Colorado Department of Transportation
Division of Transit and Rail

Advanced Guideway System Feasibility Study

REQUEST FOR FINANCIAL INFORMATION

ISSUE DATE May 17, 2013

Colorado Department of Transportation
4201 East Arkansas Avenue
Denver, Colorado 80222

Statements of Financial Information due 12:00 noon Denver, Colorado Time on June 28, 2013

1.0 Introduction

In 2009 the Division of Transit and Rail ("DTR") was created as a division of the Colorado Department of Transportation ("CDOT"). The DTR was created to plan, develop, finance, operate and integrate transit and rail services in the State. The Advanced Guideway System (AGS) was identified as the transit solution for the I 70 Mountain Corridor in the Record of Decision signed by CDOT and the Federal highway Administration (FHWA) in June of 2011. The AGS feasibility study, which commenced in April of 2012, has identified several potential technologies and alignments that are feasible in the corridor. At this time, CDOT is pleased to invite interested potential concessionaires or other possible financial providers ("Financial Providers") to submit a response to this request for financial information ("RFFI"). The purpose for the RFFI is to advance the feasibility assessment of financial options to develop the Advanced Guideway System ("AGS") in the I-70 Mountain Corridor from the vicinity of C470/I-70 in Jefferson County to Eagle County Regional Airport although ultimately the desire is to have a connection from Eagle County Regional Airport to Denver International Airport. CDOT has the ability to enter into contracts with public and private entities for public transit projects.

2.0 THE PROJECT

System Performance and Operational Criteria have been established for the AGS and are attached as Exhibit A. Key criteria include:

- The AGS should accommodate both local and express traffic;
- AGS technology should be proven and available;
- The AGS should allow for expansion of alignments to address growth in demand and/or additional station locations or branches;
- The AGS travel times should at least equal those of an unimpeded vehicle traveling along I-70 to various destinations;
- Passenger experience should conform to the requirements set forth in the European High Speed Rail Rolling Stock passenger comfort parameters/standards if rail or appropriate equivalent if other technologies; and,
- The AGS should provide 98% on-time reliability.

The technical feasibility of the AGS was determined through responses to a Request for Statements of Technical Information. A total of 18 technology providers submitted Statements of Technical Information (SOTI). The SOTIs were vetted and screened by DTR, their consultant team and other industry experts. For purposes of the feasibility assessment, three feasible technologies were selected to move forward to prepare alignments and costs: high speed steel wheel on steel rail, high speed Magnetic Levitation ("Maglev") and medium speed Maglev. The study team worked with the industry to identify feasible alignments for each of these technologies.

DTR presents this RFFI to prospective Financial Providers to gather information to inform an initial assessment of the overall financial feasibility of providing an AGS for the I-70 Mountain Corridor as required in the Programmatic Environmental Impact Statement (PEIS) Record of Decision.

The goal of the current effort is to establish if there are one or more feasible financial alternatives to fund or implement an AGS by the year 2025 as prescribed by the PEIS Record of Decision.

Additional information on the AGS feasibility study, including links to the full I-70 Mountain Corridor environmental documentation can be found at the following link:
http://www.coloradodot.info/projects/AGSstudy

The ultimate implementation of an AGS may encompass a public-private partnership approach that will:

(i) Finance, design, and construct the I-70 Mountain Corridor from the vicinity of C470/I-70 in Jefferson County to Eagle County Regional Airport, potentially starting with a minimal operable segment (MOS); The MOS is defined in the PEIS as running from C-470/I-70 in Jefferson County to west of the Continental Divide.

(ii) Operate and maintain the project for the full term of the Concession agreement.

As DTR continues its efforts to analyze and develop a financing plan for the AGS, it is expected that a number of aspects of the AGS will continue to evolve.

Potential Financial Providers responding to this RFFI ("Respondents") should also be aware that another related study is underway; the Interregional Connectivity Study "(ICS"). The ICS is examining provision of a high speed transit system along the Front Range of the Rocky Mountains from Pueblo, CO to Fort Collins, CO, generally along the I-25 corridor as well as between C-470/I-70 in Jefferson County and Denver International Airport.

3.0 AGS PROJECT BACKGROUND INFORMATION

Respondents are requested to provide a Statement of Financial Information ("SOFI") that addresses the specific questions below along with any other information they believe will be beneficial to determining the financial feasibility of the AGS. The goal of this process is to gain the best available information regarding the possible financing of the project. This is a request for information solely for the purpose of providing inputs into the AGS feasibility report. No selection of any kind will be made as a result of this RFFI.

3.1 Ridership Results

As part of the ICS, a ridership model was developed. This ridership model was used to develop preliminary ridership for the AGS and the ICS. To date, ridership was developed for two technologies; high speed steel wheel on rail and high speed maglev. The ridership data is for 2035 and assumes that both the north-south system along I-25 from Pueblo to Fort Collins and the east-west system along I-70 from DIA to Eagle County Regional Airport are in place.

Assuming that the full system (north-south from Pueblo to Fort Collins and east-west from DIA to ECRA) is in place; yearly ridership on the AGS (Golden to ECRA) would range from 3.32 million to 3.43 million riders per year. If only the east-west system from DIA to ECRA was in place, annual ridership would be about 2.99 million riders.

3.2.1 Full Corridor Alignments

The consultant team has developed four alignments. They are:

1. Greenfield (outside I-70 right of way) Alignment for High Speed Steel Wheel on Rail

- 101.6 Miles, Golden to Eagle County Regional Airport ("ECRA")
- 62.8 Miles in Tunnels

2. Greenfield Alignment for High Speed Maglev

- 116.7 Miles, Golden to ECRA
- 40.5 Miles in Tunnels

3. Wholly within I-70 Right of Way Alignment for Medium Speed Maglev

   Note: This alignment was developed and tested but due to the resulting speeds is not being taken forward in the analysis.

- 118.8 Miles, Golden to ECRA
- 1.6 Miles in Tunnels

4. Hybrid (combination of within I-70 Right of Way and Greenfield) Alignment for Medium Speed Maglev

- 115.2 Miles, Golden to ECRA
- 15.7 Miles in Tunnels

The alignments were developed using curvature and grade data obtained from the technology providers through the SOTIs and additional follow up information.

3.2.2 Minimum Operating Segment (MOS) Alignment Options

The ROD assumes that the minimum operating segment would be from Golden to a point west of the Continental Divide, which would place the west end of the MOS in Summit County. Initial alignment analysis is based on the MOS for High Speed Steel Wheel on Rail Technology running from Golden to Breckenridge. The MOS for High Speed Maglev is preliminarily assumed to run between Golden and Copper Mountain. The preliminary assumption for a MOS for the Medium Speed Maglev is running from Golden to Breckenridge on the Hybrid Alignment that is partially within the I-70 right of way..

