

**Rocky Mountain Rail Authority (RMRA) High Speed Rail Feasibility Study**  
**Scope of Work and Organization**

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**III. Project Description**

**A. Background:** An application for funds was originally submitted to the State by Front Range Commuter Rail, a Colorado private nonprofit corporation. The State has subsequently agreed to award the funds instead to Rocky Mountain Rail Authority (RMRA), an intergovernmental authority that was created for the purpose of conducting this study. The original application proposed to conduct a \$4,380,000 high speed rail feasibility study for the I-25 and I-70 corridors, extending into the states of New Mexico and Wyoming, using funds from a variety of sources, with approximately 50% being derived from the Federal Rail Administration (FRA). RMRA has indicated that the FRA funds have not been secured, and that such funds might not be forthcoming. The State has agreed to proceed with the study despite the absence of the FRA funds by conducting the study in two phases, the Rail Feasibility Study (RFS) and the Rail Corridor Plan.

**B. Phases of Work:** It is agreed that the RFS will be a high speed rail feasibility study that seeks to answer the six feasibility questions published by the FRA and found in Section III.G below. The RFS will constitute the Project for purposes of this Agreement and will be conducted with State and local funds. It is agreed that the Rail Corridor Study, which will be conducted if funds are made available from the Federal government or another source, will not be conducted with State funds. The Rail Corridor Study, which will outline how a passenger rail service could be implemented along the two study corridors, based on the findings of the RFS, will not be part of this Agreement and is only included herein for reference purposes. The Rail Corridor Study will provide a more detailed examination of potential issues not resolved in the RFS, provide new information concerning economics and other impacts, and provide more detailed alignment and other infrastructure definitions with improved understanding of urban design and transit support opportunities.

**C. Purpose of Project:** The purpose of the RFS is to conduct a study of the feasibility of developing a high speed rail passenger service along the I-25 and I-70 corridors.

**D. Study Corridors:** The two corridors that will be examined during the RMRA Rail Feasibility Study (RFS) will be Interstate 25 from the New Mexico border to the Wyoming border, and Interstate 70 from Denver International Airport to the Utah border. The RFS

will examine the I-25 corridor broadly and generally within the existing rail corridor, and examine I-70 generally within the existing I-70 corridor, which has no existing rail corridor east of Minturn (see Map 1). Spur lines, their alignments and operating characteristics, as shown in Map 1, may be examined in a limited fashion for the purposes of examining potential ridership demand along a single, broad, feasible path for each spur corridor.

**E. Consistency with the Federal High Speed Rail Corridor Guidance:** The RFS shall be prepared consistent with the Federal Railroad Administration guidelines for conceptual feasibility studies of high speed rail service, based on determining the answers to six questions concerning rail feasibility, as described below under G. Project Objective.

**F. Coordination with Existing and Ongoing State Studies:** It is understood that the Colorado Transportation Commission on November 16, 2006 adopted a resolution directing CDOT staff to work with RMRA to collaboratively develop a scope of work for the study project that explicitly does not duplicate the efforts of previous or current CDOT studies and published technical reports and makes the best use of the information contained in these studies to further evaluate the feasibility of rail transit in the major east-west and north-south corridors of the State of Colorado. RMRA agrees to likewise work with CDOT staff to ensure that it does not duplicate the efforts of previous or current CDOT studies and published technical reports and makes the best use of the information contained in these studies. A copy of that resolution is attached hereto and incorporated by reference.

