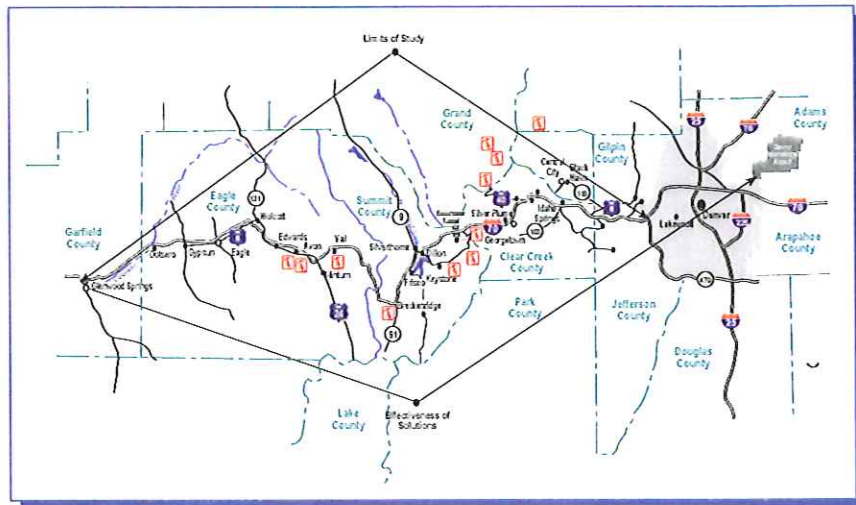


I-70 Mountain Corridor Major Investment Study

Final Report Executive Summary



Prepared for
**Colorado Department
of Transportation**



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Executive Summary

Introduction

The I-70 Mountain Corridor Major Investment Study (MIS) was commissioned by the Colorado Department of Transportation (CDOT) to identify the short- and long-term mobility solutions for I-70 from Denver International Airport (DIA) to Glenwood Springs. The 140-mile corridor¹ has many uses; it serves as a major east/west interstate route; a designated defense route; a freight route; the main access to the Colorado mountains; and the way to work, shopping, and school for many people.

This is a recreational corridor through small historic towns and provides access to many world renowned ski resorts. The corridor traverses many planning regions, 5 counties, and over 20 municipalities. The traffic problems vary from summer to winter, occur primarily on the weekends, and cause delays of over three hours on peak summer Sundays. With no transportation improvements, these delays will increase.

The corridor contains diverse interest groups, including organizations opposed to highway widening, as well as ski industry representatives who are concerned about access to ski resorts, one of the state's leading industries.

These unique conditions require a vision for the I-70



Mountain Corridor MIS built on a common mission and guiding principles.

From the beginning of the MIS, the idea emerged to plan the corridor improvements beyond the traditional 20-year horizon. This long-term futuristic approach to the corridor prompted important changes in the traditional planning method.

¹ The limits of the MIS study area extend 140 miles from the intersection of I-70/C-470 west to Glenwood Springs. However, the study impacts the 185-mile corridor from I-70/C-470 to DIA.

The goal of the MIS became to develop a 50-year vision that balances the competing interests. The longer time frame has both advantages and disadvantages. Over 50 years, technologies change, and, therefore, the I-70 MIS Recommended Vision Strategy (Vision) was not limited to existing technologies. Also, over 50 years, funding sources and funding legislation can change. Thus, the Vision includes looking at potential new funding sources and is not limited to funding through traditional public sources.

The uniqueness of this corridor necessitates a creative approach to stakeholder involvement. Through a series of workshops attended by interested parties, a Vision consensus was reached. The workshops provided a forum for diverse groups of concerned stakeholders to find a common ground. They came to respect each other's views and worked to build a solution that all could live with, the true meaning of consensus.

This consensus was built around the basic themes of maintaining quality of life and integrity for the communities adjacent to the I-70 corridor, and respecting that I-70 is the lifeline to resort communities.

Participants used the workshops to develop, design, and combine options into a strategy that supported their values. Through this process, a Vision for the corridor was developed, and a consensus was reached. Although not everyone's "best" or "preferred" plan, the Vision has the participants' support because it incorporates common goals and values.

Implementing the Vision remains a controversial issue. Because of the multi-modal elements, the magnitude of the strategy, and the multi-jurisdictional responsibility for implementing the many elements, no consensus has been reached on the implementation strategy. In the long run, this controversy will serve the I-70 Mountain Corridor well, as it will maintain the stakeholders' ongoing interest. Public debate should work toward developing a strategy that serves the needs of the corridor that will balance community, environmental, and fiscal criteria.

Even without consensus on an implementation strategy, the stakeholders have articulated their goals well. These goals include:

- Work aggressively toward travel behavior changes.
- Keep the highway open and operating safely.
- Implement the elements of transit in tandem with the highway elements.
- Aggressively pursue transit funding.
- Look for innovative mechanisms for funding transit, such as public/private partnerships.
- Implement transportation improvements that preserve rural character and protect the environment.

The I-70 Mountain Corridor presented unique challenges, and the MIS process resulted in a non-traditional solution. The I-70 Mountain Corridor MIS is a true vision of the future built on common goals.

Purpose

Need for Study

In 1988, the Colorado Department of Highways (now the Colorado Department of Transportation, CDOT) conducted a transportation study of the I-70 Mountain Corridor within Clear Creek, Summit, and Eagle counties. This segment of I-70 is in mountainous terrain, and the study area represents a significant portion of the recreational areas within the state. Through that study, CDOT forecasted dramatic increases in congestion and other significant mobility problems in the corridor over a 20-year period. Current traffic patterns and congestion on I-70 are consistent with the trends projected in the 1988 study. Currently, the problem is typically limited to congestion on 20 weekends per year, with the most severe congestion experienced in Clear Creek County, between the twin tunnels in Idaho Springs and U.S. 40, and the Eisenhower-Johnson Tunnels (Eisenhower Tunnel).

Continued high population growth and the attractiveness of the Colorado area for development have caused annual increases in traffic from 2 to 7 percent within the corridor. Based on the type of growth, annual travel demand forecasts suggest that traffic will continue to double every 11 to 35 years depending on the location along the corridor. Furthermore, the duration of congestion at critical locations is projected to increase nearly six-fold by 2020 during 30 weekends per year. For this reason, and because current operational, safety, and congestion problems demand prompt attention, CDOT initiated the I-70 MIS.

Background

Study Limits

As shown in Figure ES.1, the limits of the study extend 140 miles from the intersection of I-70/C-470 west to Glenwood Springs. Because DIA is a key corridor trip origin/destination, improvements considered for the I-70 Mountain Corridor should interface effectively through the Denver Metro area, and into Glenwood Springs, a 185-mile distance.

The study area is unique in that it traverses a distance of 140 miles, encompassing three CDOT regions, two Transportation Planning regions, and numerous political subdivisions. Additionally, any construction of mobility improvements involves the challenges of steep grades of up to 6 percent, high altitude, and a sensitive natural environment.

Why an MIS Process Was Used

The MIS serves as a critical element of a metropolitan area's long-range planning process. Although the MIS process is intended for urban transportation problems, it was determined that the structure of the MIS process would serve the needs of the study for the following reasons:

