completed actions when no real progress had been made to advance AGS beyond the feasibility study. They also noted concern with the conclusion regarding financial infeasibility and asked that the language from the AGS study that it was not feasible "at the time" (2014) be included.



The group requested that HDR rethink the table, provide more conclusions, and present the information differently for consideration at the next meeting. The group agreed to revisit Step 2B with the revised table at the next meeting, as well as discuss Step 3.

Action Items

- Prepare a separate summary of the subcommittee conclusions and observations regarding Step 1 for formal endorsement (HDR team).
- Convene a small group discussion via Zoom to discuss the consensus protocols to include Trout Unlimited, Sierra Club, CDOT, FHWA, and any other interested members (Randy)
- Revise the effectiveness table and include more data or observations regarding effectiveness, including some sort of effectiveness rating. Consider some way to measure the effort toward implementing in-progress components (HDR team)



COLORADO

Department of Transportation

I-70 Reassessment CE Subcommittee Meeting Step 2A/2B Data Presentation

April 30, 2020



1. Introductions
2. Purpose
3. Step 2A: Other Components
4. Step 2B: Implementation Status
5. Step 2: Overall Observations and Discussion
6. Step 3A: Identify Outstanding PA Questions
7. Wrap-up and Open Discussion



Meeting Goals:

- Wrap-up Step 2
- Discuss if any additional questions should be included in Step 3



Step 2A: Assess Effectiveness (Environmental and Community Values)





Step 2A: Other Components (Environmental and Community Values)

Other Components

- **Environmental Sensitivity**

Avoid and minimize adverse impacts on and, where possible, enhance environmental resources, including, but not limited to, stream sedimentation, water quality, wildlife crossings, and impacts on wetlands.

- **Respect for Community Values**

Avoid and minimize adverse impacts on and, where possible, enhance air quality, historic resources, noise levels, visual resources, and social and economic values, as well as minimize the transportation system's footprint on the mountain communities. Consider the possible growth changes and economic effects that might occur, depending on the ease or difficulty of access.

- **Safety**

- **Ability to Implement**



Step 2A: Other Components (Environmental and Community Values)

Environmental Sensitivity

Objective to protect and enhance natural and biological resources

- Stream and Wetland Ecological Enhancement Program (SWEEP): Sedimentation and Water Quality
- A Landscape Level Inventory of Valued Ecosystem Components (ALIVE): Wildlife



Step 2A: Other Components (Environmental and Community Values)

Community Values

Avoid, protect, and enhance community resources

- Context Sensitive Solutions (CSS)
- I-70 Mountain Corridor Section 106 Programmatic Agreement
- I-70 Mountain Corridor Aesthetics Guidance
- I-70 Mountain Corridor Design Criteria
- Design criteria Exceptions process



Step 2A: Assess Effectiveness Recap of Observations to Date

Step 2A

- Ongoing data collection has proven to be appropriate and applicable for assessing effectiveness
- ALIVE, SWEEP, and the components of the community values have been effective since implementation for Tier 2 projects



Step 2A: Assess Effectiveness

Step 2A Observations/Discussion



Step 2B: Implementation Status





Step 2B: Implementation Status Transportation Funding

YEAR	PROPOSAL (Title or Bill #)	DESCRIPTION	PROPOSAL OUTCOME
1999	Referendum A	TRANS bonds - Referred measure enabling the state to bond against anticipated federal HTF to funding specific list of projects including I70 West	Passed at ballot
2001	Amendment 26 - Surplus Revenue to Test I-70 Fixed Guideway	The amendment proposed to expend \$50 million of surplus state revenue to plan and test a fixed guideway transportation system for the I-70 corridor linking Denver International Airport and Eagle County Airport; and exempts the Colorado Intermountain Fixed Guideway Authority from state constitutional revenue and spending limitations.	Failed at ballot
2002	HB02-1310	HB 02-1310 transferred two thirds of the excess General Fund reserve remaining after TABOR refunds, the statutory reserve, a 6 percent increase in General Fund appropriations, and the SB 97-1 diversion to the HUTF.	Passed in legislature
2008	Amendment 52 - Severance Tax for Transportation	Amendment 52 proposed amending the Colorado Constitution to require the state legislature to spend a portion of state severance tax collections on highway projects.	Failed at ballot
2008	Amendment 58 - Severance Taxes on the Oil and Natural Gas Industry	Amendment 58 proposed changing the Colorado statutes to: <ul style="list-style-type: none"> - increase the amount of state severance taxes paid by oil and natural gas companies, primarily by eliminating an existing state tax credit; - allocate the increased severance tax revenue to college scholarships for state residents, wildlife habitat, renewable energy projects, transportation projects in energy-impacted areas, and water treatment grants; and - exempt all oil and gas severance tax revenue from state and local spending limits. 	Failed at ballot
2009	SB08-108 -FASTER	Increased various fees (vehicle registration, late fees, rental cars) allocated to State/counties/cities for investment in transportation infrastructure. Created HPTE and Bridge Enterprise.	Passed
2009	SB09-228	SB 09-228 altered the limit on General Fund (GF) appropriations, repealed the SB 97-1 diversion and HB 02-1310 transfers, and required alternative transfers (subject to triggers) to transportation, capital construction, and the General Fund statutory reserve.	Passed



Step 2B: Implementation Status Transportation Funding

YEAR	PROPOSAL (Title or Bill #)	DESCRIPTION	PROPOSAL OUTCOME
2010	Proposition 101 - Income, Motor Vehicle and Telecommunications Taxes and Fees	Proposition 101 proposed amending the Colorado statutes to: <ul style="list-style-type: none"> - reduce the state income tax rate from 4.63 percent to 4.5 percent in 2011, and to 3.5 percent gradually over time; - reduce or eliminate taxes and fees on vehicle purchases, registrations, leases, and rentals over the next four years; - eliminate all state and local taxes and fees on telecommunication services, except 911 fees; and - require voter approval to create or increase fees on vehicles and telecommunication services. 	Failed at ballot
2016	SB16-210	Fix Colorado Roads Act. Proposed to require the Transportation Commission to place a measure on the ballot authorized Transportation Revenue Anticipation Notes (TRANs bonds) and dedicating five percent sales and use tax revenue from the general fund without raising taxes	Failed in legislature
2017	HB17-1171	Proposal for a referred ballot measure to authorize CDOT to issue new Transportation Revenue Anticipation Notes	Failed in legislature
2017	HB17-1242	Proposal for New Transportation Infrastructure Funding Revenue, refer ballot measure to increase sales and use taxes by 0.5 percent and authorize bonding up to \$3.5b	Failed in legislature
2017	SB17-205	Proposal to all the Transportation Commission to submit a ballot question to the voters at either the November 2017, 2018, or 2019 election, which, if approved, would have increased the state sales and use tax from 2.9% to 3.15%, also allowed for bonding against tax revenue	Failed in legislature
2017	SB17-267	SB 17-267 authorized executions of lease-purchase agreements to fund transportation in FY 2018-19 (\$424 million for transportation), FY 2019-20, FY 2020-21, and FY 2021-22 (\$500 million for transportation each year). The bill requires General Fund obligations for lease payments each year; the obligation grows as agreements are executed and will total \$91 million annually beginning in FY 2021-22	Passed
2018	Proposition 110 - Transportation Bond Issue and Sales Tax Increase	Statewide ballot proposal to increase sales tax by 0.62 percent for 20 years to support state and local roadway and transit investments.	Failed at ballot



Step 2B: Implementation Status Transportation Funding

YEAR	PROPOSAL (Title or Bill #)	DESCRIPTION	PROPOSAL OUTCOME
2018	Proposition 109 - Transportation Bond Issue and Reallocation of Existing Revenue	Statewide ballot proposal to issue \$3.5b in bonds for transportation utilizing general fund revenues to pay debt service	Failed at ballot
2018	SB18-001	SB 18-001 transferred of \$495 million in FY 2018-19 and \$200 million in FY 2019-20 from the General Fund to a combination of the State Highway Fund, the HUTF, and the Multimodal Transportation Options Fund. For FY 2020-21 through FY 2039-40, the bill transfers \$50 million annually from the General Fund to the State Highway Fund.	Passed
2019	HB19-1157	Proposed to modify and increase Specific Ownership Tax Rates and allocate to HUTF	Failed
2019	SB19-051	Proposal to increase the SB18-001 general fund allocation to transportation from \$150M to \$340m	Failed
2019	SB19-239	Proposed for CDOT to conduct an analysis of impact of emerging technologies on the state transportation system and make recommendations (including tax and fee proposals)	Passed
2019	SB19-262	General Fund transfer of \$100m to transportation, one time only	Passed
2019	Proposition CC	Statewide ballot proposal referred by the legislature to retain TABOR Surplus funds for education and transportation.	Failed at ballot
2020	HB20-1151	Expand authority of transportation planning regions - bill proposed to give regional planning entities (MPOs and TRP) a streamlined approach to creating regional transportation authorities to fund transportation.	Introduced
2020	SB20-44	Bill proposed to allocate sales and use tax revenue attributable to the sales or use of vehicles and related items to transportation funding.	Failed

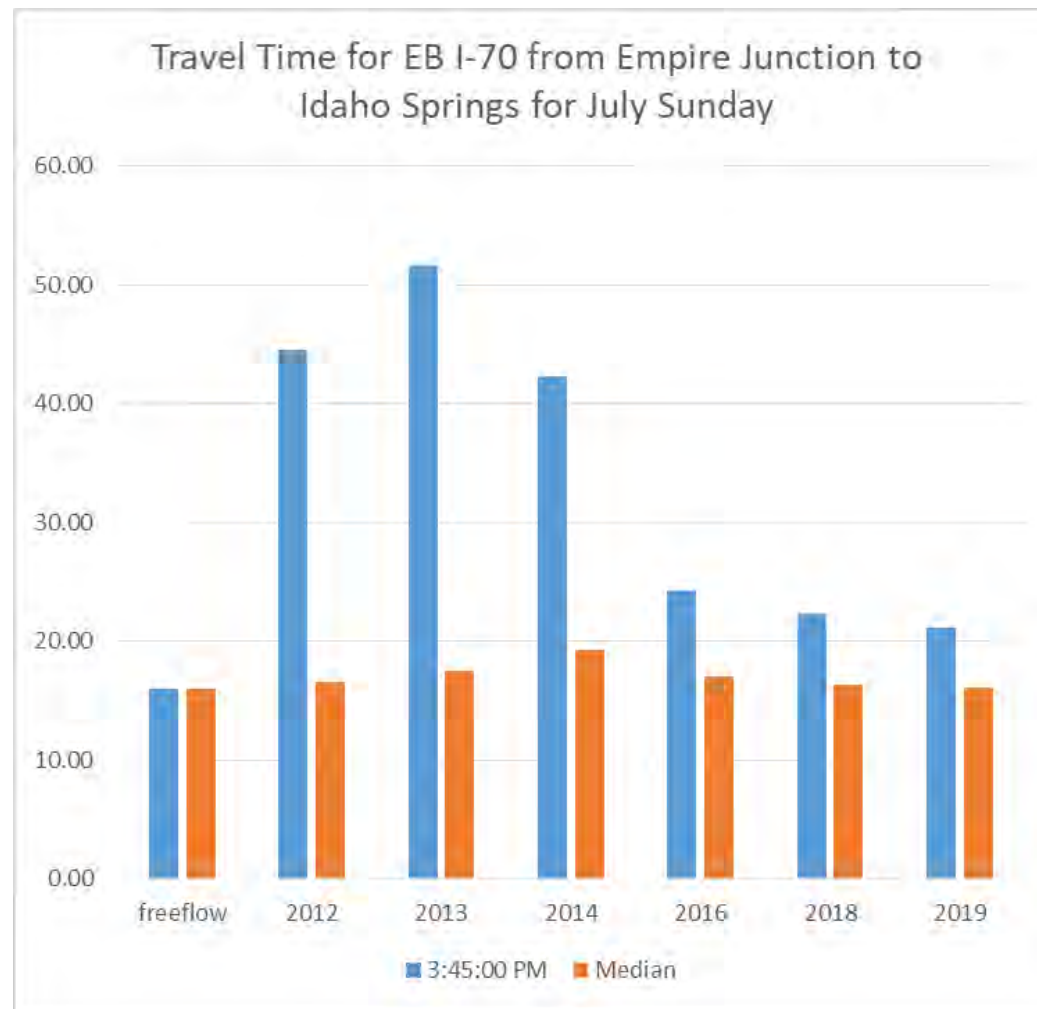
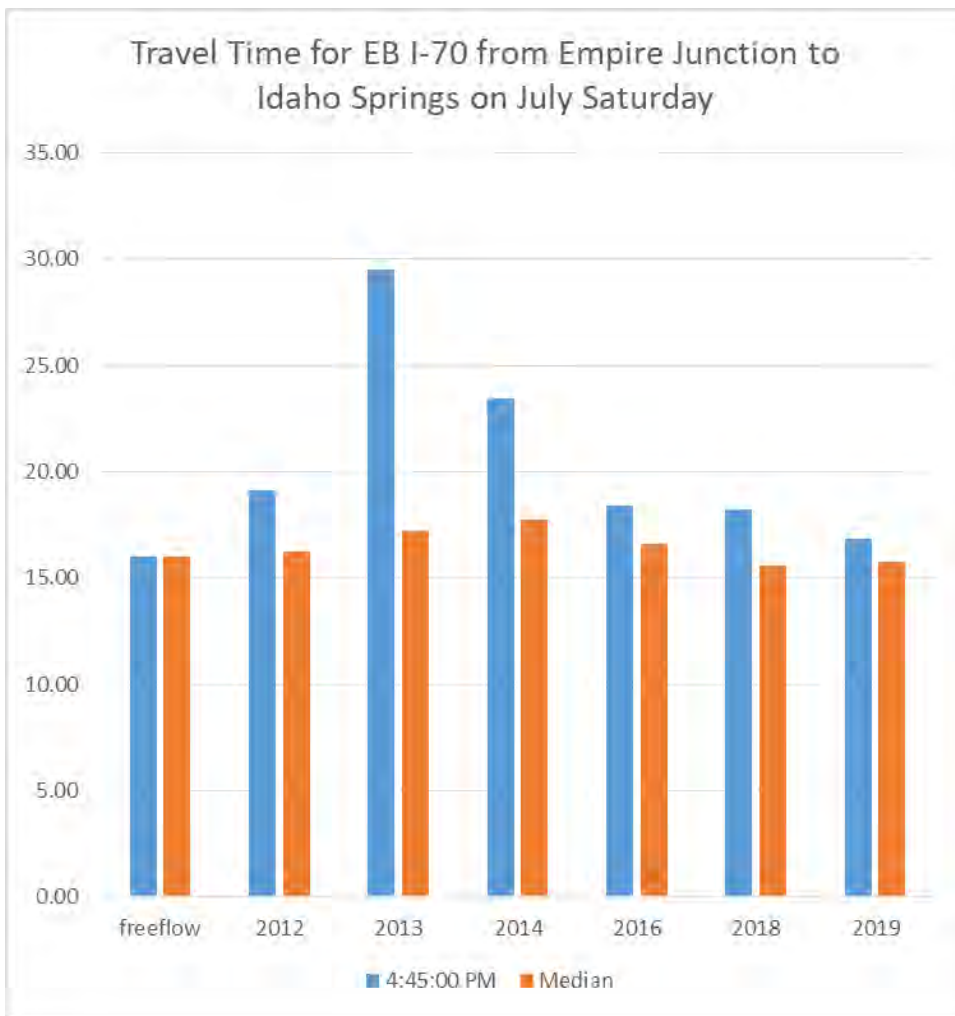


Review Preferred Alternative Tracking Table

1. Non-Infrastructure Components
2. AGS
3. Highway Components
 - Specific
 - Other
 - Interchange Improvements
 - Auxiliary Lanes

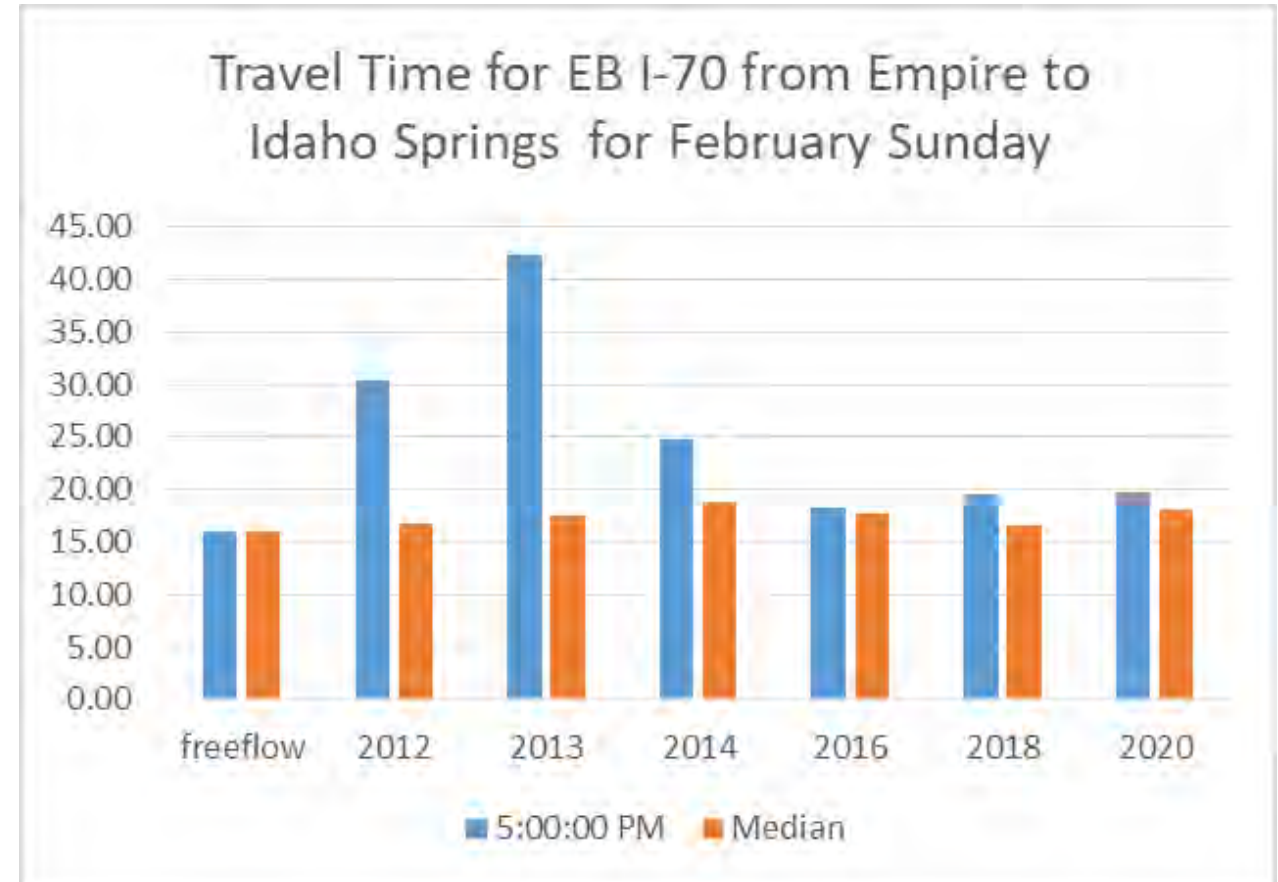
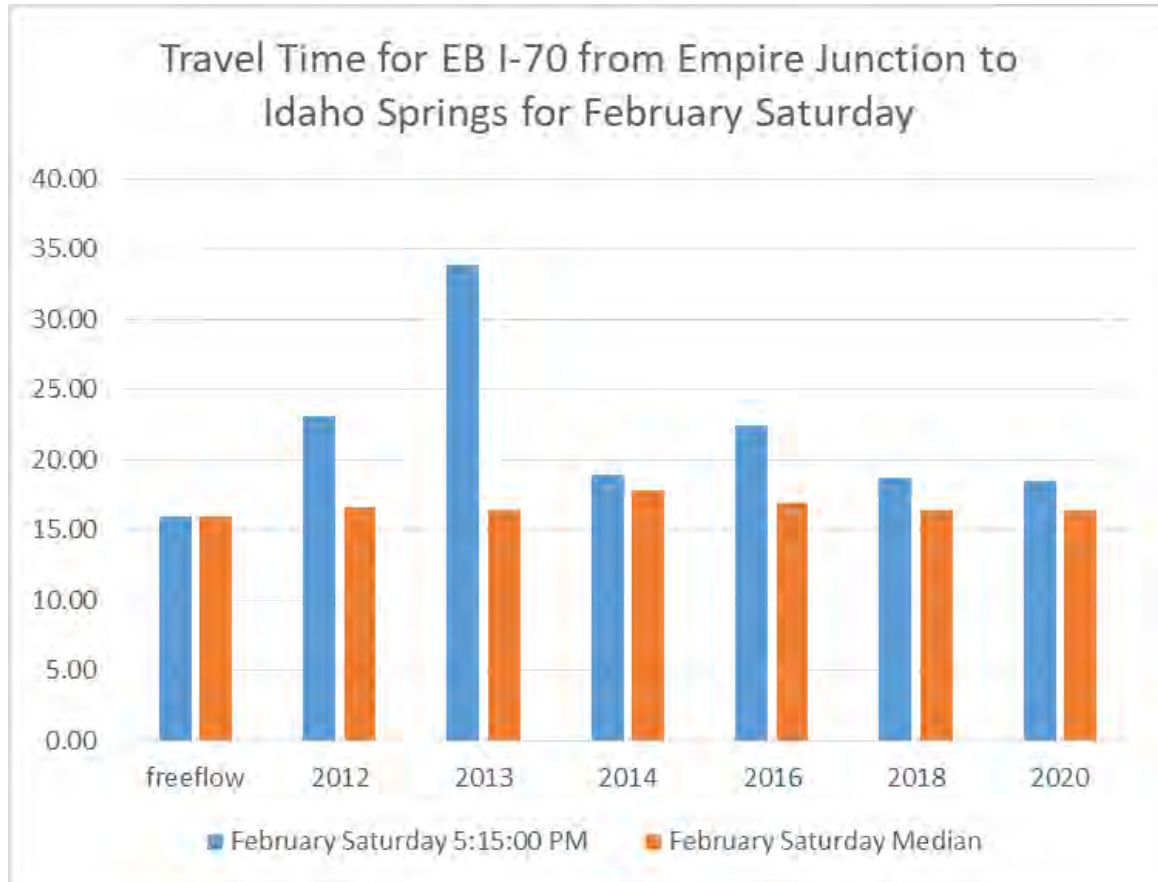


EB MEXL: Travel Time Effectiveness



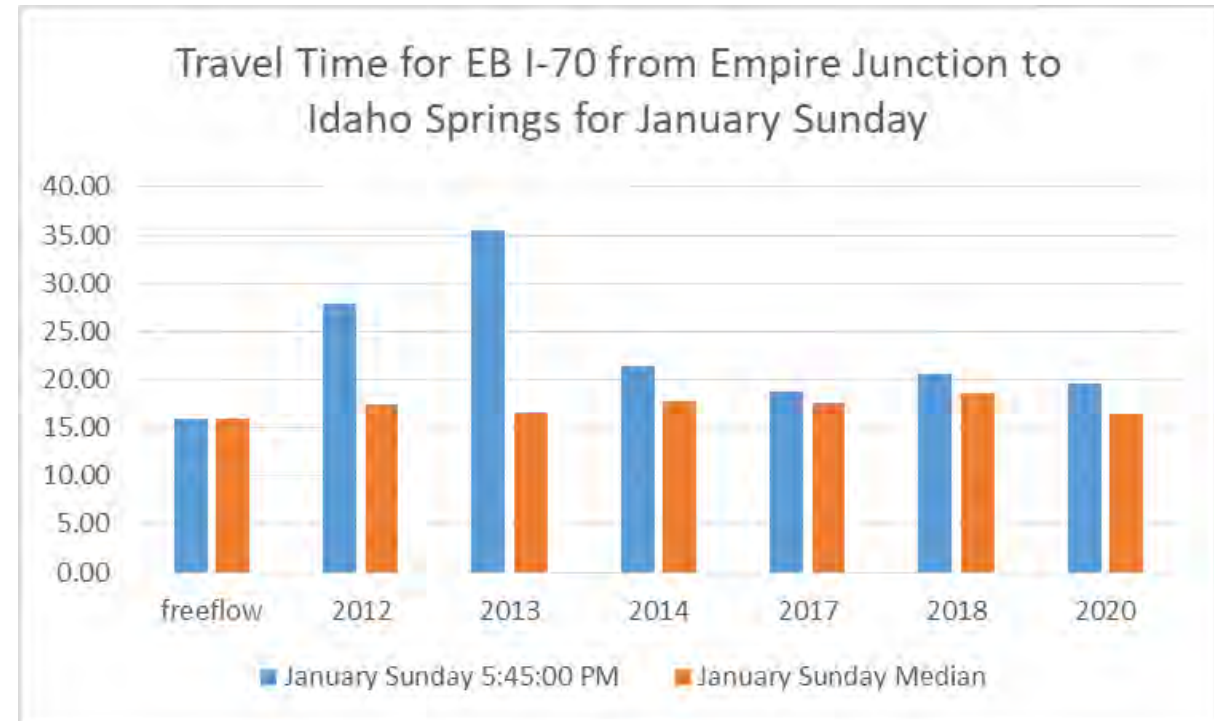
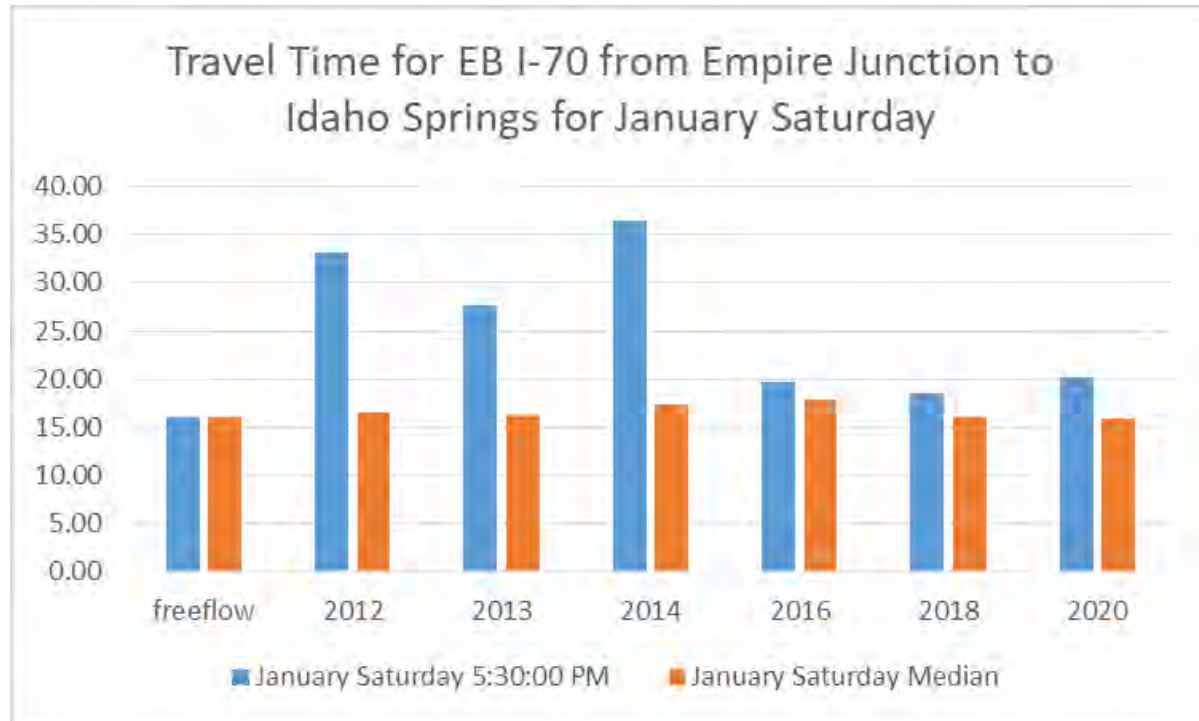


EB MEXL: Travel Time Effectiveness



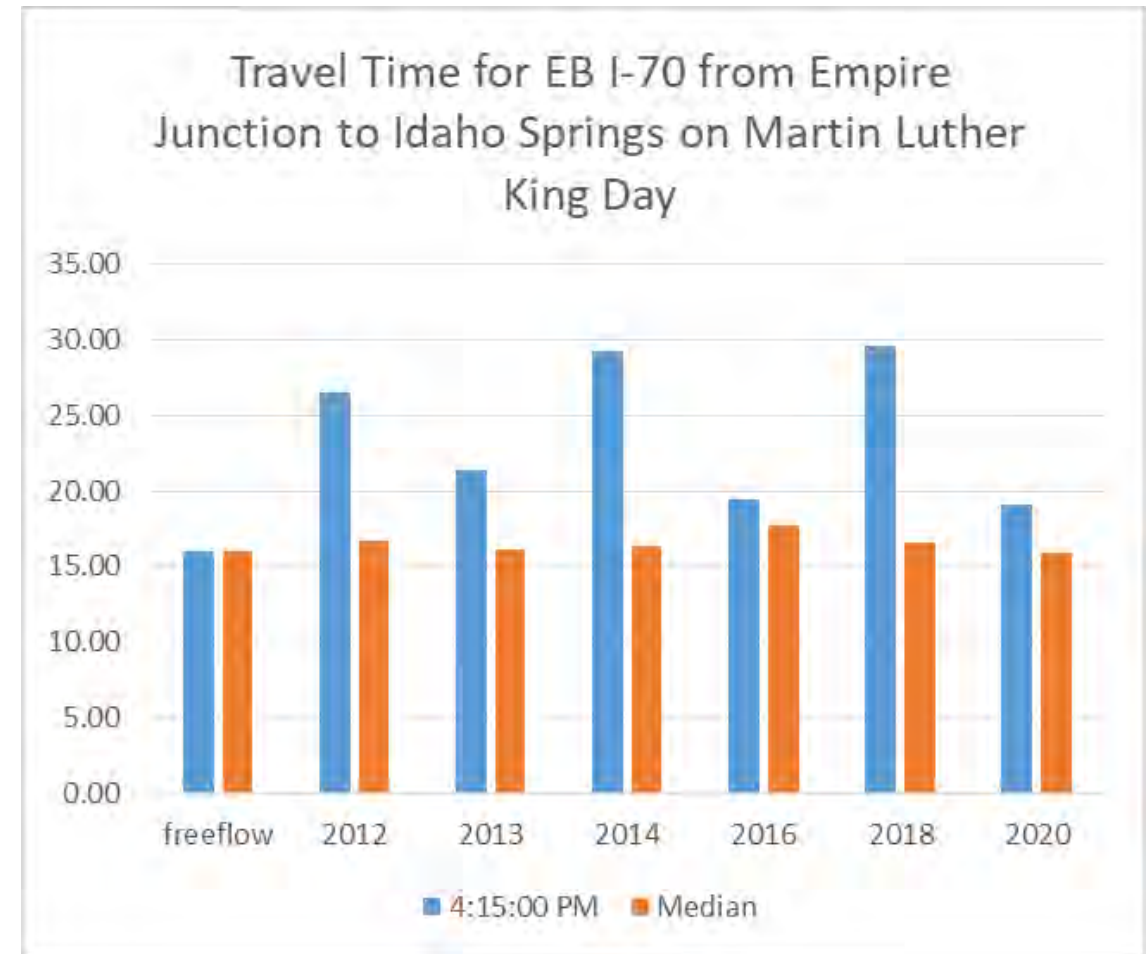
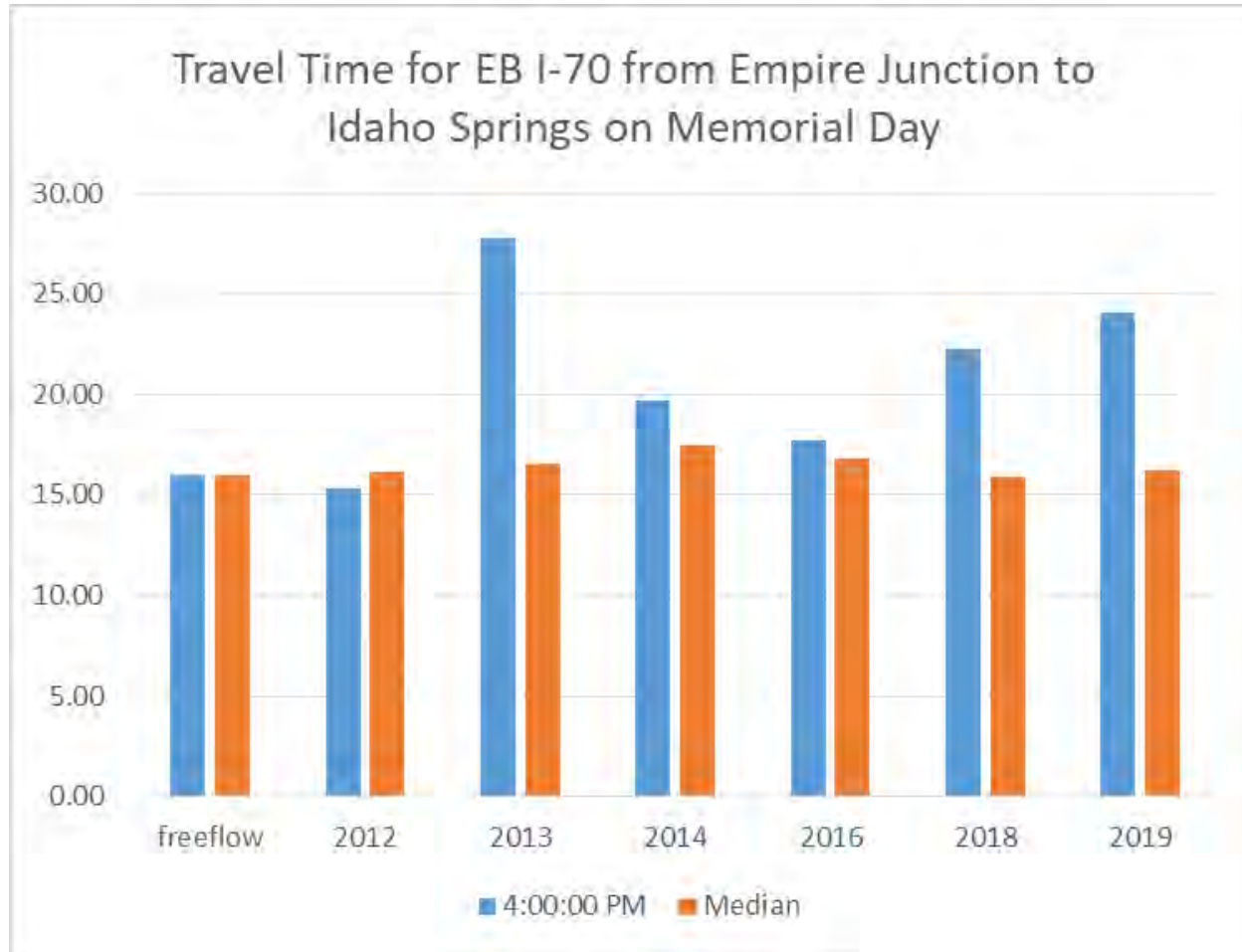


EB MEXL: Travel Time Effectiveness





EB MEXL: Travel Time Effectiveness





Step 2A and 2B: Recap

- Travel times have improved where improvements have been implemented despite increases in traffic volumes
- Crashes have decreased in locations where improvements implemented
- Implemented projects to date have started to address corridor needs
- Mobility for local communities has improved where local projects have been implemented
- CSS and other mountain corridor agreements have been implemented on all Tier 2 projects



Step 2B: Implementation Effectiveness

- **Step 2B Observations and Discussion**



Step 3A: Identify Outstanding PA Questions

1. Status of Eisenhower-Johnson Memorial Tunnels 3rd bore (clarify Minimum or Maximum Program)
2. Empire Interchange (clarify what is to be done in Minimum Program)
3. 2025 trigger
4. Clarify and restate the definition of AGS in the ROD
5. Others



Afternoon Meeting Wrap-up Discussion

- Meeting Summary and Open Discussion



Next Steps

- Next Meeting: May 27 Full CE
- Topics:

I-70 Mountain Corridor ROD Preferred Alternative Implementation Status

Line #	Preferred Alternative Item	Completed Actions *	Work in Progress / Ongoing**	Resources/Document Links	Effectiveness Observation (if available)	Purpose and Need Component (measures)
Non-Infrastructure Related Components						
1	Increased Enforcement		CSP increased safety enforcement in 2019 with troopers on overtime along the eastbound mountain express lane from Empire to Idaho Springs to help decrease unsafe driving behavior and increase efficiency	https://www.codot.gov/news/2018/august/csp-increases-safety-enforcement-along-i-70-mountain-express-lane	The CSP reports the number of crashes did not appreciably decrease with increased enforcement, so the benefits did not justify the costs of overtime for troopers.	2: Improved mobility and accessibility (travel time/reliability)
2	Bus, van, or shuttle service in mixed traffic		Commitment progress includes ski shuttles and Bustang service, which began in 2015. Snowstang service, initially piloted in 2017, was launched in 2019 to three resorts.	https://www.codot.gov/news/2018/july/bustang-exceeds-ridership-revenue-projections-as-it-hits-3-year-anniversary	In 2019, Bustang ridership was over 70,000 passengers compared to just over 26,000 in 2016, representing a 170% increase. In 2018, Bustang averaged 3,050 riders a month throughout the Corridor. Preliminary Snowstang ridership found that buses to Loveland and A-Basin were running 49% full; Steamboat buses were running 30% full. These both exceed CDOT's initial expectations. 40% of the riders are out-of-state or international tourists. In the inaugural 2019-2021 seasons, sold more than 2,000 tickets over 14 weekends.	1: Increased capacity (person trips, transit ridership)
3	Programs for improving truck movements		Revisions to the traction and chain laws to improve safety and operations; Off-corridor staging areas for trucks during adverse weather events; Variable speed limits in Glenwood Canyon; Remote continuous flow metering at Silverthorne to improve truck traction approaching the tunnel eastbound; Active Corridor Management. CMCA programs include PSAs on chain awareness, providing a best practices document, and working with trucking firms that are repeat offenders.		Remote tunnel metering reduces heavy tow incidents during adverse weather events. Truck parking program has facilitated off-mainline parking during closures for a safer mainline and truck operations.	2: Improved mobility and accessibility (travel time/reliability, safety data); 3: Decreased congestion (travel time/reliability, level of service)
4	Driver education		GoI-70.com shares news and other articles that help educate drivers on traveling through the I-70 mountain corridor. Topics include: Available transit and carpool services, real-time information sources, Colorado Traction Laws, Tire Checks, Move It Law, Move Over Law, Left Lane Law and Avalanche Activity. Additional outreach to travelers is done through the blog, social media, eBlasts and extensive partner outreach. CMCA has produced an audio guide for truckers to safely drive the I-70 corridor, by milepost	https://goi70.com/news https://www.cmca.com/industry-info/crossing-the-rockies/	Analytics show GoI-70.com site visitation has grown consistently since 2009. Last winter, the website received over 15,000 hits in a single day. Traction law compliance will be evaluated in 2020.	2: Improved mobility and accessibility (travel time/reliability, safety data)
5	Expanded use of existing transportation infrastructure in and adjacent to the corridor	Eastbound Mountain Express Lane (MEXL) project opened in December 2015. Updated each county's Traffic Incident Management Plans Active corridor management has been implemented, including creation of a full-time corridor operations manager	Westbound MEXL project under construction, opening projected for 2021.	https://www.codot.gov/projects/archived-project-sites/i70mntnpps1 and https://www.codot.gov/projects/i70mntn/i-70-westbound-peak-period-shoulder-lane	The EB MEXL diverts 750 to 900 cars from the free general-purpose lanes. This alleviates traffic congestion in the Express Lane, and decreases congestion in general-purpose lanes and frontage roads travel time savings. Travel times have improved. For example, on July Sundays 2012-2014, eastbound travel time averaged 42 to 51 minutes. On July Sundays 2016-2018, travel time averaged 21 to 24 minutes.	2: Improved mobility and accessibility (travel time/reliability, incident response times); 3: Decreased congestion (level of service, travel time/reliability)
6	Use of technology advancements and improvements to increase mobility without additional infrastructure		Technological advancements without the addition of infrastructure include: Electronic Signage, Intelligent Transportation System and V2X Data Ecosystem. CDOT is currently testing V2X throughout the corridor. CoTrip.org and GovDelivery/Travel Alerts have been improved in recent years.		As this technology matures and is installed along the corridor, effectiveness evaluations will be conducted	2: Improved mobility and accessibility (travel time/reliability, safety data)
7	Traveler information and other information technology systems		Traveler information is shared via Intelligent Transportation System; CoTrip; Variable Message Signs (VMS); CDOT Alert Texts; CDOT email alerts	https://goi70.com/real-time-radio-info , www.cotrip.org , and project websites/text systems		2: Improved mobility and accessibility (travel time/reliability, safety data)
8	Shift passenger and freight travel demand by time of day and day of week		The most popular feature of GoI70.com is the weekend travel forecast which is intended to shift passenger travel demand by time of day and day of week. Over 150 dining and lodging businesses along the I-70 mountain corridor offer deals to encourage drivers to avoid peak travel times. Examples include: \$2 tacos from 4-6pm on Saturdays and Sundays at Twist; 20% off activities at Lawson Adventure Park Saturday & Sunday 4pm- close.	https://goi70.com/deals	The GoI-70.com weekend travel forecast received over 130,000 views during the 2019-2020 winter season. Analysis of data in 2011 indicated that peak traffic had noticeably shifted since the promotion of off peak travel began 2009.	2: Improved mobility and accessibility (travel time/reliability); 3: Decreased congestion (level of service, travel time/reliability)
9	Convert day trips to overnight stays		GoI70.com Peak Time Deals worked with the lodging community to create Sunday Night Stay promotions. These are posted on the Peak Time Deals and promoted frequently through GoI70 blogs, eBlasts, social posts and stakeholder outreach. Examples include: \$125 Sunday night at the Sitmark Lodge in Vail; 20% off a Sunday night stay at the Wedgewood Lodge in Breckenridge	https://goi70.com/deals		2: Improved mobility and accessibility (travel time/reliability); 3: Decreased congestion (level of service, travel time/reliability)
10	Convert single occupancy vehicle commuters to high occupancy travel and/or public transportation		Transit promotion incentives include traveling in groups to receive discounted fares. Resorts are offering incentives to carpool by promoting reduced or free parking as well as discounted lift tickets for groups that travel together. For example, Keystone, Breckenridge, Copper Mountain and Arapahoe Basin have carpool parking incentive programs, offering discounted parking, close-in parking or discounted lift tickets. Summit express airport shuttle offers a savings of \$12 per person when traveling with 3 or more passengers.	https://goi70.com/transit	These programs are most likely contributing to the success of the Bustang ridership	1: Increased capacity (person trips, transit ridership)
11	Implement transit promotion incentives		Transit promotion incentives include traveling in groups to receive discounted fares. Resorts are incentivizing carpooling by offering reduced or free parking as well as discounted lift tickets. Summit express airport shuttle offers a savings of \$12 per person when traveling with 3 or more passengers. For example, Loveland Ski Area and Arapahoe Basin offered lift ticket discounts for Front Range Ski Bus riders. Arapahoe Basin offered food and beverage vouchers for Snowstang riders. Some airport shuttles offer discounts through GoI70 Peak Time Deals.	https://goi70.com/deals?type=other&location	These programs are most likely contributing to the success of the Bustang ridership	1: Increased capacity (person trips, transit ridership)
12	Other transportation demand management measures to be determined		I-70 Coalition frequently communicates TDM messages and strategies with partners who are encouraged to 'share' with their network and customers. Partners include resorts, local government PIOs, Information/Welcome Centers, resort associations, property managers, lodging sector, destination marketing organizations and chambers of commerce. I-70 Coalition created and piloted the Why Drive? Campaign in coordination with the lodging sector to promote transportation alternatives to mountain visitors. Since 2012, I-70 Coalition has undertaken a bi-annual research study program. These surveys inform how existing travel resources and programs are being received and utilized by the traveling public and how they might be improved.			2: Improved mobility and accessibility (travel time/reliability)
Advanced Guideway System						
13	Feasibility of high speed rail passenger service		AGS Feasibility Study (August 2014)	https://www.codot.gov/library/studies/study-archives/AGSStudy		
14	Potential station locations and local land use considerations		AGS Feasibility Study (August 2014)	https://www.codot.gov/library/studies/study-archives/AGSStudy		
15	Transit governance authority		AGS Feasibility Study (August 2014)	https://www.codot.gov/library/studies/study-archives/AGSStudy		
16	Alignment		AGS Feasibility Study (August 2014)	https://www.codot.gov/library/studies/study-archives/AGSStudy	Several alignments are viable, but Hybrid Alignment is preferred	
17	Technology		AGS Feasibility Study (August 2014)	https://www.codot.gov/library/studies/study-archives/AGSStudy	Study finding: Fixed guideway options are technically feasible but not financially feasible as of 2014	
18	Termini		AGS Feasibility Study (August 2014)	https://www.codot.gov/library/studies/study-archives/AGSStudy		
19	Funding requirements and sources		AGS Feasibility Study (August 2014)	https://www.codot.gov/library/studies/study-archives/AGSStudy	Study finding: Fixed guideway options are technically feasible but not financially feasible as of 2014	
20	Transit ridership		AGS Feasibility Study (August 2014), Interregional Connectivity Study (January 2014), & Economic Impact of High-Speed Transit in the Mountain Corridor (July 2019)	https://www.codot.gov/library/studies/study-archives/AGSStudy & https://70solutions.org/files/7215/6599/5159/I-70-RSM-Economic_Impact_FINAL_2019.pdf	Study finding: Annual ridership estimated at 4.6 to 6.2 million as of 2014, assuming a connection to a front range high speed transit system including DIA	
21	Potential system owner/operator					
22	Interface with existing and future transit systems		AGS Feasibility Study (August 2014) & Interregional Connectivity Study (January 2014)	https://www.codot.gov/library/studies/study-archives/CS-final-report-january-2014/cs-final-report-sections-1thru9-2-10-14.pdf and https://www.codot.gov/library/studies/study-archives/AGSStudy		
23	Role of an Advanced Guideway System in freight delivery both in and through the corridor					
Highway Improvements						

I-70 Mountain Corridor ROD Preferred Alternative Implementation Status

Line #	Preferred Alternative Item	Completed Actions *	Work in Progress / Ongoing**	Resources/Document Links	Effectiveness Observation (if available)	Purpose and Need Component (measures)
Specific Highway Improvements						
24	6 lane component from Floyd Hill through the Twin Tunnels (MP 243 to MP247) including a bike trail and frontage roads from Idaho Springs to Hidden Valley and Hidden Valley to US 6	Eastbound tunnel widened to 3 lanes; Westbound tunnel was widened to accommodate three lanes in the future; Frontage road and bike trail between Game Check area and Hidden Valley.	Environmental Assessment and preliminary engineering is underway for westbound I-70 from east of the Floyd Hill/Beaver Brook Exit (248) to Idaho Springs Exit (241) A Categorical Exclusion is underway for improvements to CR 314 between the Game Check trailhead and the City of Idaho Springs baseball fields.	https://www.codot.gov/projects/archived-project-sites/70twinntunnels and https://www.codot.gov/projects/i-70-floyd-hill-to-veterans-memorial-tunnels-improvements	The 3-lane project completed to date has improved safety: an average of 43 crashes per year from 2006 to 2010, eastbound from Twin Tunnels to base of Floyd Hill. After eastbound tunnel third lane project, an average of 21 crashes per year, from 2015 to 2016. Similar safety improvements are expected upon completion of the EA and Cat Ex projects	1: Increased capacity (person trips) 2: Improved mobility and accessibility (travel time/reliability, safety data, incident response time) 3: Decreased congestion (level-of-service, travel time/reliability)
25	Empire Junction (US 40 and I-70) interchange improvements (MP 232)					
26	Eastbound auxiliary lane from Eisenhower-Johnson Memorial Tunnels to Herman Gulch (MP 215 - MP 218)	The auxiliary lane ends at approximately 217.5, a half mile west of the Herman Gulch Interchange. The Project did not extend entirely to Herman Gulch to limit environmental impacts. CE agreement on project limits.			2011-2018 data indicates an improvement in crash history. The extension of the auxiliary lane at US-6 together with implementation of the mainline metering along EB I-70, east of the Silverthorne/Dillon interchange, has eased some of the safety concerns in this location.	2: Improved mobility and accessibility (travel time/reliability, safety data); 3: Decreased congestion (level-of-service, safety data, travel time/reliability)
27	Westbound auxiliary lane from Bakerville to Eisenhower-Johnson Memorial Tunnels (MP 215 to MP 221)					
Other Highway Improvements						
28	Truck operation improvements, such as pullouts, parking, and chain stations	The completed eastbound PPSL project constructed two pull outs for emergency refuge in December 2015. East Vail chain station was expanded in 2016.	7 new safety pullouts will be constructed as part of the westbound PPSL project. 5 new pullouts will be constructed in the westbound direction and 2 new pullouts in the eastbound direction.	https://www.codot.gov/projects/archived-project-sites/70mtppsl and https://www.codot.gov/projects/70mt/i-70-westbound-peak-period-shoulder-lane	Pullouts and expanded chain stations improve safety conditions for truck drivers on the roadside. Traffic operations are also improved.	2: Improved mobility and accessibility (travel time/reliability, safety data)
29	Safety improvements west of Wolcott	Super-elevation curve correction through Wolcott			2011-2018 data indicates an improvement in crash history, compared to 2001-2005. The curve correction may have alleviated safety issues at Wolcott	2: Improved mobility and accessibility (safety data)
30	Safety and capacity improvements in Dowd Canyon	Eastbound on-ramp plus taper has been extended by approximately 500' as a safety improvement.	Planning has started; currently on hold pending the results of a Bridge Enterprise inspection project. CDOT Region 3 will reassess the project in early 2020.		Data not yet available on eastbound ramp improvement	2: Improved mobility and accessibility (safety data)
Interchange Improvements at:						
31	Glenwood Springs (MP 116)	Interchange improvements were constructed as part of the Grand Avenue Bridge (GAB) Project. Interchange improvements include: Lengthened on/off ramps, increased vehicle storage, new signals, new pedestrian underpass, and a new configuration of the interchange for the newly realigned Grand Avenue bridge		https://www.codot.gov/projects/sh82grandavenuebridge	The Exit 116 connection from SH82 to I-70 and vice versa is operationally much better than before the GAB project, basically much more efficient operations by having a more direct connection to the corridors and also separating out local traffic from mainline pass through traffic accessing the SH82 and/or I-70 corridors. The new pedestrian underpass under SH82 also provides traffic operational improvements/benefits because a ped phase was eliminated at one of the signals. The pedestrian underpass also provides a considerable safety benefit, separating bikes and peds from motorized vehicles in this active resort community.	2: Improved mobility and accessibility (safety data)
32	Gypsum (MP 140)					
33	Eagle County Airport					
34	Wolcott (MP 157)					
35	Eagle and Spur Road (MP 147)					2: Improved mobility and accessibility (safety data)
36	Edwards and Spur Road (MP 163)	Phase 1 of the project—completed in 2011—made improvements to the northern half of the Spur Road, including four new roundabouts and improved connections with the I-70 on- and off-ramps.	Phase 2 is currently underway and includes design improvements to the southern half of the Edwards Spur Road - a distance of approximately 0.4 miles.	https://www.codot.gov/projects/edwards-spur-road	Phase 2 of the project included design improvements that included improved safety features such as widening roads and bridges, improved sight distances at intersections. The project added refuge islands large enough to accommodate bicycles and trailers at the roundabout. It also added Rectangular Rapid Flashing Beacons for crosswalks at the roundabout. For recreation use, the project added separated pedestrian	2: Improved mobility and accessibility (safety data)
37	Avon (MP 167)					
38	Minturn (MP 171)	Eastbound on-ramp plus taper has been extended by approximately 500' as a safety improvement.	Planning has started; currently on hold pending the results of a Bridge Enterprise inspection project. CDOT Region 3 will reassess the project in early 2020.		Data not yet available on eastbound ramp improvement	2: Improved mobility and accessibility (safety data)
39	Vail West (MP 173)/Simba Run					
40	Vail (MP 176)					
41	Vail East (MP 180)					
42	Vail Pass (East Shrine Pass Road - MP 190)					
43	Copper Mountain (MP 195)					
44	Frisco / Main Street (MP 201)					
45	Frisco / SH9 (MP 203)		Currently working on traffic analysis, operational analysis and design concepts I-70 Silverthorne/Dillon Interchange Study has been completed	https://www.codot.gov/library/studies/i-70-exit-203-interchange-in-frisco		
46	Silverthorne (MP 205)			https://www.codot.gov/projects/archived-project-sites/70SilverthorneDillon		
47	Loveland Pass (MP 216)					
48	Georgetown (MP 228)					
49	Downieville (MP 234)					
50	Fall River Road (MP 238)					
51	Base of Floyd Hill / US 6 (MP 244)		Element of the Floyd Hill Project - Environmental Assessment in Progress	https://www.codot.gov/projects/i-70-floyd-hill-to-veterans-memorial-tunnels-improvements		
52	Hyland Hills (MP 247)		Element of the Floyd Hill Project - Environmental Assessment in Progress	https://www.codot.gov/projects/i-70-floyd-hill-to-veterans-memorial-tunnels-improvements		
53	Beaver Brook (MP 248)		Element of the Floyd Hill Project - Environmental Assessment in Progress	https://www.codot.gov/projects/i-70-floyd-hill-to-veterans-memorial-tunnels-improvements		
54	Evergreen Parkway / SH 74 (MP 252)					
55	Lookout Mountain (MP 256)					
56	Morrison (MP 259)					
Auxiliary Lanes						
57	Avon to Post blvd. (Exit 168)					
58	West side of Vail Pass (eastbound and westbound)		Environmental Assessment and conceptual design for safety improvements are underway. Design and construction can follow as funding becomes available.	https://www.codot.gov/projects/i-70-West-Vail-Auxiliary-Lanes		
59	Frisco to Silverthorne (eastbound)		Currently working on traffic analysis, operational analysis and design concepts. Roadway and feasibility studies are underway as well as environmental research.	https://www.codot.gov/library/studies/i-70-exit-203-interchange-in-frisco		
60	Morrison to Chief Hosa (westbound)					
		*Completed refers to a project that has been finished with a completion date	**In progress refers to a project that is in planning or construction			Purpose and Need Components: 1. Increase capacity 2. Improve mobility and accessibility 3. Decrease congestion



**I-70 Mountain Corridor 2020 Reassessment
Collaborative Effort (CE) Subcommittee Meeting #5 Summary**
May 11, 2020, 1:00 PM to 4:00 PM
Zoom Conference Call Video Meeting

Overview

These notes summarize Meeting #5 of the I-70 Mountain Corridor 2020 Reassessment Collaborative Effort (CE) Subcommittee. The focus of the meeting was the remaining review of Step 2 of the I-70 Mountain Corridor Record of Decision's (ROD) 2020 Reassessment Work Plan.

Welcome and Introductions

Steve Long welcomed the group and provided an overview of Zoom features for participation in the video meeting. He did a roll call of the meeting participants. Subcommittee members present included:

- Randy Wheelock, Clear Creek County (CE Co-Chair)
- Greg Hall, Vail (CE Co-Chair)
- Amy Saxton, Clear Creek County
- Mary Jane Loevlie, Business Representative
- Gary Frey, Trout Unlimited
- Holly Norton, Colorado State Historic Preservation Office
- Matt Scherr, Eagle County
- Dennis Royer, Sierra Club
- Melinda Urban, Federal Highway Administration (FHWA)
- Shaun Cutting, FHWA
- Mike Keleman, Colorado Department of Transportation (CDOT)
- Vanessa Henderson, CDOT

Other meeting participants included Cindy Neely and Steve Coffin, consultants to Clear Creek County; Miller Hudson, interested party; Neil Ogden, CDOT; and Stephanie Gibson, FHWA. The HDR consultant team present included Steve Long, Wendy Wallach, Chris Primus, Kira Olson, and Mandy Whorton (Peak Consulting Group).

Steve provided an overview of the last two meetings (two video conference sessions on April 30, 2020), noting that the subcommittee concluded review of Step 1 of the work plan, confirming that the purpose and need is still valid. The purpose of this meeting to continue the Step 2 review of the effectiveness of individual Tier 2 projects with additional information and analysis as requested by the subcommittee in Meeting #4.



Step 2B: Preferred Alternative Effectiveness Review

Chris Primus reviewed the revised Preferred Alternative tracking table. He noted that the review would be categorized in the order of the Preferred Alternative, starting with non-infrastructure components, then the Advanced Guideway System (AGS), and finally the highway components.

Before delving into the table details, Chris provided a recap of the observations from Step 2. He noted that in areas where projects have been implemented, they have been effective at meeting the transportation needs to improve mobility and safety in the corridor. Chris said that since the last meeting, the team had included a rating column, and where available, the ratings were supported by data, such as reduced travel times, number of person trips served, or crash reductions.

Presentation of the Preferred Alternative Effectiveness Tracking

The group had several suggestions on the table format and wording. Mary Jane Loevlie requested that the “n/a” designations be changed globally to “incomplete” or “unknown” because there is no data to support that they are not applicable; just that they have been implemented.

Randy Wheelock stated that this was a very important discussion because it sets the stage for the CE work in Step 4. He asked subcommittee members to engage and get clarifications in the discussions as needed.

Steve agreed that the table was intended to be a tool for the CE and said that the team was open to changing ratings or colors or making other changes.

Non-infrastructure Elements

Enforcement Question: CDOT and Corridor communities have been working with Colorado State Patrol (CSP) on other projects and separate enforcement programs. Why is the Eastbound Peak Period Shoulder Lane (PPSL) the only project noted?

Answer: Vanessa Henderson requested the data from CSP and this is what was received. However, maybe the request was too narrow. She will make a broader request and provide any additional information received to the team to incorporate. Mandy Whorton noted that since increased enforcement (primarily speed enforcement) was a non-infrastructure improvement that was independent of individual projects, a broader review would be appropriate.

Bus, Van, and Shuttle Service in Mixed Traffic

Chris noted that this was one of the categories where the team was able to provide quantitative data and an associated qualitative rating of “medium effectiveness” at increasing person trip capacity. He reviewed a separate, backup table that compared the number of riders and operating costs.

Greg Hall requested that capital costs be included in the Bustang example to include capital costs of both vehicles and mobility hubs so that it would be an apples-to-apples comparison with AGS. He also asked that the estimated percentages of operating costs for Bustang service overall be revised to be actual operating costs for the Mountain Corridor to allow a better comparison. (Note that non-



infrastructure components are not meant to be compared to but rather compliment the other elements of the Preferred Alternative; that is, Bustang is not a substitute for AGS.)

The group also noted that effectiveness of this component could be stated in improved reliability.

Mary Jane Loevlie suggested that showing this component as “in progress” implies a more comprehensive effort for transit than is warranted and that even though some work had been done, more was needed.

Steve suggested that the team add a disposition column to the tracking table to allow this comment. The group agreed on four categories to be added to the table: initiate effort, continue existing level of effort, increase effort, or deemphasize effort.

Advanced Guideway System

Chris noted the change in the effectiveness column for all of the AGS feasibility categories to “incomplete.” The group continued to debate how the AGS is portrayed in the Tracking Table. As with previous discussions, many subcommittee members feel the table shows more progress on AGS than has happened. They also requested that the financial feasibility observation both state that the feasibility study found it not financially feasible “at that time (2014)” and that there was more work needed to be done to assess financial feasibility now.

The group wanted the table to reflect that little has been done to advance implementation of AGS and that this conclusion will be important as the CE considers Step 4 priorities for the Preferred Alternative. Gary Frey noted that moving forward, it was going to be harder to prioritize improvements since many of the smaller components had been completed.

Mandy suggested that although the wording for the AGS categories came directly from the Preferred Alternative, the subcategories do not address the meaning of the Preferred Alternative to implement an AGS, which is clearer in the triggers. She read the trigger language that notes conditions related to AGS as either that it is operating or that it is deemed infeasible. This language focuses on the feasibility (because more information was needed to determine feasibility in these categories) but misses the meaning of implementing a multimodal Preferred Alternative that includes AGS. She suggested that another line be included for a “functioning AGS” to provide a place for the subcommittee and CE to record observations about implementation of an AGS. Cindy Neely expressed support for this suggestion. Chris also noted that most of the categories are subsets of feasibility and suggested the subcategories be indented or otherwise noted as subsets of the first line to deemphasize the focus on feasibility.

Environmental Sensitivity and Respect for Community Values

Several subcommittee members said there needed to be a way to include these in the effectiveness table beyond noting that Context Sensitive Solutions (CSS) and other agreements had been implemented on all projects. The group felt there was variation in how the processes had been included and thus how effective projects had been in accommodating and providing for environmental sensitivity and respect for community values.



Gary noted that the Twin Tunnels project had included very effective mitigation and was a good example of meeting the intent of the Stream and Wetland Ecological Enhancements Program (SWEET) Memorandum of Understanding (MOU). He said he was hopeful the same approach could be applied to the Floyd Hill project.

Cindy said there were other projects where CDOT deserved and should take credit for making project changes to minimize environmental and community impacts, such as the auxiliary lane project. If CDOT made project changes based on the CSS process to minimize environmental and community impacts, this is a success for all that should be documented.

Cindy said the effort needed to go beyond observing whether CSS and agreements have been implemented to look at how they have been implemented and how effective the implementation has been. We need to assess these processes, not just note them. Wendy Wallach asked what assessment would look like. Cindy stated that CSS was used on all projects but not always in all project phases. Cindy suggested that the process has evolved, and much has been learned in project implementation that should be documented. She also stated that tracking tools are needed to move agreements through project phases, especially in construction. The lessons learned is a part of the CSS process and should be used to continually improve the implementation. She stated a similar review of the implementation of SWEET, A Landscape Level Inventory of Valued Ecosystem Components (ALIVE), and the Section 106 Programmatic Agreement (PA) would be helpful. As with Step 1, there may be observations in the implementation that should be recorded even if the group agrees that these tools and processes are effective. For instance, an observation may be that CSS works better when used in all lifecycles.

The HDR team will review implementation of CSS process (and associated design criteria and aesthetics guidance), SWEET MOU, ALIVE MOU, and Section 106 PA and add this to the narratives and observations for Step 2.

Step 3: Clarifications to the Preferred Alternative

Steve reviewed the questions from the work plan for Step 3 and asked if the subcommittee wanted to add to the list based on the discussions from Steps 1 and 2. The subcommittee believes the following should be clarified in its Step 3 review (in addition to those listed in the work plan):

- Maximum Program highway component, including:
 - Future highway expansion needs to be considered independent of the PPSL projects (i.e., the agreement specifically states that the PPSL cannot be converted to future highway capacity)
 - Capacity means people, not cars, and that six-lane capacity is not the same as a six-lane highway cross section
 - Alignment within the “existing highway” could move the highway from its current alignment, such as was considered in Idaho Springs visioning efforts



- Redesign of the existing roadway between the Eisenhower-Johnson Memorial Tunnels (EJMT) and Veterans Memorial Tunnels per the CE's intent, including defining quality and/or design criteria
- Meaning of "not preclude" for AGS. Now that more information is known about the AGS alignment, need to consider how future highway projects might conflict with AGS.

Action Items

- Request enforcement information from CSP (Vanessa)
- Revise the Preferred Alternative Tracking table (HDR team) to:
 - Change n/a to unknown or incomplete
 - Add disposition column
 - Revise AGS descriptions
 - Include updated enforcement information
- Review implementation of the CSS process (and associated design criteria and aesthetics guidance), SWEEP MOU, ALIVE MOU, and Section 106 PA and add this to the narratives and observations for Step 2. Include success stories and best practices. (HDR team)
- Prepare a separate summary of the subcommittee conclusions and observations regarding Step 2 for formal endorsement (HDR team).



COLORADO

Department of Transportation

I-70 Reassessment CE Subcommittee Meeting Step 2A/2B Data Presentation

April 30, 2020



1. Introductions
2. Purpose
3. Step 2A: Other Components
4. Step 2B: Implementation Status
5. Step 2: Overall Observations and Discussion
6. Step 3A: Identify Outstanding PA Questions
7. Wrap-up and Open Discussion



Meeting Goals:

- Wrap-up Step 2
- Discuss if any additional questions should be included in Step 3



Step 2A: Assess Effectiveness (Environmental and Community Values)





Step 2A: Other Components (Environmental and Community Values)

Other Components

- **Environmental Sensitivity**

Avoid and minimize adverse impacts on and, where possible, enhance environmental resources, including, but not limited to, stream sedimentation, water quality, wildlife crossings, and impacts on wetlands.

- **Respect for Community Values**

Avoid and minimize adverse impacts on and, where possible, enhance air quality, historic resources, noise levels, visual resources, and social and economic values, as well as minimize the transportation system's footprint on the mountain communities. Consider the possible growth changes and economic effects that might occur, depending on the ease or difficulty of access.

- **Safety**

- **Ability to Implement**



Step 2A: Other Components (Environmental and Community Values)

Environmental Sensitivity

Objective to protect and enhance natural and biological resources

- Stream and Wetland Ecological Enhancement Program (SWEEP): Sedimentation and Water Quality
- A Landscape Level Inventory of Valued Ecosystem Components (ALIVE): Wildlife



Step 2A: Other Components (Environmental and Community Values)

Community Values

Avoid, protect, and enhance community resources

- Context Sensitive Solutions (CSS)
- I-70 Mountain Corridor Section 106 Programmatic Agreement
- I-70 Mountain Corridor Aesthetics Guidance
- I-70 Mountain Corridor Design Criteria
- Design criteria Exceptions process



Step 2A: Assess Effectiveness Recap of Observations to Date

Step 2A

- Ongoing data collection has proven to be appropriate and applicable for assessing effectiveness
- ALIVE, SWEEP, and the components of the community values have been effective since implementation for Tier 2 projects



Step 2A: Assess Effectiveness

Step 2A Observations/Discussion



Step 2B: Implementation Status





Step 2B: Implementation Status Transportation Funding

YEAR	PROPOSAL (Title or Bill #)	DESCRIPTION	PROPOSAL OUTCOME
1999	Referendum A	TRANS bonds - Referred measure enabling the state to bond against anticipated federal HTF to funding specific list of projects including I70 West	Passed at ballot
2001	Amendment 26 - Surplus Revenue to Test I-70 Fixed Guideway	The amendment proposed to expend \$50 million of surplus state revenue to plan and test a fixed guideway transportation system for the I-70 corridor linking Denver International Airport and Eagle County Airport; and exempts the Colorado Intermountain Fixed Guideway Authority from state constitutional revenue and spending limitations.	Failed at ballot
2002	HB02-1310	HB 02-1310 transferred two thirds of the excess General Fund reserve remaining after TABOR refunds, the statutory reserve, a 6 percent increase in General Fund appropriations, and the SB 97-1 diversion to the HUTF.	Passed in legislature
2008	Amendment 52 - Severance Tax for Transportation	Amendment 52 proposed amending the Colorado Constitution to require the state legislature to spend a portion of state severance tax collections on highway projects.	Failed at ballot
2008	Amendment 58 - Severance Taxes on the Oil and Natural Gas Industry	Amendment 58 proposed changing the Colorado statutes to: <ul style="list-style-type: none"> - increase the amount of state severance taxes paid by oil and natural gas companies, primarily by eliminating an existing state tax credit; - allocate the increased severance tax revenue to college scholarships for state residents, wildlife habitat, renewable energy projects, transportation projects in energy-impacted areas, and water treatment grants; and - exempt all oil and gas severance tax revenue from state and local spending limits. 	Failed at ballot
2009	SB08-108 -FASTER	Increased various fees (vehicle registration, late fees, rental cars) allocated to State/counties/cities for investment in transportation infrastructure. Created HPTE and Bridge Enterprise.	Passed
2009	SB09-228	SB 09-228 altered the limit on General Fund (GF) appropriations, repealed the SB 97-1 diversion and HB 02-1310 transfers, and required alternative transfers (subject to triggers) to transportation, capital construction, and the General Fund statutory reserve.	Passed



Step 2B: Implementation Status Transportation Funding

YEAR	PROPOSAL (Title or Bill #)	DESCRIPTION	PROPOSAL OUTCOME
2010	Proposition 101 - Income, Motor Vehicle and Telecommunications Taxes and Fees	Proposition 101 proposed amending the Colorado statutes to: <ul style="list-style-type: none"> - reduce the state income tax rate from 4.63 percent to 4.5 percent in 2011, and to 3.5 percent gradually over time; - reduce or eliminate taxes and fees on vehicle purchases, registrations, leases, and rentals over the next four years; - eliminate all state and local taxes and fees on telecommunication services, except 911 fees; and - require voter approval to create or increase fees on vehicles and telecommunication services. 	Failed at ballot
2016	SB16-210	Fix Colorado Roads Act. Proposed to require the Transportation Commission to place a measure on the ballot authorized Transportation Revenue Anticipation Notes (TRANs bonds) and dedicating five percent sales and use tax revenue from the general fund without raising taxes	Failed in legislature
2017	HB17-1171	Proposal for a referred ballot measure to authorize CDOT to issue new Transportation Revenue Anticipation Notes	Failed in legislature
2017	HB17-1242	Proposal for New Transportation Infrastructure Funding Revenue, refer ballot measure to increase sales and use taxes by 0.5 percent and authorize bonding up to \$3.5b	Failed in legislature
2017	SB17-205	Proposal to all the Transportation Commission to submit a ballot question to the voters at either the November 2017, 2018, or 2019 election, which, if approved, would have increased the state sales and use tax from 2.9% to 3.15%, also allowed for bonding against tax revenue	Failed in legislature
2017	SB17-267	SB 17-267 authorized executions of lease-purchase agreements to fund transportation in FY 2018-19 (\$424 million for transportation), FY 2019-20, FY 2020-21, and FY 2021-22 (\$500 million for transportation each year). The bill requires General Fund obligations for lease payments each year; the obligation grows as agreements are executed and will total \$91 million annually beginning in FY 2021-22	Passed
2018	Proposition 110 - Transportation Bond Issue and Sales Tax Increase	Statewide ballot proposal to increase sales tax by 0.62 percent for 20 years to support state and local roadway and transit investments.	Failed at ballot



Step 2B: Implementation Status Transportation Funding

YEAR	PROPOSAL (Title or Bill #)	DESCRIPTION	PROPOSAL OUTCOME
2018	Proposition 109 - Transportation Bond Issue and Reallocation of Existing Revenue	Statewide ballot proposal to issue \$3.5b in bonds for transportation utilizing general fund revenues to pay debt service	Failed at ballot
2018	SB18-001	SB 18-001 transferred of \$495 million in FY 2018-19 and \$200 million in FY 2019-20 from the General Fund to a combination of the State Highway Fund, the HUTF, and the Multimodal Transportation Options Fund. For FY 2020-21 through FY 2039-40, the bill transfers \$50 million annually from the General Fund to the State Highway Fund.	Passed
2019	HB19-1157	Proposed to modify and increase Specific Ownership Tax Rates and allocate to HUTF	Failed
2019	SB19-051	Proposal to increase the SB18-001 general fund allocation to transportation from \$150M to \$340m	Failed
2019	SB19-239	Proposed for CDOT to conduct an analysis of impact of emerging technologies on the state transportation system and make recommendations (including tax and fee proposals)	Passed
2019	SB19-262	General Fund transfer of \$100m to transportation, one time only	Passed
2019	Proposition CC	Statewide ballot proposal referred by the legislature to retain TABOR Surplus funds for education and transportation.	Failed at ballot
2020	HB20-1151	Expand authority of transportation planning regions - bill proposed to give regional planning entities (MPOs and TRP) a streamlined approach to creating regional transportation authorities to fund transportation.	Introduced
2020	SB20-44	Bill proposed to allocate sales and use tax revenue attributable to the sales or use of vehicles and related items to transportation funding.	Failed



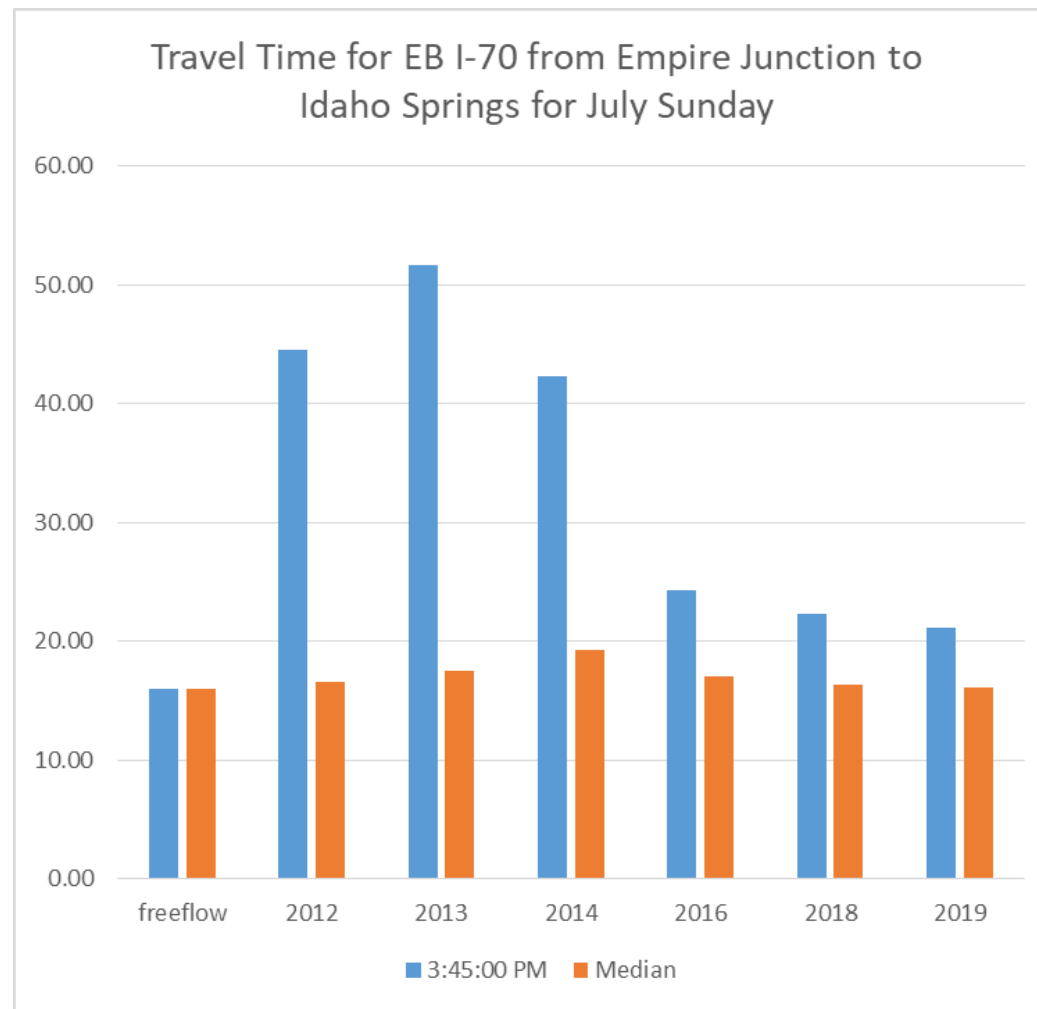
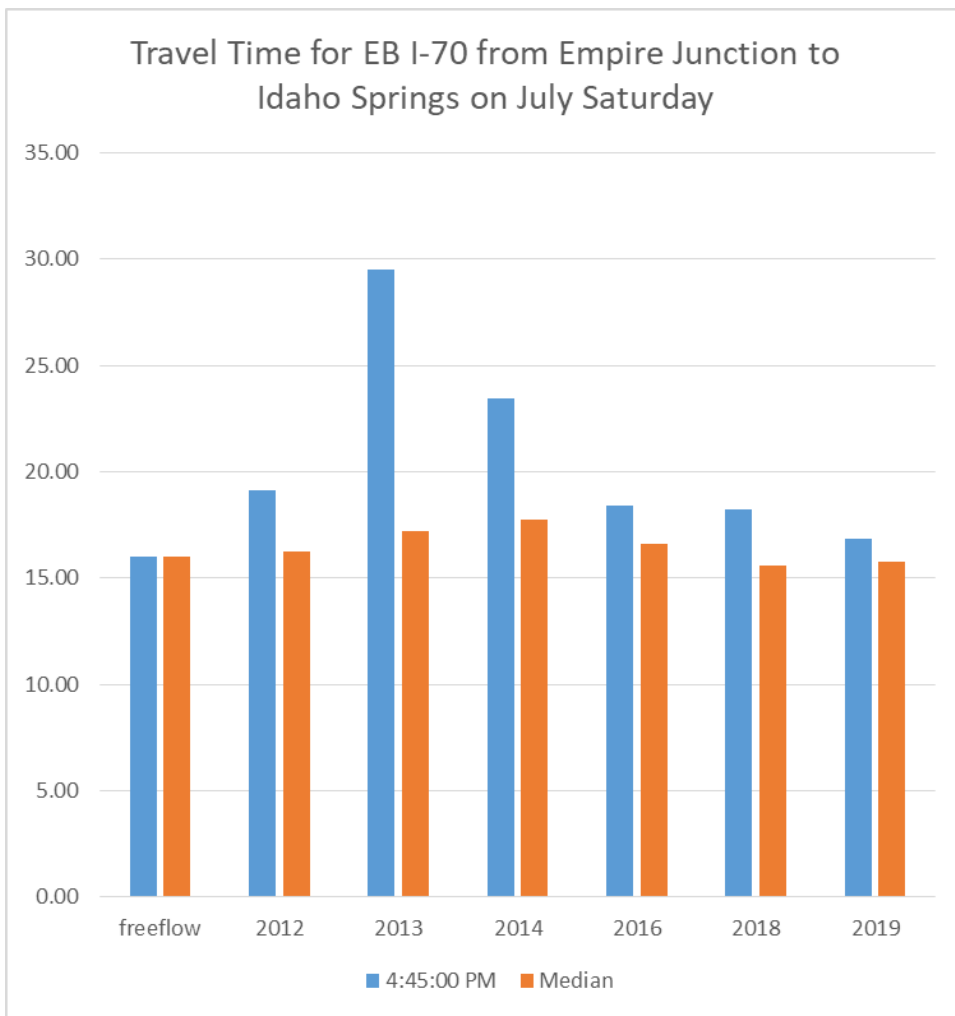
Step 2B: Implementation Status

Review Preferred Alternative Tracking Table

1. Non-Infrastructure Components
2. AGS
3. Highway Components
 - Specific
 - Other
 - Interchange Improvements
 - Auxiliary Lanes

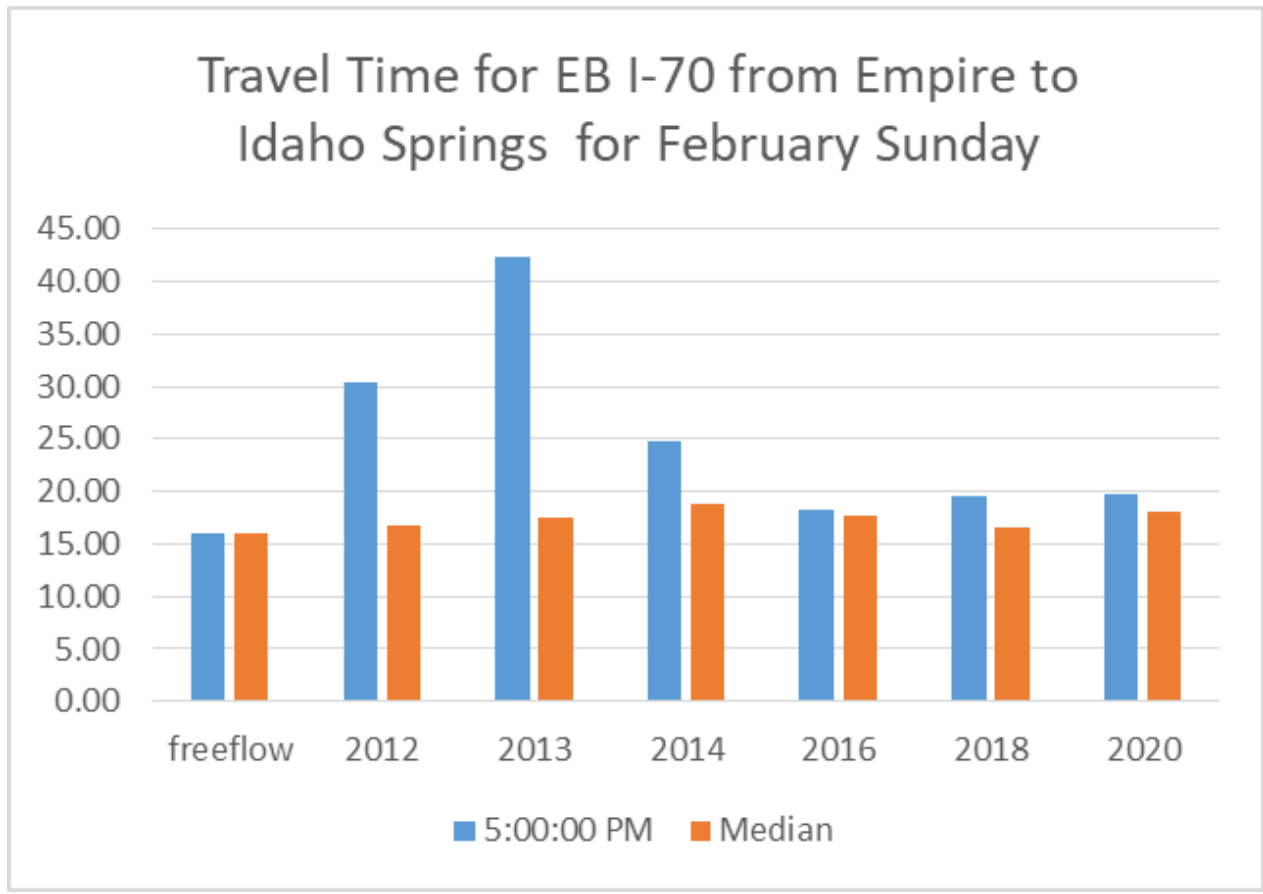
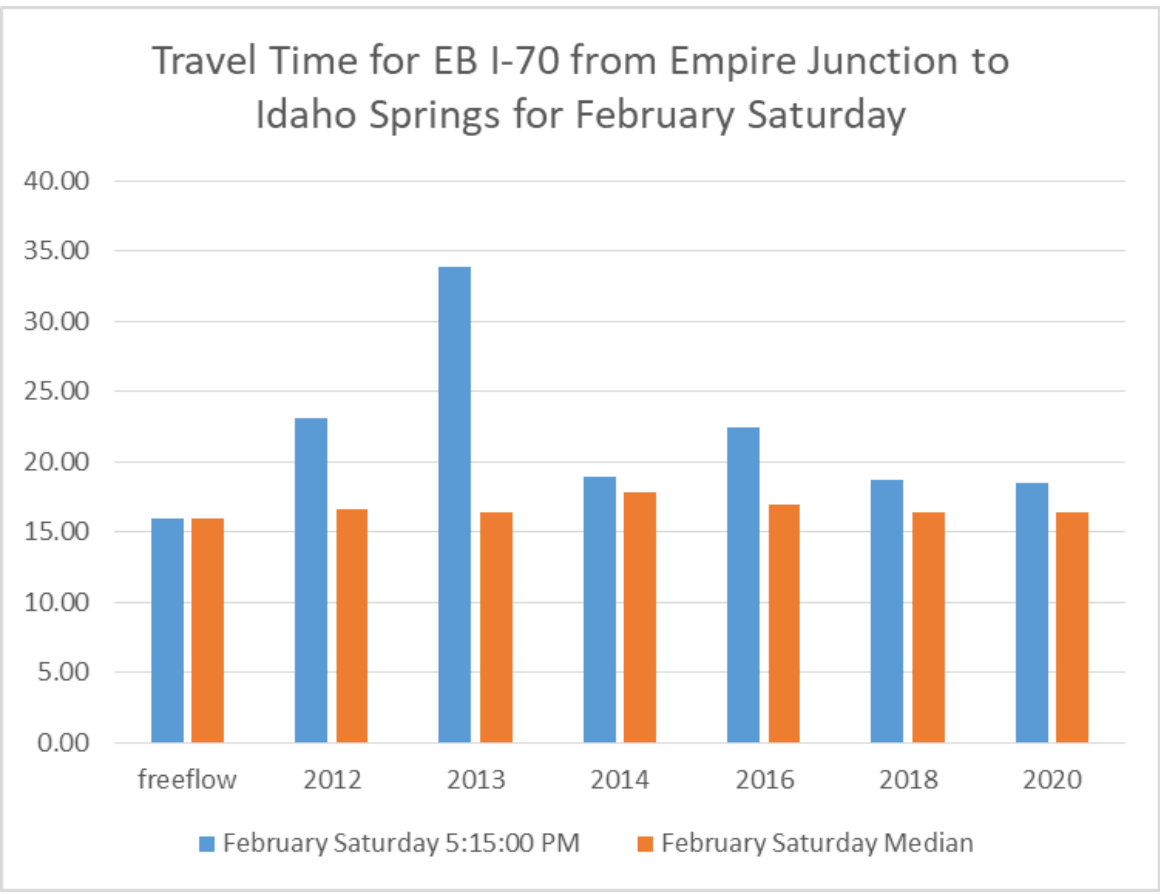