Among the existing or ongoing studies or technical reports with which RMRA will coordinate models, data or findings, and from which the RFS will incorporate such models, data or findings, are the following:

- I-70 Programmatic Environmental Impact Statement
- CDOT I-70 Context Sensitive Design Study
- I-70 Coalition SB1 Transit Land Use Planning Study
- CDOT Colorado Maglev Study
- Gaming EIS, from US 6 to Black Hawk and Central City
- CDOT Through Freight Rail Relocation Study
- I-25 North Environmental Impact Statement
- I-25 South Environmental Impact Statement
- CDOT North Metro MIS
- I-25 Through Pueblo Environmental Impact Statement
- RTD East Corridor Environmental Impact Statement
- RTD North Metro Environmental Impact Statement
- RTD Northwest Corridor, DUS to Longmont Environmental Impact Statement
- RTD Gold Line Environmental Impact Statement
- RTD West Line Environmental Impact Statement
- CDOT Northwest Corridor Environmental Impact Statement
- Analysis on Funding Options, Charlie Brown Consulting Inc.
- Colorado Passenger Rail Study
- CDOT Sponsored Rail Governance Study
- Wyoming DOT High Speed Rail Feasibility Study
- New Mexico Rail Runner Planning and Operations
- FRA Rail Corridor Study Requirements

The RFS will also coordinate its work closely with the mountain corridor transit planning project being conducted with Senate Bill 1 funds by the Northwest Colorado Council of Governments (NWCOG) in conjunction with the I-70 Coalition. In particular, the RFS will

use the products of the mountain corridor transit planning project; alignments, station locations as inputs to the RFS.

**G. Project Objective:** The overall objective of the RFS is to answer the following six concerns of the FRA High Speed Rail Designation for each high speed corridor of the project:

1. Whether the proposed corridor includes rail lines where railroad speeds of 90 miles or more per hour are occurring or can reasonably be expected to occur in the future
2. The projected ridership associated with the proposed corridor
3. The percentage of the corridor over which trains will be able to operate at maximum cruise speed, taking into account such factors as topography and other traffic on the line
4. The projected benefits to non-riders, such as congestion relief on other modes transportation servicing the corridor
5. The amount of State and local financial support that can reasonably be anticipated for the improvement of the line and related facilities
6. The cooperation of the owner of the rights-of-way (ROW) that can reasonably be expected in the operation of the high-speed rail passenger service in the corridor

**H. Plan Overall Development Strategy.** The RFS will collect all of the information required to determine the feasibility of high speed rail service on the two study corridors. During the process of answering the questions outlined above in III.G. Project Objective, the RFS shall develop a thorough understanding of local and State expectations for a possible passenger rail project in the Study Corridors, inventory the existing rail infrastructure, develop a composite passenger rail network of local transit and alternative future transit corridors, and select the best corridors of the composite plan for inclusion in the project, with input from the NWCOG/I-70 Coalition, the Regional Transportation District, MPOs and TPRs. This work strategy will provide a complete definition of an outline of a potential passenger rail project, including alignments, station and support facility locations, ridership, train speeds and operating schedules, benefits to non-riders, capital and operating costs and financing. The project shall investigate ROW needs and examine the use of CDOT ROW for the high speed corridor or sharing existing track with the Class 1 Railroads or use part of their ROW, or use ROW from other potential land owners. Also included will be cost effectiveness analysis, decision analysis, economic analysis and limited environmental analysis. A more detailed description of this work can be found later in this paper under each individual task description.

**I. Responsible Agency:** The RFS shall be conducted by the Rocky Mountain Rail Authority, a subdivision of the State created through an Intergovernmental Agreement initially between two Colorado local governments, and later through the addition of other local governments who would potentially be affected by the study.

#### **IV. Project Management and Study Methodology**

**A. Project Management:** The Program Manager (PM) will oversee the work of the two primary consultants, a Systems (engineering-based) Consultant and a Planning Consultant. The PM shall work under the overall direction of the RMRA Rail Feasibility Steering Committee, a subcommittee of the Board, and the RMRA Board of Directors. The Systems Consultant and Planning Consultant shall be recruited and selected by the RMRA Board through a request for proposals (RFP) procurement process, following rules established by the Roaring Fork Transportation Authority and formally adopted by the

Board. Each RFP will be consistent with this scope of work and must first be approved by CDOT.