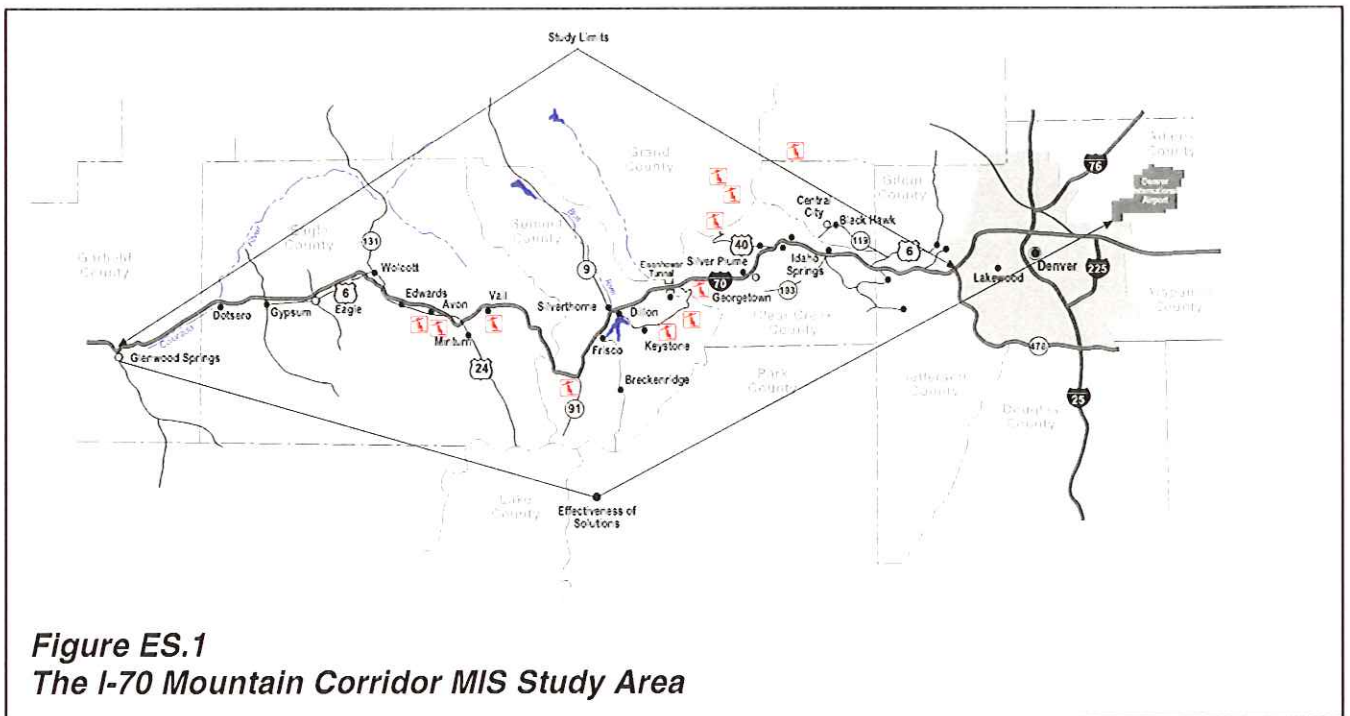


Figure ES.1
The I-70 Mountain Corridor MIS Study Area

- The MIS process is focused on multimodal solutions, including fixed and non-fixed guideway transit and highways, as well as measures that change both behavior and demand, all of which are applicable to the I-70 Mountain Corridor.
- An MIS contains information sufficient to measure and evaluate a range of investment options and to test public values, resulting in a regional consensus on the range of alternative strategies to be studied and the criteria used in the evaluation.
- The MIS process provides decision makers with improved information on the options available for addressing regional transportation problems before financial commitments are made.

How This Study is Different from a Traditional MIS

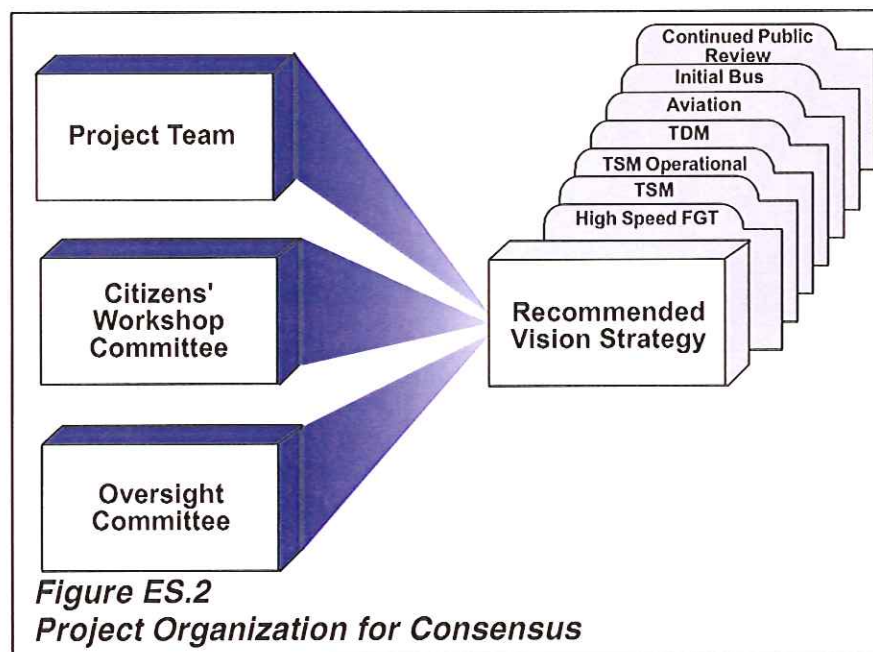
The I-70 Mountain Corridor MIS is different from a traditional MIS for at least five reasons. Each of the following issues should be considered when reading this report:

- First, CDOT adopted a goal to recommend a 50-year Vision for the corridor, recognizing that both 20-year and 50-year mobility issues needed to be addressed. This compares to a 20-year timeline for a traditional MIS.
- Second, due to the long-term perspective of the study, it was decided that whether or not a technology is a “proven technology” should not be used as an evaluation criterion for the Vision Strategy. The corridor stakeholders felt that it would not be reasonable to limit decision-making to current technologies, given the tremendous level of technological advances occurring today. Further, it was felt that the team should identify a technology that could be molded to the mountain environment, as opposed to modifying the environment to accept a technology.

- Third, due to the 50-year planning horizon, a budget for the Vision was not set. The Vision was developed without using cost as a screening or detailed evaluation criteria. Costs were developed for each element of the solution and presented at the workshop. When the Vision was completed, a total cost was calculated and evaluated against available funds from traditional funding sources. New revenue sources were examined and are presented in this report.
- Fourth, the I-70 Mountain Corridor is recreational and rural in character and covers 140 miles. The typical MIS corridor is urban and limited to 10 to 20 miles. The longer corridor increases the complexities of the environmental, institutional, technical, and financial analyses. This results in evaluations that in some cases are more conceptual than typically found in a traditional MIS.
- Fifth, it should also be noted that this document is not intended to serve as an Environmental Impact Statement (EIS). The environmental work included in this MIS provides a relative comparison of environmental consequences. A detailed EIS will be provided as a next step as discussed later in this section.

Process Overview

The decision process for the I-70 Mountain Corridor MIS was created to develop consensus among the involved stakeholders. As shown in Figure ES.2, the process was organized around three groups, including a Project Team, a Citizens' Workshop Committee (CWC), and an Oversight Committee (OSC), who collectively worked through all phases of the MIS.



The Project Team provided technical resources to the project. The CWC was charged with participating in the five workshops that were used to develop the Vision Strategy. The OSC was responsible for policy guidance and was charged with endorsing the ultimate Vision (or Recommended Strategy) for the I-70 Mountain Corridor.

OSC members included representatives of groups with responsibility for implementation of major and/or minor elements of any strategy that might emerge from the MIS. The group included elected officials of the counties in the I-70 corridor, representatives of cities and towns, the Denver Regional Council of Governments (DRCOG), the Intermountain Transportation Planning Region (ITPR), Regional Transportation District (RTD), CDOT

Regional Directors, Colorado Motor Carriers Association (CMCA), Colorado Ski Country USA, Colorado Environmental Coalition (CEC), the Federal Highway Administration (FHWA) District Director, Colorado Association of Ski Towns, and the U.S. Forest Service.

The project team included representatives from CDOT, DRCOG, ITPR, RTD, and the consultant team.

The CWC was formed on an expressed-interest basis. A mailing list of over 1,300 names was used to begin the process. These names included people who had shown interest in past projects within the I-70 corridor, and all were invited to attend the first and subsequent workshops. Attendance at one workshop entered a participant's name onto the workshop mailing list, thus making the participant a recipient of all-future invitations and information. A telephone hot line was also maintained, and interested parties could leave their name and mailing address on the hot line for inclusion on the workshop mailing list.

All members of the OSC and the project team were also encouraged to attend the workshops.

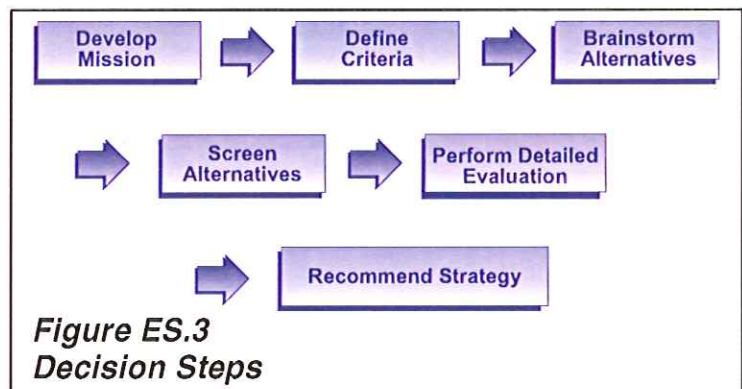
The foundation of the planning for the I-70 Mountain Corridor MIS included workshops and meetings at critical decision points. These meetings included five workshops and eight public open houses.