EB MEXL: Travel Time Effectiveness



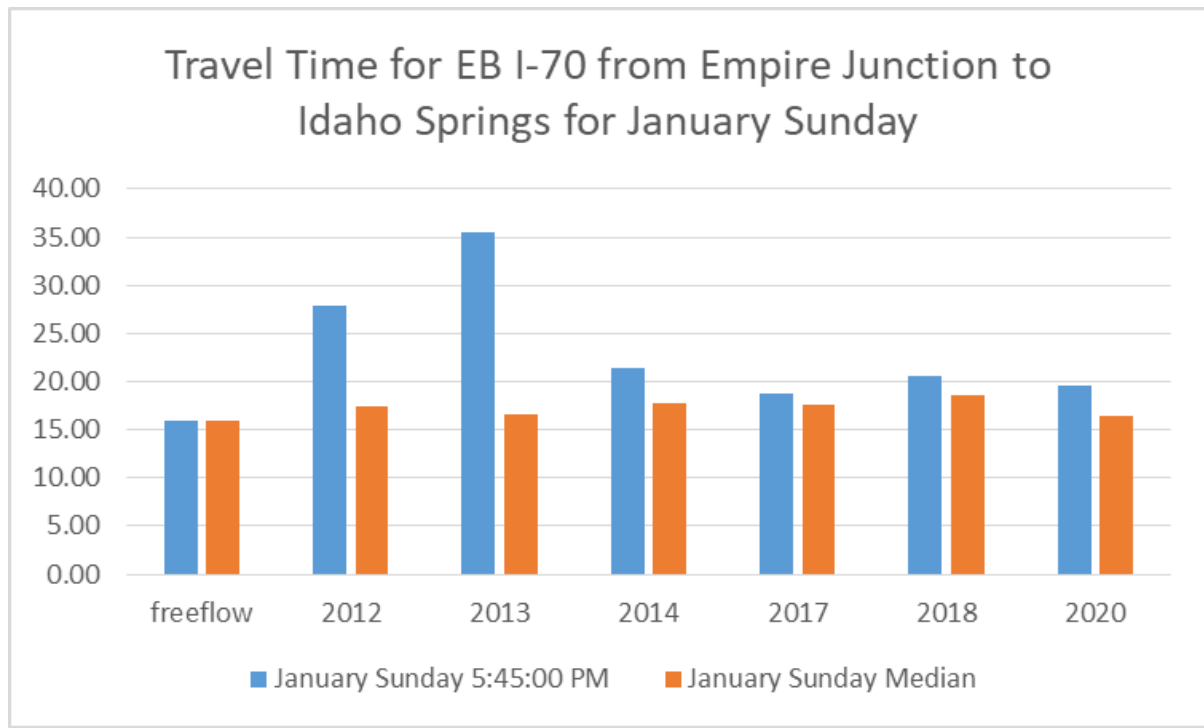
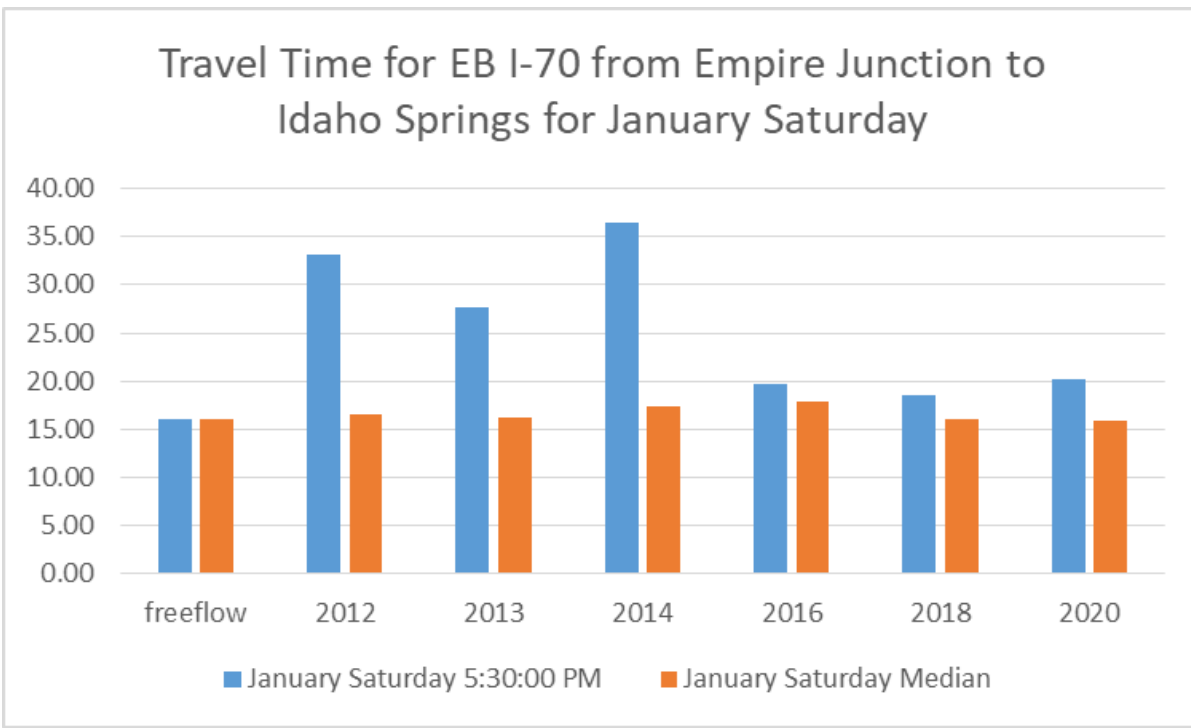


EB MEXL: Travel Time Effectiveness



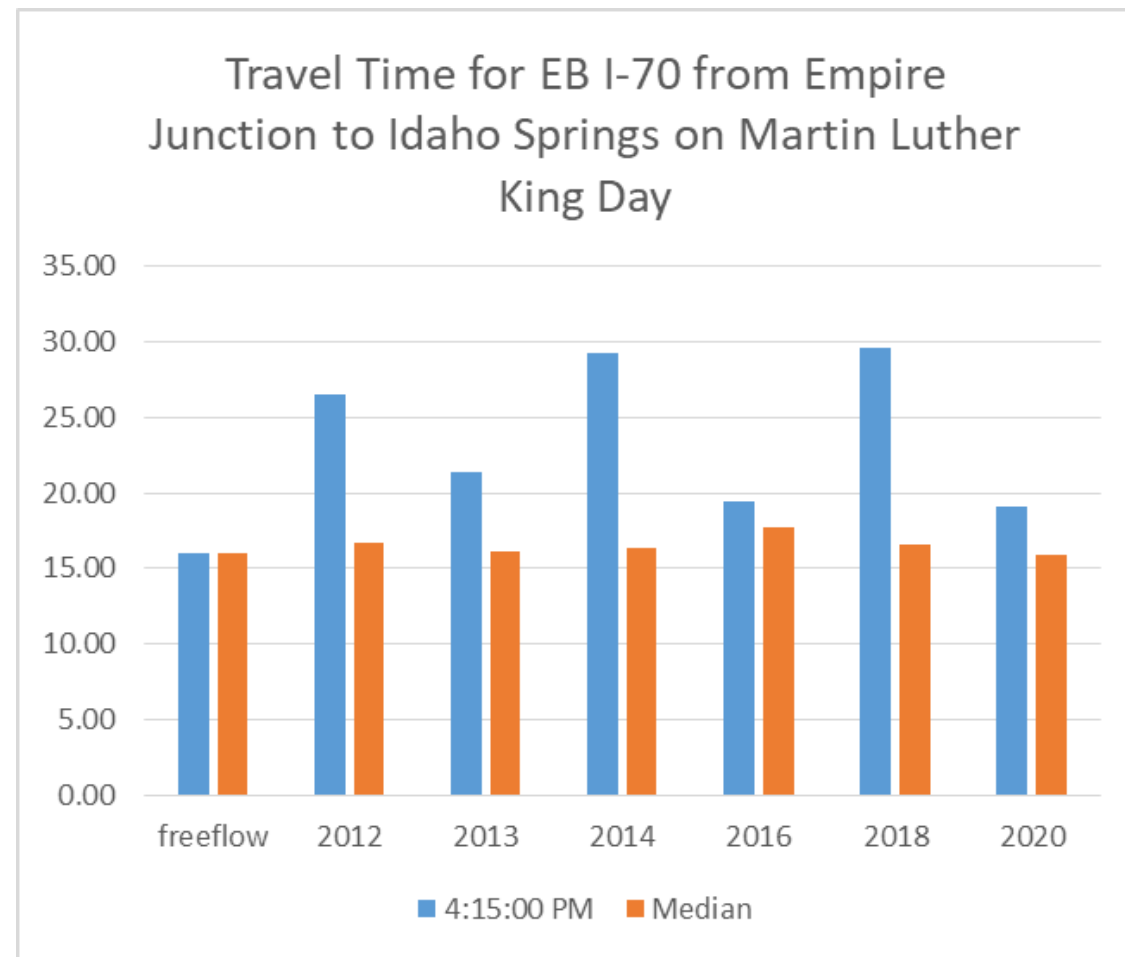
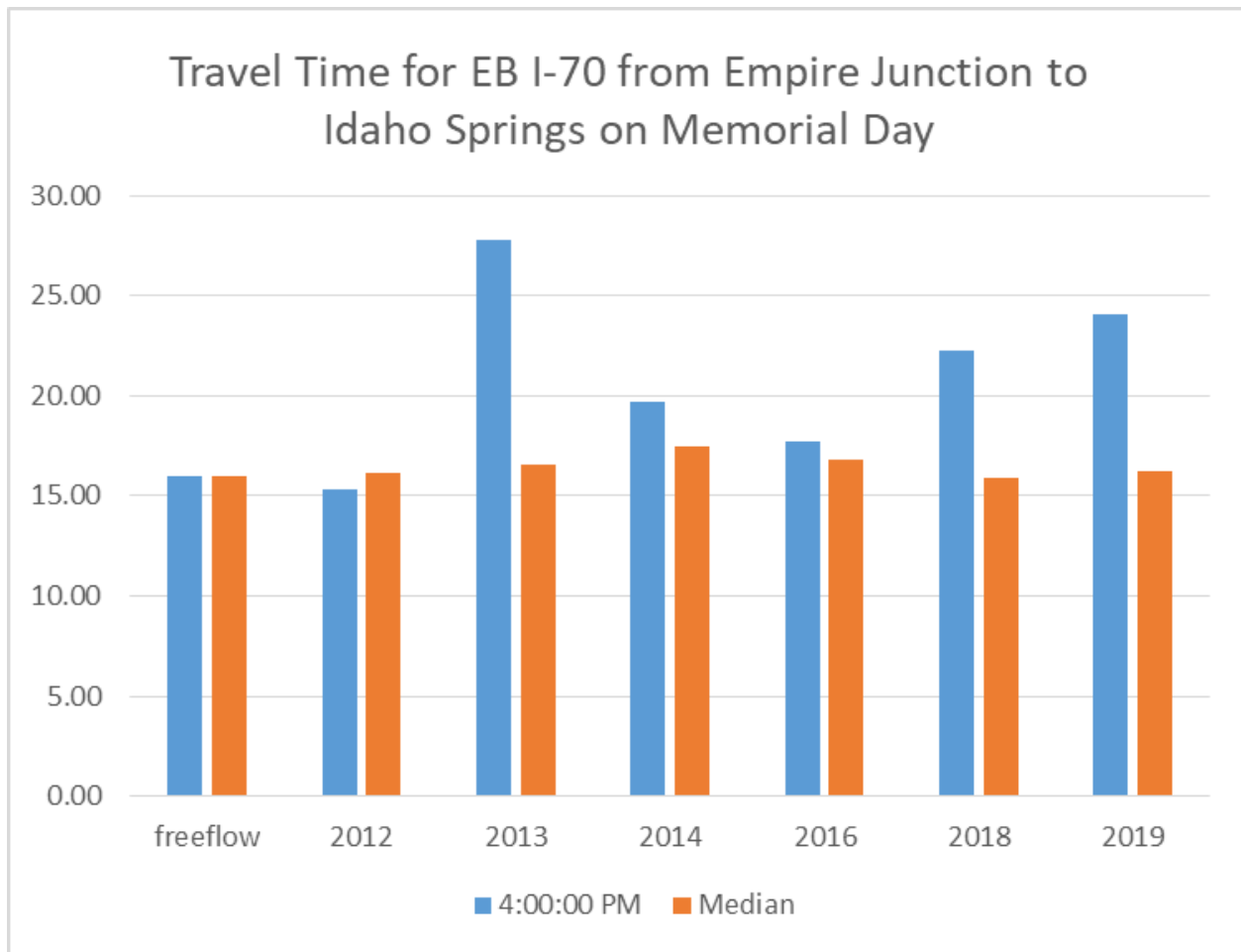


EB MEXL: Travel Time Effectiveness





EB MEXL: Travel Time Effectiveness





Step 2A and 2B: Recap

- Travel times have improved where improvements have been implemented despite increases in traffic volumes
- Crashes have decreased in locations where improvements implemented
- Implemented projects to date have started to address corridor needs
- Mobility for local communities has improved where local projects have been implemented
- CSS and other mountain corridor agreements have been implemented on all Tier 2 projects



Step 2B: Implementation Effectiveness

- **Step 2B Observations and Discussion**



Step 3A: Identify Outstanding PA Questions

1. Status of Eisenhower-Johnson Memorial Tunnels 3rd bore (clarify Minimum or Maximum Program)
2. Empire Interchange (clarify what is to be done in Minimum Program)
3. 2025 trigger
4. Clarify and restate the definition of AGS in the ROD
5. Others



Afternoon Meeting Wrap-up Discussion

- Meeting Summary and Open Discussion



- Next Meeting: *May 27 Full CE*
- Topics:

I-70 Mountain Corridor ROD Preferred Alternative Implementation Status

Line #	Preferred Alternative Item	* Completed	Completion Date	Completed Actions *	** In Progress / Ongoing	Work in Progress / Ongoing**	Effectiveness Observation (if available)	Purpose and Need Component (measures)	Effectiveness Rating	
									High Effectiveness	
									Medium Effectiveness	
									Low Effectiveness	
									Mobility	Safety
Non-Infrastructure Related Components										
1	Increased Enforcement				✓	CSP increased safety enforcement in 2019 with troopers on overtime along the eastbound mountain express lane from Empire to Idaho Springs to help decrease unsafe driving behavior and increase efficiency	The CSP reports the number of crashes did not appreciably decrease with increased enforcement, so the benefits did not justify the costs of overtime for troopers.	2: Improved mobility and accessibility (travel time/reliability)	n/a	
2	Bus, van, or shuttle service in mixed traffic				✓	Commitment progress includes ski shuttles and Bustang service, which began in 2015. Snowstang service, initially piloted in 2017, was launched in 2019 to three resorts.	In 2019, Bustang ridership was over 70,000 passengers compared to just over 26,000 in 2016, representing a 170% increase. In 2018, Bustang averaged 3,050 riders a month throughout the Corridor. Preliminary Snowstang ridership found that buses to Loveland and A-Basin were running 49% full; Steamboat buses were running 30% full. These both exceed CDOT's initial expectations. 40% of the riders are out-of-state or international tourists. In the inaugural 2019-2021 seasons, sold more than 2,000 tickets over 14 weekends.	1: Increased capacity (person trips, transit ridership)	See separate table	n/a
3	Programs for improving truck movements				✓	Revisions to the traction and chain laws to improve safety and operations; Off-corridor staging areas for trucks during adverse weather events; Variable speed limits in Glenwood Canyon; Remote continuous flow metering at Silverthorne to improve truck traction approaching the tunnel eastbound; Active Corridor Management. CMCA programs include PSAs on chain awareness, providing a best practices document, and working with trucking firms that are repeat offenders.	Remote tunnel metering reduces heavy tow incidents during adverse weather events. Truck parking program has facilitated off-mainline parking during closures for a safer mainline and truck operations.	2: Improved mobility and accessibility (travel time/reliability, safety data); 3: Decreased congestion (travel time/reliability, level of service)		
4	Driver education				✓	Gol-70.com shares news and other articles that help educate drivers on traveling through the I-70 mountain corridor. Topics include: Available transit and carpool services, real-time information sources, Colorado Traction Laws, Tire Checks, Move it Law, Move Over Law, Left Lane Law and Avalanche Activity. Additional outreach to travelers is done through the blog, social media, eBlasts and extensive partner outreach. CMCA has produced an audio guide for truckers to safely drive the I-70 corridor, by milepost	Analytics show Gol-70.com site visitation has grown consistently since 2009. Last winter, the website received over 15,000 hits in a single day. Traction law compliance will be evaluated in 2020.	2: Improved mobility and accessibility (travel time/reliability, safety data)		
5	Expanded use of existing transportation infrastructure in and adjacent to the corridor	✓	Dec. 2015	Eastbound Mountain Express Lane (MEXL) project opened in December 2015. Updated each county's Traffic Incident Management Plans Active corridor management has been implemented, including creation of a full-time corridor operations manager Ramp meters have been installed throughout much of the corridor.	✓	Westbound MEXL project under construction, opening projected for 2021.	The EB MEXL diverts 750 to 900 cars from the free general-purpose lanes. This alleviates traffic congestion in the Express Lane, and decreases congestion in general-purpose lanes and frontage roads travel time savings. Travel times have improved. For example, on July Sundays 2012-2014, eastbound travel time averaged 42 to 51 minutes. On July Sundays 2016-2018, travel time averaged 21 to 24 minutes.	2: Improved mobility and accessibility (travel time/reliability, incident response times); 3: Decreased congestion (level of service, travel time/reliability)	See separate table	

I-70 Mountain Corridor ROD Preferred Alternative Implementation Status

Line #	Preferred Alternative Item	* Completed	Completion Date	Completed Actions *	** In Progress / Ongoing	Work in Progress / Ongoing**	Effectiveness Observation (if available)	Purpose and Need Component (measures)	Effectiveness Rating	
									High Effectiveness	
									Medium Effectiveness	
									Low Effectiveness	
								Mobility	Safety	
6	Use of technology advancements and improvements to increase mobility without additional infrastructure				✓	Technological advancements without the addition of infrastructure include: Electronic Signage, Intelligent Transportation System and V2X Data Ecosystem. CDOT is currently testing V2X throughout the corridor. CoTrip.org and GovDelivery/Travel Alerts have been improved in recent years.	As this technology matures and is installed along the corridor, effectiveness evaluations will be conducted	2: Improved mobility and accessibility (travel time/reliability, safety data)		
7	Traveler information and other information technology systems				✓	Traveler information is shared via Intelligent Transportation System; CoTrip; Variable Message Signs (VMS); CDOT Alert Texts; CDOT email alerts		2: Improved mobility and accessibility (travel time/reliability, safety data)		
8	Shift passenger and freight travel demand by time of day and day of week				✓	The most popular feature of Gol70.com is the weekend travel forecast which is intended to shift passenger travel demand by time of day and day of week. Over 150 dining and lodging businesses along the I-70 mountain corridor offer deals to encourage drivers to avoid peak travel times. Examples include: \$2 tacos from 4-6pm on Saturdays and Sundays at Twist; 20% off activities at Lawson Adventure Park Saturday & Sunday 4pm- close.	The Gol-70.com weekend travel forecast received over 130,000 views during the 2019-2020 winter season. Analysis of data in 2011 indicated that peak traffic had noticeably shifted since the promotion of off peak travel began 2009.	2: Improved mobility and accessibility (travel time/reliability); 3: Decreased congestion (level of service, travel time/reliability)		
9	Convert day trips to overnight stays				✓	Gol70.com Peak Time Deals worked with the lodging community to create Sunday Night Stay promotions. These are posted on the Peak Time Deals and promoted frequently through Gol70 blogs, eBlasts, social posts and stakeholder outreach. Examples include: \$125 Sunday night at the Sitzmark Lodge in Vail; 20% off a Sunday night stay at the Wedgewood Lodge in Breckenridge		2: Improved mobility and accessibility (travel time/reliability); 3: Decreased congestion (level of service, travel time/reliability)		
10	Convert single occupancy vehicle commuters to high occupancy travel and/or public transportation				✓	Transit promotion incentives include traveling in groups to receive discounted fares. Resorts are offering incentives to carpool by promoting reduced or free parking as well as discounted lift tickets for groups that travel together. For example, Keystone, Breckenridge, Copper Mountain and Arapahoe Basin have carpool parking incentive programs, offering discounted parking, close-in parking or discounted lift tickets. Summit express airport shuttle offers a savings of \$12 per person when traveling with 3 or more passengers.	These programs are most likely contributing to the success of the Bustang ridership	1: Increased capacity (person trips, transit ridership)		
11	Implement transit promotion incentives				✓	Transit promotion incentives include traveling in groups to receive discounted fares. Resorts are incentivizing carpooling by offering reduced or free parking as well as discounted lift tickets. Summit express airport shuttle offers a savings of \$12 per person when traveling with 3 or more passengers. For example, Loveland Ski Area and Arapahoe Basin offered lift ticket discounts for Front Range Ski Bus riders. Arapahoe Basin offered food and beverage vouchers for Snowstang riders. Some airport shuttles offer discounts through Gol70 Peak Time Deals.	These programs are most likely contributing to the success of the Bustang ridership	1: Increased capacity (person trips, transit ridership)		
12	Other transportation demand management measures to be determined				✓	I-70 Coalition frequently communicates TDM messages and strategies with partners who are encouraged to 'share' with their network and customers. Partners include resorts, local government PIOs, Information/Welcome Centers, resort associations, property managers, lodging sector, destination marketing organizations and chambers of commerce. I-70 Coalition created and piloted the Why Drive? Campaign in coordination with the lodging sector to promote transportation alternatives to mountain visitors. Since 2012, I-70 Coalition has undertaken a bi-annual research study program. These surveys inform how existing travel resources and programs are being received and utilized by the traveling public and how they might be improved.		2: Improved mobility and accessibility (travel time/reliability)		

I-70 Mountain Corridor ROD Preferred Alternative Implementation Status

Line #	Preferred Alternative Item	* Completed	Completion Date	Completed Actions *	** In Progress / Ongoing	Work in Progress / Ongoing**	Effectiveness Observation (if available)	Purpose and Need Component (measures)	Effectiveness Rating		
									High Effectiveness		
									Medium Effectiveness		
									Low Effectiveness		
									Mobility	Safety	
Advanced Guideway System											
13	Feasibility of high speed rail passenger service				✓	AGS Feasibility Study (August 2014)				n/a	n/a
14	Potential station locations and local land use considerations				✓	AGS Feasibility Study (August 2014)				n/a	n/a
15	Transit governance authority				✓	AGS Feasibility Study (August 2014)				n/a	n/a
16	Alignment				✓	AGS Feasibility Study (August 2014)	Several alignments are viable, but Hybrid Alignment is preferred			n/a	n/a
17	Technology				✓	AGS Feasibility Study (August 2014)	Study finding: Fixed guideway options are technically feasible but not financially feasible as of 2014			n/a	n/a
18	Termini				✓	AGS Feasibility Study (August 2014)				n/a	n/a
19	Funding requirements and sources				✓	AGS Feasibility Study (August 2014)	Study finding: Fixed guideway options are technically feasible but not financially feasible as of 2014			n/a	n/a
20	Transit ridership				✓	AGS Feasibility Study (August 2014), Interregional Connectivity Study (January 2014), & Economic Impact of High-Speed Transit in the Mountain Corridor (July 2019)	Study finding: Annual ridership estimated at 4.6 to 6.2 million as of 2014, assuming a connection to a front range high speed transit system including DIA			n/a	n/a
21	Potential system owner/operator									n/a	n/a
22	Interface with existing and future transit systems				✓	AGS Feasibility Study (August 2014) & Interregional Connectivity Study (January 2014)				n/a	n/a
23	Role of an Advanced Guideway System in freight delivery both in and through the corridor									n/a	n/a
Highway Improvements											
Specific Highway improvements											
24	6 lane component from Floyd Hill through the Twin Tunnels (MP 243 to MP247) including a bike trail and frontage roads from Idaho Springs to Hidden Valley and Hidden Valley to US 6	✓	Dec. 2014, Sept 2015, and TBD	Eastbound tunnel widened to 3 lanes; Westbound tunnel was widened to accommodate three lanes in the future; Frontage road and bike trail between Game Check area and Hidden Valley.	✓	Environmental Assessment and preliminary engineering is underway for westbound I-70 from east of the Floyd Hill/Beaver Brook Exit (248) to Idaho Springs Exit (241) A Categorical Exclusion is underway for improvements to CR 314 between the Game Check trailhead and the City of Idaho Springs baseball fields.	The 3-lane project completed to date has improved safety: an average of 43 crashes per year from 2006 to 2010 , eastbound from Twin Tunnels to base of Floyd Hill. After eastbound tunnel third lane project, an average of 21 crashes per year , from 2015 to 2016. Similar safety improvements are expected upon completion of the EA and Cat Ex projects	1: Increased capacity (person trips) 2: Improved mobility and accessibility (travel time/reliability, safety data, incident response time) 3: Decreased congestion (level-of-service, travel time/reliability)	See separate table	See separate table	
25	Empire Junction (US 40 and I-70) interchange improvements (MP 232)									n/a	n/a
26	Eastbound auxiliary lane from Eisenhower-Johnson Memorial Tunnels to Herman Gulch (MP 215 - MP 218)	✓	2016	The auxiliary lane ends at approximately 217.5, a half mile west of the Herman Gulch Interchange. The Project did not extend entirely to Herman Gulch to limit environmental impacts. CE agreement on project limits.			2011-2018 data indicates an improvement in crash history. The extension of the auxiliary lane at US-6 together with implementation of the mainline metering along EB I-70, east of the Silverthorne/Dillon interchange, has eased some of the safety concerns in this location.	2: Improved mobility and accessibility (travel time/reliability, safety data); 3: Decreased congestion (level-of-service, safety data, travel time/reliability)	n/a	See separate table	
27	Westbound auxiliary lane from Bakerville to Eisenhower-Johnson Memorial Tunnels (MP 215 to MP 221)									n/a	n/a

I-70 Mountain Corridor ROD Preferred Alternative Implementation Status

Line #	Preferred Alternative Item	* Completed	Completion Date	Completed Actions *	** In Progress / Ongoing	Work in Progress / Ongoing**	Effectiveness Observation (if available)	Purpose and Need Component (measures)	Effectiveness Rating	
									High Effectiveness	
									Medium Effectiveness	
									Low Effectiveness	
									Mobility	Safety
Other Highway Improvements										
28	Truck operation improvements, such as pullouts, parking, and chain stations	✓	2015, 2016, and In Progress	The completed eastbound PPSL project constructed two pull outs for emergency refuge in December 2015. East Vail chain station was expanded in 2016.	✓	7 new safety pullouts will be constructed as part of the westbound PPSL project. 5 new pullouts will be constructed in the westbound direction and 2 new pullouts in the eastbound direction.	Pullouts and expanded chain stations improve safety conditions for truck drivers on the roadside. Traffic operations are also improved.	2: Improved mobility and accessibility (travel time/reliability, safety data)		
29	Safety improvements west of Wolcott	✓	2013	Super-elevation curve correction through Wolcott	✓		2011-2018 data indicates an improvement in crash history, compared to 2001-2005. The curve correction may have alleviated safety issues at Wolcott	2: Improved mobility and accessibility (safety data)	n/a	See separate table
30	Safety and capacity improvements in Dowd Canyon	✓	2019	Eastbound on-ramp plus taper has been extended by approximately 500' as a safety improvement.	✓	Planning has started; currently on hold pending the results of a Bridge Enterprise inspection project. CDOT Region 3 will reassess the project in early 2020.	Data not yet available on eastbound ramp improvement	2: Improved mobility and accessibility (safety data)	n/a	n/a
Interchange Improvements at:										
31	Glenwood Springs (MP 116)	✓	Dec. 2018	Interchange improvements were constructed as part of the Grand Avenue Bridge (GAB) Project. Interchange improvements include: Lengthened on/off ramps, increased vehicle storage, new signals, new pedestrian underpass, and a new configuration of the interchange for the newly realigned Grand Avenue bridge			The Exit 116 connection from SH82 to I-70 and vice versa is operationally much better than before the GAB project, basically much more efficient operations by having a more direct connection to the corridors and also separating out local traffic from mainline pass through traffic accessing the SH82 and/or I-70 corridors. The new pedestrian underpass under SH82 also provides traffic operational improvements/benefits because a ped phase was eliminated at one of the signals. The pedestrian underpass also provides a considerable safety benefit, separating bikes and peds from motorized vehicles in this active resort community.	2: Improved mobility and accessibility (safety data)		n/a
32	Gypsum (MP 140)								n/a	n/a
33	Eagle County Airport								n/a	n/a
34	Wolcott (MP 157)								n/a	n/a
35	Eagle and Spur Road (MP 147)	✓	2015					2: Improved mobility and accessibility (safety data)	n/a	n/a
36	Edwards and Spur Road (MP 163)	✓	2011-Phase 1, 2020-Phase 2	Phase 1 of the project—completed in 2011—made improvements to the northern half of the Spur Road, including four new roundabouts and improved connections with the I-70 on- and off-ramps.	✓	Phase 2 is currently underway and includes design improvements to the southern half of the Edwards Spur Road - a distance of approximately 0.4 miles. Phase 2 included improved safety features such as widening roads and bridges, improved sight distances at intersections. The project added refuge islands large enough to accommodate bicycles and trailers at the roundabout. It also added Rectangular Rapid Flashing Beacons for crosswalks at the roundabout. For recreation use, the project added separated pedestrian trails and bridges as well as added bike lanes to the roadway system.		2: Improved mobility and accessibility (safety data)	n/a	See separate table
37	Avon (MP 167)								n/a	n/a
38	Minturn (MP 171)	✓	Fall 2019	Eastbound on-ramp plus taper has been extended by approximately 500' as a safety improvement.	✓	Planning has started; currently on hold pending the results of a Bridge Enterprise inspection project. CDOT Region 3 will reassess the project in early 2020.	Data not yet available on eastbound ramp improvement	2: Improved mobility and accessibility (safety data)	n/a	n/a
39	Vail West (MP 173)/Simba Run								n/a	n/a
40	Vail (MP 176)								n/a	n/a
41	Vail East (MP 180)								n/a	n/a
42	Vail Pass (East Shrine Pass Road - MP 190)								n/a	n/a
43	Copper Mountain (MP 195)								n/a	n/a
44	Frisco / Main Street (MP 201)								n/a	n/a

I-70 Mountain Corridor ROD Preferred Alternative Implementation Status

Line #	Preferred Alternative Item	* Completed	Completion Date	Completed Actions *	** In Progress / Ongoing	Work in Progress / Ongoing**	Effectiveness Observation (if available)	Purpose and Need Component (measures)	Effectiveness Rating	
									High Effectiveness	
									Medium Effectiveness	
									Low Effectiveness	
								Mobility	Safety	
45	Frisco / SH9 (MP 203)				✓	Currently working on traffic analysis, operational analysis and design concepts			n/a	n/a
46	Silverthorne (MP 205)				✓	I-70 Silverthorne/Dillon Interchange Study has been completed			n/a	n/a
47	Loveland Pass (MP 216)								n/a	n/a
48	Georgetown (MP 228)								n/a	n/a
49	Downieville (MP 234)								n/a	n/a
50	Fall River Road (MP 238)								n/a	n/a
51	Base of Floyd Hill / US 6 (MP 244)				✓	Element of the Floyd Hill Project - Environmental Assessment in Progress			n/a	n/a
52	Hyland Hills (MP 247)				✓	Element of the Floyd Hill Project - Environmental Assessment in Progress			n/a	n/a
53	Beaver Brook (MP 248)				✓	Element of the Floyd Hill Project - Environmental Assessment in Progress			n/a	n/a
54	Evergreen Parkway / SH 74 (MP 252)								n/a	n/a
55	Lookout Mountain (MP 256)								n/a	n/a
56	Morrison (MP 259)								n/a	n/a
Auxiliary lanes										
57	Avon to Post blvd. (Exit 168)								n/a	n/a
58	West side of Vail Pass (eastbound and westbound)				✓	Environmental Assessment and conceptual design for safety improvements are underway. Design and construction can follow as funding becomes available.			n/a	n/a
59	Frisco to Silverthorne (eastbound)				✓	Currently working on traffic analysis, operational analysis and design concepts. Roadway and feasibility studies are underway as well as environmental research.			n/a	n/a
60	Morrison to Chief Hosa (westbound)								n/a	n/a
				*Completed refers to a project that has been finished with a completion date			**In progress refers to a project that is in planning or construction			
								Purpose and Need Components: 1. Increase capacity 2. Improve mobility and accessibility 3. Decrease congestion		

DRAFT - EFFECTIVENESS RATING OBSERVATIONS AND CALCULATIONS

Line #	Implemented Component	Effectiveness Observation (if available)	Annual Operating Cost (millions)	Calculated Quantitative Benefit						Effectiveness Rating	Qualitative Benefits
				Annual Bustang riders	Riders who would have been a driver	Time benefit as rider (hours)	Time saved per year not driving (hours)	Value of time (\$/hour)	Dollar benefit per year		
2	Bus, van, or shuttle service in mixed traffic: Bustang	In 2019, Bustang ridership was over 70,000 passengers compared to just over 26,000 in 2016, representing a 170% increase. In 2018, Bustang averaged 3,050 riders a month throughout the Corridor.	\$ 1.2	70,000	35,000	1	35,000	\$ 22	\$ 770,000		+ Serve riders who are unable to drive, or do not have access to a vehicle + Serve riders who do not desire to drive + Provide a mobility choice + Demonstrates need and demand for corridor transit service + Improved Air Quality

Effectiveness Rating:

High Effectiveness
Medium Effectiveness
Low Effectiveness

Sources and Assumptions

This is an initial broadbrush sketch analysis for planning discussion only. Further data and detailed technical analysis is needed

Bustang ridership: CDOT Division of Transit and Rail, 2020

Assume 1/3 of Bustang annual operating cost (one of three lines); Bustang's three lines cost about \$3.5 million a year to run:

<https://www.cpr.org/2019/06/25/bustangs-success-might-just-pave-the-way-for-cdots-front-range-train-dreams>

Cost excludes capital startup costs

Assume Bustang rider otherwise would have ridden in vehicles with an auto occupancy of 2

Assume average west line Bustang ride time of 2 hours; assume 1 hour is recovered by driver as benefit

Assume an average value of time - source I-70 Travel Demand Model, by trip purpose, inflated to 2020 dollars. (weighted average of \$22 work, \$22 recreation, \$13 non-work. Excludes truck trip purpose)

Calculated Benefit excludes cost of fare

<https://www.vtpi.org/tranben.pdf> :

Table 38 Transit Benefits (Litman 2004)

Benefits	Description
User benefits	Increased convenience, speed and comfort to users from transit service improvements.
Congestion Reduction	Reduced traffic congestion.
Facility cost savings	Reduced road and parking facility costs.
Consumer savings	Reduced consumer transportation costs, including reduced vehicle operating and ownership costs.
Transport diversity	Improved transport options, particularly for non-drives.
Road safety	Reduced per capita traffic crash rates.
Environmental quality	Reduced pollution emissions and habitat degradation.
Efficient land use	More compact development, reduced sprawl.
Economic development	Increased productivity and agglomeration efficiencies.
Community cohesion	Positive interactions among people in a community.
Public health	Increased physical activity (particularly walking).

Evaluating Public Transit Benefits and Costs Best Practices Guidebook 6 April 2020 Todd Litman Victoria Transport Policy Institute

DRAFT - EFFECTIVENESS RATING OBSERVATIONS AND CALCULATIONS

Line #	Implemented Component	Effectiveness Observation (if available)	Cost (millions)	Calculated Quantitative Benefit										Effectiveness Rating	Qualitative Benefits
				Weekend Daily Volume at VMT	Weekend Daily Person Trips at VMT	Weekend Peak Period Person Trips	Median travel time decrease (minutes)	Peak Period travel time decrease (minutes)	Days per year	Time saved per year (hours)	Assumed Value of time (\$/hour)	Dollar savings per year (millions)			
5	Expanded Use of Existing Infrastructure: Eastbound Mountain Express Lane (MEXL)	The EB MEXL diverts 750 to 900 cars from the free general-purpose lanes. This alleviates traffic congestion in the Express Lane, and decreases congestion in general-purpose lanes and frontage roads travel time savings. Travel times have improved. For example, on July Sundays 2012-2014, eastbound travel time averaged 42 to 51 minutes. On July Sundays 2016-2018, travel time averaged 21 to 24 minutes.	\$ 68	35,000	77,000	7,700	0.75	10	88	214,958	\$ 24	\$ 5.2		+ Improved Travel Time + Improved Quality of Life + Increased Economic Activity + Improved Emergency Response Access + Improved Air Quality	

Effectiveness Rating:

High Effectiveness
Medium Effectiveness
Low Effectiveness

Sources and Assumptions

This is an initial broadbrush sketch analysis for planning discussion only. Further data and detailed technical analysis is needed

Assume 35,000 EB ADT (1/2 of 70,000 Weekend ADT)

Assume 10% of weekend traffic during the peak period

Assume 2.2 Auto occupancy at VMT Twin Tunnels (PEIS Transportation Analysis Tech Report)

Assume median travel time savings 0.75 minutes and pk period savings July Sundays 2012-2014, eb travel time averaged 42 to 51 minutes. On July Sundays 2016-2018, travel time averaged 21 to 24 min.46 minus 22 = 24, round down to 20. (source: INRIX analysis)

Note travel time includes travel time effect of widening to three lanes on eastbound I-70 from VMT Twin Tunnels to Floyd Hill. Assume 50% due to MEXL. 20 minutes / 2 = 10 minutes

Assume 88 days of operation (50 weekends)

Assume \$24 for average value of time - source I-70 Travel Demand Model, by trip purpose, inflated to 2020 dollars. (weighted average of \$22 work, \$22 recreation, \$13 non-work, and \$82 truck trip purpose)

Assume life cycle of 20 years

Project Cost \$68 million

	Station ID	Location	Winter Satur	Summer Thursd	Summer Frid	Summer Saturday AD	Summer Sunday ADT
2019 ADT	000120	Twin Tunnels	70,236	58,860	75,442	79,730	81,147

DRAFT - EFFECTIVENESS RATING OBSERVATIONS AND CALCULATIONS

Line #	Implemented Component	Effectiveness Observation (if available)	Cost (millions)	Calculated Quantitative Benefit									Effectiveness Rating	Qualitative Benefits
				Weekend Daily Volume at VMT	Weekend Daily Person Trips at VMT	Weekend Peak Period Person Trips	Median travel time decrease (minutes)	Peak Period travel time decrease (minutes)	Days per year	Time saved per year (hours)	Assumed Value of time (\$/hour)	Dollar savings per year (millions)		
24	6 lane component from Floyd Hill through the Twin Tunnels (MP 243 to MP247) including a bike trail and frontage roads from Idaho Springs to Hidden Valley and Hidden Valley to US 6	The 3-lane project completed to date has improved safety: an average of 43 crashes per year from 2006 to 2010 , eastbound from Twin Tunnels to base of Floyd Hill. After eastbound tunnel third lane project, an average of 21 crashes per year , from 2015 to 2016.	\$ 73	35,000	77,000	7,700	0.75	10	88	214,958	\$ 24	\$ 5.2		+ Improved Travel Time + Improved Safety + Improved Quality of Life + Increased Economic Activity + Improved Emergency Response Access + Improved Air Quality

Line #	Implemented Component	Effectiveness Observation (if available)	Cost (millions)	Calculated Quantitative Benefit						Effectiveness Rating	Qualitative Benefits	
				Crashes per Year Prior to Project	Crashes per Year Post Project	Reduction in Crashes Attributable to Project	Weighted Average Cost per crash					Dollar savings per year (millions)
24	6 lane component from Floyd Hill through the Twin Tunnels (MP 243 to MP247) including a bike trail and frontage roads from Idaho Springs to Hidden Valley and Hidden Valley to US 6	The 3-lane project completed to date has improved safety: an average of 43 crashes per year from 2006 to 2010 , eastbound from Twin Tunnels to base of Floyd Hill. After eastbound tunnel third lane project, an average of 21 crashes per year , from 2015 to 2016.	\$ 73	43	21	16.5	\$8,000			\$0.1		+ Improved Travel Time + Improved Safety + Improved Quality of Life + Increased Economic Activity + Improved Emergency Response Access + Improved Air Quality

Effectiveness Rating:

High Effectiveness
Medium Effectiveness
Low Effectiveness

Sources and Assumptions

This is an initial broadbrush sketch analysis for planning discussion only. Further data and detailed technical analysis is needed

Assume 35,000 EB ADT (1/2 of 70,000 Weekend ADT)

Assume 10% of weekend traffic during the peak period

Assume 2.2 Auto occupancy at VMT Twin Tunnels (PEIS Transportation Analysis Tech Report)

Assume median travel time savings 0.75 minutes and pk period savings July Sundays 2012-2014, eb travel time averaged 42 to 51 minutes. On July Sundays 2016-2018, travel time averaged 21 to 24 min.46 minus 22 = 24, round down to 20. (source: INRIX analysis)

Note travel time includes travel time effect of MEXL. Assume 50% due to widening to three lanes on eastbound I-70 from VMT Twin Tunnels to Floyd Hill. 20 minutes / 2 = 10 minutes

Assume 88 days of operation (50 weekends)

Assume an average value of time - source I-70 Travel Demand Model, by trip purpose, inflated to 2020 dollars. (weighted average of \$22 work, \$22 recreation, \$13 non-work, and \$82 truck trip purpose)

Assume life cycle of 20 years

Project Cost Twin Tunnels = 145 M (EB 55M, WB 54M, Design/Other packages 36M). Assume \$55m + 1/2 of \$36m = \$73m

Assume 75% of crashes are attributable to project

Project completed 2014	Crash History		Assumed Split	Cost per crash (National Safety Council nsc.org)
	2006 - 2010	2015-2016		
MP 242 to MP 244			99 PDO	\$4,500
crashes per year	43.0	21	Injury	\$96,000
Safety Assessment I-70 Twin Tunnels 2011			15 Evident/possible Inj	\$25,000
Safety Assessment I-70 Recon/Widening 2018			0 Fatality	\$1,660,000
			Total	115
			wtd average	\$ 7,970

DRAFT - EFFECTIVENESS RATING OBSERVATIONS AND CALCULATIONS

Line #	Implemented Component	Effectiveness Observation (if available)	Cost (millions)	Calculated Quantitative Benefit					Effectiveness Rating	Qualitative Benefits
				Crashes per Year Prior to Project	Crashes per Year Post Project	Reduction in Crashes Attributable to Project	Weighted Average Cost per crash	Dollar savings per year (millions)		
26	Eastbound auxiliary lane from Eisenhower-Johnson Memorial Tunnels to Herman Gulch (MP 215 - MP 218)	2011-2018 data indicates an improvement in crash history. The extension of the auxiliary lane at US-6 together with implementation of the mainline metering along EB I-70, east of the Silverthorne/Dillon interchange, has eased some of the safety concerns in this location.	\$ 4	26	16	5	\$9,800	\$ 0.05	+ Improved Safety + Improved Travel Time + Improved Emergency Response Access + Improved Air Quality	

Sources and Assumptions

This is an initial broadbrush sketch analysis for planning discussion only. Further data and detailed technical analysis is needed

Project Cost \$4 million.

Assume life cycle of 20 years

Project completed 2016

MP 216.5 to MP 218	Crash History	
	2011 - 2015	2017 - 2018
Property Damage Only	101	25
Injury	31	7
Fatality	0	
Total	132	32
years	5	2
crashes per year	26.4	16

Assumed Split	Cost per crash (National Safety Council nsc.org)	
101 PDO		\$4,500
1 Disabling injury		\$96,000
30 Evident/possible Inj		\$25,000
0 Fatality		\$1,660,000
132		
	wtd average	\$ 9,852

Assume 50% of crashes are attributable to project since increased corridor management is a major factor

Effectiveness Rating:

High Effectiveness
Medium Effectiveness
Low Effectiveness

DRAFT - EFFECTIVENESS RATING OBSERVATIONS AND CALCULATIONS

Line #	Implemented Component	Effectiveness Observation (if available)	Cost (millions)	Calculated Quantitative Benefit						Effectiveness Rating	Qualitative Benefits
				Crashes per Year Prior to Project	Assumed Crashes per Year Post Project	Reduction in Crashes Attributable to Project	Weighted Average Cost per crash	Dollar savings per year (millions)			
29	Safety improvements west of Wolcott	2011-2018 data indicates an improvement in crash history, compared to 2001-2005. The curve correction may have alleviated safety issues at Wolcott	\$ 0.5	11	9	1.0	\$ 14,700	\$ 0.01		+ Improved Safety	

Effectiveness Rating:

High Effectiveness
Medium Effectiveness
Low Effectiveness

Sources and Assumptions

This is an initial broadbrush sketch analysis for planning discussion only. Further data and detailed technical analysis is needed

Project completed 2013

	Crash History		Assumed Split		Cost per crash (National Safety Council nsc.org)	
	2011 - 2012	2014 - 2018				
MP 154.5 to MP 156						
Property Damage Only	14	35	14		PDO	\$4,500
Injury	7	11	1		Disabling injury	\$96,000
			6		Evident/possible Inj	\$25,000
Fatality	1		0		Fatality	\$1,660,000
Total	22	46	21			
years	2	5				
crashes per year	11	9.2			wtd average	\$ 14,714

Assume life cycle of 20 years

Assume 50% of reduced crashes are attributable to project

Cost: included in repaving project. Assume \$500,000

DRAFT - EFFECTIVENESS RATING OBSERVATIONS AND CALCULATIONS

Line #	Implemented Component	Effectiveness Observation (if available)	Cost (millions)	Calculated Quantitative Benefit						Qualitative Benefits
				Crashes per Year Prior to Project	Crashes per Year Post Project	Reduction in Crashes Attributable to Project	Weighted Average Cost per crash	Dollar savings per year (millions)	Effectiveness Rating	
36	Edwards and Spur Road (MP 163). Phase 1 of the project—completed in 2011—made improvements to the northern half of the Spur Road, including four new roundabouts and improved connections with the I-70 on- and off-ramps.		\$ 9.5	4	2	2	\$ 22,000	\$ 0.04		+ Improved Safety + Improved Emergency Response Access

Effectiveness Rating:

High Effectiveness
Medium Effectiveness
Low Effectiveness

Sources and Assumptions

This is an initial broadbrush sketch analysis for planning discussion only. Further data and detailed technical analysis is needed

Safety effectiveness: FHWA's safety website notes that roundabouts reduce crashes that cause severe injuries or death by 82% over two way stop control and 78% over signalized intersections.

<https://safety.fhwa.dot.gov/provencountermeasures/roundabouts/>

Assume life cycle of 20 years

Phase 1 Cost \$9.5 million (CDOT)

Project completed 2011

MP 162.3 - MP 163.3	Crash History			Assumed Split	Cost per crash (National Safety Council nsc.org)	
	Calculated back history*	2012-2018				
Property Damage Only	12.0	12		12.0	PDO	\$4,500
Injury	18.2	4		2.0	Disabling injury	\$96,000
Fatality				16	Evident/possible Inj	\$25,000
Total	30.2	16		30	Fatality	\$1,660,000
years	7	7				
crashes per year	4.3	2.3			wtd average	\$ 21,533

* Crash data not immediately available prior to 2011; calculate prior crashes based on roundabout crash reduction factor of 78% from FHWA

Assume 100% of reduced crashes are attributable to project

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**Collaborative Effort (CE) Meeting and
I-70 Mountain Corridor 2020 Reassessment Meeting #6 Summary**
May 27, 2020, 9:00 AM to 4:00 PM
Zoom Conference Call Video Meeting

Overview

These notes summarize the Collaborative Effort (CE) meeting held via video conference on May 27, 2020. This meeting included some discussion of CE business but focused primarily on the I-70 Mountain Corridor 2020 Reassessment and the work of the I-70 Mountain Corridor 2020 Reassessment CE Subcommittee. The agenda and other meeting materials are attached. (Note that the year on the distributed agenda was corrected from 2019 to 2020.) The Work Plan is also attached for reference.

Welcome and Introductions

Randy Wheelock, CE co-chair, welcomed the group and provided an overview of Zoom features for participation in the video meeting. Steve Coffin did a roll call of the CE members and the alternates, then other interested parties. A digital attendance sheet is attached to these notes. Of the 32 CE members, 20 members or alternates were present, including:

- Randy Wheelock, Clear Creek County (CE Co-Chair)
- Greg Hall, Vail (CE Co-Chair)
- Ann Rajewski, Colorado Association of Transit Agencies (CASTA)
- Brian Duchinsky, Sierra Club, Headwaters Group
- Brooke Davis, US Army Corps of Engineers
- Chris Linsmayer, Colorado Ski Country USA
- Danny Katz, Colorado Public Interest Research Group (CoPIRG)
- David Krutsinger, Colorado Department of Transportation (CDOT), Division of Transit and Rail
- Dennis Royer, Sierra Club, Rocky Mountain Chapter
- Dorothy Jones, Denver Metro Chamber of Commerce
- Eva Wilson, local transit provider (Avon Mobility Director)
- Gary Frey, Colorado Trout Unlimited
- Holly Norton, Colorado State Historic Preservation Office
- Mary Jane Loevlie, Business Representative (Idaho Springs)
- Matt Scherr, Eagle County
- Mike Goolsby, CDOT Region 3
- Mike Hillman, Idaho Springs (Mayor)
- Mike Keleman, CDOT Region 1 (*alternate*)
- Shaun Cutting, Federal Highway Administration (FHWA)
- Tracy Sakaguchi, Colorado Motor Carriers Association (*alternate*)

CE member alternates that were present in addition to the primary member were Ben Gerdes, Eagle County, and Amy Saxton, Clear Creek County. Other meeting participants included Vanessa Henderson,



Neil Ogden, Karen Berdoulay, Jeff Hampton, and Kevin Brown, CDOT; Vershun Tolliver, Monica Pavlik and Melinda Urban, FHWA; Doug Rex and Ron Papsdorf, Denver Regional Council of Governments; Becky English, Sierra Club; Trent Prall, City of Grand Junction; Miller Hudson, interested party; and Steve Coffin, Steve Coffin Strategies. The HDR consultant team present included Steve Long, Wendy Wallach, Chris Primus, Kira Olson, and Mandy Whorton (Peak Consulting Group).

Mr. Wheelock opened up the meeting to public comment. No comments were recorded.

CE Business

Meeting Agenda and Previous Meeting Minutes

Mr. Wheelock reviewed the agenda for the meeting and recommended adding discussion of revisions to the 2020 Reassessment Work Plan protocols to the CE business portion of the agenda to address a concern that had been raised by the Sierra Club, which has been a topic of discussion of both the CE and the 2020 CE Subcommittee. There was no objection to adding this to the agenda.

The CE reviewed changes to the meeting notes from the previous two CE meetings (May 2019 and September 2019). There were no objections to the meeting notes, and they were adopted as final.

CE Membership and Alternates

Mr. Wheelock read the following proposed addition to the CE Operating Protocol #2, Membership and Attendance. The additions are shown below in red underline. After discussion (which follows), a modification was proposed and accepted, as shown in blue underline.

Each member organization will designate one alternate person per seat and encourage the alternate to join meetings so that there is a consistent body of knowledge. To ensure fair and equal representation, an alternate may not serve as an alternate for more than one organization. Members will use their best effort to designate their alternates and email their alternate's contact information to the Co-Chairs and to CDOT who will keep a record of both the members and the alternates. That alternate will remain the organization's alternate until the organization notifies the Co-Chairs and CDOT otherwise.

A similar edit to CE Operating Protocol #10, Working Groups and Support for Stakeholder Groups, regarding alternates was recommended and approved. The additions are shown in red underline, and deleted text in ~~red strikethrough~~.

As necessary, subcommittees may be formally created by the group to address special topics in greater detail. Each member organization of the CE and its alternate may participate in these Working Groups. These ~~Working G~~roups may also be also formed in conjunction with the CSS process, particularly when broader participation may be helpful. In addition, facilitation or agenda building support may be offered to stakeholder groups to promote coordinated, informed and representative discussions by all members.

Discussion

Mr. Wheelock described the protocols for alternates. He said alternates should be identified formally and well in advance of meetings, with a minimum of 24-hour notice to Co-Chairs and CDOT. Alternates



should serve a single organization, and if they must serve as an alternate to multiple organizations, they can only represent one organization at a single meeting. Alternates should be familiar with the Mountain Corridor "body of knowledge" and history.

Gary Frey asked if it was possible without disrupting the process for volunteer organizations to not have a formally designated alternate. This requirement is burdensome for volunteer organizations, and it is not easy to find an alternate, particularly a consistent one that can attend all meetings.

Mary Jane Loevlie said that the original CE protocols used this language intentionally because the decisions and process were so significant (because the Consensus Recommendation would become the Mountain Corridor Preferred Alternative if consensus could be reached) that if representatives could not commit to being at all meetings, it was not possible to participate productively. All of the CE members, including FHWA and CDOT, committed to this high level of participation. She noted that the circumstances may be different now but wanted to provide historical context for the Operating Protocols.

Greg Hall stated that it was important for the primary member to notify the CE members of official alternates so that it was clear that the alternate spoke on behalf of the organization. While the language says that organizations can have one member and one alternate at meetings, it does not say that if an organization does not have an alternate that it can't participate.

Mr. Wheelock noted that it is hard for members that are not familiar with the history of studies for the I-70 Mountain Corridor to participate effectively.

Mr. Hall asked for additional members to weigh in.

Dennis Royer said he thought alternates could be from organizations already on the CE because these members would be familiar with the process and body of work.

Mr. Wheelock said having members represent more than one organization is confusing because when members "tag team," it is not clear which organization they are representing.

Danny Katz agreed that not all organizations have the luxury of having an alternate and asked for clarification that Mr. Frey's concern is that Trout Unlimited can't be represented if they don't have an alternate. Mr. Frey said this was not his concern but that he wanted flexibility to try to find alternates to go to meetings if he were unable.

Ann Rajewski, Dorothy Jones, Holly Norton, and Eva Wilson agreed that it is hard to find alternates as people move around, it takes a long time to get up to speed, and having two people at meetings is not realistic for small organizations.

Mr. Wheelock suggested that members "do their best" to have alternates and prepare them for participation in meetings. This proposal was agreed to.

List of Members and Alternates

Mr. Wheelock asked Ms. Norton to summarize recent discussions with her alternate, Cindy Neely. Ms. Norton explained that Ms. Neely is an alternate for History Colorado, which is appropriate as a



representative of Historic Georgetown. However, as a state organization, History Colorado and the State Historic Preservation Office has different roles and responsibilities from local preservation organizations. She also stated that looking at the overall mix of representation on the CE, historic preservation seems underrepresented with only one member. She also noted that while to date History Colorado had not disagreed with any local consulting parties, the potential was there for that to happen in the Section 106 process, and it would be more appropriate for a local entity to weigh in on dissenting views. Ms. Norton requested that a local historic preservation interest be included as a full CE member.

Ms. Loevlie stated that all of the local historic preservation groups along the corridor would want to be involved, and the participation could balloon to become unmanageable. She noted that Idaho Springs was in a precarious position compared to Georgetown and should have more representation. However, she did not disagree with adding a local historic preservation member.

The group agreed to add a local historic preservation interest in the CE membership and to vote on the new member at the next meeting.

2020 Reassessment Work Plan Revisions

Mr. Wheelock summarized a recurring disagreement among some members with the wording of the lead agency role in the 2020 Reassessment Work Plan. After discussion with the concerned members, Mr. Coffin prepared alternative language that the smaller group, including CDOT and FHWA, agreed with for #4 of the Primary Roles and Responsibilities in the Work Plan (pages 1 and 2). The additions are shown in red underline, and deleted text in ~~red strikethrough~~.

The FHWA and CDOT commit to fully engaging as partners in this process and being an integral part of reaching consensus. However, lead agencies cannot delegate their responsibilities regarding decision making and NEPA compliance. ~~However,~~ As equal and participating members of the CE, lead agencies are committed to crafting with all stakeholders decisions that can be supportive. If consensus is not possible, then the level of support and dissension will be noted, and all deliberations and products of the CE will be considered by the lead agencies in their decision making.

Mr. Wheelock summarized the subcommittee discussion and its understanding that the fact that CDOT and FHWA cannot delegate NEPA responsibilities is not in conflict with the intent to seek consensus. Although this reassessment is not a NEPA action, it could affect implementation of future Tier 2 projects. He also noted that no organization represented in the CE could cede their authority or responsibilities, and the number one emphasis of all parties should be consensus. There were no objections to changing the Work Plan language.

Facilitator and Timing for Steps 3 and 4 of the 2020 Reassessment

Mr. Wheelock said that a group of CE members have concerns that HDR is not the right organization to facilitate Steps 3 and 4 of the 2020 Reassessment. He said they are good and trusted contractors, but they have been involved in many of the CDOT (and other) transportation projects in the corridor and could be perceived as too close to the projects to be neutral. Additionally, they are not trained facilitators, and the decisions to be made about the future of the Programmatic Environmental Impact Statement (PEIS) Preferred Alternative require skilled facilitation and mediation. This issue came up in



several Subcommittee meetings, and the Subcommittee recommended to raise it for discussion with full CE.

At the CE Subcommittee's request, Mr. Wheelock and Mr. Hall contacted CDR Associates and Keystone Group, which are considered preferred contractors for this work because of their history working in this capacity in the corridor. Quotes to facilitate the Step 3 and 4 meetings came in at about \$10K. Mr. Wheelock asked for consensus to hire one of them and to divide the cost among the 30 members. He suggested both firms be interviewed before selection. Vanessa Henderson said that the process of selecting the facilitator could be similar to the process for hiring the HDR team where questions were sent to the firms, and a small group reviewed the responses and made a recommendation to the full CE. She said she thought interviews could be burdensome for a small contract. The group agreed that a small group of the CE co-chairs, Ms. Henderson, and Mr. Coffin could review proposals and make the selection.

Mr. Hall asked who the fiscal agent would be for the procurement and asked if there was concern if the contract were held through one of the members. The group did not see a problem with the contracting coming from one of the members. Mr. Wheelock said he felt it was important that the funding come from a broad coalition of members to avoid appearance of conflict. Mr. Frey asked if there were concerns about procurement rules for following this process. Mr. Wheelock said that they would ensure that the procurement rules of the contracting entity were followed.

Mr. Katz stated that he supported an outside facilitator and process to select. However, for smaller members, even a small amount of money would be challenging in this economic climate. Ms. Wilson said she also supported the proposal and the process to select.

Mr. Wheelock said he would work offline with members to identify funding and move forward with the selection process.

The group discussed the desire to have the facilitated meetings in person. Mr. Hall said that Vail had venues that could support the CE meeting in person with appropriate social distancing measures in place.

Ms. Henderson suggested that Steps 3 and 4 of the Work Plan could be pushed beyond 2020 if the group feels that they should meet in person and could not do so because of the coronavirus restrictions, but she was not advocating for this option. But, those steps are not part of the Reassessment as described in the Record of Decision (ROD) and don't need to be completed in 2020 like Steps 1, 2, and 5. Mr. Coffin stated his opinion that it should not be deferred. The group agreed that maintaining momentum was important, and the consensus was to move forward with the current schedule. Mr. Coffin said he would survey the members individually before the July meeting to gather thoughts about whether the July meeting would be held in person or virtually.

Step 1 of the 2020 Reassessment

Steve Long presented an overview of the reassessment process for Step 1 and the structure for how the data would be presented and discussed. The team would summarize the data presented to the Subcommittee, provide the Subcommittee's observations, and seek input from the CE. The presentation



and discussion would go until the lunch break, and after lunch, the team would be presenting data and observations for Step 2. He noted that the meeting was about 25 minutes behind schedule, so it was important to keep on track.

Mr. Coffin emphasized that the purpose of this discussion was to be sure there was consensus. He said participation of all of the CE members was needed, and silence is not acceptable. If participation was not evident, he requested Mr. Long go down the list to make sure that all members participated and were heard.

Mr. Long noted that this was the first of three full CE meetings, and the next two related to Steps 3 and 4 would be led by the CE.

Step 1A: Evaluation of Context

Step 1A: Population and Land Use Context

Presentation of Data

Chris Primus reviewed the analysis of population data. He noted population projections for the Denver metro area were consistent with the PEIS projections, but the population projections for the corridor communities (Clear Creek, Eagle, Garfield, and Summit counties) were lower (by approximately 20 percent) and projected to remain lower than the PEIS projections. A similar pattern exists for employment.

Land use pressures have continued as projected in the PEIS. Development growth has intensified, and employees living outside their county of employment has grown. Affordable housing concerns have intensified.

Recreation use has also intensified. Wendy Wallach summarized the increase in recreational revenue and use in the corridor. She noted that the Colorado Parks and Wildlife (CPW) 2019 Statewide Comprehensive Outdoor Recreation Plan (SCORP) identifies priorities to balance recreational opportunities and stewardship of natural and cultural resources.

Mr. Long summarized Subcommittee observations about land use and recreation. The Subcommittee agreed with the SCORP conclusions about the challenge of balancing access to and conservation of resources. Overuse of resources is becoming a significant issue to protecting the quality of environment and recreational experiences. The economy of Mountain Corridor communities is dependent on outdoor recreation and tourism, and affordable housing for workers supporting the industry is increasingly challenging.

CE discussion and conclusions

Mr. Frey said he agreed that the summary captures the Subcommittee observations and agrees with what was said. However, he noted that he is not sure that the relationship between the land use pressures and transportation goals have been fully considered.

Ms. Loevlie said that she agreed that the context is the same and the pressures are more intense today.



Mr. Wheelock stated that CPW and the US Forest Service are seeing the conflicts and pressures in managing their lands. There is a recognition of the problems generally, but the agencies have noticed an increase in the hot spots of overuse as they have tried to manage the COVID crisis. Areas are overburdened now, and managing access and use needs to be improved. He stated that Clear Creek County is closely monitoring these trends. Mr. Frey said that Jefferson County is also experiencing these issues.

David Krutsinger said that a snapshot of data related to Lake and Park Counties south of the corridor would be helpful to see if population and employment were also lower with the other corridor counties, especially as related to affordable housing and commutes.

The group had no objections to the land use and recreation analysis and agreed with the Subcommittee observations that the land use and recreation context had not changed but pressures had intensified.

Step 1A: Technology

Presentation of Data

Mr. Primus provided an overview of the status of high-speed transit technology and vehicle technology. He said both transit and vehicle technology had evolved and advanced to commercialization since the PEIS.

Mr. Long summarized the Subcommittee observations about technology. He stated that the Subcommittee felt the transit technology advances were important and continuing to evolve rapidly. The feasibility of deploying high-speed transit in the Mountain Corridor had been strengthened by the advances and increased deployment of operating systems around the world.

CE discussion and conclusions

Mr. Krutsinger stated that the HDR team did a good job of capturing the evolution of Advanced Guideway System (AGS) vendors and technology and said he agreed with the summary.

Mr. Coffin said the purpose of this discussion was to determine whether the context changed so much that it would change the purpose and need. He noted that these discussions of land use and transit will come up in Step 4.

Ms. Loevlie said she agreed with the conclusions and wanted the reassessment to capture that technology is advancing and changing, and technologies need to be reexamined. Technologies that were feasible in 2014 (when the AGS study was completed) have only become more so with technological advancements.

Mr. Katz, Ms. Rajewski, and Ms. Wilson all stated support for the conclusions and observations.

Step 1A: Climate Change

Presentation of Data

Ms. Wallach reviewed climate change trends since the PEIS. The PEIS acknowledged climate change, and awareness has grown since then. Extreme weather events are more common. While FHWA does not have metrics for evaluating climate change in transportation projects, Colorado and CDOT have focused



on building resilient infrastructure and recognize that natural disasters increasingly affect reliability and maintenance of transportation facilities.

Mr. Long summarized the Subcommittee observations. The issue of climate change and its threat was documented in 2010 and considered in the context of the PEIS purpose and need. However, since the PEIS, cultural awareness of climate change has increased, and there is wider understanding of the need for more aggressive solutions to address it. The Subcommittee acknowledges that the concern about climate change is not reflected in current federal government policies, but there was broad agreement from the CE Subcommittee that climate change needed to be documented as a significant issue affecting the current context for the Mountain Corridor.

CE discussion and conclusions

Mr. Wheelock said he agreed that the summary reflected the primary observations of the Subcommittee but wanted to note that the Subcommittee also discussed challenges with land management and disaster management.

Shaun Cutting agreed that the observations were consistent with the Subcommittee discussions and the change in federal policies since the PEIS.

Mr. Katz noted that transportation is now the leading contributor to greenhouse gas emissions in Colorado. He said it does not change the context that climate change is important and agrees it has both intensified and that transportation is the primary cause. He also noted that the regulatory environment has changed in Colorado, and there are more defined goals, metrics, and emission reduction requirements in the state (e.g., HB 19-1261). Becky English asked that Mr. Katz's explanations of regulatory updates be added to the narratives regarding context.

Mr. Frey stated that PEIS purpose and need says that transportation solutions have to accommodate environmental sensitivity, and asked if that meant reconsidering project needs and the reduction in the environmental impacts? He asked if the purpose and need was still adequate if environmental impacts were too great?

Mr. Wheelock said he believed the context and purpose and need are still valid.

Mr. Frey said he disagreed with the scope of the reassessment. He stated that the relationship between environmental sensitivity and project proposals has not been adequately addressed. CDOT is not an expert at environmental protection. Recognizing that there are problems and pressures does not provide guidance on how or if to move forward with proposals. At what point might impacts be too great to move forward with projects?

Mr. Wheelock said that climate change is considered as part of the environmental sensitivity language in the purpose and need.

Mandy Whorton noted that climate change is part of the trigger language, and the reason that these trends, including climate change, were identified specifically in the context.



Mr. Cutting acknowledged and agreed with Mr. Frey's comment that CDOT and FHWA are not experts in enhancing the environment. He noted that FHWA's mission was not to improve the environment but to serve transportation and agreed that it was important to do so in an environmentally sensitive way.

Ms. Wilson noted that the relationship between transportation needs and environmental sensitivity was discussed by the original CE, and members agreed that FHWA and CDOT have a primary goal of transportation but there are other issues that need to be addressed, which is captured in the purpose and need. She suggested that the discussion move on to Steps 2 and 4. Matt Scherr and Mr. Wheelock agreed.

Mr. Long summarized the Subcommittee observation that the Preferred Alternative was developed with a 50-year vision that remains valid and generally captures the current context influencing the purpose and need. The CE members agreed.

The group moved on to consider purpose and need elements in Step 1B.

Step 1B: Evaluation of Current Components of the Purpose and Need

Step 1B: Increase Capacity

Presentation of Data

Mr. Primus reviewed travel demand projections and noted that projected increases in person trip demand in the updated model is similar to the PEIS forecasts. Transit service (Bustang, Snowstang, Winter Park Express) has increased to serve more travel demand but is not a comprehensive solution. The AGS study found strong ridership on the Mountain Corridor (4.6 to 6.2 million), assuming a connection to a front range high-speed transit system that included DIA.

Mr. Long reviewed the Subcommittee observations related to the need to increase capacity. The Subcommittee found the need to increase person trip capacity to remain. The Subcommittee also felt that transit demand was underrepresented (and a substantial need) because transit service is not widely available, data regarding transit use and demand are incomplete, and transit demand for existing services exceeds capacity.

CE discussion and conclusions

Mike Kelemen said he agrees with the Subcommittee conclusions that this is an appropriate component and need. There is not capacity to serve everyone that wants to go to the mountains.

Mr. Hall said he also agreed, especially with the clarification from the purpose and need language that person trips, not vehicle trips, were the focus of capacity. He reinforced the Subcommittee's focus that capacity and mobility meant people, not vehicles or pavement.

Mr. Wheelock agreed and added that he feels the metric applies to cargo as well. He said freight should be represented in efficiency/effectiveness of payload delivery, without presuming mode or method. Mr. Scherr agreed.

The CE agreed that the need to increase person trip capacity remains a valid component of the purpose and need.



Step 1B: Improve Mobility and Accessibility

Presentation of Data

Mr. Primus summarized data related to travel times, safety, and incident response. He said peak travel times remain long, increasing in both directions of I-70 between 2012 and 2019, more than doubling free flow times in the westbound direction in 2019 and almost three times free flow times in the eastbound direction in 2015. Travel times in the eastbound direction decreased between 2015 and 2019 due to the implementation of the eastbound Mountain Express Lane (MEXL) between US 40 and Floyd Hill. Even with the MEXL, peak eastbound travel times in 2019 were more than double free flow conditions.

Projected peak travel times in the updated travel demand model are very similar to the PEIS projections.

Safety improvements have been implemented in two of the six locations where the PEIS recommended safety improvements. In these locations, crash rates have decreased.

CDOT does not have reliable data related to incident response times but does keep data for clearance times, which have improved steadily since the implementation of updated Traffic Incident Management Plans and improved operational coordination along the corridor.

Mr. Long reviewed the Subcommittee observations. The Subcommittee determined that improving mobility and accessibility remained an important need. They noted that mobility is a primary need that drives the need for capacity and other factors beyond capacity affect mobility, such as affordable housing, longer commutes, and delays / unreliability caused by natural disasters. They emphasized that mobility should be viewed in terms of people, not vehicles.

CE discussion and conclusions

The CE agreed with the Subcommittee observations that mobility is a primary need and improving how people move through the corridor efficiently and safely remains important.

Step 1B: Reduce Congestion

Presentation of Data

Mr. Primus presented data related to hours of congestion in the peak periods on weekends in 2000, 2012, and 2019. West of the Eisenhower-Johnson Memorial Tunnels (EJMT), congestion grew slightly during this period but east of EJMT, congestion was intense, approaching 8 hours of daily congestion at EJMT in 2019, more than doubling the hours of congestion recorded in 2012. At the Veterans Memorial Tunnels, hours of congestion in 2019 were negligible compared with 5 hours of congestion in 2012; this is attributable to the effectiveness of eastbound MEXL improvements.

Mr. Long reviewed the Subcommittee observations. The Subcommittee agreed that congestion inhibits travel in the Mountain Corridor and affects not just personal vehicles but transit services (and freight), which rely on the shared use of the highway.

CE discussion and conclusions

The CE agreed that congestion remains a concern and valid need.



Step 1: CE Conclusions

After thorough discussion of each of the components of context and purpose and need, the CE concluded that

- The context under which the purpose and need was developed remains relevant, recognizing that since the ROD, land use, recreation, and climate change pressures have intensified and technological advances in high-speed transit and operational management strategies are increasingly appropriate to serve person trip demand in the corridor.
- The purpose and need remains valid. It identifies persistent transportation needs to increase person-trip capacity, improve mobility and accessibility for people and freight, and reduce congestion and travel delays through the I-70 Mountain Corridor. The purpose and need also recognizes the need for transportation solutions in the corridor to provide for and accommodate environmental sensitivity and respect for community values.

With this, the CE concluded Step 1 of the Work Plan and moved on to review Step 2 and assess the effectiveness of the implementation of the Preferred Alternative since the ROD.

Step 2 of the 2020 Reassessment

Step 2A: How to measure and assess effectiveness

Mr. Primus outlined quantitative data that were available to assess effectiveness, including travel times, incident response times, transit ridership, and person/vehicle capacity. In addition to assessing effectiveness of transportation measures, the team also reviewed qualitative measures for how well environmental sensitivity and community values had been provided for and accommodated.

Ms. Wallach provided an overview of the measures of the Context Sensitive Solutions (CSS) Process and other agreements, including the I-70 Mountain Corridor Section 106 Programmatic Agreement, A Landscape Level Inventory of Valued Ecosystem Components (ALIVE) Memorandum of Understanding (MOU), Stream and Wetland Ecological Enhancement Program (SWEEP) MOU, I-70 Mountain Corridor Aesthetics Guidance, and the I-70 Mountain Corridor Design Criteria and Design Criteria Exceptions Process. She noted that these agreements had been implemented on every Tier 2 project but with some variation and inconsistency. She provided examples from several larger Tier 2 projects, including the Twin Tunnels (Veterans Memorial Tunnels) projects, MEXL projects, and the EJMT to Herman Gulch eastbound auxiliary lane where environmental sensitivity and community values had been successfully provided for and accommodated.

Ms. Wallach summarized the Subcommittee observations that some projects used the CSS process and other agreements more effectively than others. The most effective projects for providing for and accommodating environmental sensitivity and respect for community values were those that carried CSS through all of the life cycles, tracked environmental commitments and were responsive to community input through the life cycle phases, and incorporated best practices and lessons learned from previous projects.



CE discussion and conclusions

CE members agreed that the CSS process is very effective when used consistently. Ms. Loevlie stated that it is important for CSS to be used throughout the life cycles. For instance, the eastbound MEXL project used the CSS process effectively in design but not in construction. Mr. Hillman agreed with this example.

Mr. Kelemen agreed that CSS is important and helps meet multiple interests. He said the process ensures that one interest is not more important than another.

Mr. Cutting noted that the CSS is also flexible and can help stakeholders come together to come up with creative solutions. He stated the peak period shoulder lane (PPSL) projects were a good example of low-impact, high-value projects that came out of flexible interpretations of the non-infrastructure components in the ROD.

Step 2B: Assess effectiveness of implementation of the Preferred Alternative to date

Mr. Long outlined the Work Plan elements for Step 2B to assess the effectiveness of the implementation of the Preferred Alternative to date along with reviewing the remaining elements of the Minimum and Maximum Programs of Improvements/Preferred Alternative, timing, and anticipated effects.

Mr. Primus said the team had prepared a detailed table of each of the components of the Preferred Alternative as described in the ROD, including non-infrastructure elements, AGS, and highway improvements. Highway improvements are further categorized in the Minimum and Maximum Program. The implementation of the Maximum Program is dependent on triggers and review of effectiveness of the Minimum Program, AGS, and non-infrastructure components. To date, progress has been made on several non-infrastructure components and a portion of the “specific highway improvements” outlined in the ROD. To the extent data were available, the effectiveness of these projects was rated. For many components, effectiveness was unknown or incomplete because projects have not been implemented or data are not available to accurately assess effectiveness. Ratings were provided for mobility and safety, and if appropriate, the applicable component of the purpose and need was noted. The rating table and corresponding narratives are included in the meeting materials.

Non-Infrastructure Components

Non-infrastructure components consist of a variety of travel demand management and other operational strategies to address immediate mobility and safety needs without major infrastructure investment or impact. The majority of the non-infrastructure improvements were rated Medium effectiveness or unknown. Notable higher rated improvements included introduction of Bustang/Snowstang service, which was rated Medium effectiveness in addressing mobility needs and the eastbound MEXL, which was rated High effectiveness in addressing mobility needs.

CE Subcommittee Observations

Mr. Long summarized the Subcommittee assessment of non-infrastructure improvements. The Subcommittee found the implemented non-infrastructure components have been effective in addressing some issues on the corridor but generally have low effectiveness at addressing core corridor needs on their own. The Subcommittee noted that the eastbound MEXL project has had a bigger impact because it is broader in scope even though it is interim and stayed mostly within the existing interstate



footprint. The MEXL was viewed as a success with regard to creative and adaptive application of a non-infrastructure components. However, the Subcommittee also observed that the categorization of non-infrastructure improvements needed to be clarified as a result of the MEXL project because it is not a long-term solution. The Subcommittee also observed that non-infrastructure projects are not intended to be long-term solutions and should complement rather than substitute for AGS and highway improvements in the Preferred Alternative.

CE Observations

Mr. Kelemen said that non-infrastructure improvements have helped and should continue to be considered. While maybe not highly effective, many are lower cost and more feasible within CDOT's budgetary constraints.

Mr. Cutting noted that non-infrastructure improvements provide opportunities for innovation and flexibility in implementing transportation improvements in the corridor. He noted the CSS process has been effective in generating creative solutions and support to pursue those ideas.

Ms. Loevlie agreed and said more non-infrastructure improvements should be implemented to manage traffic. Even though the benefits may be hard to quantify, they are effective.

Mr. Krutsinger said that Bustang and Snowstang have been effective both in improving mobility and providing a building block for future transit. He noted other opportunities to leverage investments with maintenance facilities and local connector transit services in Winter Park, Steamboat, and Frisco and the launch of ElkStang in Estes Park, which will be needed to make a future high-speed transit system effective.

Advanced Guideway System

The AGS Feasibility Study was completed in 2014 and found that the AGS was technically feasible but not financially feasible at that time. Its effectiveness is not rated because no progress has been made toward its implementation in the corridor.

CE Subcommittee Observations

The Subcommittee discussed the AGS at length and feel it is more feasible now, both technically and financially, than during the PEIS or since the AGS Feasibility Study. On financial feasibility, they observed that many transportation improvements are not funded but are not considered infeasible and that private-public partnerships and other creative financing strategies are more common now than when the AGS Study was completed. On technical feasibility, they pointed to the successful implementation of new high-speed transit systems around the world as evidence that AGS was commercially viable. They felt strongly that more attention was needed to implement the AGS and that this would be a topic of much discussion in Step 4 of the Work Plan.

CE Observations

Ms. Loevlie said implementation of the AGS has been ineffective. She said the AGS funding issue has not been addressed or considered seriously since 2014. Public-private partnerships have become more common. She stated the technical feasibility study should also be updated.



Mr. Wheelock agreed that if technical feasibility was proven once in 2014, it is likely to be more so now and agreed the feasibility study should be updated. He said that although funding remains elusive, finding a dedicated transit source was critical and should be pursued with more enthusiasm. He also asserted that the 2014 model does not reflect the revised cost of improving technology.

Mr. Kelemen said it looked like CDOT funding was going to be more challenging moving forward.

Mr. Krutsinger said mobility hubs and maintenance facilities have been successfully funded with local and sometimes federal matching dollars and could be a model for how improvements could be phased with funding partnerships.

Chris Linsmayer agreed that the will to find money has not been there but also that the AGS price tag is so large that it is an uphill climb even if the will were there. For example, the Floyd Hill funding subcommittee is looking for \$300-\$400 million, which is hard enough and not even in the same ballpark as AGS funding needs.

Ms. Loevlie said the CE always knew that AGS would need alternate funding.

Highway Improvements

Mr. Primus reviewed the highway improvements included in the Minimum Program, including four “specific highway improvements,” three “other highway improvements,” four auxiliary lane improvements, and numerous interchange improvements. Many of the highway improvements are also incomplete. Of those that have been completed or partially completed, the 6-lane component from Floyd Hill through the Veterans Memorial Tunnels (eastbound) is rated High in effectiveness for both mobility and safety, and the Edwards and Spur Road interchange improvement is also rated High in effectiveness for safety. The Grand Avenue Bridge in Glenwood Springs is rated Medium in effectiveness for safety, and the suite of truck operational improvements are also rated Medium in effectiveness. The safety effectiveness for the eastbound auxiliary lane from EJMT to Bakersville and Wolcott safety project are both rated Low effectiveness.

The Maximum Program was not assessed because progress on the other elements of the Preferred Alternative and triggers for its consideration have not been met.

CE Subcommittee Observations

The Subcommittee did not discuss highway improvements in detail but did not disagree with the assessments or ratings for these components. They did specifically affirm that the MEXL projects are non-infrastructure and not highway improvements, which may not be used for expansion into, nor as a component of, the Maximum Program’s six-lane highway.

CE Observations

Ms. Loevlie said operational improvements can improve mobility as well as traditional highway improvements. She reminded the group that the CE was intentional that six-lane capacity is different than six lanes for this reason (i.e., if the same throughput can be served without adding highway lanes, that was preferable).

Mr. Wheelock stated that all improvements in the corridor need to be high quality and that just “scabbing on” a lane would not be consistent with the ROD. He said if there are other ways to achieve



the Maximum Program improvements through other pavement-based solutions that should be considered. Highway improvements need to be viewed for more creative ways of moving people.

Step 2: CE Conclusions

Ms. Loevlie summarized her assessment of the effectiveness of the implementation of the Preferred Alternative. She said AGS has been ineffective because not enough has been done enough to advance it. She said the Minimum Program is working, and the non-infrastructure components are somewhat effective, especially traffic management and transit. She also noted that some improvements not specifically included in the Preferred Alternative or envisioned in 2010 have been implemented (e.g., MEXL), which is evidence of the effectiveness of the adaptive management approach of the Preferred Alternative.

Mr. Long noted that incremental improvements continue to make the highway improvements more effective.

Mr. Katz said all of the improvements are intertwined and all are needed to effectively address the transportation problems in the corridor. He noted there are a lot of incomplete actions and no game changers. He summarized that all of the tools will be needed moving forward.

Mr. Frey stated that until AGS is implemented, there will be a question of how effective it could be and its effect on other needs.

Mr. Krutsinger agreed that there have been no game changers and added that there has been no money for game changers.

In summary, the CE concluded that not as much progress had been made toward implementing the Preferred Alternative as the CE had hoped when it was crafted. Projects that have been implemented have positively affected mobility and safety but too much remains incomplete. All the elements in the Preferred Alternative remain relevant, and the CE looks forward to considering the prioritization and opportunities to advance incomplete elements during Step 4 of the Work Plan.

Step 3 of the 2020 Reassessment

Step 3 of the Work Plan is intended to clarify questions on existing information in the PEIS/ROD.

Mr. Long presented the four areas of clarification identified in the Work Plan and several new recommendations for clarification about the Maximum Program from the Subcommittee (as documented in the draft May 11, 2020 draft meeting notes). The areas identified for clarification in Step 3 include:

- Status of Eisenhower-Johnson Memorial Tunnels 3rd bore (clarify Minimum or Maximum Program)
- Empire Interchange (clarify what is to be done in Minimum Program)
- 2025 trigger
- Clarify and restate the definition of AGS in the ROD



- Maximum Program highway component definitions, including:
 - Future highway expansion needs to be considered independent of the MEXL projects
 - Capacity means people not cars and that 6-lane capacity is not the same as a six-lane highway cross section
 - “Existing highway” could allow moving the highway from its current alignment, such as was considered in Idaho Springs visioning efforts
 - If the six-lane capacity of the Maximum Program becomes a six-lane highway solution, a redesign of the existing roadway between VMT and EJMT is anticipated, and previous visioning exercises conducted by Clear Creek County and Idaho Springs (in 2014 and 2016) should be honored.
 - Meaning of “not preclude” for AGS. Now that more information is known about the AGS alignment, need to consider how future highway projects might conflict with AGS.

There were no additional comments. The CE co-chairs will solicit additional thoughts before the CE considers Step 3 at the next meeting.

Next Steps and Wrap Up

The narrative for Step 1, context, will be updated to include a snapshot of data related to Lake and Park Counties to see if trends with population, employment, commuting, and housing were similar to the primary corridor communities included.

The narrative for Step 1, context, will include discussion of the changes in the regulatory environment in Colorado related to climate change (e.g., HB 19-1261).

The next meeting will be July 15, 2020. The CE will be evaluating and discussing Step 3 and beginning to evaluate Step 4 by developing a list of potential future actions for continued pursuit of the Preferred Alternative. As noted previously, the CE plans to hire a third-party facilitator for the July meeting and prefers to hold it in-person if possible.

Mr. Royer stated that prioritization in Step 4 is a very important topic. Funding is going to be tight, and the CE will need to be realistic about what can be accomplished.

Ms. Loevlie said she appreciated the need for pragmatism but also said it was important to look forward to the 2050 vision.

Mr. Wheelock asked the group to think proactively about the next meeting and come prepared to think about immediate actions but also keeping an eye on 2050.

Mr. Royer said there are actions in Congress now that could be helpful for infrastructure. He said the group should advocate for infrastructure because it needs to be done, people need work, and infrastructure should be part of the coronavirus recovery.

Mr. Long asked Ms. Whorton to summarize the meeting discussion. She did. Mr. Long asked if there were any additional comments or discussion items. None were identified. Mr. Wheelock thanked Mr. Long and the HDR team for their work, and the meeting was adjourned.

I-70 Collaborative Effort Meeting

Wednesday, May 27, 2020

9:00 a.m. – 4:00 p.m.

Join Zoom Meeting

<https://zoom.us/j/95458749138?pwd=UEtFYXRKZitsZWpxOUtHWkQwQnhydz09>

- | | |
|---|---------------|
| 1. Introductions | 9:00 – 9:05 |
| 2. Public Comment | 9:05 – 9:20 |
| 3. CE Business | 9:20 – 10:15 |
| a. Approve agenda | |
| b. Minutes | |
| i. Approval of May 2019 minutes | |
| ii. Approval of September 2019 Minutes | |
| c. Operating Protocols Revisions | |
| d. Review list of members and alternates | |
| e. Workplan revisions | |
| f. Facilitator and timing for Steps 3 and 4 | |
| 4. Step 1 of 2020 Reassessment | 10:15 – 12:15 |
| a. Presentation of Analysis | |
| b. CE discussion and conclusion | |
| 5. Break | 12:15 – 1:00 |
| 6. Step 2 of 2020 Reassessment | 1:00 – 3:00 |
| a. Presentation of analysis | |
| b. CE discussion and conclusion | |
| 7. Step 3 – Discuss outstanding questions | 3:00 – 3:30 |
| 8. Step 4 – General discussion | 3:30 – 3:45 |
| 9. Next steps and Wrap-up | 3:45 – 4:00 |



COLORADO

Department of Transportation

I-70 Reassessment Full CE Meeting Steps 1 and 2 Presentation

May 27, 2020

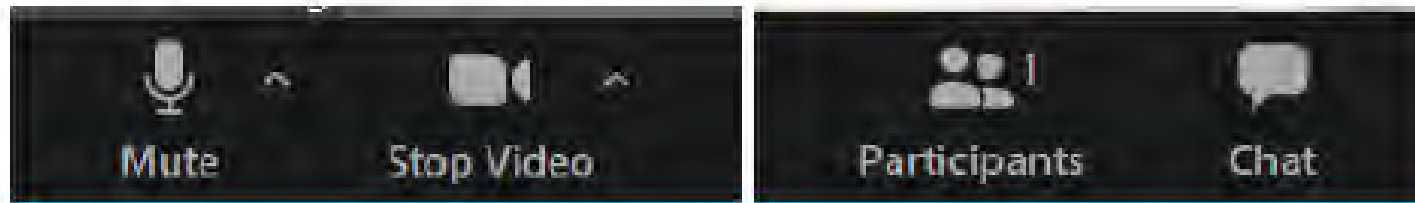


Agenda

1. Zoom Guidelines and Introductions
2. Purpose of Meeting
3. Schedule
4. Recap of Work Plan
5. Step 1A
6. Step 1B
7. Step 1 Purpose and Need Reassessment Discussion
8. Lunch
9. Step 2A: Other Components
10. Step 2B: Implementation Status
11. Step 2: Overall Observations and Discussion
12. Step 3A: Identify Outstanding PA Questions
13. Wrap-up and Open Discussion

PARTICIPATING IN THE MEETING

- You can control your audio and video settings and type comments/questions in the chat feature, using the tool bar at the bottom of your screen. You can also see a list and video/photos of participants. The phone tool bar is similar to this computer tool bar:



- **Audio:** Click Mute when you're not speaking to cut down on background noise. Unclick it to speak.
- **Video:** Turn the video on and off by clicking the video icon.
- **Chat:** Click the chat button to open a chat window to the side of your screen. You can type comments or questions here.
- **Participants:** Click the Participants button to bring up a text box showing the meeting participants.