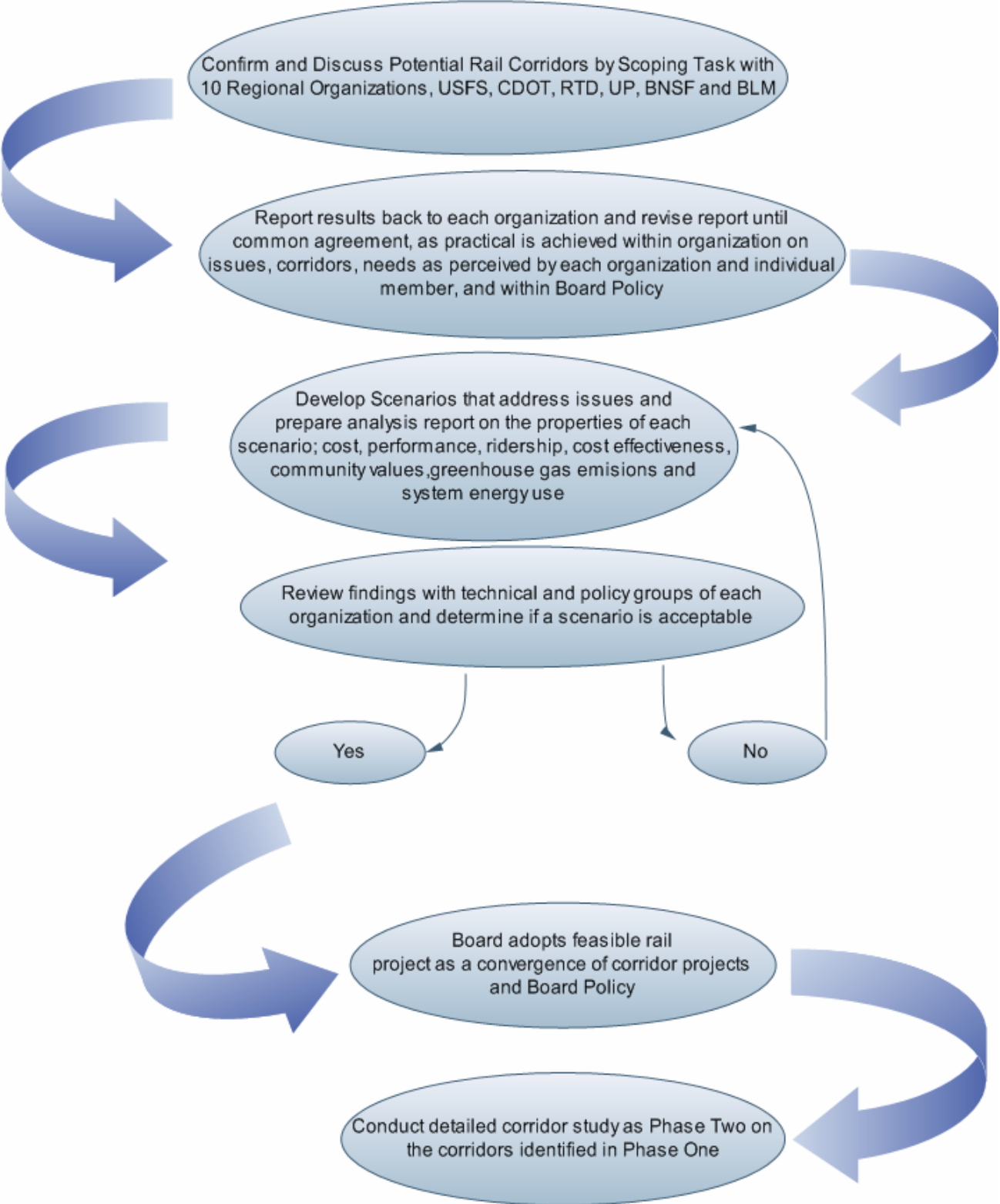
The Systems Consultant will provide work as shown on Figure 2, including data and analysis related to alignments, innovative aerial guideway design, train control, power generation and distribution, vehicle specifications, train performance and system performance, to the extent necessary to provide answers to the questions in G. Project Objective. The consultant will be responsible for determining whether the entire system works well together and with other systems and properly serves the travel demands estimated by the Planning Consultant. The Planning Consultant will be responsible for the work outlines in Figure 2, and be responsible for travel demand, county and statewide economic forecasts, small area socio-economic forecasts, and model verification, traffic counts, finance and cost effectiveness analysis, decision analysis and supporting the Systems Consultant in outreach. Each consultant shall be assigned work as set forth in a RMRA contract and overseen by the PM following a review by appropriate corridor and statewide policy, management and technical committees made up of individuals qualified in those topic areas and appointed by the RMRA Board of Directors.