Each of the workshops was attended by over 100 people representing government agency staff, resource agencies, special interest groups, and the local residents. Public open houses were scheduled in the affected communities to obtain public input and to display various elements of the alternatives under evaluation.

Decision Steps

As shown in Figure ES.3, the study evaluated alternatives at the screening and detailed levels of analysis. The results of each step were presented to the CWC and OSC. These steps were designed for making decisions and choices throughout the study and for providing adequate information and criteria to the OSC, the project team, and the CWC.

Five workshops were conducted to highlight critical issues, formulate a project mission, develop evaluation criteria, brainstorm alternatives, screen alternatives, and develop a recommended strategy and vision for the future. Throughout the workshop process, guidance was provided through reinforcing the mission, restating the concerns, and clarifying the participants' intentions.



This section summarizes the decision process in each of the workshops and the conclusions of the workshop participants.

Workshop No. 1 - Develop Critical Issues and Project Mission

Summary of Decision Process

At the first workshop, critical project issues were identified, the bounds of the study were outlined, and a collective mission statement supported by “guiding principles” was developed.

The most cited critical issues developed in the workshop fell into four general categories: environmental impacts, community values, safety/mobility, and financing.

As a result of the critical issues definition, the workshop participants developed the Project Mission and a set of guiding principles.

Guidance from Workshop Participants

The mission of the I-70 Mountain Corridor Project is to improve safe movement of people and goods through short- and long-term solutions using the following four guiding principles:

- Deploy innovative technologies that minimize or eliminate the impacts on the natural and manmade environments.
- Preserve the rural character and community values of settlements located within the corridor.
- Provide a balance of economic development and employment opportunities for the corridor.
- Ensure that those who benefit the most from the improvements pay proportionately.

This mission served as the basis for developing and evaluating alternatives for solving mobility problems in the corridor.

The participants felt that a successful and implementable project must be compatible with the environment. There was a strong concern that degradation of the alpine environment would lower the quality of life and reduce the area’s attraction for tourists. The selected solution will need to support the community goals for land use and development. The solution will need to address the impact of poor weather on traffic conditions.

It was also determined that cost and affordability should not be screening-level criteria. Those who benefit the most from the project should pay their fair share. The workshop participants decided to consider a longer planning period (50 years) and new technologies.

Workshop No. 2 - Develop Evaluation Criteria

Summary of Decision Process

The intent of the second workshop was to build on the results of the first workshop where critical issues, study scope boundaries, the project mission, and guiding principles had been developed. Participants broke into five groups, each under the direction of a facilitator and scribe.

Guidance from Workshop Participants

Criteria and measurements were developed based on the four categories of critical issues.

- Environmental Impacts - Minimize or eliminate impacts
- Community Values - Preserve the rural character
- Safety/Mobility - Safe movement of people and goods
- Financing - Ensure that those who benefit pay their fair share

Workshop No. 3 - Brainstorm Alternatives

Summary of Decision Process

The goal of the third workshop was to develop an extensive list of alternative solutions for satisfying the project mission. This long list of ideas was organized into conceptual alternatives for future screening.

Approximately 640 alternatives were developed. These were combined and refined into 20 alternatives and hundreds of features, characteristics, and goals for each of the alternatives. An example of the idea refinement process is shown in Figure ES.4, which shows only one of the categories of ideas.

Guidance from Workshops Participants

The 20 alternatives taken forward for screening by various modes were:

- No Build (NB)
- Transportation System Management (TSM) and Travel Demand Management (TDM)
- Two Non-fixed Guideway Transit Alternatives
- Four Fixed Guideway Transit Alternatives (FGT)
- Four Aviation Alternatives
- Four Alternate Route Alternatives
- Four Highway Alternatives

Workshop No. 4 - Screen Alternatives

Summary of Decision Process

The intent of this workshop was to screen and eliminate the unacceptable long-term vision alternatives within each mode from the list of alternatives developed in Workshop No. 3. Although the goal was to identify at least one acceptable alternative within each mode, there were no limitations placed on eliminating all alternatives within a mode.

Guidance from Workshop Participants

As a result of the screening workshop, six transportation strategies were carried to detailed evaluation:

- NB Strategy
- TSM/TDM Strategy
- Bus/High Occupancy Vehicle (HOV) Strategy
- FGT Strategy
- FGT with Selected Highway Improvements (SHI) Strategy
- Highway Widening (HY) Strategy

A number of important conclusions resulted from this workshop. The workshop participants expressed concerns regarding the need to preserve rural character and quality of life in the I-70 corridor. Highway capacity improvements and continuation of rapid growth in the corridor do not support these values.

The screening process established the preference that any FGT system needs to provide both local service and fast travel speeds. Circuitous routes that depart from the immediate I-70 Mountain Corridor were not favored. Technologies that could not produce high travel speeds were considered unacceptable. Consequently, concepts involving emerging/innovative technologies within the I-70 Mountain Corridor were favored over existing, conventional technologies. There was also the public belief that emerging technologies can be tailored to the mountain environment more effectively than conventional technologies, resulting in fewer and more manageable construction impacts.

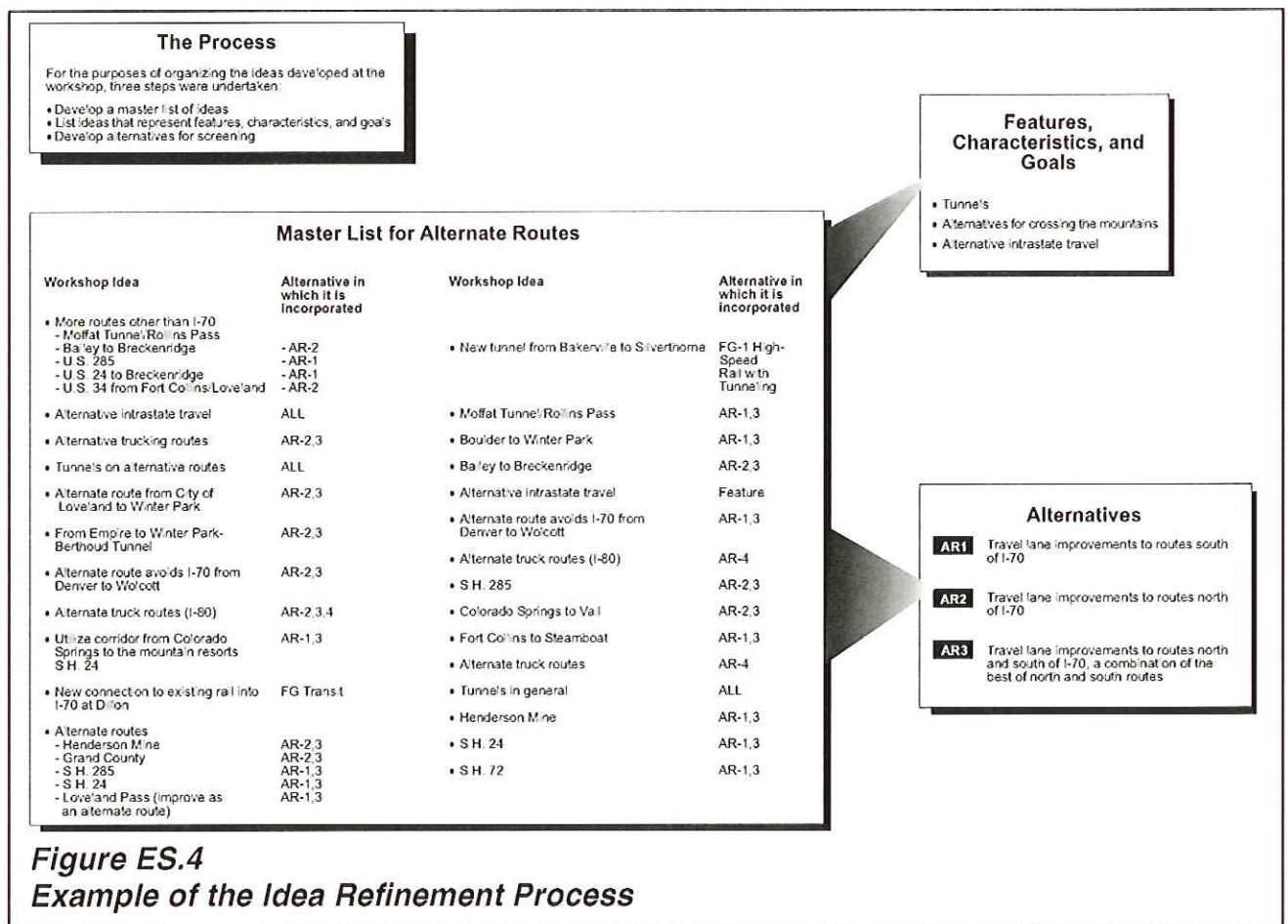


Figure ES.4
Example of the Idea Refinement Process

Alternatives involving the construction of new airports were not supported due to environmental impacts such as loss of wildlife habitat and noise. Alternatives involving improvements to existing airports and improvements to current airport operations were supported and included in the TSM/TDM package for detailed evaluation.