To change how your screen displays people and meeting materials, use the buttons at the top right of your computer screen. This Zoom article provides information on video layouts. https://support.zoom.us/hc/en-us/articles/201362323-How-Do-I-Change-The-Video-Layout-#h_e38e1056-0b7c-4678-a9ba-a1468b5f54a9



- We will stop after each slide for discussion
 - Use the chat option during the slide discussion or the presenter will ask for comments at the end of each slide
- In case of technical difficulties, text Kira Olson at
 - 970-310-1898



Project Team

- Steve Long, HDR Engineering
- Chris Primus, HDR Engineering
- Wendy Wallach, HDR Engineering
- Mandy Whorton, PEAK Consulting
- Kira Olson, HDR Engineering



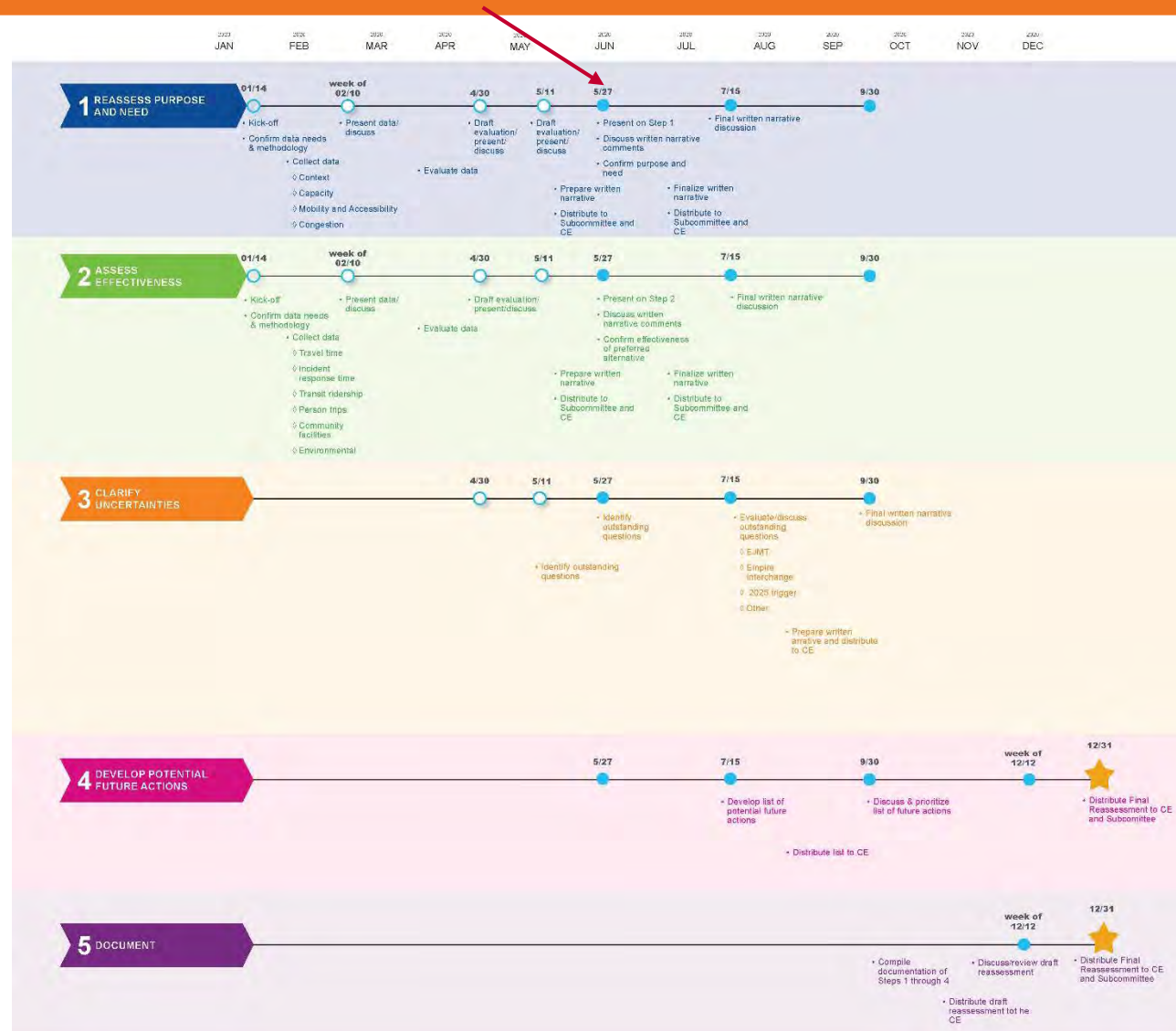
Meeting Goals:

- Review the work that the CE Subcommittee has done to date on Steps 1 and 2 of the work plan



Schedule

We are here





Step 1A: Reassess the Purpose and Need





Step 1A: Evaluation of context

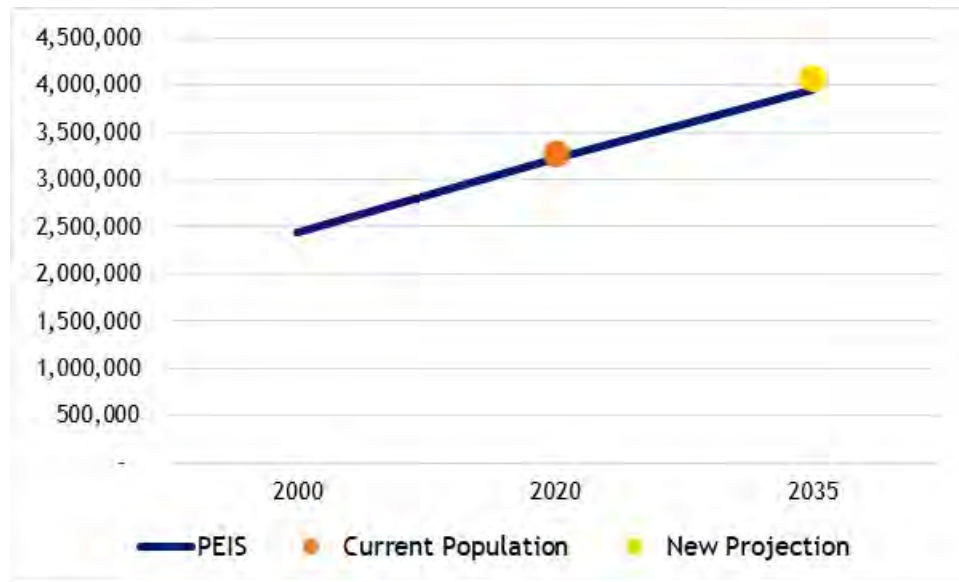
Determine if the context in which the Purpose and Need statements were developed have changed. Information that may be needed to evaluate the context includes:

1. Population
2. Land use and land use pressures (including demand)
3. Technology
4. Climate change
5. Others



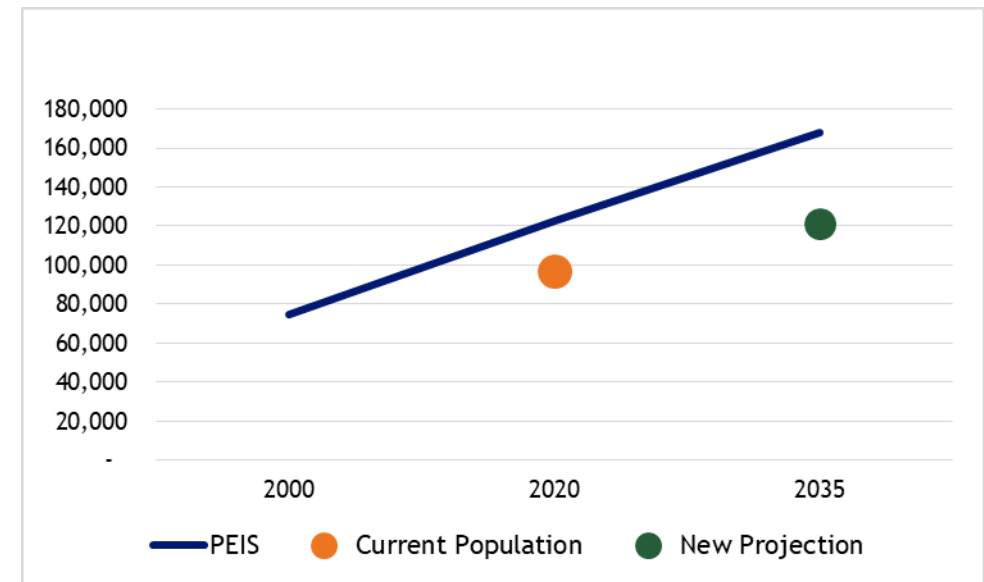
Step 1A: Evaluation of Context Population

Denver Metro Population



Source: I-70 Mountain Corridor PEIS 2011, DOLA 2019, and CDOT Statefocus model 2019.

I-70 Corridor Population



Source: I-70 Mountain Corridor PEIS 2011, DOLA 2019, and CDOT Statefocus model 2019.

2035 projections are less than prior forecasts for corridor

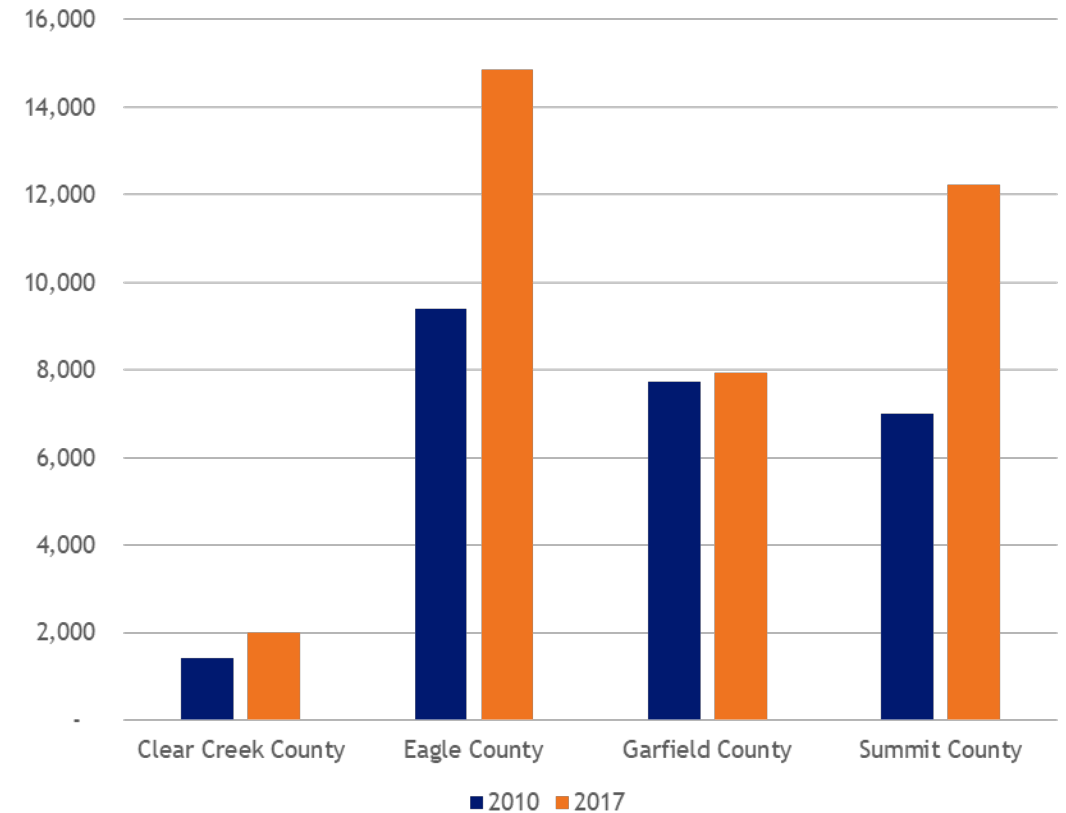


Step 1A: Evaluation of Context Land Use Pressures

Pressure on Land Use

- Development growth has intensified
- Employees living outside county of employment has grown
- Recreation use has intensified

Comparison of Number of Workers Living Outside County of Employment





Step 1A: Evaluation of Context Land Use and Land Use Pressures—Recreation

Updated Conditions

Doubling of economic revenue since 2012 from recreation opportunities but Colorado Parks and Wildlife recognizes the increased pressure on recreation sites and activities. (*SCORP, 2019*)

2019 Priorities balance recreation opportunities, with stewardship supported by land conservation.

1. Sustainable Access and Opportunity
2. Coloradans and visitors enjoy and care for natural and cultural resources and commit to stewarding them for future generations
3. Land, Water and Wildlife Conservation Goals



Step 1A: Evaluation of Context Land Use and Land Use Pressures—Recreation

Observations/Discussion

- Continued increase in recreation and land use pressures
- Collaboration will be needed to address these pressures
- Evolving use of Land Management and Mitigation Strategies
 - Off-peak use incentives
 - River access “hot spots”
 - Funding partnership for forest management



Step 1A: Evaluation of Context Land Use Pressures

Subcommittee Observations

- The challenge of balancing access to and conservation of recreational resources has intensified.
- Overuse of resources is becoming a more significant issue for protecting the environment and quality of recreational experiences.
- The outdoor recreation economy shapes the Mountain Corridor and continues to put significant pressure on the need for affordable housing for workers supporting the industry.



Step 1A: Evaluation of Context Land Use Pressures

Collaborative Effort Discussion



Step 1A: Evaluation of Context Transit Technology

Status of AGS Technology Vendors

Company	Company Status	Technology Type	Technology Status
American Maglev	Open	Maglev	Maglev trains have been tested on full-scale test track in Georgia
Flight Rail	Open	Elevated high-speed rail system	Tested a 1/6 scale working prototype
General Atomics	Open	Maglev	Tested a full scale working maglev system in California
MagneMotion	Acquired by Rockwell Automation	Maglev	No updates on Rockwell Automation Website
Own Transit Group	Open	High speed rail	Patented new HSR technology
PPRTC	Open	Public Personal Rapid Transit	Website mentions advocacy, not implementation
skyTran	Open	Maglev	Began construction on second full-scale test platform and will soon launch first commercial pilot
Swift Tram	Open	Small scale, automated guide way transit system	Completed conceptual designs
Talgo	Open	High speed rail	Implemented several HSR projects worldwide, including Spain and Uzbekistan
Transrapid	Possibly closed	N/A	No website found

Source: online research (each provider's website), accessed February 2020



Step 1A: Evaluation of Context Transit Technology

High Speed Transit Technology Continues to Evolve

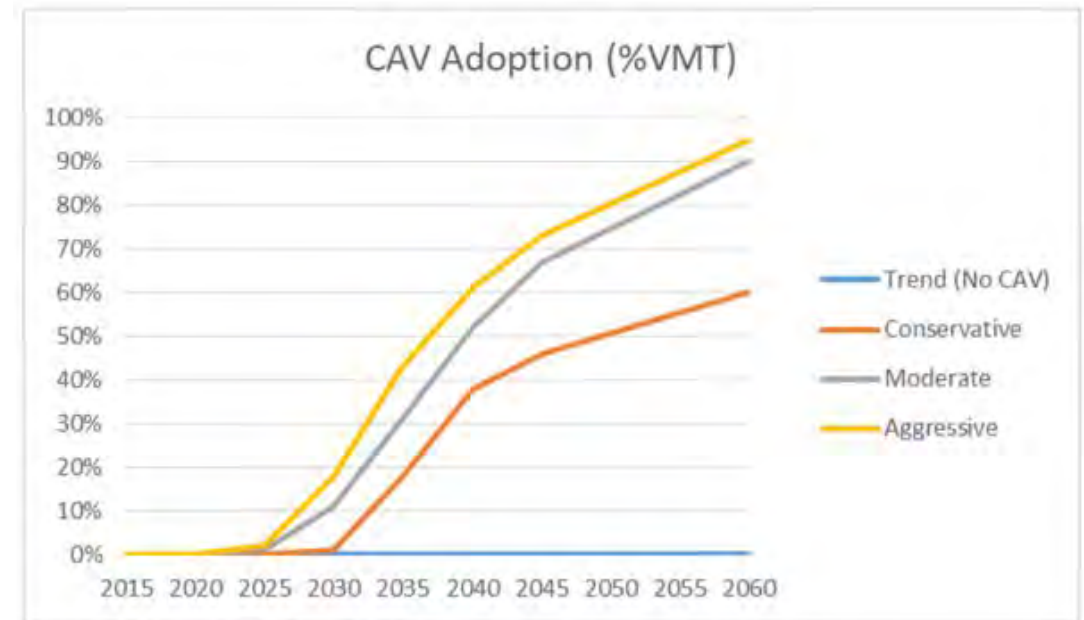
- Maglev
 - Several lines opened/under construction since 2011
 - Costs remain high
- HyperLoop
 - Prototypes in development
 - Suitability for human transport uncertain



Step 1A: Evaluation of Context Vehicle Technology

Connected Vehicle (CV) and Autonomous Vehicle (AV) technology continues to evolve

- Potential to Increase Mobility
- Potential to Improve Safety
- Full AVs could increase corridor demand
- Very high CV/AV saturation levels are likely required before congestion is reduced



Source HDR Advanced Mobility Team, 2019.

Potential Rates of Connected and Autonomous Vehicle Adoption in Terms of Vehicle Miles Traveled



Subcommittee Observations

- High-speed transit technology is evolving rapidly
- Its application and feasibility for the Mountain Corridor is strengthened by advances and increasing deployment in operating systems around the world



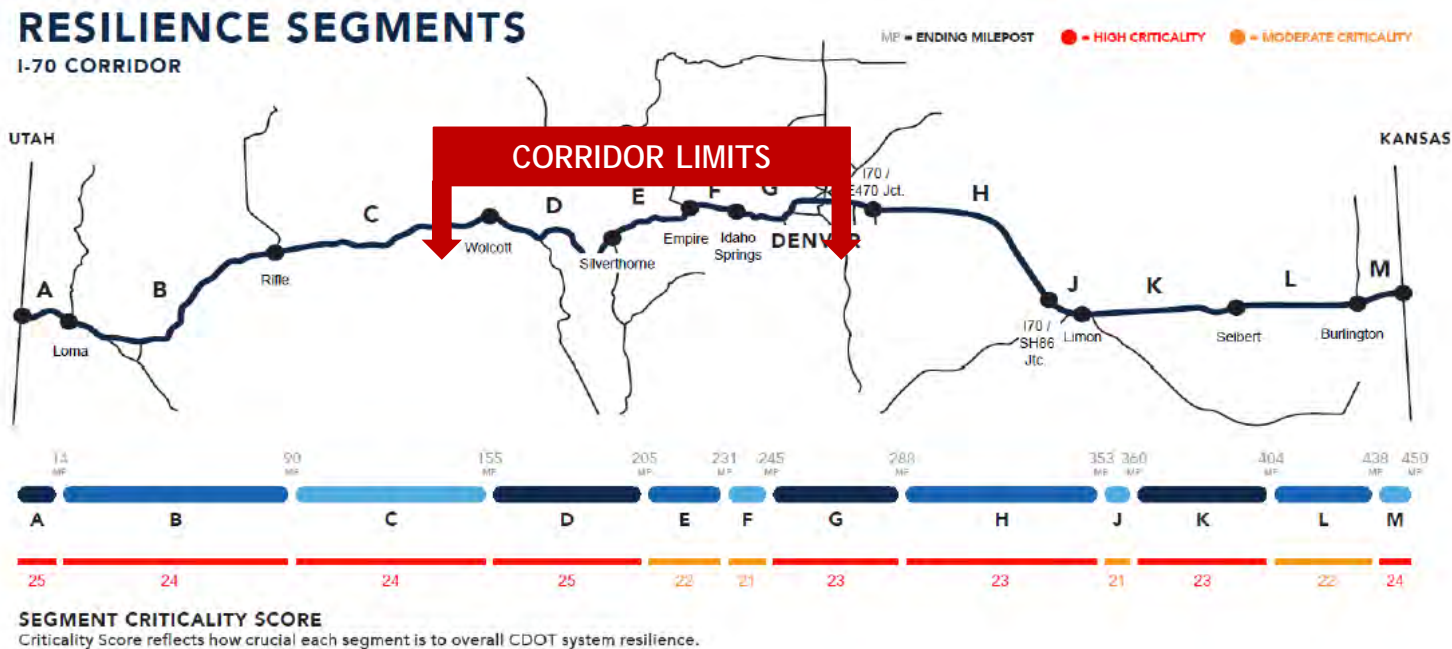
Step 1A: Evaluation of Context Technology

Collaborative Effort Discussion



Step 1A: Evaluation of Context Climate Change

- Increased Global and Local Awareness
- Building Climate Resilient Transportation
- Currently no guidance on applying metrics from FHWA





Step 1A: Evaluation of Context Climate Change

Subcommittee Observations

- The issue of climate change and its threat was documented in 2010 and considered in the context of the PEIS purpose and need.
- However, since the PEIS, cultural awareness of climate change has increased, and there is a broader understanding of the need for more aggressive solutions to address it.
- While the subcommittee acknowledges that the concern about climate change is not reflected in current federal government policies, there was broad agreement from the CE subcommittee that climate change needed to be documented as a significant issue affecting the current context for the Mountain Corridor.



Step 1A: Evaluation of Context Climate Change

Collaborative Effort Discussion



Step 1A: Evaluation of Context

Subcommittee Observations

- The Preferred Alternative was developed with a 50-year vision that remains valid and generally captures the current context influencing the purpose and need.



Step 1A: Evaluation of Context

Collaborative Effort Team Overall Discussion

Evaluation of Context



Step 1B: Evaluate Current Components of Purpose and Need





Step 1B: Evaluate current components of Purpose and Need.

Determine if the components are still valid using Step 1A context evaluation. The same data sets (listed under each component) must be used as were used in the original PEIS to provide a true comparison.



Step 1B: Evaluate Current Components of P&N

Component 1: Increase capacity

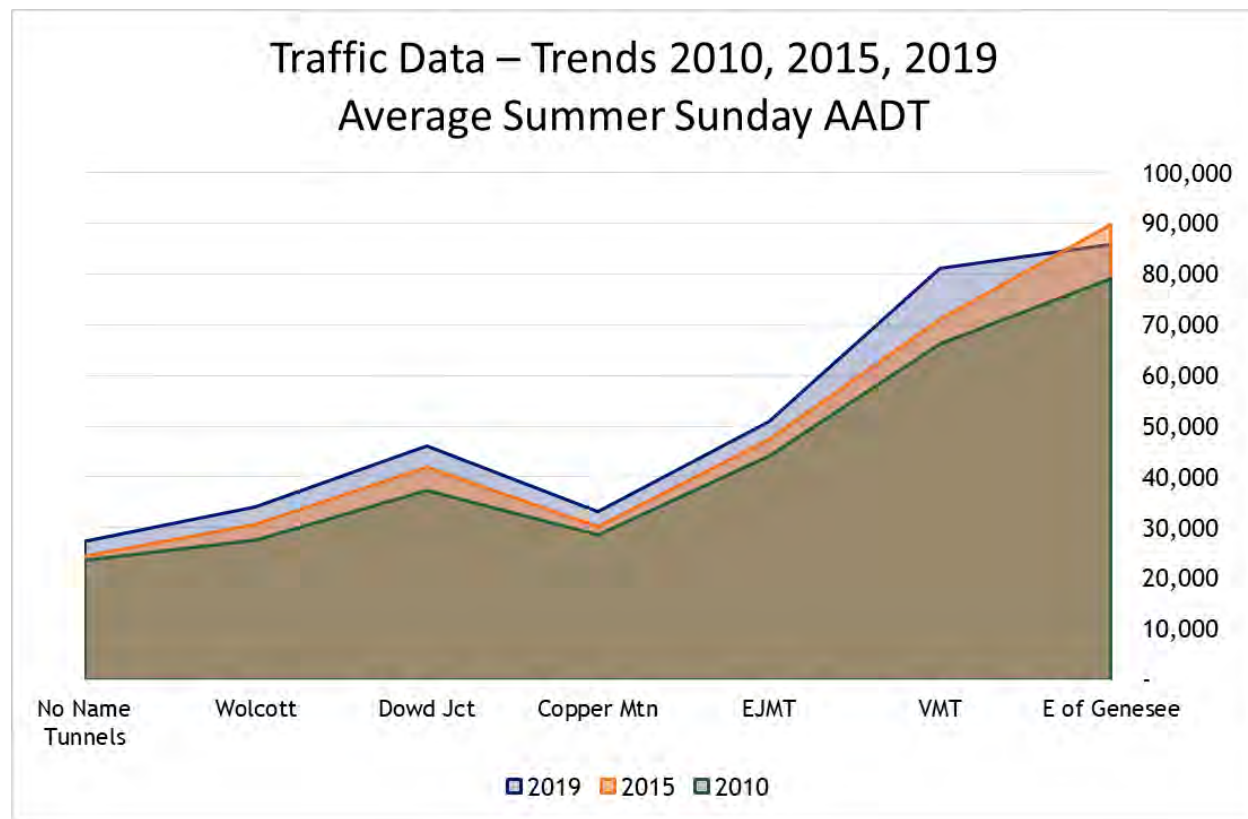
Information that may be needed to evaluate this component includes:

1. Existing traffic data
2. Person trips
3. Updated traffic projections/Travel Demand Model information
4. Transit ridership



Step 1B: Evaluate Current Components of P&N Component 1—Increase Capacity

Existing Traffic Data

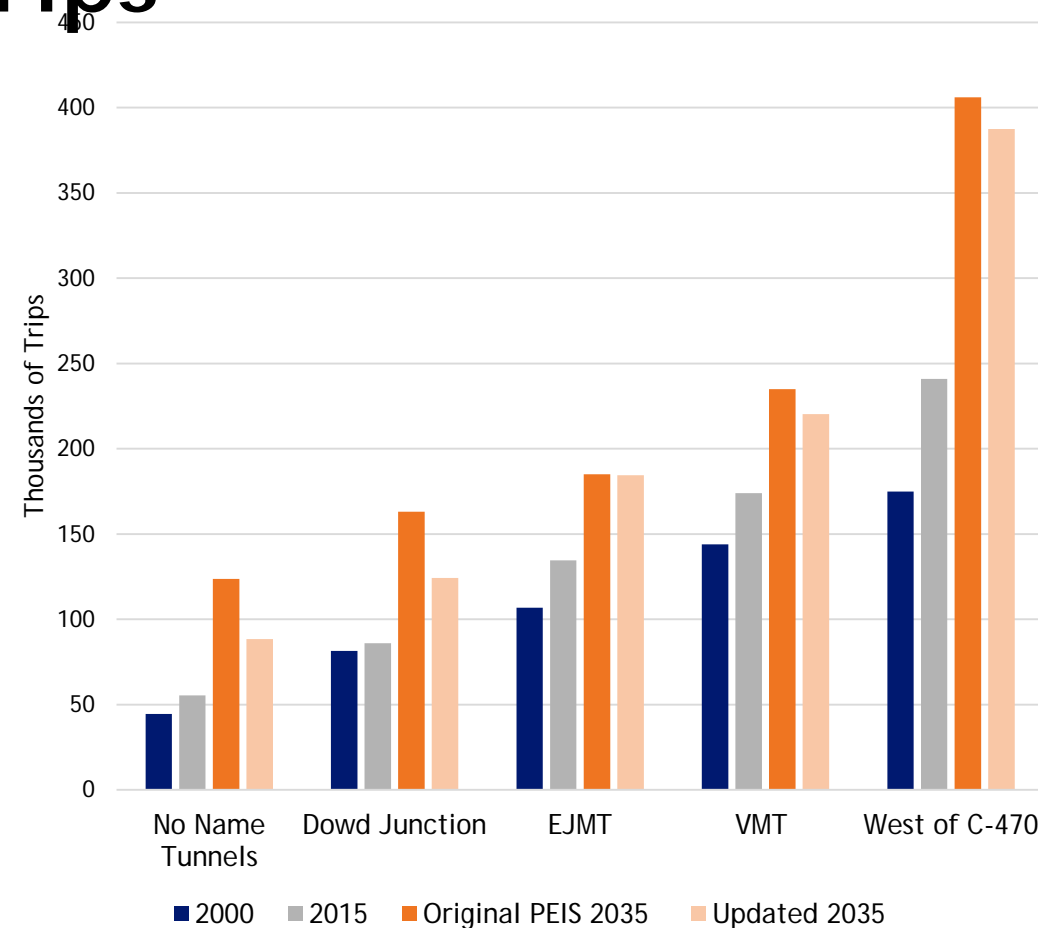
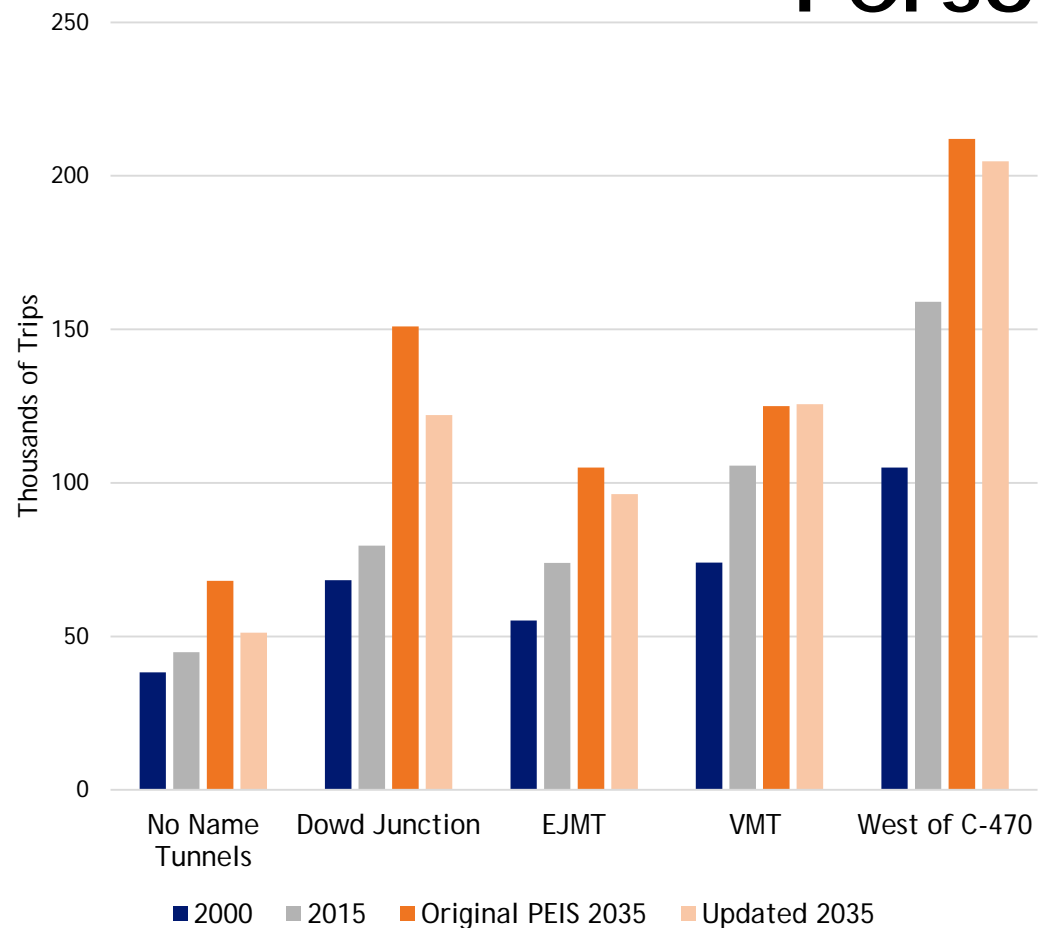


Source: CDOT OTIS



Step 1B: Evaluate Current Components of P&N Component 1—Increase Capacity

Person Trips



Source: PEIS and updated I-70 Mountain Corridor Travel Demand Model

May 27, 2020

I-70 Reassessment Full CE Meeting Steps 1 and 2 Presentation



Step 1B: Evaluate Current Components of P&N Component 1—Increase Capacity

Transit Ridership

- Initiation of CDOT Bustang and Snowstang
- Re-launch of Amtrak Winter Park Express Ski Train
- AGS/ICS/RMRA Study conducted in 2014
 - Concluded that fixed guideway options are technically feasible but not financially feasible as of 2014. Annual ridership was 4.6 to 6.2 million, assuming a connection to a front range high speed transit system including DIA



Step 1B: Evaluate Current Components of P&N Component 1—Increase Capacity

Subcommittee Observations

- Supports the evaluation of capacity in terms of person trips rather than vehicle trips
- Suppressed trips and induced demand remains a concern and that a multimodal approach “beyond pavement” continues to be needed.
- Transit demand is underrepresented because
 - Comprehensive transit service is not available;
 - Data regarding transit use are incomplete; and
 - Transit demand exceeds capacity



Step 1B: Evaluate Current Components of P&N Component 1—Increase Capacity

Collaborative Effort Discussion Component 1 - Increase Capacity



Step 1B: Evaluate Current Components of P&N Component 2—Improve Mobility and Accessibility

Component 2: Improve mobility and accessibility.

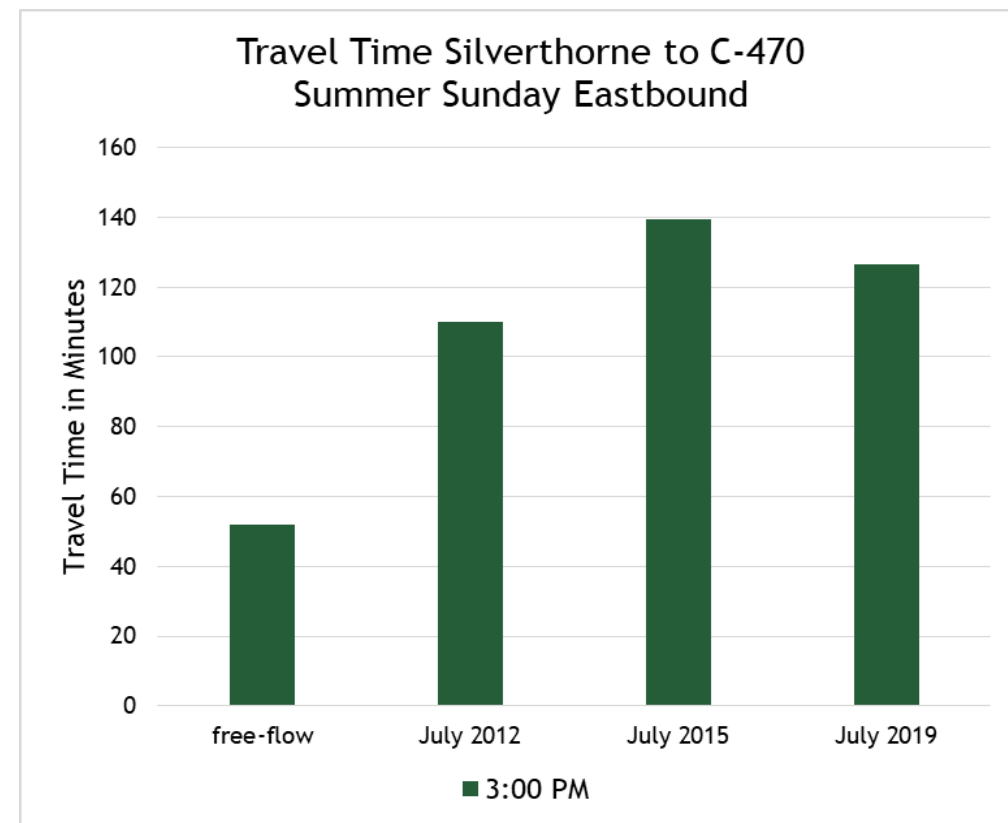
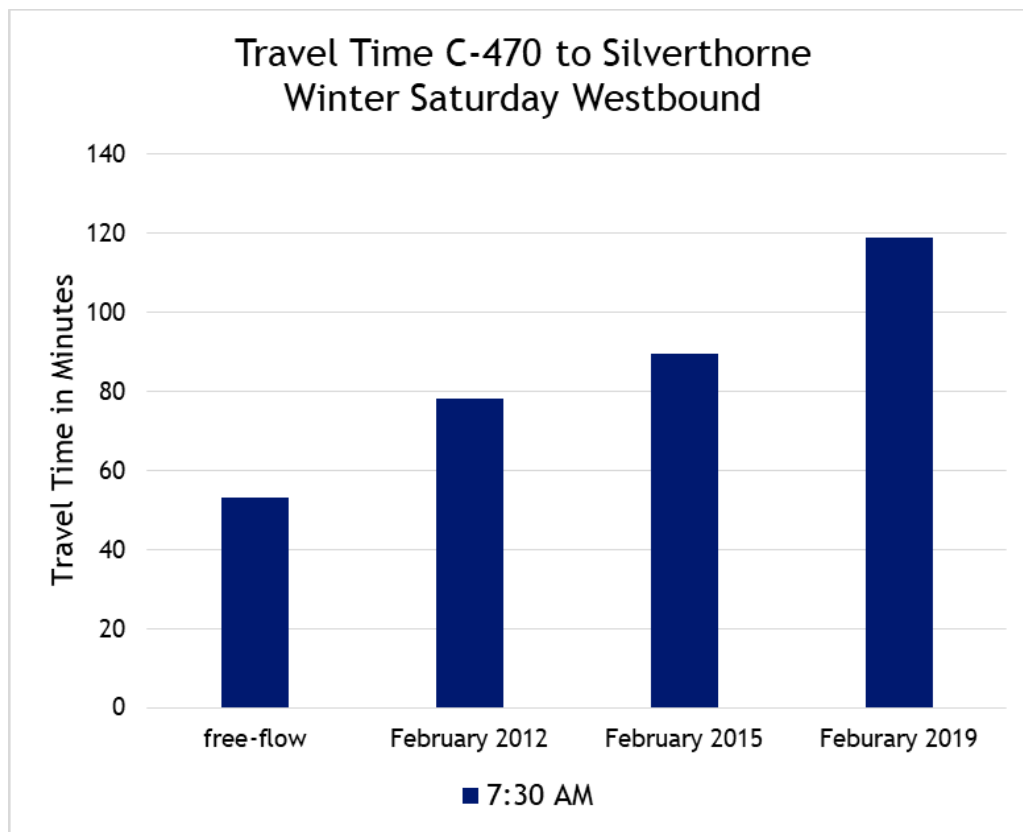
Information that may be needed to evaluate this component includes:

1. Travel time/reliability
2. Safety data
3. Incident response times
4. Travel Demand Model information
5. Others



Step 1B: Evaluate Current Components of P&N Component 2—Improve Mobility and Accessibility

Travel Time



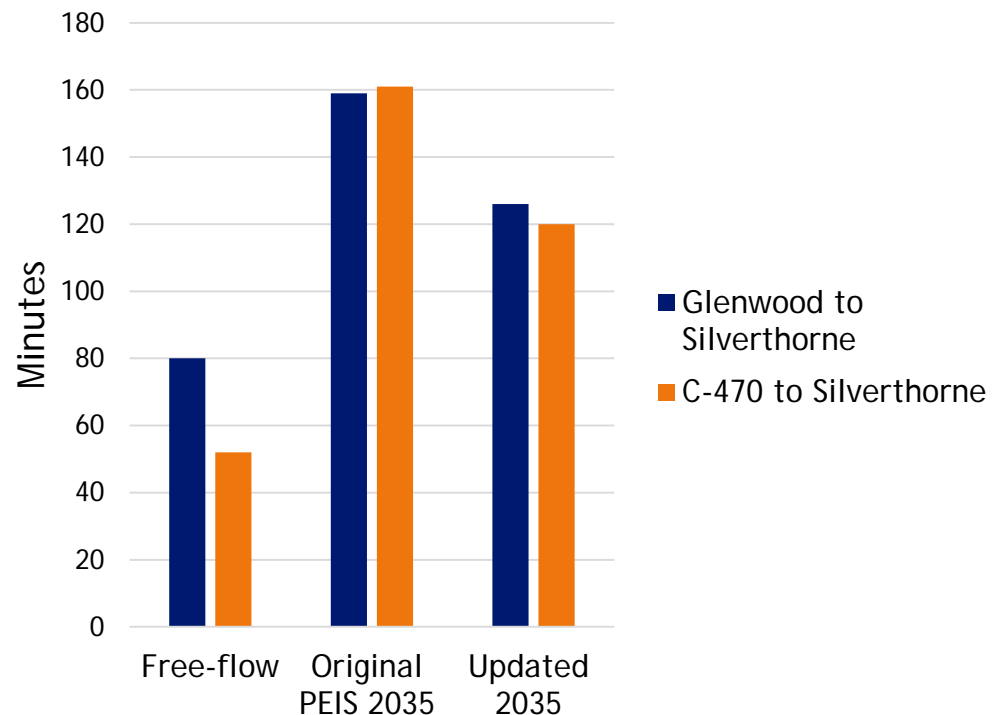
Source: INRIX



Step 1B: Evaluate Current Components of P&N Component 2—Improve Mobility and Accessibility

Travel Time

Weekend Travel Time - Peak
Period Direction 2035



Source: PEIS and updated I-70 Mountain Corridor Travel Demand Model



Step 1B: Evaluate Current Components of P&N Component 2—Improve Mobility and Accessibility

Safety

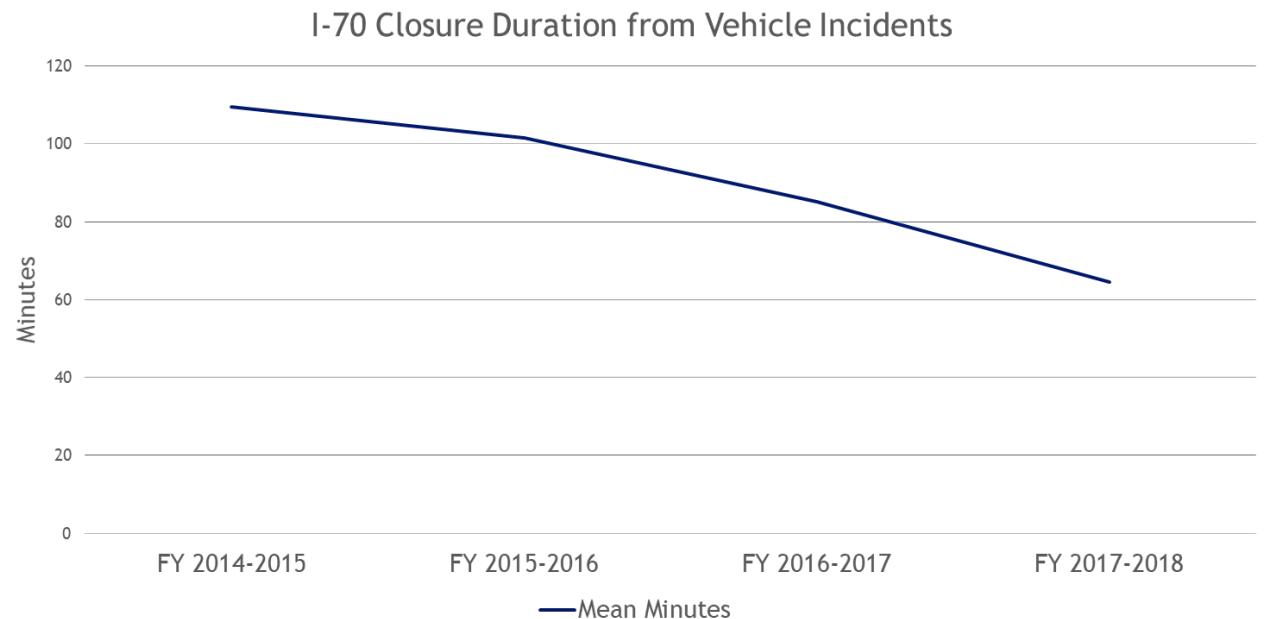
- **6** I-70 segment locations identified with notable safety deficiencies
 - Improvements at two of these locations have alleviated safety concerns
- **25** interchanges identified for needed improvements
- **4** curves identified for potential safety modifications
- **12** auxiliary lanes identified for safety and other needs



Step 1B: Evaluate Current Components of P&N Component 2—Improve Mobility and Accessibility

Incident Response Times

- CDOT has updated Traffic Incident Management Plans for the corridor counties
- CDOT created a position of a full-time mountain corridor operations manager
- CDOT has prepared a Winter Operations Plan for the I-70 Mountain Corridor
- Clearance times have improved





Step 1B: Evaluate Current Components of P&N Component 2—Improve Mobility and Accessibility

Subcommittee Observations

- Mobility is a core transportation need in the Mountain Corridor and mobility should be emphasized as the primary need because it drives the need for increased capacity.
- Discuss mobility in terms of people not vehicles.
- Other factors beyond capacity affect mobility, such as affordable housing and longer commute times, and the spreading of delays from weekends to weekdays.
- Risk and resiliency and how natural disasters - fires, floods, landslides - affect reliability / availability of the highway for all travelers and particularly for corridor communities.



Step 1B: Evaluate Current Components of P&N Component 2—Improve Mobility and Accessibility

Collaborative Effort Discussion

Component 2 - Improve Mobility and Accessibility



Step 1B: Evaluate Current Components of P&N Component 3—Decrease Congestion

Component 3: Decrease congestion

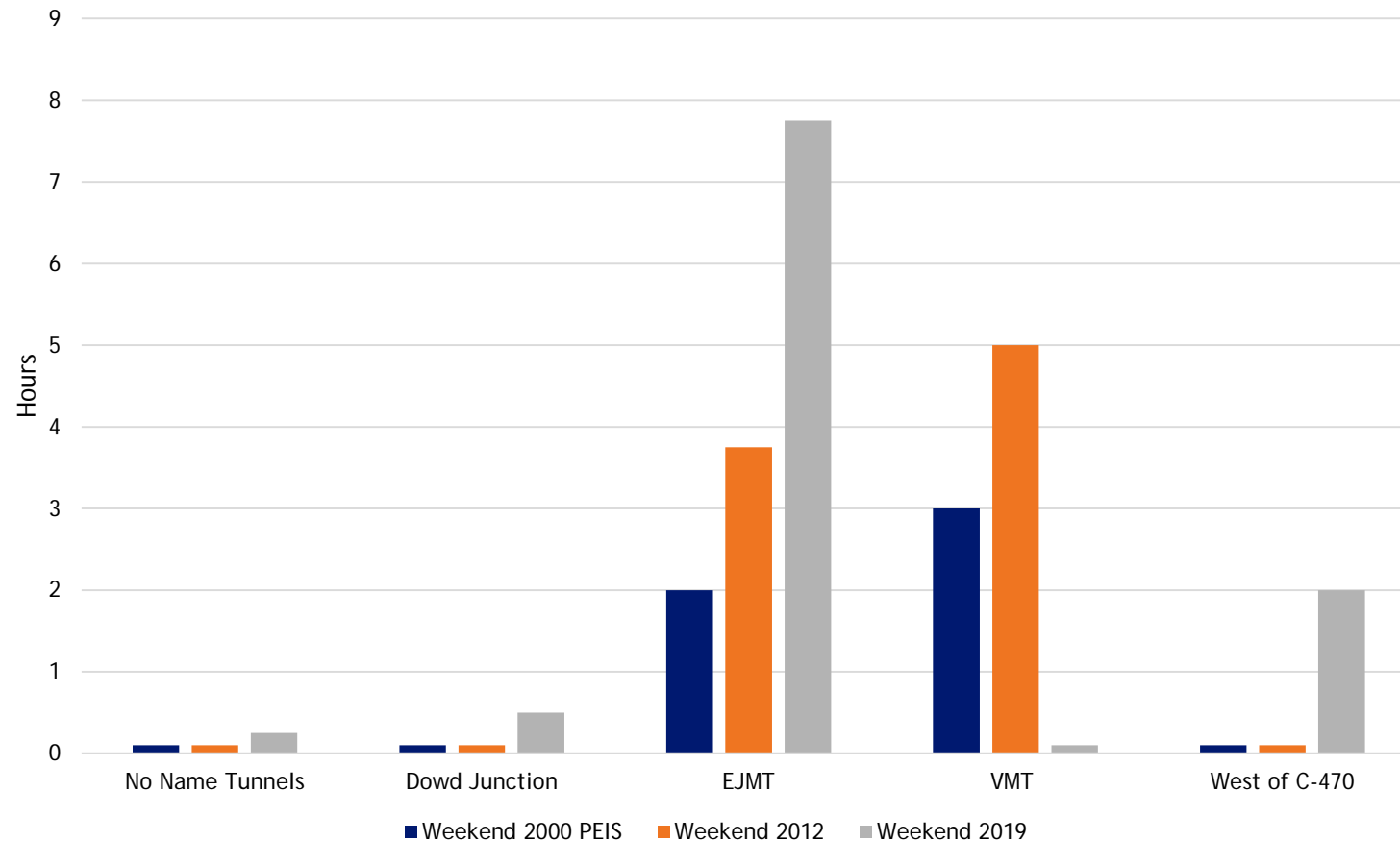
Information that may be needed to evaluate this component includes:

1. Level of Service
2. Crash data, Weighted Hazard Index (WHI) information
3. Travel time/reliability
4. Travel Demand Model information
5. Others



Step 1B: Evaluate Current Components of P&N Component 3—Decrease Congestion

Level of Service





Step 1B: Evaluate Current Components of P&N Component 3—Decrease Congestion

Subcommittee Observations

- Congestion inhibits travel in the Mountain Corridor.
- Transit service is also affected, both in terms of inadequate system capacity as well as shared use of the highway for services.



Step 1B: Evaluate Current Components of P&N Component 3—Decrease Congestion

Collaborative Effort Discussion Component 3 - Decrease Congestion



Step 1B: Components of the Purpose and Need

Subcommittee Observations

- Affirmed that the three interrelated needs describing the transportation problems in the Mountain Corridor remain valid and noted support for the language used in the PEIS to describe those needs, particularly in relation to the focus on person trips rather than vehicle trips to describe transportation needs.



Step 1B: Evaluate Current Components of P&N

Collaborative Effort Discussion

Evaluate Current Components of P&N



Step 2: Assess the Effectiveness of the Implementation of Components of the Preferred Alternative





Work Plan Definition: Step 2A

Step 2A: Determine how to measure/assess effectiveness.

- This will include an evaluation against the Purpose and Need and may include other factors as recommended by the subcommittee. Before and after data collection will be needed such as:
 - Travel time, Incident response times, Transit ridership, Person/vehicle capacity
- How well have we been providing for and accommodating community values and environmental sensitivity (qualitative)



Step 2A: Determine How to Measure Effectiveness

Effectiveness of CSS Process and Other Agreements

Other Agreements:

- I-70 Mountain Corridor Section 106 Programmatic Agreement
- I-70 Mountain Corridor Aesthetics Guidance
- I-70 Mountain Corridor Design Criteria
- Design Criteria Exceptions Process



Environmental and Community Values

- Veterans Memorial Tunnels
- Eastbound Mountain Express Lane
- Westbound Mountain Express Lane
- Eastbound Auxiliary Lane from EJMT to Herman Gulch



Step 2A: Determine How to Measure Effectiveness

Subcommittee Observations

- Some projects more effectively used the CSS process and other agreements.
- The most effective projects in providing for and accommodating environmental sensitivity and respect for community values were those that carried CSS through all the life cycles, included tracking of environmental and community values through those phases, and incorporated best practices and lessons learned from previous projects.



Step 2A: Determine How to Measure Effectiveness

Collaborative Effort Discussion

CSS Effectiveness



Work Plan Definition: Step 2B

- Assess the effectiveness of the implementation of the Preferred Alternative to date along with the remaining elements of the Minimum and Maximum Programs of Improvements/Preferred Alternative, timing, and anticipated effects. CDOT leads analysis, with oversight from FHWA.
- Non-Infrastructure Related Components
- AGS
- Highway Improvements



Step 2B: Assess the Effectiveness of the Implementation of the Preferred Alternative

Non Infrastructure Components

- Consist of a variety of TDM measures and non-physical capacity improvements
 - Majority were rated Medium Effectiveness, or Unknown
- Notable improvements included
 - Bustang - rated Medium Effectiveness for mobility
 - Eastbound MEXL - rated High Effectiveness for mobility



Step 2B: Assess the Effectiveness of the Implementation of the Preferred Alternative

Non-Infrastructure Improvements Subcommittee Observations

- Categorization of non-infrastructure improvements should be clarified as they are not intended to be long-term solutions and complement rather than substitute for AGS and highway improvements in the Preferred Alternative.
- The implemented non-infrastructure components have been effective in addressing some issues on the corridor but have low effectiveness at addressing core corridor needs on their own.
- The MEXL projects has had a bigger impact because it is broader in scope even though it is interim and stayed mostly within the existing interstate footprint



Step 2B: Assess the Effectiveness of the Implementation of the Preferred Alternative

Collaborative Effort Discussion

Non-Infrastructure Improvements



Step 2B: Assess the Effectiveness of the Implementation of the Preferred Alternative

Advanced Guideway System

- The AGS Feasibility Study was completed in 2014
 - Study finding: Fixed guideway options are technically feasible but not financially feasible as of 2014 (no funding identified as of 2020)
- No progress has been made on implementation of an AGS; therefore, its effectiveness is not rated



Step 2B: Assess the Effectiveness of the Implementation of the Preferred Alternative

Advanced Guideway System Subcommittee Observations

- The feasibility study for AGS has been completed, but little progress has been made to advance the AGS concept, and no progress has been made to advance a functioning system that could trigger evaluation of the Maximum Program.
- The AGS study conclusion that “at the time” (e.g., 2014), the AGS was not financially feasible, will be included.



Step 2B: Assess the Effectiveness of the Implementation of the Preferred Alternative

Collaborative Effort Discussion

Advanced Guideway System



Step 2B: Assess the Effectiveness of the Implementation of the Preferred Alternative

Specific Highway Improvements

- 6 lane component from Floyd Hill through the Veterans Memorial Tunnels (rated with High Effectiveness)
- Empire Junction (US 40 and I-70) interchange improvements (Incomplete)
- Eastbound auxiliary lane from Eisenhower-Johnson Memorial Tunnels to Herman Gulch (Low for Safety)
- Westbound auxiliary lane from Bakerville to EJMT (Incomplete)

Other Highway Improvements

- Truck operation improvements, such as pullouts, parking, and chain stations (Medium Rating)
- Safety improvements west of Wolcott (Low Rating)
- Safety and capacity improvements in Dowd Canyon (Incomplete)



Step 2B: Assess the Effectiveness of the Implementation of the Preferred Alternative

Interchange Improvements

- 26 interchanges identified for improvements
- Most are incomplete or unknown for effectiveness
- Notable exceptions are
 - Grand Avenue Bridge in Glenwood Springs, rated Medium for mobility
 - Edwards and Spur Road, rated High for Safety

Auxiliary Lane Improvements

- 4 locations identified for auxiliary lanes
- All are incomplete



Step 2B: Assess the Effectiveness of the Implementation of the Preferred Alternative

Highway Improvements Subcommittee Observations

- The subcommittee notes that six-lane capacity is intentionally distinct from a six-lane highway template.
- Need to affirm that MEXL projects are non-infrastructure and not highway improvements, which may not be used for expansion into, nor as a component of, the Maximum Program's six-lane highway.



Step 2B: Assess the Effectiveness of the Implementation of the Preferred Alternative

Collaborative Effort Discussion

Highway and Interchange Improvements



Step 3A: Identify Outstanding PA Questions





Step 3A: Identify Outstanding PA Questions

Explicit in Work Plan:

1. Status of Eisenhower-Johnson Memorial Tunnels 3rd bore (clarify Minimum or Maximum Program)
2. Empire Interchange (clarify what is to be done in Minimum Program)
3. 2025 trigger
4. Clarify and restate the definition of AGS in the ROD
5. Others



Step 3A: Identify Outstanding PA Questions

Subcommittee added the following suggestions for consideration.

Maximum Program highway component definitions, including:

- Future highway expansion needs to be considered independent of the MEXL projects
- Capacity means people not cars and that 6-lane capacity is not the same as a six-lane highway cross section
- “Existing highway” could allow moving the highway from its current alignment, such as was considered in Idaho Springs visioning efforts
- If the six lane capacity of the Maximum Program becomes a six-lane highway solution, a redesign of the existing roadway between VMT and EJMT is anticipated, and previous visioning exercises conducted by Clear Creek County and Idaho Springs (in 2014 and 2016) should be honored.
- Meaning of “not preclude” for AGS. Now that more information is known about the AGS alignment, need to consider how future highway projects might conflict with AGS.



Step 3: Clarify Uncertainties of the Components of the Preferred Alternative

Collaborative Effort Discussion

Identify Outstanding Preferred Alternative Questions



Conclusion and Wrap up

- Summary of today's CE discussions and action item review
- CE and CE Subcommittee review of Narratives document for Steps 1 and 2. Comments DUE by COB Friday, June 5th
- Next CE meeting is July 15th. Topics will include finalizing the narratives, evaluating the outstanding questions in Step 3, and developing a list of potential future actions for prioritization in Step 4

Collaborative Effort
Record of Decision 2020 Reassessment
Work Plan

As stated in the 2011 Record of Decision (ROD), the Preferred Alternative is “...a multimodal solution and includes three main components identified by the Collaborative Effort Team: 1) Non-infrastructure Components, 2) the Advanced Guideway System, and 3) Highway Improvements” (ROD 2011 pg. 2).

The 2020 Language (ROD 2011 pg. 8)

“In 2020, regardless of the status of the triggers, there will be a thorough reassessment of the overall purpose and need and effectiveness of the implementation of components of the Preferred Alternative.

At that time, the full range of improvements evaluated at Tier 1 may be reconsidered. In addition, the Collaborative Effort stakeholder committee (including the lead agencies) may reconsider the full range of improvements evaluated in the Final PEIS, or pursue a new process because the context in which this Tier 1 decision was made is so changed that none of the alternatives evaluated in the Final PEIS meets future transportation needs. Global, regional, and local trends such as peak oil, climate change, technological advances, and changing demographics could affect these future transportation needs.”

Purpose and Need (Final Programmatic Impact Statement [PEIS] 2011 pg. ES-4)

“The purpose for transportation improvements is to increase capacity, improve accessibility and mobility, and decrease congestion for travel demand (projected to occur in 2050) to destinations along the I-70 Mountain Corridor as well as for interstate travel, while providing for and accommodating environmental sensitivity, community values, transportation safety, and ability to implement the proposed solutions for the Corridor.”

Primary Roles and Responsibilities

The following are the primary roles and responsibilities for the reassessment. Any specific roles and responsibilities for a given step are listed within the steps.

1. The Collaborative Effort’s (CE) highest goal is consensus. A consensus agreement is one that all group members can support, built by identifying and exploring all parties’ interests and by developing an outcome that satisfies these interests to the greatest extent possible.
2. The CE will strive to build consensus around which criteria and key considerations will be used to reassess the overall purpose and need and effectiveness of the implementation of the components of the Preferred Alternative.
3. The CE will strive to build consensus around revisions, if any, to the Preferred Alternative.
4. The FHWA and CDOT commit to fully engaging as partners in this process and being an integral part of reaching consensus. However, lead agencies cannot delegate their responsibilities regarding decision making and NEPA compliance. As equal and participating members of the CE, lead agencies are committed to crafting with all stakeholders decisions that can be supportive.

If consensus is not possible, then the level of support and dissension will be noted and all deliberations and products of the CE will be considered by the lead agencies in their decision making.

5. The CE ROD Reassessment Subcommittee is tasked by the CE to act as the working group, to carry out task specific roles and responsibilities listed within the steps. The CE subcommittee will regularly report to the CE. The CE will provide guidance to the subcommittee at any time while they carry out their specific tasks.
6. The CE subcommittee members are obligated to be transparent and will proactively communicate results to the CE. This includes narratives, listed in the steps below, to be submitted to the CE via email with a 2-week comment period. The subcommittee will work together to address the comments and if some are not solvable, a CE meeting may be called.
7. The obligation of the CE members is to actively participate. They review the narrative summaries distributed by the subcommittee to gain understanding. It is intended that each step leading to the preparation of the reassessment is the time for the CE to build consensus. The CE may call special meetings at any time for discussion to help build consensus.
8. CDOT leads analysis/prepares documentation, with oversight from FHWA.

Step 1: Reassess the Purpose and Need. If this proposed process identifies substantial changes in the I-70 Mountain Corridor that alter the Purpose and Need of the Final PEIS/ROD the work plan does not automatically progress to Step 2. The group will reconvene to determine next steps.

Roles and Responsibilities - CE ROD Reassessment Subcommittee provides input and feedback to evaluation criteria. CE reviews written narrative summary to gain understanding on any changes in context and/or purpose and need.

Deliverables - Written narrative of context evaluation, written narrative of Purpose and Need evaluation, and discussion at CE meetings.

Schedule – List of trends and relevant factors discussion in January 2020, Draft analysis complete in May 2020, and Final analysis complete in September 2020.

Step 1A: Evaluation of context. Determine if the context in which the Purpose and Need statements were developed have changed. Information that may be needed to evaluate the context includes:

1. Population
2. Land use and land use pressures (including demand)
3. Technology
4. Climate change
5. Others

Step 1B: Evaluate current components of Purpose and Need. Determine if the components are still valid using Step 1A context evaluation. The same data sets (listed under each component) must be used as were used in the original PEIS to provide a true comparison.

Component 1: Increase capacity. Information that may be needed to evaluate this component includes:

1. Existing traffic data
2. Person trips

3. Updated traffic projections/Travel Demand Model information
4. Transit ridership
5. Others

Component 2: Improve mobility and accessibility. Information that may be needed to evaluate this component includes:

1. Travel time/reliability
2. Safety data
3. Incident response times
4. Travel Demand Model information
5. Others

Component 3: Decrease congestion. Information that may be needed to evaluate this component includes:

1. Level of Service
2. Crash data, Weighted Hazard Index (WHI) information
3. Travel time/reliability
4. Travel Demand Model information
5. Others

Step 2: Assess the effectiveness of the implementation of components of the Preferred Alternative.

This includes discussion on the Minimum and Maximum Programs of Improvements in the Preferred Alternative and the specific Tier 2 improvements implemented to date, as well as the remaining improvements under the Minimum and Maximum Programs.

Roles and Responsibilities - CE ROD Reassessment Subcommittee provides input and feedback to how effectiveness will be measured. CE reviews written narrative summary to gain understanding on assessment of effectiveness.

Deliverables - Written narrative and discussion at CE meetings.

Schedule - Initial input into Step 2A and Step 2B in January 2020, additional discussion/initial analysis in May 2020, Draft analysis complete in September 2020, and Final analysis complete in December 2020.

Step 2A: Determine how to measure/assess effectiveness.

This will include an evaluation against the Purpose and Need and may include other factors as recommended by the subcommittee. Data collection will be needed such as:

- Travel time before and after implementation of an improvement
- Incident response times before and after implementation of an improvement
- Transit ridership before and after implementation of an improvement
- Person/vehicle capacity of surrounding area before and after implementation of an improvement
- How well have we been providing for and accommodating community values and environmental sensitivity (qualitative)
- Others

Step 2B: Assess the effectiveness of the implementation of the Preferred Alternative to date along with the remaining elements of the Minimum and Maximum Programs of Improvements/Preferred Alternative, timing, and anticipated effects. CDOT leads analysis, with oversight from FHWA. This section is taken directly from the ROD to show the exact components as listed.

Components of the Preferred Alternative.

- 1) Non-Infrastructure Related Components
- 2) Advanced Guideway System (AGS)
- 3) Highway Improvements

Minimum Program of Improvements. The non-infrastructure related components, AGS, specific highway improvements, and other highway projects comprise the Minimum Program of Improvements.

“Non-Infrastructure Related Components – Non-infrastructure-related components can begin in advance of major infrastructure improvements to address some of the issues in the Corridor today. Some of these components require actions and leadership by agencies, municipalities, and other stakeholders beyond the lead agencies. The Tier 1 decision includes non-infrastructure-related components that could be carried out with federal involvement in a Tier 2 NEPA process. Other non-infrastructure components, including those identified below and others not listed, could be carried out without federal involvement and would not require a Tier 2 NEPA process. When entities advance these strategies without federal involvement, for example, if the I-70 Coalition (a coalition of Corridor governments) were to implement travel demand management strategies for increasing overnight stays in the Corridor, Tier 2 NEPA processes would not be required. The non-infrastructure strategies include, but are not limited to:

- Increased enforcement
- Bus, van, or shuttle service in mixed traffic
- Programs for improving truck movements
- Driver education
- Expanded use of existing transportation infrastructure in and adjacent to the Corridor
- Use of technology advancements and improvements to increase mobility without additional infrastructure
- Traveler information and other information technology systems
- Shift passenger and freight travel demand by time of day and day of week
- Convert day trips to overnight stays
- Promote high-occupancy travel and public transportation
- Convert single-occupancy vehicle commuters to high-occupancy travel and/or public transportation
- Implement transit promotion and incentives
- Other transportation demand management measures to be determined

Advanced Guideway System – An Advanced Guideway System is a central part of the Preferred Alternative and includes a commitment to the evaluation and implementation of an Advanced Guideway System within the Corridor, including a vision of transit connectivity beyond the study area and local accessibility to such a system. Additional

information is necessary to advance implementation of an Advanced Guideway System in the Corridor:

- Feasibility of high-speed rail passenger service
- Potential station locations and local land use considerations
- Transit governance authority
- Alignment
- Technology
- Termini
- Funding requirements and sources
- Transit ridership
- Potential system owner/operator
- Interface with existing and future transit systems
- Role of an Advanced Guideway System in freight delivery both in and through the Corridor

Highway Improvements – The Preferred Alternative includes highway improvements to address current Corridor conditions and future demands. These improvements will be planned taking into consideration all elements of the Preferred Alternative and local land use planning. The following safety, mobility, and capacity components are not listed in order of priority, are not subject to the parameters established for future capacity components, do not represent individual projects, and may be included in more than one description. They are listed in two categories: 1) “specific highway improvements” and 2) “other highway projects.” All of the improvements in both categories are included in the Minimum Program of Improvements. The specific highway improvements are called out specifically for the “triggers” for future highway and non-Advanced Guideway System transit improvements.

The specific highway improvements are:

- Six-lane component from Floyd Hill through the Twin Tunnels (milepost [MP] 243 to MP 247) including a bike trail and frontage roads from Idaho Springs to Hidden Valley and Hidden Valley to US 6
- Empire Junction (US 40 and I-70) interchange improvements (MP 232)
- Eastbound auxiliary lane from Eisenhower-Johnson Memorial Tunnels to Herman Gulch (MP 215 to MP 218)
- Westbound auxiliary lane from Bakerville to the Eisenhower-Johnson Memorial Tunnels (MP 215 to MP 221)

The other highway projects are:

- Truck operation improvements, such as pullouts, parking, and chain stations (multiple locations)
- Safety improvements west of Wolcott (MP 155 to MP 156)
- Safety and capacity improvements in Dowd Canyon (MP 170 to MP 173)
- Interchange improvements at the following locations:
 - Glenwood Springs (MP 116)
 - Frisco / Main Street (MP 201)
 - Gypsum (MP 140)
 - Frisco / SH 9 (MP 203)

- Eagle County Airport (part of No Action)
- Silverthorne (MP 205)
- Wolcott (MP 157)
- Loveland Pass (MP 216)
- Eagle & Spur Road (MP 147)
- Georgetown (MP 228)
- Edwards & Spur Road (MP 163)
- Downieville (MP 234)
- Avon (MP 167)
- Fall River Road (MP 238)
- Minturn (MP 171)
- Base of Floyd Hill / US 6 (MP 244)
- Vail West (MP 173) / Simba Run
- Hyland Hills (MP 247)
- Vail (MP 176)
- Beaver Brook (MP 248)
- Vail East (MP 180)
- Evergreen Parkway / SH 74 MP 252)
- Vail Pass (East Shrine Pass Road MP 190)
- Lookout Mountain (MP 256)
- Copper Mountain (MP 195)
- Morrison (MP 259)

Auxiliary lanes:

- Avon to Post Boulevard (Exit 168) (eastbound) (MP 167–MP 168)
- West of Vail Pass (eastbound and westbound) (MP 180–MP 190)
- Frisco to Silverthorne (eastbound) (MP 202.7–MP 205.1)
- Morrison to Chief Hosa (westbound) (MP 253–MP 259)” (ROD 2011 p. 3-5)

Maximum Program of Improvements. “To address long-term needs, additional highway capacity improvements were added to the Minimum Program of Improvements to comprise the Maximum Program of Improvements with the condition that prior to taking action to add capacity, the Collaborative Effort Team must review and consider certain triggers. The Maximum Program is comprised of all of the components of the Minimum Program plus six-lane capacity from the Eisenhower-Johnson Memorial Tunnels to the Twin Tunnels, four additional interchange modifications in the Idaho Springs area, and a curve safety modification project at Fall River Road.” (ROD 2011 p. 7)

For the implementation status of the Preferred Alternative, see the attached table. (Note that this is being finalized and will be provided once a consultant team is selected.)

Step 3: Clarify uncertainties of the components of the Preferred Alternative. This section is not intended to add new information to the PEIS/ROD but rather to clarify questions on existing information.

Roles and Responsibilities - CE ROD Reassessment Subcommittee provides input and feedback on outstanding questions and how they will be evaluated. CE reviews written narrative summary to gain understanding on the questions and how they will be evaluated.

Deliverables - Written narrative to CE and discussion at CE meetings.

Schedule - List of outstanding questions determined in January 2020, Initial analysis complete in May 2020, and Final analysis complete in September 2020. Note this step may be able to be completed in one CE ROD Reassessment Subcommittee meeting and one CE meeting.

Step 3A: Identify outstanding questions regarding the Preferred Alternative, such as:

1. Status of Eisenhower-Johnson Memorial Tunnels 3rd bore (clarify Minimum or Maximum Program)
2. Empire Interchange (clarify what is to be done in Minimum Program)
3. 2025 trigger
4. Clarify and restate the definition of AGS in the ROD
5. Maximum Program highway component definitions, including:
 - a. Future highway expansion needs to be considered independent of the MEXL projects
 - b. Capacity means people, not cars, and six-lane capacity is not the same as six-lane highway cross section
 - c. “Existing highway” could allow moving the highway from its current alignment, such as was considered in Idaho Springs visioning efforts
 - d. If the six-lane capacity of the Maximum Program becomes a six-lane highway solution, a redesign of the existing roadway between the Veterans Memorial Tunnels and Eisenhower-Johnson Memorial Tunnels is anticipated, and previous visioning exercises conducted by Clear Creek County and Idaho Springs (in 2014 and 2016) should be honored
 - e. Meaning of “not preclude” for AGS. Now that more information is known about the AGS alignment, need to consider how future highway projects might conflict with AGS.
6. Others

Step 3B: Evaluate/discuss outstanding questions regarding the Preferred Alternative.

Step 4: Develop list of potential future actions for continued pursuit of the Preferred Alternative. This section is not intended to add new information to the PEIS/ROD but rather to develop a list of potential future actions for continued pursuit of the Preferred Alternative. This list will be considered during the formal statewide planning process.

Roles and Responsibilities – CE brings forward considerations for future projects and initiatives. CDOT and FHWA will consider list of actions in formal statewide planning process. CE to discuss public involvement for this plan.

Deliverables – Listing of potential future actions for consideration developed at CE meeting.

Schedule – Initial discussion May 2020, prioritization in September 2020, Consensus Recommendation by December 2020. Note this step may be able to be completed in one or two longer CE workshop meetings.

Examples for consideration during Step 4:

- Update and expand on information in past studies (AGS 2014, ICS 2014, RMRA 2010)
- Analyze impact of Front Range Rail with AGS.
- Analyze technologies not studied in the past.
- Review risk & resiliency of the corridor including the potential effects of climate change.
- Program for improving truck movements.
- Analyze the data for change in GHG emissions for each technology assessed in the ROD and updates.
- Others

Step 5: Develop Reassessment Document. This step is intended provide a written summary of all steps above in a complete package. The obligation of the CE members is to actively participate. They review the narrative summaries distributed by the subcommittee to gain understanding. It is intended that each step leading to the preparation of the reassessment document is the time for the CE to build consensus, not to wait for this step to review all information and comment.

1. Develop Reassessment document.

Roles and Responsibilities – CDOT and FHWA prepare Reassessment document. If substantial changes from the ROD are realized, a public involvement process will be included.

Deliverables - Final Reassessment document

Schedule - Reassessment completed in December 2020.



**Collaborative Effort (CE) Meeting and
I-70 Mountain Corridor 2020 Reassessment Meeting #7 Summary**
July 15, 2020, 9:00 AM to 4:00 PM (ended early at 12:15 PM)
Zoom Conference Call Video Meeting

Overview

These notes summarize the special Collaborative Effort (CE) I-70 Mountain Corridor 2020 Reassessment meeting held via video conference on July 15, 2020. The agenda and other meeting materials are attached.

Welcome and Introductions

Greg Hall, CE co-chair, welcomed the group and did a roll call of the CE members and the alternates. A digital attendance sheet is attached to these notes. Of the 32 CE members, 22 members or alternates were present, including:

- Greg Hall, Vail (CE Co-Chair)
- Randy Wheelock, Clear Creek County (CE Co-Chair)
- Ann Rajewski, Colorado Association of Transit Agencies (CASTA)
- Brendan McGuire, Vail Resorts
- Brian Duchinsky, Sierra Club, Headwaters Group
- Brooke Davis, US Army Corps of Engineers
- Chris Linsmayer, Colorado Ski Country USA
- Danny Katz, Colorado Public Interest Research Group (CoPIRG)
- David Krutsinger, Colorado Department of Transportation (CDOT), Division of Transit and Rail (DTR)
- Dennis Royer, Sierra Club, Rocky Mountain Chapter
- Eva Wilson, local transit provider (Avon Mobility Director)
- Holly Norton, Colorado State Historic Preservation Office
- Lauren Masias, Denver Metro Chamber of Commerce (*alternate*)
- Margaret Bowes, I-70 Coalition
- Mary Jane Loevlie, Business Representative (Idaho Springs)
- Matt Scherr, Eagle County
- Mike Hillman, Idaho Springs (Mayor)
- Mike Keleman, CDOT Region 1 (*alternate*)
- Shaun Cutting, Federal Highway Administration (FHWA)
- Tracey MacDonald, Federal Transit Administration
- Tracy Sakaguchi, Colorado Motor Carriers Association (*alternate*)

Alternates present in addition to the primary CE member were Amy Saxton, Clear Creek County; Ben Gerdes, Eagle County; Brian Hartman, CDOT DTR; Cindy Neeley, Historic Georgetown; and Melinda



Jeff Hampton, and Kevin Brown, CDOT; Vershun Tolliver and Kelly Galardi, FHWA; George Marlin, Clear Creek County; Becky English, Sierra Club; Karen Hedlund and Miller Hudson, interested parties; and Steve Coffin, Steve Coffin Strategies. The HDR consultant team present included Wendy Wallach, Chris Primus, and Kira Olson, and Mandy Whorton (Peak Consulting Group). Jonathan Bartsch, CDR Associates, facilitated the meeting.

Public Comment and General CE Business

Mr. Hall opened up the meeting to public comment. No comments were recorded.

Jonathan Bartsch introduced himself as the facilitator hired for Steps 3 and 4 of the CE 2020 Reassessment Work Plan. He provided his background in facilitation and on the I-70 Mountain Corridor specifically. He said that he respected the CE participation and protocols and would use the protocols to help encourage full participation and discussion. He reviewed the agenda and asked if there were any questions about the meeting, process, or his role or background as a facilitator. There were no questions.

Mr. Hall noted that between this meeting and September meeting, Mr. Bartsch would be reaching out to CE members individually to understand their important issues in the 2020 Reassessment. Mr. Bartsch clarified that there may be several touch points with the members, and this would happen soon with plenty of time to prepare for the September meeting.

Mr. Bartsch reviewed the purpose of the meeting to clarify uncertainties regarding Preferred Alternative components (2020 Reassessment Work Plan, Step 3) and discuss approach for addressing potential future actions (2020 Reassessment Work Plan, Step 4). He noted that there would be breaks throughout the day and understood that people would need to be in and out of the meeting at some points.

Summary of Steps 1 and 2 of the Work Plan

Wendy Wallach reviewed the progress to date and the CE observations and conclusions on Steps 1 and 2 of the 2020 Reassessment Work Plan. She summarized the CE confirmation of the validity of the Programmatic Environmental Impact Statement's (PEIS) purpose and need in context of current transportation and environmental conditions. She also summarized the CE observations on Step 2 regarding the effectiveness of the implementation of the Preferred Alternative to date, noting that the CE reaffirmed that all of the components of the Preferred Alternative were important, projects that had been implemented were viewed as moderately effective, and the CE was disappointed with the progress toward the Advanced Guideway System (AGS) implementation.

Mandy Whorton reminded the CE members that a summary document for Steps 1 and 2 as well as narratives that documented the HDR team's data review and analysis for these steps were distributed to the CE in advance of the meeting. Vanessa Henderson stated that the documents had been revised in response to comments received by the CE members and asked the group to provide any final comments on those materials by July 24, 2020 so that the consultant team could finalize the documentation of the completed steps. No additional actions are required or were suggested for Steps 1 and 2.



Steve Coffin noted that in the materials distributed by Ms. Henderson and Mr. Wheelock, the status of action items and list of next steps discussed at the previous six meetings was summarized. Ms. Henderson said the action items would be reviewed later in the meeting.

The May 27, 2020 CE meeting notes were approved with no comments or corrections.

Clarify and discuss uncertainties or questions about the Preferred Alternative

Through developing the Work Plan and discussing the Preferred Alternative during Steps 1 and 2 of the Work Plan, the following components of the Preferred Alternative were identified by the CE for further discussion or clarification.

- Status of the Eisenhower-Johnson Memorial Tunnels (EJMT) Third Bore
- I-70/US 40 Empire Junction Interchange
- 2025 Triggers
- Definition of AGS in Record of Decision (ROD), including what “not preclude” means for planning AGS with ongoing highway and non-infrastructure improvements.
- Maximum Program of Highway component definition

These topics were discussed in depth during the meeting.

EJMT Third Bore

Mr. Hall indicated the CE wanted to clarify whether the EJMT third bore is part of the Minimum or Maximum Program of Improvements because the PEIS does not specifically classify the EJMT third bore in either program or as a separate improvement project other than what’s shown in the Preferred Alternative figure (Figure 1 in the ROD).

The group discussed and agreed that it should be part of the Minimum Program. The following were specific observations supporting this conclusion.

Vail Pass auxiliary lanes. Mr. Hall stated that it makes sense for the EJMT third bore to be included in the Minimum Program due to its connection to the functionality of the Vail Pass auxiliary lane projects that are part of the Minimum Program. If the third bore were part of the Maximum Program, the triggers would need to be met to make the auxiliary lanes fully functional, which does not make sense.

AGS

- Mr. Wheelock stated that the AGS is part of the Minimum Program and requires a third bore, so a third bore should be part of the Minimum Program.
- Mary Jane Loevlie stated that technological advances related to tunneling made the third bore a reasonable part of the Minimum Program.
- David Krutsinger asked about the alignment assumptions for the AGS through EJMT. Mr. Wheelock said that the scope could be determined later but the assumption that AGS needs a third bore is documented. In this context, Mr. Krutsinger agreed that the third bore should be part of the Minimum Program.



- Mike Riggs stated that the AGS feasibility study alignment does not go through EJMT so additional capacity at EJMT does not support AGS. He also stated that EJMT by itself (without improvements on each side), does not support improvements anyway. He also stated that he disagreed with the characterization of AGS's dependence on a third EJMT bore since the AGS alignment would not go through the EJMT area. He stated it would be preferred to state that a bore through the Continental Divide would be required but that it would likely not be in the location of the existing EJMT. Mr. Krutsinger agreed.

Flexibility of including the third bore in the Minimum Program. Shaun Cutting asked how the Preferred Alternative implementation might change depending on whether the third bore is part of the Minimum or Maximum Programs? For instance, if tolling made money available for expansion of the EJMT, would it not be pursued if it was part of the Maximum Program and triggers had not been reached? He stated that he felt there was more flexibility to include in the Minimum Program rather than tied to the Maximum Program. Dennis Royer stated that it needed to say in the Minimum Program, or it could get pushed out and deprioritized.

Empire Junction

Mr. Wheelock framed the discussion to clarify the scope of improvements included in the Empire Junction "specific highway improvements." He stated his understanding that the intent of the interchange reconstruction was to support short-term safety and mobility in the interchange area but not reconstruction that supports the Maximum Program. The design of the Maximum Program highway improvements is unknown and, therefore, how the interchange would interact with Maximum Program improvements can't be determined. He stated that the way the interchange was accommodated in the Peak Period Shoulder Lane (PPSL) projects was evidence of the intended short-term nature of the improvements.

Tracey MacDonald agreed with this observation and cited the language in the Preferred Alternative specified under the Highway Improvement components that specific highway improvements "...are not subject to the parameters established for future capacity components..."

The group agreed that the specific highway improvement for Empire Junction is intended to meet immediate safety and mobility needs and is separate from the Maximum Program.

2025 Triggers

Mr. Hall explained that because 2025 was approaching and membership in the CE had changed since the ROD, the CE felt it was important to discuss what the current CE thinks the 2025 triggers means now (and context for those members from what it meant originally). The discussion focused on the language for the second trigger related to AGS (bolded below for emphasis):

*"The "specific highway improvements" are complete and Advanced Guideway System studies that answer questions regarding the feasibility, cost, ridership, governance, and land use are complete and indicate that **Advanced Guideway System cannot be funded or implemented by 2025 or is otherwise deemed unfeasible to implement, ...**"*



Danny Katz agreed and said that the timing of AGS should be clarified. The trigger says it needs to be funded or implemented by 2025. What does “funded” mean? Does this mean fully funded? He noted that the CE remains committed to getting the AGS built and that in that spirit, the commitment should not expire because we hit 2025.

Mr. Cutting clarified that 2025 trigger was not intended to be a trigger to eliminate AGS. Additionally, he pointed out that there are a lot of specific highway improvements that also won't be completed by 2025 so either way, the Maximum Program is not going to be triggered even if AGS is not funded or implemented.

Mike Kelemen said he agreed with the discussion that the clock does not set 2025 as an expiration date for AGS.

Brendan McGuire stated that a strict reading of the second bullet point should not be a sticking point for advancing AGS. He speculated that the 2025 language may have been included because of the sensitivity at the time the consensus recommendation was crafted to ensure that AGS remained a central component of the Preferred Alternative and not get relegated to a back burner to highway improvements.

The group concluded that no changes are needed to the language and agreed that 2025 is not a deadline for AGS.

AGS Definition

Mr. Bartsch presented several references to the AGS definition from the ROD in the presentation. He asked the group to review (see attached presentation) and solicited observations on how AGS is defined in the ROD, especially related to AGS technology.

Margaret Bowes stated that she likes and thinks it is appropriate that technology is undefined to allow for flexibility to adopt newest technology.

Mr. Katz provided perspective from the original AGS subgroup. He said they did not struggle with the definition, and he agreed with Ms. Bowes that this definition is appropriately flexible.

Mr. Krutsinger agreed that the technology discussion was intentionally framed not to be tied to past technology. He said the AGS Feasibility Study had lots of breadth to consider a variety of technologies.

Mr. Riggs said that the language should be updated to remove rail and the 24-foot guideway details because the feasibility study concluded that rail was not feasible. Mandy Whorton clarified that the references to rail and guideway was needed to evaluate representative impacts at the programmatic level but the PEIS was clear that the assumptions could and likely would change as the AGS was developed. Mr. Krutsinger said that he disagreed that high-speed rail was infeasible, just expensive.

Mr. Wheelock said he thought the language was clear that both a feasibility study would be needed to clarify technologies and that the specific technology would be chosen in a Tier 2 process. (The feasibility study was not a Tier 2 NEPA process; it evaluated but did not choose technologies.)

Ms. MacDonald said she thought the ROD language was appropriate, and no changes were needed.



Mr. Riggs stated that the feasibility study addressed most of the technology questions.

Mr. Wheelock said the CE believes there have been advancements in technology since the AGS feasibility study and that a harder look at the technology and funding was needed in Step 4.

Mr. Hall asked if what is NOT AGS needed to be clarified? He said there seems to be common understanding that rail service, scenic trains, and autonomous/connected vehicles are not included in AGS technologies.

Mr. Wheelock agreed and stated that in addition, AGS is not pavement based. All of the pavement-based solutions, such as connected vehicles, reversible lanes, and use of infrastructure for additional highway improvements (such as the Peak Period Shoulder Lanes) were in addition to AGS.

Mr. Krutsinger offered that although high-speed or rapid-speed transit is more appropriate for language, rail neither predetermines nor is excluded from that definition. Additionally, because bus transit is specifically included as a non-infrastructure component, it is distinctly separate from AGS.

Mr. Katz said over the course of the discussions about AGS, technology has never been a point of confusion or conflict. He noted that the definition in the ROD is clear (“The specific technology for the Advanced Guideway System has not been defined but is intended to represent a modern, “state-of-the-art” transit system”) and captures the intention that AGS be a modern, state of the art transit system that left open the possibility to take advantage of what is “state-of-the-art” at the time it is implemented. He said the CE had operated under the PEIS language for the past decade, and the open technology language has not restricted any discussions to date.

The group agreed that the common understanding of AGS as a modern, high-speed transit system that reflects state-of-the-art technology discussed at this meeting would be sufficient documentation if future scenarios need interpretation.

What is meant by “not precluding” AGS?

Mr. Hall framed this question in relation to the current large studies with Floyd Hill and Vail Pass. He said the CE had concerns that AGS design is kept “wide open” while allowing these other projects to move forward. He asked the group to consider if more analysis of conflicts beyond an overlay of the alignments was needed to answer the question of potential future conflicts with AGS.

Mr. Riggs offered that it was important to consider whether improvements conflict with or preclude the hybrid alignment from the AGS study, which was the preferred alignment in the AGS Feasibility Study.

Mr. Hall stated that he was not sure that even if the AGS alignment was “not precluded,” these projects might make future AGS implementation more challenging. For instance, the large retaining walls on Vail Pass may make AGS much harder and may require reconstruction, and/or add significant cost, or result in environmental impacts that cannot be reasonably understood without a more thorough consideration of AGS. He suggested Project Leadership Teams (PLTs) need a process for how to address AGS conflicts more thoroughly than with an alignment overlay. Cindy Neeley agreed and added that PLTs have generally not included people that can speak to the feasibility, conflicts, or preclusion of AGS. She said this representation was needed, especially for larger projects. Mr. Wheelock agreed that for permanent



projects, AGS expertise, such as Mr. Riggs or Mr. Krutsinger, is needed on the PLT. He said that he did not believe Floyd Hill fully evaluated AGS either.

Mr. Bartsch asked if this was a Step 4 discussion for what to do with future PLTs?

Ms. Bowes said that this discussion about how there is more to understanding AGS conflicts than looking at alignments on a map was enlightening. She agreed that this was an important discussion to address in Step 4.

Maximum Program of Improvements.

The group reviewed several observations about the Maximum Program identified during the earlier steps of the Work Plan, noted in italics below.

Future highway expansion needs to be considered independent of the MEXL projects

The group agreed with this clarification and had no comments or discussion.

Capacity means people, not cars; six-lane capacity is not the same as six-lane highway cross section

The group agreed with this clarification and had no comments. Mr. Wheelock, Mr. Krutsinger, and Mr. Riggs emphasized this was a very important consideration of the Preferred Alternative.