**B. Use of CDOT Front Range Relocation Study:** SB1 funds will not be used to study relocation of freight lines, given that CDOT has completed a Public Benefits and Costs Study and will be conducting a Front Range Relocation Study in the near future. The RFS will closely monitor the outcomes of the Front Range Relocation Study, given their potential impacts on the Front Range portion of the RFS. No cost has been budgeted for this analysis except for coordination by the Program Manager.

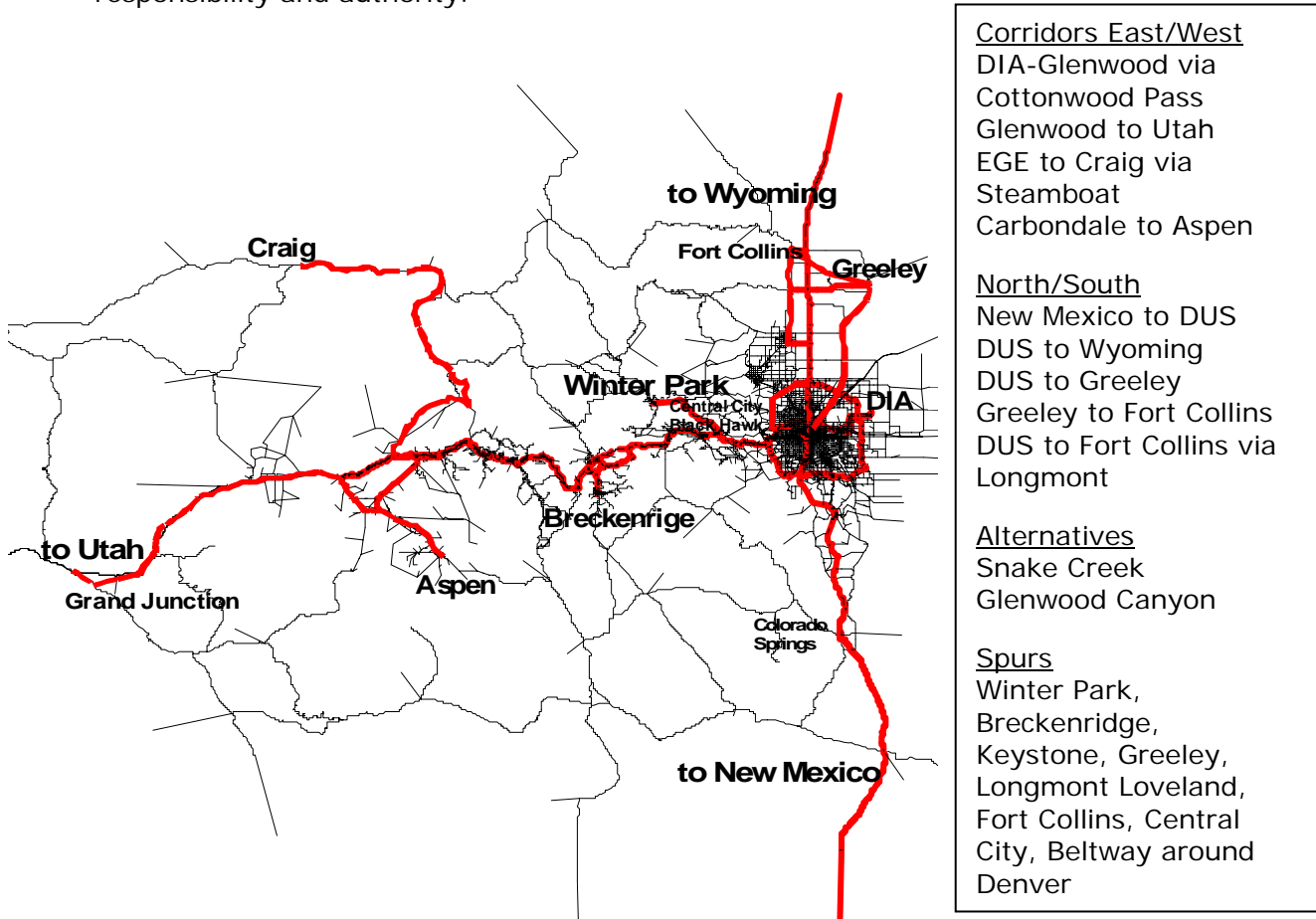
**C. Funding Eligibility:** SB 1 funds will be used to pay for reasonable costs of the subconsultants working on Phase I of the RFS and for direct expenses for meetings or software used in Phase I of the study. No SB 1 funds are reimbursable for work conducted prior to the execution of this Agreement, on the process to select the subconsultants, or for general administrative costs such as rent or power, or for other work of the RMRA not specifically oriented toward fulfilling the scope of work described herein. While Federal funds are not being provided, CDOT and RMRA will generally follow the accounting guidelines and guidelines for eligible costs set forth in the Federal government's Common Rule.