3.2.3 Minimum Operating Segment Costs

The AGS Consultant Team is in the process of developing detailed system and operations/maintenance cost estimates for the various alignments and technologies. As of the date of the issuance of this RFFI, those detailed estimates have not been completed. However, the following data should provide the responder with a general idea of costs. As soon as detailed estimates are complete they will be forwarded to potential respondents.

1. **High Speed Steel Wheel on Steel Rail**

    a. Capital

    The AGS team is currently evaluating costs but has identified a preliminary cost of $16.44 billion for the full high speed steel wheel on rail system from Golden to ECRA. The preliminary cost for the MOS is $9.56 billion.

    b. Operating Costs

    Preliminary yearly operating costs range from $81,500,000 to $115,140,000, depending on the operation plan selected.

    c. Operating Costs as Percentage of Farebox Revenues

Based on preliminary revenue estimates of $64,840,000 to $81,855,140, the Operating Ratio is between 0.71 and 0.79.

2. High Speed Maglev

a. Capital

The AGS team is currently evaluating costs but has identified a preliminary cost of $15.90 billion for the full high speed maglev system from Golden to ECRA. The preliminary cost for the MOS is $8.44 billion.

b. Operating Costs

Preliminary yearly operating costs range from $63,000,000 to $89,000,000 depending on the operation plan selected.

c. Operating Costs as Percentage of Farebox Revenues

Based on preliminary revenue estimates of $76,604,404, the Operating Ratio is between 0.86 and 1.22.

3. Medium Speed Maglev

a. Capital

The AGS team is currently evaluating costs but has identified a preliminary cost of $13.09 billion for the full medium speed maglev system from Golden to ECRA. The preliminary cost for the MOS is $6.59 billion.

b. Operating Costs

Preliminary yearly operating costs range from $75,100,000 to $106,130,000 depending on the operation plan selected.

c. Operating Costs as Percentage of Farebox Revenues

Ridership data for medium speed maglev is not available as of this date. Therefore an Operating Ratio cannot be calculated.

3.3 Preliminary Funding Assumptions

The following preliminary funding assumptions are made related to the financing of the Advanced Guideway System. All Respondents should address these assumptions and are welcome to submit comments regarding these assumptions.

- Federal funding for the project could range from 0% to 50% of project costs. If federal funding is available the most likely scenario is considered to be 25%. Respondents are asked to provide their input on federal funding likelihood as indicated in section 4.2.1.

- Funding for the AGS project from Corridor communities and counties could range from 0 to 10% of project costs.

- Fare box could cover between 71% and 122% of operations and maintenance (O&M) costs for the AGS. Systems with lower O&M costs could generate excess revenues.

- Currently there are no dedicated state and/or regional funding sources committed to the AGS. It is acknowledged that in order to implement the AGS, such additional funding sources will be required. Section 4.0 of the RFFI further discusses the desired inputs from Respondents associated with completing the funding picture.

3.4 Support for the Project

3.4.1 Collaborative Effort

The I-70 Collaborative Effort (CE) is a 27-member group representing various corridor interests formed by CDOT in 2008 to reach a consensus for future highway and transit development in the I 70 Mountain Corridor. . CDOT and the Federal Highway Administration were active participants and both agencies committed to adopting the CE's Consensus Recommendation as the Preferred Alterative in the PEIS and ROD.

By consensus in June 2008, the CE recommended a multi-modal transportation solution for the I-70 Mountain Corridor. The consensus recommendation includes both transit and highway improvements, based on proven needs. These improvements are aimed at enhancing the corridor, its environment, and its communities. It also allows for flexibility in determining the order for improvements to be made and the ability to assess impacts of improvements as time goes on before further improvements are implemented.

The following organizations are represented as part of the CE and continue to meet periodically:

Federal Highway Administration, CDOT, Colorado Motor Carriers Association, Federal Transit Administration, Colorado Environmental Coalition, Rocky Mountain Rail Authority, Colorado Passenger Rail Association, Vail Resorts, Garfield County, Summit Stage, US Forest Service, City of Idaho Springs, Sierra Club, Colorado Ski Country USA, City of Denver (Mayor's office), I-70 Mountain Corridor cultural resources representative, Clear Creek County, Town of Frisco, Colorado Association of Transit Agencies, Eagle County, Summit Chamber, Town of Vail, and the US Army Corp of Engineers..

The Consensus Recommendation document is attached as Exhibit B. The stakeholder vision for the corridor is multi-modal with a commitment to implementation of both AGS and highway improvements.

3.4.2 I-70 Coalition

The I-70 Coalition was formed in January 2004. Since then, Coalition members, both private and public, are coordinating efforts to implement long-term transportation improvements along the mountain corridor while representing the Coalition's best interests. The Coalition has proven to be a powerful voice for local and regional transportation interests. Coalition members maintain an involved presence on the various leadership teams, task forces, and committees that are working to study and implement the I70 improvements identified in the PEIS.

The following are represented on the Coalition:

Counties:
Clear Creek, Eagle, Jefferson, and Summit.

Municipalities:
Aspen, Avon, Breckenridge, Dillon, Eagle, Empire, Fraser, Frisco, Georgetown, Golden, Grand Lake, Idaho Springs, Leadville, Minturn, Silverthorne, Silver Plume, Vail, and Winter Park.

Private Sector Members:
Powder Corp-Copper Mountain Resort, Intrawest Winter Park and Vail Resorts.

Other Members:
Denver Regional Council of Governments (DRCOG)

A letter expressing support by the I-70 Coalition is attached as Exhibit C.

4.0 THE REQUEST FOR FINANCIAL INFORMATION

Respondents are requested to provide information regarding the following AGS-related questions. These responses will be compiled and use to inform the conclusions in the final financial feasibility report and the overall feasibility analysis of the AGS.

4.1 Financial Provider Background

Briefly describe your organization and its experience in financing multi-billion dollar transportation projects, particularly under a P3 concession approach.

4.2 Funding and Financing Components

As further detailed below, please provide recommendations regarding the funding streams that would need to be in place for the project in order to have a successful financing. These recommendations should be as realistic as possible, but also demonstrate innovative thinking.

4.2.1. Federal

Please provide your assessment as to whether the AGS project is likely to be a candidate for federal funding, and if so, at what level and from which federal agencies or programs. Please include the rationale for your response.

4.2.2 Project-generated Revenues

Please provide information on potential revenues in addition to farebox collections which a concessionaire, or developer could generate from the AGS project and that could be applied towards financing the capital costs of the AGS. Examples of a possible revenue sources in this category would be high value freight, power generation or development rights. Please provide information on what level of revenues could be generated on an annual basis, how such revenues might vary over the life of a concession and how "bankable" they would be to third party lenders. Also, please indicate what percentage of overall costs could be covered by these project generated revenues.