It was felt that alternate highway routes outside the mountain corridor should be incorporated into CDOT's future statewide planning effort and not analyzed as part of the

MIS. This was due to the concern that the public, who would be affected by the construction and operation of those new or improved routes, had not participated in the MIS stakeholder involvement process.

None of the highway alternatives received strong support because of impacts on community values and the environment. However, there was limited support for developing an environmentally sensitive highway alternative that combined the use of “smart” widening (minimal construction footprint) with mitigations such as “Glenwood Canyon-type” design techniques through environmentally sensitive areas. Additionally, there were participants who felt that highway improvements would not receive any consideration unless combined with FGT. Thus, it was concluded that another alternative should be carried into detailed evaluation that incorporated highway widening in areas where traffic volumes most critically warrant improvements, combined with FGT.

Workshop No. 5 - Detailed Evaluation

Summary of Decision Process

Prior to the fifth workshop, the project team performed a preliminary detailed evaluation on the six strategies recommended from Workshop No. 4. A summary of the project team detailed evaluation is presented in the next section. The intent of Workshop No. 5 was to review the results of the detailed evaluation information presented by the Project Team and review each of the six transportation strategies and develop a recommended strategy.

Guidance from Workshop Participants

The results from Workshop No. 5 were consistent with the opinions expressed throughout the course of the MIS project. The following conclusions were drawn from the stakeholder participation process.

Concepts that received general CWC support included:

- FGT as a Vision
- TSM/TDM program (with the qualification that citizens have the right to participate in project design)
- Incentives for carpools
- Need for mobility options
- Need for changing travel behavior
- Measures that improve safety

Concepts that have limited CWC support included:

- Highway widening as a Vision, even if the lanes are used for HOV
- Conventional transit technology as a Vision
- Congestion pricing
- No-Build or “do nothing” alternative

Concepts where the CWC was neutral or the results were not conclusive included:

- Use of flex lanes for HOV
- Use of tolls to provide revenue

The workshop participants clearly articulated the need to change the way mobility problems are solved in the future in the I-70 Mountain Corridor. Conventional solutions are considered too restrictive, environmentally destructive, and are perceived as short-term fixes. The public mandate includes development of new technology that can be configured to the uniqueness of the environment and represents a long-term solution. Coupled with this is the need to develop both the social and institutional infrastructure required to change the way people think about travel and use the corridor. This Vision is described below.

At the close of the workshop, all of the participants met as a group to discuss the conclusions from the breakout groups and decide on the preferred strategy of improvements. The group achieved consensus by recommending a Vision Strategy that included FGT with selected HY elements chosen from the TSM/TDM Strategy.

Summary of the Project Team Detailed Evaluation

A summary of the results of the detailed evaluation prepared by the project team is presented below. Copies of the detailed evaluation report (CH2M HILL, et al., 1998a) were presented to the CWC the week before Workshop No. 5.

Key to the results of the detailed evaluation is that a high-speed electric train, such as the French TGV, was assumed for the FGT Strategies. The TGV was assumed because it is the most powerful technology currently available. This power is needed to climb the grades found in the I-70 Mountain Corridor and to maintain a travel speed that is competitive with the automobile. This assumption was made to provide a baseline of cost, benefits, and impacts.

Summary results for environmental, community values, mobility, and financial criteria are provided below based on the TGV technology.

Environmental

Because all of the strategies represent long, linear projects, and all have been contained within existing I-70 right of way, dramatic differences in impact do not result at this level of analysis, and environmental impact is not a discriminator among the strategies. Additionally, all attempts were made to place additional highway lanes and FGT guideways within the median of I-70. Since this is currently a "developed" area, it typically offers no refuge or habitat for wildlife. In general, less construction results in less impact. The probable amount of acres disturbed for each of the strategies is presented in Table ES-1. These totals do not include additional acreage associated with adding TSM build elements to the Vision Strategies.

TABLE ES-1 <i>Acres Disturbed During Construction</i> <i>(Based on the Project Team Estimates for Detailed Evaluation)</i>	
Strategy	Potential Acres Disturbed
No Build	0
Transportation System Management/Travel Demand Management	430
Bus/High Occupancy Vehicle	555
Fixed Guideway Transit	550
Fixed Guideway Transit/Selected Highway Improvements	740
Highway Widening	585

The FGT/SHI Strategy appears to represent the potential for the greatest environmental disturbance. The HOV, FGT, and HY strategies would disturb about the same amount of area. In all instances, there are potential impacts on water resources, air quality, noise, and visual quality during construction.

More significantly, all of the strategies provide improved access to the mountain environment, which is likely to have secondary or indirect impacts. The principal impact is the potential for additional growth and development in the corridor. More people and more development would not only affect the rural character of the corridor, it could result in fewer open spaces and less critical winter habitat for migrating wildlife such as deer and elk. The FGT and FGT/SHI strategies are anticipated to provide a greater potential for stimulating additional development than the TSM, HOV, and HY strategies. This is due to the fact that the FGT systems would allow commuters to travel from the mountains to the Denver Metro area with more convenience and reliability than the other strategies because productive work can be accomplished on the “train,” and weather is a lesser consideration.

Community Values

Rural character is one of the most important elements of community values in the mountain corridor. This criterion is difficult to precisely define, but in general terms is characterized as preservation of open spaces, small town atmosphere, and avoidance of the crowding and other inconveniences of urban life. Large construction projects typically do not support these values.

All of the strategies represent large construction projects. In general, the higher the cost of the project, the more construction and resulting associated inconveniences. Issues include noise, delays to motorists, dust, and visual impacts. Construction of any of the build strategies would take at least 10 years or more, prolonging these impacts.

Likewise, all of the build strategies involve visual impacts due to the need for rock cuts and retaining walls and, in the case of the FGT and FGT/SHI strategies, elevated structures. FGT stations could also impact rural character. The greatest potential for visual change, as defined by rural character, is for the FGT and FGT/SHI strategies.

Other impacts include construction employment. Estimates for construction employment, in person years, range from 9,000 for the TSM, 15,000 for the HOV, 20,000 for the HY, and 40,000 for the FGT. The FGT/SHI Strategy is estimated to create up to 50,000 person years of construction employment. While construction employment would provide local economic prosperity, housing shortages and the disruption to the host communities caused by the construction workers would be negative impacts.

Regardless of potential construction impact, the FGT strategies were found to be more acceptable to community values than the HOV or HY strategies. All of the comprehensive plans developed by communities along the mountain corridor recommend more transit, less reliance on the automobile, less urban sprawl, and the provision of travel options. Additionally, highway capacity improvements were viewed negatively by some participants in all five of the CWC workshops.

Mobility

Relief of congestion on weekends, improvements of safety on steep grades, improved movement of freight, and reliability serve as the basis of the mobility criteria that were evaluated.

Table ES-2 presents the impact on congestion provided by each of the strategies. With the NB Strategy, congestion at the Eisenhower Tunnel is projected to increase nearly six-fold; at Idaho Springs it is estimated to increase slightly more than 4 times.