Periodic reviews of the funding allocation for specific tasks will be conducted by the Program Manager and CDOT staff to insure the most effective use of the SB1 and local funds.

Figure 1, Process to Develop Feasible Rail Project



**D. Distribution of Work:** Work for each consultant will be specified in work orders that reference the individual contracts for each consultant, as modified and consistent with this scope of work, to provide integration between the two consultants and the needs of local government. A management committee will be used to coordinate the efforts of all of the agencies working on elements of affected by the RFS. The Program Manager will chair this committee and report the results through periodic reports to the Rail Feasibility Steering Committee, the Board and affected agencies. RMRA will notify CDOT of the membership selection process, membership, and committee areas of responsibility and authority.



Map 1 –Rail Study Corridors

Source: Summit Development Group, LLC

**E. Summary of Phase I Anticipated Tasks:** The organization of the study and the relationships between the consultants doing each task are shown on Figure 2. The tasks are further described below:

1. Management. The PM will manage, control, delegate work through work orders based upon decisions made by the Rail Feasibility Steering Committee and any advice from corridor or statewide management committees. The PM will create progress reports, schedules, project task accounting/control and presentations to various committees. The PM shall provide the work product deliverables to the RMRA Board. A statewide management review team will be created to review and coordinate the development of the two RFQs or RFPs and to coordinate work between the CDOT DTD, CDOT Regions, RTD, and various affected corridor agencies.