4.2.3 Additional Public Funding

As the farebox for the AGS could cover between 71% and 122% of O&M costs and the opportunities for project-generated revenues could be limited, it is recognized that additional sources of public funding will be needed to implement this AGS project. Please provide information as to the type and range of such sources that would be necessary to finance the project, when these revenues would need to be in place relative to an AGS concession procurement process and the overall required characteristics of such revenue streams.

4.2.4 Financing Capacity

As described above, given that the AGS project costs are expected to range between $6.59 to $9.56 billion in 2013 dollars for MOS and $13.09 to $16.44 billion in 2013 dollars for full corridor costs, please provide your responses to the following questions.

- Is it possible to secure financing for the full amount of project costs?
- What range of financing structures could be considered for the project?
- Is there a maximum absolute dollar amount (in 2013 dollars) that can be financed by the private sector within reasonable financing parameters?
- Are there "break points' where the financing risk level materially changes between low, medium, and high risks?
- What elements could potentially influence these amounts, positively or negatively?

4.2.5 Financing Cost

Please provide information on the expected average cost of capital if the AGS project were financed today and what debt structure and credit rating assumption that rate is based upon.

4.2.6 Recommended Term

Please provide recommendations as to the optimum term of a concession contract for the AGS and the basis for the recommendation.

4.2.7 Availability Payment Structure

If an availability payment method is used, please provide recommendations as to the critical components to make that structure viable. This would include information such as whether milestone payments during the construction period will be critical; if so, what percentage of overall payments the construction milestone payments would constitute; how should the O&M portion of the payments be structured; what types of incentives/disincentives should be included in the O&M payments?

4.2.8 General Terms

Please provide any recommendations as to other specific contract/financing terms that would be necessary to create private sector interest in financing the AGS project.

4.3 Recommendations on Governance Structure

Please provide recommendations as to what is considered the most effective governance structure for supporting a public-private partnership concession for the AGS. This structure should take into account the relationships between the private sector developer, CDOT and local governmental entities located with the project area. Please provide specifics as to the most critical aspects of the governance structure.

4.4 Recommended Delivery Structure

Please provide recommendations as to the most effective delivery structure for the AGS. Is a P3 concession structure the most beneficial? Should the capital and O&M components be separated? How will the delivery structure impact the financial feasibility of the AGS? These recommendations should provide suggested project financing methods in support of recommended delivery structures.

4.5 AGS Technology Selection

Please provide information as to how the selection of a technology will influence the risks and financeability of the AGS. For instance, if the technology selection is a less established technology such as magnetic levitation or if a more traditional rail technology requires more tunneling, how might this selection influence (positively or negatively) competition, life cycle costs and ability to obtain financing?

4.6 Roles and Responsibilities

Please provide recommendations as to the allocation of risks between the public and private partners. These recommendations should be as detailed as possible and be based on the premise of assigning the risks to the party best able to mitigate those risks.

4.6.1 Roles/Risk Allocation for the Private Sector

Please provide recommendations as to the roles, duties and risks that should be managed by the private sector partner in any AGS agreement.

4.6.2 Roles/Risk Allocation for the Public Sector

Please provide recommendations as to the roles, duties and risks that should be managed by the public sector partner in any AGS agreement.

4.7 Revenue Generation Risk

4.7.1 Fare Box

Please provide, in as much detail as possible, an explanation of the conditions under which you would be willing to collect and retain AGS transit fares as the means for payment of O&M costs and/or retirement of debt.

4.7.2 Other Revenue Streams

Please provide, in as much detail as possible, an explanation of the conditions under which you would be willing to collect and retain other revenue streams as the means for payment of O&M costs and/or retirement of debt.

4.8 Project Components

Please provide a response as to whether a concession concept that included other project components in addition to the AGS would assist in the financing of the AGS. Two scenarios to consider include

(1) Combining I-70 Highway Tolling with the AGS. Potential assumptions to consider under such a scenario include:

a) P3 / Concessionaire ability to set price of tolls and transit fare

b) Excess revenues from one could be used to balance and pay off the investment in the other, such that the whole investment in the corridor succeeds

c) Phasing would be possible, e.g. AGS first, tolls later, vice-versa, or concurrent development.

OR

(2) The combination of AGS with the ICS Front Range High Speed Transit project. Further information on the ICS Front Range High Speed Transit project can be found at the following website: http://www.coloradodot.info/projects/ICS.

The ICS Project is assessing the costs and benefits of providing a high speed transit system north-south along the I-25 corridor from Pueblo to Fort Collins CO and east-west through the Denver Metro area from Denver International Airport to the Golden CO area, where it would link with the AGS along the I-70 Mountain Corridor. Preliminary ridership data shows that if developed as a complete system, yearly ridership on the north-south alignment and the east-west alignment, including the AGS could be as high as 13,850,000 passengers per year (2035).

Potential issues to consider associated with this scenario include:

a) Do benefits outweigh the complications/risks to offer first right of refusal for both corridors, or

b) Consideration to include access to one or more airports (i.e. Denver International Airport (DEN) or Eagle County Regional Airport (EGE)

If Respondents consider one or both of these options to be beneficial, please provide further details as the critical components of such an arrangement.

5.0 THE PROCESS

This RFFI is the first in a multi-stage process for the development of the AGS. The schedule for the RFFI and other elements associated with the feasibility assessment is expected to generally follow the schedule below:

Target RFFI Schedule

Event	**Date**
Release Draft of RFFI	05/17/13
Final Questions on RFFI	06/7/13
Reponses to Questions on RFFI	06/14/13
Final Draft of RFFI (if any modifications)	06/14/13
SOFI Due	06/28/13
Questions and Clarifications on SOFI	06/29/13 – 07/31/13
Final Feasibility Study Available to Public	Fall 2013

6.0 QUESTIONS AND REQUESTS FOR CLARIFICATION; ADDENDA

In order to facilitate receipt, processing, and response, Financial Providers are to submit all questions and requests for clarification in writing to the RFFI as follows:

Division of Transit and Rail
Colorado Department of Transportation
4201 E. Arkansas Avenue
Denver, Colorado 80222

Attn: David Krutsinger, CDOT DTR
Email: david.krustsinger@state.co.us
Phone: (303) 757-9008

7.0 RFFI SUBMITTAL REQUIREMENTS

7.1 General

DTR expects the SOFIs submitted in response to this RFFI will provide critical financial information that will allow DTR to complete the AGS feasibility analysis. For consistency it is requested that SOFIs be submitted exclusively in the English language inclusive of English units of measure, and cost terms in United States of America dollar denominations.

7.2 Format

Each Respondent is requested to submit one original of its SOFI. These SOFI submissions may be submitted one of two ways: (1) a hard copy (as further specified below) plus an electronic copy or (2) via e-mail at Jill.Sweeney@state.co.us, including "AGS Statement of Financial Information" in the subject line. E-mail SOFI submissions are to meet the electronic copy requirements listed below. E-mail submissions will be issued a reply "receipt"; please follow-up with Jill Sweeney at 303-757-9398if a receipt is not received to an e-mail submission. The interested Respondent's name is to be clearly marked on the face of the SOFI. For those submitting the SOFI as hard copy submissions, each Respondent must submit an electronic copy of the SOFI in PDF (searchable) format. Double-sided printing on hard copy submissions is encouraged. There is no page limit restriction on the SOFI.