“Existing highway” could allow moving highway from current alignment. If six-lane capacity becomes a six-lane highway, redesign of existing roadway between VMT and EJMT is anticipated. Visioning exercises by Clear Creek County and Idaho Springs should be honored in the design of six-lane capacity.

The group agreed. Mr. Wheelock emphasized that a six-lane capacity highway improvement requires a high-quality design, and cost estimates need to take into consideration this type of project in comparison to other options. Mr. Hall emphasized that rebuilding the highway capacity is different than adding on. He also stated that when defining standards for future six-lane capacity, the design would need to consider more than NEPA minimums for mitigation. Mike Hillman stated that mitigation needs to consider the context – such as Idaho Springs’ location in a narrow canyon – rather than what is “required” by NEPA.

Future Actions and Next Steps

Mr. Bartsch asked what else is needed to move to Step 4 or if any other clarifications were required? No additional clarifications were identified.

Mr. Bartsch asked Ms. Whorton to review the status of action items. She noted that the status of action items had been distributed with the CE meeting materials. Action items had been completed but if there was desire by the group to review them, she would do so. The group agreed that they could review the action item table separately and let Ms. Henderson know if they had any questions or concerns.

Mr. Bartsch noted that a Survey Monkey survey would be coming out in preparation for the Step 4 discussion. Ms. Whorton stated that the CE had agreed that the Preferred Alternative tracking tool would be a useful guide to the updates of the disposition status of the Preferred Alternative components.



Mr. Bartsch reminded the group that he would be reaching out to CE members individually in preparation for the September 2020 meeting. Mr. Wheelock asked what the schedule would be for those check-ins? Mr. Bartsch said he would be in touch over the next few weeks in July.









































The group completed discussion of Step 3 and adjourned early.




























#	First Name	Last Name	Affiliation	Present	Notes
1	Danny	Katz	COPIRG	X	
2	Randy	Wheelock	Clear Creek County	X	
3	Matt	Scherr	Eagle County	X	Needs to step away at 10:00
4	Holly	Norton	State Historic Preservation Office	X	
5	Tracey	MacDonald	Federal Transit Administration	X	
6	Mike	Goolsby	CDOT Region 3 Director (CDOT Seat/Voice Shared R-1 and R-3)		
7	Nicholas	Williams	Public Works, City and County of Denver		
8	Brian	Duchinsky	Headwaters Group	X	
9	John	Martin	Garfield County		
10	Brooke	Davis	US Army Corps of Engineers	X	
11	Chris	Linsmayer	Colorado Ski Country USA	X	
12	Paul	Jesaitis	CDOT R-1 (CDOT Seat/Voice Shared R-1 and R-3)		Mike is serving as alternate
13	Dorothy	Jones	Denver Metro Chamber of Commerce		Lauren Masias will be serving as alternate and is present
14	Margaret	Bowes	I-70 Coalition	X	
15	Adam	Bianchi	US Forest Service	X	Adam needs to step out from 11-noon
16	Casey	Tighe	Jefferson County		
17	Greg	Fulton	Colorado Motor Carriers Assoc		Tracy Sakaguchi is serving as alternate as is present
18	Shaun	Cutting	FHWA	X	
19	Brendan	McGuire	Vail Resorts	X	Nathan will be joining throughout the day
20	Greg	Hall	Town of Vail	X	
21	Mike	Hillman	Idaho Springs	X	
22	Bentley	Henderson	Summit County		
23	Mike	Riggs	Automated Guideway	X	



























			System/High Speed Transit		
24	Eva	Wilson	Local Transit Provider (Avon Mobility Director)	X	
25	Sylvia	Brady	Colorado Rail Passenger Association		
26	Ann	Rajewski	CASTA	X	
27	Gary	Frey	Colorado Trout Unlimited		
28	Dennis	Royer	Sierra Club, Rocky Mountain Chapter	X	
29	Mary Jane	Loevlie	Corridor business rep. (Idaho Springs)	X	Mary will be on until 10:00 and then back at 2:00
30	David	Krutsinger	CDOT - Director of Transit and Rail	X	Out from 12:00-12:30 and Brian Hartman serving as an alternate after 230
31	Amy	Saxton	Clear Creek County	X	
32	Becky	English	Sierra Club	X	
33	Ben	Gerdes	Eagle County	X	
35	Doug	Rex	DRCOG		
36	Kevin	Brown	CDOT	X	
37	Melinda	Urban	FHWA	X	
38	Miller	Hudson		X	
39	Monica	Pavlik	FHWA		
40	Neil	Ogden	CDOT	X	
41	Ron	Papsdorf	DRCOG		
42	Steve	Coffin	Steve Coffin Strategies	X	
43	Vanessa	Henderson	CDOT	X	
44	Vershun	Tolliver	FHWA	X	
45	Trent	Prall	City of Grand Junction		
46	Karen	Berdoulay	CDOT	X	
47	Jeff	Hampton	CDOT		
48	Karen	Hedlund		X	
49	Cindy	Neely	SHPO	X	
50	George	Marlin	Clear Creek County	X	
51	Kelly	Galardi	FHWA	X	
48	Chris	Primus	HDR	X	
49	Steve	Long	HDR		

50	Wendy	Wallach	HDR	X	
51	Mandy	Whorton	Peak Consulting	X	
52	Kira	Olson	HDR	X	
52	Jonathan	Bartsch	CDR	X	

AM Meeting

- | | | | | |
|---|----------------------------------|---|--|--|
|  | Kira Olson (Co-host, me) |  |  | |
|  | Mandy Whorton (Host) |  |  | |
|  | Jonathan Bartsch |  |  |  |
|  | Greg Hall |  |  | |
|  | WWALLACH |  |  | |
|  | Adam Bianchi - US Forest Service |  |  | |
|  | Amy Saxton |  |  | |
|  | Ann Rajewski/CASTA |  |  | |
|  | Becky English |  |  | |
|  | ben.gerdes |  |  | |
|  | Brendan McGuire - Vail Resorts |  |  | |
|  | Brian Duchinsky - Sierra Club |  |  | |
|  | Brian Hartman - CDOT |  |  | |

BD	Brooke Davis	 
CL	Chris Linsmayer	 
CP	Chris Primus	 
C	cynthianeely	 
DK	Danny Katz, CoPIRG	 
DK	David Krutsinger (CDOT - DTR)	 
DR	Dennis Royer	 
EW	eva wilson	 
GM	George Marlin	 
	Holly Norton- History Colorado	 
KB	Karen Berdoulay	 
KH	Karen Hedlund	 
KG	Kelly Galardi FHWA	 

KB	Kevin Brown	 
LM	Lauren Masias	 
MB	Margaret Bowes	 
MJ	Mary Jane Loevie	 
MS	Matt Scherr - Eagle County	 
M	Melinda.Urban	 
MH	Mike Hillman	 
MK	Mike Keleman	 
MR	Mike Riggs	 
M	millerhudson	
NO	Neil Ogden	 
	Randall Wheelock	 
SC	Shaun Cutting	 



Steve Coffin



tracey.macdonald



Tracy Sakaguchi-CMCA



Vanessa Henderson



Vershun.Tolliver





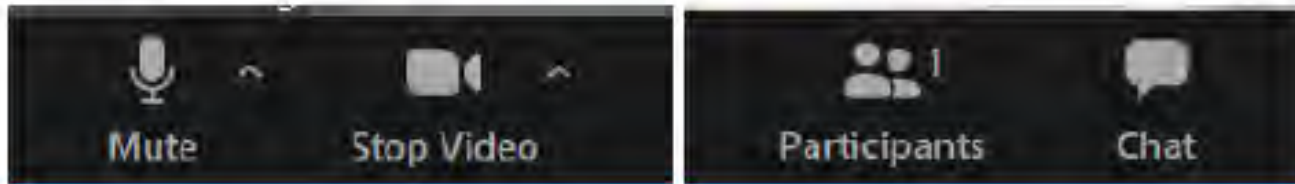
Special Collaborative Effort (CE) 2020 Reassessment Meeting July 15, 2020

Introductions, Agenda Review, Meeting Purpose

Zoom Guide

PARTICIPATING IN THE MEETING

- You can control your audio and video settings and type comments/questions in the chat feature, using the tool bar at the bottom of your screen. You can also see a list and video/photos of participants. The phone tool bar is similar to this computer tool bar:



- **Audio:** Click Mute when you're not speaking to cut down on background noise. Unclick it to speak.
- **Video:** Turn the video on and off by clicking the video icon.
- **Chat:** Click the chat button to open a chat window to the side of your screen. You can type comments or questions here.
- **Participants:** Click the Participants button to bring up a text box showing the meeting participants.

To change how your screen displays people and meeting materials, use the buttons at the top right of your computer screen. This Zoom article provides information on video layouts. https://support.zoom.us/hc/en-us/articles/201362323-How-Do-I-Change-The-Video-Layout-#h_e38e1056-0b7c-4678-a9ba-a1468b5f54a9

Zoom Protocol

In today's meeting...

- We will stop after each slide for discussion
- Use the chat option during the slide discussion or the presenter will ask for comments at the end of each slide
- In case of technical difficulties, text Kira Olson at 970-310-1898

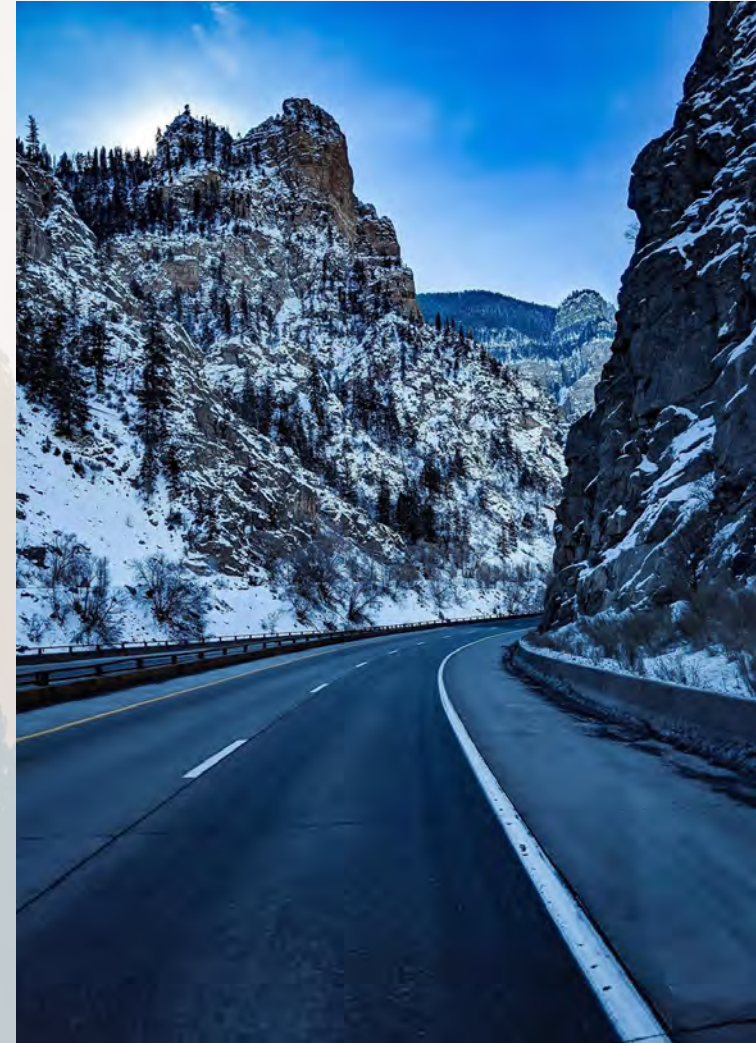
Meeting Purpose

Today's meeting purpose is to...

- **Clarify uncertainties regarding Preferred Alternative components (Step 3) and discuss approach for addressing potential future actions (Step 4).**

Agenda

- Public Comment
- General CE Business
- Summary of Decisions and Minutes
- Next Steps/Actions Items for Steps 1 and 2
- Confirm List of Outstanding Questions (3A)
- Address Outstanding Questions (3B)



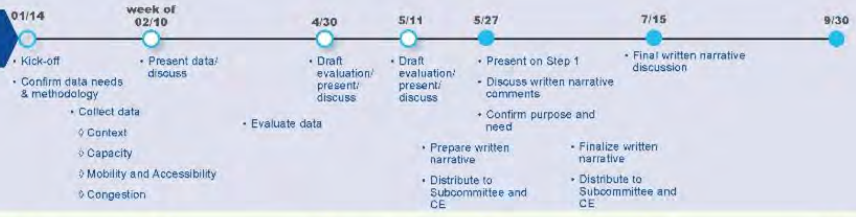
Public Comment Period

General Collaborative Effort Business

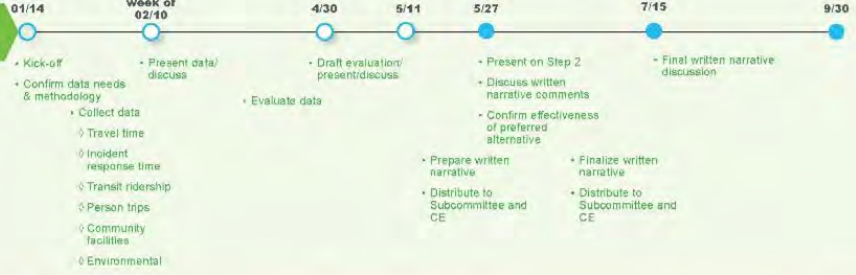
Topics:

- CE Quorum Roll Call
- CE Fundraising Effort
- Local Historic Chapter Update

1 REASSESS PURPOSE AND NEED



2 ASSESS EFFECTIVENESS

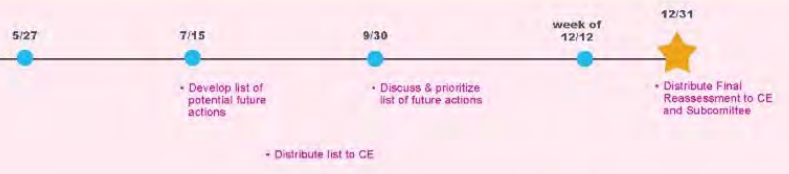


3 CLARIFY UNCERTAINTIES

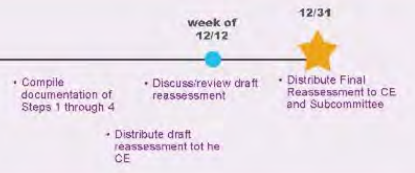


← We are here

4 DEVELOP POTENTIAL FUTURE ACTIONS



5 DOCUMENT



Summary of Decisions from Steps 1 and 2

Step 1: Reassess Purpose and Need

CE reached consensus that the PEIS/ROD purpose and need components are valid based on the current context.

- Land use, recreation, and climate change pressures have intensified
- Technological advances in high-speed transit and highway operational management strategies are increasingly appropriate to serve person trips in the corridor.
- Purpose and Need
- Transportation needs to increase person-trip capacity, improve mobility and accessibility for people and freight, and reduce congestion and travel delays through the I-70 Mountain Corridor persist.
- Transportation solutions must provide for and accommodate environmental sensitivity and respect for community values.

Step 2: Assess the Effectiveness of the Implementation of the Preferred Alternative

- All major components of the Preferred Alternative remain relevant; the intertwined elements are all important and needed to effectively address transportation problems in the corridor.
- Non-infrastructure components
- Advanced Guideway System
- Highway Improvements (only Minimum Program assessed)
- Effectiveness of AGS and its relationship/role to other components cannot be fully addressed because no progress has been made to implementing a functioning system
- Feasibility of AGS is reaffirmed
- AGS remains highly supported component for which more action is needed to realize transportation benefits
- Non-infrastructure and highway components that have been implemented have been moderately effective in addressing transportation problems.

Steps 1 and 2 Follow-up and Discussion

- Review of action items
- Comments on revised Steps 1 and 2 Summary Document
- Other comments or outstanding issues related to Steps 1 and 2?

Approval of May 27, 2020 Meeting Minutes



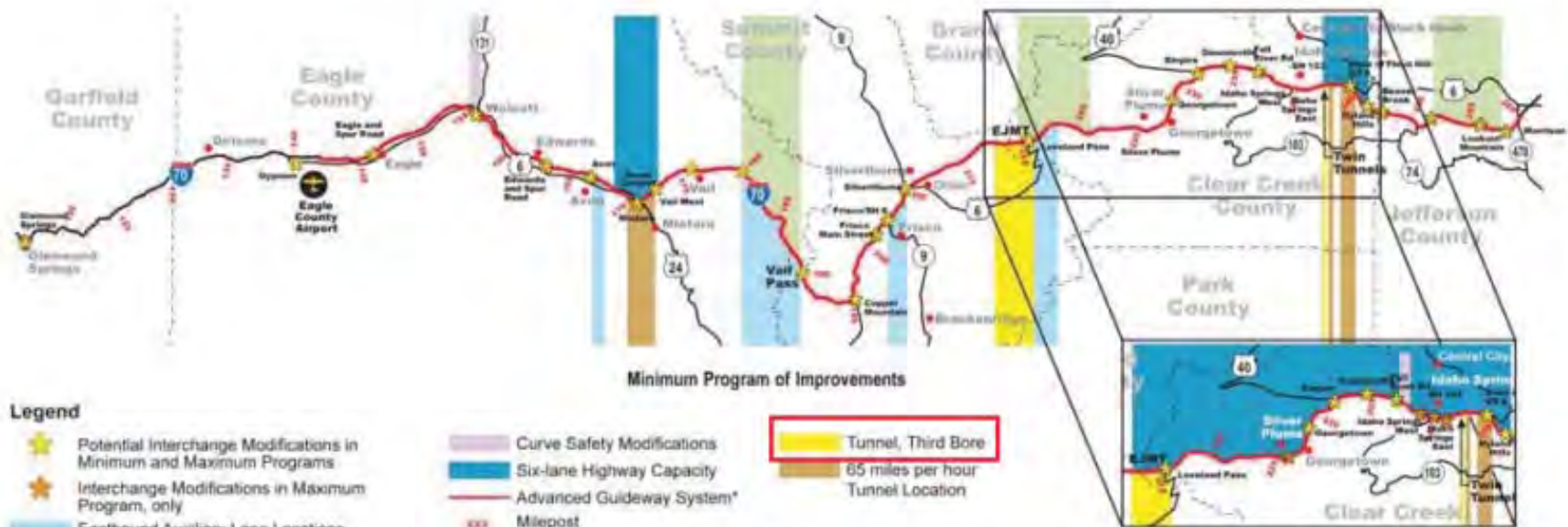
20 Minute Break

Clarify and Address Outstanding Questions

- Status of the EJMT 3rd Bore
- Empire Interchange
- 2025 Trigger
- Definition of AGS in ROD - “not preclude”
- Maximum Program of Highway component definition
- Other?

EJMT 3rd Bore

Figure 1. Preferred Alternative



Minimum Program of Improvements

Additions to Maximum Program of Improvements

*Advanced Gateway System follows the general location of the I-70 highway but is not necessarily within the highway right-of-way.

The Maximum Program of Improvements includes all the Minimum Program of Improvements plus the additions shown here, including six-lane highway capacity from Eisenhower-Johnson Memorial Tunnel to the Twin Tunnels, four additional interchange modifications in Clear Creek County, and curve safety modifications at Fall River Road.

EJMT 3rd Bore

- Is the 3rd bore a part of the Minimum Program of Improvements or Maximum Program of Improvements?



45 Minute Lunch Break

Empire Interchange

- Specific Highway Improvements include:
 - “Empire Junction (US 40 and I-70) interchange improvements (MP 232)” ROD pg 5
- What is included in the Minimum Program of Improvements for the Empire Interchange?

2025 Triggers

Additional highway capacity improvements will proceed if and when:

- The specific highway improvements are complete and an Advanced Guideway System is functioning (Front Range to beyond the Continental Divide),

OR

- The specific highway improvements are complete and Advanced Guideway System studies that answer questions regarding the feasibility, cost, ridership, governance, and land use are complete and indicate that an Advanced Guideway System cannot be funded or implemented by 2025 or is otherwise deemed unfeasible to implement

OR

- Global, regional, or local trends or events have unexpected effects on travel needs, behaviors, and patterns and demonstrate a need to consider other improvements. ROD Pg. 7

AGS Definition in ROD

“An Advanced Guideway System is a central part of the Preferred Alternative and includes a commitment to the evaluation and implementation of an Advanced Guideway System within the Corridor, including a vision of transit connectivity beyond the study area and local accessibility to such a system.” ROD pg. 3

“Capacity is measured by the combined capacity of the Advanced Guideway System and increased highway capacity, both of which are needed to meet 2050 network capacity.” ROD pg 6

AGS Definition in ROD (continued)

“The Advanced Guideway System Alternative would provide rail transit service between the Eagle County Regional Airport and the Jeffco Government Center light rail station with a 24-foot-wide guideway system that is capable of being fully elevated throughout its length. The specific technology for the Advanced Guideway System has not been defined but is intended to represent a modern, “state-of-the-art” transit system.

For the purposes of analysis in the PEIS, the advanced guideway technology was assumed to be an urban magnetic levitation (maglev) transit system. However, the actual technology would be identified during Tier 2 NEPA processes.” ROD pg. 9

AGS Definition in ROD (continued)

Additional information is necessary:

- Feasibility of high-speed rail passenger service
- Potential station locations and local land use considerations
- Transit governance authority
- Alignment Technology Termini
- Funding requirements and sources
- Transit ridership
- Potential system owner/operator
- Interface with existing and future transit systems
- Role of an Advanced Guideway System in freight delivery

AGS Definition in ROD (continued)

“A specific Advanced Guideway System technology has not been identified and will be studied in a subsequent feasibility study; if feasible, it will be evaluated in one or more Tier 2 NEPA processes.” ROD pg 2

“Additional information is required to select a technology for the Advanced Guideway System, and the specific technology for that system will be identified during Tier 2 NEPA processes.” ROD pg 6

AGS Definition in ROD (continued)

“Based on the Tier 1 evaluation, this capacity requires double-track throughout the transit service area. The selection of a transit technology will depend on the limitations of transit technologies, such as seat capacity, speed, power needs, and ability to handle grades and curves, as well as the ability of transit technologies to attract riders to switch from highway travel to transit use. Although a specific technology for the Advanced Guideway System is not selected in this Tier 1 decision, an operable transportation system requires a minimum of 25 percent of trips (or 4,900 travelers) to shift from highway travel to transit.” ROD Pg 7

Definition of AGS - Preclude

What is the meaning of “not preclude” for AGS?

20 Minute Break

Maximum Program of Improvements

- Future highway expansion needs to be considered independent of the MEXL projects
- Capacity means people, not cars; 6-lane capacity is not the same as six-lane highway cross section
 - “Person trips are used to portray the future demand, rather than vehicle trips, so that all potential modes of travel are examined similarly.” ROD pg 1-7
 - “Unmet demand is measured in person trips. The need to increase capacity is based on person trips; there are various ways to increase person trip capacity.” ROD pg 1-19

Maximum Program of Improvements

- “Existing highway” could allow moving highway from current alignment
- If 6-lane capacity becomes 6-lane highway; redesign of existing roadway between VMT and EJMT is anticipated
- Honor visioning exercises by CCC and Idaho Springs
 - “Throughout the Corridor, improvements may be north or south of the existing I-70 highway alignment, or within the highway median, but not necessarily within existing right-of-way.” ROD pg 6

NOTE: ROD indicates that all projects will go through a Tier 2 NEPA process where alternatives will be developed and evaluated

Looking Ahead

Future Actions (Step 4) and Next Steps:

- Overview of Step 4
 - Survey on PA - Status of Implementation
 - Interviews with CE Members
- Review PA list for considerations for future actions

Next Steps/Action Items

- Next CE Meeting Scheduled for September 30, 2020
- Action Item Review



Special Collaborative Effort (CE) 2020 Reassessment Meeting July 15, 2020



**Collaborative Effort (CE) Meeting and
I-70 Mountain Corridor 2020 Reassessment Meeting #8 Summary**
September 30, 2020, 9:00 AM to 4:00 PM
Zoom Conference Call Video Meeting

Overview

These notes summarize the Collaborative Effort (CE) meeting held via video conference on September 30, 2020. The agenda and other meeting materials are attached.

Welcome and Introductions

Jonathan Bartsch introduced himself as the facilitator of the meeting and reviewed the Zoom video conference platform and how it would be used for today's meeting. He reviewed the meeting agenda and explained that this meeting, unlike previous meetings for the 2020 Reassessment, would include breakout sessions.

Mr. Bartsch reviewed the purpose and operating protocols for the meeting (see attached presentation). No comments or discussion was recorded regarding the purpose or protocols for the meeting. He reviewed the 2020 Reassessment schedule, noting that this meeting is focused on Step 4 of the Work Plan to discuss and prioritize future actions for implementation of the Preferred Alternatives. He also explained that since the last meeting, he had developed and distributed a survey to the CE members and an opportunity to talk to most of the CE members individually and would be reviewing the results of the survey and discussions later in the agenda.

Public Comment and CE Business

Mr. Bartsch opened up the meeting to public comment. None was recorded. He asked the CE members to introduce themselves via roll call. The following members or alternates were present, including:

- Randy Wheelock, Clear Creek County (CE Co-Chair)
- Greg Hall, Vail (CE Co-Chair)
- Ann Rajewski, Colorado Association of Transit Agencies (CASTA)
- Brian Duchinsky, Sierra Club, Headwaters Group
- Brooke Davis, US Army Corps of Engineers
- Chris Linsmayer, Colorado Ski County USA
- Danny Katz, Colorado Public Interest Research Group (CoPIRG)
- David Krutsinger, Colorado Department of Transportation (CDOT), Division of Transit and Rail
- Dennis Royer, Sierra Club, Rocky Mountain Chapter
- Dorothy Jones, Denver Metro Chamber of Commerce
- Eva Wilson, local transit provider (Avon Mobility Director)
- Holly Norton, Colorado State Historic Preservation Office
- Margaret Bowes, I-70 Coalition
- Mary Jane Loevlie, Business Representative (Idaho Springs)
- Matt Scherr, Eagle County
- Mike Goolsby, CDOT Region 3



- Mike Hillman, Idaho Springs (Mayor)
- Mike Keleman, CDOT Region 1 (*alternate*)
- Mike Riggs, Stantec
- Shaun Cutting, Federal Highway Administration (FHWA)
- Tracy Sakaguchi, Colorado Motor Carriers Association (*alternate*)

CE member alternates that were present in addition to the primary member were Ben Gerdes, Eagle County, and Amy Saxton, Clear Creek County; and Becky English, Sierra Club. Other meeting participants included Vanessa Henderson, Neil Ogden, Karen Berdoulay, Jeff Hampton, and Kevin Brown, CDOT; Kelly Galardi, FHWA; Miller Hudson, interested party; and Steve Coffin, Steve Coffin Strategies. The HDR consultant team present included Chris Primus, Kenna Davis, and Mandy Whorton (Peak Consulting Group).

The group reviewed the CE membership and the previous (May 27, 2020) meeting decision to add an organization to the CE to represent local historic preservation interests. Holly Norton said one application had been received, from Cindy Neely, representing Historic Georgetown and asked that the group approve filling the position. The CE supported Ms. Neely filling the seat. Ms. Neely said she had been involved in various capacities with the CE since its inception and was glad to serve in the capacity of representing local historic preservation.

Randy Wheelock, CE Co-Chair, said no comments had been received on the July 15, 2020 CE 2020 Reassessment meeting notes. They were approved.

Summary of Decisions from Steps 1, 2, and 3 of the 2020 Reassessment Work Plan

Mr. Bartsch reviewed the outcomes of Steps 1, 2, and 3 of the Reassessment Work Plan. The review is included in the attached presentation. There were no comments or discussion about the previous steps.

The meeting moved along ahead of schedule, and the planned break was not needed. Mr. Bartsch went on to review the CE member interview themes and survey results. He said that the mood of the CE members was upbeat, and the group was excited to get to the work of Step 4. CE members especially wanted to focus on AGS vision and implementation but generally thought that all components of the Preferred Alternative should be continued at current or increased levels of effort.

Several members requested copies of the slides to review the survey results more closely. Mandy Whorton sent the materials to the group, and they reviewed over a break.

Mr. Bartsch explained that due to the consensus that more effort was needed for non-infrastructure-related components and AGS, the group would be divided into breakout sessions to brainstorm and report back ideas for how to focus efforts for those components. The first group would discuss AGS, then Non-Infrastructure Components. The second group would discuss Non-Infrastructure Components then AGS. The groups would compare notes by reporting out after each session and then move on to discuss highway components as a group.

AGS Breakout

The following represent themes from the breakout discussions regarding how to move forward with AGS implementation. This combines the discussions of both Group 1 and Group 2.



- **Understanding / Championing AGS**
 - There is a need to educate corridor communities, Denver metro users, and others statewide about AGS: what it is, its benefits, and its vision.
 - Need for more *corridor-wide champions* for AGS
 - Collaboration and engagement with local communities and leaders
 - Need to understand phasing potential and options; would a segmented approach increase financial feasibility (i.e., AGS to Idaho Springs or Georgetown)?
 - Convening local leaders in a “politically agnostic” fashion to think about solutions toward implementation
 - Need for transit experts to participate in Technical Teams for large projects, especially in evaluating how to “not preclude” AGS in large roadway projects
- **AGS Financial Feasibility**
 - Trying to implement a multi-billion-dollar system is difficult. We need to find a meaningful way to phase it without compromising the vision or the purpose and need.
 - All or nothing approach has been a non-starter for implementation
 - Need new funding sources. Trying to carve money out of the existing CDOT budget will continue to be infeasible.
 - Concerns by some that relying on AGS may prevent other short-term improvements from moving forward.
 - Although this is a legitimate issue, it has not played out, and many improvements in the I-70 Mountain Corridor have been implemented.
 - Gain a better understanding of *private funding options* and how to attract private investment
 - Talking to private funders to better understand their perspective and their needs
- **AGS Ridership and Capacity**
 - Most emerging technologies cannot meet the capacity needs of 4,900 riders in the peak hour
 - Need for updated and refined ridership studies
 - Investment-grade ridership studies will be needed for discussions with potential private equity investors
 - Look at ridership in context of current and planned transit and more investments in local transit (e.g., Winter Park) and first/last mile solutions (e.g., Uber, Lyft)



- Develop “back of envelope” initial study, which could prelude (and build the case for) a more advanced Investment Grade study

Non-infrastructure and Highway Components Breakout

The following represent themes from the breakout discussions regarding Non-infrastructure Components. This combines the discussions of both Group 1 and Group 2.

- Focus on building transit ridership as precursor to AGS
 - Combining adequate incentives for transit use and disincentives for driving
 - Potential study
 - Incentive: look to examples where there is a high level of visitor experience to make sure transit is a choice not a consequence (i.e., people will choose transit over driving, not by default that cars are not allowed)
 - Disincentive: bring in and communicate the cost of driving. Focus on travel times and unpleasant user experience on congested highways
 - COVID: What can be done in the interim before transit is back to full capacity and operation
 - Looking at how transit ties into adaptive management
 - Focusing on higher occupancy regional transit, somewhere between bus and car (e.g., 25 person occupancy); support CDOT DTR purchase of smaller vehicles that can operate in Express Lanes
- Need for updated travel demand studies
 - Travel habits and availability of “big data”
CDOT’s statewide travel demand model may provide additional application/update (note that the statewide model does not have weekend trips, which is why it was not used for the purpose and need update)
- Environmental strategies
 - Looking at how climate ties in
 - Environmental groups are potential champions for these efforts
- Other roadway strategies
 - Being thoughtful with interchange improvements, specifically looking at future transit feasibility
 - Continue ITS and TDM efforts

CE Discussion of Next Steps for Preferred Alternative Implementation

The following summarizes next steps and potential work plans that could be pursued as outcomes of the CE discussion.



Non-Infrastructure Actions

Travel Demand Modeling

Update travel demand modeling for the corridor identifying a) potential ridership and b) capacity goal for the corridor. The following are topics that should be addressed by a subcommittee.

1. Forecast maximum ridership from Bustang/micro transit vehicles in the Express Lanes
2. Update the capacity requirements of the ROD and discuss implications of those requirements and the need to meet those requirements.
3. Determine what part of the capacity requirement can be achieved with the incremental implementation of the Minimum Program of improvements. Consider effects of increasing travel demand and transit technologies on capacity requirements.
4. Need a stepping stone approach to high-speed transit, it is not an all or nothing

Action Item: Discuss approach with CDOT DTD and availability of CDOT to assist with statewide model. Consider a subcommittee to champion the outlined tasks.

Build Transit Ridership

Develop interim goals and build transit ridership.

1. Incentivize the use of transit service and increase roadway transit service
2. Consider increasing Bustang service on weekends due to peak traffic (as well as a fare adjustment as an incentive)
3. Improve transit connections and integrate final mile solutions to get riders to their ultimate destination. Local transit should be high quality so that people *choose* transit.
4. Advance the use of micro-transit and other roadway technologies (e-vehicle/connected/autonomous).
5. Support CDOT DTR's purchase and operation of smaller buses, which would be narrow enough to operate in the MEXL safely.

Action Item:

- Develop a strategy and approach for incentivizing and increasing transit service.
- Establish ridership and mode shift goals (5, 10, 15 year goals) and a plan on how to meet them.
- Discuss ways to improve Bustang in the corridor with the Transportation Commission and communicate that expansion does not impact rural transit agencies funding because the expansion is funded by the ski industry

TDM and Corridor Management Approaches

1. Consider parking management as a strategy to change behavior
2. Consider congestion fees to disincentivize driving
3. Pilot alternative traffic management strategies
4. Expand TDM services and provide education to change driver behavior (delaying travel, use of transit)
5. Develop strategies to improve real-time and predictive traveler information- more robust, timely road information



Action Items:

- Continued I-70 Coalition engagement with CDOT's Office of Innovative Mobility
- Continued I-70 Coalition engagement with sustainability coordinators throughout the corridor.
- CE members join and support the I-70 Coalition TDM Committee
- Develop and implement a strategy to further engage the Front Range residents and increase alliances with partner agencies and stakeholder groups on the Front Range. Danny Katz, Margaret Bowes to discuss ways to further engage Front Range stakeholders and report back to CE.

Advanced Guideway System

Increase Support for AGS

1. Identify additional champions for AGS and communicate the vision through educating elected officials, staff and businesses on what AGS is and how it can serve the corridor.
2. Establish a community and agency vision for AGS
3. Develop AGS ad hoc committee to guide AGS promotional strategies.

Funding and Financing

1. Create a community and agency vision for AGS and determine how much money can be generated by communities (ROW, TOD, etc.). Determine how to attract private investment for AGS
2. Local governments are essential in this effort. Before AGS implementation, communities need to make decisions about land use and other community amenities that would enable the AGS vision to advance (station, TOD areas, and ROW)
3. Address community concerns related to growth in the corridor, land use impacts and station locations
4. Discuss with private equity investors and HPTE the community vision and what it can offer to private sector
5. Change the paradigm of how AGS/high speed transit can be funded

Future Coordination for AGS Implementation

1. Assess and understand any technology advances that may meet the requirements of the ROD (building off information presented in Reassessment Step 2). Consider a Technology Fair?
2. Address how 'precluding AGS' is addressed in the corridor specific projects. Beyond an overlay and consider the implications for costs and constructability (easier/harder – for instance, large retaining walls that need to be reconstructed could add unnecessary cost if addressed proactively)
3. Consider amending CSS guidance to include high-speed transit expertise on Technical Teams

Form AGS Subcommittee

1. Lead efforts to complete an order of magnitude economic evaluation/order of magnitude costs, reexamine technology advances (building off of Work Plan Step 2 related information) and come to a common understanding of how to advance.
2. Consider a more formalized committee with funding (deadline, deliverables, timeline) and executive agency/legislative support.



Potential Steps for Ad Hoc Committee :

- Step 1 - Define work plan and report back at the December meeting including expectations and a definition of the subcommittee charge and timeline
- Step 2 - focused ridership study; define the modeling assumptions and inputs, including goals for the number of person trips to divert, consider assumptions regarding what people will pay for a trip and identify a reasonable range of revenue. Look to identify revenue for initial capital investments.
 - Use Patti Silverstein's study and determine how to monetize the economic benefits to generate revenue stream
- Step 3 - consider application of the new statewide travel model, recognizing that it is a weekday model as compared to the I-70 mountain corridor model that is a weekend model
- Step 4 - based on Step1/2 results move to an investment-grade traffic and revenue study

Recruit AGS Subcommittee Members:

Potential members from CE: Margaret Bowes, Eva Wilson, Mike Riggs, Danny Katz, David Krutsinger, Randy Wheelock, Mary Jane, Greg Hall.

Additional members: Expand to include more geographic breadth and expand representation from counties, metro area, agencies

Highway Components

The CE members did not feel much additional work was needed to implement highway improvements. However, they did note support for current projects, such as Floyd Hill and Vail Pass. More information is needed to analyze the impact of implemented improvements from a capacity, safety, environmental and community perspective building off of the 2020 Reassessment Steps 1 and 2.

Next Steps

Mr. Bartsch concluded the meeting noting that the group accomplished a lot in defining actions for supporting the Preferred Alternative. However, members agreed that the list of "future actions in pursuit of the Preferred Alternative" needed to be augmented and refined so Step 4 was not completed. Once Step 4 is completed and future actions are agreed upon, the CE would like to develop a roadshow from the CE update to present to the Transportation Commission, the CDOT Executive leadership the legislature's Transportation Legislative Review Committee, corridor communities and community leaders on the progress of the PA/ROD, AGS and the Collaborative Effort. The goal is to build understanding and support for the effort and for continued implementation of the Preferred Alternative, particularly related to AGS and interim steps to building understanding, ridership, and support for AGS.



Special Collaborative Effort (CE) 2020 Reassessment Meeting - Step 4 September 30, 2020

Introductions

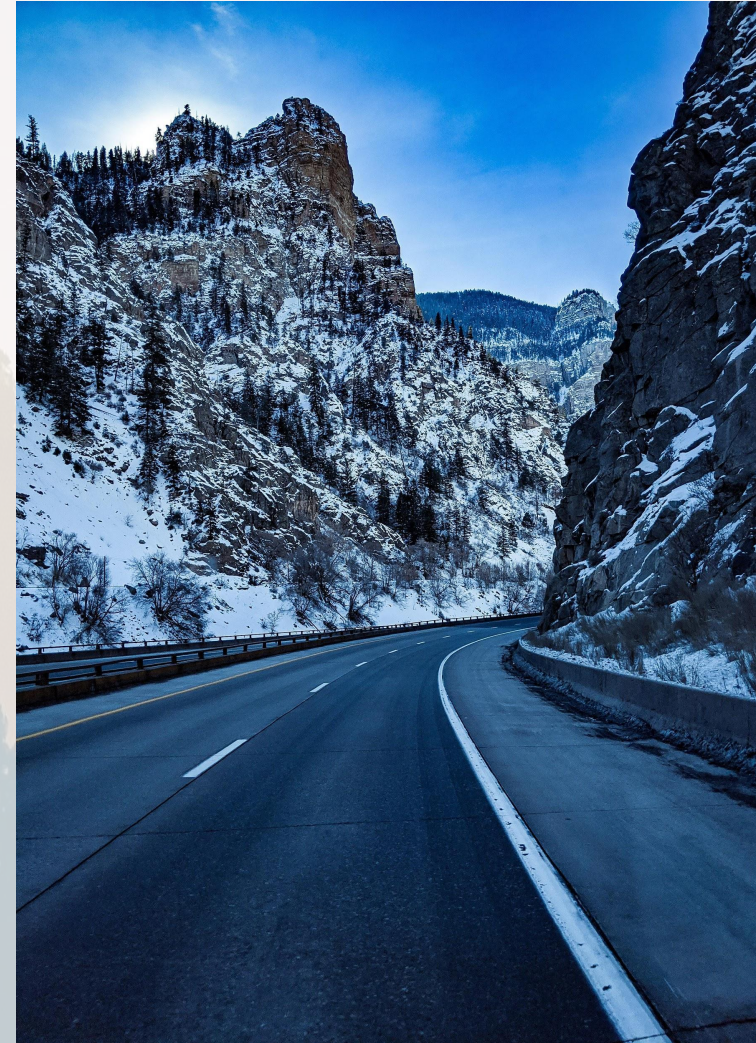
Zoom Protocol

In today's meeting...

- We will stop for discussion throughout the presentation
- Use the chat option during the slide discussion or the presenter will ask for comments at the end of each slide
- In case of technical difficulties, text Kenna Davis 720-560-4211

Agenda

- Public Comment
- General CE Business
- Reassessment Overview and Summary
- CE Member Interview Themes and Survey Results
- Key Issues and Work Plan Items
- Priority CE Work Plan items and Responsibilities



Meeting Purpose

Today's meeting purpose is to...

- Discuss and determine priority future actions (work plan) to advance the I-70 Mountain Corridor Preferred Alternative.

Operating Protocols

The ongoing purpose of the Collaborative Effort is to:

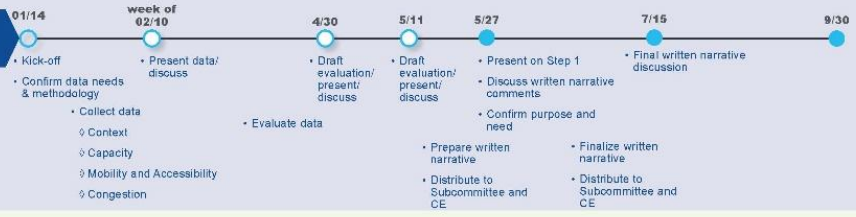
- Ensure consistency of implementation of the Record of Decision (ROD) with the Collaborative Effort's agreement, signed May, 2008;
- Provide a forum to track programmatic decisions and progress related to the I-70 Mountain Corridor Programmatic Environmental Impact Statement (PEIS);
- Provide a mechanism for responding to the triggers identified in the Collaborative Effort Agreement, signed May, 2008.

Operating Protocols (cont.)

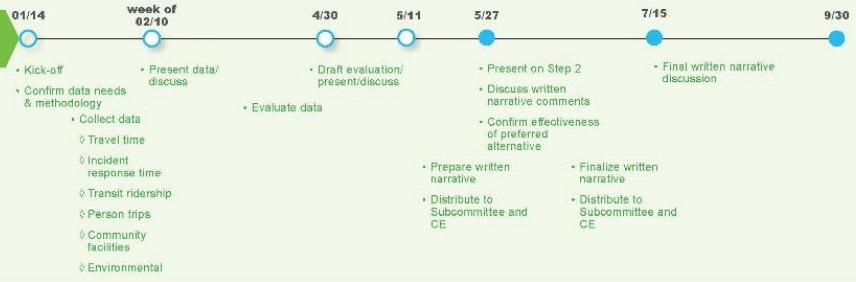
Consensus Decision-Making

- The group's highest goal is consensus. A consensus agreement is one that all group members can support, built by identifying and exploring all parties' interests and by developing an outcome that satisfies these interests to the greatest extent possible.
- The goal of the meetings is to have frank and open discussion of the topics and alternatives in question.
- If consensus is not possible, then the level of support and dissention will be noted and all deliberations and products of the Collaborative Effort will be considered by the lead agencies in their decision making.

1 REASSESS PURPOSE AND NEED



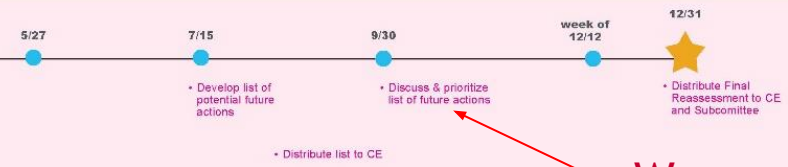
2 ASSESS EFFECTIVENESS



3 CLARIFY UNCERTAINTIES



4 DEVELOP POTENTIAL FUTURE ACTIONS



5 DOCUMENT



○ SUB
● CE (suggest full day workshops for 5/27, 7/13, and 9/30 for Step 3 and Step 4)

We are here

Public Comment Period

General Collaborative Effort Business

Topics:

- Quorum, Roll Call
- New CE member representative - State/Local Historical
- Approval of minutes from July 15, 2020

Summary of Decisions from Steps 1, 2, and 3

Step 1: Reassess Purpose and Need

CE reached consensus that the PEIS/ROD purpose and need components are valid based on the current context.

- Context Evaluation:
 - Land use, recreation, and climate change pressures have intensified
 - Technological advances in high-speed transit and highway operational management strategies are increasingly appropriate to serve person trips in the corridor.
- Purpose and Need
 - Transportation needs to (1) increase person-trip capacity, (2) improve mobility and accessibility for people and freight, (3) and reduce congestion and travel delays through the I-70 Mountain Corridor persist.
 - Transportation solutions must provide for and accommodate environmental sensitivity and respect for community values.

Step 2: Assess the Effectiveness of the Implementation of the Preferred Alternative

- All major components of the Preferred Alternative remain relevant; the intertwined elements are all important and needed to effectively address transportation problems in the corridor.
- Non-infrastructure components
- Advanced Guideway System
- Highway Improvements (only Minimum Program assessed)
- Effectiveness of AGS and its relationship/role to other components cannot be fully addressed because no progress has been made to implementing a functioning system
- Feasibility of AGS is reaffirmed
- AGS remains highly supported component for which more action is needed to realize transportation benefits
- Non-infrastructure and highway components that have been implemented have been moderately effective in addressing transportation problems.

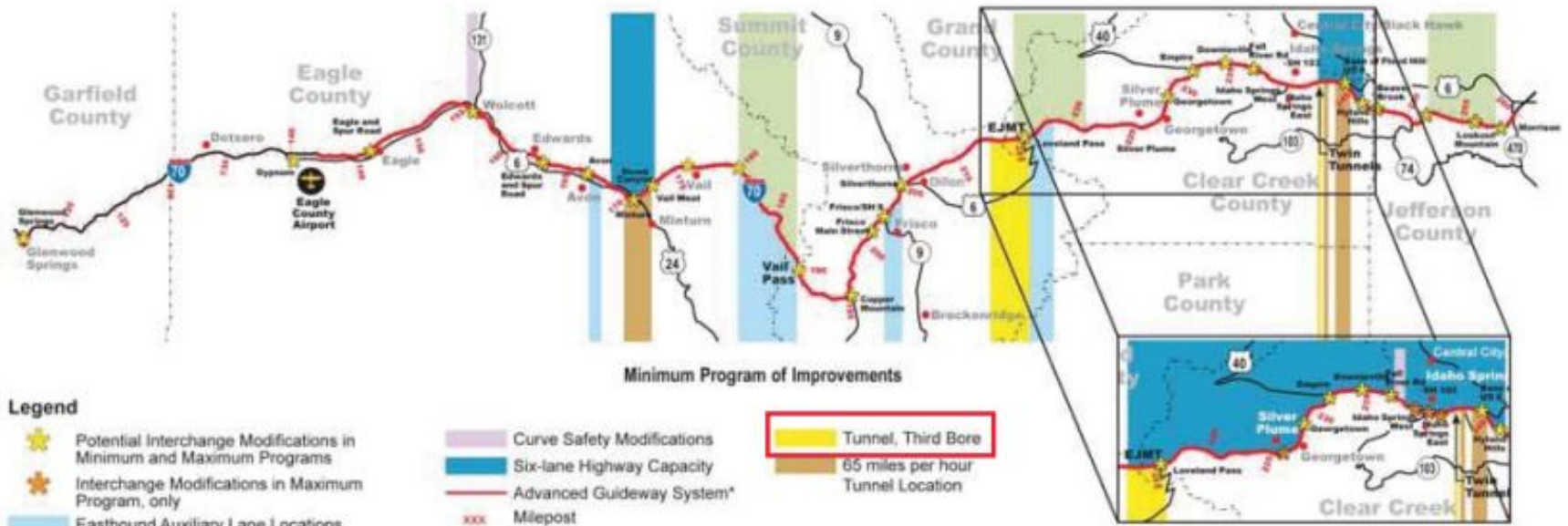
Step 3: Clarify and Address Outstanding Questions

The CE Reached an understanding of the following Preferred Alternative items including:

- Status of the EJMT 3rd Bore
- Empire Interchange
- 2025 Trigger
- Definition of AGS in ROD - “not preclude”
- Maximum Program of Highway component definition

EJMT 3rd Bore

Figure 1. Preferred Alternative



Legend

- Potential Interchange Modifications in Minimum and Maximum Programs
- Interchange Modifications in Maximum Program, only
- Eastbound Auxiliary Lane Locations
- Westbound Auxiliary Lane Locations

EJMT = Eisenhower-Johnson Memorial Tunnels

- Curve Safety Modifications
- Six-lane Highway Capacity
- Advanced Guideway System*
- Milepost
- Tunnel, Third Bore
- 65 miles per hour Tunnel Location

*Advanced Guideway System follows the general location of the I-70 highway but is not necessarily within the highway right-of-way.

Additions to Maximum Program of Improvements

The Maximum Program of Improvements includes all the Minimum Program of Improvements plus the additions shown here, including six-lane highway capacity from Eisenhower-Johnson Memorial Tunnel to the Twin Tunnels, four additional interchange modifications in Clear Creek County, and curve safety modifications at Fall River Road.

Step 3: Clarify and Address Outstanding Questions

EJMT Third Bore

- The group agreed EJMT is part of the Minimum Program of Improvements.

Empire Junction

- The group agreed that the specific highway improvement for Empire Junction is intended to meet immediate safety and mobility needs and is separate from the Maximum Program.

2025 Triggers

- The group concluded that no changes are needed to the language and agreed that 2025 is not a deadline for AGS.

Step 3: Clarify and Address Outstanding Questions

AGS Definition

- The group agreed that the common understanding of AGS as a modern, high-speed transit system that reflects state-of-the-art technology discussed at the meeting would be sufficient documentation if future scenarios need interpretation.

“Not Precluding” AGS

- Need to discuss further

Maximum Program of Improvements

- Group agreement on clarification points

Follow-up and Discussion

- What observations and questions do you have about the 2020 Reassessment process and decisions from Steps 1 - 3?

10 Minute Break

CE Member Interview Themes and Survey Results

- Series of interviews with most CE members
- Survey results from CE Member survey (14 Responses)

Interview Themes: General Themes

- CE finds a stronger voice together, define roles and contributions CE and CSS processes are effective in corridor
- Accomplishments: Momentum, motivation, and increased trust to continue to implement the PA.
- 2025 trigger and Re-Evaluation
- Diversity of perspectives regarding Work Plan going forward

Interview Themes: Preferred Alternative - Non-Infrastructure/ Roadway Transit

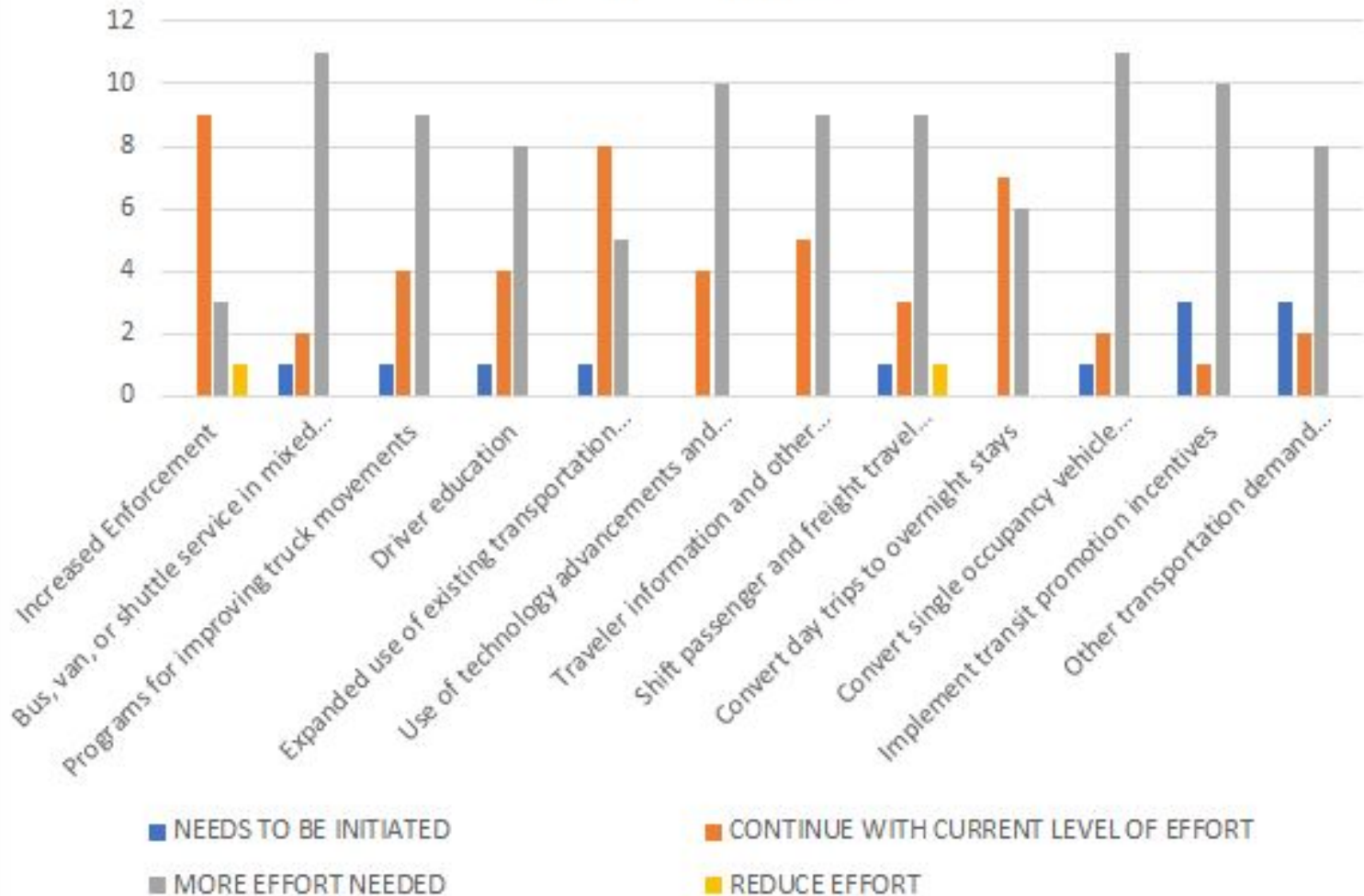
- Interest in more roadway transit, congestion reduction, step to build ridership and demonstrate viability of transit
- **Work Plan items:** statewide travel model application, improve Bustang, snowstang and ski shuttles, roadway vehicles and technology (connected and autonomous vehicles)

Interview Themes: Preferred Alternative - AGS

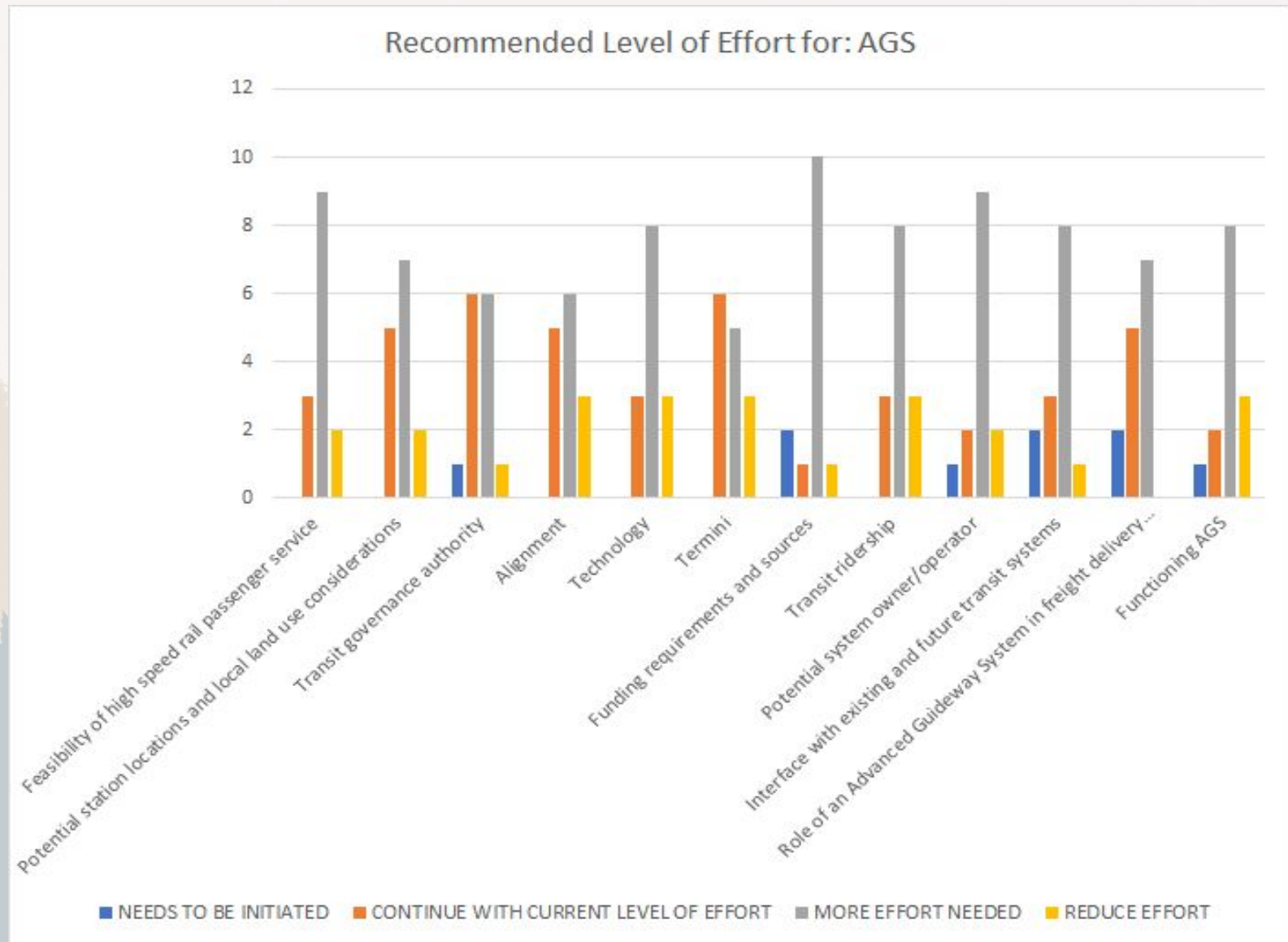
- Primary focus of conversations
- Most interviewees expressed a desire to chart a path forward for AGS by answering questions
- Range of perspectives: excitement about AGS vision, incremental steps to demonstrate transit viability, concerns about financial feasibility, time and priority
- **Work Plan items:** data collection, technology and alignment, financial feasibility, land use planning

Survey Results

Recommended Level of Effort for: Non-Infrastructure Related Components

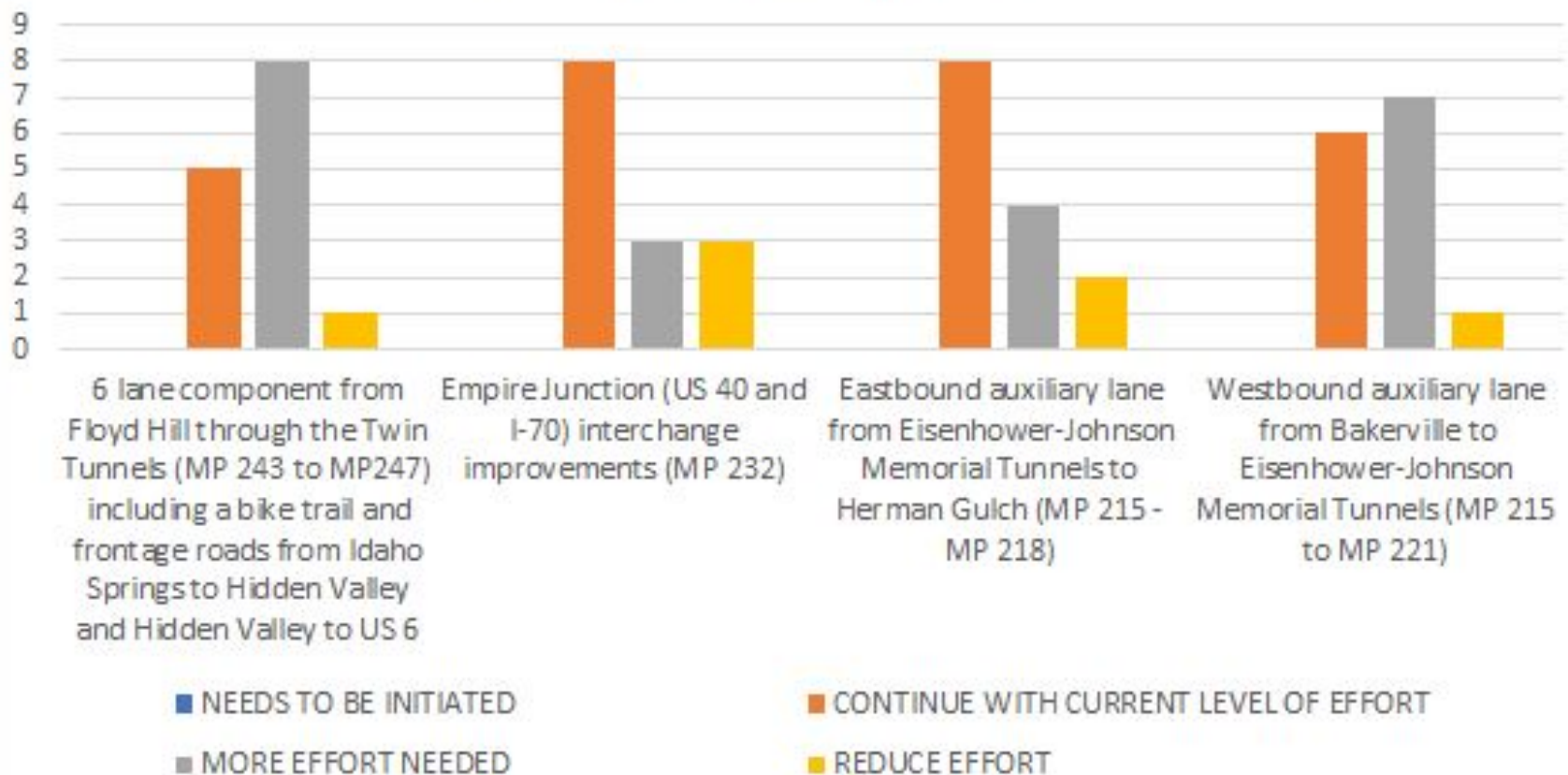


Survey Results



Survey Results

Recommended Level of Effort for: Highway Improvements
(Specific Highway Improvements)



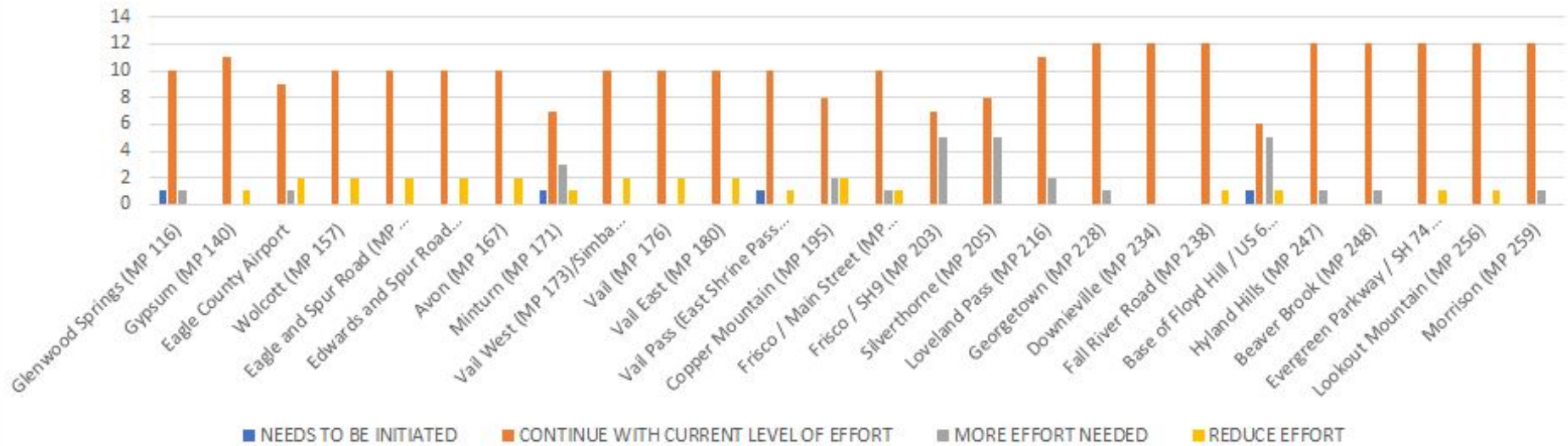
Survey Results

Recommended Level of Effort for: Highway Improvements (Other Highway Improvements)



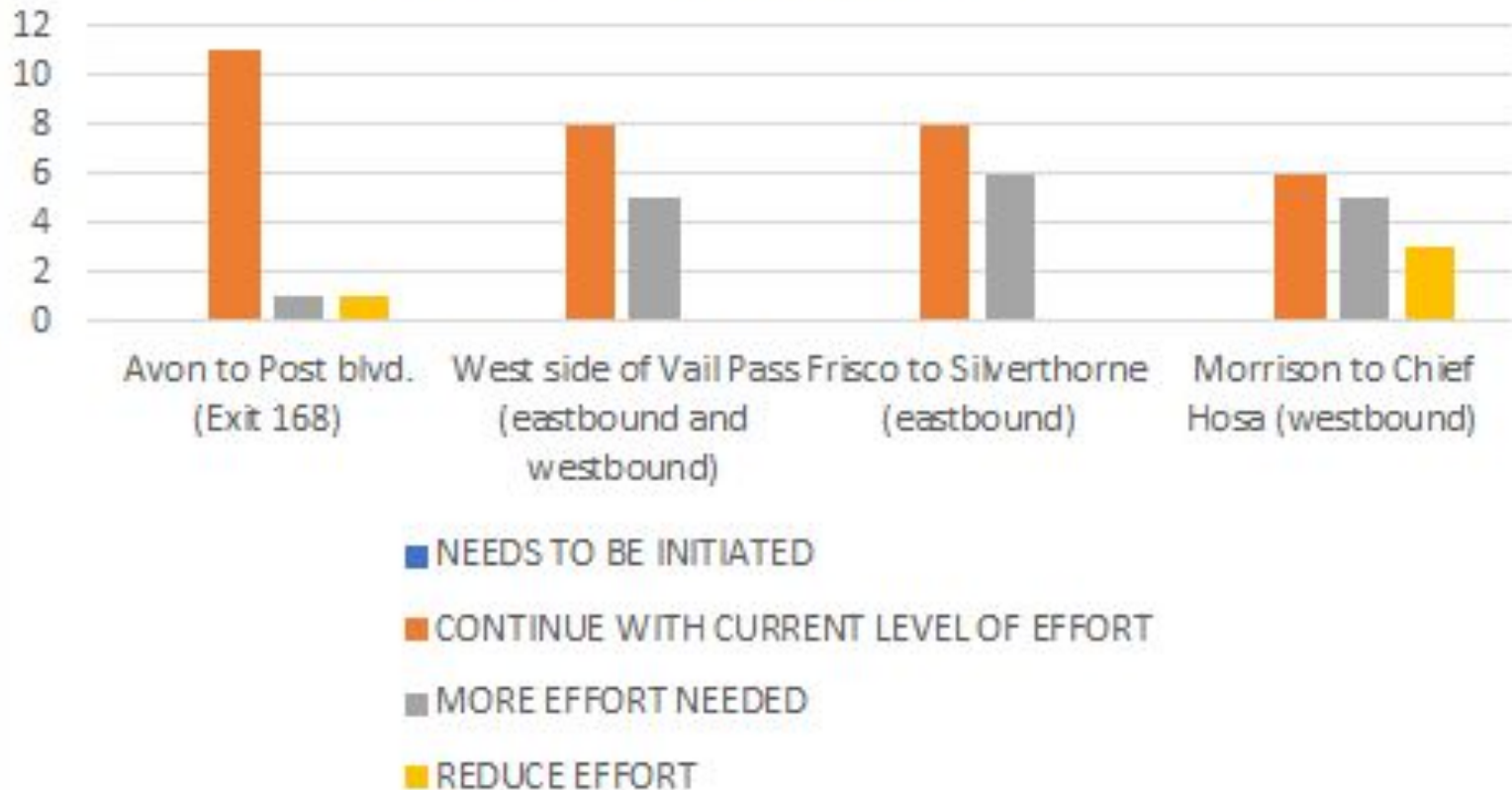
Survey Results

Recommended Level of Effort for: Highway Improvements (Interchange Improvements)



Survey Results

Recommended Level of Effort for: Highway Improvements (Auxiliary Lanes)



Survey Results: Key Takeaways

- As a whole, more effort needed for non-infrastructure related components and AGS
- Continue with current level of effort for highway improvements
- Non-Infrastructure Related Components Comments
 - Do as much as possible to increase movement of people through the corridor
 - Non-Infrastructure related components contribute to system improvements
 - Alternate modes of transportation and technology can help jump start

Survey Results: Key Takeaways

- AGS Comments
 - More research and data gaps to be filled
 - Funding, technology
 - Interest in finding non-highway solution
- Highway Improvements Comments
 - Many projects are complete or in-progress

Interview Themes and Survey Results: CE Discussion

- Is there information missing from the interview results?
- What strikes you as surprising?
- What needs themes require more discussion?
- For those unable to participate in the survey or interview, do you have anything else you'd like to add?
- What are your initial reactions and takeaways?

45 Minute Lunch Break

Key Issues and Work Plan Items

- Two break-out groups
- Everyone will discuss everything!

Task: defining the work plan items (1) issue, (2) interests/needs, (3) tasks, and (4) implementation steps/responsibilities.

Round 1:

- Group 1 discuss Non-Infrastructure
- Group 2 discuss AGS

Round 2:

- Group 1 discuss AGS and Highway
- Group 2 discuss Non-Infrastructure and Highway

Report-Out

15 Minute Break

Priority CE Work Plan items and Responsibilities

- Determine priority work plan items and identify responsibilities and timelines for implementation.
- Use Shared Google Doc for discussion

Next Steps/Action Items

- Step 5 Report Review
- Inclusion in statewide planning process (as appropriate)



Special Collaborative Effort (CE) 2020 Reassessment Meeting - Step 4 September 30, 2020

Overview: Implementation of Preferred Alternative

Non Infrastructure Components

- Consist of a variety of TDM measures and non-physical capacity improvements
 - Majority were rated Medium Effectiveness, or Unknown
- Notable improvements included
 - Bustang - rated Medium Effectiveness for mobility
 - Eastbound MEXL - rated High Effectiveness for mobility
- Categorization of non-infrastructure improvements should be clarified as they are not intended to be long-term solutions and complement rather than substitute for AGS and highway improvements in the Preferred Alternative.
- The implemented non-infrastructure components have been effective in addressing some issues on the corridor but have low effectiveness at addressing core corridor needs on their own.

Overview: Implementation of Preferred Alternative

Advanced Guideway System

- The AGS Feasibility Study was completed in 2014 Study finding: Fixed guideway options are technically feasible but not financially feasible as of 2014 (no funding identified as of 2020)
- No progress has been made on implementation of an AGS; therefore, its effectiveness is not rated
- The feasibility study for AGS has been completed, but little progress has been made to advance the AGS concept, and no progress has been made to advance a functioning system that could trigger evaluation of the Maximum Program.

Overview: Implementation of Preferred Alternative

Specific Highway Improvements

- 6 lane component from Floyd Hill through the Veterans Memorial Tunnels (rated with High Effectiveness)
- Empire Junction (US 40 and I-70) interchange improvements (Incomplete)
- Eastbound auxiliary lane from Eisenhower-Johnson Memorial Tunnels to Herman Gulch (Low for Safety)
- Westbound auxiliary lane from Bakerville to EJMT (Incomplete)

Other Highway Improvements

- Truck operation improvements, such as pullouts, parking, and chain stations (Medium Rating)
- Safety improvements west of Wolcott (Low Rating)
- Safety and capacity improvements in Dowd Canyon (Incomplete)

Overview: Implementation of Preferred Alternative

Interchange Improvements

- 26 interchanges identified for improvements
 - Most are incomplete or unknown for effectiveness
- Notable exceptions are
 - Grand Avenue Bridge in Glenwood Springs, rated Medium for mobility
 - Edwards and Spur Road, rated High for Safety

Auxiliary Lane Improvements

- 4 locations identified for auxiliary lanes
- All are incomplete



**Collaborative Effort (CE) Meeting and
I-70 Mountain Corridor 2020 Reassessment Meeting #9 Summary**
November 18, 2020, 9:00 AM to 12:00 PM
Zoom Conference Call Video Meeting

Overview

These notes summarize the Collaborative Effort (CE) meeting held via video conference on November 18, 2020. This meeting focused on the I-70 Mountain Corridor 2020 Reassessment and follow up from the September 30, 2020 discussion of Step 4 of the I-70 Mountain Corridor 2020 Work Plan. The presentation and draft action plan are attached.

Welcome and Introductions

Greg Hall, CE co-chair, welcomed the group and conducted a roll call of the CE members and the alternates, then other interested parties. The following CE members and alternates were present:

- Randy Wheelock, Clear Creek County (CE Co-Chair)
- Greg Hall, Vail (CE Co-Chair)
- Amy Saxton, Clear Creek County (*alternate*)
- Ann Rajewski, Colorado Association of Transit Agencies (CASTA)
- Becky English, Sierra Club (*alternate*)
- Ben Gerdes, Eagle County (*alternate*)
- Brooke Davis, US Army Corps of Engineers
- Chris Linsmayer, Colorado Ski Country USA
- Cindy Neely, Local Historic Preservation Representative
- Danny Katz, Colorado Public Interest Research Group (CoPIRG)
- David Cezark, CDOT Region 3 (*alternate*)
- David Krutsinger, CDOT, Division of Transit and Rail
- Dennis Royer, Sierra Club, Rocky Mountain Chapter
- Eva Wilson, local transit provider (Avon Mobility Director)
- Gary Frey, Colorado Trout Unlimited
- Holly Norton, Colorado State Historic Preservation Office
- Kent Abernathy, Sierra Club Headwaters Group (*alternate*)
- Lauren Masias, Denver Metro Chamber (*alternate*)
- Margaret Bowes, I-70 Coalition
- Mary Jane Loevlie, Business Representative (Idaho Springs)
- Matt Scherr, Eagle County
- Mike Goolsby, CDOT Region 3
- Mike Hillman, Idaho Springs (Mayor)
- Mike Keleman, Colorado Department of Transportation (CDOT) Region 1 (*alternate*)
- Mike Riggs, AGS/High-Speed Transit Representative
- Shaun Cutting, Federal Highway Administration (FHWA)



- Steve Durian, Jefferson County (*alternate*)
- Tracey MacDonald, Federal Transit Administration (FTA)
- Tracy Sakaguchi, Colorado Motor Carriers Association (*alternate*)

CE member organizations that were not represented at the meeting included:

- City and County of Denver
- Colorado Passenger Rail Association
- Garfield County
- Summit County
- US Forest Service
- Vail Resorts

Other meeting participants included Vanessa Henderson, Neil Ogden, and Julie George, CDOT; Vershun Tolliver and Kelly Galardi, FHWA; Miller Hudson, interested party; Jonathan Bartsch, CDR Associates; Steve Coffin, Steve Coffin Strategies; Wendy Wallach, HDR; Mandy Whorton, Peak Consulting Group, and Sara Cassidy, Bridge Strategies.

Mr. Hall opened up the meeting to public comment. No comments were recorded.

CE Business

Randy Wheelock asked that the CE members review the previous meeting (September 30, 2020) notes and submit comments or corrections.

Margaret Bowes noted that she attended the September 30, 2020 meeting but this is not reflected in the notes. Mandy Whorton said she would correct this when responding to other edits.

Mr. Wheelock noted that the charge today is to clarify the work plan and get consensus on the work plan. He stated the need to focus and clarify the specific tasks, including assigning responsibilities of “who” and “when” to the work plan. He said the goal was to complete the work at this meeting and not have to have another meeting.

Review of Previous Work on the 2020 Reassessment

Jonathan Bartsch reviewed progress on Steps 1 through 3 of the 2020 Reassessment Work Plan and the previous meeting’s work toward Step 4. The presentation lays out the summary; there was no further discussion about the previous work. Wendy Wallach offered to answer any questions about the previous work; there were no questions.

The group proceeded to discuss the draft work plan developed from the previous meeting. Mr. Bartsch organized the work plan elements in the presentation, including scope, action items, and implementation strategies.



Step 4 Non-Infrastructure Work Plan Tasks

Mr. Bartsch reviewed the Non-Infrastructure Work Plan items.

Non-Infrastructure: Update Modeling

The group identified the need to update modeling and capacity goals. A subcommittee would likely be needed to delve into these issues.

Cindy Neely stated that clarifying the capacity goal should be its own work item. She said the group wanted to understand what the capacity goal in the ROD means for highway and transit elements. Margaret Bowes agreed that clarification was needed.

Ms. Whorton stated that the ROD defined capacity needs in conjunction with the purpose and need to serve person trips and create a modal shift to transit that could alleviate highway congestion and travel delays. Kelly Galardi added that looking into demand questions and updating modeling is worthwhile but would not change the outcomes in the ROD.

David Krutsinger said he supported a subcommittee and stated that the statewide model might help relative to sensitivities of travel behaviors, such as bus fares and travel time advantages to attract people to transit service. He said more work would be needed to understand Bustang's interaction with local transit, and that it would be hard to answer how public transit (both Bustang and municipal) interacts with private transit operators.

Ms. Wallach noted that the HDR team had been coordinating with CDOT's DTD on how to apply the statewide model to the I-70 Mountain Corridor. Ms. Whorton noted that the statewide model was not yet calibrated for weekend peak travel demand. Mr. Hall stated that this was an issue that the subcommittee should address, given the statewide importance of weekend travel in the corridor.

The group agreed to form a subcommittee to examine travel demand and capacity and that the subcommittee could address both issues but they should be looked at independently; that is capacity goals are different than travel demand. Tracy Sakaguchi expressed interest in participating on this subcommittee.

Non-Infrastructure: Micro-transit, Roadway Technologies, and Travel Demand Management and Education

Mr. Bartsch reviewed the suggestions from the previous meeting, including how transit could benefit from the Mountain Express Lanes and how the CE could encourage increased transit use before AGS is able to be deployed.

Ms. Bowes stated that the I-70 Coalition is working on this now, and this is part of its approved Travel Demand Management (TDM) plan. The group agreed that the increased use of transit and other TDM strategies are similar and are being addressed by the I-70 Coalition. The CE could support the coalition, and the group recommended CE members join and support the I-70 Coalition TDM Subcommittee.



Mr. Krutsinger added that CDOT has started a "Connected Colorado" effort with corridor transit agencies to integrate, via virtual mobility hubs, the following: transit data sharing, trip planning services, and ultimately some service coordination / bus dispatch coordination.

Other related items discussed included:

- Improve transit connections and integrate final mile solutions to get riders to their ultimate destination.
- Developing strategies to improve real-time and predictive traveler information- more robust, timely road information

The group agreed that the CE Work Plan should specifically include engaging with and supporting the I-70 Coalition and CDOT efforts. The group also agreed focused effort was needed to engage the Front Range residents to support TDM strategies. Mr. Krutsinger noted that outreach with the Transportation Commission was also needed to educate them that Bustang/Snowstang expansion would not impact other rural transit funding.

Non-Infrastructure: Corridor Management Approaches

Mr. Bartsch framed the previous discussion of ways to disincentivize driving. Specific ideas discussed by the CE included parking management, congestion fees, and alternative traffic management strategies.

Ms. Bowes stated that parking management is an important issue that needs more support. The I-70 Coalition has been working on this but needs help. Mr. Krutsinger agreed that most if not all of the subcommittees will need to leverage additional staff support to get work done.

AGS

Mr. Bartsch noted that CE members supported additional effort to advance AGS. Some of the needs include:

- Educating elected officials, staff, and businesses about AGS and its role in the corridor.
- Revisiting financial feasibility, including public-private partnerships.
- Assessing technology advances and new technology that may meet ROD criteria
- More assessment of AGS interface with large corridor projects to ensure that AGS opportunities are considered and leveraged

The group agreed that an AGS Subcommittee should be established and that it should begin working before the end of the 2020 Reassessment to identify specific areas of support needs. For instance, how can the statewide travel demand model be adapted for use in the Mountain Corridor? What does that mean for ridership projections? How can AGS attract private investment? What are the metrics equity investors might use to evaluate AGS investment?

Several members expressed interest in serving on the AGS Subcommittee. They include: Margaret Bowes, Eva Wilson, Mike Riggs, Danny Katz, David Krutsinger, Randy Wheelock, Mary Jane, Greg Hall, , Dennis Royer, and Becky English. The group agreed that other non-CE members would be needed to advance the AGS work plan and the identified needs. Mr. Wheelock said he would organize a meeting



and provide an invitation for the Subcommittee to meet before the December full CE meeting to finalize the 2020 Reassessment.

Highway Elements

Mr. Bartsch noted that in general CE members felt that the level of investment and attention to highway components was appropriate but that more effort should be spent to document the effectiveness of their implementation. Specifically, Ms. Neely noted that more data and analysis of how the transportation improvements affect the environment is needed. Ms. Whorton suggested that the effectiveness of mitigation strategies should also be included in the evaluation. Vanessa Henderson noted that all of the Tier 2 NEPA processes evaluated environmental impacts and mitigation, and there was a large body of work to review and help focus the effort. The primary areas of interest for review are air quality, water quality, wildlife, and noise. Becky English asked what federal agency was responsible for monitoring noise issues. Ms. Henderson responded that noise analyses follow FHWA and CDOT guidelines, and there is not an outside agency that regulates highway noise. The group agreed that a subcommittee should be established to review environmental impacts and mitigation. Members who expressed interest in this committee included: Mr. Wheelock, Ms. Neely, Ms. Saxton. They noted that they would need help from CDOT, and the vacancy of Ms. Henderson's position is a concern. Ms. Henderson stated that CDOT environmental specialists, such as CDOT's noise specialist, could be resources for the group.

(Although not discussed at this meeting, the review of project implementation related to environmental impacts and mitigation is similar to but separate from the review of CSS implementation discussed at the September 30, 2020 meeting and reflected in the draft Work Plan.)

Wrap Up and Action Items

Ms. Neely asked if the Work Plan should be positively approved by each member of the CE in order reach consensus? The group agreed this was a good goal and should be a focus of the post-meeting meeting note review and summary (see attached draft Work Plan).

Mr. Wheelock stated that more lead agency executive participation was needed on the CE. He said participation had dropped off in recent months, perhaps due to COVID but felt it was important for executive leadership to understand the work of the CE on the 2020 Reassessment. He asked for agreement that Mr. Wheelock and Mr. Hall, as CE Co-Chairs, set up a meeting with CDOT Director Lew on behalf of the CE. Dennis Royer concurred and stated he was also concerned about CDOT priorities. Mr. Wheelock will organize the meeting. Eva Wilson pointed out that Mr. Krutsinger is part of the CDOT executive team. Mr. Royer noted that CDOT was supporting high-speed rail on the Front Range and that the Mountain Corridor was not getting priority. Mr. Krutsinger clarified that a Denver Post editorial argued that Front Range Passenger Rail should be high speed, but CDOT has not taken that position. The group agreed that a meeting with Director Lew to express the CE Work Plan objectives was appropriate.



Action Items

- CE members to review and provide comments/corrections to September 30, 2020 meeting notes.
- Mr. Bartsch to update draft Work Plan from meeting notes. CE member to review and comment on Work Plan prior to December meeting.
- Mr. Wheelock to organize meeting of AGS Subcommittee before December CE meeting.
- Mr. Wheelock to set up a meeting with CDOT Executive Director and CE Co-Chairs on behalf of the CE.

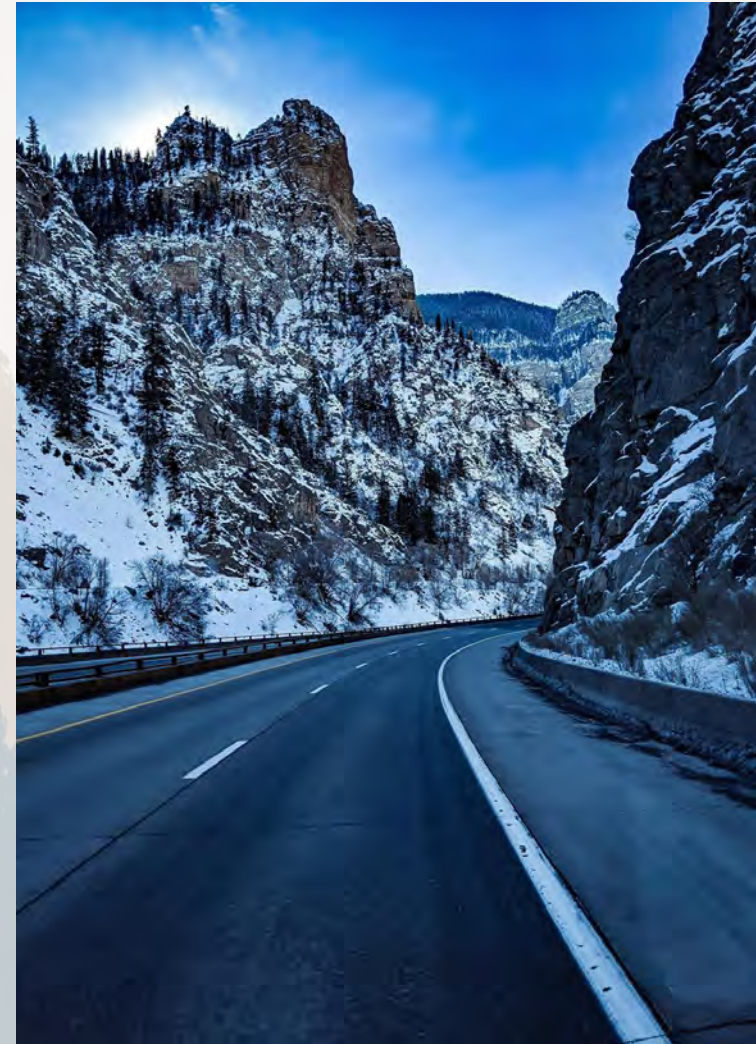
Zoom Protocol

In today's meeting...