Strategy	Annual Estimated hours of Congestion on I-70 at Eisenhower Tunnel	Annual Estimated hours of Congestion on I-70 in Idaho Springs
Existing Conditions	120	160
No Build	700	700
Transportation Systems Management/Transportation Demand Management	450	225
Bus/High Occupancy Vehicle	500	200
Fixed Guideway Transit	500	400
Fixed Guideway Transit/ Selected Highway Improvements	500	100
Highway Widening	175	150

At the Eisenhower Tunnel, the HY Strategy provides the best relief of future congestion. This is due to the fact that this is the only strategy that includes a third bore at the tunnel. It is important to note that future conditions still deteriorate over existing conditions. That is, annual congestion would increase from a current 120 hours to 175 hours in 2020. Congestion at the Eisenhower Tunnel would increase to 500 hours per year with the FGT, HOV, and FGT/SHI strategies and to 450 hours per year with the TSM Strategy.

Through Idaho Springs, the FGT/SHI Strategy provides the best mitigation of congestion. In fact, future conditions would likely improve over existing conditions. This is due to the fact that this strategy provides both FGT and highway capacity improvements through Idaho Springs. The HY Strategy provides the second best relief of congestion through Idaho Springs, resulting in conditions that are about the same as experienced currently. The TSM and HOV strategies result in some deterioration over existing conditions. The FGT Strategy results in a significant increase in congestion through Idaho Springs, due to the fact that it captures relatively few users as compared to the number of persons using the highway.

To varying degrees, all of the build strategies would improve safety. The FGT strategies would provide safe and reliable travel to those using the systems. HOV and HY improvements would improve travel safety to motorists using I-70. Providing both highway and FGT improvements, as with the FGT/SHI Strategy, would also provide safety benefits.

Regarding the movement of freight, the impact of the FGT strategies cannot be fairly determined until a technology is defined. However, the FGT could be used for the transport of freight to the communities along the mountain corridor. Until the fixed guideway technology is determined, the HY Strategy is the best strategy for the movement of freight, followed by the HOV and TSM strategies.

The FGT Strategy provides the most reliable form of travel, because it is typically not constrained by inclement weather, accidents on the highway, or periods of congestion. The other build strategies provide additional reliability over the NB Strategy, but all lose reliability during poor weather, accidents, and peak travel periods.

In summary, none of the strategies would likely provide significant improvement over existing conditions at the Eisenhower Tunnel. However, even with the addition of a third bore at the tunnel, the increased capacity is consumed by the increased demand in 2020. Travel conditions at Idaho Springs improve over existing conditions with the FGT/SHI and are maintained to about current levels with the HY Strategy. Congestion increases dramatically with any of the other build strategies.

Forecasting travel demand for peak periods to the year 2050, the target year for the 50-year Vision, indicates failure of I-70 in many locations with any of the build strategies as currently defined. To overcome these conditions, more highway construction would be required, such as greatly expanding the FGT system and/or adding more lanes to I-70 and capacity to the Eisenhower Tunnel and significant changes in travel characteristics that would transfer more demand to the FGT system.

Financial

Table ES-3 presents the capital cost estimates for each of the strategies analyzed during detailed evaluation. With the exception of the NB or TSM strategies, implementation of any of the remaining strategies is projected to require substantial additional sources of funding. This could include tolling, or increases to motor fuel, property, income, sales, or tourism/recreation taxes.

Strategy	Project Cost (Millions)
No Build	\$80
Transportation System Management/Travel Demand Management	\$1,100
Bus/High Occupancy Vehicle	\$1,900
Fixed Guideway Transit	\$5,300
Fixed Guideway Transit/Selected Highway Improvements	\$5,700
Highway Widening	\$3,200

Recommended Vision Strategy

The Vision as shown in Figure ES.5 responds to the major elements of the Project Mission collectively developed by the affected stakeholders in the corridor. The Project Mission mandates the safe movement of people and goods through the use of innovative technologies, preservation of visual character, and provisions for a balance between economic development and environmental protection. The mission also states that users should pay proportionately for benefits received.

In response to the mission, the Vision incorporates futuristic thinking, including a 50-year planning horizon, minimizing the focus on highway elements, changing travel behavior, and preserving the communal and environmental character of this unique setting. As such, the strategy incorporates mobility solutions that overcome steep grades, difficult construction conditions, severe weather conditions, and unique travel demand characteristics. Recognizing that conventional rail technologies do not universally address these requirements, the Vision incorporates the use of innovative fixed guideway solutions conforming to rigid performance specifications and tailored to this special environmental setting. Other Vision elements include bus transit, highway, aviation, and bicycle and pedestrian improvements.

Exhibit A presents the Vision statement developed by the OSC.

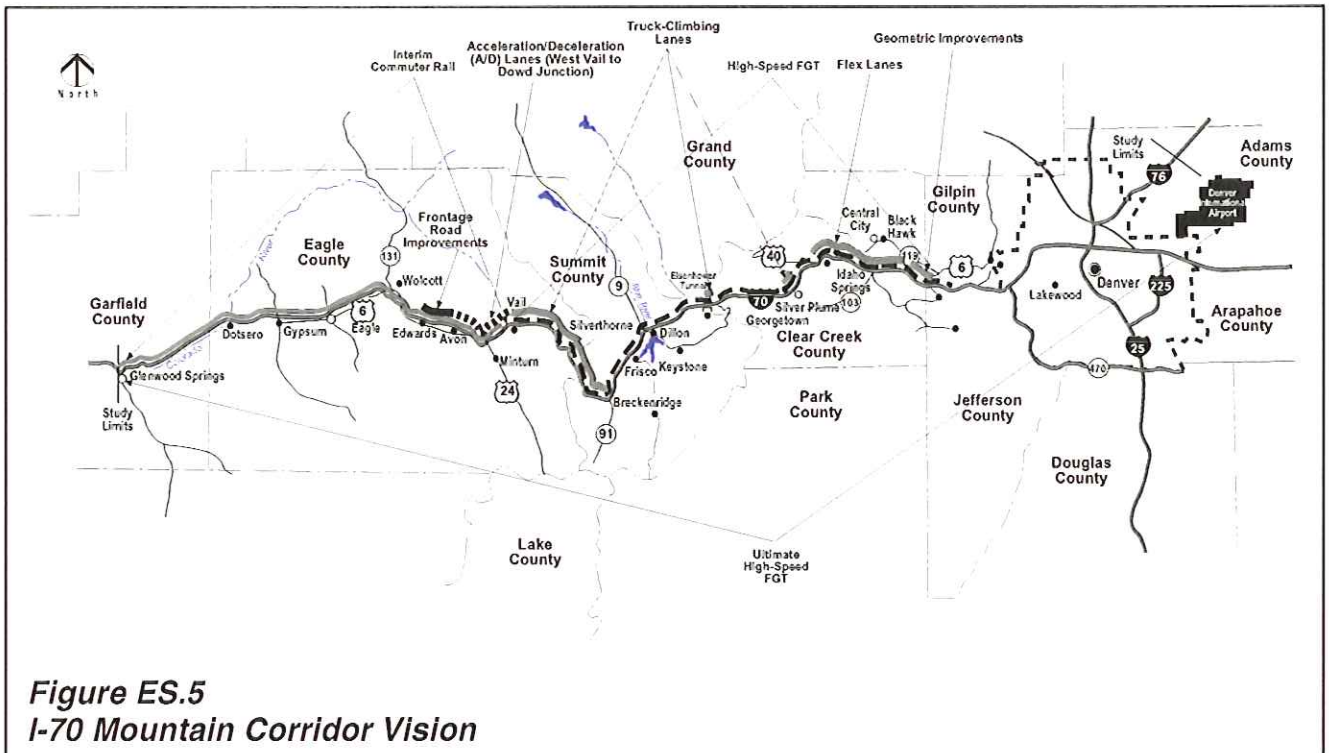
Exhibit B highlights the technical characteristics of the Vision. All costs and technical evaluations were completed on the Vision elements as described in Exhibit A. The exact technologies used are described in Section 5.

Consequences of Implementing the Vision

Environmental Impacts

Anticipated environmental impacts include the following:

- Disturbance of approximately 1,000 to 1,300 acres during construction from West Denver to Glenwood Springs. Of this, approximately 70 percent would be associated with the FGT and 30 percent with the TSM build improvements.