7.3 SOFI Submittal Information

All packages or e-mail submissions constituting the SOFI shall be individually labeled as follows:

AGS Statement of Financial Information

Email submissions of the SOFIs is to be delivered to the DTR RFFI Procurement Contact as stated in Section 7.2.

If mailed or delivered, they should be addressed to:

Colorado Department of Transportation
4201 E. Arkansas Avenue
Denver, Colorado 80222
Attn: Jill Sweeney
Email: Jill.Sweeney@state.co.usi
Phone: (303) 757-9398

Acknowledgment of receipt of SOFIs will be evidenced by the issuance of a receipt as described in Section 7.2 above.

SOFIs are to be submitted by 12:00 noon Denver, Colorado time on the SOFI Due Date. SOFIs will be accepted by CDOT during normal business hours up to the SOFI Due Date and time specified.

8.0 RFFI IS NOT A PROCUREMENT

As this RFFI is not part of a procurement process, the submission of a SOFI by a Financial Provider does not qualify the respondent for any subsequent procurement activities. By the same token, submission of a SOFI does not create any conflict from participation in any future procurements from DTR and CDOT including any associated with an AGS.

DTR does strongly encourage the submission of SOFIs by Financial Providers to aid in ensuring that the best possible information is included as part of the AGS feasibility analysis.

EXHIBIT A – AGS Operational and Performance Criteria

COLORADO ADVANCED GUIDEWAY SYSTEM (AGS)
SYSTEM PERFORMANCE & OPERATIONAL CRITERIA
August 31, 2012

On June 26, 2012 the initial draft of the AGS System Performance and Operational Criteria were released to industry. Over the past two months, we received comments on the criteria from four technology providers. In general, the comments can be characterized as:

- Make criteria less "traincentric"
- Desire to use criteria more suited to commercial aircraft or passenger car like transport.

The following revised criteria were developed based on the input we received.

Travel Time

For systems that connect to stations with vehicles that arrive/depart on a scheduled basis, the AGS should accommodate both local and express traffic simultaneously. These systems and other system-types should be able to accommodate, at a minimum, the peak period demands of 4,900 passengers per hour in the peak direction in 2035.

- Express (scheduled-type operations) – AGS travel times including station dwell time should, at a minimum, be faster than a travel time calculated as the highway distance between the station locations divided by 65 mph.

- Local (scheduled-type operations) – at least as fast as unimpeded vehicle (including station dwell time, acceleration/deceleration), equivalent of existing local transit systems (Summit Stage, Eco-Transit, etc.) between local locations.

- Other System/Operational Types – same as Express travel time above for peak demand times and Local travel times for non-peak periods.

Special Use Vehicles

The AGS should allow for private entities to design and/or build vehicles for specific needs (proprietary) to meet very specialized needs beyond traditional passenger/baggage traffic.

Technology

The AGS technology should be proven and available. This includes commercial availability, and/or subject to full-size independent evaluation by the end of 2017. If safety certification or other requirements by FRA, FTA, Colorado Public Utilities Commission (PUC) or others are necessary to be met, the technology provider should supply written evidence by the 2017 deadline that these provisions have been met.

In order to encourage both statewide and national future connectivity, CDOT will give additional consideration to a provider that is willing to license its intellectual property and technology to others. An example might include a fee structure that declines over time where after 25 years the property would be in the public domain (e.g., year 1-5 fee is 10%, year 5-10 fee is 8%.....year 25 fee is 0%). Additionally, CDOT will give additional consideration to those that will share non-proprietary design specifications to encourage a nationwide system.

Noise

The AGS should consider both external (system) noise and internal (cabin/vehicle) noise as follows:

- External – noise level generated by the AGS should not exceed those levels specified in the Technical Specifications of Interoperability (TSI, European Directive) Rolling Stock for those technologies for whom these standards apply. Other technology providers should supply applicable noise standards and test data or system expectations concerning external system noise (at various anticipated system speeds).

- Internal – ability to hold a conversation without raising one's voice (current research indicates this is approximately 50-60 decibels).

Footprint

The AGS design should follow context sensitive solutions guidelines to accommodate local community desires and needs. The footprint of the AGS (especially for alignments outside of the I-70 ROW) should be minimized to the extent possible to avoid community and environmental impacts and to maximize safety.

Grade

The AGS should have the ability to traverse grades (4 to 7 percent in many locations) as required by the alignment while meeting the travel time, safety, and capacity requirements.

Safety

The AGS should meet the TSI criteria (at guideway) for non-compensated lateral acceleration and braking deceleration for those technologies for whom these standards apply. Other technology providers should supply applicable safety standards and test data or system expectations concerning safety. Some standards from FRA, FTA, ASCE and other sources might apply. Again, if safety certifications or other requirements by FRA, FTA or others are required to be met, the technology provider should supply written evidence by the 2017 deadline that these provisions have been met.

The AGS should provide grade separated and wildlife crossings, an access controlled guideway, and emergency egress from the vehicles and guideway including structures and tunnels. System security should also be considered in design.

Weather

The AGS should be capable of operating in severe weather events with minimal interruption or delays in service. This includes tolerances for extremes of heat, cold, wind, ice and snow. The AGS provider should specify the level of service their system can provide relative to temperature range, wind speed and ice/snow accumulation.

The alignment passes through known avalanche zones and this condition will need to be addressed in the project design to maintain reliability, safety, and cost-effective maintenance.

Wind

The AGS technology and network must be able to withstand windshear in excess of extreme alpine wind storms such as those frequently experienced throughout the corridor. The AGS infrastructure shall be designed to withstand wind forces as specified in the applicable building codes.

The AGS provider shall specify the level of service their system can provide for ranges of wind speeds along with the maximum wind speed at which operations must cease.

Scalability/Growth

The AGS should allow for expansion of alignments to address future growth in demand and/or additional station locations or branches.

The AGS should allow for varying passenger demand (i.e., daily and seasonal peak demand) to respond to changes in passenger demand within reasonable time.

Passenger Comfort

The AGS passenger acceleration/deceleration/lateral cabin experience should conform to the requirements set forth in the European HSR Rolling Stock passenger comfort parameters/standards for those technologies for whom these standards apply. Other technology providers should supply applicable ride comfort standards and test data or system expectations concerning passenger comfort.

The following requirements should be met:

- Ability to have a cup of coffee on board without concern for spilling it.