- We will stop for discussion throughout the presentation
- Use the chat option during the slide discussion or the presenter will ask for comments at the end of each slide
- In case of technical difficulties, text Daniel Estes 307-760-7001

Agenda

- Public Comment
- General CE Business
- Step 4 Finalization, Action Steps and Implementation
- Step 5 & Role of the CE Moving Forward

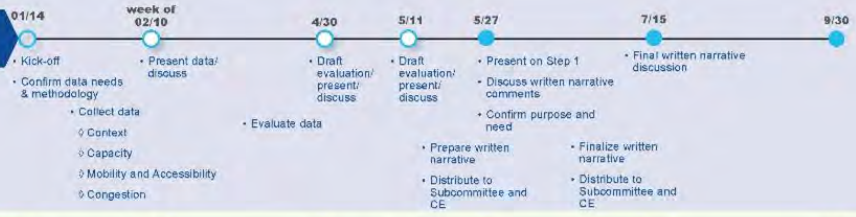


Meeting Purpose

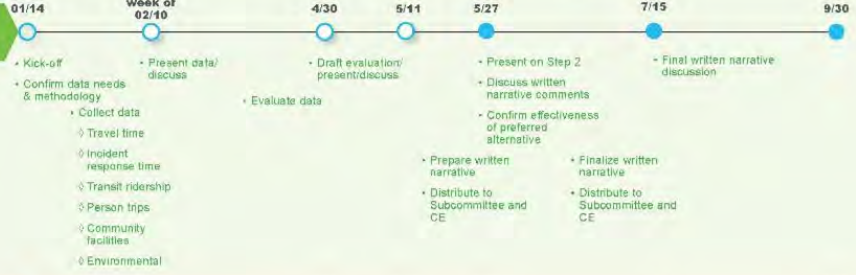
Today's meeting purpose is to...

- Review future action steps, clarify uncertainties and agree on future action steps

1 REASSESS PURPOSE AND NEED



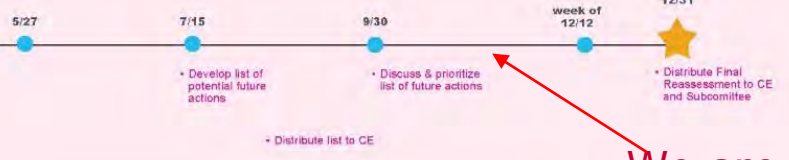
2 ASSESS EFFECTIVENESS



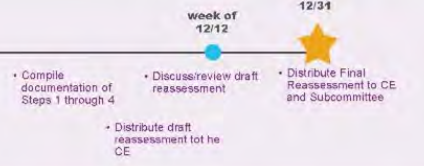
3 CLARIFY UNCERTAINTIES



4 DEVELOP POTENTIAL FUTURE ACTIONS



5 DOCUMENT



○ SUB
● CE (suggest full day workshops for 5/27, 7/13, and 9/30 for Step 3 and Step 4)

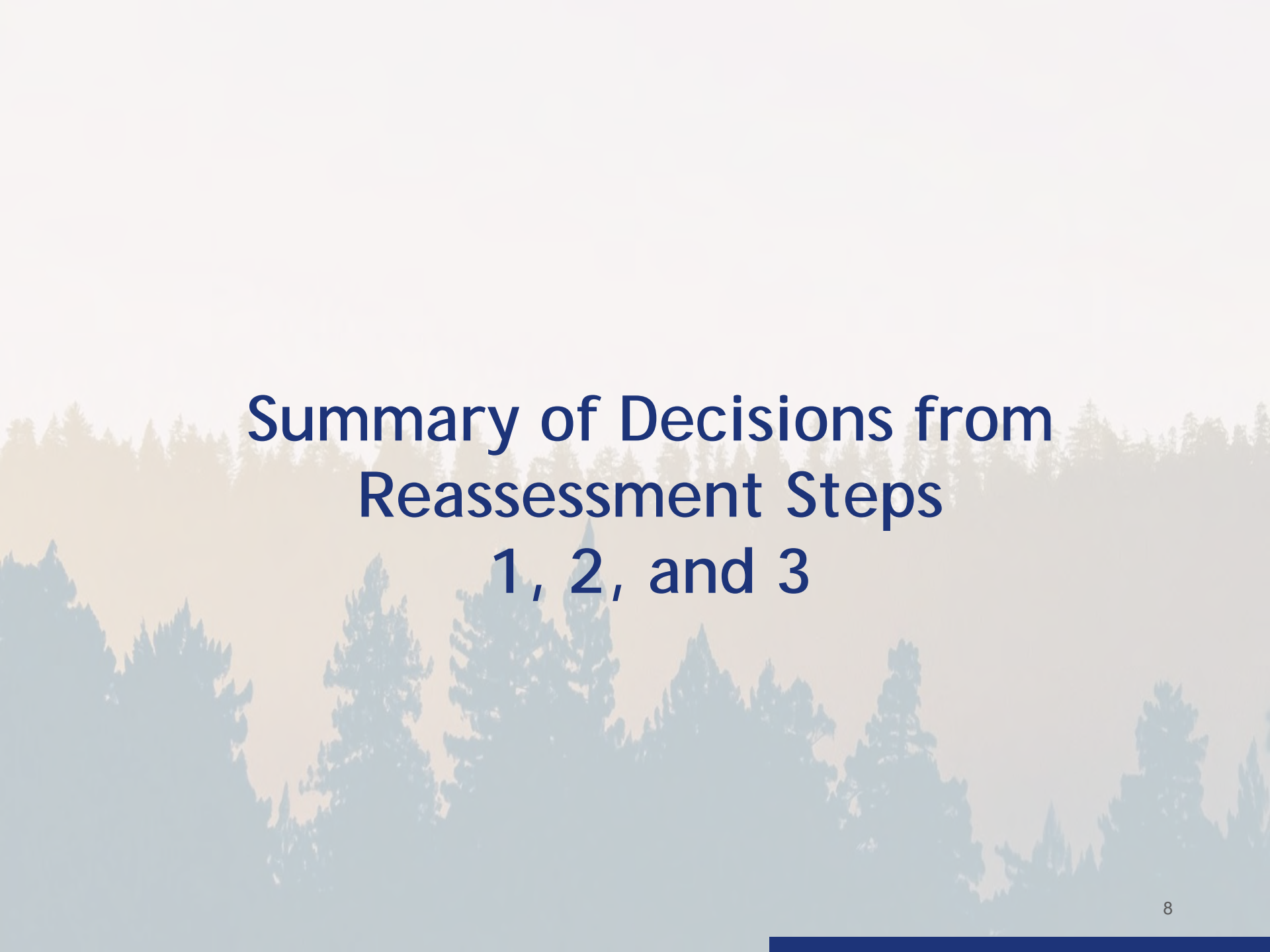
We are here

Public Comment Period

General Collaborative Effort Business

Topics:

- Quorum, Roll Call
- Approval of minutes from September 30, 2020



Summary of Decisions from Reassessment Steps 1, 2, and 3

Step 1: Reassess Purpose and Need

CE reached consensus that the PEIS/ROD purpose and need components are valid based on the current context.

- Context Evaluation:
 - Land use, recreation, and climate change pressures have intensified
 - Technological advances in high-speed transit and highway operational management strategies are increasingly appropriate to serve person trips in the corridor.
- Purpose and Need
 - Transportation needs to (1) increase person-trip capacity, (2) improve mobility and accessibility for people and freight, (3) and reduce congestion and travel delays through the I-70 Mountain Corridor persist.
 - Transportation solutions must provide for and accommodate environmental sensitivity and respect for community values.

Step 2: Assess the Effectiveness of the Implementation of the Preferred Alternative

- All major components of the Preferred Alternative remain relevant; the intertwined elements are all important and needed to effectively address transportation problems in the corridor.
- Non-infrastructure components
- Advanced Guideway System
- Highway Improvements (only Minimum Program assessed)
- Effectiveness of AGS and its relationship/role to other components cannot be fully addressed because no progress has been made to implementing a functioning system
- Feasibility of AGS is reaffirmed
- AGS remains highly supported component for which more action is needed to realize transportation benefits
- Non-infrastructure and highway components that have been implemented have been moderately effective in addressing transportation problems.

Step 3: Clarify and Address Outstanding Questions

The CE Reached an understanding of the following Preferred Alternative items including:

- Status of the EJMT 3rd Bore
- Empire Interchange
- 2025 Trigger
- Definition of AGS in ROD - “not preclude”
- Maximum Program of Highway component definition



Step 4

Draft Work Plan Items

Step 4 - Work Plan Items - Non-Infrastructure

See November 18, 2020 Approved Work Plan

Step 4 - Work Plan Items - AGS

See November 18, 2020 Approved Work Plan

Step 4 - Work Plan Items - Highway

See November 18, 2020 Approved Work Plan

Step 5 and the Role of CE

- Plan for Step 5 (Reassessment Report)
- Role of CE in 2021 and Beyond
- December CE meeting topics



Special Collaborative Effort (CE) 2020 Reassessment Meeting - Step 4 November 18, 2020

Overview: Implementation of Preferred Alternative

Non Infrastructure Components

- Consist of a variety of TDM measures and non-physical capacity improvements
 - Majority were rated Medium Effectiveness, or Unknown
- Notable improvements included
 - Bustang - rated Medium Effectiveness for mobility
 - Eastbound MEXL - rated High Effectiveness for mobility
- Categorization of non-infrastructure improvements should be clarified as they are not intended to be long-term solutions and complement rather than substitute for AGS and highway improvements in the Preferred Alternative.
- The implemented non-infrastructure components have been effective in addressing some issues on the corridor but have low effectiveness at addressing core corridor needs on their own.

Overview: Implementation of Preferred Alternative

Advanced Guideway System

- The AGS Feasibility Study was completed in 2014 Study finding: Fixed guideway options are technically feasible but not financially feasible as of 2014 (no funding identified as of 2020)
- No progress has been made on implementation of an AGS; therefore, its effectiveness is not rated
- The feasibility study for AGS has been completed, but little progress has been made to advance the AGS concept, and no progress has been made to advance a functioning system that could trigger evaluation of the Maximum Program.

Overview: Implementation of Preferred Alternative

Specific Highway Improvements

- 6 lane component from Floyd Hill through the Veterans Memorial Tunnels (rated with High Effectiveness)
- Empire Junction (US 40 and I-70) interchange improvements (Incomplete)
- Eastbound auxiliary lane from Eisenhower-Johnson Memorial Tunnels to Herman Gulch (Low for Safety)
- Westbound auxiliary lane from Bakerville to EJMT (Incomplete)

Other Highway Improvements

- Truck operation improvements, such as pullouts, parking, and chain stations (Medium Rating)
- Safety improvements west of Wolcott (Low Rating)
- Safety and capacity improvements in Dowd Canyon (Incomplete)

Overview: Implementation of Preferred Alternative

Interchange Improvements

- 26 interchanges identified for improvements
 - Most are incomplete or unknown for effectiveness
- Notable exceptions are
 - Grand Avenue Bridge in Glenwood Springs, rated Medium for mobility
 - Edwards and Spur Road, rated High for Safety

Auxiliary Lane Improvements

- 4 locations identified for auxiliary lanes
- All are incomplete

**COLLABORATIVE EFFORT
FUTURE ACTIONS STEP 4 WORK PLAN
November 18, 2020**

The following 2020 Reassessment Work Plan was adopted by the CE on November 18, 2020.

CE Tools and Processes

Corridor Demand and Capacity Model

1. Create CE Subcommittee to **review travel demand and capacity goals**
 - a. Verify the model assumptions and inputs and agree on the appropriate use of the model.
 - i. Meet with Chris Primus (HDR).
 - b. Identify the capacity goals of the ROD and discuss implications of those goals; assess the ability to meet those goals.
 - c. Determine what part of the ROD capacity goal can be achieved with the implementation of the minimum and maximum program of improvements. Distinguish between capacity and increasing travel demand.
 - d. Identify transit ridership goals. Identify the mode share or ridership growth number % and establish a yardstick for future evaluation (5, 10, 15 year goals).
2. Coordinate and apply the statewide travel model.
 - i. Coordinate with CDOT DTD

CSS Process Review

- 1 Gather lessons learned and benefits of use of the CSS process; continued path and review of CSS going forward

Environmental Review

1. Form CE Subcommittee to review environmental goals analyze the environmental impact and effectiveness of environmental mitigation for implemented improvements in the corridor (including TDM and non-infrastructure i.e. MEXL).
2. Address the question: how have the transportation improvements impacted the environment (air quality /water/noise/wildlife/aquatic) in the corridor?
3. Create environmental baseline and compare environmental conditions to current conditions today
 - i. **Action Item:** CE coordinates with CDOT to facilitate continue coordination with Water Quality working groups in the corridor;
 - ii. **Action Item:** Review all relevant project documents combining the environmental impacts/mitigation in one location;
 - iii. **Action Item:** CE indicate to CDOT the importance of filling corridor environmental specialist;
 - iv. **Action Item:** Report to CE as needed.

(Who: Cindy Neely, Gary Frey)

Outreach and Communication

Form a CE Outreach and Communication Subcommittee to provide outreach to local elected officials regarding the entire PA/ROD, TDM, AGS, and highway elements of the ROD PA. Identify ways to engage front range population and build support for the effort

- i. **Action Item:** Develop a roadshow from the CE update to the Transportation Commission, Exec branch TLRC, communities on the corridor and progress of the CE/ROD.
- ii. **Action Item:** Develop strategies to engage Front Range residents in support of non-infrastructure improvements, supporting I-70 Coalition.
Danny Katz, Margaret Bowes to discuss ways to further engage Front Range stakeholders and report back to CE.

Non-Infrastructure Work Plan Items

Transit

1. Advance the use of **micro-transit and other roadway technologies** (e-vehicle/autonomous)
2. Forecast maximum ridership from Bustang in travel lanes as well as micro transit vehicles in the Express Lanes etc.
 - a. What are the characteristics of vehicles that could use MEXL?
 - i. **Action Item:** Continued I-70 Coalition engagement with CDOT's Office of Innovative Mobility and increased engagement with sustainability coordinators throughout the corridor;
 - ii. **Action Item:** Provide CE updates and CE to support Coalition's outreach efforts.
3. Improve **transit connections** and integrate final mile solutions to get riders to their ultimate destination; ensure that local transit should be high quality.
 - i. **Action Item:** CE supports on-going monitoring and encourages transit connection improvements.
4. Identify transit ridership goals. Identify the mode share or ridership growth number % and establish a yardstick for future evaluation (5, 10, 15-year goals).
5. Incentivize the use of transit service and increase roadway transit service.
 - i. **Action Item:** CE discussion regarding strategy and approach for incentivizing and increasing transit service.
 - ii. **Action Item:** CE discusses ways to support and improve Bustang/Snowstang in the corridor with the Transportation Commission; communicate that expansion does not impact rural transit agencies funding.

Travel Demand Management

6. Engage and support corridor TDM efforts by expanding **TDM** services and providing education to change driver behavior

- i. **Action Item:** CE members join and support the I-70 Coalition TDM Committee; CE monitor and discuss TDM implementation.

7. Corridor Management Approaches

- a. Consider parking management as a strategy to change behavior.
- b. Consider congestion fees to disincentivize driving.
- c. Pilot alternative traffic management strategies.
 - i. **Action Item:** CE considers corridor management tools and approaches including BMPs, and serves as a clearinghouse of information regarding tools and approaches.

8. Technology

Implement and advance the use technology to maximize the use of the existing infrastructure and systems to optimize corridor mobility, operations, safety and innovation.

Assess and understand any technology advances that may meet the requirements of the ROD (building off information presented in Step 2)

Action Item: Continued I-70 Coalition engagement with CDOT's Office of Innovative Mobility in advancing the use of technology

9. Improve **real-time and predictive traveler information**- more robust, timely road information
 - i. **Action Item:** CE supports monitoring and encouragement of the use of up-to-date tools.
 - b. **CE Goal:** Maximize the use of non-infrastructure strategies and incrementally implement transit solutions in the near term and build support for high-speed transit in the future.

AGS Work Plan Items

Form a CE led AGS Subcommittee to advance AGS in the corridor. The AGS Subcommittee will establish a regular meeting schedule to advance the implementation of AGS, using a Subcommittee work plan to guide the effort. AGS Subcommittee members should be open to new ideas and be willing to question previous assumptions. The subcommittee will report periodically to the full CE on the status of the subcommittee.

- a. **Draft Membership:** Margaret Bowes, Eva Wilson, Mike Riggs, Danny Katz, David Krutsinger, Randy Wheelock, Mary Jane, Greg Hall, Becky English, Dennis Royer. May include non-CE members at discretion of the CE, based on topic area/expertise.
 - i. **Action Item:** Randy to organize and provide invitation for 1st Subcommittee convene Subcommittee before next CE meeting identify champions for AGS and clarify the vision through educating elected officials, staff and businesses on what AGS is and how it can serve the corridor.

Potential ideas to guide the AGS Subcommittee were developed by the CE and include the following:

1. Financial Feasibility
 - a. Create a community and agency vision for AGS and determine how much money can be generated by communities (ROW, TOD, etc.). Determine how to attract private investment for AGS?
 - b. Local governments – towns and counties are essential in this effort. Before AGS implementation communities (towns and counties) need to make decisions about land use and other community amenities that would support that vision (station, TOD areas, and ROW).
 - c. Address concerns related to growth in the corridor and station locations.
2. Following establishment of vision, discuss with private equity investors and HPTE the community vision and what it can offer to private sector.
 - a. Outline ways to change the car culture and build ridership.
3. Assess and understand any technology advances that may meet the requirements of the ROD (building off information presented in Step 2).
4. Address how ‘precluding AGS’ is addressed in the corridor specific projects. Need to do a better job of doing this beyond an overlay; implications for costs/ constructability (easier/hard etc.), opportunities.
 - a. When TTs are formed for specific projects ensure high-speed transit specialists are included.

Additional Suggestions for the AGS Subcommittee include:

1. Define work plan and report back at the December meeting including expectations and a definition of the subcommittee charge and timeline.
2. Review and revisit AGS technology.
3. Model the total riders, % of person trips aim to divert, consider assumptions regarding what people will pay for a trip and identify a reasonable range of revenue. Look to identify revenue for initial capital investments.
 - a. Determine how to monetize the economic benefits to generate revenue stream.
4. Depending on results, move to an investment grade study.
 - i. **Action Item:** AGS Subcommittee to provide Input to the CE Travel Demand and Capacity Subcommittee.

Highway Work Plan Items:

Ensure specific topics of the work plan are engaged and understood during each Highway project development

ACTION ITEM SUMMARY

CE Tools and Processes
Action Item: Create a CE Subcommittee to review travel demand and capacity goals
CSS Process Review
Action Item: CE gathers lessons learned and benefits of the use of CSS Process in corridor
Environmental Review
Action Item: Form CE Subcommittee to review environmental goals and analyze the environmental impact and effectiveness of mitigation for implemented improvements in the corridor
Action Item: CE coordinates with CDOT to facilitate continue coordination with Water Quality working groups in the corridor
Action Item: Review all relevant project documents combining the environmental

impacts/mitigation in one location
Action Item: CE indicates to CDOT the importance of filling corridor environmental specialist position
Outreach and Communication
Action Item: CE to develop a roadshow to update the Transportation Commission, Executive branch TLRC, and communities on the corridor and progress of the CE/ROD.
Action Item: Develop communication strategies to engage Front Range residents in support of non-infrastructure improvements, supporting I-70 Coalition. Danny Katz, Margaret Bowes to discuss ways to further engage Front Range stakeholders and report back to CE.
Non-Infrastructure Work Plan Items
Action Item: CE discussion regarding strategy and approach for incentivizing and increasing transit service.
Action Item: CE supports on-going monitoring and encourages transit connection improvements. Increase engagement with sustainability coordinators throughout the corridor; I-70 Coalition to provide updates to CE; CE to support Coalition’s outreach efforts
Action Item: CE discusses ways to support and improve Bustang/Snowstang in the corridor with the Transportation Commission; communicate that expansion does not impact rural transit agencies funding.
Travel Demand Management
Action Item: CE members join and support the I-70 Coalition TDM Committee; CE monitor and discuss TDM implementation
Corridor Management Approaches
Action Item: CE considers corridor management tools and approaches including BMPs, and serves as a clearinghouse of information regarding tools and approaches
Technology
Action Item: Continued I-70 Coalition engagement with CDOT’s Office of Innovative Mobility in advancing use of technology in the corridor

Action Item: CE supports monitoring and encouragement of up-to-date tools for providing predictive traveler information

AGS

Action Item: Form AGS Subcommittee. Randy Wheelock to organize and provide invitation for 1st Subcommittee convene Subcommittee before next CE meeting.

Action Item: Identify champions for AGS and clarify the vision through educating elected officials, staff and businesses on what AGS is and how it can serve the corridor.

Action Item: AGS Subcommittee to provide Input to the CE Travel Demand and Capacity Subcommittee

Highway Work Plan Items

Preferred													
(The components of the)													
Line #	Preferred Alternative Item	*Completed	Completion Date	Completed Actions *	**In Progress / Ongoing	Work in Progress / Ongoing**	Resources/Document Links	Effectiveness Observation (if available)	Purpose and Need Component (measures)	Effectiveness Rating		Recommended	
										Effectiveness Rating			Mobility
										High Effectiveness		Needs to be Initiated	
										Medium Effectiveness		Continue with Current Level of Effort	
Low Effectiveness		More Effort Needed											
		Reduce Effort											
		SPLIT: Current Level of Effort and More Effort Needed											
Non-Infrastructure Related													
1	Increased Enforcement				####	For the MEXL, the Colorado State Patrol (CSP) increased safety enforcement in 2019 with troopers on overtime along the eastbound mountain express lane from Empire to Idaho Springs to help decrease unsafe driving behavior and increase efficiency. Overall, each CSP troop defines goals and objectives to reduce crashes and save lives. Troop 1A picked the lower end of I-70 as a primary targeted roadway. The troop is using a targeted saturation methodology with team operations, using multiple troopers.	https://www.codot.gov/news/2018/august/csp-increases-safety-enforcement-along-i-70-mountain-express-lane	For the MEXL effort, the CSP reports the number of crashes did not appreciably decrease with increased enforcement, so the benefits did not justify the costs of overtime for troopers. With the targeted saturation strategy, the number of contacts with passenger vehicles and commercial vehicles have gone up significantly. Crashes are way down. Impossible to say if the effect is from COVID-19 or the targeted enforcement; probably some of both.	2: Improved mobility and accessibility (travel time/reliability)	Unknown	Unknown	Continue with Current Level of Effort	
2	Bus, van, or shuttle service in mixed traffic				####	Ski shuttles continue to serve the corridor. Bustang service, which began in 2015, provides daily trips to and from corridor communities and Denver, but does not serve peak direction recreational trips at peak demand. Snowstang service, initially piloted in 2017, was launched in 2019 to three resorts.	https://www.codot.gov/news/2018/july/bustang-exceeds-ridership-revenue-collectors-as-it-hits-3-year-anniversary	In 2019, Bustang ridership was over 70,000 passengers compared to just over 26,000 in 2016, representing a 170% increase. In 2018, Bustang averaged 3,050 riders a month throughout the Corridor. Preliminary Snowstang ridership found that buses to Loveland and A Basin were running 49% full; Steamboat buses were running 30% full. These both exceed CDOT's initial expectations. 40% of the riders are out-of-state or international tourists. In the inaugural 2019-2021 seasons, sold more than 2,000 tickets over 14 weekends.	1: Increased capacity (person trips, transit ridership)	See separate table	Unknown	More Effort Needed	
3	Programs for improving truck movements				####	Revisions to the traction and chain laws to improve safety and operations; Off-corridor staging areas for trucks during adverse weather events; Variable speed limits in Glenwood Canyon; Remote continuous flow metering at Silverthorne to improve truck traction approaching the tunnel eastbound; Active Corridor Management. Colorado Motor Carriers Association (CMCA) programs include public service announcements (PSAs) on chain awareness, providing a best practices document, and working with trucking firms		Remote tunnel metering reduces heavy tow incidents during adverse weather events. Truck parking program has facilitated off-mainline parking during closures for a safer mainline and truck operations.	2: Improved mobility and accessibility (travel time/reliability, safety data); 3: Decreased congestion (travel time/reliability, level of service)	(Based on limited data and group discussion)	(Based on limited data and group discussion)	More Effort Needed	
4	Driver education				####	Go!70.com shares news and other articles that help educate drivers on traveling through the I-70 Mountain Corridor. Topics include: Available transit and carpool services, real-time information sources, Colorado Traction Laws, Tire Checks, Move It Law, Move Over Law, Left Lane Law and Avalanche Activity. Additional outreach to travelers is done through the blog, social media, eBlasts and extensive partner outreach. CMCA has produced an audio guide for truckers to safely drive the I-70 Mountain Corridor, by milepost	https://go70.com/news https://www.cmca.com/industry-info/crossing-the-rockies/	Analytics show Go!70.com site visitation has grown consistently since 2009. Last winter, the website received over 15,000 hits in a single day. Traction law compliance will be evaluated in 2020.	2: Improved mobility and accessibility (travel time/reliability, safety data)	(Based on limited data and group discussion)	(Based on limited data and group discussion)	More Effort Needed	
5	Expanded use of existing	####	Dec.	Eastbound Mountain	####	Westbound MEXL project under construction.	https://www.codot.gov/projects/archived-project-sites/i70mntpsj and	- The EB MEXL diverts 750 to 900 cars from the free general-	2: Improved mobility and	See separate table	(Based on limited data and	Continue with Current Level	
6	Use of technology advancements and				####	Technological advancements without the addition of		As this technology matures and is installed along the corridor,	2: Improved mobility and	(Based on limited data and	(Based on limited data and	More Effort Needed	
7	Traveler information and other				####	Traveler information is shared via Intelligent	https://go70.com/real-time-radio-info , www.cotrip.org , and project		2: Improved mobility and	(Based on limited data and	(Based on limited data and	More Effort Needed	
8	Shift passenger and freight travel demand by time of day and day of week				####	The most popular feature of Go!70.com is the weekend travel forecast which is intended to shift passenger travel demand by time of day and day of week. Over 150 dining and lodging businesses along the I-70 Mountain Corridor offer deals to encourage drivers to avoid peak travel times. Examples include: \$2 tacos from 4-6pm on Saturdays and Sundays at Twist; 20% off activities at Lawson Adventure Park Saturday & Sunday 4pm- close.	https://go70.com/deals	The Go!70.com weekend travel forecast received over 130,000 views during the 2019-2020 winter season. Analysis of data in 2011 indicated that peak traffic had noticeably shifted since the promotion of off peak travel began 2009.	2: Improved mobility and accessibility (travel time/reliability); 3: Decreased congestion (level of service, travel time/reliability)	(Based on limited data and group discussion)	(Based on limited data and group discussion)	More Effort Needed	
9	Convert day trips to overnight stays					Go!70.com Peak Time Deals worked with the lodging community to create Sunday Night Stay promotions. These are posted on the Peak Time Deals and promoted frequently through Go!70 blogs, eBlasts, social posts and stakeholder outreach. Examples include: \$125 Sunday night at the Sitzmark Lodge in Vail; 20% off a Sunday night stay at the Wedgewood Lodge in Breckenridge	https://go70.com/deals		2: Improved mobility and accessibility (travel time/reliability); 3: Decreased congestion (level of service, travel time/reliability)	(Based on limited data and group discussion)	(Based on limited data and group discussion)	Continue with Current Level of Effort	

10	Convert single occupancy vehicle commuters to high occupancy travel and/or public transportation			####	Transit promotion incentives include traveling in groups to receive discounted fares. Resorts are offering incentives to carpool by promoting reduced or free parking as well as discounted lift tickets for groups that travel together. For example, Keystone, Breckenridge, Copper Mountain and Arapahoe Basin have carpool parking incentive programs, offering discounted parking, close-in parking or discounted lift tickets. Summit express airport shuttle offers a savings of \$12 per person. Transit promotion incentives include traveling in groups to receive discounted fares. Resorts are offering incentives to carpool by promoting reduced or free parking as well as discounted lift tickets for groups that travel together. For example, Keystone, Breckenridge, Copper Mountain and Arapahoe Basin have carpool parking incentive programs, offering discounted parking, close-in parking or discounted lift tickets. Summit express airport shuttle offers a savings of \$12 per person when traveling with 3 or more passengers.	https://go70.com/transit	These programs are most likely contributing to the success of the Bustang ridership	1: Increased capacity (person trips, transit ridership)	(Based on limited data and group discussion)	(Based on limited data and group discussion)	More Effort Needed			
11	Implement transit promotion incentives			####	Transit promotion incentives include traveling in groups to receive discounted fares. Resorts are incentivizing carpooling by offering reduced or free parking as well as discounted lift tickets. Summit Express airport shuttle offers a savings of \$12 per person when traveling with 3 or more passengers. For example, Loveland Ski Area and Arapahoe Basin offered lift ticket discounts for Front Range Ski Bus riders. Arapahoe Basin offered food and beverage vouchers for Snowstang riders. Some airport shuttles offer discounts through Go70 Peak Time Deals.	https://go70.com/deals?type=other&location=	These programs are most likely contributing to the success of the Bustang ridership	1: Increased capacity (person trips, transit ridership)	(Based on limited data and group discussion)	(Based on limited data and group discussion)	More Effort Needed			
12	Other transportation demand management measures to be determined			####	I-70 Coalition frequently communicates transportation demand management messages and strategies with partners who are encouraged to 'share' with their network and customers. Partners include resorts, local government public information officers (PIOs), Information/Welcome Centers, resort associations, property managers, lodging sector, destination marketing organizations and chambers of commerce. I-70 Coalition created and piloted the Why Drive? Campaign in coordination with the lodging sector to promote transportation alternatives to mountain visitors. Since 2012, I-70 Coalition has undertaken a bi-annual research study program. These surveys inform how existing travel, resorts, and programs are being			2: Improved mobility and accessibility (travel time/reliability)	(Based on limited data and group discussion)	(Based on limited data and group discussion)	More Effort Needed			
Advanced Guideway System														
13	Feasibility of high speed rail			####	AGS Feasibility Study (August 2014)	https://www.codot.gov/library/studies/study-archives/AGSStudy			Incomplete	Incomplete	More Effort Needed			
a	Potential station locations and local transit governance authority			####	AGS Feasibility Study (August 2014)	https://www.codot.gov/library/studies/study-archives/AGSStudy			Incomplete	Incomplete	More Effort Needed			
b	Alignment			####	AGS Feasibility Study (August 2014)	https://www.codot.gov/library/studies/study-archives/AGSStudy	Several alignments are viable, but Hybrid Alignment is preferred		Incomplete	Incomplete	SPLIT: Current Level of Effort and More Effort Needed			
c	Technology			####	AGS Feasibility Study (August 2014)	https://www.codot.gov/library/studies/study-archives/AGSStudy	Study finding: Fixed guideway options are technically feasible but not financially feasible as of 2014 (no funding identified as of 2020)		Incomplete	Incomplete	More Effort Needed			
d	Termini			####	AGS Feasibility Study (August 2014)	https://www.codot.gov/library/studies/study-archives/AGSStudy			Incomplete	Incomplete	SPLIT: Current Level of Effort and More Effort Needed			
e	Funding requirements and sources			####	AGS Feasibility Study (August 2014)	https://www.codot.gov/library/studies/study-archives/AGSStudy	Study finding: Fixed guideway options are technically feasible but not financially feasible as of 2014 (no funding identified as of 2020)		Incomplete	Incomplete	SPLIT: Current Level of Effort and More Effort Needed			
f	Transit ridership			####	AGS Feasibility Study (August 2014), Interregional Connectivity Study (January 2014), & Economic Impact of High-Speed Transit in the Mountain Corridor (July 2019)	https://www.codot.gov/library/studies/study-archives/AGSStudy & https://i70solutions.org/files/7215/6599/5159/I-70_RSM_Economic_Impact_FINAL_2019.pdf	Study finding: Annual ridership estimated at 4.6 to 6.2 million as of 2014, assuming a connection to a front range high speed transit system including DIA (no funding identified as of 2020)		Incomplete	Incomplete	More Effort Needed			
g	Potential system owner/operator			####	AGS Feasibility Study (August 2014) & Interregional Connectivity Study (January 2014)	https://www.codot.gov/library/studies/study-archives/AGSStudy			Incomplete	Incomplete	More Effort Needed			
h	Interface with existing and future transit systems			####	AGS Feasibility Study (August 2014) & Interregional Connectivity Study (January 2014)	https://www.codot.gov/library/studies/study-archives/AGSStudy			Incomplete	Incomplete	More Effort Needed			
i	Role of an Advanced Guideway System in freight delivery both in and through the corridor								Incomplete	Incomplete	More Effort Needed			
j	Functioning AGS								Incomplete	Incomplete	More Effort Needed			
Highway Improvements														
Specific Highway Improvements														
15	6 lane component from Floyd Hill through the Twin Tunnels (MP 243 to MP247) including a bike trail and frontage roads from Idaho Springs to Hidden Valley and Hidden Valley to US 6	####	Dec. 2014, Sept 2015, and TBD		Eastbound tunnel widened to 3 lanes; Westbound tunnel was widened to accommodate three lanes in the future; Frontage road and bike trail between Game Check area and Hidden Valley	####	Environmental Assessment and preliminary engineering is underway for westbound I-70 from east of the Floyd Hill/Beaver Brook Exit (248) to Idaho Springs Exit (241) A Categorical Exclusion is underway for improvements to CR 314 between the Game Check trailhead and the City of Idaho Springs baseball fields.	https://www.codot.gov/projects/archived-projects/70wintunnels and https://www.codot.gov/projects/I-70-floyd-hill-to-veterans-memorial-tunnels-improvements	The 3-lane project completed to date has improved safety; an average of 51 crashes per year from 2009 to 2011, eastbound from Twin Tunnels to base of Floyd Hill. After the major geometric and cross section improvements, an average of 22 crashes per year, from 2016 to 2018. Similar safety improvements are expected upon completion of the EA and Cat Ex projects	1: Increased capacity (person trips) 2: Improved mobility and accessibility (travel time/reliability, safety data, incident response time) 3: Decreased congestion (level-of-service, travel time/reliability)	See separate table	See separate table	More Effort Needed	
16	Empire Junction (US 40 and I-70) interchange improvements (MP 232)											Incomplete	Incomplete	Continue with Current Level of Effort

17	Eastbound auxiliary lane from Eisenhower-Johnson Memorial Tunnels to Herman Gulch (MP 215 - MP 218)	####	2016	The auxiliary lane ends at approximately 217.5, a half mile west of the Herman Gulch Interchange. The Project did not extend entirely to Herman Gulch to limit environmental impacts. CE agreement on project limits.				2011-2018 data indicates an improvement in crash history. The extension of the auxiliary lane at US-6 together with implementation of the mainline metering along EB I-70, east of the Silverthorne/Dillon interchange, has eased some of the safety concerns in this location. During the CSS process, it was agreed to shorten the project by a 1/2 mile (to limit environmental impacts)	2: Improved mobility and accessibility (travel time/reliability, safety data); 3: Decreased congestion (level-of-service, safety data, travel time/reliability)	Unknown	See separate table	Continue with Current Level of Effort
18	Westbound auxiliary lane from Bakerville to Eisenhower-Johnson Memorial Tunnels (MP 215 to MP 221)									Incomplete	Incomplete	More Effort Needed
Other Highway Improvements												
19	Truck operation improvements, such as pullouts, parking, and chain stations	####	2015, 2016, and In Progress	The completed eastbound PPSL project constructed two pull outs for emergency refuge in December 2015. East Vail chain station was expanded in 2016.	####	7 new safety pullouts will be constructed as part of the westbound PPSL project. 5 new pullouts will be constructed in the westbound direction and 2 new pullouts in the eastbound direction.	https://www.codot.gov/projects/archived-projects/170mtmps/ and https://www.codot.gov/projects/170mntv/i-70-westbound-peak-period-shoulder-lane	Pullouts and expanded chain stations improve safety conditions for truck drivers on the roadside. Traffic operations are also improved.	2: Improved mobility and accessibility (travel time/reliability, safety data)	(Based on limited data and group discussion)	(Based on limited data and group discussion)	Continue with Current Level of Effort
20	Safety improvements west of Wolcott	####	2013	Super-elevation curve correction through Wolcott	####			2011-2018 data indicates an improvement in crash history, compared to 2001-2005. The curve correction may have alleviated safety issues at Wolcott	2: Improved mobility and accessibility (safety data)	Unknown	See separate table	Continue with Current Level of Effort
21	Safety and capacity improvements in Dowd Canyon	####	2019	Eastbound on-ramp plus taper has been extended by approximately 500' as a safety improvement.	####	Planning has started; currently on hold pending the results of a Bridge Enterprise inspection project. CDOT Region 3 will reassess the project in early 2020.		Data not yet available on eastbound ramp improvement	2: Improved mobility and accessibility (safety data)	Incomplete	Incomplete	Continue with Current Level of Effort
Interchange Improvements at:												
22	Glenwood Springs (MP 116)	####	Dec. 2018	Interchange improvements were constructed as part of the Grand Avenue Bridge (GAB) Project. Interchange improvements include: Lengthened on/off ramps, increased vehicle storage, new signals, new pedestrian underpass, and a new configuration of the interchange for the newly realigned Grand Avenue bridge.			https://www.codot.gov/projects/sh82grandavenuebridge	The Exit 116 connection from SH82 to I-70 and vice versa is operationally much better than before the GAB project, basically much more efficient operations by having a more direct connection to the corridors and also separating out local traffic from mainline pass through traffic accessing the SH82 and/or I-70 corridors. The new pedestrian underpass under SH82 also provides traffic operational improvements/benefits because a ped phase was eliminated at one of the signals. The pedestrian underpass also provides a considerable safety benefit, separating bikes and peds from motorized vehicles in this active resort community.	2: Improved mobility and accessibility (safety data)	(Based on limited data and group discussion)	Unknown	Continue with Current Level of Effort
23	Gypsum (MP 140)									Incomplete	Incomplete	Continue with Current Level of Effort
24	Eagle County Airport									Incomplete	Incomplete	Continue with Current Level of Effort
25	Wolcott (MP 157)									Incomplete	Incomplete	Continue with Current Level of Effort
26	Eagle and Spur Road (MP 147)	####	2015	Roundabouts were incorporated into the interchange to remove the traffic lights. Also a pedestrian bridge over I-70 was installed, pedestrian circulation in general was improved, and better access from a park-and-ride to a bus stop which was improved for safety.				Safety improvements completed but data not available to assess effectiveness	2: Improved mobility and accessibility (safety data)	Unknown	Unknown	Continue with Current Level of Effort
27	Edwards and Spur Road (MP 163)	####	2011-Phase 1, 2020-Phase 2	Phase 1 of the project—completed in 2011—made improvements to the northern half of the Spur Road, including four new roundabouts and improved connections with the I-70 on- and off-ramps.	####	Phase 2 is currently underway and includes design improvements to the southern half of the Edwards Spur Road - a distance of approximately 0.4 miles. Phase 2 included improved safety features such as widening roads and bridges, improved sight distances at intersections. The project added refuge islands large enough to accommodate bicycles and trailers at the roundabout. It also added Rectangular Rapid Flashing Beacons for crosswalks at the roundabout. For recreation use, the project added separated pedestrian trails and bridges as well as added bike lanes to the roadway system.	https://www.codot.gov/projects/edwards-spur-road		2: Improved mobility and accessibility (safety data)	Unknown	See separate table	Continue with Current Level of Effort
28	Avon (MP 167)									Incomplete	Incomplete	Continue with Current Level of Effort
29	Minturn (MP 171)	####	Fall 2019	Eastbound on-ramp plus taper has been extended by approximately 500' as a safety improvement.	####	Planning has started; currently on hold pending the results of a Bridge Enterprise inspection project. CDOT Region 3 will reassess the project in early 2020.		Data not yet available on eastbound ramp improvement	2: Improved mobility and accessibility (safety data)	Unknown	Unknown	Continue with Current Level of Effort

30	Vail West (MP 173)/Simba Run									Incomplete	Incomplete	Continue with Current Level of Effort
31	Vail (MP 176)									Incomplete	Incomplete	Continue with Current Level of Effort
32	Vail East (MP 180)									Incomplete	Incomplete	Continue with Current Level of Effort
33	Vail Pass (East Shrine Pass Road - MP 190)									Incomplete	Incomplete	Continue with Current Level of Effort
34	Copper Mountain (MP 195)									Incomplete	Incomplete	Continue with Current Level of Effort
35	Frisco / Main Street (MP 201)									Incomplete	Incomplete	Continue with Current Level of Effort
36	Frisco / SH9 (MP 203)				#####	Currently working on traffic analysis, operational analysis and design concepts	https://www.codot.gov/library/studies/i-70-exit-203-interchange-in-frisco			Incomplete	Incomplete	Continue with Current Level of Effort
37	Silverthorne (MP 205)				#####	I-70 Silverthorne/Dillon Interchange Study has been completed	https://www.codot.gov/projects/archived-project-sites/I70SilverthorneDillon			Incomplete	Incomplete	Continue with Current Level of Effort
38	Loveland Pass (MP 216)									Incomplete	Incomplete	Continue with Current Level of Effort
39	Georgetown (MP 228)	#####	2012	Added roundabout serving interchange access road				Safety improvements completed but data not available to assess effectiveness	2: Improved mobility and accessibility (safety data)	Unknown	Unknown	Continue with Current Level of Effort
40	Downieville (MP 234)									Incomplete	Incomplete	Continue with Current Level of Effort
41	Fall River Road (MP 238)									Incomplete	Incomplete	Continue with Current Level of Effort
42	Base of Floyd Hill / US 6 (MP 244)				#####	Element of the Floyd Hill Project - Environmental Assessment in Progress	https://www.codot.gov/projects/i-70-floyd-hill-to-veterans-memorial-tunnels-improvements			Incomplete	Incomplete	SPLIT: Current Level of Effort and More Effort Needed
43	Hyland Hills (MP 247)				#####	Element of the Floyd Hill Project - Environmental Assessment in Progress	https://www.codot.gov/projects/i-70-floyd-hill-to-veterans-memorial-tunnels-improvements			Incomplete	Incomplete	
44	Beaver Brook (MP 248)				#####	Element of the Floyd Hill Project - Environmental Assessment in Progress	https://www.codot.gov/projects/i-70-floyd-hill-to-veterans-memorial-tunnels-improvements			Incomplete	Incomplete	
45	Evergreen Parkway / SH 74 (MP 252)									Incomplete	Incomplete	Continue with Current Level of Effort
46	Lookout Mountain (MP 256)									Incomplete	Incomplete	Continue with Current Level of Effort
47	Morrison (MP 259)									Incomplete	Incomplete	Continue with Current Level of Effort
Auxiliary lanes												
48	Avon to Post Blvd. (Exit 168)									Incomplete	Incomplete	Continue with Current Level of Effort
49	West side of Vail Pass (eastbound and westbound)				#####	Environmental Assessment and conceptual design for safety improvements are underway. Design and construction can follow as funding becomes available.	https://www.codot.gov/projects/i-70-West-Vail-Auxiliary-Lanes			Incomplete	Incomplete	Continue with Current Level of Effort
50	Frisco to Silverthorne (eastbound)				#####	Currently working on traffic analysis, operational analysis and design concepts. Roadway and feasibility studies are underway as well as environmental research.	https://www.codot.gov/library/studies/i-70-exit-203-interchange-in-frisco			Incomplete	Incomplete	Continue with Current Level of Effort
51	Morrison to Chief Hosa (westbound)									Incomplete	Incomplete	SPLIT: Current Level of Effort and More Effort Needed



**Collaborative Effort (CE) Meeting and
I-70 Mountain Corridor 2020 Reassessment Meeting #10 Summary**
December 16, 2020, 9:00 AM to 12:00 PM
Zoom Conference Call Video Meeting

Overview

These notes summarize the Collaborative Effort (CE) meeting held via video conference on December 16, 2020. This meeting focused on completion of the I-70 Mountain Corridor 2020 Reassessment Step 4 Work Plan and Step 5 Documentation. The presentation, revised CE Step 4 Work Plan, and Step 5 Executive Summary (as discussed at the meeting) are attached. (Note the Work Plan and Step 5 summary were revised based on comments received at meeting; changes are reflected in the final Step 5 documentation.)

Welcome and Introductions

Greg Hall, CE Co-Chair, welcomed the group and congratulated them for getting to the final milestone in the 2020 Reassessment. He conducted a roll call of the CE members and the alternates. The following CE members and alternates were present:

- Randy Wheelock, Clear Creek County (CE Co-Chair)
- Greg Hall, Vail (CE Co-Chair)
- Amy Saxton, Clear Creek County (*alternate*)
- Ann Rajewski, Colorado Association of Transit Agencies (CASTA)
- Becky English, Sierra Club (*alternate*)
- Ben Gerdes, Eagle County (*alternate*)
- Brendan McGuire, Vail Resorts
- Brooke Davis, US Army Corps of Engineers
- Chris Linsmayer, Colorado Ski Country USA
- Cindy Neely, Local Historic Preservation Representative
- Danny Katz, Colorado Public Interest Research Group (CoPIRG)
- David Krutsinger, CDOT, Division of Transit and Rail
- Dennis Royer, Sierra Club, Rocky Mountain Chapter
- Eva Wilson, local transit provider (Avon Mobility Director)
- Gary Frey, Colorado Trout Unlimited
- Holly Norton, Colorado State Historic Preservation Office
- Lauren Masias, Denver Metro Chamber (*alternate*)
- Margaret Bowes, I-70 Coalition
- Mary Jane Loevlie, local business representative (Idaho Springs)
- Matt Scherr, Eagle County
- Mike Hillman, Idaho Springs (Mayor)
- Mike Riggs, AGS/high-speed transit representative



- Shaun Cutting, Federal Highway Administration (FHWA)
- Tracy Sakaguchi, Colorado Motor Carriers Association (*alternate*)
- Steve Durian, Jefferson County (*alternate*)
- Mike Keleman CDOT Region 1 (*alternate*)

CE member organizations whose primary or alternate members were not present included:

- CDOT Region 3 (staff members Karen Berdoulay and Rob Beck were present)
- City and County of Denver
- Colorado Passenger Rail Association
- Garfield County
- Summit County
- US Forest Service
- Headwaters Group, Sierra Club

Other meeting participants included State Representative Dylan Roberts; Vanessa Henderson, Neil Ogden, Tamara Burke, Brian Hartman, Julie George, Karen Berdoulay, and Rob Beck, CDOT; Melinda Urban, FHWA; Miller Hudson, interested party; Steve Coffin, Steve Coffin Strategies; Wendy Wallach, Chris Primus, and Kira Olson, HDR; and Mandy Whorton, Peak Consulting Group.

Mr. Hall opened up the meeting to public comment. No comments were recorded.

Mr. Hall asked if there were any comments or edits to the September 30 or November 18 meeting notes distributed in the meeting materials sent by Randy Wheelock on December 10, 2020. Cindy Neely said the date of the meeting in the November 18 notes needed to be revised. Mandy Whorton stated that the revised notes distributed on December 11 corrected this. Mr. Hall noted that the numbers of meetings #7, #8, and #9 needed to be checked. Ms. Whorton stated she would check and correct as needed. No other comments were received, and the group approved the meeting notes.

CE Work Plan Review

Mr. Hall went through the action items for the CE Work Plan, as summarized in the attached PowerPoint presentation. He asked members to weigh in as they moved through the presentation with suggested edits or concerns with any of the items. He noted silence would assume consensus.

Ms. Neely observed that the Work Plan should be reformatted for consistency. She noted this was not a comment or concern about the content but reformatting to present action items for each task would make tracking progress easier. She suggested lettered sub-bullets be labeled as action items and rephrased as needed. Ms. Whorton said she would reformat accordingly after the meeting. The group proceeded to review each of the Work Plan tasks to clarify scope and responsibilities/assignments.

Corridor Demand and Capacity Model

The group reviewed and agreed with #1 and the action items for the subcommittee (noted as lettered bullets but revised to label as action items). Ms. Neely said that she would organize the subcommittee and had received word from Vanessa Henderson that CDOT and HDR were able to rearrange tasks and budgets in the 2020 Reassessment consultant contract to allow Chris Primus to participate in a meeting



with the subcommittee and provide background on the travel demand modeling and capacity goals. David Krutsinger suggested that Erik Sabina, CDOT's subject matter expert on travel demand modeling, would be a good addition to the meeting. (This would also further item #2 to coordinate with CDOT DTD.) Ms. Neely asked anyone with interest to submit questions to her and/or let her know if they wanted to participate in the meeting with Mr. Primus.

Subcommittee members include Mr. Neely, Mr. Hall, Randy Wheelock, Eva Wilson, and Tracy Sakaguchi.

CSS Process Review

Ms. Neely noted that action items were needed to clarify this task. The group discussed several ways that the CSS process could be tracked better and reported out to the CE. The following action items were added:

Action Item: PLT members should ensure lessons learned are considered at the end of projects, consistent with the CSS Step 6 process to review and document lessons learned.

Action Item: For ongoing projects in the corridor, PLT members should report out at CE meetings how the CSS process is working, especially for large projects. This would be a standing agenda item for future CE meetings.

Environmental Review

The group did not have anything to add to the action items. Amy Saxton offered to organize the subcommittee and its first meeting; the group agreed to discuss leadership of the subcommittee at the meeting. In addition to Ms. Saxton, members that committed to serve on this CE subcommittee included Ms. Neely, Gary Frey, and Becky English. Mr. Hall stated that someone from the Town of Vail would participate on this subcommittee as well. Tamara Burke agreed to be the CDOT liaison with the subcommittee and to coordinate with CDOT specialists as needed to support the action items.

Mr. Hall asked how the subcommittee could get help from CDOT in going back through the documents. Ms. Henderson said that Ms. Burke could help but it would likely be a heavy lift so she will need help. Ms. Saxton said she would help with the lift.

Mr. Hall also noted that when the Co-Chairs met with CDOT Director Lew, they requested that the CDOT Mountain Corridor Environmental Manager position be filled quickly. They also stressed the importance of this position in supporting the CE and progress on corridor improvements.

Outreach and Communication

There were no changes or additions to the action items listed. Margaret Bowes stated that the I-70 Coalition engaged GBSM to do a fairly extensive campaign in summer and fall 2018, and this could be a start on collateral materials identified for the first action item. While the materials are comprehensive related to the Preferred Alternative, some additions would be needed for talking points on the CE and its role.



Ms. Bowes agreed to lead this subcommittee. Ms. Saxton, Ms. Sakaguchi, Mary Jane Lovelie, and Danny Katz volunteered to serve on this subcommittee. Chris Linsmayer said he would attend the first call to see how it developed.

Ms. Whorton asked if Denver needed to be represented. Mr. Katz responded that the work of the subcommittee will help get Denver engaged but more progress needed to be made on the communication materials before meaningful Front Range engagement was likely.

Transit

Ms. Neely said that this goal was for micro transit generally, not just for the vehicles in the MEXLs. Ms. Bowes said that Bustang and Snowstang needed to be called out separately or with a slash as they serve different purposes. She also commented that “travel lanes” should be changed to “general purpose lanes” in the second action item because MEXL is already in that sentence.

Ms. Bowes asked for clarification on why the #5(ii) action item regarding Bustang/Snowstang expansion and coordination with rural transit agencies was included. Mr. Krutsinger responded that the current funding for rural transit is a fixed pie so there is sensitivity about funding. He suggested changing the wording to be more positive, changing “expansion does not...” to “in a way that also supports local transit.” The group endorsed this change.

The group discussed whether a Transit subcommittee was needed. Mr. Krutsinger suggested that micro transit would fit well with the TDM subcommittee and that one committee would be more efficient. Mr. Wheelock agreed and said micro-transit fit well with CDOT goals and is consistent with what the Co-Chairs heard in the meeting with CDOT Director Lew. Mr. Hall asked if adding transit to the TDM subcommittee was too much? Ms. Bowes said that micro transit is well covered under TDM work of the I-70 Coalition. Additionally, because work for AGS would be covered by the AGS subcommittee, the group agreed another Transit subcommittee was not needed. Ms. English stated that local micro-transit business opportunities for public transit & ride systems will naturally develop as AGS station plans firm up.

Travel Demand Management (TDM)

Ms. Bowes stated that the I-70 Coalition has a TDM work plan, and Trevor Tandy is a part-time staffer with the Coalition charged with its implementation. She said she would welcome CE participation in implementing the Coalition’s work plan. While the I-70 Coalition has a TDM work plan that overlaps with many of the CE interests, Ms. Bowes said the Coalition does not have bandwidth to take on all of the items in the CE Work Plan, especially related to the Corridor Management approaches in task #7 such as parking and congestion pricing. Ms. Bowes said she could give a brief presentation on the Coalition work plan and how they are focusing their efforts at the next CE meeting.

The group discussed whether a CE subcommittee separate from the Coalition TDM committee was needed. After discussion, the group agreed that CE members should join the Coalition committee, and a new subcommittee could be formed in the future if needed. Mr. Krutsinger offered that CDOT DTR/OIM can lend support / subject matter experts to the committee; he said staff would likely be Rachel Bolin (OIM) and a member of the Bustang/Bus Ops team.



Based on discussion about transit representation on the TDM subcommittee, Eva Wilson, Tracy McDonald, and Ann Rajewski were suggested to join the Coalition TDM committee. Ms. Bowes stated that she would have Mr. Tandy reach out to interested CE members. The group also agreed that the next CE meeting will include a presentation on the Coalition's TDM work, including the integration of CE members to that committee.

Corridor Management Approaches

Ms. Bowes requested that the acronym BMP (best management practice) be defined. No other comments were received on the action items (other than formatting, which applies globally to the CE Work Plan). No subcommittee was assigned for this task but the I-70 Coalition could likely serve as a clearinghouse of BMPs as they are developed.

Technology and Traveler Information

Ms. Bowes said that the #9b goal should be moved under the title non-infrastructure work plan item, as this is a CE goal that applies to all non-infrastructure items. All agreed. Ms. Whorton asked for clarification on where the item should be moved, and Ms. Neely stated it should be moved as a preamble to the non-infrastructure elements as the overarching goal. Ms. Whorton thanked her for the clarification and said she would revise in the CE Work Plan.

(No separate subcommittee was discussed for technology topics. However, the topic may fall under the TDM Committee, and a subcommittee could be added if needed.)

AGS

Ms. Bowes noted that the AGS subcommittee had already met and endorsed the tasks listed in the CE Work Plan. Ms. Lovelie asked if there was a need to add timeframes to the AGS tasks? Mr. Wheelock said he did not think this was necessary for two reasons. First, the Work Plan is aspirational at this point, and more work is needed before the CE can confirm the ability to achieve timelines. He said adding timeframes now would put people on the spot to endorse timelines in the document that may not be achievable. Mr. Hall agreed and added that the meeting with Director Lew emphasized the need to be clear about what is achievable in a ten-year timeframe; right now, AGS does not fit into that plan. Second, Mr. Wheelock stated that although the subcommittee has already begun work, the Work Plan sets the right direction, and the subcommittee is carrying forward action on the Work Plan under this direction. There were no other comments on the AGS tasks or action items.

Subcommittee members include Mr. Wheelock (who organized the first meeting), Ms. Bowes, Ms. Wilson, Mr. Krutsinger, Mr. Katz, Ms. English, Ms. Lovelie, Mike Riggs, and Dennis Royer. A report out of the first meeting of the AGS subcommittee occurred later in the agenda.

Highway Elements

Mr. Hall stated that the CE felt progress had been made on the highway elements and the appropriate level of effort had been placed on this component of the Preferred Alternative. However, he noted that there are outstanding items related to the review of CSS and environmental impacts and commitments.



Ms. Neely asked if the language in the CE Work Plan should include reference to the clarifications on the six-lane capacity in Step 3? Mr. Hall said that since Step 3 is part of the Reassessment report currently, it is already documented so would not need to be added here. Ms. Neely agreed but said that it could be added in the same way as the environmental and CSS work plan items are referenced. Ms. Whorton suggested adding “and the clarifications from Step 3 on six lane highway capacity” after the CSS and environmental Work Plan items. The group agreed. (Because highway projects follow Tier 2 processes, including CSS, and are represented with project-specific PLTs, the CE did not determine a subcommittee was needed for the Highway Elements.)

Wrap Up

Mr. Wheelock reiterated that getting through the 2020 Reassessment had been a great accomplishment for the CE. He said he was thrilled with the outcome and thanked all the members for their participation. Ms. Henderson also stated that the process had gone really well, and she had enjoyed working through the 2020 Reassessment Work Plan with the CE.

Step 5

Wendy Wallach reviewed the schedule and said the schedule had been ambitious, and due to the work of the CE, it was accomplished. She reiterated praise for the CE on the accomplishment.

Ms. Wallach said that the final documentation was the last step but all the hard work had been done. The first three steps had been completed and documented. Today’s meeting completed the Step 4 and refinements to the Work Plan.

Ms. Whorton asked if anyone had feedback on the Step 5 documentation summary. Ms. Neely said she thought the summary was outstanding and captured the outcomes and intent of the work done over the past year well. Mr. Coffin agreed that the summary was well done. Ms. Neely suggested a minor change to the way CDOT and FHWA were described as potentially separate from rather than part of the CE. Ms. Whorton said she would revise those descriptions. Mr. Linsmayer requested that the summary be provided in Word format for comment. Ms. Whorton stated that both the revised work plan and summary document could be provided in Word format.

Ms. Bowes asked about the Preferred Alternative tracking sheet. She said it seems to be included twice and asked why and what the difference was with the versions? Ms. Henderson explained that one is a condensed version with some of the columns hidden so that the work plan was more readable. The other is the full Excel spreadsheet. Ms. Bowes asked how the Preferred Alternative tracking sheet would be updated. Ms. Henderson said the full sheet lives on the website, and Ms. Burke will update as projects are completed.

Mr. Hall thanked everyone for their hard work on the Reassessment. Ms. Henderson again complimented the group’s effort and said she really appreciated their work.

Co-Chairs Meeting with CDOT Executive Director

Mr. Wheelock said that Mr. Hall, Steve Coffin, and he met with CDOT Director Shoshana Lew along with CDOT Region 1 Director, Paul Jesaitis, and CDOT Chief Engineer, Steve Harrelson, to share the results of



the Reassessment. He said CDOT was clear that its focus is on the 10-year work plan and what can be done in that timeframe. Director Lew talked about projects in the corridor, including commitment to micro transit, Floyd Hill, and other past and ongoing projects. Mr. Wheelock said he felt CDOT was clearly committed to the corridor, and all involved in the meeting recognize funding limitations will be factors for prioritizing future improvements. They agreed to set regular meetings to check in as CE Work Plan progresses. He asked if any of the others at the meeting had anything to add. Mr. Hall and Mr. Coffin did not.

Mr. Jesaitis said he agreed that the meeting was a robust discussion about next steps for transit. He said CDOT would like to try to do some things in the next 5 years that move the needle on other modes. He said projects in the current 10-year plan are not funded beyond 5 years (i.e., years 6-10). He said CDOT appreciates the CE efforts and looks forward to continued partnership with the CE.

Mr. Katz asked how the work that the CE is doing and planning now could support action in the future when we do have funding without requiring a lot of rework in the future? Mr. Wheelock said this was a good consideration. The 10 year plan doesn't solve all the problems, and even it is not fully funded. He said the CE needs to be sensitive to CDOT's position with funding and will need to communicate so that the subcommittees don't get out in front of what can realistically be done and not committing to timelines that will cause work to be lost or need to be redone. Mr. Hall summarized the sentiment of the meeting that "dollars are limited so don't waste them."

CE Protocols and Meetings

Meetings

The CE has traditionally met for full-day workshops twice per year. The group discussed meeting frequency and duration. After some discussion, the group agreed that three meetings per year of less than 4 to 6 hours would be more productive. Holly Norton suggested that the video format used through the Reassessment had proved to be efficient and should be considered for future meetings. The subcommittees will meet more frequently and will develop schedules based on the work plan tasks and member availability. Ms. Neely suggested the 2021 schedule should include a meeting at the end of February to check in on the Work Plan and allow the subcommittees some time to organize. The group agreed and set the next meeting for February 24 from 9 am to 11 am.

All agreed that in 2021, meetings would be in February, May, and September. Future years, meetings would be in January, May, and September. Miller Hudson requested that the full mailing list receive notifications of subcommittee meetings.

Suggested Revision to the CE Operating Protocols (regarding subcommittees)

Steve Coffin said that the CE Reassessment subcommittees have a different role than the working groups envisioned in the CE Operating Protocols. He read suggested changes to the protocols below.

10. Subcommittees ~~Working Groups and Support for Stakeholder Groups~~

As necessary, subcommittees may be formally created by the ~~CE group~~ to address ~~specific~~ ~~special~~ topics in greater detail. These subcommittees are advisory bodies to the CE. They will research or explore a designated issue and come to the CE with



recommendations for the full CE to consider and act on as appropriate. Each subcommittee will appoint a chair from a CE member organization and will develop a scope of the issue to be researched or explored. That scope will be presented to the CE for its consensus approval prior to the commencement of its work. The same principles that guide the CE in its work (operating by consensus, no formal voting, staying true to the collaborative framework and approach, etc.) apply to each subcommittee in its operations.

Each member organization of the CE ~~and its alternate~~ may participate in these subcommittees and may bring in subject matter expertise from their organizations as needed ~~Working Groups~~. With the consensus of the CE, these subcommittees may also include non-CE members when the CE has determined that expertise outside the membership of the CE is needed. These subcommittees ~~groups~~ may be also formed in conjunction with the CSS process, particularly when broader participation may be helpful. ~~In addition, f~~ If resources make this possible, facilitation or agenda building support may be offered to subcommittees ~~stakeholder groups~~ to promote coordinated, informed and representative discussions by all members.

There were no comments, and all agreed to revision.

AGS Subcommittee Meeting

Mr. Wheelock reviewed the first AGS subcommittee meeting. He noted the group got through lots of topics in a dense agenda. The subcommittee agreed to meet every two weeks as they were getting established. There is a lot of energy and enthusiasm for this subcommittee. Mr. Hall added that the meeting agenda was very well organized and got through a lot of topics because Mr. Wheelock did a great job keeping the discussion organized and focused on the Work Plan action items.

Wrap Up and Action Items

Mr. Wheelock noted that this is Ms. Henderson's last meeting. He extended thanks to her on behalf of the CE for her support, not just in the CE Reassessment process but in being a bridge to CDOT. He said she would be missed. Ms. Henderson said she enjoyed her time working with the CE and would stay engaged if she could.

Mr. Hall noted that CDOT Region 3 did not officially participate as neither the primary member (Mike Goolsby) or alternate (Dave Cezak) were in attendance.

Ms. Lovelie thanked the Co-Chairs for the collaborative process and for keeping the CE going.



Action Items

- Schedule meeting to review corridor capacity goals with Mr. Primus, HDR (January 2021) (Ms. Neely and Ms. Henderson)
- Invite Erik Sabina to the capacity goal meeting (Ms. Henderson/Ms. Burke)
- Submit questions to Ms. Neeley and/or participate in the meeting with Mr. Primus (all CE members)
- Reformat the CE Work Plan with consistent action items and other edits discussed at this meeting (Ms. Whorton)
- Distribute the Step 5 Reassessment Summary document and reformatted CE Work Plan in Word format (Ms. Whorton and Ms. Henderson)
- Review and provide comments on the Reassessment Summary Document (all CE members)
- Schedule CE meeting for February 24, 2021 (CE Co-Chairs or delegate)
- Schedule first Environmental Subcommittee meeting (Ms. Saxton)
- Schedule first Outreach Subcommittee meeting and review collateral materials developed by the Coalition in 2018 (Ms. Bowes)
- Invite interested CE members to the I-70 Coalition TDM committee meeting (Ms. Bowes/Mr. Tandy)
- Set recurring meetings between CE Co-Chairs and CDOT Executive Management (Mr. Wheelock/Mr. Jesaitis)
- Provide notifications of subcommittee meetings to full CE mailing list (CE Subcommittee Chairs)



I-70 Mountain Corridor 2020 Reassessment

COLLABORATIVE EFFORT (CE) MEETING

Date/Time: December 16, 2020; 9:00 a.m. to 12:00 p.m.

Location: Zoom Video Meeting

<https://zoom.us/j/99063953749?pwd=dE8vaExjVCtFZ3l2aFdHekNBZWV6dz09>

Meeting ID: 990 6395 3749 Passcode: 673684

Dial by your location: +1 669 900 6833 US (San Jose), +1 253 215 8782 US (Tacoma), +1 346 248 7799 US (Houston), +1 929 205 6099 US (New York), +1 301 715 8592 US (Washington D.C), +1 312 626 6799 US (Chicago)

AGENDA

1. Roll Call
2. Public Comment Period
3. Approval of September 30, 2020 and November 18, 2020 Meeting Notes
4. Reassessment Step 5 (Documentation)
 - a. Discuss and finalize Step 4 (CE Work Plan)
 - b. Discuss overall Step 5 documentation and finalize
 - c. Consensus by CE members
5. Recap of Meeting with CDOT Executive Director Shoshana Lew (Randy Wheelock, Greg Hall, Shoshana Lew)
6. CE 2021 Meeting Schedule
7. Revision to Operating Protocols
8. CE Work Plan Moving Forward
 - a. Create subcommittees
 - b. Identify members of each subcommittee
9. Report-out from AGS Subcommittee
10. Meeting Wrap-up



COLORADO

Department of Transportation

COLLABORATIVE EFFORT (CE) MEETING 2020 REASSESSMENT – STEP 5

December 16, 2020



Zoom Protocol/Reminders

- In case of technical difficulties, text Kira Olson 970.310.1898
- Please stay on mute unless you're speaking and remember to mute yourself after you're done speaking
- Use the chat option during the slide discussion or the presenter will ask for comments at the end of each slide



Agenda

- Roll Call
- Public Comment Period
- Approval of September 30, 2020 and November 18, 2020 Meeting Notes
- Reassessment Step 5 (Documentation)
- Recap of Meeting with CDOT Executive Director Shoshana Lew
- CE 2021 Meeting Schedule
- Revision to Operating Protocols
- CE Work Plan Moving Forward
- Report-Out from AGS Subcommittee
- Meeting Wrap-Up



Agenda

- Roll Call
- Public Comment Period
- Approval of September 30, 2020 and November 18, 2020 Meeting Notes



Reassessment Step 5 (Documentation)

- Discuss and finalize Step 4 (CE Work Plan)
- Discuss overall Step 5 documentation and finalize
- Consensus by CE members



Step 4 – CE Work Plan

CE Tools and Processes

Corridor Demand and Capacity Model

1. Create CE Subcommittee to **review travel demand and capacity goals**
 - a. Verify the model assumptions and inputs and agree on the appropriate use of the model.
 - i. Meet with Chris Primus (HDR).
 - b. Identify the capacity goals of the ROD and discuss implications of those goals; assess the ability to meet those goals.
 - c. Determine what part of the ROD capacity goal can be achieved with the implementation of the minimum and maximum program of improvements. Distinguish between capacity and increasing travel demand.
 - d. Identify transit ridership goals. Identify the mode share or ridership growth number % and establish a yardstick for future evaluation (5, 10, 15 year goals).
2. Coordinate and apply the statewide travel model.
 - i. Coordinate with CDOT DTD



Step 4 – CE Work Plan (continued)

CSS Process Review

- 1 Gather lessons learned and benefits of use of the CSS process; continued path and review of CSS going forward



Step 4 – CE Work Plan (continued)

Environmental Review

1. Form CE Subcommittee to review environmental goals analyze the environmental impact and effectiveness of environmental mitigation for implemented improvements in the corridor (including TDM and non-infrastructure i.e. MEXL).
2. Address the question: how have the transportation improvements impacted the environment (air quality /water/noise/wildlife/aquatic) in the corridor?
3. Create environmental baseline and compare environmental conditions to current conditions today
 - i. **Action Item:** CE coordinates with CDOT to facilitate continue coordination with Water Quality working groups in the corridor;
 - ii. **Action Item:** Review all relevant project documents combining the environmental impacts/mitigation in one location;
 - iii. **Action Item:** CE indicate to CDOT the importance of filling corridor environmental specialist;
 - iv. **Action Item:** Report to CE as needed.

(Who: Cindy Neely, Gary Frey)



Step 4 – CE Work Plan (continued)

Outreach and Communication

Form a CE Outreach and Communication Subcommittee to provide outreach to local elected officials regarding the entire PA/ROD, TDM, AGS, and highway elements of the ROD PA. Identify ways to engage front range population and build support for the effort

- i. **Action Item:** Develop a roadshow from the CE update to the Transportation Commission, Exec branch TLRC, communities on the corridor and progress of the CE/ROD.
- ii. **Action Item:** Develop strategies to engage Front Range residents in support of non-infrastructure improvements, supporting I-70 Coalition.
Danny Katz, Margaret Bowes to discuss ways to further engage Front Range stakeholders and report back to CE.



Step 4 – CE Work Plan (continued)

Non-Infrastructure Work Plan Items

Transit

1. Advance the use of **micro-transit and other roadway technologies** (e-vehicle/autonomous)
2. Forecast maximum ridership from Bustang in travel lanes as well as micro transit vehicles in the Express Lanes etc.
 - a. What are the characteristics of vehicles that could use MEXL?
 - i. **Action Item:** Continued I-70 Coalition engagement with CDOT's Office of Innovative Mobility and increased engagement with sustainability coordinators throughout the corridor;
 - ii. **Action Item:** Provide CE updates and CE to support Coalition's outreach efforts.
3. Improve **transit connections** and integrate final mile solutions to get riders to their ultimate destination; ensure that local transit should be high quality.
 - i. **Action Item:** CE supports on-going monitoring and encourages transit connection improvements.



Step 4 – CE Work Plan (continued)

Non-Infrastructure Work Plan Items

Transit

4. Identify transit ridership goals. Identify the mode share or ridership growth number % and establish a yardstick for future evaluation (5, 10, 15-year goals).
5. Incentivize the use of transit service and increase roadway transit service.
 - i. **Action Item:** CE discussion regarding strategy and approach for incentivizing and increasing transit service.
 - ii. **Action Item:** CE discusses ways to support and improve Bustang/Snowstang in the corridor with the Transportation Commission; communicate that expansion does not impact rural transit agencies funding.



Step 4 – CE Work Plan (continued)

Travel Demand Management

6. Engage and support corridor TDM efforts by expanding **TDM** services and providing education to change driver behavior
 - i. **Action Item:** CE members join and support the I-70 Coalition TDM Committee; CE monitor and discuss TDM implementation.

7. **Corridor Management** Approaches

- a. Consider parking management as a strategy to change behavior.
- b. Consider congestion fees to disincentivize driving.
- c. Pilot alternative traffic management strategies.
 - i. **Action Item:** CE considers corridor management tools and approaches including BMPs, and serves as a clearinghouse of information regarding tools and approaches.



Step 4 – CE Work Plan (continued)

8. Technology

Implement and advance the use technology to maximize the use of the existing infrastructure and systems to optimize corridor mobility, operations, safety and innovation.

Assess and understand any technology advances that may meet the requirements of the ROD (building off information presented in Step 2)

Action Item: Continued I-70 Coalition engagement with CDOT's Office of Innovative Mobility in advancing the use of technology

9. Improve **real-time and predictive traveler information**- more robust, timely road information

i. **Action Item:** CE supports monitoring and encouragement of the use of up-to-date tools.

b. **CE Goal:** Maximize the use of non-infrastructure strategies and incrementally implement transit solutions in the near term and build support for high-speed transit in the future.



Step 4 – CE Work Plan (continued)

AGS Work Plan Items

Form a CE led AGS Subcommittee to advance AGS in the corridor. The AGS Subcommittee will establish a regular meeting schedule to advance the implementation of AGS, using a Subcommittee work plan to guide the effort. AGS Subcommittee members should be open to new ideas and be willing to question previous assumptions. The subcommittee will report periodically to the full CE on the status of the subcommittee.

- a. **Draft Membership:** Margaret Bowes, Eva Wilson, Mike Riggs, Danny Katz, David Krutsinger, Randy Wheelock, Mary Jane, Greg Hall, Becky English, Dennis Royer. May include non-CE members at discretion of the CE, based on topic area/expertise.
 - i. **Action Item:** Randy to organize and provide invitation for 1st Subcommittee convene Subcommittee before next CE meeting identify champions for AGS and clarify the vision through educating elected officials, staff and businesses on what AGS is and how it can serve the corridor.



Step 4 – CE Work Plan (continued)

Potential ideas to guide the AGS Subcommittee were developed by the CE and include the following:

1. Financial Feasibility
 - a. Create a community and agency vision for AGS and determine how much money can be generated by communities (ROW, TOD, etc.). Determine how to attract private investment for AGS?
 - b. Local governments – towns and counties are essential in this effort. Before AGS implementation communities (towns and counties) need to make decisions about land use and other community amenities that would support that vision (station, TOD areas, and ROW).
 - c. Address concerns related to growth in the corridor and station locations.
2. Following establishment of vision, discuss with private equity investors and HPTE the community vision and what it can offer to private sector.
 - a. Outline ways to change the car culture and build ridership.
3. Assess and understand any technology advances that may meet the requirements of the ROD (building off information presented in Step 2).



Step 4 – CE Work Plan (continued)

4. Address how 'precluding AGS' is addressed in the corridor specific projects. Need to do a better job of doing this beyond an overlay; implications for costs/ constructability (easier/hard etc.), opportunities.
 - a. When TTs are formed for specific projects ensure high-speed transit specialists are included.

Additional Suggestions for the AGS Subcommittee include:

1. Define work plan and report back at the December meeting including expectations and a definition of the subcommittee charge and timeline.
2. Review and revisit AGS technology.
3. Model the total riders, % of person trips aim to divert, consider assumptions regarding what people will pay for a trip and identify a reasonable range of revenue. Look to identify revenue for initial capital investments.
 - a. Determine how to monetize the economic benefits to generate revenue stream.
4. Depending on results, move to an investment grade study.
 - i. **Action Item:** AGS Subcommittee to provide Input to the CE Travel Demand and Capacity Subcommittee.



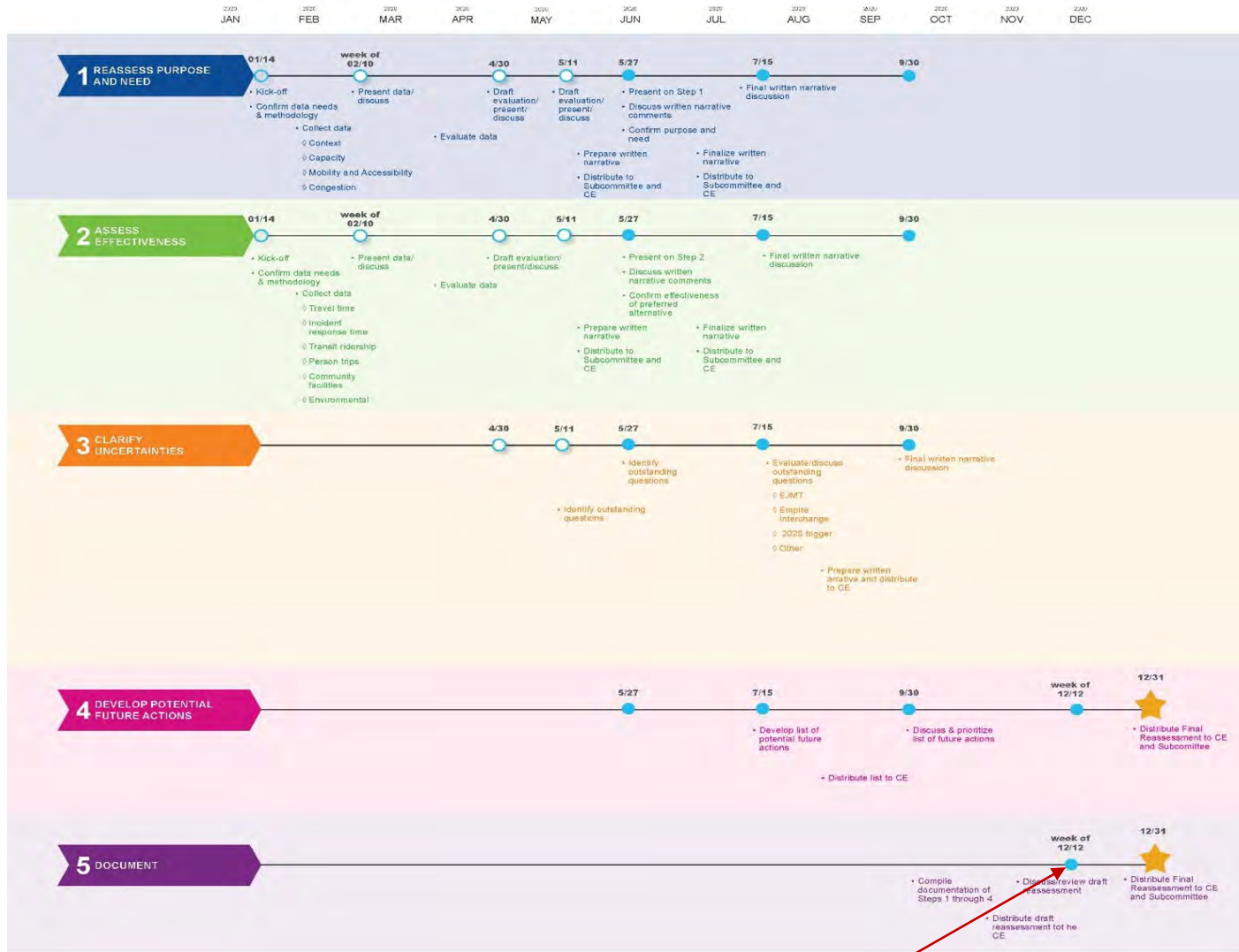
Step 4 – CE Work Plan (continued)

Highway Work Plan Items:

Ensure specific topics of the work plan are engaged and understood during each Highway project development and these items also include the CSS and Environmental Work Plan items listed above. See attached Preferred Alternative Implementation Matrix for priorities of each highway project.



Reassessment Step 5 (Documentation)



We are here

- 4 CE Subcommittee Meetings
- 6 CE Meetings, including today
- Steps 1 through 4 completed!
- Thanks to everyone for all of your hard work and time to get this Reassessment completed!!

○ SUB
● CE (suggest full day workshops for 5/27, 7/15, and 9/30 for Step 3 and Step 4)



Reassessment Step 5 (continued)

Format

- Executive Summary
- Attachment - Step 1 Materials, already approved
- Attachment - Step 2 Materials, already approved
- Attachment - Step 3 Materials, already approved
- Attachment - Step 4 Materials, to be approved today
- Attachment - Step 5 Materials, to be approved today



Agenda

- Recap of Meeting with CDOT Executive Director Shoshana Lew
- CE 2021 Meeting Schedule
- Revision to Operating Protocols
- CE Work Plan Moving Forward - Create Subcommittees and Identify Members
- Report-out from AGS Subcommittee



Meeting Wrap-Up

Thanks again for everyone's hard work this year on the 2020 Reassessment!



**COLLABORATIVE EFFORT
FUTURE ACTIONS STEP 4 WORK PLAN
November 18, 2020**

The following 2020 Reassessment Work Plan was adopted by the CE on November 18, 2020.

CE Tools and Processes

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- i. **Action Item:** CE members join and support the I-70 Coalition TDM Committee; CE monitor and discuss TDM implementation.

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Assess and understand any technology advances that may meet the requirements of the ROD (building off information presented in Step 2)

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 - a. Outline ways to change the car culture and build ridership.
3. Assess and understand any technology advances that may meet the requirements of the ROD (building off information presented in Step 2).
4. Address how ‘precluding AGS’ is addressed in the corridor specific projects. Need to do a better job of doing this beyond an overlay; implications for costs/ constructability (easier/hard etc.), opportunities.
 - a. When TTs are formed for specific projects ensure high-speed transit specialists are included.

Additional Suggestions for the AGS Subcommittee include:

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3. Model the total riders, % of person trips aim to divert, consider assumptions regarding what people will pay for a trip and identify a reasonable range of revenue. Look to identify revenue for initial capital investments.
 - a. Determine how to monetize the economic benefits to generate revenue stream.
4. Depending on results, move to an investment grade study.
 - i. **Action Item:** AGS Subcommittee to provide Input to the CE Travel Demand and Capacity Subcommittee.

Highway Work Plan Items:

Ensure specific topics of the work plan are engaged and understood during each Highway project development

ACTION ITEM SUMMARY

CE Tools and Processes
Action Item: Create a CE Subcommittee to review travel demand and capacity goals
CSS Process Review
Action Item: CE gathers lessons learned and benefits of the use of CSS Process in corridor
Environmental Review
Action Item: Form CE Subcommittee to review environmental goals and analyze the environmental impact and effectiveness of mitigation for implemented improvements in the corridor
Action Item: CE coordinates with CDOT to facilitate continue coordination with Water Quality working groups in the corridor
Action Item: Review all relevant project documents combining the environmental

impacts/mitigation in one location
Action Item: CE indicates to CDOT the importance of filling corridor environmental specialist position
Outreach and Communication
Action Item: CE to develop a roadshow to update the Transportation Commission, Executive branch TLRC, and communities on the corridor and progress of the CE/ROD.
Action Item: Develop communication strategies to engage Front Range residents in support of non-infrastructure improvements, supporting I-70 Coalition. Danny Katz, Margaret Bowes to discuss ways to further engage Front Range stakeholders and report back to CE.
Non-Infrastructure Work Plan Items
Action Item: CE discussion regarding strategy and approach for incentivizing and increasing transit service.
Action Item: CE supports on-going monitoring and encourages transit connection improvements. Increase engagement with sustainability coordinators throughout the corridor; I-70 Coalition to provide updates to CE; CE to support Coalition’s outreach efforts
Action Item: CE discusses ways to support and improve Bustang/Snowstang in the corridor with the Transportation Commission; communicate that expansion does not impact rural transit agencies funding.
Travel Demand Management
Action Item: CE members join and support the I-70 Coalition TDM Committee; CE monitor and discuss TDM implementation
Corridor Management Approaches
Action Item: CE considers corridor management tools and approaches including BMPs, and serves as a clearinghouse of information regarding tools and approaches
Technology
Action Item: Continued I-70 Coalition engagement with CDOT’s Office of Innovative Mobility in advancing use of technology in the corridor

Action Item: CE supports monitoring and encouragement of up-to-date tools for providing predictive traveler information

AGS

Action Item: Form AGS Subcommittee. Randy Wheelock to organize and provide invitation for 1st Subcommittee convene Subcommittee before next CE meeting.

Action Item: Identify champions for AGS and clarify the vision through educating elected officials, staff and businesses on what AGS is and how it can serve the corridor.

Action Item: AGS Subcommittee to provide Input to the CE Travel Demand and Capacity Subcommittee

Highway Work Plan Items

I-70 MOUNTAIN CORRIDOR REASSESSMENT

Step 5: Documentation of the 2020 Reassessment

December 2020

INTRODUCTION AND PURPOSE

On June 16, 2011, the Federal Highway Administration (FHWA) signed the Tier 1 Record of Decision (ROD) approving the Preferred Alternative for the I-70 Mountain Corridor Programmatic Environmental Impact Statement (PEIS), marking the end of nearly 20 years of studying and discussing improvements for the 144-mile I-70 Mountain Corridor from C-470 in the west Denver metropolitan area to Glenwood Springs. The Preferred Alternative consists of non-infrastructure components, an Advanced Guideway System (AGS) (transit), and a flexible program of highway improvements (referred to as Minimum and Maximum Programs) that adapt to future trends.

To reach agreement on the Preferred Alternative, FHWA and CDOT participated in the Collaborative Effort (CE), a consensus-building process with stakeholders to identify a Consensus Recommendation for improvements. The Preferred Alternative selected by the ROD adopted the Consensus Recommendation. The criteria below, outlined in the Consensus Recommendation and described in the ROD (Section D, Basis for the Selection of the Preferred Alternative), informed the CE's development of the recommendation and continue to inform effectiveness criteria:

- The solution should improve safety and mobility for all users.
- The solution should be responsive and adaptive to broader global trends that will affect the way we make travel decisions in the future.
- The solution will meet the Purpose and Need and all environmental and legal requirements.
- The solution should preserve, restore, and enhance community and cultural resources.
- The solution should preserve and restore or enhance ecosystem functions.
- The solution should be economically viable over the long term.

Additionally, the ROD provided an adaptive and incremental framework to implement the Preferred Alternative based on triggers where CDOT and the CE regularly review the current status of all projects and consider the triggers in evaluating the need for additional capacity improvements. As such, the ROD committed to reconvening the CE at least every two years to review progress on the implementation of the Preferred Alternative and to conduct a thorough review of the Preferred Alternative in 2020.

As explained in the ROD, "In 2020, regardless of the status of the triggers, there will be a thorough reassessment of the overall Purpose and Need and effectiveness of the implementation of components of the Preferred Alternative. At that time, the full range of improvements evaluated at Tier 1 may be reconsidered. In addition, the Collaborative Effort stakeholder committee (including the lead agencies) may reconsider the full range of improvements evaluated in the Final PEIS, or pursue a new process because the context in which this Tier 1 decision was made is so changed that none of the alternatives evaluated in

the Final PEIS meets future transportation needs. Global, regional, and local trends such as peak oil, climate change, technological advances, and changing demographics could affect these future transportation needs.”




REASSESSMENT WORK PLAN



For the 2020 Reassessment, the CE developed a Work Plan with CDOT and FHWA to conduct this comprehensive review and designated a Reassessment CE Subcommittee to advance the Work Plan and facilitate consensus agreement from the CE. The Work Plan (Attachment 1) outlines five steps to the Reassessment:

- **Step 1:** Reassess the Purpose and Need
- **Step 2:** Assess the effectiveness of the implementation of the Preferred Alternative
- **Step 3:** Clarify uncertainties of the components of the Preferred Alternative
- **Step 4:** Develop a list of potential future actions for continued pursuit of the Preferred Alternative
- **Step 5:** Develop a Reassessment Document

Through the course of the Reassessment, the CE and CE Subcommittee met 13 times from November 2019 through December 2020 in half-day and full-day workshops to progress through the Work Plan (Attachment 2). CDOT, with the support of the CE, retained HDR Engineering and Peak Consulting Group to provide technical support for Steps 1 and 2 of the Work Plan and to complete the documentation in Step 5. Steps 3 and 4 of the Work Plan were led by the CE and the CE contracted with an independent facilitator, CDR Associates, to enable the discussions and consensus on those steps.

Through this process, the CE affirmed the Preferred Alternative and the implementation processes and agreements committed to in the ROD. The CE identified and committed to additional work to implement the Preferred Alternative, improve transportation conditions, and continue the I-70 Mountain Corridor Context Sensitive Solutions (CSS) process and other agreements to protect and enhance the environment and community values along the corridor. Consensus was achieved for each of the steps in the Work Plan.