- Construction of geometric improvements in Clear Creek County would involve rock cuts and visual impacts from Floyd Hill to the twin tunnels, a distance of about 2.5 miles.
- Construction of flex lanes would impact about 33 acres and construction of slow-moving vehicle lanes about 60 acres, much of which is in sensitive environment.
- Construction of highway improvements between West Vail and Dowd Junction would require rock cuts to the north of I-70, immediately east of Dowd Junction.
- Frontage road construction in Eagle County would require approximately 40 acres.
- TSM interchange improvements may impact as much as 60 acres and intermodal transfer stations as much as 50 acres.
- Construction of new bicycle and pedestrian trails may affect up to 110 acres.
- It is anticipated that the potential impact to wildlife and habitat would be minimal because the majority of construction will occur in the I-70 median or in other areas contained within the CDOT right-of-way.
- Construction through approximately 14 miles of threatened and endangered (T&E) species habitat over Vail Pass for the implementation of slow-moving vehicle lanes.
- Potential loss of 1 to 5 acres of wetlands during construction for bridge widening required for both the FGT and highway improvements. Wetlands will need to be delineated during the environmental clearance process.
- Potential impacts on water quality due to construction of both guideways and highway improvements proximate to riparian areas along I-70.

Exhibit A

Vision Statement

The I-70 MIS Vision Program includes development of a High Speed Fixed Guideway Transit System (FGT) from DIA to Glenwood Springs, recognizing that as an interim measure, conventional technology may be appropriate from Vail to Glenwood Springs. This will be supplemented by the TSM/TDM programs as described below. The FGT improvements from West Denver to Vail will be procured through a performance specification, and the specific technology is not known at this time.

The project is estimated to cost approximately \$7.4 billion¹, not including improvements from West Denver to DIA, which may add as much as \$1.0 billion to the program. Annual Operations and Maintenance (O&M) costs are estimated at \$160 million.

The Vision Strategy incorporates:

- *Transportation improvements compatible with the mountain environment.*
- *A permanent behavioral change in mobility with more acceptance and support for transit, including the needed land use management policies to support this change.*
- *The need to optimize the existing highway infrastructure currently in place.*
- *A philosophy of finality: What is implemented through the MIS program represents a strategic commitment to the vision statement described herein.*

Summary of FGT Improvements

The specific elements of the FGT System cannot be described in detail until a technology is chosen. However, the system can be expected to include:

- *Up to 185 miles of guideway including both an aerial structure and at-grade construction*
- *Traction Power System*
- *Communications System*
- *Signalization System*
- *Automatic Train Control*
- *Security System*
- *Vehicles*
- *Stations, including parking*
- *Landscaping Program/Environmental Mitigation*

Summary of TSM/TDM Improvements

The proposed TSM/TDM program includes Build, Travel Demand, Operational, Aviation, and Transit elements as described below.

Build Elements

The program includes the following "Build Elements":

- *Flex Lanes for 14 miles in Clear Creek County*
- *Geometric Improvements in Clear Creek County*
- *Interchange Improvements at selected locations*
- *Frontage Road Improvements in Eagle County*
- *Slow-Moving Vehicle-Climbing/Descending Lanes*
- *Enhanced Bus Operations*
- *Intermodal Transfer Centers*
- *Enhanced Air Service*

Exhibit A (Continued)

Key Facts of Build Elements

These projects represent approximately:

- \$850 million in new construction
- 38 miles of highway improvements
- Improvements at 10 interchanges
- Reconfiguration at 2 interchanges
- Construction of 2 new interchanges

It is anticipated that the design details of the TSM build elements will be subject to review and refinement during the completion of the environmental review process.

Travel Demand Management (TDM)

The proposed TDM elements include:

- *Measures to change behavior, including greater marketing of shuttle services; carpool matching services; preferential parking for carpools; and subsidies for transit passes.*
- *Operational options for the management of the flex lanes shall be included and evaluated for their benefit in changing demand patterns and encouraging an increase in HOV usage. Such options include, but are not limited to, HOV designations or High Occupancy Toll (HOT) lanes.*
- *Intermodal Transfer Centers at Cold Spring park-n-Ride, West Metro, Idaho Springs, Empire Junction, Silverthorne, Frisco, Vail, Avon, Eagle, Eagle County Regional Airport, and Glenwood Springs.*
- *Parking Management Program to control the number, location, and pricing of available parking spaces.*
- *Access management to control the spacing and design of highway interchanges.*
- *Land use strategies to support the Vision.*

Operational Improvements

The operational improvements include:

- *Intelligent Transportation System (ITS) Program: a broad range of driver information and communications improvements using advanced technology*
- *Incident Management Program: addition of remote surveillance cameras; development of an incident management plan; outfitting vehicles with probes to provide real-time speed and travel estimates; test and evaluation of MAYDAY operations for in-vehicle signaling from stranded vehicles; expanded highway advisory radio and variable message systems; and emergency services district program for funding local programs*
- *Truck Operations Plan: expanded chainup areas; minimum left-lane speeds; Georgetown gusty wind sensor/variable message signage; more aggressive use of chains for icy/snow conditions; and expanded automated port-of-entry/weigh-in-motion programs*

Aviation Improvements

Aviation improvements should be provided at all airports along the corridor to promote passenger and cargo air service. Five airports currently offer the majority of passenger and air cargo services along the I-70 corridor. These airports will continue to provide for significant passenger and air cargo services over the next 20 years. These airports are Aspen, Eagle County, Grand Junction, Montrose, and Steamboat Springs/Hayden. The total

Exhibit A (Continued)

costs for airport improvements over the next 10 years at these airports are estimated at \$123 million. A large portion of these funds could come from Federal Aviation Administration sources. Additionally, facilities at Garfield County Airport, Gunnison County Airport, Kremmling-McElroy Field, and Telluride Regional Airport currently have or could support potential passenger and air cargo service to meet the additional needs of air travelers in the vicinity of the I-70 corridor. Each of these nine airports will require continued planning and support from local and state government to maintain their viability and service potential into the future.

Initial Transit Improvements

The transit improvements are estimated to cost about \$55 million, representing a 150 percent increase in bus service, and include the following:

- Expanded Intermountain Bus Service from Denver to Glenwood Springs with stops at Denver Union Terminal (DUT), Idaho Springs, Frisco, Silverthorne, Vail, Avon, Eagle, Gypsum/Eagle County Regional Airport, and Glenwood Springs
- Skier Express Service from Denver area park-n-Rides to mountain ski resorts
- Enhancements to local bus service in Jefferson, Summit, and Eagle counties and a new bus service to Clear Creek County, with the availability of funding

After the FGT service is implemented, the Intermountain and Skier Express services would be discontinued and replaced with additional bus feeder systems to support the FGT system.

Alternate Routes

Alternate route information shall be forwarded to the statewide planning process with a recommendation to review and consider these improvements for the statewide benefit.

Continued Public Review

The program includes the maintenance of a group with similar composition to the existing OSC. This group would be convened at key steps in the existing public planning processes or, as a minimum, once per year. Joint meetings of the Intermountain Transportation Planning Region and the Denver Regional Council of Governments will be held annually to review the I-70 Mountain Corridor program. Further, an aggressive outreach program will be conducted with each environmental document, and concurrent with the 20-Year Statewide Planning Process, a corridor workshop will be held.

Exhibit B

Summary of Vision Characteristics

Vision Elements		
Major FGT Elements		Ultimate development of a 185-mile high-speed Fixed Guideway Transit (FGT) System from DIA to Glenwood Springs. The specific technology is not identified at this time. Alignment is not specified in detail but is expected to be within I-70 Right-of-Way (ROW) in the mountains. As an interim measure, conventional passenger rail is proposed from Vail to Glenwood Springs; 8 stations identified from West Denver to Vail; 8 passenger rail stations identified west to Glenwood Springs.
Freeway Elements		<ul style="list-style-type: none"> Floyd Hill to U.S. 40 (Empire): flex lanes (possibly restricted to HOV or HOT), geometric improvements (curve smoothing) from U.S. 6 to Idaho Springs and twin tunnel modifications; examples cited, specifics to be developed later Interchange reconstruction: U.S. 40 (Empire), East Idaho Springs Interchange improvements: 10 locations including Fall River Road, West Idaho Springs, 13th Avenue, Hidden Valley, and U.S. 6 New interchanges: 2 locations in Eagle County Slow-moving vehicle lanes (2 directions) on Georgetown/Silver Plume Hill (4 miles), east tunnel approach (2 miles), and Vail Pass (14 miles) Continuous acceleration/deceleration lanes from East Avon to West Vail (5 miles)
Frontage Road/Arterial Element		Widen U.S. 6 to 4 lanes in Eagle County; Squaw Creek to East Avon (9 miles).
Aviation Element		Improvements per master plans at 5 airports in western Colorado; improved land use control adjacent to existing airports
Transportation Management Element	Highway	<ul style="list-style-type: none"> Snow slide mitigation at West Vail Pass and Seven Sisters Intelligent transportation system (comprehensive) Incident management (including courtesy patrols and emergency services district program) Enhanced trucking operations program (including improved chain up areas and minimum left lane speed limits) Enhanced maintenance actions (including signing, striping, lighting) Access management around interchanges
	Bus Transit	<ul style="list-style-type: none"> Ultimate: reconfigure local transit as feeder to FGT. Establish public transit service in Clear Creek County Interim: expanded intermountain bus service, expanded skier express service, expanded local public transit (including new in Clear Creek), recognizing private shuttle service (specific recommendations uncertain), intermodal transfer centers (at sites of future FGT stations)
	Bicycle/Pedestrian	Complete continuous bike path along I-70 from West Metro to Glenwood (75 new miles)
	Demand Management	<ul style="list-style-type: none"> Traveler information and marketing Carpool/vanpool formation/matching Preferential parking Subsidized transit passes Parking management at destinations
Alternate Routes		Recommendation to statewide planning process to consider improvements to alternate routes
Land Use		Land use strategies to support the Vision