- Work on a laptop or other electronic device.
- Ride comfort – ability to move around without being slammed against a wall for those technologies that have aisles and seating rows. Technologies that are designed to use automobile-style seating (without walkable aisles) should have ride comfort similar to auto travel. Other technologies might have other seating arrangements and should be described.
- Access to restrooms.
- Seating for each passenger (passengers should not be allowed to stand).
- ADA compliant.

Baggage Capacity

The AGS should accommodate luggage and outdoor gear including skis, snowboards, bicycles and golf clubs. Loading of such accoutrements must have minimal impact on station dwell and boarding times. This may necessitate the design and/or building of specific needs vehicles.

Light Freight

The AGS should provide for handling of light-weight and high-value packages. This includes food deliveries. This may necessitate the design and/or building of specific needs vehicles.

Heavy Freight

This criterion is optional. The AGS provider may accommodate heavy freight with the system. If the provider chooses to include heavy freight as part of their AGS, the details of this should be presented in the proposal. The provision for heavy freight on the AGS shall not negatively impact passenger traffic on the system, operational efficiencies or maintenance costs.

Tunnels

Tunnels are acceptable provided they are a cost-effective solution or one that reduces community and environmental impacts.

Reliability

Except for the extreme weather events to be defined by the AGS provider under the Weather and/or Wind criteria, the AGS should provide 98% on-time operational reliability. “On-time” is defined as within 5-minutes of the scheduled arrival or departure time. For systems that do not propose a schedule-based service, the technology provider should supply applicable reliability standards and test data or system expectations concerning operational and maintenance reliability.

Headways

The AGS headway times should be capable of addressing peak period demands of 4,900 passengers per hour in the peak direction in 2035. For systems that do not propose a schedule-based service, the technology provider should supply their plan for meeting or exceeding the passenger per hour minimum (above).

Operational Efficiencies and Maintenance Costs

The AGS provider should provide an operational efficiency and maintenance plan.

Context Sensitive Solutions

The AGS should conform to CSS principles for environmental and community considerations in design, construction and operations in all locations, the development of transit stations of all designs, all system facilities and for all types of technologies.

Power Generation, Transmission and Distribution

The AGS should define the system consumption and provider's plan to obtain power and/or fuel for system components (e.g., propulsion, substations, etc.).

The AGS provider should describe their system's ability to accommodate electrical power transmission/distribution lines and other utilities within the guideway area both for the system use and for uses outside of the AGS.

Energy Efficiency

The AGS provider should describe the ability of their system to respond to incorporating green technology for renewable power sources such as wind and solar power.

Sustainability

The AGS should be implemented in a sustainable manner.

The AGS provider should describe a basic sustainability plan that at a minimum covers: supply chain, carbon footprint, construction and maintenance methods and impacts, green materials, life-cycle analysis, and alternative energy. Technology providers should describe how their sustainability goals will be measured and met (e.g., LEED, ASCE ISI, other).

Cost

The AGS provider should provide a unit cost array showing costs for major system elements (e.g., guideway per mile, O&M facility, vehicles, power, others).

Proposers are encouraged to consider a range of system size and capabilities. This might include scenarios of $5 B, $10 B, $20 B and $30 B. Providing multiple system sizes is not a requirement. There is no limit on the financial size of the proposed system.

In addition to phasing options, the proposers should identify any high cost, high risk items that may be better addressed through additional project development, ultimately reducing the total project cost.

Alignment

The AGS alignment should, to the extent possible, generally follow the I-70 highway ROW. The system does not need to be limited to the current CDOT I-70 highway ROW if a more efficient, more direct, faster, more reliable, more cost-effective, safer, and/or environmentally sensitive alignment is possible. The AGS alignment should optimize ridership potential and minimize environmental impacts to both the corridor's natural and built environments, including impact to corridor communities and the current highway operation. In addition, alignment location considerations should include minimizing the impact to the current I-70 highway operation during the construction or maintenance of the AGS.

Termini

Ultimately, it is planned that the AGS will operate from Denver International Airport (DIA) to Eagle County Regional Airport. The AGS can be implemented in a phased manner provided the technology is consistent and, at a minimum, the minimum operating segment (MOS) is operational from the Front Range to west of the Continental Divide by 2025. The full system implementation must be achieved by 2050. The provider shall provide an implementation and financial plan concerning the MOS and ultimate system build out.

Right-of-Way (ROW)

The system ROW will be defined by the provider and will include the guideway, platforms, stations, electrical substations and maintenance facilities/depots. The ROW will be valued and cleared by CDOT, local jurisdictions, U.S. Forest Service and other affected parties. The final ROW needed for the system will be made available at no cost to the developer prior to financial close.

Interface With Existing and Future Transit Systems

The AGS provider will not be responsible for costs of development and operations of transit systems to connect the AGS stations to local destinations. Local agencies will utilize existing

transit systems or develop new transit systems prior to the AGS becoming operational to transport passengers and baggage from the AGS stations to their destinations. The provider will work with the appropriate agencies during design development to develop local transit systems to meet the demands posed by the AGS at each station.

Potential System Owner and Operator

The AGS will be owned by a governmental authority and operated by the provider(s) for a term to be defined at a later date. The provider shall provide a suggested term for the concession.

Potential Station Locations

Preliminary stations locations include:

- Jefferson County Station Near C-470/US 6/I-70 (1 Station)
- Clear Creek County (1 Station)
- Summit County (2 Stations)
- Vail (1 Station)
- Eagle County Regional Airport (1 Station)

AGS providers, working with the corridor stakeholders, may elect to include additional stations if their technology allows the other criteria to be met with the additional stations and stops.

EXHIBIT B – Collaborative Effort Recommendation

INTRODUCTION

The Collaborative Effort, a 27-member group[1] representing varied interests of the corridor, was charged with reaching consensus on a recommended transportation solution for the I-70 Mountain Corridor[2]. The Colorado Department of Transportation (CDOT) and the Federal Highway Administration (FHWA) were active participants in this group and committed to adopt the consensus recommendation in the I-70 Programmatic Environmental Impact Statement (PEIS).

VISION FOR THE I-70 MOUNTAIN CORRIDOR

The Collaborative Effort's vision for transportation in the I-70 Mountain Corridor is multi-modal. Transit and highway improvements are based on proven needs and will enhance the corridor, its environment and communities. The Collaborative Effort has not completed a corridor-wide vision for the future, thereby limiting the ability of the group to accurately determine future actions and needs. In order to adequately assess future transportation needs, local governments and communities, along with additional broad stakeholder participation, need to lead a discussion to develop a long-range corridor vision for growth, transportation, and mobility. One primary purpose of this endeavor would be used to assist in the evaluation of capacity improvements. All parties must take ownership in needed changes and continue to work together to achieve this vision.

The criteria below informed the Collaborative Effort's recommendation and will serve as criteria of effectiveness moving forward:

- 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 into 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.