	Step 1	The CE concluded that the Purpose and Need under which the Preferred Alternative was developed remains valid.
	Step 2	The CE reviewed completed projects in the corridor and reached consensus that most of the implemented components had been effective (noting that some data were incomplete and not enough progress had been made in some areas to assess effectiveness).
	Step 3	Outstanding questions about the Preferred Alternative were identified and resolved.

	Step 4	The CE developed a work plan listing priority actions for continued implementation of the Preferred Alternative and identified subcommittees to champion those efforts.
	Step 5	Documentation of the effort is summarized in this report, and supplementary materials are appended to support future work of the CE in its Future Actions Step 4 Work Plan moving forward.

This document summarizes the conclusions and observations of each of the steps in the 2020 Reassessment effort. The following attachments support documentation of the Reassessment process and outline steps the CE will take for continued implementation of the Preferred Alternative:

- Attachment 1. Reassessment Work Plan
- Attachment 2. CE and CE Subcommittee Meeting Notes
- Attachment 3. Technical Narratives
- Attachment 4. Preferred Alternative Tracking Sheet
- Attachment 5. CE Future Actions Work Plan

WORK PLAN STEP 1: REASSESS THE PURPOSE AND NEED

The CE reached consensus that the context and the components of the Purpose and Need are still valid based on the current context. After thorough discussion of each of the components of context and Purpose and Need, the CE Subcommittee and CE concluded that:

- The context under which the Purpose and Need was developed remains relevant, recognizing that since the ROD, land use, recreation, and climate change pressures have intensified and technological advances in high-speed transit and operational management strategies are increasingly appropriate to serve person trip demand in the corridor.
- The Purpose and Need remains valid. It identifies persistent transportation needs to increase person-trip capacity, improve mobility and accessibility for people and freight, and reduce congestion and travel delays through the I-70 Mountain Corridor. The Purpose and Need also recognizes the need for transportation solutions in the corridor to provide for and accommodate environmental sensitivity and respect for community values.

The attached technical narratives provide additional data supporting the purpose and need evaluation (Attachment 3). Additional observations related to both the context and Purpose and Need are documented below.

Observations on Context

The Preferred Alternative was developed with a 50-year vision that remains valid and generally captures the current context influencing the Purpose and Need. Several conditions identified in the PEIS have intensified.

LAND USE AND RECREATIONAL PRESSURES

The challenge of balancing access to and conservation of recreational resources has intensified. Overuse of resources is becoming a more significant issue for protecting the environment and quality of recreational experiences. Additionally, the outdoor recreation economy shapes the Mountain Corridor and continues to put significant pressure on the need for affordable housing for workers supporting the industry.

HIGH-SPEED TRANSIT TECHNOLOGY

High-speed transit technology is evolving rapidly, and most members feel strongly that its application and feasibility for the Mountain Corridor is strengthened by these advances. The increasing common deployment of high-speed technology in operating systems around the world, particularly for areas with similar mountainous terrain, such as the Swiss Alps, is also a positive trend for AGS. Technological advances do improve cost effectiveness, but some members noted that high-speed transit remains expensive to build and requires a stable, ongoing funding source to operate.

CLIMATE CHANGE

The issue of climate change and its threat was documented in 2011 and considered in the context of the PEIS Purpose and Need. However, since the PEIS and ROD, cultural awareness of climate change has increased, and the need for more aggressive solutions to address it is more broadly understood. The CE acknowledges that the concern about climate change is not reflected in current federal government policies, but notes its membership agrees that climate change needed to be documented as a significant issue affecting the current context for the Mountain Corridor.

Observations on Components of the Purpose and Need

The three interrelated needs describing the transportation problems in the Mountain Corridor remain valid, and the PEIS language describing those needs, particularly in relation to the focus on person trips rather than vehicle trips to describe transportation needs, is important and supported. The following observations for each of the components are noted below.

INCREASE CAPACITY

The evaluation of capacity in terms of person trips rather than vehicle trips, as described in the PEIS Purpose and Need, is an important distinction. In the context of person trips, the CE agrees that additional capacity is needed. The issue of suppressed trips and induced demand (that increased capacity is filled up by latent demand) remains a concern, and a multimodal approach “beyond pavement” continues to be needed. The capacity for vehicles in terms of person trips also applies to freight, where capacity should be represented in efficiency/effectiveness of payload delivery, without presuming mode or method. Finally, the CE observed that transit demand in the I-70 Mountain Corridor is underrepresented because 1) comprehensive transit service is not available; 2) data regarding transit use are incomplete; for instance, private transit operators, which provide a significant portion of existing transit service, particularly to/from DEN, do not release ridership data; and 3) transit demand

exceeds capacity, as evidenced by crowded transit vehicles that are often over-capacity on mainline I-70 and in local communities/recreational areas.

IMPROVE MOBILITY AND ACCESSIBILITY

The CE agreed mobility continues to be a core transportation need in the Mountain Corridor and noted that mobility should be emphasized as the primary need because it drives the need for increased capacity. The CE reiterated the need to discuss mobility in terms of people not vehicles and noted that other factors beyond capacity affect mobility, such as affordable housing and longer commute times, and the spreading of delays from weekends to weekdays. Finally, the issues with risk and resiliency and how natural disasters - fires, floods, landslides - affect reliability / availability of the highway for all travelers and particularly for corridor communities are important considerations for developing projects.

DECREASE CONGESTION

The CE agrees that congestion inhibits travel in the Mountain Corridor and notes that existing transit service is also affected by congestion, both in terms of inadequate system capacity as well as shared use of the congested highway for services.

ENVIRONMENTAL SENSITIVITY AND COMMUNITY VALUES

In addition to transportation needs, the PEIS Purpose and Need provides additional considerations in developing alternatives and states:

“Alternatives must meet the transportation needs and be developed in a manner that provides for and accommodates the following:

Environmental Sensitivity - Avoid and minimize adverse impacts on and, where possible, enhance environmental resources, including, but not limited to, stream sedimentation, water quality, wildlife crossings, and impacts on wetlands.

Respect for Community Values - Avoid and minimize adverse impacts on and, where possible, enhance air quality, historic resources, noise levels, visual resources, and social and economic values, as well as minimize the transportation system’s footprint on the mountain communities. Consider the possible growth changes and economic effects that might occur, depending on the ease or difficulty of access.

Safety - Improve where possible problematic roadway geometric conditions, such as tight curves and lane drops, and consider the safety characteristics of the modes of travel. Undesirable safety conditions along the Corridor directly affect the project need, specifically the mobility, accessibility, and congestion elements.

Ability to Implement - Consider technical feasibility (that is, overall use of a mode and the feasibility of the technology), as well as affordability of alternatives in terms of capital costs, maintenance and operational costs, user costs, and environmental mitigation costs. Understanding the construction

impacts on existing mobility and to the communities along the Corridor is important to evaluating implementation of alternatives.”

The need to measure and document the effectiveness of the Preferred Alternative implementation in providing for and accommodating environmental sensitivity and respect for community values is important and was a topic of much discussion throughout the review of Steps 1 and 2. The ROD requires Tier 2 processes and agreements, including the CSS process, Stream and Wetland Ecological Enhancement Program (SWEEP) Memorandum of Understanding (MOU), A Landscape Level Inventory of Valued Ecosystem Components (ALIVE) MOU, and Section 106 Programmatic Agreement be followed. The importance of these processes and agreements in meeting the Purpose and Need requirements for projects in the corridor was affirmed in Step 1 and assessed in Step 2.

WORK PLAN STEP 2: EFFECTIVENESS OF THE PREFERRED ALTERNATIVE IMPLEMENTATION

The CE affirmed all of the major components of the Preferred Alternative - non-infrastructure improvements, AGS, and highway improvements - remain relevant and are important and intertwined. The CE agreed all are needed to effectively address the transportation problems in the corridor.

The consultant team developed a tracking sheet showing each of the components of the Preferred Alternative Minimum Program of Improvements, as presented in the PEIS and ROD (Attachment 4).¹ For each component, the team reviewed and summarized the status of improvements (what had been accomplished); the evaluation was supported by technical narratives (Attachment 3). For components where improvements had been implemented, the consultant provided observations about the mobility and safety effectiveness of the completed or work-in-progress projects associated with each component based on project goals (needs addressed), research and review of “before and after” data, and judgements from Colorado State Patrol, CDOT maintenance, and corridor stakeholders, as applicable. Effectiveness for many of the components of the Preferred Alternative was characterized as “unknown” or “incomplete” because either no progress has been made toward implementation or data were not available to measure effectiveness. Where data were available, a ranking of High, Medium, or Low effectiveness was assigned. The observations and ratings were discussed with and endorsed by the CE and set the stage for the CE evaluation in Step 4 of the Work Plan regarding the actions needed to advance the Preferred Alternative.

The CE generally concluded that implemented improvements have been moderately effective in addressing the corridor Purpose and Need. However, not enough progress had been made toward advancing the Preferred Alternative, especially with regard to the AGS component, and the lack of progress on the AGS component complicated the assessment of AGS’s effect on needs and other components. While funding is a challenge, more tangible action is

¹ The Maximum Program of Improvements was not evaluated because the triggers have not been met.

needed. Much of the “low hanging fruit” has been picked, and there have been no “game changers” to address major mobility and safety challenges in the corridor.

The CE also noted thorough support for the framework that the ROD establishes for considering and evaluating environmental sensitivity and community values in the needs; the adaptive management approach to implementation of projects, which provides flexibility and allows for innovative ideas and new technologies to be advanced; and the CSS process. The CE noted that the CSS process is especially effective when it is carried through all the life cycles of project development.

Additional observations on how effectiveness is measured and discussion of effectiveness of the non-infrastructure, AGS, and highway components are included below.

Observations on Measuring/Assessing Effectiveness

Effectiveness was characterized broadly in terms of mobility and safety. Several CE Subcommittee members suggested additional measures, such as reliability. Rather than change the categories, the group agreed the disposition status of each component should be categorized for future effort needed: initiate effort, continue existing level of effort, increase effort, or deemphasize effort.

Providing for and accommodating environmental sensitivity and respect for community values is integral to the effectiveness of projects in the Mountain Corridor, and the CSS process, SWEEP MOU, ALIVE MOU, and Section 106 PA are commitments for every Tier 2 project. These values will be measured by reviewing Tier 2 project implementation and documenting lessons learned and process improvements that have occurred since the PEIS and ROD.

Observations on the Effectiveness of the Implementation of Preferred Alternative Components

The Preferred Alternative tracking sheet captures the conclusions of the CE review of the effectiveness of the Preferred Alternative implementation. The CE recorded additional overarching observations related to the main components of the non-infrastructure, AGS, and highway improvements as noted below.

NON-INFRASTRUCTURE RELATED COMPONENTS

Although observations can be made generally, measuring progress for the non-infrastructure components, either qualitatively or quantitatively, is difficult because these actions are not intended to be completed but expected to evolve over time. Usage and effectiveness data are difficult to obtain. Additionally, many of these components are actions that are taken by others (for example, the I-70 Coalition).

The implemented non-infrastructure components were found to be effective in addressing some issues on the corridor but have low effectiveness at addressing core corridor needs on their own. The lower effectiveness of the non-infrastructure components is expected because this category of improvements is not intended to create long-term solutions independently but rather complement AGS and highway improvements in the Preferred Alternative.

The Peak Period Shoulder Lane (PPSL) projects have had a bigger impact because they are broader in scope even though they are interim and stayed mostly within the existing interstate footprint.

ADVANCED GUIDEWAY SYSTEM (AGS)

The feasibility study for AGS has been completed, but little progress has been made to advance the AGS concept, and no progress has been made to advance a functioning system that could trigger evaluation of the Maximum Program. The lack of progress on the AGS is a concern because it is considered a game changer for improving mobility in the corridor but also very costly and could prevent additional, more affordable improvements from moving forward.

The AGS study conclusion that the AGS was not financially feasible “at the time” (e.g., 2014), is dated, and the financial feasibility may be greater now with improvements in technology, greater use of public-private partnerships, and greater political will.

The CE agreed that additional work is needed to assess both technological and financial feasibility of AGS. How to advance AGS was a significant focus of the Step 4 actions developed by the CE.

HIGHWAY IMPROVEMENTS

The CE felt the highway improvements were generally more effective because more effort and funding had been directed to this component of the Preferred Alternative. The CE made several observations about the highway improvements:

- Six-lane capacity is intentionally distinct from a six-lane highway template. (Note: this comment applies to the Maximum Program, which is not triggered at this time.) If the six-lane capacity of the Maximum Program becomes a six-lane highway solution, a redesign of the existing roadway between the Veterans Memorial Tunnels and Eisenhower-Johnson Memorial Tunnels is anticipated, and previous visioning exercises conducted by Clear Creek County and Idaho Springs (in 2014 and 2016) should be honored. (See <https://www.clearcreekcounty.us/684/Interstate-70-Visioning-Plan> for the visioning documents.) The CE also noted that the agreement for the PPSLs as non-infrastructure improvements mean they may not be used for expansion into, nor as a component of, the Maximum Program’s six-lane highway
- Interchange improvements that have not been implemented should be classified as “unknown” in terms of effectiveness.
- Highway projects, particularly large-scale ones like Floyd Hill and West Vail Pass, need to take a deeper look into “not precluding” AGS. Several members noted that the evaluations have been superficial due to the lack of AGS expertise on Project Leadership Teams and Technical Teams.

EFFECTIVENESS OF CSS AND AGREEMENTS

The CE highly supports the CSS process and the significant time that stakeholders have devoted to developing and implementing the Preferred Alternative in a manner that honors the CSS process.

They noted variability in the application of CSS; some projects more effectively used the CSS process and other agreements. The most effective projects in providing for and accommodating environmental sensitivity and respect for community values were those that carried CSS through all the life cycles, included tracking of environmental and community values through those phases, and incorporated best practices and lessons learned from previous projects.

CLARIFICATIONS TO THE PREFERRED ALTERNATIVE: STEP 3

Through developing the Work Plan and discussing the Preferred Alternative during Steps 1 and 2 of the Work Plan, five aspects of the ROD and Preferred Alternative were identified by the CE for further discussion or clarification: the status of the Eisenhower-Johnson Memorial Tunnels (EJMT) Third Bore, the I-70/US 40 Empire Junction Interchange scope of improvements, the 2025 Triggers, the definition of AGS, and the definition of the Maximum Program highway improvements component. In all cases, the discussions concluded that no changes to the ROD or Preferred Alternative were needed.

EJMT Third Bore

The CE wanted to clarify whether the EJMT third bore is part of the Minimum or Maximum Program of Improvements because the PEIS does not specifically classify the EJMT third bore in either program or as a separate improvement project. After discussion, the CE concluded that the EJMT expansion should be classified in the Minimum Program. This conclusion was based on the relationship of the EJMT improvements to other parts of the Preferred Alternative that are clearly outlined in the Minimum Program, such as the Vail Pass auxiliary lanes and the AGS bore through the Continental Divide. Further, expanding the EJMT would not trigger the Maximum Program and classifying the EJMT expansion in the Minimum Program provides more flexibility to advance this discrete but complex action, such as if tolling could fund its expansion.

I-70/US 40 Empire Junction Interchange

The CE wanted to clarify the scope of improvements for Empire Junction as a “specific highway improvement” in the Minimum Program. Clear Creek County understands that the intent of the interchange reconstruction is to support short-term safety and mobility in the interchange area, but not reconstruction that supports the Maximum Program. This clarification is important because the design of the Maximum Program highway improvements is unknown and, therefore, how the interchange would interact with Maximum Program improvements cannot be determined. The group agreed that the specific highway improvement for Empire Junction is intended to meet immediate safety and mobility needs and is separate from the Maximum Program. This conclusion is consistent with the PEIS

description of specific highway improvements and that they "...are not subject to the parameters established for future capacity components..."

2025 Triggers

The CE wanted to clarify the intent of the following language for the second trigger related to AGS (bolded below for emphasis):

"The specific highway improvements are complete and Advanced Guideway System studies that answer questions regarding the feasibility, cost, ridership, governance, and land use are complete and indicate that an **Advanced Guideway System cannot be funded or implemented by 2025 or is otherwise deemed unfeasible to implement...**"

The group discussed the meaning of "funded" and "implemented" and whether this presented a deadline for AGS. The CE remains committed to getting the AGS built and that in that spirit, the commitment should not expire in 2025. FHWA clarified that the 2025 trigger was not intended to be a trigger to eliminate AGS and that a lot of specific highway improvements are also outstanding, so it is very unlikely that the Maximum Program could be triggered regardless of whether AGS is funded or implemented.

CE members that participated in the Consensus Recommendation suggested that the 2025 language may have been included to ensure that AGS remained a central component of the Preferred Alternative and not get relegated to a back burner to highway improvements.

The group concluded that no changes are needed to the language and agreed that 2025 is not a deadline for AGS.

AGS Definition

The definition of AGS in the ROD, especially related to technology, was raised for potential clarification by some CE members that felt the definition was too loose or vague to accurately describe the intent of the AGS component of the Preferred Alternative. After discussion, the group agreed that the definition in the ROD ("The specific technology for the Advanced Guideway System has not been defined but is intended to represent a modern, "state-of-the-art" transit system") captures the intention that the AGS be a modern, state of the art transit system that left open the possibility to take advantage of what is "state-of-the-art" at the time it is implemented. The undefined technology provides flexibility to adopt the newest technology, which was the intent of the AGS definition. In the past decade since the ROD, the open technology language had not restricted any discussions to date and no changes to the definition were recommended.

A related issue was raised regarding the AGS design. The AGS design is kept "wide open" as other large roadway projects move forward. The CE discussed whether more analysis of AGS conflicts beyond an overlay of the alignments was needed to answer the question of whether AGS would be precluded. Even if projects did not rise to the level of precluding the AGS, would significant reconstruction or cost be encountered when AGS was implemented? Did Project Leadership Teams have sufficient expertise to answer questions about how AGS would fit in with highway improvements? The group agreed this was an important topic that should be discussed further in Step 4.

Maximum Program of Improvements

Several clarifications were discussed regarding six-lane capacity in the Maximum Program (i.e., between Veterans Memorial Tunnels and EJMT). Two of the issues were directly addressed by the PEIS. First, the PEIS was intentional in the discussion of six-lane capacity, not lanes. This means people, not cars, and six-lane capacity is not the same as a six-lane highway section. Second, the “general alignment” of improvements along the existing I-70 highway could include - and Idaho Springs and Clear Creek County have conducted visioning exercises to recommend - moving the highway outside of its current footprint. Finally, the PPSL projects, while not envisioned in the PEIS, are non-infrastructure improvements that are separate from and cannot be considered as part of the six-lane capacity in the Maximum Program. This is clarified in the operating agreement for the Mountain Express Lanes (aka, PPSLs).

ACTION PLAN: STEP 4

The CE developed the Future Actions Step 4 Work Plan during two workshops held on September 30, 2020 and November 18, 2020 (Attachment 5). The plan (attached) identifies 25 actions under the following categories:

- Travel Demand and Capacity
- CSS Process
- Environmental Impacts and Mitigation
- Outreach and Communication
- Non-AGS Transit Improvements
- Travel Demand Management
- Corridor Management
- Technology
- AGS

Four subcommittees were recommended to champion the Future Actions Step 4 Work Plan and CE members volunteered to serve on these committees. The subcommittees will organize and seek support to begin work in 2021. The subcommittees will report progress at future CE meetings.

CONCLUSION

The Reassessment process confirmed the CE’s commitment to the ROD Preferred Alternative as the right solution for the Corridor and renewed its pledge to working collaboratively with CDOT and FHWA, particularly to advance AGS and non-infrastructure transit elements. The Consensus Recommendation developed by the CE and adopted as the ROD Preferred Alternative has stood the test of time. Its multimodal solution and unique implementation approach provide flexibility to adapt to changing conditions, harness innovative technologies, develop sustainable strategies, and respect the magnificent environment and communities along its route. The CSS process, corridor MOUs, agreements, and mitigation strategies provide a successful framework for developing Tier 2 projects and thinking creatively.

The CE has created a Future Actions Step 4 Work Plan to guide its activities through focused subcommittees. The CE Co-Chairs are working with CDOT and FHWA leadership to support the Work Plan and the recommendations that will come out of the subcommittees.

I-70 MOUNTAIN CORRIDOR REASSESSMENT
Step 5: Documentation of the 2020 Reassessment

ATTACHMENT 3
Technical Narratives

Supporting Narrative

Step 1A: Evaluation of Context

Step 1B Evaluate Current Components of Purpose and Need

**Step 2 Assess Effectiveness of Implementation of Preferred
Alternative Components**

I-70 MOUNTAIN CORRIDOR REASSESSMENT NARRATIVE

Step 1A Evaluation of Context

July 6, 2020

WORK PLAN STEP 1A EVALUATION OF CONTEXT

From the Collaborative Effort Record of Decision 2020 Reassessment Work Plan, Step 1 is to Reassess the Purpose and Need. Step 1A is described as follows:

Step 1A: Evaluation of context. Determine if the context in which the Purpose and Need statements were developed have changed. Information that may be needed to evaluate the context includes:

1. Population
2. Land use and land use pressures (including demand)
3. Technology
4. Climate change
5. Others

POPULATION

Methodology

Current forecasts of population are compared to the population forecast used during development of the 2011 I-70 Mountain Corridor Programmatic Environmental Impact Statement (PEIS). The 2011 PEIS included socioeconomic forecasts of population and employment. The base year was 2000 and the original 2025 forecasts were extended to the horizon year of 2035. The forecasts are a primary input to the travel demand model, which produces forecasts of vehicular highway volumes and future transit ridership.

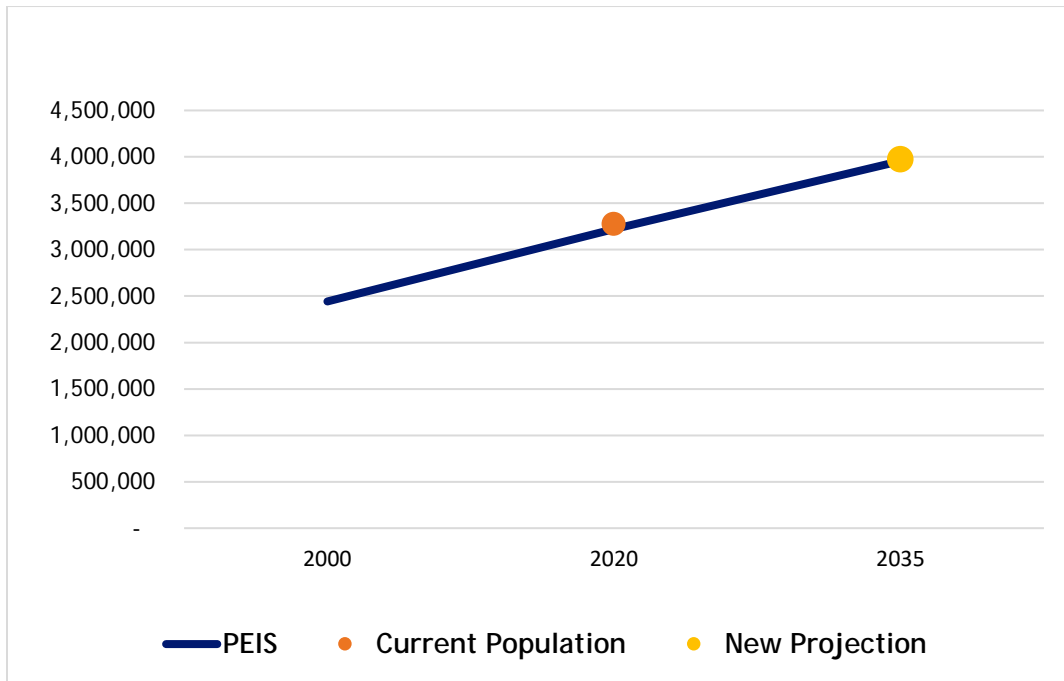
Updated socioeconomic forecasts are available from the statewide travel demand model, *StateFocus*. The model, recently developed by CDOT, has a base year of 2015 and a horizon year of 2045.

The primary source for the forecasts, both in 2011 as well as today, is the Colorado State Demography Office in the Colorado Department of Local Affairs (DOLA).

The current forecasts are compared to the prior population forecast. For a consistent basis of comparison, the forecasts are compared for the year 2035. Current year 2020 estimates of population and employment are presented in Figure 1 through Figure 4. The socioeconomic data are shown for the both the Front Range metro area, where the vast majority of recreation trips are generated, and for the corridor area.

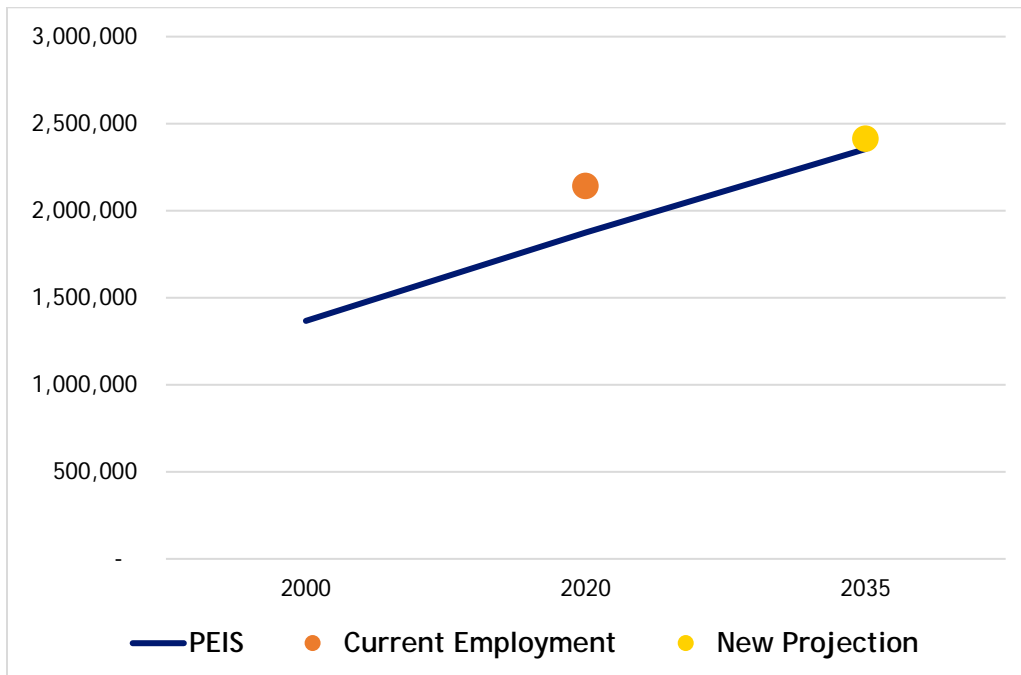
Summary of Findings

Figure 1. Denver Metropolitan Area Population



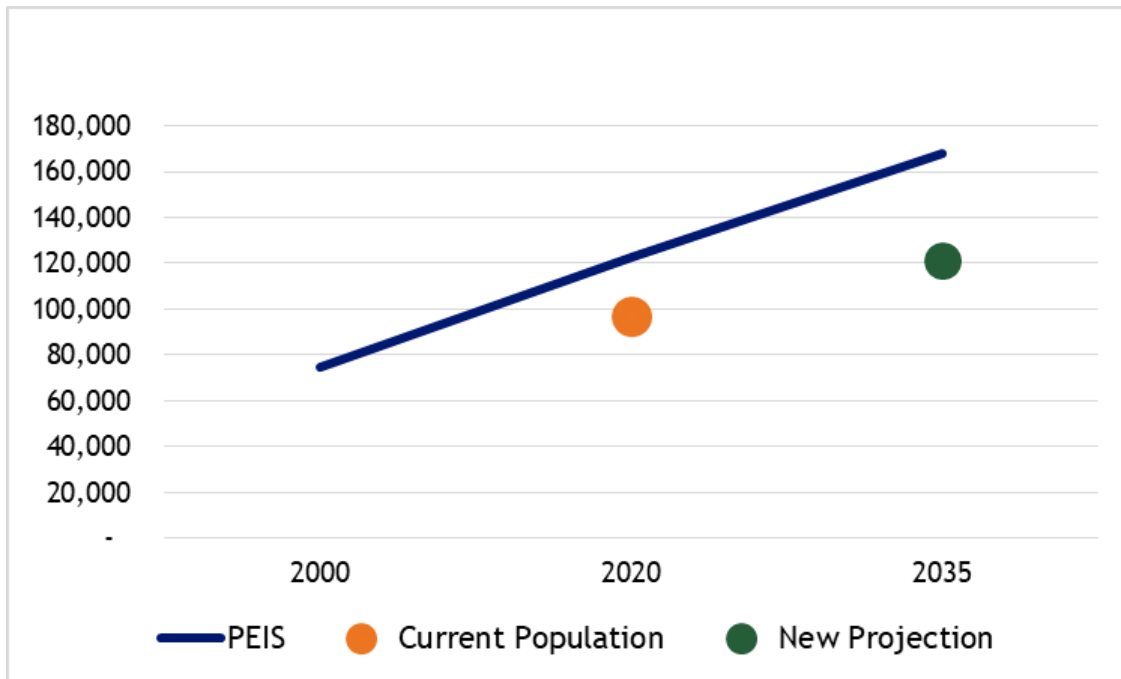
Source: I-70 Mountain Corridor PEIS 2011, 2020 DOLA, and 2035 CDOT Statewide model.
Area: Counties of Adams, Arapahoe, Boulder, Broomfield, Denver, Douglas, Jefferson

Figure 2. Denver Metropolitan Area Employment



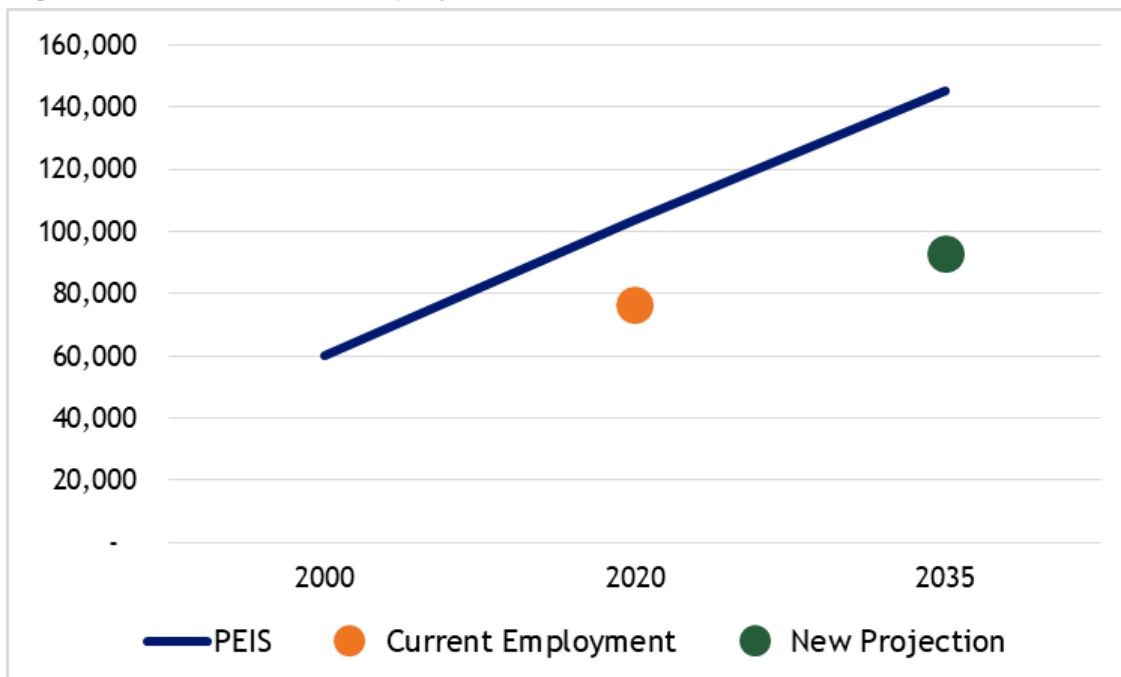
Source: I-70 Mountain Corridor PEIS 2011, 2020 DOLA, and 2035 CDOT Statewide model.
Area: Counties of Adams, Arapahoe, Boulder, Broomfield, Denver, Douglas, Jefferson

Figure 3. Corridor Area Population



Source: I-70 Mountain Corridor PEIS 2011, 2020 DOLA, and 2035 CDOT Statewide model.
Area: Counties of Clear Creek, Summit, Eagle

Figure 4. Corridor Area Employment



Source: I-70 Mountain Corridor PEIS 2011, 2020 DOLA, and 2035 CDOT Statewide model.
Area: Counties of Clear Creek, Summit, Eagle

Summary of Findings

In the Denver metropolitan area, the 2011 PEIS 2035 forecasts for both population and employment are very close to the current forecasts for that horizon year. The current estimate of population 2020 is on track with the 2035 projection for the Denver metropolitan area. Current employment in 2020 is slightly higher than the interpolated forecast, perhaps partially because of the unusually low level of unemployment that occurred in early 2020.

In contrast, the 2011 PEIS forecasts for population and employment are notably higher than the current forecasts for the corridor counties of Clear Creek, Summit, and Eagle. This is corroborated by the current estimates for population and employment in those counties in 2020, which are less than the line of forecast. The change in forecast for development in the mountain counties by DOLA could be because of a variety of reasons, including slower observed rates of growth, less interest in the communities for continuing high rates of growth, or other.

LAND USE AND LAND USE PRESSURES

Introduction

The 2011 PEIS recognized the relationship between transportation and predicted changes in land uses in the corridor, depending on the types of transportation alternatives implemented. Highway improvements were expected to distribute growth based on existing trends of dispersed growth in rural areas, while transit alternatives were expected to concentrate growth in populated areas (around stations). The Preferred Alternative, as a mix of both highway and transit improvements, was expected to balance the growth and put pressures both on urban and rural areas to manage growth. For recreation-based land uses, the 2011 PEIS noted that recreational land uses in the I-70 Mountain Corridor heavily influence economic development and travel demand trends. Recreation and tourism account for a higher percentage of jobs along the corridor compared to the rest of the state, and the I-70 Mountain Corridor contains hundreds of recreational destinations. The 2011 PEIS projected that transportation improvements associated with the Preferred Alternative would induce more recreational travel to the I-70 Mountain Corridor as suppressed trips were induced because of improved access and travel conditions.

Methodology

An updated review of land use, recreational activities, and recreational trip indicators used by the travel demand model were assembled through Internet research, as well as review of some research papers and public informational documents.

Summary of Findings

Colorado saw a doubling of economic revenue since 2012 (SCORP, 2019). The outdoor recreation economy in Colorado in 2020 accounts for:

- 229,000 direct jobs
- \$28.0 billion in consumer spending

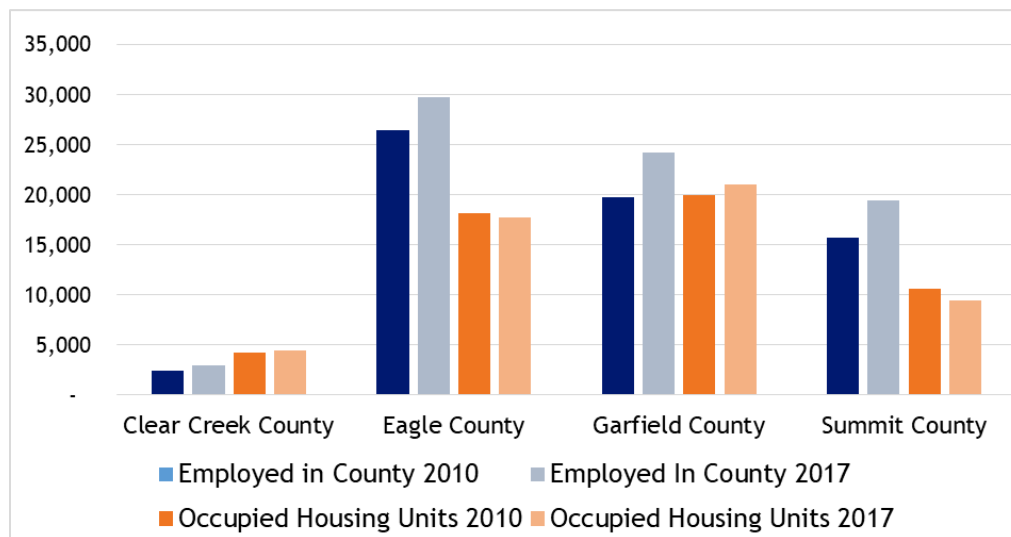
- \$9.7 billion in wages and salaries
- \$2 billion in state and local tax revenue¹

Colorado Parks and Wildlife (CPW) recognizes that the increase this revenue brings puts pressure on recreation sites and activities. Because increased pressure on recreational resources, CPW has several strategies and objectives to balance recreation opportunities and stewardship for future generations:

1. **Sustainable Access and Opportunity.** This includes using technology to disperse people to recreation areas that can accommodate them as well as providing off-peak use incentives.
2. **Coloradans and visitors enjoy and care for natural and cultural resources and commit to stewarding them for future generations.** Recently, the CPW put into place a permitting system for Hanging Lake recreation because of overuse in the area.
3. **Land, Water, and Wildlife Conservation Goals.** This includes an ever-evolving use of land management and mitigation strategies, including funding partnerships for forest management, as well as support for sustainable outdoor recreation.

2010 and 2017 census data were analyzed to determine recent housing and employment trends in Clear Creek, Summit, Eagle, and Garfield counties. As Figure 5 shows, there was growth in the number of employed in each county between 2010 and 2017 but minimal growth (or even small decreases) in the number of occupied housing units.

Figure 5. Comparison of Housing and Employment between 2010 and 2017

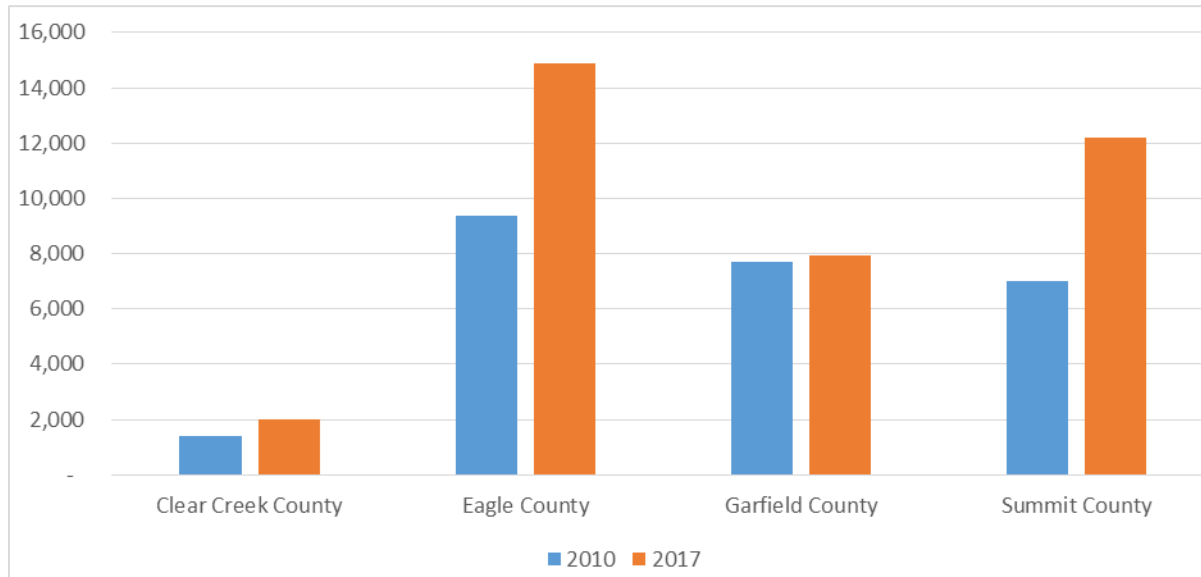


Source: U.S. Census, American Community Survey, 5-Year Estimates, 2010 and 2017 and Longitudinal Employer–Household Dynamics (LEHD) On the Map 2010 and 2017.

¹ Existing year data downloaded April 2020 <https://outdoorindustry.org/state/colorado/>

Figure 6 presents the number of workers who work in each county but reside in other counties. Figure 6 shows more workers are commuting into Eagle and Summit counties in 2010 compared to 2017.

Figure 6. Comparison of Number of Workers Living Outside County of Employment



Source: U.S. Census, Longitudinal Employer–Household Dynamics (LEHD) On the Map 2010 and 2017.

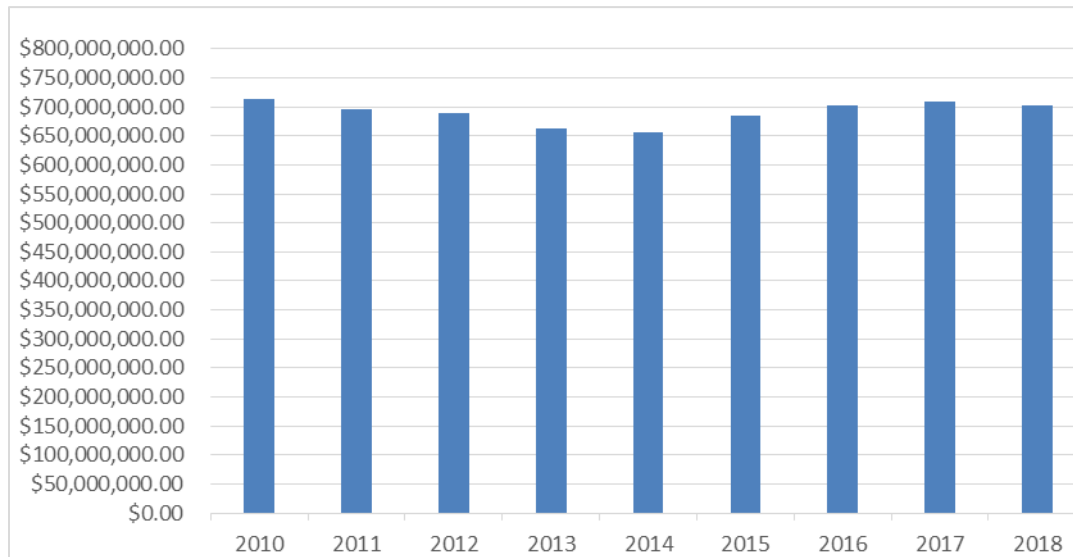
RECREATIONAL TRIP INDICATORS

Recreational trips make up a large portion of the peak period travel that occurs in the corridor. The travel demand model accounts for recreational travel by enumerating indicators for several recreational trip types. Readily available information was gathered to update these statistics for the current year.

Gaming devices

The model uses the estimated number of gaming devices to generate recreational gaming trips. Data from the Colorado Department of Revenue was summarized for casinos in Black Hawk and Central City from 2010 to 2018 (Figure 7). The adjusted gross proceeds (AGP) data revealed that this indicator has fluctuated but remained consistent between \$600 million and \$700 million. AGP is the total amount of all wagers made by players less all payments to players.

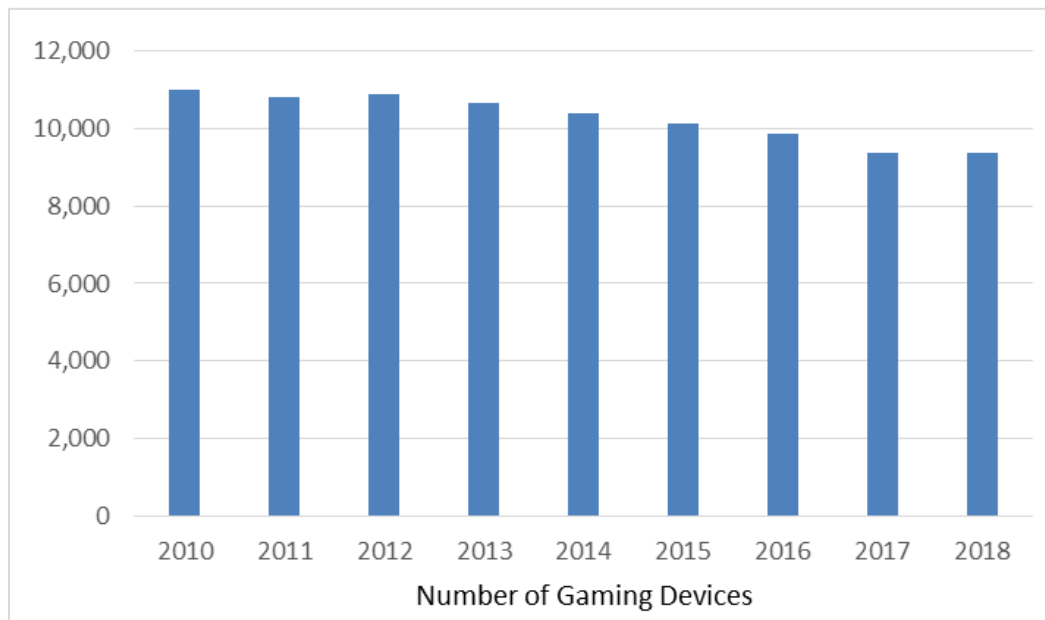
Figure 7. AGP for Black Hawk and Central City adjusted for 2018 Dollars



Source: Colorado Department of Revenue, Statistical Summaries, <https://www.colorado.gov/pacific/enforcement/industry-statistics-gaming>, accessed February 20, 2020

The number of gaming devices has declined slightly from 2010 to present (Figure 8).

Figure 8. Number of Gaming Devices at Casinos in Black Hawk and Central City by Year



Source: Colorado Department of Revenue, Statistical Summaries, <https://www.colorado.gov/pacific/enforcement/industry-statistics-gaming>, accessed February 20, 2020

Hotel Beds

The model uses the estimated number of hotel beds to generate some of the visitor recreational trips. A comprehensive list of hotels in Colorado was collected, including the number of rooms

and the hotel date of opening from the Colorado Hotel and Lodging Association (A. Mayhew, personal communication, January 30, 2020). Industry standards were used to convert rooms to the number of beds (deRoos, 2011). Overall, for the four counties along I-70 (Clear Creek, Summit, Eagle, Garfield), there was an increase of 1,400 hotel beds between 2010 and 2020, which is a 7 percent increase.

Second Homes

The model uses the estimated number of second homes to generate some of the visitor recreational trips. There were an estimated 67,000 second homes in 2000, growing to an estimated 125,000 in 2035 in the model area. These are estimated by extrapolating from data developed for the original PEIS travel demand model.

A recent phenomenon is vacation homes available to rent online. In the model, trips to these home rentals are covered by the second homes. For a general reference, in March 2020 a search was conducted of vacation home rentals available through the websites Airbnb.com and VRBO.com. The results for VRBO include all available properties, and the Airbnb results include a snapshot in time, properties available to book between August 21 and 24, 2020.

Table 1. Airbnb and VRBO Vacation Home Rentals in March 2020

County	VRBO—all properties	Airbnb—properties available to book August 21-24, 2020
Clear Creek County	3,036	190
Summit County	9,154	300+
Eagle County	5,682	300+
Garfield County	317	284

Camping sites

The model uses an estimated number of camping sites to generate some of the visitor recreational trips.

From a variety of state and federal sources, the number of public campgrounds in Clear Creek, Summit, Eagle, and Garfield counties is approximately 40, with around 1,000 campsites in 2020.² Data for prior years is not available.

Skier visits

The model uses an estimated number of skier visits to resorts to generate some of the visitor recreational trips. Skier visits to the overall Rocky Mountain Area (including Colorado, Utah,

² <https://www.recreation.gov/>.

United States Department of Agriculture, National Forest, Recreational Facilities Data:

<https://data.fs.usda.gov/geodata/edw/datasets.php?xmlKeyword=camp>

Bureau of Land Management, Colorado Recreation Data: <https://www.blm.gov/site-page/services-geospatial-gis-data-colorado>

US National Park Service, Campsites Data: <https://public-nps.opendata.arcgis.com/>

Colorado Parks and Wildlife, Campsites Data:

<http://www.arcgis.com/home/search.html?q=Colorado%20Parks%20and%20Wildlife&t=groups>

New Mexico, and Wyoming) totaled 18.1 million in 1999/2000, and 24.4 million in 2018/2019, based on data from the National Ski Areas Association.

TRANSPORTATION TECHNOLOGY

Introduction

Around the time the 2011 PEIS was written, groundbreaking research was occurring in the realm of new automobile and transit vehicle technology: Other technologies affecting mobility and travel behavior that have also evolved rapidly in the last decade include social media, transportation network companies, and smart phone applications for navigation and other travel information.

Methodology

A snapshot of the current state of new transportation technology was assembled largely through Internet research, as well as review of some research papers. A definition of terms of new transportation technologies is provided below:

- Automated vehicles have automated driver assistance features, up to and including driverless vehicles. Autonomous vehicles can be personal or fleet-owned automobiles, or small transit vehicles (HDR, 2019).
- Microtransit refers to public or private transit systems designed to serve relatively small number of persons (3 to 10) at the same time with dynamically dispatched or “ad-hoc” transit services. Microtransit typically is used for first and last mile applications near major transit stations or in campus like settings. (HDR, 2019).
- Connected vehicles are vehicles with the capacity to communicate with other vehicles and roadside infrastructure through interoperable networked wireless communications (HDR, 2019).
- Connected and autonomous vehicles are often together referred to as CAVS. Autonomous vehicles need not be connected vehicles, and connected vehicles need not be automated.
- Maglev trains are suspended and propelled by magnets, using magnetic levitation.³
- High-speed transit: 250 kilometers per hour or faster (155 miles per hour).⁴
- Transportation Network Companies refer to hired rides for personal trips that are accessed through a mobile application. Uber and Lyft are the dominant players in this market (HDR, 2019).

Summary of Findings—High Speed Transit Technology

Technology of high speed trains has continued to evolve over the past decade. This provides a brief overview of the current status of technology related to high speed transit.

³ <https://www.energy.gov/articles/how-maglev-works>

⁴ https://reason.org/wp-content/uploads/files/high_speed_rail_lessons.pdf

ADVANCED GUIDEWAY SYSTEM STUDY TRANSIT TECHNOLOGY VENDORS

In 2014 the Advanced Guideway System (AGS) Feasibility Study conducted by CDOT identified several transit vendors with viable technologies that could potentially serve the I-70 Mountain Corridor. These eight transit technology vendors were researched to ascertain their current status in 2020 regarding implemented projects and/or demonstration pilot projects. Table 2 contains the results of the research. Some of the vendors identified in the 2014 AGS report have conducted tests or pilot projects (CDOT, 2014).

Table 2. Status of Technology Vendors Identified in AGS Study

Provider Name	Provider Status	Technology Type	Technology Status
American Maglev	Open	Maglev	Maglev trains have been tested on full-scale test track in Georgia.
FlightRail	Open	Elevated high-speed rail system	Tested a 1/6 scale working prototype.
General Atomics	Open	Maglev	Tested a full scale working maglev system in California.
MagneMotion	Acquired by Rockwell Automation	Maglev	No updates on Rockwell Automation's website.
Owen Transit Group	Open	High speed rail	Patented new HSR technology.
PPRTC	Open	Public Personal Rapid Transit	Website mentions advocacy, not implementation.
skyTran	Open	Maglev	Began construction on second full-scale test platform and will soon launch first commercial pilot.
Swift Tram	Open	Small scale, automated guideway transit system	Completed conceptual designs.
Talgo	Open	High speed rail	Implemented several HSR projects worldwide, including Spain and Uzbekistan.
Transrapid	Possibly Closed	N/A	No website found.

Source: Online research (each provider's website), accessed February 2020.

MAGLEV

Many of the AGS technology vendors use maglev technology in one form or another.

The fastest train technology available—maglev trains—are advancing across the globe. Compared to traditional steel wheel technologies, maglev trains can travel at higher speeds and have reduced maintenance because they only touch the guideways briefly. Maglev vehicles are quiet and smooth because there is no metal-on-metal contact. In addition, this technology does not include an engine and the concrete guideways are largely unaffected by weather.⁵

⁵ <https://now.northropgrumman.com/maglev-technology-the-force-is-very-strong-with-this-one/>

There are also clear challenges. The cost of maglev technologies, evidenced by past, existing, and planned projects, is a barrier. For example, the Tokaido Shinkansen Bypass (expected to open in 2047) will cost \$83 billion to build.⁶

During the last decade, several maglev train lines have opened in other countries (Table 3). While not all are high-speed lines, the viability of maglev technology is clearly demonstrated by these implemented projects. China has unveiled a prototype of a new maglev train designed to reach speeds of up to 600 kilometers per hour or 370 miles per hour.

Table 3. Maglev Train Lines in Other Countries

Country	Train Line	Speed	Status
South Korea	Incheon Airport Maglev	68 mph	Opened 2016
China	Changsha Maglev Express	62 mph	Opened 2016
China	Beijing Metro Line	62 mph	Opened 2017
Japan	Chūō Shinkansen, Tokyo-Nagoya	314 mph	Construction began in 2014, expected to open in 2027
China	Qingyuan Maglev	75 mph	Under construction, opening in 2020
China	Fenghuang Ancient Town Maglev	62 mph	Construction began in 2019, expected opening 2021

Source: <https://www.maglev.net/all-existing-and-under-construction-maglev-lines>.

In the United States, maglev has also advanced since 2011. The three projects listed below were eligible for the \$24 million in Federal Railroad Administration Magnetic Levitation Deployment Grants Program (FY 2019).

➤ The Baltimore-Washington Maglev Project

- Currently in planning phase and the National Environmental Policy Act (NEPA) process is on hold; project completion set for 2028.
- First segment of the Northwest Rail Maglev Project which is planned to extend from Washington to New York City.⁷
- This project is the NEPA process and completed an alternatives report in 2018. NEPA is on hold to allow Northeast Maglev, the company proposing the train, time to provide more details on the project for regulatory agencies and the public.⁸

⁶ <https://www.railjournal.com/passenger/high-speed/jr-centrals-chuo-maglev-project-approved/> and <https://www.railway-technology.com/projects/chuo-shinkansen-maglev-line/>

⁷ <https://www.bwmaglev.info/>

⁸ <https://www.baltimoresun.com/news/investigations/bs-bz-maglev-paused-20191217-bpgouqhwwaze27fbqger67vamnq-story.html>

- Atlanta-Chattanooga high-speed-rail corridor
 - 2016 Study released with possible routes for maglev or steel wheel.
 - The NEPA process is underway and the Tier 1 Final EIS and Record of Decision have been released.⁹
- Pennsylvania High Speed Rail
 - The proposed Pennsylvania High-Speed Maglev project is an approximately 54-mile line connecting Pittsburgh International Airport, Downtown Pittsburgh, Monroeville, and Greensburg.
 - The Final EIS was completed in 2010. In 2011 the company running Pittsburgh's maglev went bankrupt. While this project was eligible for the Federal Railroad Administration Magnetic Levitation Deployment Grant in 2019, research did not find any indication that funds were sought or the project is still underway.¹⁰

HYPERLOOP

Hyperloop systems are a new advancement in high-speed transit. Hyperloop systems employ maglev vehicles that are accelerated in vacuum pipelines.¹¹ There currently are three prominent vendors in the Hyperloop market: Virgin Hyperloop One, TransPod, and Hyperloop Transportation Technologies. There are planned Hyperloop test tracks and studies in Saudi Arabia, India, Canada, France, Abu Dhabi, France, and China.¹²

In the United States, a short test track has been built near Las Vegas, Nevada.¹³ Missouri completed an I-70 feasibility study in October 2019.¹⁴ Also, \$5 million in initial funding was allocated for a route connecting Cleveland and Chicago in June 2019.¹⁵ In Colorado, a Hyperloop feasibility study was completed by engineering firm AECOM and CDOT. The I-70 Mountain Corridor was included as part of this study. However, Hyperloop is no longer being pursued by CDOT.

Summary of Findings—Vehicle Technology

AUTONOMOUS VEHICLES

Autonomous vehicle features are offered on many new models offered by automobile manufacturers. These include forward collision warnings, automated braking, blind spot

⁹ <http://www.dot.ga.gov/IS/Rail/AtlantatoChattanooga>

¹⁰ <https://www.pghcitypaper.com/pittsburgh/is-the-proposed-hyperloop-taking-the-focus-advancing-feasible-transit-solutions-in-pittsburgh/Content?oid=7281728>

¹¹ <https://builtin.com/transportation-tech/what-is-hyperloop>

¹² <https://www.nytimes.com/2019/02/18/technology/hyperloop-virgin-vacuum-tubes.html>

¹³ <https://www.theverge.com/2017/3/7/14840322/hyperloop-one-test-track-nevada-desert>

¹⁴ <https://hyperloop-one.com/black-veatch-announces-results-first-ever-feasibility-study-hyperloop-united-states-confirms-commercial-viability-virgin-hyperloop-one-technology>

¹⁵ <https://www.craigslist.com/government/initial-funding-cleveland-chicago-hyperloop-passes-house-moves-senate>

detection, lane keeping assistance, adaptive cruise control, and a myriad of other elements. These features greatly enhance safety.¹⁶

Fully functioning completely driverless vehicles are not yet driving the roads and streets. However, many pilot tests of fully driverless vehicles have occurred and are ongoing. These include tests by Tesla, as well as all the major automobile manufacturers. Transportation Network Companies also continue to conduct demonstration projects of driverless automobile vehicles.¹⁷

In Denver, the Regional Transportation District recently conducted a pilot of a driverless microtransit vehicle. This was staged at Peña Station NEXT on the A-Line Commuter Rail, which occurred for 6 months in 2019. Challenges of the project included disruptions in service because of snow on the road and other severe weather (shuttle was not equipped with temperature regulation). It was very quick to respond to obstacles, was very safe, and there were no accidents.¹⁸

CONNECTED VEHICLES

Vehicle manufacturers are moving towards producing 100 percent of cars with an embedded data modem.¹⁹ Development of communication protocols, and the type of wireless technology, is continuing. Roadside communication infrastructure is also advancing on most major roadways. Connected vehicle technology has the potential improve safety. Connected vehicles can avoid accidents by communicating with nearby vehicles and be informed of road conditions.²⁰

CDOT and Panasonic successfully installed and tested five roadside units and six vehicle onboard units, and established a Network Operations Center to manage the overall system during a pilot deployment in 2018²¹. Additional roadside units were installed along the I-70 Mountain Corridor from Golden to Vail. CDOT is currently operating and maintain the units along I-70, and testing backend software that will support CAV messaging, infrastructure, and traffic management centers.

UNCERTAINTIES

As with any new technologies, uncertainties exist. The potential of this vehicle technology to have an impact on congestion is uncertain. In theory, CAVs can travel with very short separation in time and space; therefore, greatly increasing the throughput of a roadway. However, traffic modeling has shown that very high CAV saturation levels are likely required before CAVs will reduce congestion (HDR, 2020). It is also possible that fully autonomous vehicles will induce people to take more trips, and therefore increase the congestion on roads. Other uncertainties include the rate of deployment of technologies, the technology's ability to overcome the

¹⁶ (<https://www.wired.com/brandlab/2016/03/a-brief-history-of-autonomous-vehicle-technology/>)

¹⁷ <https://www.wired.com/brandlab/2016/03/a-brief-history-of-autonomous-vehicle-technology/>

¹⁸ <https://www.rtd-denver.com/>

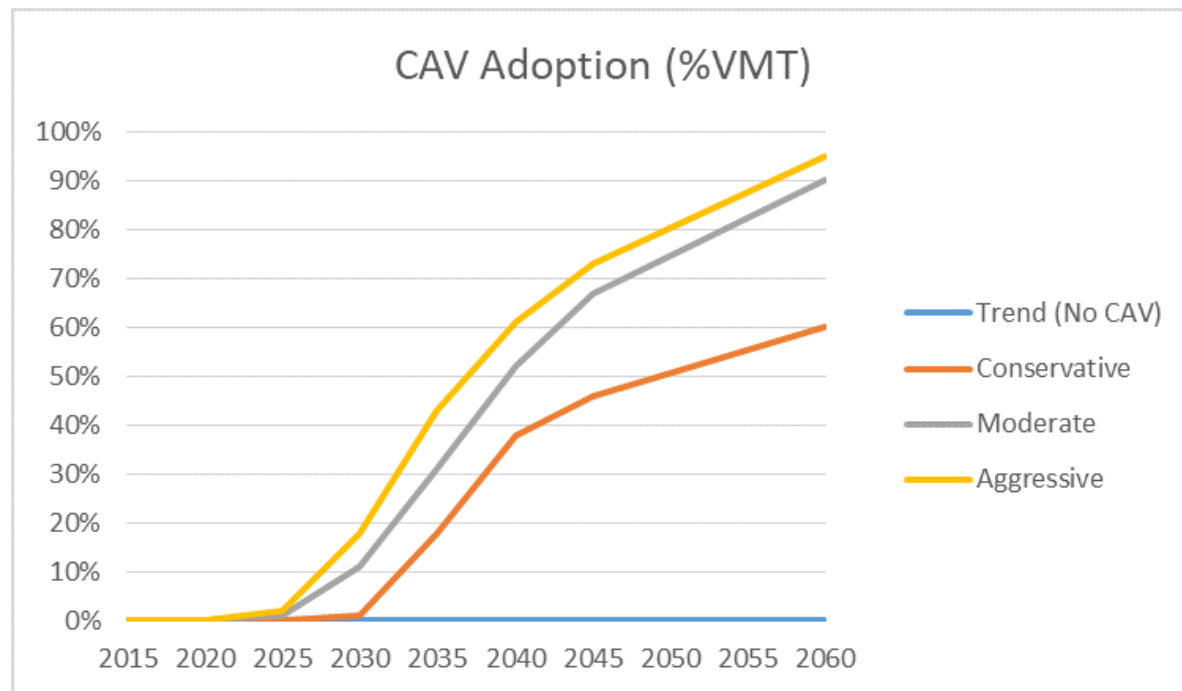
¹⁹ <https://www.aptiv.com/newsroom/article/top-three-trends-driving-the-future-of-connected-vehicles>

²⁰ <https://interestingengineering.com/connected-vehicles-in-smart-cities-the-future-of-transportation>

²¹ <https://www.codot.gov/news/2018/july/cdot-and-panasonic-take-first-steps-to-turn-i-70-into-connected-roadway>

challenge of weather, and the viability of fully autonomous vehicles. Figure 9 presents the range of potential CAV adoption scenarios in terms of their portion of vehicle miles traveled.

Figure 9. Potential Rates of Connected and Autonomous Vehicle Adoption in Terms of Vehicle Miles Traveled



Source HDR Advanced Mobility Team, 2019.

As Figure 9 shows, an adoption rate of 75 percent—the approximate rate where vehicle throughput will increase—is at year 2045 or beyond, even under the most aggressive scenario. The effect of vehicle technology on congestion in the I-70 Mountain Corridor is most likely decades out.

Further details and information on new technology of high speed transit, autonomous vehicles, and connected vehicles is contained in the draft technical paper *I-70 PEIS Reassessment 2020: Innovations and Advances in Technology* (HDR, 2020).

CLIMATE CHANGE

Introduction

Climate change was considered in the 2011 PEIS, and there was a level of awareness in 2011. Primarily cited in the 2011 PEIS was the Governor’s Climate Action Plan, adopted in 2007, which included measures to reduce vehicle carbon dioxide emissions standards and to reduce

vehicle travel through transit, flex time, telecommuting, ride-sharing, and broadband communications.²²

Awareness and concern over climate issues have grown in the past 9 years. There have been political advancements in the Governor's office and at CDOT with risk and resiliency regarding climate change that add to the context. The Colorado Energy Office has been active in addressing climate change as well with a study called the Greenhouse Gas Road Map.²³

Methodology

A review of relevant local, national, and worldwide research papers that have been published since the 2011 PIES was completed. These documents included:

- I-70 Corridor Risk and Resilience Pilot (CDOT, 2017).
- Polis Administration's: Roadmap to 100% Renewable Energy by 2040 and Bold Climate Action (Colorado Energy Office, 2019).
- The United Nation Intergovernmental Panel on Climate Change (IPCC), updated 2013 (IPCC, 2020).
- Transportation System Resilience, Extreme Weather and Climate Change (USDOT, 2015).
- National Climate Assessment (NCA, 2014).
- Paris Agreement (United Nations Climate Change, 2016).

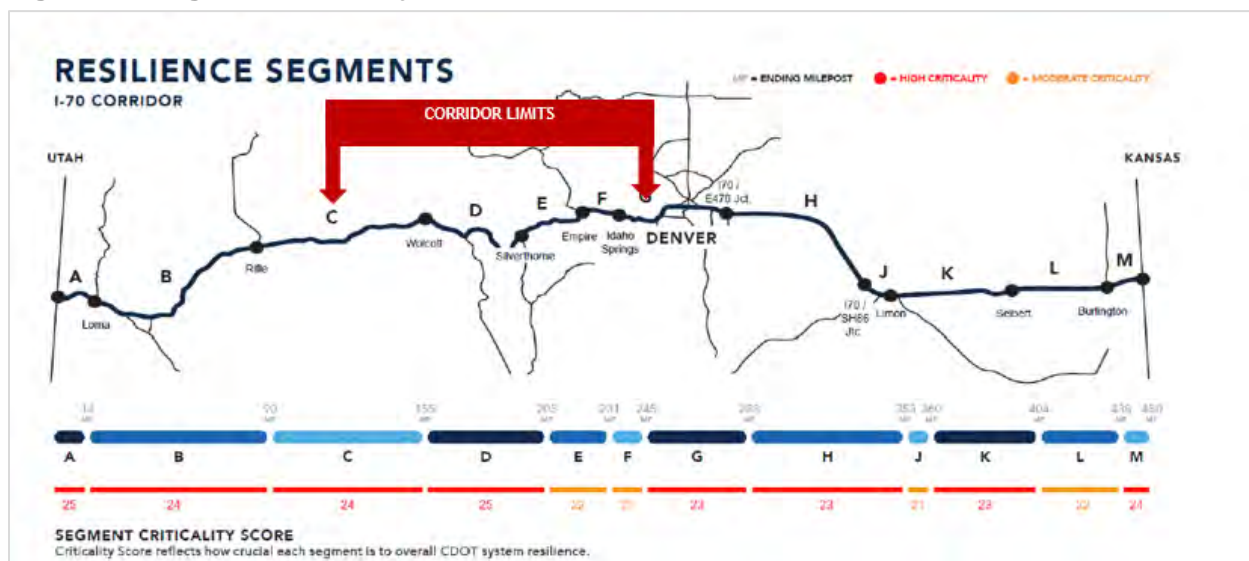
Summary of Findings

Colorado has seen an increase in severe weather events since the 2011 PEIS was completed. In 2013 Colorado experienced a historic flooding event across the state that had a significant impact on the transportation infrastructure, in some cases taking years to repair and replace. Based on an uptick in severe weather events and an increased awareness and scientific research surrounding climate change, a specific emphasis on building "climate resilient transportation infrastructure" has become a top priority for local decision-makers to ensure that the risk and resiliency of the statewide transportation system are in a place that can help withstand national, economic or other disasters. Figure 10 shows the segment criticality score for the entire I-70 Mountain Corridor. The study area for the I-70 Mountain Corridor Reassessment is primarily considered high criticality. CDOT is taking a proactive approach by acknowledging that there are real threats to the complex infrastructure system, identifying where the system might be vulnerable to a natural or human made event. The current administration has not provided direction to the Federal Highway Administration to formally consider climate change implications in administering NEPA.

²² (2007) Colorado Climate Action Plan: A Strategy to Address Global Warming

²³ Colorado Energy Office: GHG Pollution Reduction Roadmap

Figure 10. Segment Criticality Score for the Entire I-70 Mountain Corridor



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I-70 MOUNTAIN CORRIDOR REASSESSMENT NARRATIVE

Step 1B Evaluate Current Components of Purpose and Need

July 6, 2020

WORK PLAN STEP 1B EVALUATE CURRENT COMPONENTS OF PURPOSE AND NEED

From the Collaborative Effort Record of Decision 2020 Reassessment Work Plan, Step 1 is to reassess the Purpose and Need. Step 1B is described as follows:

Step 1B: Evaluate current components of Purpose and Need. Determine if the components are still valid using Step 1A context evaluation. The same data sets (listed under each component) must be used as were used in the 2011 Programmatic Environmental Impact Statement (PEIS) to provide a true comparison.

Component 1: Increase capacity. Information that may be needed to evaluate this component includes:

1. Existing traffic data
2. Person trips
3. Updated traffic projections/Travel Demand Model information
4. Transit ridership
5. Others

Component 2: Improve mobility and accessibility. Information that may be needed to evaluate this component includes:

1. Travel time/reliability
2. Safety data
3. Incident response times
4. Travel Demand Model information
5. Others

Component 3: Decrease congestion. Information that may be needed to evaluate this component includes:

1. Level of Service
2. Crash data, Weighted Hazard Index (WHI) information
3. Travel time/reliability
4. Travel Demand Model information
5. Others

COMPONENT 1—INCREASE CAPACITY

Existing Traffic Data

METHODOLOGY

Traffic count data were assembled from the CDOT Online Transportation Information System (OTIS). Average traffic counts for 2010, 2015, and 2019 followed the same methodology of the 2011 PEIS as outlined below. In the 2011 PEIS, the year 2000 Automatic Traffic Recorder (ATR) counts were used to determine the model day hourly and total vehicle trips. The following calendar days were assumed to be representative of the model days:

- **Winter Saturday:** Average of the first two Saturdays in February
- **Summer Thursday:** Average of the first two Thursdays in August
- **Summer Friday:** Average of the first two Fridays in August
- **Summer Saturday:** Average of the first two Saturdays in August
- **Summer Sunday:** Average of the first two Sundays in August

Seven representative locations on the corridor were tabulated, similar to the PEIS (Table 1 through Table 3 and Figure 1 through Figure 3). Because of data collection limitations, such as ATRs that were malfunctioning, some assumptions were necessary as described below:

- 2010
 - Data are unavailable at the Eisenhower-Johnson Memorial Tunnels (EJMT) for the second Saturday in February. Therefore, the average of the first and third Saturdays is used.
 - Data are unavailable at EJMT for the full first weekend in August. Therefore, the average of the second and third weekends is used.
- 2015
 - Data are unavailable for the first two Saturdays of the month for Wolcott. Therefore, averages included for the Winter Saturday for Wolcott are for the last two Saturdays of the month.
 - Data are unavailable at the No Name Tunnels for July and August. Therefore, the averages included for the Summer Sunday at the No Name Tunnels are for the middle weeks of June.
- 2019
 - 2019 traffic counts were unavailable at Station ID 000126-Dowd Junction for sampling dates in 2019. The counts for Station ID 000126-Dowd Junction represent interpolated averages from previous years and adjusted to year-to-year growth at other sampled stations.

For truck counts, more detailed traffic information was obtained from CDOT's Transportation Data Management System. The selected location for this detailed information was at the Veterans Memorial Tunnels, because of the high proportion of recreational demand at this point of the corridor. Comparisons were made for the number of trucks on peak days (defined as

Sundays) and off-peak days (an average of Wednesdays and Thursdays) during two target months—February and August—during the year 2018.

SUMMARY OF FINDINGS

Table 1. 2010 Traffic Volumes on the I-70 Mountain Corridor

Station ID	Name	Winter Saturday ADT	Summer Thursday ADT	Summer Friday ADT	Summer Saturday ADT	Summer Sunday ADT
000107	East of Genesee	70,789	69,244	85,994	86,083	79,113
000120	Veterans Memorial Tunnels	57,050	48,360	64,174	67,235	66,242
000106	EJMT	36,576	32,419	42,660	41,841	44,098
000119	Copper Mountain	17,981	23,687	28,602	26,439	28,591
000126	Dowd Junction	29,699	40,775	44,020	37,009	37,346
000011	Wolcott	17,915	29,605	32,098	26,139	27,564
000105	No Name Tunnels	13,438	21,144	24,063	21,184	23,581

Source: CDOT Online Transportation Information System (OTIS)

ADT = average daily traffic; EJMT = Eisenhower-Johnson Memorial Tunnels

Table 2. 2015 Traffic Volumes on the I-70 Mountain Corridor

Station ID	Location	Winter Saturday ADT	Summer Thursday ADT	Summer Friday ADT	Summer Saturday ADT	Summer Sunday ADT
000107	East of Genesee	78,213	76,367	88,594	90,279	89,781
000120	Veterans Memorial Tunnels	57,757	52,604	67,324	70,109	71,067
000106	EJMT	40,586	36,950	47,655	46,713	47,395
000119	Copper Mountain	22,505	25,521	31,455	28,670	30,184
000126	Dowd Junction	42,664	44,624	49,193	41,684	41,938
000011	Wolcott	17,041	33,188	31,076	24,883	30,667
000105	No Name Tunnels	14,523	16,659	24,543	21,343	24,394

Source: CDOT Online Transportation Information System (OTIS)

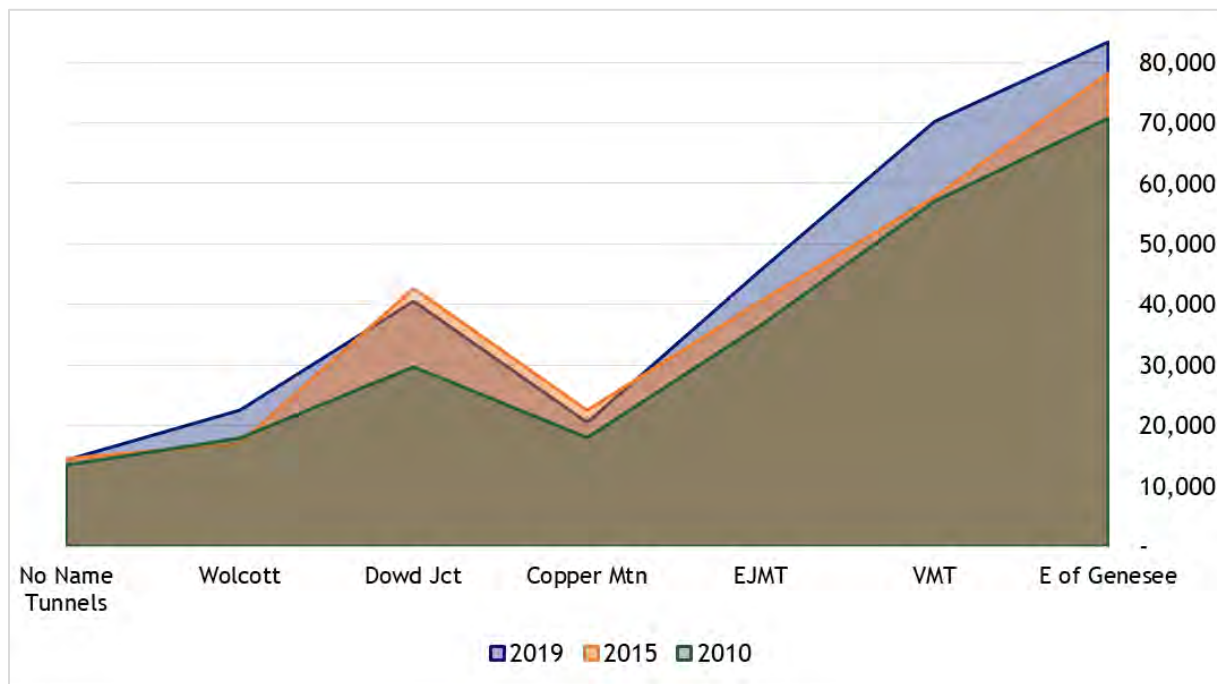
ADT = average daily traffic; EJMT = Eisenhower-Johnson Memorial Tunnels

Table 3. 2019 Traffic Volumes on the I-70 Mountain Corridor

Station ID	Location	Winter Saturday ADT	Summer Thursday ADT	Summer Friday ADT	Summer Saturday ADT	Summer Sunday ADT
000107	East of Genesee	83,393	76,965	89,982	90,937	85,856
000120	Veterans Memorial Tunnels	70,236	58,860	75,442	79,730	81,147
000106	EJMT	45,702	41,276	52,157	51,342	50,928
000119	Copper Mountain	20,489	27,457	33,041	30,767	33,174
000126	Dowd Junction	40,529	49,086	54,112	45,852	46,131
000011	Wolcott	22,529	36,606	39,583	32,588	34,140
000105	No Name Tunnels	14,272	24,397	27,467	25,097	27,334

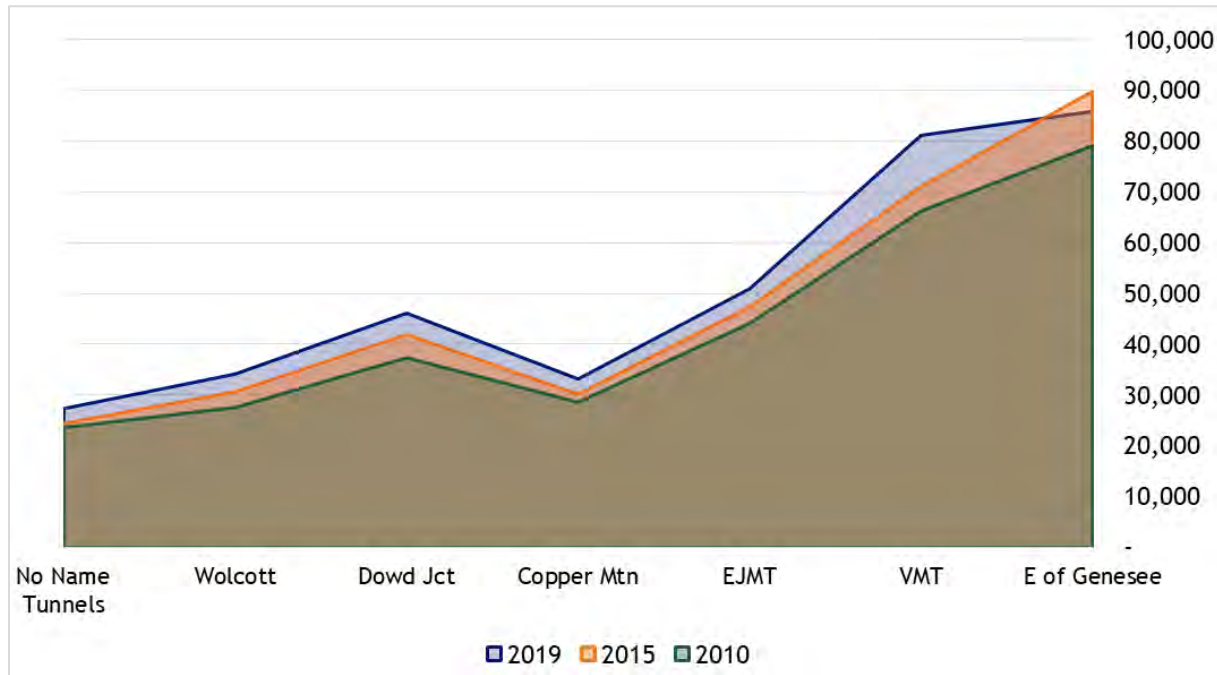
Source: CDOT Online Transportation Information System (OTIS)
 ADT = average daily traffic; EJMT = Eisenhower-Johnson Memorial Tunnels

Figure 1. Traffic Data—Trends 2010, 2015, 2019 Winter Saturday Average Daily Traffic



Source: CDOT Online Transportation Information System (OTIS).
 Jct = Junction; Mtn = mountain; EJMT = Eisenhower-Johnson Memorial Tunnels; VMT = Veterans Memorial Tunnels; E = east

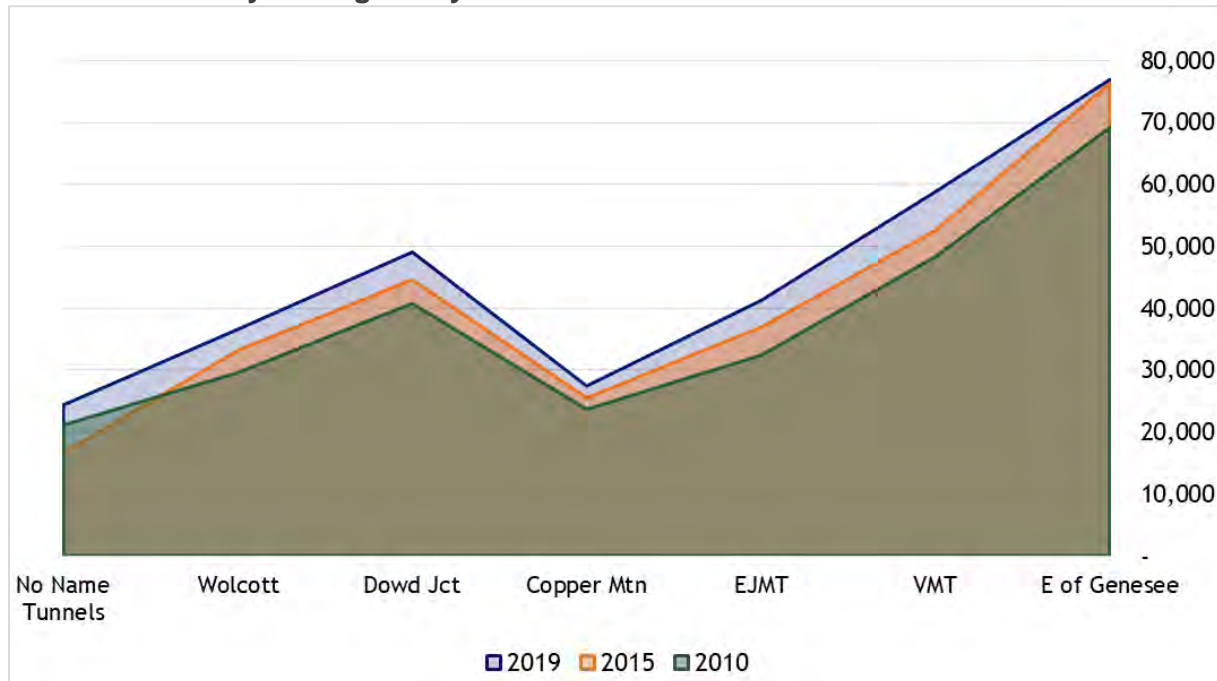
**Figure 2. Traffic Data—Trends 2010, 2015, 2019
Summer Sunday Average Daily Traffic**



Source: CDOT Online Transportation Information System (OTIS).

Jct = Junction; Mtn = mountain; EJMT = Eisenhower-Johnson Memorial Tunnels; VMT = Veterans Memorial Tunnels; E = east

**Figure 3. Traffic Data—Trends 2010, 2015, 2019
Summer Thursday Average Daily Traffic**



Source: CDOT Online Transportation Information System (OTIS).

Jct = Junction; Mtn = mountain; EJMT = Eisenhower-Johnson Memorial Tunnels; VMT = Veterans Memorial Tunnels; E = east

Table 4. Peak Day vs Off Peak Day Truck Traffic August

Veterans Memorial Tunnels—August				
Off Peak Day PM Period		% of PM Peak	Off Peak Day Totals	% of Off Peak Day Total
Automobiles	13,990	96.3%	51,024	94.26%
Truck	527	3.63%	3,058	5.65%
Bus	11	0.08%	51	0.09%
Subtotal	538	3.70%	3,109	5.74%
Total Vehicles	14,528	100%	54,133	100%
Peak Day PM Period		% of PM Peak	Peak Day Total	% of Peak Day Total
Automobiles	22,161	98.02%	76,229	97.49%
Truck	436	1.93%	1,907	2.44%
Bus	11	0.05%	55	0.07%
Subtotal	447	1.98%	1,962	2.51%
Total Vehicles	22,608	100%	78,191	100%

Source: CDOT Transportation Data Management System.

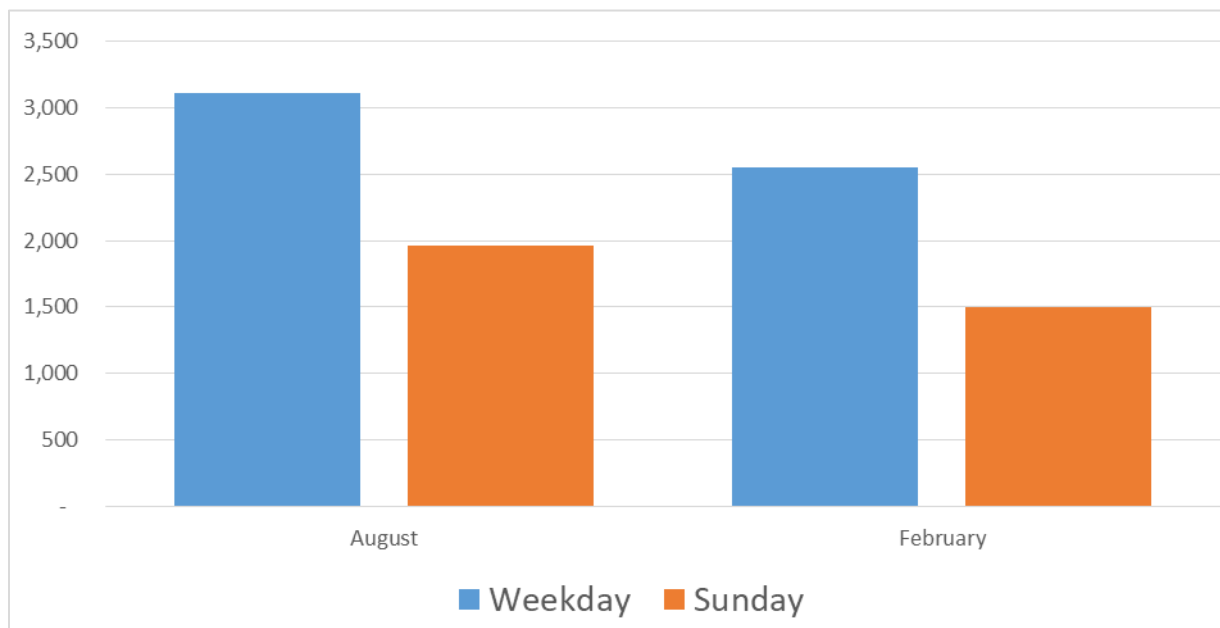
PM = post meridiem (evening)

Table 5. Peak Day vs Off Peak Day Truck Traffic August

Veterans Memorial Tunnels—February				
Off Peak Day PM Period		% of PM Peak	Off Peak Day Totals	% of Off Peak Day Total
Automobiles	10,331	95.36%	35,736	93.34%
Truck	485	4.48%	2,486	6.49%
Bus	18	0.17%	63	0.16%
Subtotal	503	4.64%	2,548	6.66%
Total Vehicles	10,834	100%	38,284	100%
Peak Day PM Period		% of PM Peak	Peak Day Total	% of Peak Day Total
Automobiles	16,757	98.02%	62,774	97.67%
Truck	325	1.90%	1,422	2.21%
Bus	13	0.08%	74	0.12%
Subtotal	338	1.98%	1,496	2.33%
Total Vehicles	17,095	100%	64,270	100%

Source: CDOT Transportation Data Management System.