Exhibit B (Continued)

Vision Costs

Capital Cost Total	Cost in Millions (rounded)
FGT Transit	\$7,100
Other Transit	\$340
Highway	\$802
Aviation	\$123.5
Bicycle/Pedestrian	\$30
Total Capital Cost	\$8,400

Effectiveness, Capacity and Usage, and Travel Times

Effectiveness Measures

Daily users (transit)*	4,750 for operations plan (does not include potential intra-metro riders)
Change in annual linked transit trips	1.7 million "new" riders
Change in annual VMT	Increases by about 59 million/year over No-Build; 58 million/year less than the HY Strategy
<i>Transit Capacity (persons per hour per direction)</i>	
Capacity provided*	1,200
Amount of capacity used in peak theoretical maximum capacity*	1,200

Highway Travel Times (Vail to C-470)

Non-congested off peak highway	1 hour, 30 minutes
Existing – 1995; 30th highest hour	1 hour, 55 minutes
No Build – 2020; 30th highest hour	3 hours, 5 minutes
Vision – 2020; 30th highest hour	2 hours

Transit Travel Times (Vail to C-470)

Vision – All years; all times	1 hour, 20 minutes	
Annual Hours of Highway Congestion	At Eisenhower Tunnel	At Idaho Springs
1995	120	160
No Build – 2020	700	700
Vision – 2020	500	100

- * Assumes Train-a-Grande Vitesse (TGV) technology - the fastest train system currently operating in France.
- Vision for 2020 assumes completion of all elements of the Vision.

Exhibit B (Continued)

Community and Environmental Impacts*

Relocations	Possibly None
Remaining residences within 500 feet	2,600
Direct park impacts	None
Wetlands impacted	1 to 5 acres
Total acreage disturbed	1,000 to 1,300 acres (West Denver to Glenwood Springs)
Potential T&E species habitat impacts	14 miles along I-70 Vail Pass; 2 miles east approach to Eisenhower Tunnel
Historic districts	In Idaho Springs and Georgetown
Construction socioeconomics	"Boomtown"; 40,000 person-years of employment estimated for "test system"; potential housing shortages and community disruption
* Assumes TGV Technology	

Vision Financial Measures

Financial Measures	Cost
Total Capital Cost	\$8,400,000,000
Annualized Capital Cost	\$610,000,000
Yearly O&M Cost (excluding West Denver to DIA)*	\$162,000,000
Total Annualized Cost (Capital Recovery and O&M)	\$772,000,000
Total Annualized Cost per user (including highway and transit users)*	\$6.11
Annualized Transit Cost per new transit user (one-way trip)	\$350
*Assumes TGV Technology-Based on estimated 126,350,000 person trips per year	

- Compared to the non-FGT alternatives, there will be a potential increase in corridor energy consumption due to the operation of the FGT.
- Potential secondary impacts from loss and fragmentation of wildlife habitat due to the increased development resulting from improvements in mobility between Colorado's - populated Front Range and the mountain communities.

Community Impacts

Anticipated community impacts include the following:

- The Vision best supports the community values criteria voiced by the workshop participants throughout the planning process.
- The construction of an elevated FGT will impact noise and the visual character of the I-70 corridor. The development of the stations and the intensified land use surrounding the stations may impact the rural visual character of the corridor.
- Implementation of the Vision is anticipated to represent a significant strain on availability of employee housing during the peak years of construction. Delays during construction will represent significant inconvenience to the travelers on I-70. This will persist throughout the construction of the recommended Vision.
- There is a potential need to acquire private properties for the construction of the frontage roads in Eagle County and for the development of Intermodal Transfer Centers and FGT stations.
- Construction of the FGT and highway elements will require clearances for construction through historic districts in Idaho Springs and historic landmark districts in Georgetown and Silver Plume.
- A potential for indirect and secondary impacts exists resulting from increased development throughout the corridor due to improved mobility between Colorado's populated Front Range and the mountain communities. The FGT is anticipated to increase the number of commuters relocating to the mountain communities. This will serve to reduce the rural character of the corridor.



Stakeholder Workshop

Mobility Impacts

Anticipated mobility impacts include the following:

- FGT and bus service add mobility options in the I-70 corridor.
- Reduction of 58 million vehicle miles traveled (VMT) per year compared to the highway alternative.
- Reduction of 2020 thirtieth highest hour (an estimated volume used by design engineers as a basis for highway designs) highway travel times between Vail and C-470 from 3

hours, 5 minutes for the NB Strategy to 2 hours with the Vision Strategy. Further, travel times on the FGT system will not be affected by congestion or inclement weather.

- In 2020, the hours of highway congestion will be reduced from 700 annually with the NB Strategy to 500 hours at the Eisenhower Tunnel and from 700 to 100 hours at Idaho Springs.
- Increase in person-carrying capacity from 1,200 to 4,685 persons per hour per direction depending on the location in the corridor (the higher value occurs where highway capacity is increased, approximately 38 miles in the corridor).
- Increase in transit ridership of approximately 1.7 million riders per year.
- Reduction in highway crash potential.

Financial Impacts

Anticipated financial impacts include the following:

- Currently identified and anticipated funds total approximately \$1.28 billion for the I-70 Mountain Corridor. This compares to an estimated project cost of about \$8.4 billion, resulting in a project shortfall of about \$7.1 billion (1997 dollars) as shown in Table ES-4.
- Project shortfalls will be \$2 to \$3 billion less if the use of conventional rail is assumed from DIA to West Metro Denver and from West Vail to Glenwood Springs. The higher costs result from assuming that a high-speed technology is ultimately constructed in these segments.
- Also, costs will be about \$3 billion less if CIFGA's assumptions are correct and the FGT costs \$20 million mile per mile versus the reported cost estimate of approximately \$40 million per mile.
- Need for voter approval to initiate both new primary and secondary revenue sources including consideration of tolling, and increases in state sales, income and gas taxes, as well as increases in local sales and property taxes. Taxes on rental cars, hotel rooms, ski tickets, and recreational equipment may also need to be considered.
- Need for legislative approval to use Highway Users Trust Fund (HUTF) monies for transit and to provide CDOT with bonding authority.
- Recognition that travel on the I-70 corridor will probably become more costly in the future.