The Collaborative Effort's solution recognizes the importance of providing meaningful recommendations, short-term direction, and the ability to adapt to future conditions and needs. The Collaborative Effort has not analyzed the potential environmental impacts of this recommendation. A comparative analysis must be made of the impacts of this alternative against all other alternatives identified in the Draft Programmatic Environmental Impact Statement. The CE understands that the agencies will make this comparison as required by the National Environmental Policy Act. As soon as this analysis is complete and prior to publication in the Final Programmatic EIS the agencies shall provide a briefing to interested members of the CE of the results of this analysis.

The recommendation below captures the consensus of the Collaborative Effort.

RECOMMENDATION

The recommendation for I-70 through Colorado's mountain corridor is a multi-modal solution including non-infrastructure components, a commitment to evaluation and implementation of an Advanced Guideway System (AGS), and highway improvements. A reassessment of the improvements' effectiveness and reviews of study results and global trends shall be conducted prior to implementing additional capacity improvements. Continued stakeholder involvement is necessary for all tasks conducted on the I-70 transportation system.

[1] See Attachment A for a list of Collaborative Effort representatives and organizations.
[2] The I-70 Mountain Corridor as defined by the study boundaries identified in the PEIS.

The following describes the components of this recommendation:

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. These strategies and the potential tactics for implementation require actions and leadership by agencies, municipalities and other stakeholders beyond CDOT and FHWA. The strategies include but are not limited to the following:

- 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 which may increase mobility without additional infrastructure.
- Traveler information and other intelligent transportation 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 (TDM) measures yet to be determined.

Advanced Guideway System

An Advanced Guideway System (AGS)[3] is a central part of the recommendation and includes a commitment to the evaluation and implementation of AGS 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 AGS system within 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 AGS in freight delivery both in and through the corridor.

Several studies currently underway will provide further information to assist stakeholders with evaluation and implementation of AGS.

[3] As defined by the performance criteria identified by the I-70 Coalition (Attachment B).

CDOT is committed to provide funding for studies in support of the additional information needs to determine the viability of the AGS. The implementation plan included in the Final Programmatic Environmental Impact Statement will identify roles and responsibilities, including actions and leadership required by agencies, municipalities and other stakeholders in addition to CDOT and FHWA.

Highway Improvements

The Collaborative Effort recognizes that the following highway improvements are needed to address current corridor conditions and future demands. These improvements must be planned considering all elements of the recommendation and consistent with local land use planning. The following safety, mobility, and capacity components are not listed in order of priority, do not represent individual projects and may be included in more than one description[4]. They are listed in two categories. All of the improvements in both categories are included in our recommendation. The "Specific Highway Improvements" are called out specifically for the triggers for the Future Highway and Non-AGS Transit Improvements:

Specific Highway Improvements

- A six-lane component from Floyd Hill through the Twin Tunnels including a bike trail and frontage roads from Idaho Springs East to Hidden Valley and Hidden Valley to US 6.
- Empire Junction (U.S. 40/I-70) improvements.
- Eastbound auxiliary lane from the Eisenhower Johnson Memorial Tunnel (EJMT) to Herman Gulch.
- Westbound auxiliary lane from Bakerville to the EJMT.

Other Highway Projects

The following safety and mobility components are not subject to the parameters established for future capacity improvements identified in the latter part of this document.

- Truck operation improvements such as pullouts, parking and chain stations.
- Safety improvements west of Wolcott.
- Eastbound auxiliary lane from Frisco to Silverthorne.
- Safety and capacity improvements in Dowd Canyon.
- Interchange improvements at the following locations:
  - East Glenwood Springs.
  - Gypsum.
  - Eagle County Airport (as cleared by the FONSI and future 1601 process)
  - Eagle.
  - Edwards.
  - Avon.
  - Minturn.
  - Vail West.
  - Copper Mountain.
  - Frisco/Main Street.
  - Frisco/SH 9.
  - Silverthorne.
  - Loveland Pass.
  - Georgetown.

[4] See Attachment C for a detailed description of safety improvement, interchange and auxiliary lane projects.

  - Downieville.
  - Fall River Road.
  - Hyland Hills and Beaver Brook.
  - Lookout Mountain.
  - Morrison.
- Auxiliary Lanes:
  - Avon to Post Boulevard (eastbound).
  - West of Vail Pass (eastbound and westbound).
  - Morrison to Chief Hosa (westbound).

Future Stakeholder Engagement

Ongoing stakeholder engagement is necessary because the aforementioned improvements may or may not fully address the needs of the corridor beyond 2025, and the recommendation does not preclude nor commit to the additional mutli-modal capacity improvements. As such, CDOT and FHWA will convene a committee that retains the Collaborative Effort member profile. The committee will establish its own meeting schedule based on progress made against the approved triggers, with check-ins at least every two years. Such meetings will review the current status of all projects and will consider the following triggers in evaluating the need for additional capacity improvements.

Triggers for Additional Highway and Non-AGS Transit Capacity Improvements

Additional highway and non-AGS transit capacity improvements may proceed if and when:

- The "Specific Highway Improvements" are complete, and an AGS is functioning from the front range to a destination beyond the Continental Divide, or

- The "Specific Highway Improvements" are complete, and AGS studies that answer questions regarding the feasibility, cost, ridership, governance, and land use are complete and indicate that AGS 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, such as climate change, resource availability, and/or technological advancements.

In 2020, there will be a thorough assessment of the overall purpose and need and effectiveness of implementation of these decisions. At that time, CDOT and FHWA, in conjunction with the stakeholder committee, may consider the full range of improvement options.

The CE recommends that the Record of Decision for the PEIS require that Tier 2 studies comply with:

- The Section 106 Programmatic Agreement,
- The Memoranda of Understanding for:
  - Stream Wetland Ecology Enhancement Project (SWEEP),
  - Minewaste, and
  - A Landscape-level Inventory of Valued Ecosystem Components (ALIVE),, and
- The Context Sensitive Solutions (CSS) decision making process and guidance manual.

CDOT and FHWA also will consider the principles of the Colorado Governor Ritter's Climate Action Plan within future environmental studies.

Attachment A: Collaborative Effort Representatives and Organizations

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Attachment B: AGS Technology Performance Criteria
I-70 Coalition Technical Committee Recommendations

The I-70 Coalition requested that its Technical Committee develop a list of performance criteria that could be useful in the effort to screen potential Advanced Guideway System technologies, both existing in research and development phase technologies. These criteria are not meant to be a detailed, specific and definitive list, but merely a basic screening tool for general purposes of the Coalition and its partners.

CRITERA:

NOISE – This criterion has two separate factors to consider, both external (system) noise and internal (cabin noise) should be considered as important factors for consideration.

External – should be less than existing highway noise levels.
Internal – ability to hold a conversation without raising one's voice (current research indicates this is approximately decibel levels of about 50 db).