PM = post meridiem (evening)

Figure 4. Number of Daily Trucks by Type of Day at VMT

Source: CDOT Transportation Data Management System.

OBSERVATIONS

As Table 1 through Table 3 and Figure 1 through Figure 3 show, the corridor has experienced a steady growth in traffic over the last decade. Some anomalies exist, such as east of Genesee on a summer Sunday. These are most likely because of data collection irregularities of the ATRs, which are not uncommon for this equipment.

The number of trucks at the Veterans Memorial Tunnels during 2018 is higher on off-peak days compared to peak travel days, as presented in Table 4, Table 5 and Figure 4. This corroborates the anecdotal information that truckers make an effort to avoid I-70 during the heavy traffic that occurs on Sundays and other peak days.

Person trips

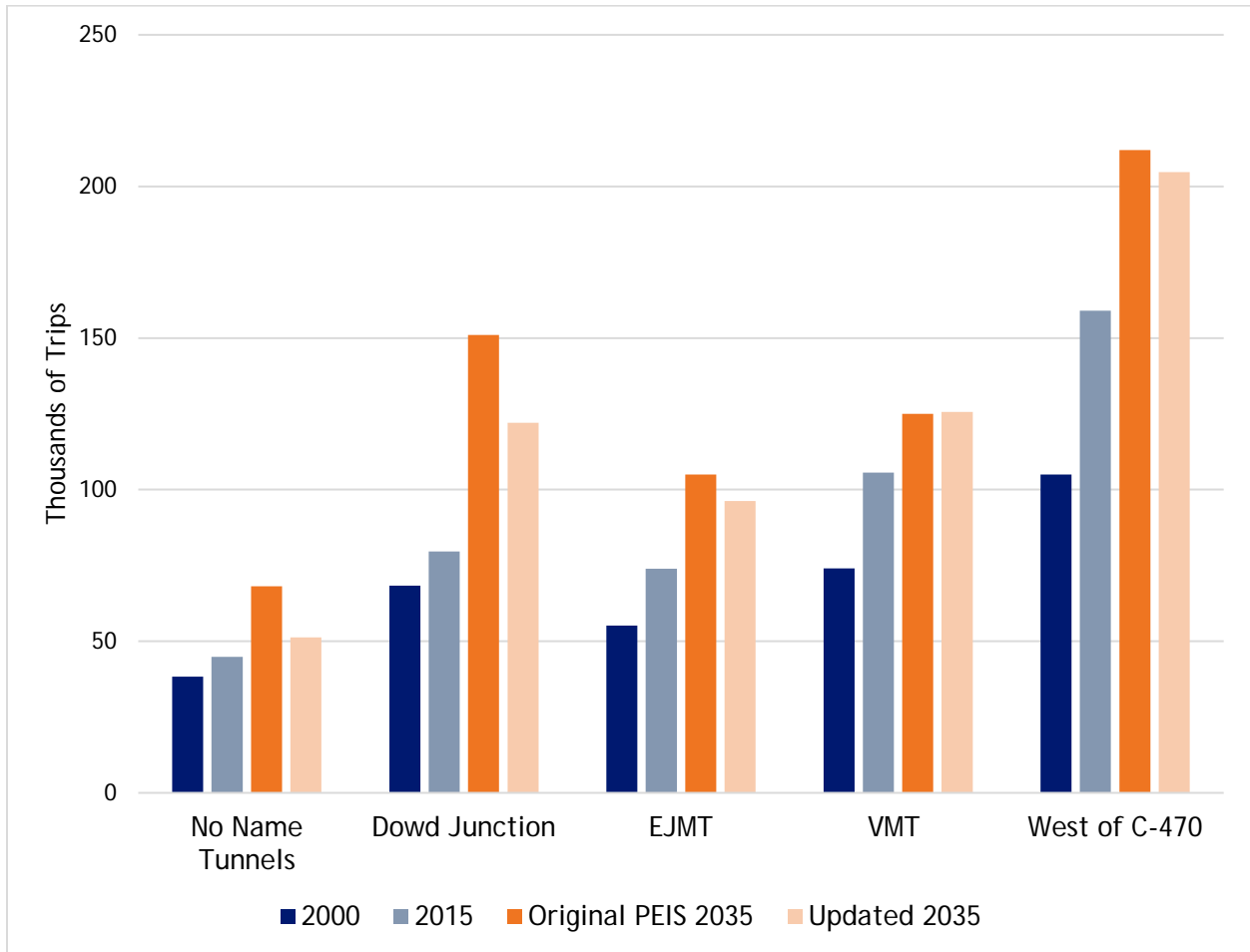
METHODOLOGY

Estimates of person trips were estimated by the 2011 PEIS travel demand model. The person trips are two-way totals. This model was updated with new socio-economic forecasts for 2035 from the Colorado State Demography office. More information on the model is available in the *2020 Update of the I-70 Mountain Corridor Travel Demand Model*¹.

¹ Draft technical report in progress (not yet available).

SUMMARY OF FINDINGS

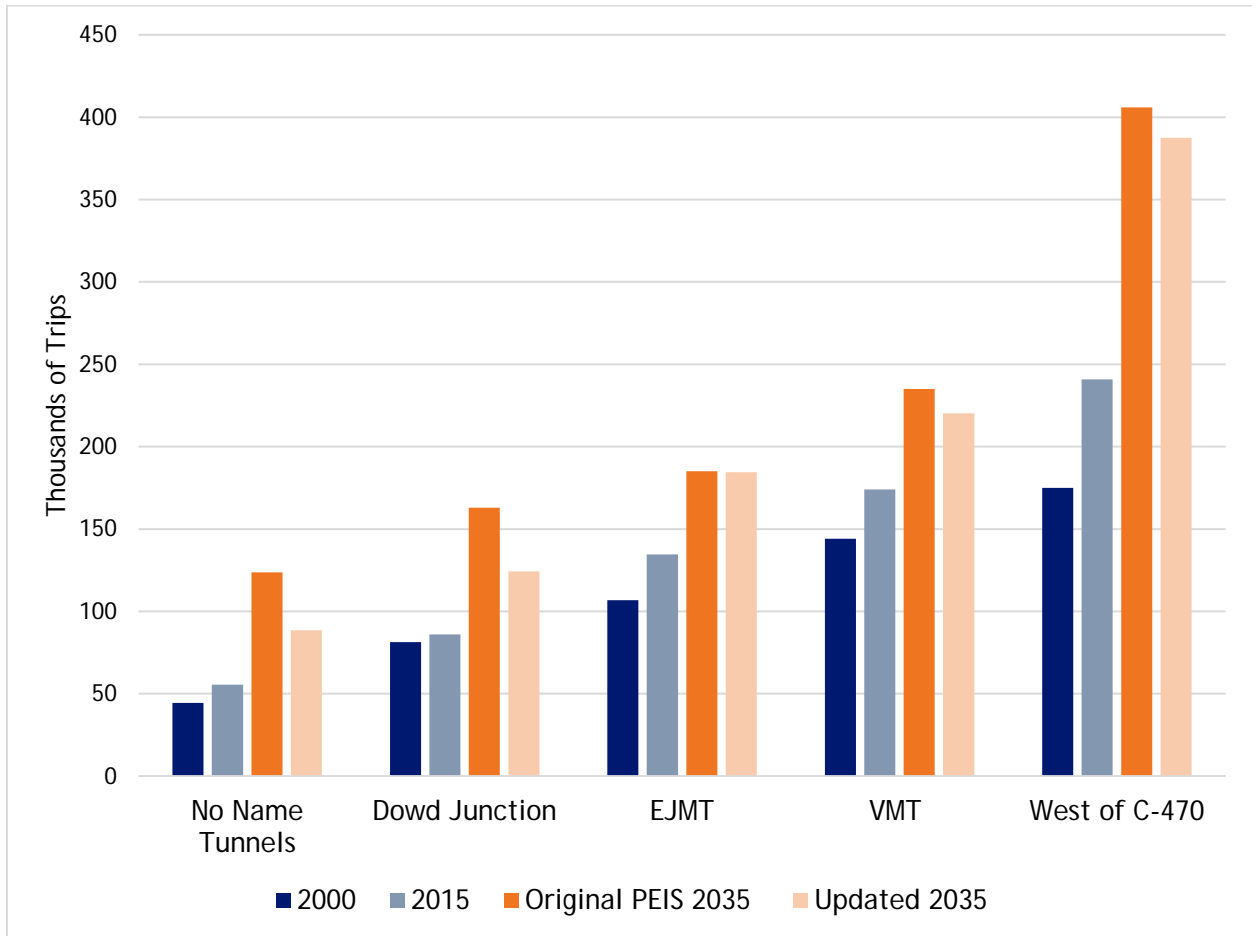
Figure 5. Daily Person Weekday Trip Demand



Sources: I-70 Mountain Corridor PEIS 2035 Transportation Analysis Technical Report (Reissued March 2011); Updated I-70 Mountain Corridor Travel Demand Model (2020).

EJMT = Eisenhower-Johnson Memorial Tunnels; VMT = Veterans Memorial Tunnels

Figure 6. Daily Person Weekend Trip Demand



Sources: I-70 Mountain Corridor PEIS 2035 Transportation Analysis Technical Report Reissued March 2011; Updated I-70 Mountain Corridor Travel Demand Model 2020.

EJMT = Eisenhower-Johnson Memorial Tunnels; VMT = Veterans Memorial Tunnels

OBSERVATIONS

As Figure 5 and Figure 6 show, person trips at the representative locations along the corridor have increased from 2000 through 2015, and are projected to further increase by 2035. The updated 2035 projections are slightly less than the 2035 projections of the 2011 PEIS because of the lower population and employment projections for 2035 from the Colorado State Demography Office. This change is more pronounced on the western portion of the corridor compared to the eastern section, because the 2035 socioeconomic forecasts in the Denver metropolitan area are about the same. Weekend trips are higher than weekday trips on the eastern portion of the corridor because of recreational trips to and from the Denver metropolitan area.

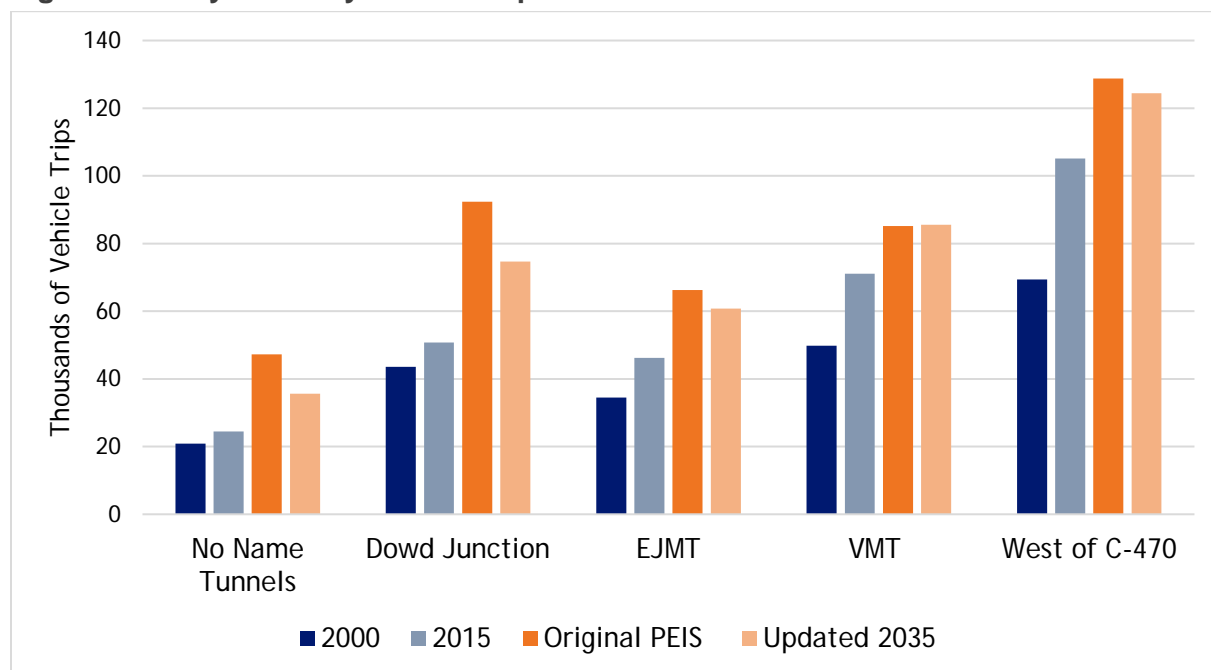
Traffic Projections

METHODOLOGY

Estimates of vehicle trips (two-way totals) were estimated by the 2011 PEIS travel demand model. This model was updated with new socio-economic forecasts for 2035 from the Colorado State Demography office. More information on the model is available in the 2020 *Update of the I-70 Mountain Corridor Travel Demand Model*².

SUMMARY OF FINDINGS

Figure 7. Daily Weekday Vehicle Trips

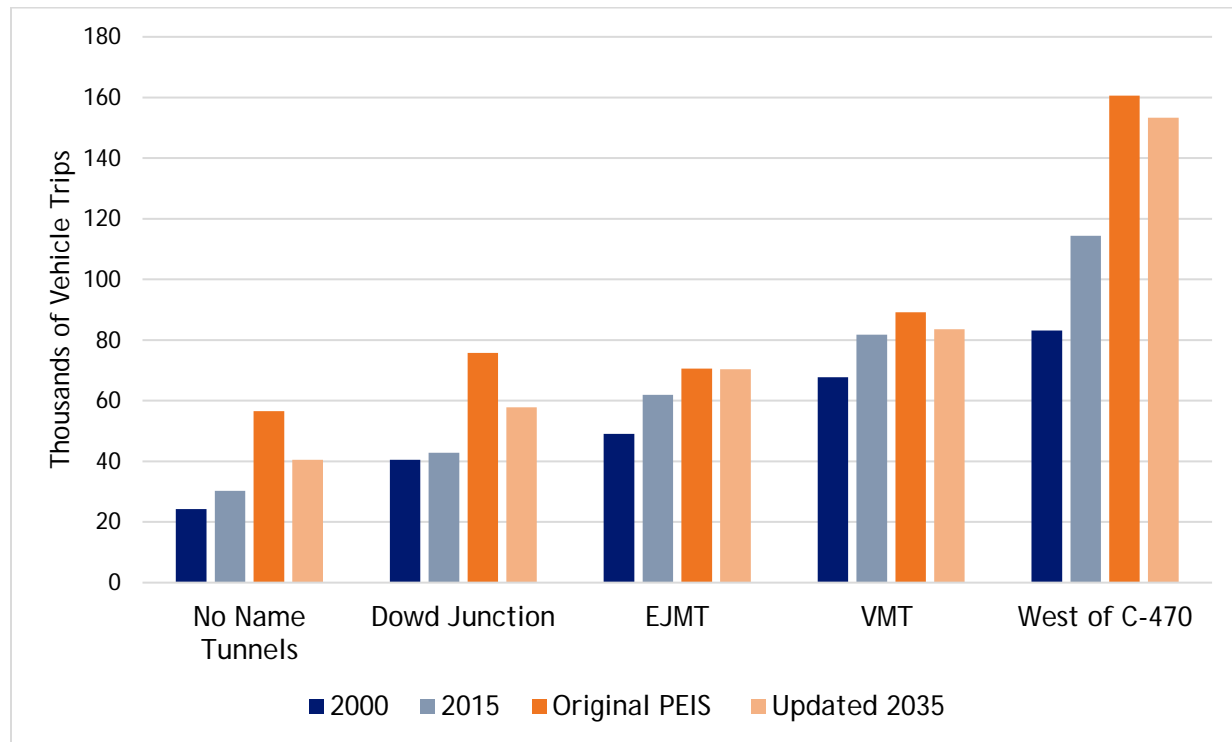


Sources: I-70 Mountain Corridor PEIS 2035 Transportation Analysis Technical Report Reissued March 2011; Updated I-70 Mountain Corridor Travel Demand Model 2020.

EJMT = Eisenhower-Johnson Memorial Tunnels; VMT = Veterans Memorial Tunnels

² Draft technical report in progress (not yet available).

Figure 8. Daily Weekend Vehicle Trips



Sources: I-70 Mountain Corridor PEIS 2035 Transportation Analysis Technical Report Reissued March 2011; Updated I-70 Mountain Corridor Travel Demand Model 2020.

EJMT = Eisenhower-Johnson Memorial Tunnels; VMT = Veterans Memorial Tunnels

OBSERVATIONS

As Figure 7 and Figure 8 show, vehicle trips at the representative locations along the corridor have increased from 2000 through 2015, and are projected to further increase by 2035. The updated 2035 projections are slightly less than the 2035 projections of the 2011 PEIS because of the lower population and employment projections for 2035 from the Colorado State Demography Office. This change is more pronounced on the western side of the corridor compared to the eastern section, because the 2035 socioeconomic forecasts in the Denver metropolitan area are about the same. Weekend vehicle trips are higher than weekday trips on the eastern portion of the corridor because of recreational trips to and from the Denver metropolitan area.

Transit Ridership

METHODOLOGY

Data were collected from a variety of sources regarding transit in the I-70 Mountain Corridor. The sources included CDOT Division of Transit and Rail, review of final study reports, the National Transit Database, and Internet research on services provided by a variety of agencies and operators. A summary of findings and references for this research are documented below.

SUMMARY OF FINDINGS

Transit studies and services have advanced in many ways in the I-70 Mountain Corridor since the 2011 PEIS was published.

Technology for high-speed transit has also evolved since 2011; the summary of findings on this topic are found in *Step 1A Evaluation of Context Narrative*.

Bustang

CDOT launched a new transit route, Bustang, serving the I-70 corridor with daily bus routes between Grand Junction and Denver, with additional daily routes between Denver and both Glenwood Springs and Vail. However, it does not serve peak direction recreational trips at peak demand. Ridership has grown dramatically since the Bustang service was launched in 2015. In 2019, ridership was over 70,000 passengers compared to just over 26,000 in 2016, representing a 170 percent increase (V. Henderson, personal communication, January 24, 2020).

Snowstang

CDOT piloted a bus route called Snowstang in 2017 to six ski resorts on two weekends that year (Colorado Ski Country USA, 2017). Based on the success of the pilot and other Bustang routes, Snowstang launched in 2019 with service to three resorts (Loveland, Arapahoe Basin, and Steamboat) (CDOT, 2019). Early reports indicate the ridership is exceeding expectations; however, the 2019-2020 ski season terminated early because of coronavirus (Go I-70, 2020).

Amtrak Winter Park Express Ski Train

Another new service in the corridor is the Amtrak Winter Park Express Ski Train. The original ski train operated from 1940 to 2009. The Winter Park Express returned in 2017 with regular weekend service from Denver Union Station to Winter Park Ski Resort (CPR News, 2016). In 2020, Friday service was added (Winter Park Resort, 2020). Ridership has been growing steadily since it came back into operation. In April 2019, Amtrak reported an increase in ridership of about 7 percent from the 2018 season and 8 percent from the inaugural season in 2017 (Colorado Ski Country USA, 2019).

Ski Shuttles

Ski shuttles provide private transit service from the Denver Front Range (often Denver International Airport [DEN]). Three ski shuttle companies that currently operate were operating in 2011, including Epic Mountain Express, Home James, and Intermountain Express (CDOT, 2011). Epic Mountain Express (formerly known as Colorado Mountain Express) facilitates several transportation options, including ride sharing from airports and to the ski resorts in the Epic group and surrounding communities (Epic Mountain Express, 2020). The Home James shuttle service serves DEN to Winter Park.³ Intermountain Express had service from Eagle Airport to Vail in 2011, and has since expanded to DEN Airport, Summit County resorts, and Vail Valley Resorts (Intermountain Express, 2020). Several new ski shuttles have begun

³ <https://www.ridehj.com/>

service, including Fresh Tracks Transportation⁴, Peak 1 Express Shuttle⁵, and Summit Express.⁶ Table 6 provides additional information on several of the ski shuttles.

Table 6. Ski Shuttles

Ski Shuttle Name	Service Areas	Cost
Summit Express ⁷	DEN Airport to Breckenridge, Keystone, Copper, Frisco, Dillon and Silverthorne	Approximately \$59 per person
Peak 1 ⁸	DEN Airport to Summit County (Breckenridge, Keystone, Copper, Frisco, Silverthorne, Dillon) and Vail/Beaver Creek (Vail, Beaver Creek, Avon, Edwards).	The cost for the Summit County shuttle is approximately \$44 and Vail is \$54 (Mountain Shuttle, 2020).
Fresh Tracks ⁹	DEN Airport to several towns in Summit County including Breckenridge, Keystone, Copper, Frisco, Dillon and Silverthorne. They also offer a resort to resort ski shuttle for resorts including Vail, Keystone, Beaver Creek, Copper Mountain, Breckenridge, and Arapahoe Basin.	Approximately \$52 - \$75 per person
Epic Mountain Express ¹⁰	DEN Airport to Vail/Beaver Creek, DEN Airport to Summit County (Breckenridge, Keystone, Frisco, Copper), DEN Airport to Eagle, Glenwood, Aspen, Eagle-Vail Airport, Vail/Beaver Creek.	The cost is approximately \$39 per person, each way.
Home James ¹¹	DEN Airport to Winter Park	The cost is \$63-\$78 for adults and \$39 for children.
Intermountain Express ¹²	Rates provided for service to Eagle Airport and DEN Airport to Vail/Beaver Creek, Breckenridge, Aspen/Snowmass, Steamboat Springs. Additional service may be available.	Rates provided per vehicle, rates \$100 - \$800. Ridesharing does not appear to be available.

Casino Buses

A variety of buses and shuttles provide transit service to and within Black Hawk and Central City. These include Ace Express Coaches¹³, Casino Shuttle by Ramblin Express¹⁴, and Black Hawk & Central City Tramway.¹⁵

Transit Agencies

Colorado outpaces every other state in terms of rural transit ridership, and many of the transit agencies are located along the I-70 Mountain Corridor. These include Roaring Fork

⁴<https://www.freshtrackstransportation.com/>

⁵<https://www.mountainshuttle.com/>

⁶<https://www.summitexpress.com/>

⁷<https://www.summitexpress.com/>

⁸<https://www.mountainshuttle.com/>

⁹<https://www.freshtrackstransportation.com/>

¹⁰<https://www.epicmountainexpress.com/>

¹¹<https://www.ridehj.com/rates>

¹²<https://imedenver.com/our-rates/>

¹³<https://www.aceexpresscoaches.com/>

¹⁴<https://ramblinexpress.com/casino-shuttles/>

¹⁵<http://site.cityofblackhawk.org/visit-black-hawk/shuttle-service/>

Transportation Authority (RFTA), Eagle County Transportation Authority (ECO), Vail Transit, Summit Stage, and Avon Transit. Clear Creek County also operates a route.

RFTA has seen an increase in ridership of 8 percent between 2014 and 2018 and in 2018 reported 4.9 million rides (FTA, 2020). ECO has seen an increase in ridership of 19 percent between 2014 and 2018 and in 2018 reported 1 million rides (FTA, 2020). Vail has been expanding its transit routes and residents and guests have responded favorably. Residents have requested that the City expand the summer bus service. In 2017, Vail saw a 37 percent increase in ridership on routes that had expanded service (Town of Vail, 2017). With current ridership reaching nearly 2 million, Summit Stage has seen a significant increase in rides since it reported 432,000 passenger trips in 1992 (Summit County, 2020). However, in the period between 2014 and 2018, ridership declined by 9 percent (FTA, 2020). In 2018, Summit Stage reported 1.7 million passenger trips. Avon Transit reported 424,696 trips to the National Transit Database for 2018 (FTA, 2020). Avon Transit ridership is lower than recorded in 2008. At that time, the “Town Routes” (including the Blue Line, Red Line, and evening Black Line) and the Gondola Express Route carried a total of 520,000 (Town of Avon, 2017).

Mobility Hubs

Stations along the corridor for existing and future transit have long been identified; for example, in the *I-70 Coalition Land Use Planning Study For Rail Transit Alignment Throughout the I-70 Corridor* (I-70 Coalition, 2009). CDOT is in early planning stages to identify designated mobility hubs across the state. Those along the I-70 Mountain Corridor include Idaho Springs, Frisco, Vail, Eagle, and Glenwood Springs. Providing parking at transit stations is no longer sufficient; there is a need for people to connect to transit through other modes. The services at mobility hubs are also planned to include charging stations for electric vehicles. The goal of mobility hubs in Colorado is to increase transit ridership, multimodal options, safety, trip reliability, economic vitality, and air quality while decreasing vehicle miles traveled, congestion, travel time, and greenhouse gas emissions.

Rail Studies

The Advanced Guideway System (AGS) feasibility study was conducted by CDOT in 2014 with the goal of determining the technical and financial feasibility of a fixed guideway on I-70 from Jefferson County to Eagle County Airport (CDOT, 2014). It concluded that the fixed guideway is technically feasible, but was not financially feasible as of 2014 when the report was completed. The AGS study states that state/local financial commitment, private-sector involvement, and federal government funding/financing would be required. Cost was projected to be \$13.3 billion to \$32.4 billion (2013 dollars), depending on the pairing of alignment and technology. Ridership was predicted to be 4.6 million to 6.2 million annual riders, assuming a Hybrid Alignment with High Speed Maglev from Eagle County Regional Airport to I-70/C-470 with the Interregional Connectivity Study System in place through Denver including DIA and along I-25 from Pueblo to Fort Collins.

In 2014, CDOT and the Regional Transportation District (RTD) conducted the Interregional Connectivity Study (CDOT, 2014). It concluded that a high-speed transit system is feasible for Colorado, for the Front Range between Pueblo, DEN, and Fort Collins, plus the I-70 Mountain

Corridor AGS. The segments that serve the Front Range perform the best because they connect the highest-density populations and should be phased first.

COMPONENT 2—IMPROVE MOBILITY AND ACCESSIBILITY

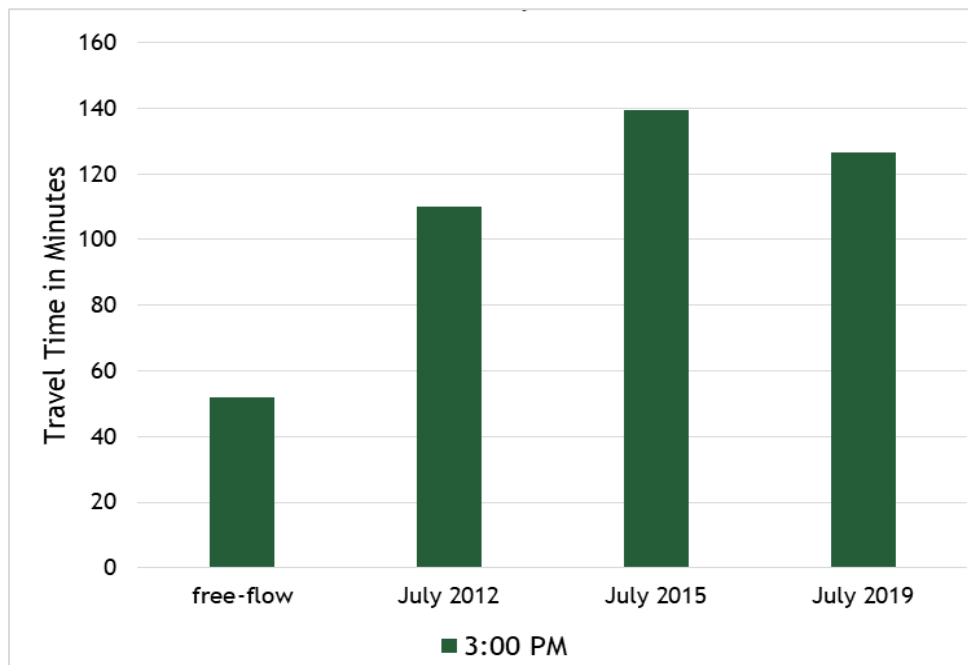
Travel Time/Reliability

METHODOLOGY

Historic and existing travel time information was obtained from INRIX, a traffic speed and travel time collection service. The analyses presented in Figure 9 and Figure 10 average travel times for 2012, 2015, and 2019, as well as free flow time. For the eastern section of the corridor (Silverthorne to C-470), average westbound travel times were presented for winter Saturdays at 7:30 AM (morning) while average eastbound travel times were gathered for summer Sundays at 3:00 PM (evening) to capture the peak travel conditions. For the western section of the corridor (Silverthorne to Glenwood Springs), average travel time (as presented in Figure 11 and Figure 12 for summer Fridays for both eastbound [1:00 PM] and westbound [5:00PM] represents peak travel conditions at this location even though this section does not have such dramatic peak direction travel characteristics. Winter was defined as an average of Saturdays or Sundays in February, while summer was defined as an average of Fridays or Sundays in July.

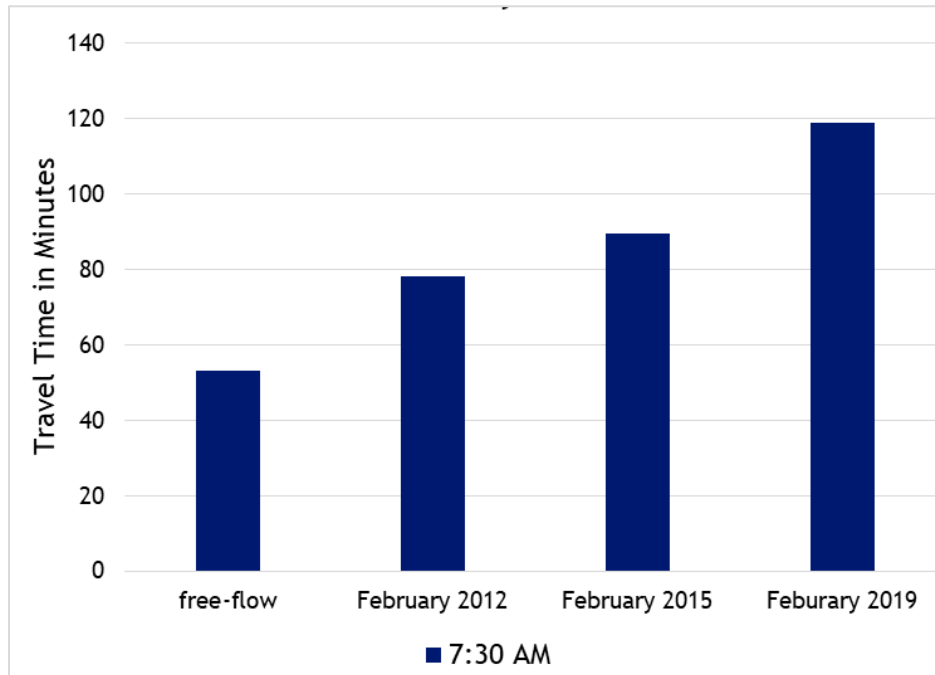
SUMMARY OF FINDINGS

Figure 9. Travel Time Silverthorne to C-470
Summer Sunday Eastbound



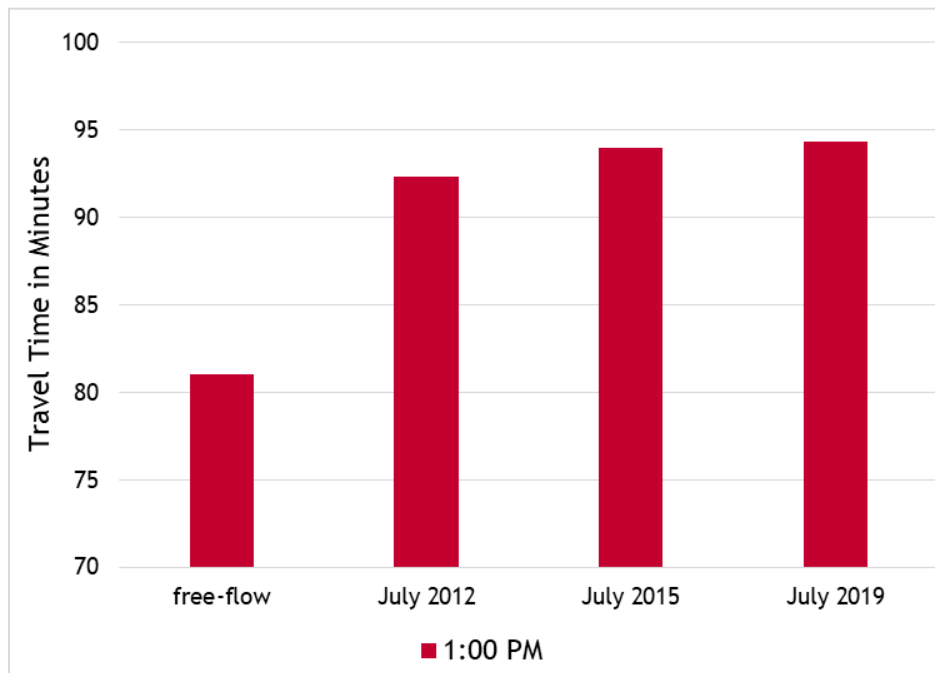
Source: INRIX.

**Figure 10. Travel Time Silverthorne to C-470
Winter Saturday Eastbound**



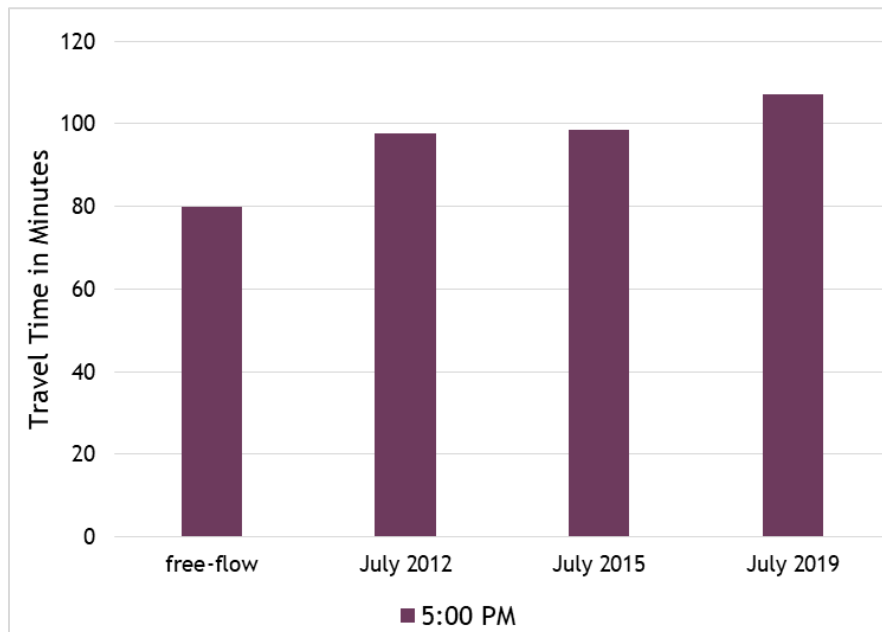
Source: INRIX.

**Figure 11. Travel Time Glenwood Springs to Silverthorne
Summer Friday Eastbound**



Source: INRIX.

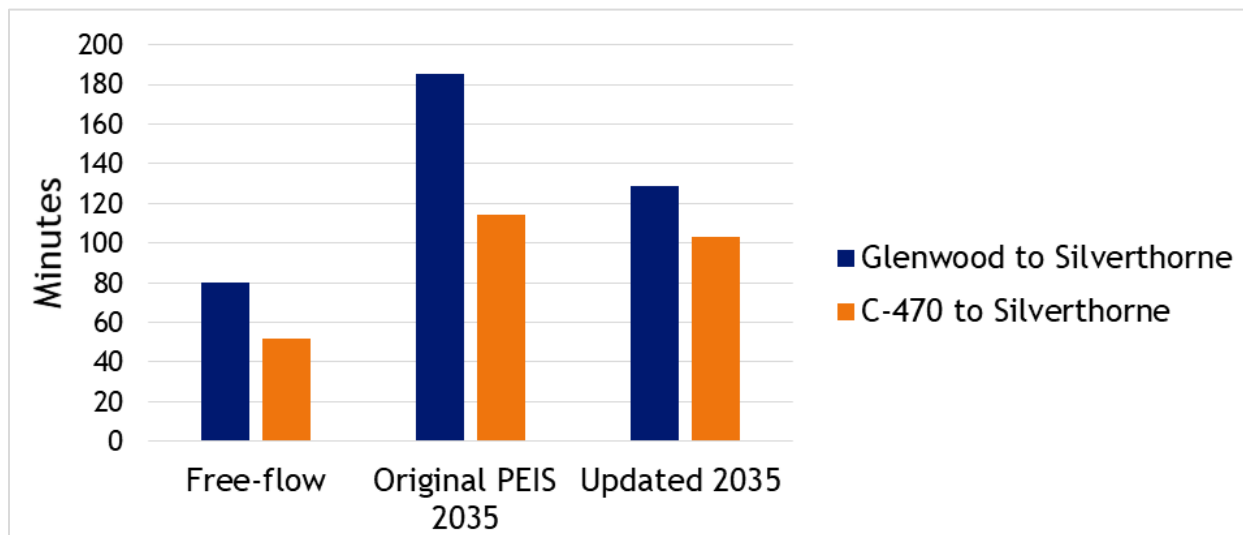
Figure 12. Travel Time Silverthorne Glenwood Springs Summer Friday Westbound



Source: INRIX.

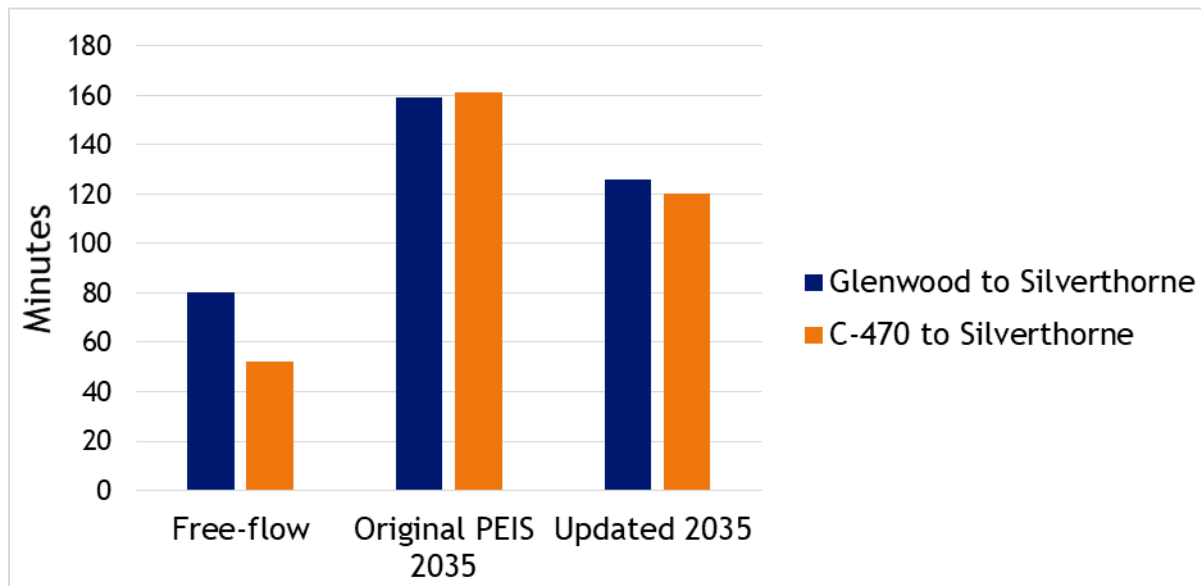
Estimates of future travel time in 2035 were produced by the updated I-70 Mountain Corridor Travel Demand Model. The estimates for travel times were for both typical weekdays (Figure 13) and weekend days (Figure 14) in the peak direction. The travel times are tabulated separately for the western portion of the corridor between Glenwood Springs and Silverthorne and the eastern portion between Silverthorne and C-470.

Figure 13. Weekday Travel Time—Peak Period Direction 2035



Sources: I-70 Mountain Corridor PEIS 2035 Transportation Analysis Technical Report Reissued March 2011; Updated I-70 Mountain Corridor Travel Demand Model 2020.

Figure 14. Weekend Travel Time—Peak Period Direction 2035



Sources: I-70 Mountain Corridor PEIS 2035 Transportation Analysis Technical Report Reissued March 2011; Updated I-70 Mountain Corridor Travel Demand Model 2020.

OBSERVATIONS

During the peak period conditions as presented, travel times for both the eastern and western sections of the corridor are markedly higher than free flow conditions. Travel times have steadily increased on the corridor, between 2012 and 2019. The one exception is eastbound on a Sunday, in the eastern section between Vail and Silverthorne. In this section, the travel times improve in 2019 compared to 2015. This is most likely because of the implementation of the eastbound peak period shoulder lane, from the US 40/Empire Junction interchange to the base of Floyd Hill.

Travel times in 2035 are projected to be significantly higher than free-flow times. The updated travel time estimates for 2035 are slightly less than the prior estimates of the 2011 PEIS because of the lower socioeconomic 2035 forecasts for the mountain corridor counties from the Colorado State Demography office.

Safety

METHODOLOGY

Safety conditions were assessed for the 2011 PEIS. These are documented in the August 2010 (Reissued March 2011) *I-70 Mountain Corridor PEIS Safety Technical Report*. Safety concerns were identified for six segments of I-70, 25 interchanges were identified as needing safety improvements, 4 curves were recognized with safety issues, and locations for 12 auxiliary lanes were identified for safety and other needs.

The focus of the updated analysis for the Reassessment is on the six I-70 segment locations with safety concerns. In the 2011 PEIS, these were identified quantitatively based on the

Weighted Hazard Index (WHI) methodology that identifies safety deficiencies based on crash rates and how those rates compare to statewide average crash rates for similar facility types. Locations where the WHI is higher than 0.0 indicate notable or significant safety deficiencies. Those locations with a WHI greater than 2.0 were identified and mitigation measures suggested that could bring the WHI down to below zero. In the 2011 PEIS, the six locations identified with a WHI greater than 2.0, based on an analysis of 2001 to 2005 crash data, are:

- West of Wolcott Curve
- Westbound, west side of Vail Pass
- Eastbound, EJMT to Herman Gulch
- Westbound, Morrison to Chief Hosa
- Loveland Pass interchange
- Base of Floyd Hill

These locations were reassessed to determine if crash conditions have changed since publication of the 2011 PEIS. Crash data were provided for the project corridor from CDOT for 2011 through 2018 (Table 7.). CDOT has advanced its crash analysis methodology and now uses the Level of Service of Safety (LOSS) methodology to evaluate safety along its highway system. LOSS considers crash frequency and severity and traffic volumes in a graphical comparison with crash rates of other, similar highways. LOSS 1 indicates a low potential for crash reduction and LOSS 4 indicates a high level of potential for crash reduction. A LOSS number was calculated for the six identified high-crash locations listed above, with LOSS 3 or LOSS 4 being comparable to a WHI of 2.0 or higher.

SUMMARY OF FINDINGS

Table 7. Comparison of Crash Trends at I-70 Segment Locations of Concern

Location	(2011 PEIS) 2001-2005 Weighted Hazard Index (WHI)	2011-2018 Level of Service of Safety (LOSS)	Observation
West of Wolcott Curve	WHI 2.01	LOSS II	Curve correction project appears to have alleviated safety issues
WB, west side of Vail Pass	WHI 4.78	LOSS IV	Still a high crash location
EB, EJMT to Herman Gulch	WHI 2.56	LOSS II/ LOSS III	EB auxiliary lane project together with ramp metering appear to have alleviated safety issues
WB, Morrison to Chief Hosa	WHI 3.01	LOSS IV	Still a high crash location
Loveland Pass interchange	WHI 4.53	LOSS IV	Still a high crash location
Base of Floyd Hill	WHI 2.74	LOSS IV	Still a high crash location

Sources: I-70 Mountain Corridor PEIS Safety Technical Report, August 2010 (Reissued March 2011), 2020 *Updated Safety Analysis I-70 Mountain Corridor PEIS*

Further information is available in the accompanying technical report, *2020 Updated Safety Analysis I-70 Mountain Corridor PEIS*¹⁶.

OBSERVATIONS

At the two locations where safety improvement projects have been implemented, crash patterns appear to have been improved. Safety concerns remain at the other four locations.

Incident Response Times

METHODOLOGY

Data are not available on the number of minutes that emergency responders needed to respond to individual incidents. However, there are several programs that CDOT has initiated that mitigate incident response times; these are listed and described below in the Summary of SUMMARY OF Findings section.

There is limited data on clearance times, which is defined for this analysis as the duration of time that a lane or lanes are closed due to vehicle-related incidents, such as disabled vehicles, stalled cars, crashes, etc. This is logged by CDOT personnel into a database called COGNOS. There are full incident reports from Fiscal Year (FY) 2014-2015, FY 2015-2016, FY 2016-2017, and FY 2017-2018. Other years were not available. The incident reports included data pertaining to events along I-70 between mile markers 133 and 259, which caused full or partial closure. The data logs do not appear to be particularly robust nor necessarily well-defined; but provide some information nonetheless. Clearance time for lane closure events such as roadway maintenance, avalanche control, debris clearance, rock fall, etc. are not included in this analysis.

SUMMARY OF FINDINGS

CDOT has taken several actions that support improved incident response times, among other safety and mobility benefits. These include the following:

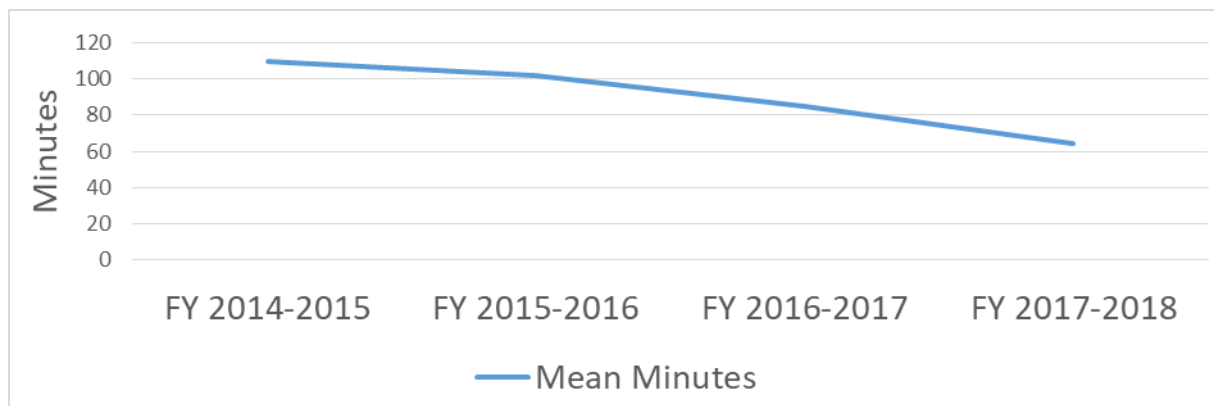
- CDOT has updated Traffic Incident Management Plans for the corridor counties. These plans direct emergency responders regarding procedures, communication protocols, and other guidance for coordination, for a hierarchy of incident types. These include Clear Creek County August 2018, Eagle County July 2019, and Summit County July 2019.
- CDOT created a position of a full-time corridor operations manager for the I-70 Mountain Corridor. The manager oversees all policies, procedures, and activities that impact the safety and mobility of the I-70 Mountain Corridor. The manager evaluates corridor conditions, determines appropriate operational and safety strategies, evaluates projects, and coordinates with a variety of CDOT, law enforcement, and community stakeholders.
- CDOT has prepared an I-70 Mountain Corridor Winter Operations Plan in 2016. The Winter Operations Plan specifies cost-effective strategies, procedures, and projects to maximize corridor safety and mobility during the winter travel season.

¹⁶ Draft technical report in progress (not yet available)

- The eastbound Mountain Express Lane (MEXL) or peak period shoulder lane, improves the ability of emergency response providers to get to incidents during peak period times of severe congestion. The addition of a westbound MEXL (currently under construction) will further improve these conditions between Floyd Hill and Empire Junction.

While different than incident response times, there is information on clearance times. Clearance times as defined for this analysis as the duration of time that a lane or lanes are closed because of vehicle-related incidents, such as disabled vehicles, stalled cars, crashes, etc. As Figure 15 shows, the average amount of time to clear vehicle incidents has a clear downward trend since FY 2014-2015.

Figure 15. I-70 Closure Duration from Vehicle Incidents



Sources: CDOT Incident Reports FY 2014-2015, FY 2015-2016, FY 2016-2017, FY 2017-2018.

COMPONENT 3—DECREASE CONGESTION

Level of Service

METHODOLOGY

Level of service is measured with hours of severe congestion, as it was in the 2011 PEIS.

INRIX data were analyzed for the locations presented in the 2011 PEIS. Four time periods were analyzed, where each of these days in the month was averaged:

- August 2012 Thursdays
- August 2019 Thursdays
- August 2012 Sundays
- August 2019 Sundays

For each time period, speeds were analyzed in the eastbound direction for each weekday (Figure 16) or weekend day (Figure 17) in the month. Where average speeds drop below 75 percent of an approximate average of free-flow in the segment in question during a 15-minute period, these segments are flagged as congested. For example, approaching EJMT from Silverthorne, free flow speeds are approximately 65 miles per hour during the majority of the

day; therefore, speeds below 48.75 miles per hour during a 15-minute period are considered congested. Note that some segments have different free-flow speeds during different times of day because of varying vehicle types throughout the day and topography.

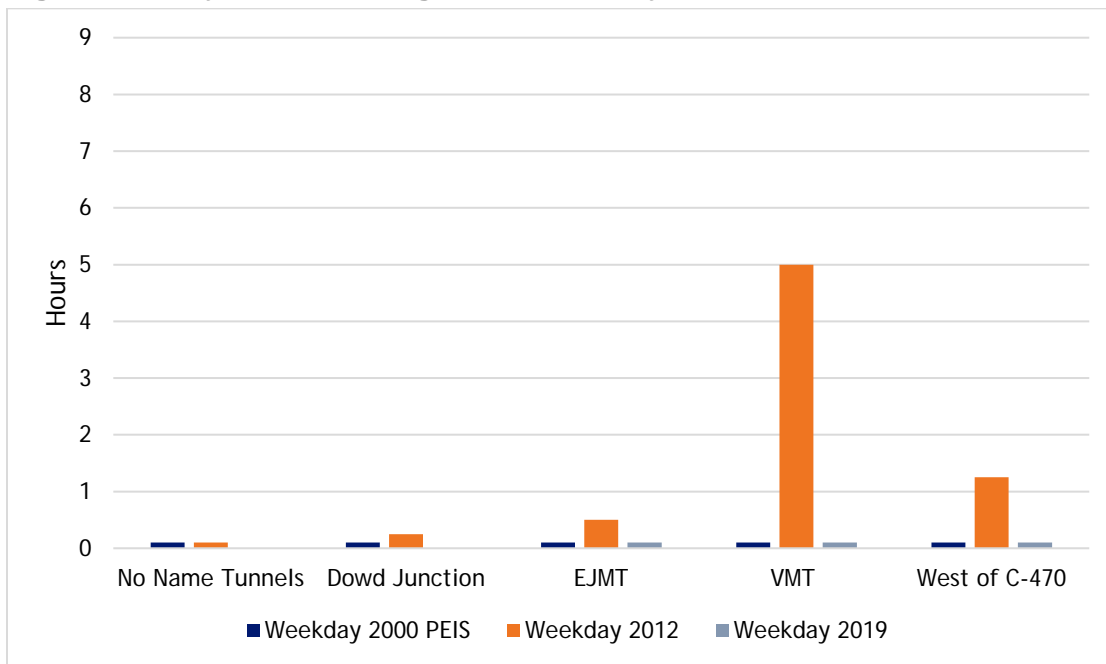
Results were reasonable but two potential exceptions were noted in the data:

- **No Name Tunnels.** The results for 2019 weekdays appear to be skewed for unknown reasons.
- **Dowd Junction.** The results for the 2019 weekdays appear to be skewed. Congestion occurs between 6:00 PM and 10:00 PM which seems unlikely.

These un-intuitive data points were omitted from the summary of findings.

SUMMARY OF FINDINGS

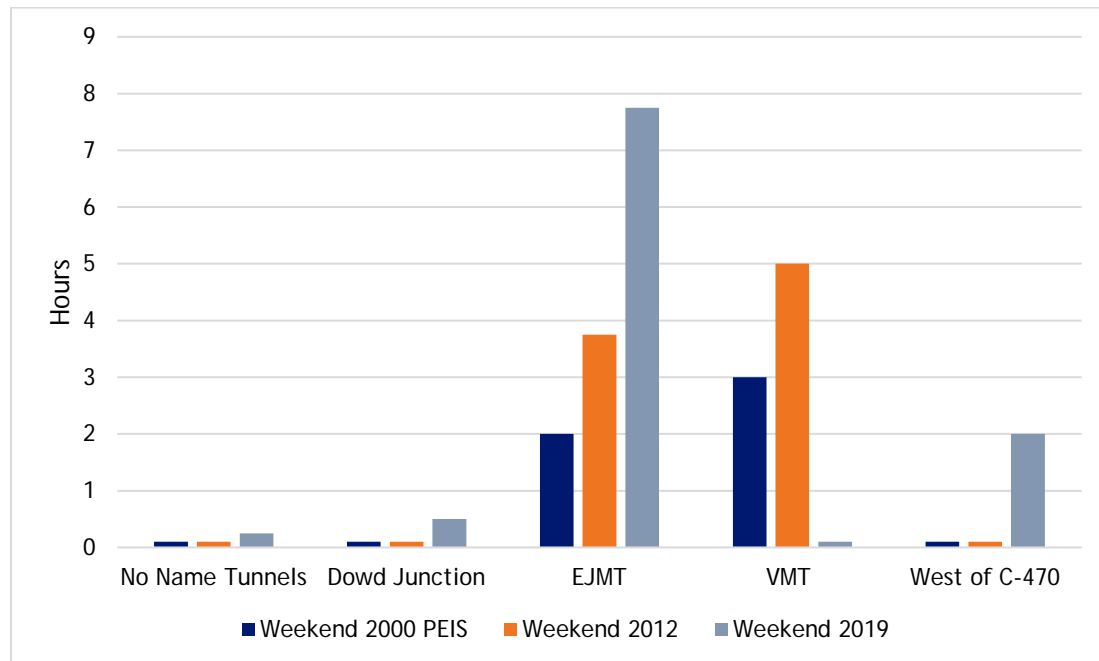
Figure 16. Daily Hours of Congestion: Weekday



Source: INRIX.

EJMT = Eisenhower-Johnson Memorial Tunnels; VMT = Veterans Memorial Tunnels

Figure 17. Daily Hours of Congestion: Weekend



Source: INRIX.

EJMT = Eisenhower-Johnson Memorial Tunnels; VMT = Veterans Memorial Tunnels

OBSERVATIONS

On a typical weekday, the hours of congestion are relatively low at the representative locations in the corridor. An exception is in 2012 where the data indicate the hours of congestion peaked at Veteran Memorial Tunnels, and also on C-470. In 2019, after the tunnels were widened to three lanes (and three lanes were continued eastbound to the base of Floyd Hill), the hours of congestion drop to a nominal amount at these two locations.

On a typical weekend day, the hours of congestion are relatively low at the western representative locations at No Name Tunnels and Dowd Junction. However, at EJMT the hours of severe congestion, already notable in 2000, continue to rise through 2012 and 2019. This is also the case at Veteran Memorial Tunnels. However, in 2019, after the tunnels were widened to three lanes (and three lanes were continued eastbound to the base of Floyd Hill), the hours of congestion drop back to a nominal number.

Crash Data

Safety data is presented in Component 2—Improve Mobility and Accessibility section above.

Travel Time/Reliability

Travel time data is presented in the Component 2—Improve Mobility and Accessibility section above.

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I-70 MOUNTAIN CORRIDOR REASSESSMENT NARRATIVE

Step 2 Effectiveness of Implementation of Preferred Alternative Components

July 6, 2020

WORK PLAN STEP 2 ASSESS EFFECTIVENESS

From the Collaborative Effort Record of Decision (ROD) 2020 Reassessment Work Plan, Step 2 is to assess the effectiveness of the implementation of components of the Preferred Alternative. Step 2A and Step 2B are described as follows:

Step 2A: Determine how to measure/assess effectiveness. This will include an evaluation against the Purpose and Need and may include other factors as recommended by the subcommittee. Data collection will be needed such as:

- Travel time before and after implementation of an improvement
- Incident response times before and after implementation of an improvement
- Transit ridership before and after implementation of an improvement
- Person/vehicle capacity of surrounding area before and after implementation of an improvement
- How well have we been providing for and accommodating community values and environmental sensitivity (qualitative)
- Others

Step 2B: Assess the effectiveness of the implementation of the Preferred Alternative to date along with the remaining elements of the Minimum and Maximum Programs of Improvements/Preferred Alternative, timing, and anticipated effects. This analysis of components (Non-Infrastructure Related Components, Advanced Guideway System [AGS], and Highway Improvements) is taken directly from the ROD to show the details under each component as listed.

ASSESS EFFECTIVENESS OF OTHER COMPONENTS

The effectiveness of the Purpose and Need includes other components for consideration. The Context Sensitive Solution (CSS) process decision making principles must be applied to each life cycle of all I-70 Mountain Corridor Tier 2 projects. The CSS decision making process identifies core values that must be included for consideration in the project development process. These core values include but are not limited to, maintaining a healthy environment which preserves restores and enhances natural resources in the Tier 2 project areas and respecting community values that promote community character and their viability.

Consideration of environmental sensitivity and community values is paramount to assessing effectiveness of the of Tier 2 projects in meeting the overall corridor Purpose and Need.

The Final 2011 I-70 Mountain Corridor Programmatic Environmental Impact Statement (PEIS) Purpose and Need included language that transportation solutions *must* provide for and accommodate environmental sensitivity and community values.

Environmental Sensitivity

Acknowledging Environmental Sensitivity from project development through operations and maintenance directs stakeholders to avoid and minimize adverse impacts on and, where possible, enhance environmental resources, including, but not limited to, stream sedimentation, water quality, wildlife crossings, and impacts on wetlands. CSS guidance includes many tools to meet this objective to protect and enhance these natural and biological resources.

- Stream and Wetland Ecological Enhancement Program (SWEEP): The PEIS includes a Memorandum of Understanding to convene a SWEEP Issue Task Force for each Tier 2 project in order to integrate and address water resource needs with design elements during construction and long term maintenance and operations. The SWEEP identifies opportunities to enhance water quality, address sediment control, consider wetlands—fisheries, riparian areas and protection of necessary aquatic biota.
- A Landscape Level Inventory of Valued Ecosystem Components (ALIVE): The PEIS includes a Memorandum of Understanding for interagency collaboration to provide an opportunity to address issues related to wildlife connectivity and habitat fragmentation. An ALIVE Issue Task Force has been convened for Tier 2 projects to look at project specific opportunities to identify and mitigate wildlife permeability issues.

Community Values

Similarly, acknowledging community values in Tier 2 projects includes the objective to avoid and minimize adverse impacts on community values that define and retain community character. Tier 2 projects where possible, should consider and enhance air quality and historic resources, address impacts to noise levels, visual resources, and social and economic values, as well as minimize the transportation system's footprint on the mountain communities. Several agreements are in place to consider these resources during project planning and subsequent life cycles of Tier 2 projects. The following agreements are in place to retain community values.

- I-70 Mountain Corridor Section 106 Programmatic Agreement. Historic context, including historic features and landmarks, are critical to defining and retaining community character. A Programmatic Agreement was developed specifically to honor and retain the historic context in the corridor. A Section 106 Issue Task Force is convened to ensure the preservation of historic resources is taken into consideration when planning and constructing Tier 2 projects.

- I-70 Mountain Corridor Aesthetics Guidance. The I-70 Mountain Corridor Aesthetic Guidance provides an aesthetic vision for the entire corridor that will guide the design of future projects and improvements. The guidance defines the corridor as a whole rather than defining it in construction phases or funding increments. This ensures that future projects do not become separate and disconnected from the entire corridor. The guidance is intended to be used in all future design efforts for Tier 2 projects. Location specific considerations are included in the guidance for earthwork, rock cuts, vegetation clearing, revegetation practices, retaining wall design, bridges, sound attenuation, trails, and bike paths.
- I-70 Mountain Corridor Design Criteria and Design Criteria Exceptions process. Design guidelines have been developed for the I-70 Mountain Corridor. During project development for Tier 2 projects, the team uses the guidelines to inform the design. The design is also informed by partnerships with the local community, agencies and stakeholders with a vested interest. The I-70 Mountain Corridor CSS process allows deviations from the Design Criteria if it's not feasible. Design Exceptions must be vetted through work with the Project Leadership Team, Technical Team and Issue Task Forces. The Design Exceptions process requires measuring each request against nine justification criteria – including complementing the surrounding physical characteristics, enhancing safety, increasing capacity, protecting the environment, utilizing new technology and others.

METHODOLOGY

Several Tier 2 projects along the corridor have been constructed as part of the Minimum Program of the Preferred Alternative. Both infrastructure and non-infrastructure projects have been constructed such as the Eastbound Mountain Express Lane, the Fall River Road bridge, Veterans Memorial Tunnels, and improvements to the Eagle Spur Road. For the Reassessment, a review of these projects was conducted to determine if project mitigation developed as part of the working groups and task forces was included in design documents and if project specific mitigation was included in final design and construction documents.

SUMMARY OF FINDINGS

The Project Leadership Teams, Technical Teams, and Issue Task Forces on the Tier 2 projects to date have used the CSS guidance to identify areas where impacts can be avoided or minimized and resources that can be enhanced to accommodate Environmental Sensitivity and Community Values. Using the CSS guidance, the Aesthetics Guidance, Design Criteria, and ALIVE, SWEEP, and Section 106 Issue Task Forces have been instrumental in the application of processes to retain and enhance values specific to project locations along the corridor in order to successfully address impacts to community resources and provide mitigation for a majority of the impacts. Opportunities for enhancement are sometimes limited, but implemented when feasible.

While all projects along the corridor have followed the PEIS agreements and processes to avoid and minimize impacts to communities and the environment, several have gone above and

beyond to enhance these values. Some successful examples of application of the CSS process and aesthetic guidelines and design criteria, SWEEP and ALIVE Memoranda of Understanding, and the Section 106 Programmatic Agreement include the following:

- The Veterans Memorial Tunnels (Twin Tunnels) project was the first Tier 2 process conducted after the PEIS, and it was developed on a very accelerated timeline that was born out of a visioning exercise with stakeholders and industry experts to identify possibilities for constructing the Veterans Memorial Tunnels expansion on an accelerated timeline. Stakeholder involvement in developing the project's goals, core values, criteria, and desired outcomes through the CSS process allowed CDOT to accelerate the project schedule, avoid backtracking, and develop a quality project. The Veterans Memorial Tunnels' collaborative approach demonstrates that building trust with stakeholders at all levels is an integral part of expedited project delivery, and FHWA formally recognized CDOT's achievements with a 2013 Environmental Excellence Award for Environmental Streamlining. Specific design elements that supported environmental sensitivity included:
 - A partnership with Colorado Parks and Wildlife (CPW), Trout Unlimited, Clear Creek Watershed, and others to restore aquatic habitat and water quality through a portion of Clear Creek downstream of the Game Check Area Park. Since implementation of the mitigation, trout biomass has increased, and recreational access to the creek has been enhanced.
 - An adaptive mitigation approach that incentivized the Construction Manager/General Contractor (CM/GC) to avoid or minimize environmental impacts during construction to reduce mitigation requirements (if impacts were avoided, compensatory mitigation was not required).
 - Use of visual simulations to support decisions regarding tradeoffs between impacts to the median and Clear Creek. CDOT and FHWA sought and honored public input during the NEPA process (both options were carried forward and analyzed) to minimize impacts to the creek and shift into the median.
- The Eastbound Peak Period Shoulder Lane (PPSL) project (now known as the Eastbound Mountain Express Lane, or MEXL) was developed out of the adaptive management approach of the PEIS to provide significant congestion relief with a much smaller impact to the environment and community than would be required to add a permanent travel lane. This concept of utilizing existing infrastructure is one of the non-infrastructure components in the PEIS, and the CSS process helped FHWA, CDOT, and stakeholders come to agreements about how the project should operate. The innovative project was the nation's first project to use a highway shoulder as a part-time lane based on recreational traffic. Working through the CSS process, the project was able to be designed to avoid acquiring new right-of-way; avoid adverse effects to historic properties; and minimize wetland impacts, including placing fill and removing valuable riparian vegetation along Clear Creek. The design changes supported environmental sensitivity and allowed the project to be processed as a Categorical

Exclusion. The project resulted in a noticeable increase in economic activity in Idaho Springs; enhanced reliability of travel for recreational travelers, community residents, and emergency vehicles; reduced air pollution associated with congestion; improved wildlife connectivity; and enhanced the historic Water Wheel Park in Idaho Springs.

- During the Westbound PPSL project, the ALIVE Issue Task Force met three times during the design (life cycle phase 3) to evaluate opportunities to reduce big horn sheep mortality near Empire Junction (US 40). The group used information from stakeholders, including CPW, to identify areas where mitigation measures could be applied to reduce mortality and wildlife vehicle collisions; examples include limiting and removing vegetation in roadside areas, adding targeted signage in two locations to warn motorists of seasonal migration, the addition of guardrail to redirect wildlife, and providing median barrier gaps for small animal migration. This project also raised awareness of bighorn sheep conflicts, which were identified in the ALIVE MOU as one of the Linkage Interference Zones.
- During the Eastbound Auxiliary Lane from EJMT to Herman Gulch project, the SWEEP MOU was followed, and the project was redesigned (shortened) to avoid impacts to fen wetlands. Fens are ancient wetlands (thousands of years old) that are recognized as irreplaceable resources in the Southern Rocky Mountain Region due to the functional and biological values they provide. They are afforded special protection because of their rarity and the difficulty of mitigation and restoration. Several fen wetland complexes were identified in the project area during the NEPA phase, and the project was modified to avoid impacting these irreplaceable resources. The construction phase carefully monitored the identified fens to avoid direct or indirect impacts. The Technical Team, Project Leadership Team, and CE agreed that shortening this project to avoid fen impacts was the right approach.

SUMMARY OF FINDINGS

Implementation of the agreements along the corridor provides a successful framework in which to accommodate objectives specified in the Purpose and Need. Environmental Sensitivity and Community values were considered, accommodated and included in developing the Purpose and Need for the PEIS. Project-specific mitigation to protect resources is included in planning, design and construction of Tier 2 projects.

There are five life cycle phases for each Tier 2 project; implementation of these agreements have protected invaluable resources along the corridor when viable. Often working groups are convened and included during the first three life cycles of planning, project development and design and these agreements are successfully applied and included in planning, project development and design. Stakeholder feedback indicates that working group and issue task force objectives have not been applied as successfully during the last 2 life cycle phases (project construction and operations, maintenance and monitoring).

There was general agreement among the group that some projects more effectively used the CSS process and implementation of agreements.

In summary, the most effective projects in providing for and accommodating environmental sensitivity and respect for community values were those that carried CSS through all the life cycles, included tracking of environmental and community values through those phases, and those that incorporated best practices and lessons learned from previous projects.

IMPLEMENTATION STATUS: REVIEW OF TRANSPORTATION FUNDING INITIATIVES

Statewide Transportation Funding Proposals from 1999 through 2020

METHODOLOGY

There have been multiple efforts over the last 20 years proposing to increase funding for transportation. Information is available online concerning transportation funding proposals, bills and initiatives 1999-2020. Some of those proposals came in the form of introduced legislation, legislatively referred measures, and citizen ballot initiatives. Some proposals focused solely on funding for the state transportation system; others proposed to increase funding for the state, counties, and municipalities. Some proposals called for allocating funding for transportation from the state's general fund and other proposed raising new taxes or fees. Additional information on the amount of historical amount of transportation funding is available in <https://leg.colorado.gov/publications/2019-colorados-transportation-system>.

SUMMARY OF FINDINGS

The summary of findings is shown below in Table 1.

Table 1. Outcomes of Colorado Transportation Funding Measures (1999-2020)

Year	Proposal (Title Or Bill #)	Description	Proposal Outcome
1999	Referendum A	TRANS bonds—Referred measure enabling the state to bond against anticipated federal HTF to funding specific list of projects including I70 West	Passed at ballot
2001	Amendment 26—Surplus Revenue to Test I-70 Fixed Guideway	The amendment proposed to expend \$50 million of surplus state revenue to plan and test a fixed guideway transportation system for the I-70 corridor linking Denver International Airport and Eagle County Airport; and exempts the Colorado Intermountain Fixed Guideway Authority from state constitutional revenue and spending limitations.	Failed at ballot
2002	HB02-1310	HB 02-1310 transferred two thirds of the excess General Fund reserve remaining after TABOR refunds, the statutory reserve, a 6 percent increase in General Fund appropriations, and the SB 97-1 diversion to the HUTF.	Passed in legislature
2008	Amendment 52—Severance Tax for Transportation	Amendment 52 proposed amending the Colorado Constitution to require the state legislature to spend a portion of state severance tax collections on highway projects.	Failed at ballot
2008	Amendment 58—Severance Taxes on the Oil and Natural Gas Industry	Amendment 58 proposed changing the Colorado statutes to: <ul style="list-style-type: none"> ▪ increase the amount of state severance taxes paid by oil and natural gas companies, primarily by eliminating an existing state tax credit; ▪ Allocate the increased severance tax revenue to college scholarships for state residents, wildlife habitat, renewable energy projects, transportation projects in energy-impacted areas, and water treatment grants; and ▪ Exempt all oil and gas severance tax revenue from state and local spending limits. 	Failed at ballot
2009	SB08-108 -FASTER	Increased various fees (vehicle registration, late fees, rental cars) allocated to State/counties/cities for investment in transportation infrastructure. Created HPTE and Bridge Enterprise.	Passed
2009	SB09-228	SB 09-228 altered the limit on General Fund (GF) appropriations, repealed the SB 97-1 diversion and HB 02-1310 transfers, and required alternative transfers (subject to triggers) to transportation, capital construction, and the General Fund statutory reserve.	Passed
2010	Proposition 101—Income, Motor Vehicle and	Proposition 101 proposed amending the Colorado statutes to: <ul style="list-style-type: none"> ▪ reduce the state income tax rate from 4.63 percent to 4.5 percent in 2011, and to 3.5 percent gradually over time; 	Failed at ballot

Table 1. Outcomes of Colorado Transportation Funding Measures (1999-2020)

Year	Proposal (Title Or Bill #)	Description	Proposal Outcome
	Telecommunications Taxes and Fees	<ul style="list-style-type: none"> Reduce or eliminate taxes and fees on vehicle purchases, registrations, leases, and rentals over the next four years; Eliminate all state and local taxes and fees on telecommunication services, except 911 fees; and Require voter approval to create or increase fees on vehicles and telecommunication services. 	
2016	SB16-210	Fix Colorado Roads Act. Proposed to require the Transportation Commission to place a measure on the ballot authorized Transportation Revenue Anticipation Notes (TRANs bonds) and dedicating five percent sales and use tax revenue from the general fund without raising taxes	Failed in legislature
2017	HB17-1171	Proposal for a referred ballot measure to authorize CDOT to issue new Transportation Revenue Anticipation Notes	Failed in legislature
2017	HB17-1242	Proposal for New Transportation Infrastructure Funding Revenue, refer ballot measure to increase sales and use taxes by 0.5 percent and authorize bonding up to \$3.5b	Failed in legislature
2017	SB17-205	Proposal to all the Transportation Commission to submit a ballot question to the voters at either the November 2017, 2018, or 2019 election, which, if approved, would have increased the state sales and use tax from 2.9% to 3.15%, also allowed for bonding against tax revenue	Failed in legislature
2017	SB17-267	SB 17-267 authorized executions of lease-purchase agreements to fund transportation in FY 2018-19 (\$424 million for transportation), FY 2019-20, FY 2020-21, and FY 2021-22 (\$500 million for transportation each year). The bill requires General Fund obligations for lease payments each year; the obligation grows as agreements are executed and will total \$91 million annually beginning in FY 2021-22	Passed
2018	Proposition 110—Transportation Bond Issue and Sales Tax Increase	Statewide ballot proposal to increase sales tax by 0.62 percent for 20 years to support state and local roadway and transit investments.	Failed at ballot
2018	Proposition 109—Transportation Bond Issue and Reallocation of Existing Revenue	Statewide ballot proposal to issue \$3.5b in bonds for transportation utilizing general fund revenues to pay debt service	Failed at ballot

Table 1. Outcomes of Colorado Transportation Funding Measures (1999-2020)

Year	Proposal (Title Or Bill #)	Description	Proposal Outcome
2018	SB18-001	SB 18-001 transferred of \$495 million in FY 2018-19 and \$200 million in FY 2019-20 from the General Fund to a combination of the State Highway Fund, the HUTF, and the Multimodal Transportation Options Fund. For FY 2020-21 through FY 2039-40, the bill transfers \$50 million annually from the General Fund to the State Highway Fund.	Passed
2019	HB19-1157	Proposed to modify and increase Specific Ownership Tax Rates and allocate to HUTF	Failed
2019	SB19-051	Proposal to increase the SB18-001 general fund allocation to transportation from \$150M to \$340m	Failed
2019	SB19-239	Proposed for CDOT to conduct an analysis of impact of emerging technologies on the state transportation system and make recommendations (including tax and fee proposals)	Passed
2019	SB19-262	General Fund transfer of \$100m to transportation, one time only	Passed
2019	Proposition CC	Statewide ballot proposal referred by the legislature to retain TABOR Surplus funds for education and transportation.	Failed at ballot
2020	HB20-1151	Expand authority of transportation planning regions—bill proposed to give regional planning entities (MPOs and TRP) a streamlined approach to creating regional transportation authorities to fund transportation.	Introduced
2020	SB20-44	Bill proposed to allocate sales and use tax revenue attributable to the sales or use of vehicles and related items to transportation funding.	Failed

Sources:

“2019 Transportation Handbook.” Colorado Legislative Council, Colorado General Assembly, Nov. 2019, leg.colorado.gov.

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“Prior Session Information 2016-2020.” Prior Session Information | Colorado General Assembly, leg.colorado.gov/prior-session-information.

“Prior Session Information 1999-2015.” Prior Session Information | Colorado General Assembly, leg.colorado.gov/prior-session-information.

“Colorado Transportation Commission.” January TC Packet, Jan. 2020, www.codot.gov/about/transportation-commission/documents/2020-supporting-documents/tc-january-2020-packet.pdf.

SUMMARY OF FINDINGS

As presented in Table 1, there have been multiple attempts over the years to increase state investment in transportation. The efforts have resulted in more failures than successes.

ASSESS THE EFFECTIVENESS OF THE IMPLEMENTATION OF THE PREFERRED ALTERNATIVE

METHODOLOGY

An effectiveness rating was given to those Preferred Alternative components that are ongoing or completed projects. These were each rated with a Low, Medium, or High Effectiveness in regards to mobility and safety. As an initial broad-brush sketch analysis for the planning discussion, a quantitative benefit was calculated and presented alongside the project cost. This was only calculated for those projects that had before and after empirical data available. Further data and detailed technical analysis is needed, as assumptions were needed to complete the sketch calculations. These calculations are in Attachment A through Attachment F.

SUMMARY OF FINDINGS

Information on the status and effectiveness of each of the components of the Preferred Alternative is presented in Table 2. It is recognized that each of the components incrementally contributes towards the realization of the I-70 Mountain Corridor's Purpose and Need and Preferred Alternative. As individual components are implemented during Tier 2 processes, progress will continue towards the implementation of the Preferred Alternative and fulfillment of the Purpose and Need. The effectiveness of each individual component is assessed accordingly.

Additional Travel Time Information, to supplement Attachment A, is available for the Eastbound MEXL, which is part of the Non-Infrastructure Improvements: Expanded use of existing transportation infrastructure category of the Preferred Alternative.