TABLE ES-4 Total Project Cost	
Transit Projects	Cost (rounded) ^(a)
Commuter Rail Right-of-Way Preservation/Acquisition	Yet to be determined
Transit Market Studies (Ridership/O&D)	\$1,000,000
FGT Preliminary Performance Specifications	\$1,000,000
Transit Supportive Comp Plan Updates	\$700,000
Measures to Change Behavior	\$50,000
Parking Management Program	\$50,000
Intermodal Transfer Centers	\$9,000,000
TSM Bus/Transit System Improvements	\$45,600,000
FGT Testing & Demonstration Research Program	\$100,000,000
Commuter Rail In Eagle Co.	\$185,000,000
High Speed FGT DIA to West Denver	\$1,000,000,000
High Speed FGT West Denver to Vail	\$4,100,000,000
High Speed FGT Vail to Glenwood (Ultimate)	\$2,000,000,000
Total Transit	\$7,440,000,000 ^(b)
Highway Projects	
Current STIP Improvements	\$82,000,000
Corridor-wide ITS Improvements	Included above
Improved Maintenance Program	NA
Interchange Improvement Program	\$153,000,000
Geometric Improvements to Clear Creek Co./Twin Tunnels	\$60,500,000
Geometric Improvements to Clear Creek Co./Curve	\$33,000,000
Flex Lanes in Clear Creek Co.	\$80,000,000
A/D Lane Improvements: Vail to Eagle	\$34,000,000
Improvements to Frontage Roads: U.S. 6 in Eagle Co.	\$34,000,000
Slow-Moving Vehicle Lanes at Georgetown Hill	\$65,500,000
Slow-Moving Vehicle Lanes at Eisenhower	\$32,500,000
Slow-Moving Vehicle Lanes at Vail Pass	\$227,000,000
Total Highway	\$802,000,000
Aviation Improvements	
Land Use Planning at Airports	\$500,000
Aviation Improvements	\$123,000,000
Total Aviation	\$123,500,000 ^(c)
Bicycle and Pedestrian Improvements	
Early Action Bicycles & Pedestrian Improvements	\$30,000,000
Total Bicycle & Pedestrian	\$30,000,000
Grand Total	\$8,400,000,000
^(a) Includes construction costs plus estimated non-construction costs associated with the project.	
^(b) Assumes connection to DIA cost of \$1 billion and conversion of commuter rail in Eagle County to High-Speed FGT at an additional cost of \$2 billion.	
^(c) Same as No Build Strategy	

Next Steps for Resolving Issues

The next step in the process will be for CDOT to sponsor an EIS on the Vision. The EIS will define the cumulative and secondary impacts of all of the Vision elements. It is also probable that individual EISs will be prepared for each of the major build elements (flex lanes, twin tunnel improvements, startup local bus systems, FGT demonstration projects, geometric improvements, slow-moving vehicle lanes, etc.) of the Vision. A proactive public involvement program will be part of all environmental approval processes.

CDOT will conduct a programmatic EIS analyzing the cumulative impact of the projects included in the MIS vision. This programmatic EIS will determine an early action plan for the corridor.

Since the fixed guideway and related transit are core elements of the MIS vision, the programmatic EIS will review and consider these elements for inclusion in the early action plan. This will include the consideration of all potential sources of available funding for the transit elements of the vision, including multimodal federal funds in Colorado's allocation of the Surface Transportation Program, the portion of Interstate Maintenance funds available to be used for transit projects in the corridor, the portion of state funds in Sb1 and HB 1202 available for multimodal projects, and other state and federal funds available for multimodal or transit use.

While the development of the Vision involved extensive public and stakeholder input, there are still many issues that need to be addressed in the EIS. Given in no particular order of priority, some of these issues that have been presented by the participants to the project team are provided in the following subsections.

Environmental Issues

In compliance with National Environmental Policy Act (NEPA), all environmental impacts and alternatives will need to be evaluated. During the stakeholder process, the environmental issues that were identified as concerns include:

1. **Secondary and Indirect Impacts.** The effect of improved mobility in the corridor on development trends and on fragmentation of wildlife habitat, and the effects of more permanent and second home residents on the mountain ecology need to be carefully assessed. Likewise, the effects of not providing (or providing fewer) mobility improvements in the corridor on the long-term economic vitality of both the mountain communities and the statewide tourism industry need to be determined.
2. **Ultimate FGT Alignment through Glenwood Canyon.** Service from Vail to Glenwood Springs will be provided with an interim commuter rail system. This system can utilize existing track with little or no impact. Construction of the ultimate High-Speed FGT from Vail to the mouth of Glenwood Canyon can generally be accommodated in the existing CDOT right-of-way, with minimal environmental impact. However, the ultimate extension of the High-Speed FGT through Glenwood Canyon would be extremely difficult from an environmental approval standpoint. None-the-less, the best alignment will need to be identified during the design phase.

3. **Impacts on T&E Species.** Elements of the Vision cross through habitats of T&E species near the Eisenhower Tunnel and over Vail Pass. The effects of building and operating the Vision elements on these species will need to be addressed.
4. **Protection of Wildlife.** Methods to mitigate vehicle/animal accidents will need to be investigated. Concerns are especially pronounced in Clear Creek County where bighorn sheep frequent the I-70 right-of-way and near Dowd Junction, where accidents with migrating elk on I-70 are an ongoing problem.
5. **Water Quality Impacts.** The impact of construction of the Vision elements is a concern identified throughout the planning process. This includes the impact of the Vision due to increased runoff of sediments, deicing chemicals, metals, oil and grease, etc., into proximate streams.
6. **Wetlands.** Construction of the Vision will be located within 150 feet of 24 miles of riparian habitat, much of which includes wetlands. Additionally, numerous bridges and culverts will need to be replaced over watercourses. Consequently, there is significant concern regarding wetlands impacts. Wetlands maps will need to be updated and quantities of potentially affected wetlands calculated.
7. **Noise.** Approximately 2,600 dwellings are located within 500 feet of I-70, and noise impacts are a concern. After a transit technology is defined, an evaluation and mitigation of noise impacts will be required.
8. **Hazardous Wastes.** Local citizens are concerned about potential spills of hazardous waste.
9. **Energy.** Operation of the FGT will require a power source. It may be necessary to construct a transmission line to serve the FGT. While energy requirements cannot be estimated until a technology is defined, the issue of the need for a new transmission line needs to be resolved.

Community Values

Community values issues identified by the public include:

1. **Boomtown Impacts.** Affordable employee housing is in short supply throughout the corridor. The addition of a huge demand for employee housing during the construction of the Vision will need to be addressed.
2. **Land Use Planning.** As discussed in the Mobility/Safety Section, the shift of trips from the automobile to FGT will require behavioral and cultural changes. Agencies in the corridor will need to support the concept of land use controls to increase densities in general, and particularly around station areas, to support the effectiveness of transit. Land use planning to protect operations of the airports in the corridor will be critical for allowing the expansion of air travel. Last, innovative land use planning, such as cluster development, could help maintain rural character, while accommodating the level of growth that is projected in the future.
3. **Rural Character.** The need for the Vision is a corollary to the explosive growth being experienced in the corridor, and the state in general. The extents to which the secondary effects of the Vision influence growth in the corridor need to be presented. The tradeoffs

of economic development and growth versus quality of life and rural character are contentious and complicated issues.

4. **Visual Impacts.** The amount of rock cuts and retaining wall needed for the TSM build elements will need to be addressed, as will the visual impact of the FGT guideway. Impacts of the FGT stations will also need to be mitigated.
5. **Historic Districts and Section 4(f) Impact Analysis.** The Vision will pass through an historic district in Idaho Springs and an historic landmark district in Georgetown and Silver Plume. This will complicate approvals for construction through these areas.

Mobility/Safety

Three mobility issues have been identified:

1. **Behavior Changes.** Successful implementation of the Vision will require a change in travel behavior. Levels of service and congestion will not be improved unless the FGT system is endorsed and used by the traveling public. History suggests that transit will not be used sufficiently to address the corridor's mobility problems without a different view of travel. Mobility to mountain recreation must rely less on the automobile in the future. The "political will" to affect this change may be an issue.
2. **Operation of the FGT Through the Denver Metro Area.** The Vision cannot be implemented without support from metro area communities, the DRCOG, and RTD. Numerous issues need to be resolved such as travel speeds through communities, the number of stops in the metro area, compatibility of technologies, right-of-way constraints, and competition with other projects for available space for construction.
3. **Design Standards.** Minimization of highway footprints to reduce environmental impacts will require narrower medians, shoulders and clear zones. This will significantly reduce impacts but may reduce clear zones and space for disabled vehicles. Tradeoff analyses will need to be prepared and the results supported by the public, FHWA, and CDOT.

Financial Impacts

Several critical financial issues will need to be resolved:

1. **Impacts on Local Communities.** There is a goal that the mountain communities should not pay more than their proportionate share for implementing the Vision. Another fairness concern is that Colorado residents who will seldom or never use the I-70 corridor will pay to support an FGT system.
2. **Increases in Taxation.** Implementation of the Vision will require additional revenues that will increase the cost of traveling on I-70. While the implementation of the FGT system is supported, additional taxes to finance it will also have to be supported.
3. **Impact of Funding of Other Projects.** There is a concern that committing significant dollars to the I-70 Mountain Corridor will detract from the funding of other equally important projects in the state.
4. **Expenditure of Funds by Mode.** There is a concern that available funding be spent equally on transit and highways in the short term.