ELEVATED – The intent is for the AGS to be capable of being elevated for more than just for short spans like bridges, in an effort to avoid environmental (especially wildlife) impacts and to minimize the footprint of the system. Pre-fab structures for cost containment and deployment, as well as those constructed in sections offsite using steel and/or concrete should be considered. Design must follow context sensitive solutions guidelines to accommodate local community desires and needs.

WEIGHT – This criterion refers to a minimum/maximum freight carrying capacity (consumer freight) and also anticipates average per passenger as well as freight only capacity. The discussion regarding freight capacity is included in slightly more detail below. The basic guideline is for the AGS to accommodate passengers, luggage (and recreational paraphernalia) as well as some measure of containerized or consumer freight.

TRAVEL TIME – This category also has two components to consider since the intent is for AGS to accommodate both local and express traffic simultaneously. This implies a need for off-line stations since it would not be feasible to allow for both local and express traffic on a single line with on-line stations.

Express – as least as fast as unimpeded vehicle on highway between Denver and Vail (speeds likely approaching greater than 65 mph)
Local – as least as fast as unimpeded vehicle on highway (including station dwell time), equivalent of local transit now (Summit Stage, Eco-Transit, etc.) between local locations (i.e. Silverthorne to Copper Mountain). This implies that the speed of AGS would need to exceed 65 mph if station dwell time is going to be incorporated in transit time.

GRADE – AGS must accommodate demand between Denver and Glenwood Springs without significant degradation of speed and efficiency. That may mean ability to climb grades of 7% or greater over long stretches (10 miles or more) without significant decrease in speed.

SAFETY – This is a critical factor which includes both passenger safety (which has implications for g-forces for acceleration and deceleration, lateral stability and smoothness of ride) as well as safety for traffic/pedestrian crossings and potential wildlife crossings. Elevation of AGS should accommodate grade separated crossings and alleviate wildlife crossing concerns.

WEATHER – AGS should be capable of operating in all weather conditions and accommodate sever weather events with minimal interruption or delays in service. This includes tolerances for extremes of heat, cold, wind, ice.

WIND – Technology and network must be able to withstand windshear in excess of extreme alpine wind storms such as those frequently experienced at Georgetown and throughout the corridor.

SALABILITY – Expansion of alignments and carrying capacity (within hours) should be able to address both growth in demand over time as well as peak demand vs off-peak demand. This criterion will have vehicle design ramifications as well as storage requirements for the system.

PASSENGER COMFORT AND SAFETY – While not “scientific” and quantifiable, the following observations are important factors to consider in evaluation of any technology on the I-70 corridor:

Ability to have a cup of coffee on board without concern for spilling it.
Work on laptop
Ride comfort – ability to move around without being slammed against a wall
Acceleration
Restroom capable
Seating for all passengers
ADA compliant

BAGGAGE CAPACITY – For most riders, there will be a need to accommodate gear, luggage, outdoor gear, “stuff.” Loading of such accoutrements must have minimal impact on station dwell and boarding times. In general, the intent is to be able to carry anything one could carry in or on a passenger vehicle.

LIGHT FREIGHT – commercial freight during off hours (Consumer Freight). This criterion is still being discussed, but the intent is to accommodate UPS/FedEx type of freight as well as restaurant and lodging types of commodities.

ENERGY EFFICIENCY – Technology should be capable of incorporating green technology for power sources such as wind and solar power. Ideally it should accommodate such power sources on-line.

GROWTH – ability to accommodate 50 years of growth in demand.

ACCOMMODATE LOCAL AND EXPRESS TRAFFIC SIMULTANEOUSLY

TUNNELS – if needed, the technology should minimize the need for tunneling as an expensive alternative to other routes. However, there is a recognition that in certain circumstances, tunneling may be a viable option and even desirable to mitigate other factors.

ADAPTABILITY – the system should be able to incorporate or evolve to future technological developments without scrapping the entire system.

RELIABILITY – consistent, predictable travel times in all weather conditions is a mandatory feature of any AGS proposed for the I-70 Corridor.

FREQUENCY – head-way times capable of addressing peak period demands is a necessity for this system.

ALIGNMENT – the system should not be limited to the current CDOT I-70 highway R.O.W. if a more efficient, more direct, more reliable and potentially less expensive alignment is possible. The AGS alignment should optimize rider ship potential and minimize environmental impacts to both the corridor's natural and built environments, including impact to corridor communities and the current highway operation. In addition, alignment location considerations should include minimizing the impact to the current I-70 highway operation during the construction of the AGS.\

OPERATIONAL EFFICIENCIES AND LOW MAINTENANCE COSTS

EQUIPMENT DESIGN FLEXIBILITY – the system should be able to accommodate multiple needs for passengers, freight, passenger "stuff," possibly even cars (based on European models). It should allow for private entities (UPS) to build specific needs vehicles (proprietary) to meet very specialized cargo needs. This may include a need for different vehicle configurations to accommodate low demand travel times and locations as well as the high demand, peak travel times and destinations.

CONTEXT SENSITIVE SOLUTIONS – CSS principles will apply for environmental and community considerations in construction and operations in all locations, the development of transit stations of all designs and for all types of technologies.

Attachment C: Safety Improvement, Interchange and Auxiliary Lane Project Descriptions

Interchanges

COMPONENT	BENEFIT
East Glenwood Springs (milepost 116): Interchange improvements would constitute the westernmost local safety and capacity improvement.	Improvements to the East Glenwood Springs Interchange would involve upgrades to all existing ramps, including widening and lengthening, and signalization of the interchanges on SH 82 at the bottom of the I-70 ramps.
Gypsum (milepost 140): Extensive development in western Eagle County is expected to result in excess travel demand at this currently unsignalized interchange.	This improvement also would provide more storage to prevent traffic from backing up onto the I-70 mainline.
Eagle County Airport (milepost 143): As cleared by the FONSI and future 1601 process, the interchange will include a new I-70 interchange and exit between the Towns of Eagle and Gypsum, and a new 4-lane bridge and roadway connecting to Cooley Mesa Road at the east end of the airport.	This improvement will provide a more direct connection between I-70 and the Eagle County Regional Airport, located south of State Highway 6 (SH 6) between the towns of Eagle and Gypsum.
Eagle (milepost 147): As with the Gypsum interchange, this interchange is expected to see demands increasing with local development.	Improvements would reconstruct the interchange and increase the capacity of the spur road that connects I-70 and US 6.
Edwards (milepost 163): Continued development in Edwards would result in increased congestion at this interchange.	Improvements would reconstruct the interchange and increase the capacity of the spur road that connects I-70 and US 6.
Avon (milepost 167): The westbound off-ramp at Avon is anticipated to have traffic backing up onto the I-70 mainline in the future.	The Avon interchange would be modified to create more capacity for this movement.
Minturn (milepost 171): The Minturn interchange is a partial-cloverleaf on a mainline curve. Tight ramp loops and the curves in the mainline contribute to a substantial accident rate. The eastbound off-ramp also has safety issues resulting from a single approach lane for both the through traffic to Minturn and the traffic turning right to go to Vail.	A separate right turn lane for the eastbound on-ramp traffic would be provided, along with other minor reconstruction elements to improve safety and capacity.
Vail West (milepost 173): The roundabouts at Vail West Entrance carry heavy volumes of both local and regional traffic. As a result, traffic currently backs up onto eastbound I-70. The improvement would primarily involve construction of the "Simba Run" underpass, which would connect the north and south frontage roads between Vail West Entrance and Vail Main Entrance (milepost 176).	This component would relieve local traffic pressures on the interchange roundabouts and would lengthen an inadequate eastbound on-ramp acceleration lane.
Copper Mountain (milepost 195): Unusual geometry and grades contribute to a greater-than-average accident rate at this interchange.	This local improvement would modify this interchange – also known as Wheeler Junction – to provide greater safety and capacity.