Table 2. Preferred Alternative Minimum Program of Improvements—Status of Implementation

*Completed refers to a project that has been finished with a completion date								**In progress refers to a project that is in planning or construction				Purpose and Need Components: 1. Increase capacity 2. Improve mobility and accessibility 3. Decrease congestion	
Line #	Preferred Alternative Item	*Completed	Completion Date	Completed Actions *	**In Progress/Ongoing	Work in Progress/Ongoing**	Effectiveness Observation (if available)	Purpose and Need Component (measures)	Effectiveness Rating		Recommended Level of Effort (Step 4 Activity)		
									High Effectiveness	Medium Effectiveness		Low Effectiveness	Mobility
Non-Infrastructure Related Components													
1	Increased Enforcement				✓	<p>"For the MEXL, the Colorado State Patrol (CSP) increased safety enforcement in 2019 with troopers on overtime along the eastbound mountain express lane from Empire to Idaho Springs to help decrease unsafe driving behavior and increase efficiency.</p> <p>Overall, each CSP troop defines goals and objectives to reduce crashes and save lives. Troop 1A picked the lower end of I-70 as a primary targeted roadway. The troop is using a targeted saturation methodology with team operations, using multiple troopers."</p>	<p>"For the MEXL effort, the CSP reports the number of crashes did not appreciably decrease with increased enforcement, so the benefits did not justify the costs of overtime for troopers.</p> <p>With the targeted saturation strategy, the number of contacts with passenger vehicles and commercial vehicles have gone up significantly. Crashes are way down. Impossible to say if the effect is from COVID-19 or the targeted enforcement; probably some of both. "</p>	2: Improved mobility and accessibility (travel time/reliability)	Unknown	Unknown			
2	Bus, van, or shuttle service in mixed traffic				✓	<p>Ski shuttles continue to serve the corridor.</p> <p>Bustang service, which began in 2015, provides daily trips to and from corridor communities and Denver, but does not serve peak direction recreational trips at peak demand.</p> <p>Snowstang service, initially piloted in 2017, was launched in 2019 to three resorts.</p>	<p>In 2019, Bustang ridership was over 70,000 passengers compared to just over 26,000 in 2016, representing a 170% increase. In 2018, Bustang averaged 3,050 riders a month throughout the Corridor.</p> <p>Preliminary Snowstang ridership found that buses to Loveland and A-Basin were running 49% full; Steamboat buses were running 30% full. These both exceed CDOT's initial expectations. 40% of the riders are out-of-state or international tourists. In the inaugural 2019-2021 seasons, sold more than 2,000 tickets over 14 weekends.</p>	1: Increased capacity (person trips, transit ridership)	See separate table	Unknown			
3	Programs for improving truck movements				✓	<p>Revisions to the traction and chain laws to improve safety and operations;</p> <p>Off-corridor staging areas for trucks during adverse weather events;</p> <p>Variable speed limits in Glenwood</p>	<p>Remote tunnel metering reduces heavy tow incidents during adverse weather events.</p> <p>Truck parking program has facilitated off-mainline parking during closures for a safer mainline and truck operations.</p>	2: Improved mobility and accessibility (travel time/reliability, safety data); 3: Decreased	(Based on limited data and group discussion)	(Based on limited data and group discussion)			

Table 2. Preferred Alternative Minimum Program of Improvements—Status of Implementation

*Completed refers to a project that has been finished with a completion date										**In progress refers to a project that is in planning or construction										Purpose and Need Components: 1. Increase capacity 2. Improve mobility and accessibility 3. Decrease congestion	
Line #	Preferred Alternative Item	*Completed	Completion Date	Completed Actions *	**In Progress/Ongoing	Work in Progress/Ongoing**	Effectiveness Observation (if available)	Purpose and Need Component (measures)	Effectiveness Rating		Recommended Level of Effort (Step 4 Activity)										
									High Effectiveness			Needs to be Initiated									
									Medium Effectiveness		Continue with Current Level of Effort										
									Low Effectiveness				More Effort Needed								
									Mobility	Safety	Reduce Effort										
						Canyon; Remote continuous flow metering at Silverthorne to improve truck traction approaching the tunnel eastbound; Active Corridor Management. Colorado Motor Carriers Association (CMCA) programs include public service announcements (PSAs) on chain awareness, providing a best practices document, and working with trucking firms that are repeat offenders.		congestion (travel time/reliability, level of service)													
4	Driver education				✓	Gol-70.com shares news and other articles that help educate drivers on traveling through the I-70 Mountain Corridor. Topics include: Available transit and carpool services, real-time information sources, Colorado Traction Laws, Tire Checks, Move it Law, Move Over Law, Left Lane Law and Avalanche Activity. Additional outreach to travelers is done through the blog, social media, eBlasts and extensive partner outreach. CMCA has produced an audio guide for truckers to safely drive the I-70 Mountain Corridor, by milepost	Analytics show Gol-70.com site visitation has grown consistently since 2009. Last winter, the website received over 15,000 hits in a single day. Traction law compliance will be evaluated in 2020.	2: Improved mobility and accessibility (travel time/reliability, safety data)	(Based on limited data and group discussion)	(Based on limited data and group discussion)											
5	Expanded use of existing transportation infrastructure in and adjacent to the corridor	✓	Dec. 2015	Eastbound Mountain Express Lane (MEXL) opened in December 2015. Updated each county's Traffic Incident Management Plans Active corridor management has been implemented, including creation of a full-time corridor operations manager	✓	Westbound MEXL project under construction, opening projected for 2021.	" • The EB MEXL diverts 750 to 900 cars from the free general-purpose lanes. This alleviates traffic congestion in the Express Lane, and decreases congestion in general-purpose lanes and frontage roads travel time savings. • Travel times have improved. For example, on July Sundays 2012-2014, eastbound travel time averaged 42 to 51 minutes. On July Sundays 2016-	2: Improved mobility and accessibility (travel time/reliability, incident response times); 3: Decreased congestion (level of service, travel time/reliability)	See separate table	(Based on limited data and group discussion)											

Table 2. Preferred Alternative Minimum Program of Improvements—Status of Implementation

*Completed refers to a project that has been finished with a completion date								**In progress refers to a project that is in planning or construction				Purpose and Need Components: 1. Increase capacity 2. Improve mobility and accessibility 3. Decrease congestion	
Line #	Preferred Alternative Item	*Completed	Completion Date	Completed Actions *	**In Progress/Ongoing	Work in Progress/Ongoing**	Effectiveness Observation (if available)	Purpose and Need Component (measures)	Effectiveness Rating		Recommended Level of Effort (Step 4 Activity)		
									High Effectiveness		Needs to be Initiated		
									Medium Effectiveness		Continue with Current Level of Effort		
									Low Effectiveness		More Effort Needed		
									Mobility	Safety	Reduce Effort		
				Ramp meters have been installed throughout much of the corridor.			2018, travel time averaged 21 to 24 minutes. • Over the entire 12-mile MEXL corridor as a whole, crashes have increased slightly more than would have been expected without changes to the roadway over the time period. • Crashes have increased significantly in the western 5 miles of the corridor and this increase may be a product of substandard cross section elements and weaving associated with the US 40 entrance and express lane access combination. • Crashes have decreased significantly in the eastern 2 miles and this decrease may be a product of the major geometric and cross section improvements that resulted from the Veterans Memorial Tunnel expansion project. • Crashes in the middle 5 miles increased slightly. This segment has substandard cross section elements but does not have any high-volume exit or entrance ramps or any legal access to the managed lane.						
6	Use of technology advancements and improvements to increase mobility without additional infrastructure				✓	Technological advancements without the addition of infrastructure include: Electronic Signage, Intelligent Transportation System and Vehicle to Infrastructure (V2X) Data Ecosystem. CDOT is currently testing V2X throughout the corridor. CoTrip.org and GovDelivery/Travel Alerts have been improved in recent years.	As this technology matures and is installed along the corridor, effectiveness evaluations will be conducted	2: Improved mobility and accessibility (travel time/reliability, safety data)	(Based on limited data and group discussion)	(Based on limited data and group discussion)			
7	Traveler information and other information technology systems				✓	Traveler information is shared via Intelligent Transportation System; CoTrip; Variable Message Signs		2: Improved mobility and accessibility (travel	(Based on limited data)	(Based on limited data)			

Table 2. Preferred Alternative Minimum Program of Improvements—Status of Implementation

*Completed refers to a project that has been finished with a completion date										**In progress refers to a project that is in planning or construction										Purpose and Need Components: 1. Increase capacity 2. Improve mobility and accessibility 3. Decrease congestion	
Line #	Preferred Alternative Item	*Completed	Completion Date	Completed Actions *	**In Progress/Ongoing	Work in Progress/Ongoing**	Effectiveness Observation (if available)	Purpose and Need Component (measures)	Effectiveness Rating		Recommended Level of Effort (Step 4 Activity)										
									High Effectiveness	Medium Effectiveness		Low Effectiveness	Mobility	Safety							
						(VMS);CDOT Alert Texts; CDOT email alerts		time/reliability, safety data)	and group discussion)	and group discussion)											
8	Shift passenger and freight travel demand by time of day and day of week				✓	The most popular feature of Gol70.com is the weekend travel forecast which is intended to shift passenger travel demand by time of day and day of week. Over 150 dining and lodging businesses along the I-70 Mountain Corridor offer deals to encourage drivers to avoid peak travel times. Examples include: \$2 tacos from 4-6pm on Saturdays and Sundays at Twist; 20% off activities at Lawson Adventure Park Saturday & Sunday 4pm-close.	The Gol-70.com weekend travel forecast received over 130,000 views during the 2019-2020 winter season. Analysis of data in 2011 indicated that peak traffic had noticeably shifted since the promotion of off peak travel began 2009.	2: Improved mobility and accessibility (travel time/reliability); 3: Decreased congestion (level of service, travel time/reliability)	(Based on limited data and group discussion)	(Based on limited data and group discussion)											
9	Convert day trips to overnight stays				✓	Gol70.com Peak Time Deals worked with the lodging community to create Sunday Night Stay promotions. These are posted on the Peak Time Deals and promoted frequently through Gol70 blogs, eBlasts, social posts and stakeholder outreach. Examples include: \$125 Sunday night at the Sitzmark Lodge in Vail; 20% off a Sunday night stay at the Wedgewood Lodge in Breckenridge		2: Improved mobility and accessibility (travel time/reliability); 3: Decreased congestion (level of service, travel time/reliability)	(Based on limited data and group discussion)	(Based on limited data and group discussion)											
10	Convert single occupancy vehicle commuters to high occupancy travel and/or public transportation				✓	Transit promotion incentives include traveling in groups to receive discounted fares. Resorts are offering incentives to carpool by promoting reduced or free parking as well as discounted lift tickets for groups that travel together. For example, Keystone, Breckenridge, Copper Mountain and Arapahoe Basin have carpool parking incentive programs, offering discounted parking, close-in parking or discounted lift tickets. Summit express airport shuttle offers a savings of \$12 per person when traveling with 3 or more passengers.	These programs are most likely contributing to the success of the Bustang ridership	1: Increased capacity (person trips, transit ridership)	(Based on limited data and group discussion)	(Based on limited data and group discussion)											

Table 2. Preferred Alternative Minimum Program of Improvements—Status of Implementation

*Completed refers to a project that has been finished with a completion date								**In progress refers to a project that is in planning or construction				Purpose and Need Components: 1. Increase capacity 2. Improve mobility and accessibility 3. Decrease congestion	
Line #	Preferred Alternative Item	*Completed	Completion Date	Completed Actions *	**In Progress/Ongoing	Work in Progress/Ongoing**	Effectiveness Observation (if available)	Purpose and Need Component (measures)	Effectiveness Rating		Recommended Level of Effort (Step 4 Activity)		
									High Effectiveness			Needs to be Initiated	
									Medium Effectiveness		Continue with Current Level of Effort		
									Low Effectiveness		More Effort Needed		
									Mobility	Safety	Reduce Effort		
11	Implement transit promotion incentives				✓	Transit promotion incentives include traveling in groups to receive discounted fares. Resorts are incentivizing carpooling by offering reduced or free parking as well as discounted lift tickets. Summit Express airport shuttle offers a savings of \$12 per person when traveling with 3 or more passengers. For example, Loveland Ski Area and Arapahoe Basin offered lift ticket discounts for Front Range Ski Bus riders. Arapahoe Basin offered food and beverage vouchers for Snowstang riders. Some airport shuttles offer discounts through GoI70 Peak Time Deals.	These programs are most likely contributing to the success of the Bustang ridership	1: Increased capacity (person trips, transit ridership)	(Based on limited data and group discussion)	(Based on limited data and group discussion)			
12	Other transportation demand management measures to be determined				✓	I-70 Coalition frequently communicates transportation demand management messages and strategies with partners who are encouraged to 'share' with their network and customers. Partners include resorts, local government public information officers (PIOs), Information/Welcome Centers, resort associations, property managers, lodging sector, destination marketing organizations and chambers of commerce. I-70 Coalition created and piloted the Why Drive? Campaign in coordination with the lodging sector to promote transportation alternatives to mountain visitors. Since 2012, I-70 Coalition has undertaken a bi-annual research study program. These surveys inform how existing travel resources and programs are being received and utilized by the traveling public and how they might be improved.		2: Improved mobility and accessibility (travel time/reliability)	(Based on limited data and group discussion)	(Based on limited data and group discussion)			

Table 2. Preferred Alternative Minimum Program of Improvements—Status of Implementation

Line #	Preferred Alternative Item	*Completed	Completion Date	Completed Actions *	**In Progress/Ongoing	Work in Progress/Ongoing**	Effectiveness Observation (if available)	Purpose and Need Component (measures)	Purpose and Need Components: 1. Increase capacity 2. Improve mobility and accessibility 3. Decrease congestion		
									Effectiveness Rating		Recommended Level of Effort (Step 4 Activity)
									High Effectiveness		
									Medium Effectiveness		
									Low Effectiveness		
Mobility	Safety										
Advanced Guideway System											
13	Feasibility of high speed rail passenger service				✓	AGS Feasibility Study (August 2014)			Incomplete	Incomplete	
a	Potential station locations and local land use considerations				✓	AGS Feasibility Study (August 2014)			Incomplete	Incomplete	
b	Transit governance authority				✓	AGS Feasibility Study (August 2014)			Incomplete	Incomplete	
c	Alignment				✓	AGS Feasibility Study (August 2014)	Several alignments are viable, but Hybrid Alignment is preferred		Incomplete	Incomplete	
d	Technology				✓	AGS Feasibility Study (August 2014)	Study finding: Fixed guideway options are technically feasible but not financially feasible as of 2014 (no funding identified as of 2020)		Incomplete	Incomplete	
e	Termini				✓	AGS Feasibility Study (August 2014)			Incomplete	Incomplete	
f	Funding requirements and sources				✓	AGS Feasibility Study (August 2014)	Study finding: Fixed guideway options are technically feasible but not financially feasible as of 2014 (no funding identified as of 2020)		Incomplete	Incomplete	
g	Transit ridership				✓	AGS Feasibility Study (August 2014), Interregional Connectivity Study (January 2014), & Economic Impact of High-Speed Transit in the Mountain Corridor (July 2019)	Study finding: Annual ridership estimated at 4.6 to 6.2 million as of 2014, assuming a connection to a front range high speed transit system including DIA (no funding identified as of 2020)		Incomplete	Incomplete	
h	Potential system owner/operator				✓				Incomplete	Incomplete	
i	Interface with existing and future transit systems				✓	AGS Feasibility Study (August 2014) & Interregional Connectivity Study (January 2014)			Incomplete	Incomplete	
j	Role of an Advanced Guideway System in freight delivery both in and through the corridor								Incomplete	Incomplete	
14	Functioning AGS								Incomplete	Incomplete	
Highway Improvements											
Specific Highway improvements											

Table 2. Preferred Alternative Minimum Program of Improvements—Status of Implementation

*Completed refers to a project that has been finished with a completion date										**In progress refers to a project that is in planning or construction										Purpose and Need Components: 1. Increase capacity 2. Improve mobility and accessibility 3. Decrease congestion	
Line #	Preferred Alternative Item	*Completed	Completion Date	Completed Actions *	**In Progress/Ongoing	Work in Progress/Ongoing**	Effectiveness Observation (if available)	Purpose and Need Component (measures)	Effectiveness Rating		Recommended Level of Effort (Step 4 Activity)										
									High Effectiveness	Medium Effectiveness		Low Effectiveness	Mobility	Safety							
15	6 lane component from Floyd Hill through the Veterans Memorial Tunnels (MP 243 to MP247) including a bike trail and frontage roads from Idaho Springs to Hidden Valley and Hidden Valley to US 6	✓	Dec. 2014, Sept 2015, and TBD	Eastbound tunnel widened to 3 lanes; Westbound tunnel was widened to accommodate three lanes in the future; Frontage road and bike trail between Game Check area and Hidden Valley.	✓	Environmental Assessment and preliminary engineering is underway for I-70 from east of the Floyd Hill/Beaver Brook Exit (248) to Idaho Springs Exit (241). A Categorical Exclusion is underway for improvements to CR 314 between the Game Check trailhead and the City of Idaho Springs baseball fields.	The 3-lane project completed to date has improved safety: an average of 51 crashes per year from 2009 to 2011, eastbound from Twin Tunnels to base of Floyd Hill. After the major geometric and cross section improvements, an average of 22 crashes per year, from 2016 to 2018. Similar safety improvements are expected upon completion of the EA and Cat Ex projects	1: Increased capacity (person trips) 2: Improved mobility and accessibility (travel time/reliability, safety data, incident response time) 3: Decreased congestion (level-of-service, travel time/reliability)	See separate table	See separate table	Needs to be Initiated										
16	Empire Junction (US 40 and I-70) interchange improvements (MP 232)								Incomplete	Incomplete											
17	Eastbound auxiliary lane from Eisenhower-Johnson Memorial Tunnels to Herman Gulch (MP 215 - MP 218)	✓	2016	The auxiliary lane ends at approximately 217.5, a half mile west of the Herman Gulch Interchange. The Project did not extend entirely to Herman Gulch to limit environmental impacts. CE agreement on project limits.			2011-2018 data indicates an improvement in crash history. The extension of the auxiliary lane at US-6 together with implementation of the mainline metering along eastbound I-70, east of the Silverthorne/Dillon interchange, has eased some of the safety concerns in this location. During the CSS process, it was agreed to shorten the project by a 1/2 mile (to limit environmental impacts)	2: Improved mobility and accessibility (travel time/reliability, safety data); 3: Decreased congestion (level-of-service, safety data, travel time/reliability)	Unknown	See separate table											
18	Westbound auxiliary lane from Bakerville to Eisenhower-Johnson Memorial Tunnels (MP 215 to MP 221)								Incomplete	Incomplete											
Other Highway Improvements																					
19	Truck operation improvements, such as	✓	2015, 2016, and In Progress	The completed Eastbound PPSL project constructed two pull outs for emergency	✓	7 new safety pullouts will be constructed as part of the westbound PPSL project. 5 new pullouts will be constructed in the	Pullouts and expanded chain stations improve safety conditions for truck drivers	2: Improved mobility and accessibility (travel	(Based on limited data)	(Based on limited data)											

Table 2. Preferred Alternative Minimum Program of Improvements—Status of Implementation

Line #	Preferred Alternative Item	*Completed	Completion Date	Completed Actions *	**In Progress/Ongoing	Work in Progress/Ongoing**	Effectiveness Observation (if available)	Purpose and Need Component (measures)	Purpose and Need Components:		Recommended Level of Effort (Step 4 Activity)
									1. Increase capacity		
									2. Improve mobility and accessibility		
									3. Decrease congestion		
									Effectiveness Rating		
									High Effectiveness		Needs to be Initiated
									Medium Effectiveness		Continue with Current Level of Effort
									Low Effectiveness		More Effort Needed
									Mobility	Safety	Reduce Effort
	pullouts, parking, and chain stations			refuge in December 2015. East Vail chain station was expanded in 2016.		westbound direction and 2 new pullouts in the eastbound direction.	on the roadside. Traffic operations are also improved.	time/reliability, safety data)	and group discussion)	and group discussion)	
20	Safety improvements west of Wolcott	✓	2013	Super-elevation curve correction through Wolcott	✓		2011-2018 data indicates an improvement in crash history, compared to 2001-2005. The curve correction may have alleviated safety issues at Wolcott	2: Improved mobility and accessibility (safety data)	Unknown	See separate table	
21	Safety and capacity improvements in Dowd Canyon	✓	2019	Eastbound on-ramp plus taper has been extended by approximately 500' as a safety improvement.	✓	Planning has started; currently on hold pending the results of a Bridge Enterprise inspection project. CDOT Region 3 will reassess the project in early 2020.	Data not yet available on eastbound ramp improvement	2: Improved mobility and accessibility (safety data)	Incomplete	Incomplete	
	Interchange Improvements at:										
22	Glenwood Springs (MP 116)	✓	Dec. 2018	Interchange improvements were constructed as part of the Grand Avenue Bridge (GAB) Project. Interchange improvements include: Lengthened on/off ramps, increased vehicle storage, new signals, new pedestrian underpass, and a new configuration of the interchange for the newly realigned Grand Avenue bridge			The Exit 116 connection from SH82 to I-70 and vice versa is operationally much better than before the GAB project, basically much more efficient operations by having a more direct connection to the corridors and also separating out local traffic from mainline pass through traffic accessing the SH82 and/or I-70 corridors. The new pedestrian underpass under SH82 also provides traffic operational improvements/benefits because a ped phase was eliminated at one of the signals. The pedestrian underpass also provides a considerable safety benefit, separating bikes and peds from motorized vehicles in this active resort community.	2: Improved mobility and accessibility (safety data)	(Based on limited data and group discussion)	Unknown	
23	Gypsum (MP 140)								Incomplete	Incomplete	
24	Eagle County Airport								Incomplete	Incomplete	
25	Wolcott (MP 157)								Incomplete	Incomplete	
26	Eagle and Spur Road (MP 147)	✓	2015	Roundabouts were incorporated into the interchange to remove the traffic lights. Also a pedestrian bridge over I-70 was installed, pedestrian circulation in general was improved, and				2: Improved mobility and accessibility (safety data)	Unknown	Unknown	

Table 2. Preferred Alternative Minimum Program of Improvements—Status of Implementation

Line #	Preferred Alternative Item	*Completed	Completion Date	Completed Actions *	**In Progress/Ongoing	Work in Progress/Ongoing**	Effectiveness Observation (if available)	Purpose and Need Component (measures)	Effectiveness Rating		Recommended Level of Effort (Step 4 Activity)	
									High Effectiveness			Needs to be Initiated
									Medium Effectiveness			Continue with Current Level of Effort
									Low Effectiveness			More Effort Needed
									Mobility	Safety		Reduce Effort
				better access from a park-and-ride to a bus stop which was improved for safety.								
27	Edwards and Spur Road (MP 163)	✓	2011-Phase 1, 2020-Phase 2	Phase 1 of the project—completed in 2011—made improvements to the northern half of the Spur Road, including four new roundabouts and improved connections with the I-70 on- and off-ramps.	✓	Phase 2 is currently underway and includes design improvements to the southern half of the Edwards Spur Road - a distance of approximately 0.4 miles. Phase 2 included improved safety features such as widening roads and bridges, improved sight distances at intersections. The project added refuge islands large enough to accommodate bicycles and trailers at the roundabout. It also added Rectangular Rapid Flashing Beacons for crosswalks at the roundabout. For recreation use, the project added separated pedestrian trails and bridges as well as added bike lanes to the roadway system.		2: Improved mobility and accessibility (safety data)	Unknown	See separate table		
28	Avon (MP 167)								Incomplete	Incomplete		
29	Minturn (MP 171)	✓	Fall 2019	Eastbound on-ramp plus taper has been extended by approximately 500' as a safety improvement.	✓	Planning has started; currently on hold pending the results of a Bridge Enterprise inspection project. CDOT Region 3 will reassess the project in early 2020.	Data not yet available on eastbound ramp improvement	2: Improved mobility and accessibility (safety data)	Unknown	Unknown		
30	Vail West (MP 173)/Simba Run								Incomplete	Incomplete		
31	Vail (MP 176)								Incomplete	Incomplete		
32	Vail East (MP 180)								Incomplete	Incomplete		
33	Vail Pass (East Shrine Pass Road - MP 190)								Incomplete	Incomplete		
34	Copper Mountain (MP 195)								Incomplete	Incomplete		
35	Frisco/Main Street (MP 201)								Incomplete	Incomplete		
36	Frisco/SH9 (MP 203)				✓	Currently working on traffic analysis, operational analysis and design concepts			Incomplete	Incomplete		
37	Silverthorne (MP 205)				✓	I-70 Silverthorne/Dillon Interchange Study has been completed			Incomplete	Incomplete		
38	Loveland Pass (MP 216)								Incomplete	Incomplete		

Table 2. Preferred Alternative Minimum Program of Improvements—Status of Implementation

Line #	Preferred Alternative Item	*Completed	Completion Date	Completed Actions *	**In Progress/Ongoing	Work in Progress/Ongoing**	Effectiveness Observation (if available)	Purpose and Need Component (measures)	Purpose and Need Components: 1. Increase capacity 2. Improve mobility and accessibility 3. Decrease congestion		
									Effectiveness Rating		Recommended Level of Effort (Step 4 Activity)
									High Effectiveness		
									Medium Effectiveness		
									Low Effectiveness		
Mobility	Safety										
39	Georgetown (MP 228)	✓	2012	Added roundabout serving interchange access road			*Data collection in progress	2: Improved mobility and accessibility (safety data)	Unknown	Unknown	
40	Downieville (MP 234)								Incomplete	Incomplete	
41	Fall River Road (MP 238)								Incomplete	Incomplete	
42	Base of Floyd Hill/US 6 (MP 244)				✓	Element of the Floyd Hill Project - Environmental Assessment in Progress			Incomplete	Incomplete	
43	Hyland Hills (MP 247)				✓	Element of the Floyd Hill Project - Environmental Assessment in Progress			Incomplete	Incomplete	
44	Beaver Brook (MP 248)				✓	Element of the Floyd Hill Project - Environmental Assessment in Progress			Incomplete	Incomplete	
45	Evergreen Parkway /SH 74 (MP 252)								Incomplete	Incomplete	
46	Lookout Mountain (MP 256)								Incomplete	Incomplete	
47	Morrison (MP 259)								Incomplete	Incomplete	
Auxiliary lanes											
48	Avon to Post blvd. (Exit 168)								Incomplete	Incomplete	
49	West side of Vail Pass (eastbound and westbound)				✓	Environmental Assessment and conceptual design for safety improvements are underway. Design and construction can follow as funding becomes available.			Incomplete	Incomplete	
50	Frisco to Silverthorne (eastbound)				✓	Currently working on traffic analysis, operational analysis and design concepts. Roadway and feasibility studies are underway as well as environmental research.			Incomplete	Incomplete	
51	Morrison to Chief Hosa (westbound)								Incomplete	Incomplete	

EASTBOUND MEXL ADDITIONAL INFORMATION

METHODOLOGY

The Eastbound MEXL, operating as a peak period shoulder lane, opened to traffic in 2015. It is operated up to 100 times per year, on most Saturday and Sunday afternoons as well as on Monday holidays.

The mobility effectiveness of the Eastbound MEXL can be assessed by comparing average travel times, before and after its implementation. Several representative summer and winter days (averaged across all lanes over the selected month) are presented in Figure 1 through Figure 6—for three years before its opening (2012, 2013, and 2014) and for three representative years after its opening (2016, 2018, and 2020 (2019 was used in place of 2020 for analysis periods that have not occurred yet)). For the January comparison, 2017 was used instead of 2016 because the PPSL was not open every weekend in January in 2016.

The safety effectiveness of the Eastbound MEXL can be assessed by comparing crash statistics for the three year periods before and after its implementation, 2009 – 2011 and 2016-2018 respectively. Crashes are considered statistical "rare events." As a result, a very large number of "trials" (vehicles passing through a given segment and either not crashing or crashing) are needed to draw accurate conclusions on whether or not crash frequency on a given piece of highway is changing over time. Using too small of a time or distance interval, too large of a segment, and not properly taking into account changes in traffic volume can cause an observer to overlook changes that would be observed over longer time frames, conversely, attribute a change that actually turns out to be within the normal range of general random occurrence of these events. This safety analysis accounts for and corrects that random influence to give an accurate answer by analyzing homogeneous segments of the roadway and excluding the influence of temporary construction impacts on crashes.

SUMMARY OF FINDINGS

Figure 1. Travel Time for Eastbound I-70 from Empire Junction to Idaho Springs on July Saturday

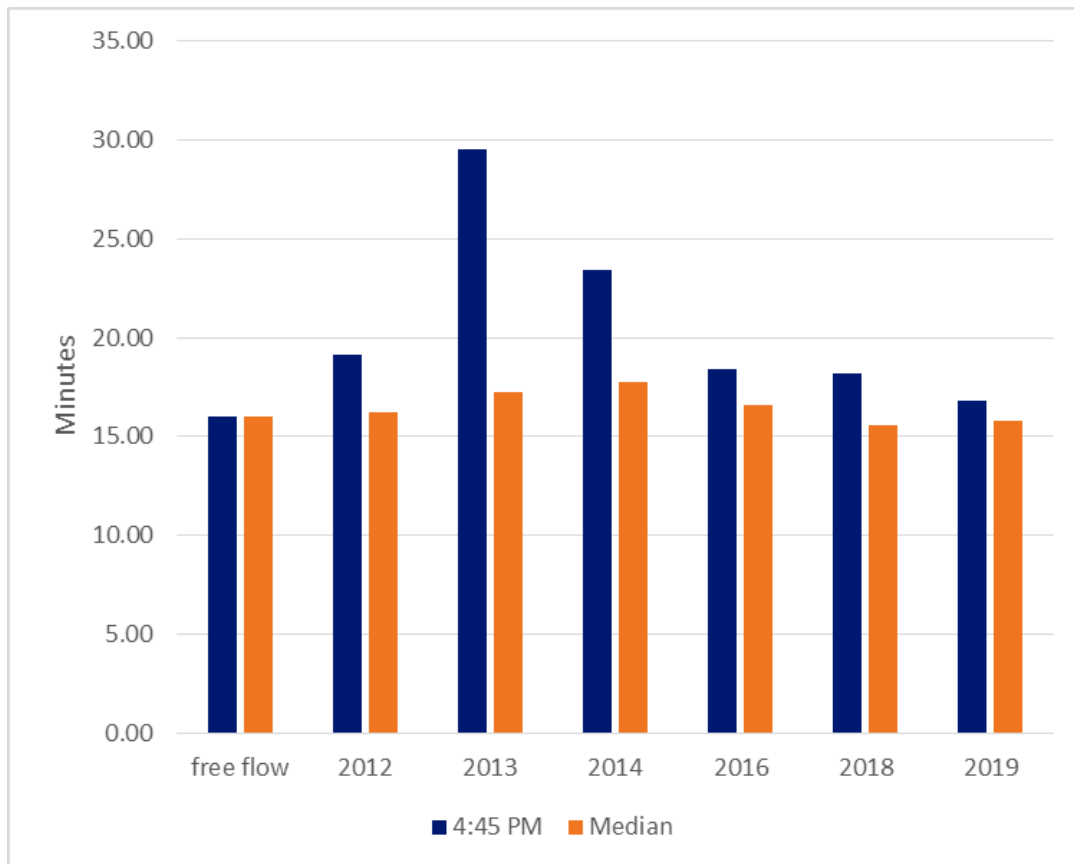


Figure 2. Travel Time for Eastbound I-70 from Empire Junction to Idaho Springs for July Sunday

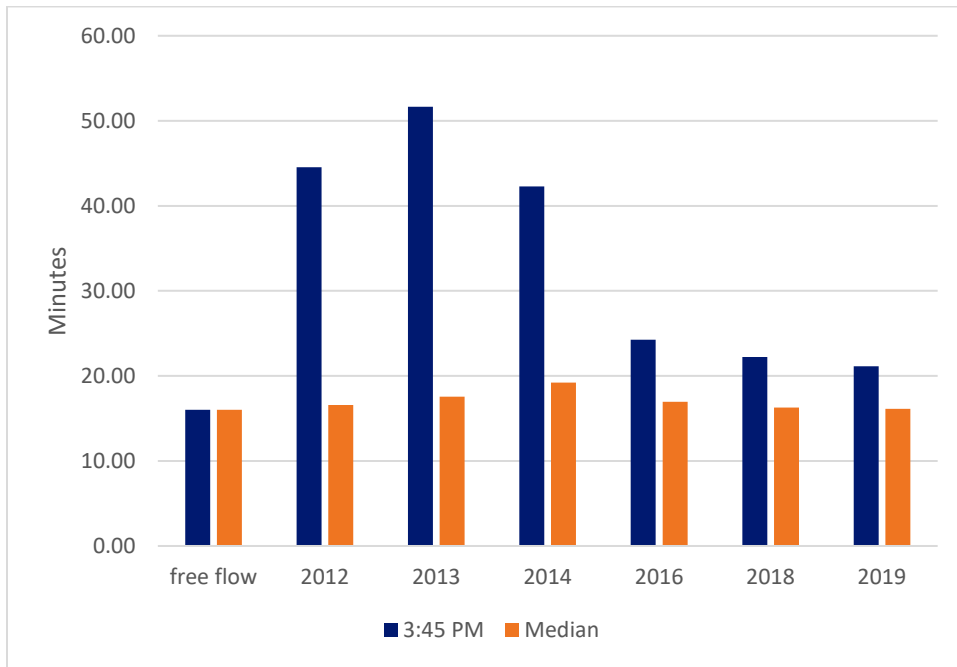


Figure 3. Travel Time for Eastbound I-70 from Empire Junction to Idaho Springs for January Saturday

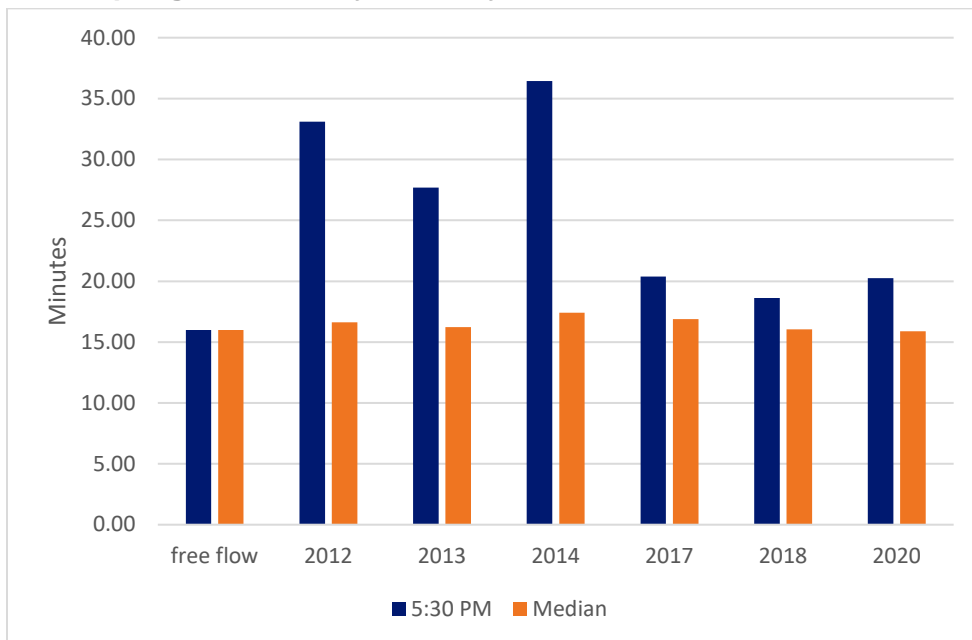


Figure 4. Travel Time for Eastbound I-70 from Empire Junction to Idaho Springs for January Sunday

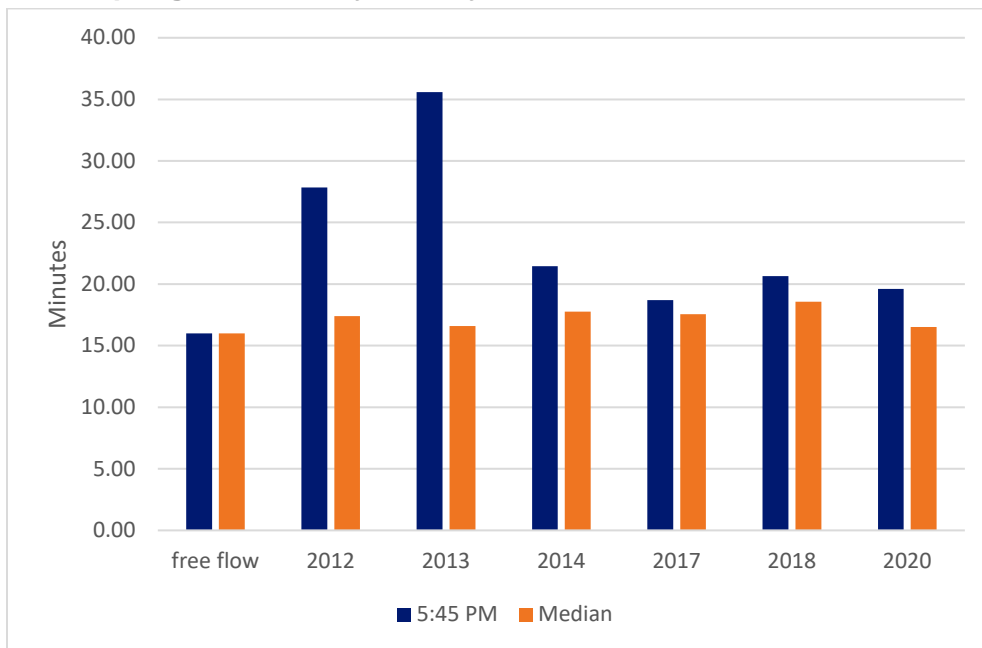


Figure 5. Travel Time for Eastbound I-70 from Empire Junction to Idaho Springs for February Saturday

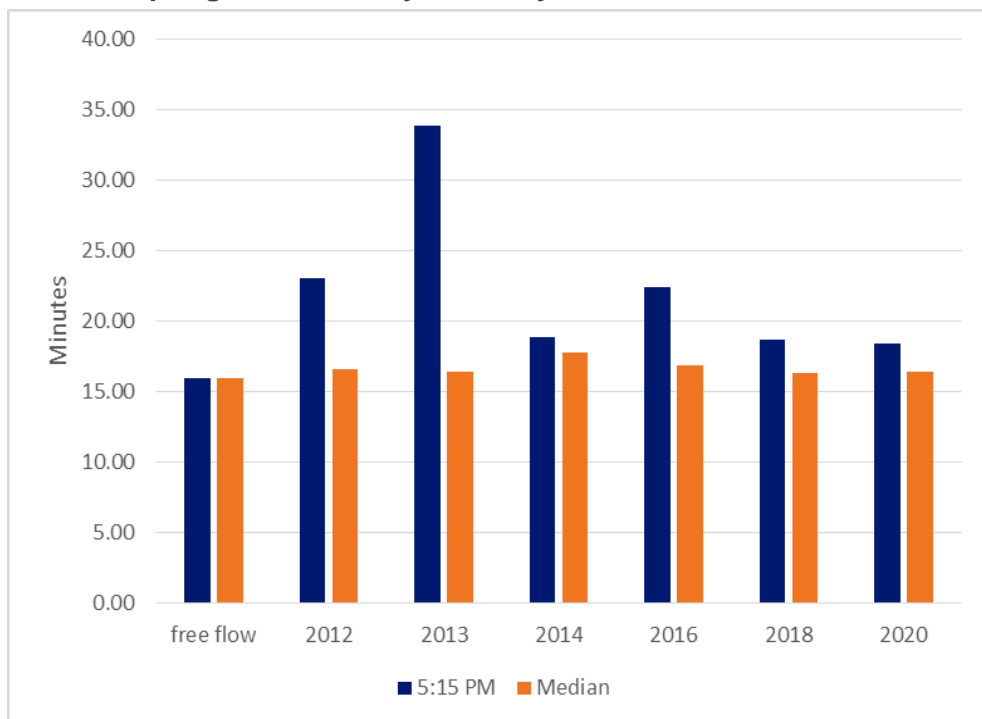


Figure 6. Travel Time for Eastbound I-70 from Empire to Idaho Springs for February Sunday

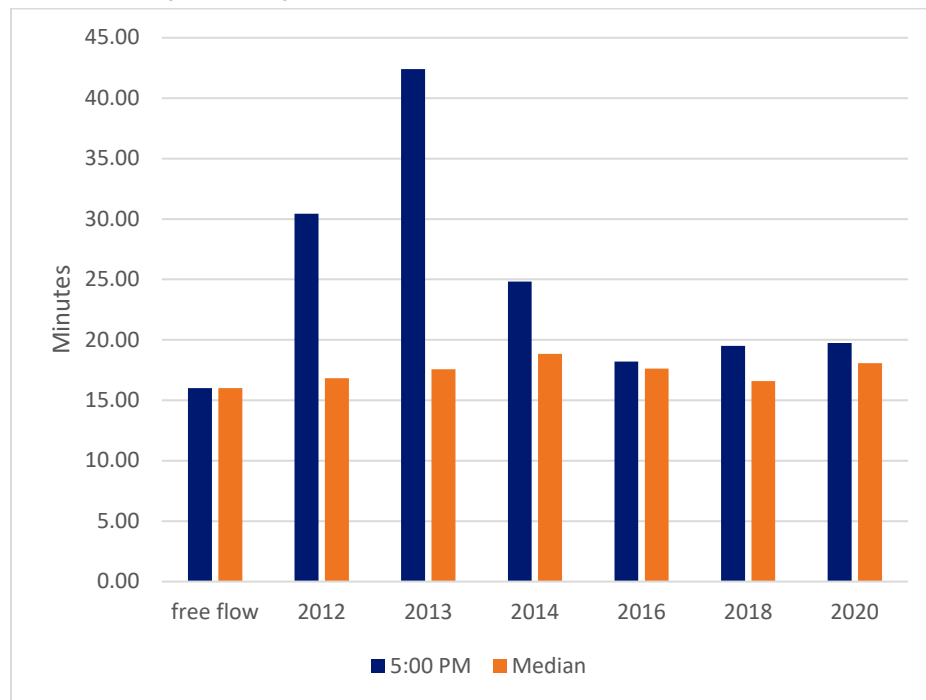


Figure 7. Travel Time for Eastbound I-70 from Empire Junction to Idaho Springs on Martin Luther King Day

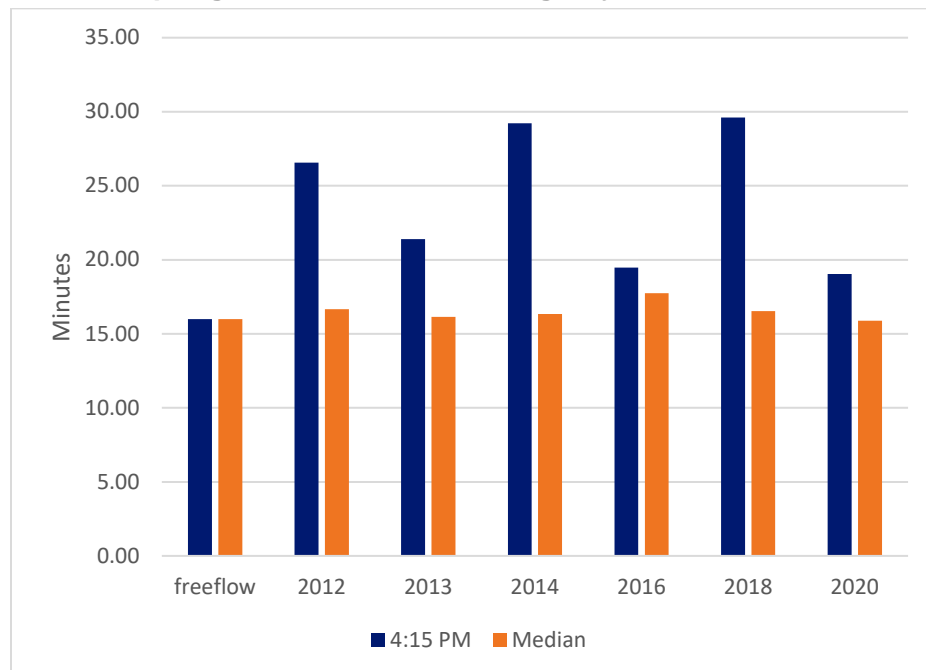


Figure 8. Travel Time for Eastbound I-70 from Empire Junction to Idaho Springs on Memorial Day

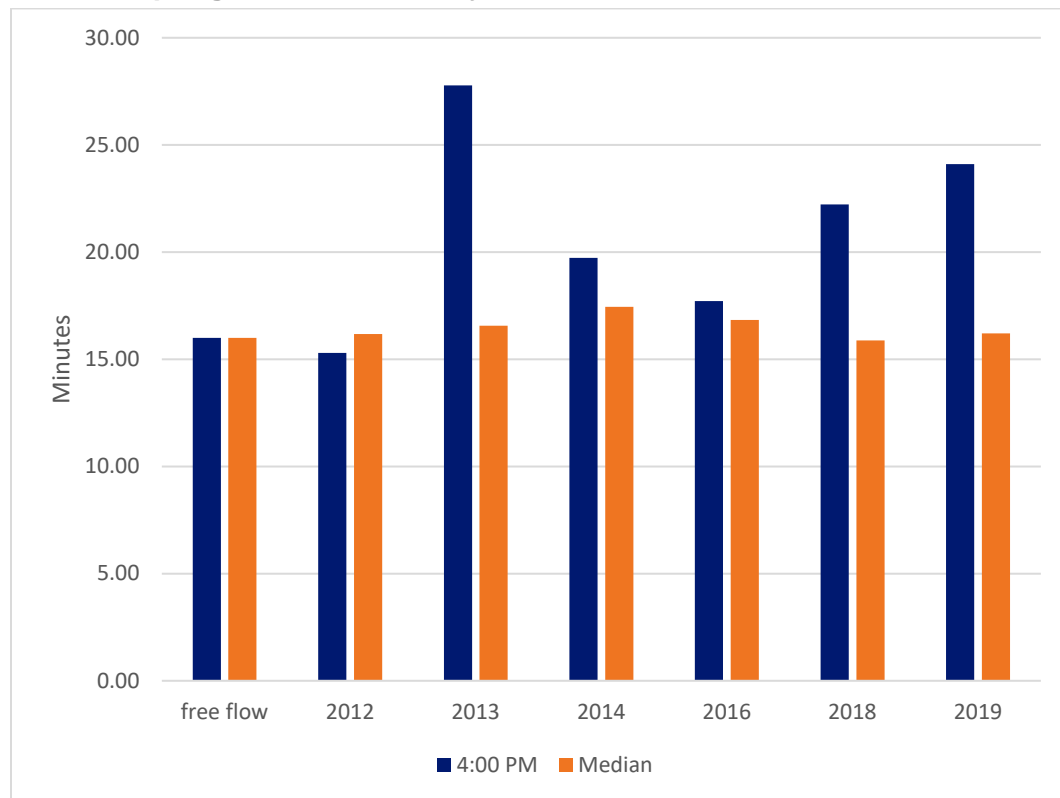


Table 3 shows the before and after crash statistics of the Eastbound MEXL. The key findings are that over the entire 12-mile MEXL corridor as a whole, crashes have increased slightly more than would have been expected without changes to the roadway over the time period.

However there is significant variation depending on the subsection of the MEXL corridor. Crashes have increased significantly in the western 5 miles of the corridor and this increase may be a product of substandard cross section elements and weaving associated with the US 40 entrance and express lane access combination. In the easternmost 2 mile subsection, crashes have decreased significantly and this decrease may be a product of the major geometric and cross section improvements that resulted from the Veterans Memorial Tunnel expansion project. Crashes in the middle 5-mile subsection increased slightly. This segment has substandard cross section elements but does not have any high-volume exit or entrance ramps or any legal access to the managed lane.

Table 3. Number of Crashes Before and After MEXL

Corridor Segment	Milepost Endpoints	Crash Type	Before	After
			1/1/2009 - 12/31/2011	1/1/2016 - 12/31/2018
Entire MEXL Corridor	MP 231.75 – 243.57	PDO	276	258
		Injury	75	81
		Fatality	0	0
		TOTAL	351	339
Western Subsection	MP 231.75 – 236.62	PDO	70	123
		Injury	32	56
		Fatality	0	0
		TOTAL	102	179
Middle Subsection	MP 236.63 – 241.49	PDO	82	77
		Injury	14	18
		Fatality	0	0
		TOTAL	96	93
Eastern Subsection	MP 241.50 – 243.57	PDO	124	58
		Injury	29	9
		Fatality	0	0
		TOTAL	153	67

PDO = Property Damage Only
 Source: CDOT R1 June 2020

SUMMARY OF FINDINGS

The representative data in Figure 1 through Figure 8 show the median travel time is typically slightly longer than or about the same as free flow time to travel between Empire Junction and Idaho Springs. The median time means that over the course of the day, half of the trips are longer than the median time, and half are shorter than the median time.

The mobility effectiveness of the Eastbound MEXL is evident by the data shown in Figure 1 through Figure 8 for the highest travel time, during the peak demand to travel to the Denver metropolitan area in the late afternoon. In general, before the MEXL was implemented, the travel time between Empire Junction and Idaho Springs ranged up to 35 or 40 minutes. After 2015, the average travel times during the peak demand dropped markedly, closer to 20 minutes. Some natural variations can be seen in the recorded data of the average daily patterns. This is particularly the case for the holidays of Martin Luther King Day (Figure 7) and

Memorial Day (Figure 8), which are one time slot snapshots for one day each year, instead of monthly averages as shown in Figure 1 through Figure 6.

The safety effectiveness of the Eastbound MEXL is ambiguous. For the whole 12 miles corridor, crashes have increased slightly more than would have been expected. The crash statistics differ by subsection. Crashes have notably risen in the westernmost 5-mile subsection, and risen slightly for the middle 5-mile subsection. However for the easternmost 2-mile subsection, crashes have significantly decreased, due to the geometric and cross-section improvements of adding a third eastbound lane between the Veterans Memorial Tunnels and the bottom of Floyd Hill.

ATTACHMENT A.

Non-Infrastructure Component: Bus, van, or shuttle service in mixed traffic—Bustang Transit Service

DRAFT - EFFECTIVENESS RATING OBSERVATIONS AND CALCULATIONS

Line #	Implemented Component	Effectiveness Observation (if available)	Annual Operating Cost (millions)	Calculated Quantitative Benefit							Qualitative Benefits
				Annual Bustang riders	Riders who would have been a driver	Time benefit as rider (hours)	Time saved per year not driving (hours)	Value of time (\$/hour)	Dollar benefit per year	Effectiveness Rating	
2	Bus, van, or shuttle service in mixed traffic: Bustang	In 2019, Bustang ridership was over 70,000 passengers compared to just over 26,000 in 2016, representing a 170% increase. In 2018, Bustang averaged 3,050 riders a month throughout the Corridor.	\$ 2.4	70,000	35,000	1	35,000	\$ 22	\$ 770,000		+ Serve riders who are unable to drive, or do not have access to a vehicle + Serve riders who do not desire to drive + Provide a mobility choice + Demonstrates need and demand for corridor transit service + Improved Air Quality

Effectiveness Rating:

High Effectiveness
Medium Effectiveness
Low Effectiveness

Sources and Assumptions

This is an initial broadbrush sketch analysis for planning discussion only. Further data and detailed technical analysis is needed

Bustang ridership: CDOT Division of Transit and Rail, 2020

Annual west line Operating cost FY2018-19 was \$2.1M: CDOT Division of Transit and Rail, 2020

Startup capital costs for 5 motorcoaches, fareboxes, radios, routers, etc = \$3.1M: CDOT Division of Transit and Rail, 2020

Assume bus life cycle of 12 years; annualized startup costs of \$0.3m

Assume Bustang rider otherwise would have ridden in vehicles with an auto occupancy of 2

Assume average west line Bustang ride time of 2 hours; assume 1 hour is recovered by personal vehicle driver who is now a passenger as benefit

Assume an average value of time - source I-70 Travel Demand Model, inflated to 2020 dollars. (weighted average of \$22 work, \$22 recreation, \$13 non-work. Excludes truck)

Calculated Benefit excludes cost of fare

0.25833333

<https://www.vtpi.org/ranben.pdf>

Table 38 Transit Benefits (Litman 2004)

Benefits	Description
User benefits	Increased convenience, speed and comfort to users from transit service improvements.
Congestion Reduction	Reduced traffic congestion.
Facility cost savings	Reduced road and parking facility costs.
Consumer savings	Reduced consumer transportation costs, including reduced vehicle operating and ownership costs.
Transport diversity	Improved transport options, particularly for non-drivers.
Road safety	Reduced per capita traffic crash rates.
Environmental quality	Reduced pollution emissions and habitat degradation.
Efficient land use	More compact development, reduced sprawl.
Economic development	Increased productivity and agglomeration efficiencies.
Community cohesion	Positive interactions among people in a community.
Public health	Increased physical activity (particularly walking).

Evaluating Public Transit Benefits and Costs Best Practices Guidebook 6 April 2020 Todd Litman Victoria Transport Policy Institute

ATTACHMENT B.

Non-Infrastructure Component: Expanded Use of Existing Infrastructure—Eastbound Mountain Express Lane (MEXL)

DRAFT - EFFECTIVENESS RATING OBSERVATIONS AND CALCULATIONS

Line #	Implemented Component	Effectiveness Observation (if available)	Cost (millions)	Calculated Quantitative Benefit									Effectiveness Rating	Qualitative Benefits
				Weekend Daily EB Volume at VMT	Weekend Daily EB Person Trips at VMT	Weekend Peak Period EB Person Trips	Median travel time decrease (minutes)	Peak Period travel time decrease (minutes)	Days per year	Time saved per year (hours)	Assumed Value of time (\$/hour)	Dollar savings per year (millions)		
5	Expanded Use of Existing Infrastructure: Eastbound Mountain Express Lane (MEXL)	The EB MEXL diverts 750 to 900 cars from the free general-purpose lanes. This alleviates traffic congestion in the Express Lane, and decreases congestion in general-purpose lanes and frontage roads travel time savings. Travel times have improved. For example, on July Sundays 2012-2014, eastbound travel time averaged 42 to 51 minutes. On July Sundays 2016-2018, travel time averaged 21 to 24 minutes.	\$ 68	35,000	77,000	7,700	0.75	10	88	214,958	\$ 24	\$ 5.2		+ Improved Travel Time + Improved Quality of Life + Increased Economic Activity + Improved Emergency Response Access + Improved Air Quality

Effectiveness Rating:

High Effectiveness
Medium Effectiveness
Low Effectiveness

Sources and Assumptions:

This is an initial broadbrush sketch analysis for planning discussion only. Further data and detailed technical analysis is needed.

Assume 35,000 EB ADT (1/2 of 70,000 Weekend ADT)

Assume 10% of weekend traffic during the peak period

Assume 2.2 Auto occupancy at VMT Twin Tunnels (PEIS Transportation Analysis Tech Report)

Assume median travel time savings 0.75 minutes and pk period savings July Sundays 2012-2014, eb travel time averaged 42 to 51 minutes. On July Sundays 2016-2018, travel time averaged 21 to 24 min.46 minus 22 = 24, round down to 20. (source: INRIX analysis)

Note travel time includes travel time effect of widening to three lanes on eastbound I-70 from VMT Twin Tunnels to Floyd Hill. Assume 50% due to MEXL. 20 minutes / 2 = 10 minutes

Assume 88 days of operation (44 weekends)

Assume \$24 for average value of time - source I-70 Travel Demand Model, by trip purpose, inflated to 2020 dollars. (weighted average of \$22 work, \$22 recreation, \$13 non-work, and \$82 truck trip purpose)

Assume life cycle of 20 years

Project Cost \$68 million (CDOT)

	Station ID	Location	Winter Saturday ADT	Summer Thursday ADT	Summer Friday ADT	Summer Saturday ADT	Summer Sunday ADT
2019 ADT	000120	Twin Tunnels	70,236	58,860	75,442	79,730	81,147

ATTACHMENT C.

Highway Improvements (Specific Highway Improvements): 6-lane component from Floyd Hill through the Veterans Memorial Tunnels (MP 243 to MP247) including a bike trail and frontage roads from Idaho Springs to Hidden Valley and Hidden Valley to US 6

DRAFT - EFFECTIVENESS RATING OBSERVATIONS AND CALCULATIONS													
Line #	Implemented Component	Effectiveness Observation (if available)	Cost (millions)	Calculated Quantitative Benefit								Effectiveness Rating	Qualitative Benefits
				Weekend Daily EB Volume at VMT	Weekend Daily EB Person Trips at VMT	Weekend Peak Period Person Trips	Median travel time decrease (minutes)	Peak Period travel time decrease (minutes)	Days per year	Time saved per year (hours)	Assumed Value of time (\$/hour)		
15	6 lane component from Floyd Hill through the Twin Tunnels (MP 243 to MP247) including a bike trail and frontage roads from Idaho Springs to Hidden Valley and Hidden Valley to US 6	The 3-lane project completed to date has improved safety: an average of 43 crashes per year from 2006 to 2010 , eastbound from Twin Tunnels to base of Floyd Hill. After eastbound tunnel third lane project, an average of 21 crashes per year , from 2015 to 2016.	\$ 73	35,000	77,000	7,700	0.75	10	88	214,958	\$ 24	\$ 5.2	+ Improved Travel Time + Improved Safety + Improved Quality of Life + Increased Economic Activity + Improved Emergency Response Access + Improved Air Quality
Line #	Implemented Component	Effectiveness Observation (if available)	Cost (millions)	Calculated Quantitative Benefit								Effectiveness Rating	Qualitative Benefits
				Crashes per Year Prior to Project	Crashes per Year Post Project	Reduction in Crashes Attributable to Project	Weighted Average Cost per crash				Dollar savings per year (millions)		
15	6 lane component from Floyd Hill through the Twin Tunnels (MP 243 to MP247) including a bike trail and frontage roads from Idaho Springs to Hidden Valley and Hidden Valley to US 6	The 3-lane project completed to date has improved safety: an average of 43 crashes per year from 2006 to 2010 , eastbound from Twin Tunnels to base of Floyd Hill. After eastbound tunnel third lane project, an average of 21 crashes per year , from 2015 to 2016.	\$ 73	43	21	16.5	\$8,000				\$0.1	+ Improved Travel Time + Improved Safety + Improved Quality of Life + Increased Economic Activity + Improved Emergency Response Access + Improved Air Quality	

Effectiveness Rating:

High Effectiveness
Medium Effectiveness
Low Effectiveness

Sources and Assumptions:
 This is an initial broadbrush sketch analysis for planning discussion only. Further data and detailed technical analysis is needed.
 Assume 35,000 EB ADT (1/2 of 70,000 Weekend ADT)
 Assume 10% of weekend traffic during the peak period
 Assume 2.2 Auto occupancy at VMT Twin Tunnels (PEIS Transportation Analysis Tech Report)
 Assume median travel time savings 0.75 minutes and pk period savings July Sundays 2012-2014, eb travel time averaged 42 to 51 minutes. On July Sundays 2016-2018, travel time averaged 21 to 24 min.46 minus 22 = 24, round down to 20. (source: INRIX analysis)
 Note travel time includes travel time effect of MEXL. Assume 50% due to widening to three lanes on eastbound I-70 from VMT Twin Tunnels to Floyd Hill. 20 minutes / 2 = 10 minutes
 Assume 88 days of operation (44 weekends)
 Assume an average value of time - source I-70 Travel Demand Model, by trip purpose, inflated to 2020 dollars. (weighted average of \$22 work, \$22 recreation, \$13 non-work, and \$82 truck trip purpose)
 Assume life cycle of 20 years
 Project Cost Twin Tunnels = 145 M (EB 55M, WB 54M, Design/Other packages 36M (CDOT)). Assume \$55m + 1/2 of \$36m = \$73m
 Assume 75% of reduced crashes are attributable to project. Other factors that can contribute to reducing crash patterns include changes in traffic volume and fleet mix, driver behavior, enforcement, and corridor management (e.g. plowing policies, preemptive closures, law changes, etc.).

Project completed 2014	Crash History		2011-2013	Assumed Split	Cost per crash (National Safety Council nsc.org)
	2006-2010	2015-2016			
MP 242 to MP 244			99	PDO	\$4,500
crashes per year	43.0	21	1	Disabling injury	\$96,000
Safety Assessment I-70 Twin Tunnels 2011			15	Evident/possible Inj	\$25,000
Safety Assessment I-70 Recon/Widening 2018			0	Fatality	\$1,660,000
			115	Total	
				wtd average	\$ 7,970

ATTACHMENT D.

Highway Improvements (Specific Highway Improvements): Eastbound auxiliary lane from Eisenhower-Johnson Memorial Tunnels to Herman Gulch (MP 215 to MP 218)

DRAFT - EFFECTIVENESS RATING OBSERVATIONS AND CALCULATIONS

Line #	Implemented Component	Effectiveness Observation (if available)	Cost (millions)	Calculated Quantitative Benefit					Effectiveness Rating	Qualitative Benefits
				Crashes per Year Prior to Project	Crashes per Year Post Project	Reduction in Crashes Attributable to Project	Weighted Average Cost per crash	Dollar savings per year (millions)		
17	Eastbound auxiliary lane from Eisenhower-Johnson Memorial Tunnels to Herman Gulch (MP 215 - MP 218)	2011-2018 data indicates an improvement in crash history. The extension of the auxiliary lane at US-6 together with implementation of the mainline metering along EB I-70, east of the Silverthorne/Dillon interchange, has eased some of the safety concerns in this location.	\$ 4	26	16	5	\$9,800	\$ 0.05		+ Improved Safety + Improved Travel Time + Improved Emergency Response Access + Improved Air Quality

Effectiveness Rating:

High Effectiveness
Medium Effectiveness
Low Effectiveness

Sources and Assumptions:

This is an initial broadbrush sketch analysis for planning discussion only. Further data and detailed technical analysis is needed.

Project Cost \$4 million.

Assume life cycle of 20 years

Assume 50% of reduced crashes are attributable to project. Other factors that can contribute to reducing crash patterns include changes in traffic volume and fleet mix, driver behavior, enforcement, and corridor management (e.g. plowing policies, preemptive closures, law changes, etc.).

Project completed 2016	Crash History		Assumed Split	Cost per crash (National Safety Council nsc.org)	
	2011-2015	2017-2018			
MP 216.5 to MP 218					
Property Damage Only	101	25	101	PDO	\$4,500
Injury	31	7	1	Disabling injury	\$96,000
Fatality	0		30	Evident/possible Inj	\$25,000
Total	132	32	0	Fatality	\$1,660,000
years	5	2	132		
crashes per year	26.4	16		wtd average	\$ 9,852

ATTACHMENT E.

Highway Improvements (Other Highway Improvements): Safety improvements west of Wolcott

DRAFT - EFFECTIVENESS RATING OBSERVATIONS AND CALCULATIONS

Line #	Implemented Component	Effectiveness Observation (if available)	Cost (millions)	Calculated Quantitative Benefit					Effectiveness Rating	Qualitative Benefits
				Crashes per Year Prior to Project	Assumed Crashes per Year Post Project	Reduction in Crashes Attributable to Project	Weighted Average Cost per crash	Dollar savings per year (millions)		
20	Safety improvements west of Wolcott	2011-2018 data indicates an improvement in crash history, compared to 2001-2005. The curve correction may have alleviated safety issues at Wolcott	\$ 0.5	11	9	1.0	\$ 14,700	\$ 0.01		+ Improved Safety

Effectiveness Rating:

High Effectiveness
Medium Effectiveness
Low Effectiveness

Sources and Assumptions:

This is an initial broadbrush sketch analysis for planning discussion only. Further data and detailed technical analysis is needed.

Assume life cycle of 20 years

Assume 50% of reduced crashes are attributable to project. Other factors that can contribute to reducing crash patterns include changes in traffic volume and fleet mix, driver behavior, enforcement, and corridor management (e.g. plowing policies, preemptive closures, law changes, etc.).

Cost: included in repaving project. Assume \$500,000

Project completed 2013	Crash History		Assumed Split	Cost per crash (National Safety Council nsc.org)
	2011- 2012	2014-2018		
MP 154.5 to MP 156				
Property Damage Only	14	35	14	PDO \$4,500
Injury	7	11	1	Disabling injury \$96,000
Fatality	1		6	Evident/possible Inj \$25,000
Total	22	46	0	Fatality \$1,660,000
years	2	5	21	
crashes per year	11	9.2		wtd average \$ 14,714

ATTACHMENT F.

Highway Improvements (Interchange Improvements): Edwards and Spur Road (MP 163). Phase 1 of the project—completed in 2011—made improvements to the northern half of the Spur Road, including four new roundabouts and improved connections with the I-70 on- and off-ramps.

DRAFT - EFFECTIVENESS RATING OBSERVATIONS AND CALCULATIONS										
Line #	Implemented Component	Effectiveness Observation (if available)	Cost (millions)	Calculated Quantitative Benefit					Effectiveness Rating	Qualitative Benefits
				Crashes per Year Prior to Project	Crashes per Year Post Project	Reduction in Crashes Attributable to Project	Weighted Average Cost per crash	Dollar savings per year (millions)		
27	Edwards and Spur Road (MP 163). Phase 1 of the project—completed in 2011—made improvements to the northern half of the Spur Road, including four new roundabouts and improved connections with the I-70 on- and off-ramps.		\$ 9.5	4	2	2	\$ 22,000	\$ 0.04		+ Improved Safety + Improved Emergency Response Access

Effectiveness Rating:
High Effectiveness
Medium Effectiveness
Low Effectiveness

Sources and Assumptions:
 This is an initial broadbrush sketch analysis for planning discussion only. Further data and detailed technical analysis is needed.
<https://safety.fhwa.dot.gov/provencountermeasures/roundabouts/>
 Safety effectiveness: FHWA's safety website notes that roundabouts reduce crashes that cause severe injuries or death by 82% over two way stop control and 78% over signalized intersections.
 Assume life cycle of 20 years
 Phase 1 Cost \$9.5 million (CDOT)

Project completed 2011	Crash History		Assumed Split	Cost per crash (National Safety Council nsc.org)	
	Calculated back history*	2012-2018			
MP 162.3 - MP 163.3					
Property Damage Only	12.0	12	12.0	PDO	\$4,500
Injury	18.2	4	2.0	Disabling injury	\$96,000
Fatality			16	Evident/possible Inj	\$25,000
Total	30.2	16		Fatality	\$1,660,000
years	7	7	30		
crashes per year	4.3	2.3		wtd average	\$ 21,533

* Crash data not immediately available prior to 2011; calculate prior crashes based on roundabout crash reduction factor of 78% from FHWA. Assume 100% of reduced crashes are attributable to project

I-70 MOUNTAIN CORRIDOR REASSESSMENT
Step 5: Documentation of the 2020 Reassessment

ATTACHMENT 4
Preferred Alternative Tracking Sheet

Preferred Alternative Minimum Program of Improvements - Status of Implementation							
(The components of the Preferred Alternative Maximum Program have not been implemented and therefore are not listed)							
Line #	Preferred Alternative Item	Completion Date	Completed Actions *	Work in Progress / Ongoing**	Effectiveness Rating		Recommended Level of Effort (Step 4 Activity)
					High Effectiveness		Needs to be Initiated
					Medium Effectiveness		Continue with Current Level of Effort
					Low Effectiveness		More Effort Needed
					Mobility	Safety	Reduce Effort SPLIT: Current Level of Effort and More Effort
Non-Infrastructure Related							
1	Increased Enforcement			<p>For the MEXL, the Colorado State Patrol (CSP) increased safety enforcement in 2019 with troopers on overtime along the eastbound mountain express lane from Empire to Idaho Springs to help decrease unsafe driving behavior and increase efficiency.</p> <p>Overall, each CSP troop defines goals and objectives to reduce crashes and save lives. Troop 1A picked the lower end of I-70 as a primary targeted roadway. The troop is using a targeted saturation methodology with team operations, using multiple troopers.</p>	Unknown	Unknown	Continue with Current Level of Effort
2	Bus, van, or shuttle service in mixed traffic			<p>Ski shuttles continue to serve the corridor.</p> <p>Bustang service, which began in 2015, provides daily trips to and from corridor communities and Denver, but does not serve peak direction recreational trips at peak demand.</p> <p>Snowstang service, initially piloted in 2017, was launched in 2019 to three resorts.</p>	See separate table	Unknown	More Effort Needed

Line #	Preferred Alternative Item	Completion Date	Completed Actions *	Work in Progress / Ongoing**	Effectiveness Rating		Recommended Level of Effort (Step 4 Activity)
					High Effectiveness		Needs to be Initiated
					Medium Effectiveness		Continue with Current Level of Effort
					Low Effectiveness		More Effort Needed
					Mobility	Safety	Reduce Effort
		SPLIT: Current Level of Effort and More Effort					
3	Programs for improving truck movements			<p>Revisions to the traction and chain laws to improve safety and operations;</p> <p>Off-corridor staging areas for trucks during adverse weather events;</p> <p>Variable speed limits in Glenwood Canyon;</p> <p>Remote continuous flow metering at Silverthorne to improve truck traction approaching the tunnel eastbound;</p> <p>Active Corridor Management.</p> <p>Colorado Motor Carriers Association (CMCA) programs include public service announcements (PSAs) on chain awareness, providing a best practices document, and working with trucking firms that are repeat offenders.</p>	(Based on limited data and group discussion)	(Based on limited data and group discussion)	More Effort Needed
4	Driver education			<p>Gol-70.com shares news and other articles that help educate drivers on traveling through the I-70 Mountain Corridor. Topics include: Available transit and carpool services, real-time information sources, Colorado Traction Laws, Tire Checks, Move it Law, Move Over Law, Left Lane Law and Avalanche Activity. Additional outreach to travelers is done through the blog, social media, eBlasts and extensive partner outreach.</p> <p>CMCA has produced an audio guide for truckers to safely drive the I-70 Mountain Corridor, by milepost</p>	(Based on limited data and group discussion)	(Based on limited data and group discussion)	More Effort Needed

Line #	Preferred Alternative Item	Completion Date	Completed Actions *	Work in Progress / Ongoing**	Effectiveness Rating		Recommended Level of Effort (Step 4 Activity)
					High Effectiveness		Needs to be Initiated
					Medium Effectiveness		Continue with Current Level of Effort
					Low Effectiveness		More Effort Needed
					Mobility	Safety	Reduce Effort SPLIT: Current Level of Effort and More Effort
5	Expanded use of existing transportation infrastructure in and adjacent to the corridor	Dec. 2015	<p>Eastbound Mountain Express Lane (MEXL) project opened in December 2015.</p> <p>Updated each county's Traffic Incident Management Plans</p> <p>Active corridor management has been implemented, including creation of a full-time corridor operations manager</p> <p>Ramp meters have been installed throughout much of the corridor.</p>	Westbound MEXL project under construction, opening projected for 2021.	See separate table	(Based on limited data and group discussion)	Continue with Current Level of Effort
6	Use of technology advancements and improvements to increase mobility without additional infrastructure			Technological advancements without the addition of infrastructure include: Electronic Signage, Intelligent Transportation System and Vehicle to Infrastructure (V2X) Data Ecosystem. CDOT is currently testing V2X throughout the corridor. CoTrip.org and GovDelivery/Travel Alerts have been improved in recent years.	(Based on limited data and group discussion)	(Based on limited data and group discussion)	More Effort Needed
7	Traveler information and other information technology systems			Traveler information is shared via Intelligent Transportation System; CoTrip; Variable Message Signs (VMS);CDOT Alert Texts; CDOT email alerts	(Based on limited data and group discussion)	(Based on limited data and group discussion)	More Effort Needed

Line #	Preferred Alternative Item	Completion Date	Completed Actions *	Work in Progress / Ongoing**	Effectiveness Rating		Recommended Level of Effort (Step 4 Activity)
					High Effectiveness		Needs to be Initiated
					Medium Effectiveness		Continue with Current Level of Effort
					Low Effectiveness		More Effort Needed
					Mobility	Safety	Reduce Effort
		SPLIT: Current Level of Effort and More Effort					
8	Shift passenger and freight travel demand by time of day and day of week			<p>The most popular feature of GoI70.com is the weekend travel forecast which is intended to shift passenger travel demand by time of day and day of week.</p> <p>Over 150 dining and lodging businesses along the I-70 Mountain Corridor offer deals to encourage drivers to avoid peak travel times. Examples include: \$2 tacos from 4-6pm on Saturdays and Sundays at Twist; 20% off activities at Lawson Adventure Park Saturday & Sunday 4pm- close.</p>	(Based on limited data and group discussion)	(Based on limited data and group discussion)	More Effort Needed
9	Convert day trips to overnight stays			<p>GoI70.com Peak Time Deals worked with the lodging community to create Sunday Night Stay promotions. These are posted on the Peak Time Deals and promoted frequently through GoI70 blogs, eBlasts, social posts and stakeholder outreach. Examples include: \$125 Sunday night at the Sitzmark Lodge in Vail; 20% off a Sunday night stay at the Wedgewood Lodge in Breckenridge</p>	(Based on limited data and group discussion)	(Based on limited data and group discussion)	Continue with Current Level of Effort

Line #	Preferred Alternative Item	Completion Date	Completed Actions *	Work in Progress / Ongoing**	Effectiveness Rating		Recommended Level of Effort (Step 4 Activity)
					High Effectiveness		Needs to be Initiated
					Medium Effectiveness		Continue with Current Level of Effort
					Low Effectiveness		More Effort Needed
					Mobility	Safety	Reduce Effort SPLIT: Current Level of Effort and More Effort
10	Convert single occupancy vehicle commuters to high occupancy travel and/or public transportation			Transit promotion incentives include traveling in groups to receive discounted fares. Resorts are offering incentives to carpool by promoting reduced or free parking as well as discounted lift tickets for groups that travel together. For example, Keystone, Breckenridge, Copper Mountain and Arapahoe Basin have carpool parking incentive programs, offering discounted parking, close-in parking or discounted lift tickets. Summit express airport shuttle offers a savings of \$12 per person Transit promotion incentives include traveling in groups to receive discounted fares. Resorts are offering incentives to carpool by promoting reduced or free parking as well as discounted lift tickets for groups that travel together. For example, Keystone, Breckenridge, Copper Mountain and Arapahoe Basin have carpool parking incentive programs, offering discounted parking, close-in parking or discounted lift tickets. Summit express airport shuttle offers a savings of \$12 per person when traveling with 3 or more passengers.	(Based on limited data and group discussion)	(Based on limited data and group discussion)	More Effort Needed
11	Implement transit promotion incentives			Transit promotion incentives include traveling in groups to receive discounted fares. Resorts are incentivizing carpooling by offering reduced or free parking as well as discounted lift tickets. Summit Express airport shuttle offers a savings of \$12 per person when traveling with 3 or more passengers. For example, Loveland Ski Area and Arapahoe Basin offered lift ticket discounts for Front Range Ski Bus riders. Arapahoe Basin offered food and beverage vouchers for Snowstang riders. Some airport shuttles offer discounts through Go170 Peak Time Deals.	(Based on limited data and group discussion)	(Based on limited data and group discussion)	More Effort Needed

Line #	Preferred Alternative Item	Completion Date	Completed Actions *	Work in Progress / Ongoing**	Effectiveness Rating		Recommended Level of Effort (Step 4 Activity)
					High Effectiveness		Needs to be Initiated
					Medium Effectiveness		Continue with Current Level of Effort
					Low Effectiveness		More Effort Needed
					Mobility	Safety	Reduce Effort SPLIT: Current Level of Effort and More Effort
12	Other transportation demand management measures to be determined			<p>I-70 Coalition frequently communicates transportation demand management messages and strategies with partners who are encouraged to 'share' with their network and customers. Partners include resorts, local government public information officers (PIOs), Information/Welcome Centers, resort associations, property managers, lodging sector, destination marketing organizations and chambers of commerce.</p> <p>I-70 Coalition created and piloted the Why Drive? Campaign in coordination with the lodging sector to promote transportation alternatives to mountain visitors.</p> <p>Since 2012, I-70 Coalition has undertaken a bi-annual research study program. These surveys inform how existing travel resources and programs are being received and utilized by the traveling public and how they might be improved.</p>	(Based on limited data and group discussion)	(Based on limited data and group discussion)	More Effort Needed
Advanced Guideway System							
13	Feasibility of high speed rail passenger service			AGS Feasibility Study (August 2014)	Incomplete	Incomplete	More Effort Needed
a	Potential station locations and local land use considerations			AGS Feasibility Study (August 2014)	Incomplete	Incomplete	More Effort Needed
b	Transit governance authority			AGS Feasibility Study (August 2014)	Incomplete	Incomplete	SPLIT: Current Level of Effort and More Effort Needed
c	Alignment			AGS Feasibility Study (August 2014)	Incomplete	Incomplete	
d	Technology			AGS Feasibility Study (August 2014)	Incomplete	Incomplete	More Effort Needed
e	Termini			AGS Feasibility Study (August 2014)	Incomplete	Incomplete	SPLIT: Current Level of Effort and More Effort Needed
f	Funding requirements and sources			AGS Feasibility Study (August 2014)	Incomplete	Incomplete	

Line #	Preferred Alternative Item	Completion Date	Completed Actions *	Work in Progress / Ongoing**	Effectiveness Rating		Recommended Level of Effort (Step 4 Activity)
					High Effectiveness		Needs to be Initiated
					Medium Effectiveness		Continue with Current Level of Effort
					Low Effectiveness		More Effort Needed
					Mobility	Safety	Reduce Effort SPLIT: Current Level of Effort and More Effort
g	Transit ridership			AGS Feasibility Study (August 2014), Interregional Connectivity Study (January 2014), & Economic Impact of High-Speed Transit in the Mountain Corridor (July 2019)	Incomplete	Incomplete	More Effort Needed
h	Potential system owner/operator				Incomplete	Incomplete	More Effort Needed
i	Interface with existing and future transit systems			AGS Feasibility Study (August 2014) & Interregional Connectivity Study (January 2014)	Incomplete	Incomplete	More Effort Needed
j	Role of an Advanced Guideway System in freight delivery both in and through the corridor				Incomplete	Incomplete	More Effort Needed
14	Functioning AGS				Incomplete	Incomplete	More Effort Needed
Highway Improvements							
Specific Highway improvements							
15	6 lane component from Floyd Hill through the Twin Tunnels (MP 243 to MP247) including a bike trail and frontage roads from Idaho Springs to Hidden Valley and Hidden Valley to US 6	Dec. 2014, Sept 2015, and TBD	Eastbound tunnel widened to 3 lanes; Westbound tunnel was widened to accommodate three lanes in the future; Frontage road and bike trail between Game Check area and Hidden Valley.	Environmental Assessment and preliminary engineering is underway for westbound I-70 from east of the Floyd Hill/Beaver Brook Exit (248) to Idaho Springs Exit (241) A Categorical Exclusion is underway for improvements to CR 314 between the Game Check trailhead and the City of Idaho Springs baseball fields.	See separate table	See separate table	More Effort Needed
16	Empire Junction (US 40 and I-70) interchange improvements (MP 232)				Incomplete	Incomplete	Continue with Current Level of Effort

Line #	Preferred Alternative Item	Completion Date	Completed Actions *	Work in Progress / Ongoing**	Effectiveness Rating		Recommended Level of Effort (Step 4 Activity)
					High Effectiveness		Needs to be Initiated
					Medium Effectiveness		Continue with Current Level of Effort
					Low Effectiveness		More Effort Needed
					Mobility	Safety	Reduce Effort SPLIT: Current Level of Effort and More Effort
17	Eastbound auxiliary lane from Eisenhower-Johnson Memorial Tunnels to Herman Gulch (MP 215 - MP 218)	2016	The auxiliary lane ends at approximately 217.5, a half mile west of the Herman Gulch Interchange. The Project did not extend entirely to Herman Gulch to limit environmental impacts. CE agreement on project limits.		Unknown	See separate table	Continue with Current Level of Effort
18	Westbound auxiliary lane from Bakerville to Eisenhower-Johnson Memorial Tunnels (MP 215 to MP 221)				Incomplete	Incomplete	More Effort Needed
Other Highway Improvements							
19	Truck operation improvements, such as pullouts, parking, and chain stations	2015, 2016, and In Progress	The completed eastbound PPSL project constructed two pull outs for emergency refuge in December 2015. East Vail chain station was expanded in 2016.	7 new safety pullouts will be constructed as part of the westbound PPSL project. 5 new pullouts will be constructed in the westbound direction and 2 new pullouts in the eastbound direction.	(Based on limited data and group discussion)	(Based on limited data and group discussion)	Continue with Current Level of Effort
20	Safety improvements west of Wolcott	2013	Super-elevation curve correction through Wolcott		Unknown	See separate table	Continue with Current Level of Effort
21	Safety and capacity improvements in Dowd Canyon	2019	Eastbound on-ramp plus taper has been extended by approximately 500' as a safety improvement.	Planning has started; currently on hold pending the results of a Bridge Enterprise inspection project. CDOT Region 3 will reassess the project in early 2020.	Incomplete	Incomplete	Continue with Current Level of Effort

Line #	Preferred Alternative Item	Completion Date	Completed Actions *	Work in Progress / Ongoing**	Effectiveness Rating		Recommended Level of Effort (Step 4 Activity)
					High Effectiveness		Needs to be Initiated
					Medium Effectiveness		Continue with Current Level of Effort
					Low Effectiveness		More Effort Needed
					Mobility	Safety	Reduce Effort SPLIT: Current Level of Effort and More Effort
Interchange Improvements at:							
22	Glenwood Springs (MP 116)	Dec. 2018	Interchange improvements were constructed as part of the Grand Avenue Bridge (GAB) Project. Interchange improvements include: Lengthened on/off ramps, increased vehicle storage, new signals, new pedestrian underpass, and a new configuration of the interchange for the newly realigned Grand Avenue bridge		(Based on limited data and group discussion)	Unknown	Continue with Current Level of Effort
23	Gypsum (MP 140)				Incomplete	Incomplete	Continue with Current Level of Effort
24	Eagle County Airport				Incomplete	Incomplete	Continue with Current Level of Effort
25	Wolcott (MP 157)				Incomplete	Incomplete	Continue with Current Level of Effort
26	Eagle and Spur Road (MP 147)	2015	Roundabouts were incorporated into the interchange to remove the traffic lights. Also a pedestrian bridge over I-70 was installed, pedestrian circulation in general was improved, and better access from a park-and-ride to a bus stop which was improved for safety.		Unknown	Unknown	Continue with Current Level of Effort

Line #	Preferred Alternative Item	Completion Date	Completed Actions *	Work in Progress / Ongoing**	Effectiveness Rating		Recommended Level of Effort (Step 4 Activity)
					High Effectiveness		Needs to be Initiated
					Medium Effectiveness		Continue with Current Level of Effort
					Low Effectiveness		More Effort Needed
					Mobility	Safety	Reduce Effort
							SPLIT: Current Level of Effort and More Effort
27	Edwards and Spur Road (MP 163)	2011-Phase 1, 2020-Phase 2	Phase 1 of the project—completed in 2011—made improvements to the northern half of the Spur Road, including four new roundabouts and improved connections with the I-70 on- and off-ramps.	Phase 2 is currently underway and includes design improvements to the southern half of the Edwards Spur Road - a distance of approximately 0.4 miles. Phase 2 included improved safety features such as widening roads and bridges, improved sight distances at intersections. The project added refuge islands large enough to accommodate bicycles and trailers at the roundabout. It also added Rectangular Rapid Flashing Beacons for crosswalks at the roundabout. For recreation use, the project added separated pedestrian trails and bridges as well as added bike lanes to the roadway system.	Unknown	See separate table	Continue with Current Level of Effort
28	Avon (MP 167)				Incomplete	Incomplete	Continue with Current Level of Effort
29	Minturn (MP 171)	Fall 2019	Eastbound on-ramp plus taper has been extended by approximately 500' as a safety improvement.	Planning has started; currently on hold pending the results of a Bridge Enterprise inspection project. CDOT Region 3 will reassess the project in early 2020.	Unknown	Unknown	Continue with Current Level of Effort
30	Vail West (MP 173)/Simba Run				Incomplete	Incomplete	Continue with Current Level of Effort
31	Vail (MP 176)				Incomplete	Incomplete	Continue with Current Level of Effort
32	Vail East (MP 180)				Incomplete	Incomplete	Continue with Current Level of Effort
33	Vail Pass (East Shrine Pass Road - MP 190)				Incomplete	Incomplete	Continue with Current Level of Effort
34	Copper Mountain (MP 195)				Incomplete	Incomplete	Continue with Current Level of Effort
35	Frisco / Main Street (MP 201)				Incomplete	Incomplete	Continue with Current Level of Effort
36	Frisco / SH9 (MP 203)			Currently working on traffic analysis, operational analysis and design concepts	Incomplete	Incomplete	Continue with Current Level of Effort

Line #	Preferred Alternative Item	Completion Date	Completed Actions *	Work in Progress / Ongoing**	Effectiveness Rating		Recommended Level of Effort (Step 4 Activity)
					High Effectiveness		Needs to be Initiated
					Medium Effectiveness		Continue with Current Level of Effort
					Low Effectiveness		More Effort Needed
		Mobility	Safety	Reduce Effort	SPLIT: Current Level of Effort and More Effort		
37	Silverthorne (MP 205)			I-70 Silverthorne/Dillon Interchange Study has been completed	Incomplete	Incomplete	Continue with Current Level of Effort
38	Loveland Pass (MP 216)				Incomplete	Incomplete	Continue with Current Level of Effort
39	Georgetown (MP 228)	2012	Added roundabout serving interchange access road		Unknown	Unknown	Continue with Current Level of Effort
40	Downieville (MP 234)				Incomplete	Incomplete	Continue with Current Level of Effort
41	Fall River Road (MP 238)				Incomplete	Incomplete	Continue with Current Level of Effort
42	Base of Floyd Hill / US 6 (MP 244)			Element of the Floyd Hill Project - Environmental Assessment in Progress	Incomplete	Incomplete	SPLIT: Current Level of Effort and More Effort Needed
43	Hyland Hills (MP 247)			Element of the Floyd Hill Project - Environmental Assessment in Progress	Incomplete	Incomplete	
44	Beaver Brook (MP 248)			Element of the Floyd Hill Project - Environmental Assessment in Progress	Incomplete	Incomplete	Continue with Current Level of Effort
45	Evergreen Parkway / SH 74 (MP 252)				Incomplete	Incomplete	Continue with Current Level of Effort
46	Lookout Mountain (MP 256)				Incomplete	Incomplete	Continue with Current Level of Effort
47	Morrison (MP 259)				Incomplete	Incomplete	Continue with Current Level of Effort
Auxiliary lanes							
48	Avon to Post blvd. (Exit 168)				Incomplete	Incomplete	Continue with Current Level of Effort
49	West side of Vail Pass (eastbound and westbound)			Environmental Assessment and conceptual design for safety improvements are underway. Design and construction can follow as funding becomes available.	Incomplete	Incomplete	Continue with Current Level of Effort
50	Frisco to Silverthorne (eastbound)			Currently working on traffic analysis, operational analysis and design concepts. Roadway and feasibility studies are underway as well as environmental research.	Incomplete	Incomplete	Continue with Current Level of Effort

Line #	Preferred Alternative Item	Completion Date	Completed Actions *	Work in Progress / Ongoing**	Effectiveness Rating		Recommended Level of Effort (Step 4 Activity)
					High Effectiveness		Needs to be Initiated
					Medium Effectiveness		Continue with Current Level of Effort
					Low Effectiveness		More Effort Needed
					Mobility	Safety	Reduce Effort
		SPLIT: Current Level of Effort and More Effort					
51	Morrison to Chief Hosa (westbound)				Incomplete	Incomplete	SPLIT: Current Level of Effort and More Effort Needed
			*Completed refers to a project that has been finished with a completion date	**In progress refers to a project that is in planning or construction			

I-70 MOUNTAIN CORRIDOR REASSESSMENT
Step 5: Documentation of the 2020 Reassessment

ATTACHMENT 5
CE Future Actions Step 4 Work Plan

COLLABORATIVE EFFORT (CE) FUTURE ACTIONS 2020 REASSESSMENT STEP 4 WORK PLAN November 18, 2020 (revised December 16, 2020)

The following 2020 Reassessment Work Plan was adopted by the CE on November 18, 2020. Minor edits and formatting revised the document on December 16, 2020. The Work Plan is organized by the components of the Preferred Alternative: Non-Infrastructure Elements, AGS, and Highway Elements. In addition, the Work Plan includes tools and processes related to the goals or implementation of the Preferred Alternative; these are described first in the Work Plan.

The Work Plan involves commitments from all CE members. Members agreed to join and participate in the following subcommittees to further actions related to specific Work Plan actions:

- Corridor Demand and Capacity Subcommittee
- Environmental Review Subcommittee
- Outreach and Communications Subcommittee
- AGS Subcommittee

Additional subcommittees could be added if other topics require more focus. The I-70 Coalition and CDOT's Office of Innovative Mobility (OIM), Division of Transit and Rail (DTR), and Division of Transportation Development (DTD) have initiatives and expertise that are supportive of the Work Plan. The I-70 Coalition and CDOT are committed to the Work Plan but may not have the bandwidth to lead all activities within their purview and will need to assess how resources can be leveraged to support the Work Plan and maintain ongoing organizational commitments.

CE Tools and Processes

Corridor Demand and Capacity Goals

Review travel demand and capacity goals of the Record of Decision (ROD).

Verify the model assumptions and inputs and agree on the appropriate use of the model.

Coordinate and apply the statewide travel model.

Action Item: Create CE Subcommittee

Action Item: Meet with Chris Primus (HDR) to review capacity goals and travel demand modeling background

Action Item: Identify the capacity goals of the ROD and discuss implications of those goals; assess the ability to meet those goals

Action Item: Determine what part of the ROD capacity goal can be achieved with the

implementation of the minimum and maximum program of improvements. Distinguish between capacity and increasing travel demand.

Action Item: Identify transit ridership goals. Identify the mode share percentage or ridership growth number and establish a yardstick for future evaluation (5, 10, 15 year goals).

Action Item: Coordinate with CDOT DTD and CDOT OIM/DTR

Subcommittee Members: Cindy Neely, Greg Hall, Randy Wheelock, Eva Wilson, and Tracy Sakaguchi

Context Sensitive Solutions (CSS) Process Review

Gather lessons learned and benefits of use of the CSS process; refine and review path and success of CSS going forward.

Action Item: Project Leadership Team (PLT) members future projects should ensure lessons learned are considered at the end of projects, consistent with the CSS Step 6 process to review and document lessons learned.

Action Item: For ongoing projects in the corridor, PLT members should report out at CE meetings how the CSS process is working, especially for large projects. This would be a standing agenda item for future CE meetings.

Environmental Review

Review environmental goals.

Analyze the environmental impact and effectiveness of environmental mitigation for implemented improvements in the corridor (including travel demand management [TDM] and non-infrastructure elements such as the Mountain Express Lanes [MEXLs]).

Address the question: how have the transportation improvements impacted the environment (air quality /water/noise/wildlife/aquatic) in the corridor?

Action Item: Form CE Subcommittee

Action Item: Create environmental baseline and compare environmental conditions after implementing projects

Action Item: Facilitate continued coordination with Water Quality working groups in the corridor

Action Item: Review all relevant project documents combining the environmental impacts/mitigation in one location

Action Item: CE indicate to CDOT the importance of filling corridor environmental specialist

Action Item: Report to CE as needed.

Subcommittee Members: Amy Saxton, Cindy Neely, Gary Frey, Becky English, and Town of Vail staff (to be named). Support from Tamara Burke.

Outreach and Communication

Provide outreach to educate local communities and the Front Range residents regarding the entire Preferred Alternative/ROD, non-infrastructure, Advanced Guideway System (AGS), and highway elements of the ROD Preferred Alternative.

Action Item: Form a CE Outreach and Communication Subcommittee

Action Item: Develop a roadshow from the CE update to the Transportation Commission, CDOT and Federal Highway Administration (FHWA) executive management, and communities on the corridor and progress of the CE/ROD

Action Item: Develop talking points so that CE members can clearly and succinctly explain what the CE is and what it does

Action Item: Develop strategies to engage Front Range residents in support of non-infrastructure improvements, supporting I-70 Coalition

Action Item: Identify ways to engage front range population and build support for the effort

Subcommittee Members: Margaret Bowes, Tracy Sakaguchi, Mary Jane Lovelie, Danny Katz, Amy Saxton, and Chris Linsmayer.

Non-Infrastructure Work Plan Items

Maximize the use of non-infrastructure strategies and incrementally implement transit solutions in the near term and build support for high-speed transit in the future.

Transit

Advance the use of micro-transit and other roadway technologies (e-vehicle/autonomous).

Improve transit connections, integrate final mile solutions to get riders to their ultimate destination, and support high quality local transit.

Incentivize the use of transit services within existing highway infrastructure.

Action Item: Forecast maximum ridership from Bustang/Snowstang in general purpose lanes as well as micro transit vehicles in the Express Lanes etc.

Action Item: Define characteristics of vehicles that could use MEXL and advocate for their use

Action Item: Continue engagement between CDOT's OIM/DTR and I-70 Coalition regarding Bustang/Snowstang use in the corridor and other transit initiatives

Action Item: Increase engagement with sustainability coordinators throughout the corridor to promote transit use

Action Item: Provide CE updates on I-70 Coalition's outreach efforts

Action Item: Support ongoing monitoring and encourages transit connection improvements

Action Item: Identify transit ridership goals. Identify the mode share percentage or ridership growth goals and establish a yardstick for future evaluation (5, 10, 15-year goals)

Action Item: Discuss and develop strategy and approach for incentivizing and increasing transit service

Action Item: Discuss and develop ways to support and improve Bustang/Snowstang in the corridor with the Transportation Commission in a way that supports local transit

Action Item: Outline ways to change the car culture and build transit ridership

Travel Demand Management (TDM)

Engage and support I-70 Coalition TDM work plan efforts and expand TDM services

Action Item: Provide education to change driver behavior

Action Item: CE members join and support the I-70 Coalition TDM Committee

Action Item: Monitor and discuss TDM implementation at CE meetings.

Corridor Management

Consider corridor management tools, approaches, and best management practices (BMPs).

Serve as a clearinghouse of information regarding tools and approaches.

Action Item: Consider parking management strategies to change driver behavior

Action Item: Consider congestion fees to disincentivize driving

Action Item: Pilot alternative traffic management strategies

Action Item: Create clearinghouse of information regarding corridor management tools, approaches, and BMPs

Technology

Implement and advance the use technology to maximize the use of the existing infrastructure and systems to optimize corridor mobility, operations, safety, and innovation.

Improve real-time and predictive traveler information- more robust, timely road information.

Action Item: Assess and understand any technology advances that may meet the requirements of the ROD (building off information presented in Reassessment Step 2)

Action Item: Continue engagement between I-70 Coalition and CDOT's OIM to advance technology use

Action Item: Support monitoring and encourage the use of up-to-date technology tools

AGS Work Plan Items

Support the implementation of AGS component of the Preferred Alternative.

Identify champions for AGS.

Clarify the AGS vision and educate elected officials, staff, and businesses on what AGS is and how it can serve the corridor.

AGS Subcommittee

Action Item: Form an AGS Subcommittee to lead AGS work plan

Action Item: Establish a regular AGS Subcommittee meeting schedule

Action Item: Develop an AGS work plan, based on the goals in this Work Plan, to guide the effort. AGS Subcommittee members should be open to new ideas and be willing to question previous assumptions

Action Item: Include AGS Subcommittee reports at CE meetings

Subcommittee Members: Margaret Bowes, Mike Riggs, Danny Katz, David Krutsinger, Randy Wheelock, Mary Jane Lovelie, Greg Hall, Becky English, and Dennis Royer.

Create a Community and Agency Vision for AGS

Action Item: Articulate a community and agency vision for AGS

Action Item: Work with local governments (towns and counties) to facilitate decisions about land use and other community amenities that would support the AGS vision (station, transit-oriented development [TOD] areas, and right of way)

Action Item: Evaluate and address concerns related to growth in the corridor and station locations

Reevaluate AGS Financial Feasibility

Action Item: Discuss the community vision with private equity investors and the High Performance Transportation Enterprise (HPTE) and present what it can offer to private sector

Action Item: Identify revenue for initial capital investments. Determine how much money can be generated by communities (right of way, TOD, etc.). Determine how to monetize the economic benefits to generate revenue stream. Depending on results, move to an investment grade study.

Action Item: Model the total riders, % of person trips aim to divert, consider assumptions regarding what people will pay for a trip and identify a reasonable range of revenue

Action Item: Determine how to attract private investment for AGS

Reevaluate AGS Technology

Action Item: Review and revisit AGS technology advances

Action Item: Assess and understand any technology advances that may meet the requirements of the ROD (building off information presented in Step 2)

Consider Role of AGS in Large Highway Projects

Action Item: Provide more detailed assessment of how 'precluding AGS' is addressed in highway projects. Needs to be beyond an overlay of AGS alignment on a project map and include implications for costs/ constructability (easier/hard etc.).

Action Item: Include high-speed transit specialists on Technical Teams for major highway projects

Action Item: Coordinate with Travel Demand and Capacity Subcommittee regarding AGS forecasts, travel demand, and mode shift assumptions

Highway Work Plan Items

Ensure specific topics of the work plan are engaged and understood during each Highway project development and these items also include the CSS and Environmental Work Plan items and clarifications from Reassessment Step 3 on six-lane capacity.