Frisco/Main Street (milepost 201): Without this improvement, off-ramp traffic at Main Street on the west side of Frisco is expected to back onto the I-70 mainline during peak hours.	This component would replace the current stop signs with traffic signals and provide appropriate turn bays.
Frisco/SH9 (milepost 203): This improvement would provide a two-lane eastbound on-ramp and acceleration lane up to near the scenic overlook (milepost 202.5 to 203).	This would allow southbound traffic on SH 9 to use both lanes throughout the town of Frisco, which would help reduce or eliminate queuing at the multiple traffic signals. It would also increase westbound off-ramp ramp storage.
Silverthorne (milepost 205): The interchange with US 6 and SH 9 near Dillon and Silverthorne currently experiences congestion and many accidents on the intersecting highways.	Rebuilding the interchange – likely as a single point urban interchange (SPUI) – would mitigate congestion and safety issues.
Loveland Pass (milepost 216): This improvement would provide longer acceleration and deceleration lanes at the Loveland Pass interchange.	This would result in greater capacity and safer merging.
Georgetown (milepost 228): Proposed improvements would signalize the ramps, provide turn bays and build a roundabout at Argentine Street.	Improvements would improve capacity and safety.
Downieville (milepost 234): The north side of the Downieville interchange has two unsignalized intersections within about 50 feet of each other, where the crossroad meets up with the westbound ramps and then the frontage road. The intersections have limited capacity and often cause long queues on the frontage road today. Future traffic is expected to back onto the main I-70 roadway.	This component would provide greater ramp and intersection capacity.
Fall River Road (milepost 238): Minor ramp modifications would be made. Additionally, a spur road would be constructed over Clear Creek to connect the interchange with the frontage road.	Improvements at the Fall River Road interchange would address both safety and capacity issues. Spur road would remove local traffic from I-70 and improve local access.
Hyland Hills and Beaver Brook (mileposts 247 and 248): The Hyland Hills (milepost 247) and Beaver Brook (milepost 248) interchanges would be improved.	Improvements would increase capacity of the ramps and the intersections with local roads (Hyland Hills Road and Bergen Park Road).
Lookout Mountain (milepost 256): This interchange would be rebuilt.	The rebuilt interchange would accommodate future increases in demand.
Morrison (milepost 259): An additional left turn lane would be added at this interchange for eastbound on-ramp traffic.	This would improve performance of intersections under I-70.

Safety Improvements

COMPONENT	BENEFIT
West of Wolcott (milepost 155 to 156): The curve west of the Wolcott interchange is posted	Curve safety modification improves safety.

with advisory speeds as low as 60 mph, when the speed limit on adjacent portions of I-70 is 75 mph. As a result of this violation of driver expectancy, this section has an above-average accident rate.	
Dowd Canyon (milepost 170 to 173): This narrow canyon accommodates the Eagle River, Gore Creek, and I-70. The tight curves here have some of the highest accident rates in the corridor.	Curve safety modification improves safety.

Auxiliary Lanes

COMPONENT	BENEFIT
Eastbound Auxiliary Lane from Frisco to Silverthorne (mileposts 203 to 205):	An auxiliary lane between these two interchanges would increase safety and improve capacity.
Avon to Post Boulevard Eastbound (mileposts 167 to 168): I-70 between Avon (milepost 167) and Post Blvd. (milepost 168) is uphill. Traffic merging from the Avon on-ramp has difficulty accelerating on the grade and finding sufficient gaps for merging. Traffic attempting to get from I-70 to the Post Blvd. off-ramp creates a problematic weaving issue.	An auxiliary lane between these two interchanges would increase safety and improve capacity.
West of Vail Pass Eastbound and Westbound (mileposts 180 to 190): An additional lane in both directions would be built between Vail East Entrance (milepost 180) and the Shrine Pass interchange (milepost 190), just east of the Vail Pass summit.	The eastbound auxiliary lane would provide additional capacity by allowing more space fro fast-moving vehicles to pass slow-moving vehicles struggling with the steep grades. The westbound lane would primarily be a safety improvement, reducing the likelihood
Morrison to Chief Hosa Westbound (mileposts 253 to 259): A fourth lane westbound would be provided from the Morrison on-ramp (milepost 259) connecting to the existing fourth (auxiliary) lane, which starts at the Chief Hosa interchange (milepost 253)and exits at the Evergreen Parkway (milepost 252) exit.	The auxiliary lane would provide additional capacity up this steep section with six percent grades and the highest traffic volumes in the Corridor. The low-volume Chief Hosa westbound on-ramp would be rebuilt using a taper configuration.

EXHIBIT C – I-70 Coalition Letter of Support

I-70 COALITION

setting the pace for the future

May 15, 2013

To Whom It May Concern,

The I-70 Coalition is a non-profit organization comprised of 26 counties, towns and resorts along the I-70 Corridor with a mission to *enhance public accessibility and mobility in the I-70 Central Mountain Corridor and adjoining dependent counties and municipalities through the implementation of joint public & private transportation management efforts.*

An Advanced Guideway System (AGS) was a central component of the I-70 Coalition's preferred alternative that was adopted in the I-70 Programmatic Environmental Impact Statement Record of Decision. The Coalition also supports the Collaborative Effort (CE) commitment to the evaluation and implementation of AGS within the corridor. The I-70 Coalition is involved in several initiatives affecting the I-70 corridor, one of which is the AGS Feasibility Study Project Leadership Team.

We recognize the importance of assessing financial feasibility of an AGS system, and support CDOT's commitment to this consideration as part of the larger AGS Feasibility Study process. We encourage you to seriously consider responding to the Request for Financial Information (RFFI) and subsequent opportunities to assist CDOT's Division of Transit and Rail in determining the feasibility of an Advanced Guideway System.

Thank you for your interest in AGS on the I-70 Mountain corridor.

Sincerely,

Stan Zemler, Chair
I-70 Coalition

P.O. Box 4100 • Frisco CO 80443· www.i70solulions.org