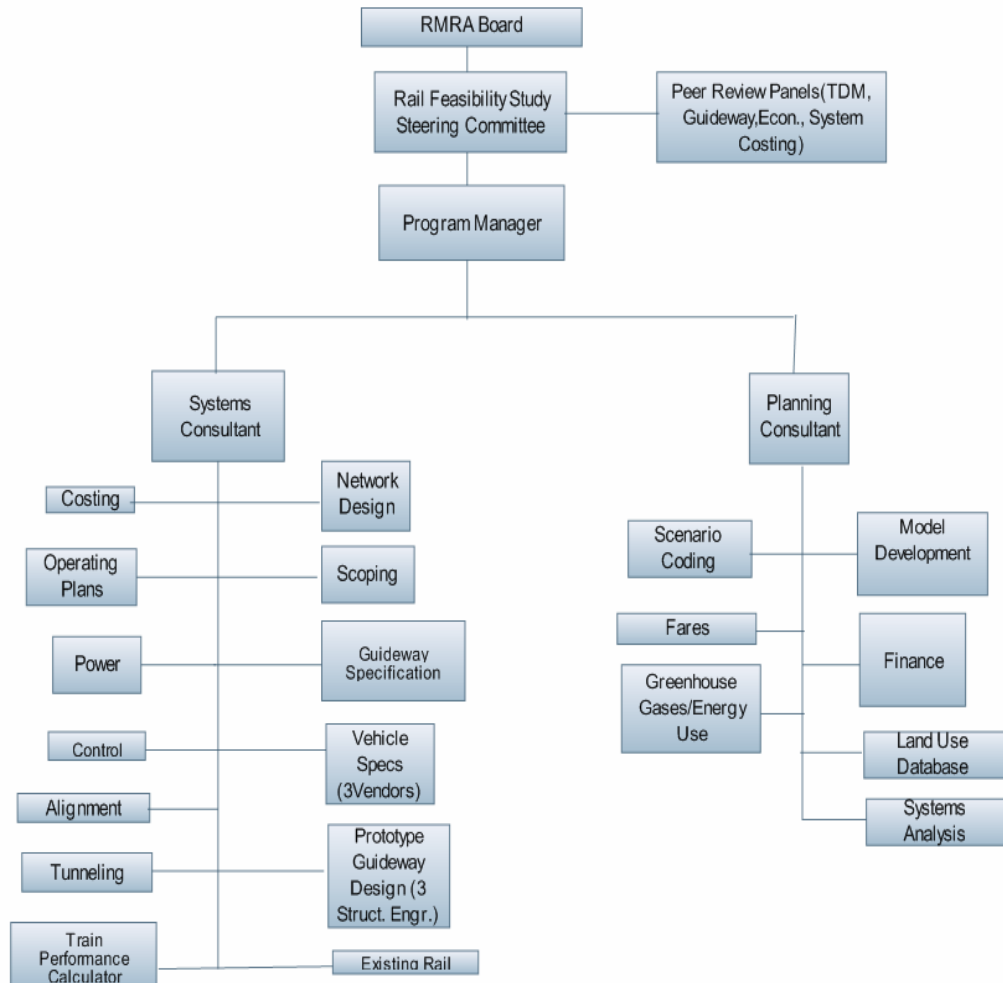
The work orders shall be based upon discussions between the Program Manager and the Systems and/or Planning Consultants concerning how a specific task or subtask shall be conducted and describes expected deliverables, start and end times, quality of work and data and methods. The work order shall specify a not to exceed amount and a process to monitor the progress of the work order over time.

2. Scoping. The jurisdictions in each of the corridors specified above will each be requested to define for their jurisdiction how passenger rail should be developed in their corridor including alignments and vehicle technology. These discussions will then be summarized by the Systems Consultant and PM who will create a corridor report. Both common areas of agreement and areas of disagreement will be identified and documented in a technical report and then emailed to each affected jurisdiction. Planning issues will first be resolved at the corridor level and then by the Board. Scoping will be limited by the scoping budget. A website will be available for each corridor for the purpose of discussion of this report and final definition of the requirements of the corridor. When the expectations of some of the jurisdictions are different than the initial plan for a corridor, alternative system plans will be describe that bound the type of expectations described in the scoping technical reports. As a set the corridor scoping reports, will describe the initial plan, and variations to that plan as suggested by the affected jurisdictions. The plan will be described in terms of the FRA 6 questions; classify each segment as either one that allows trains to operate above or below 90 MPH, the initial ridership forecast by major segment, within the sections classified as above 90 MPH, how much of each segment will the actually operate above 90 MPH, the effect on non transit users, the general cost for each segment, and the availability of ROW from the land holder or availability of track rights from the railroads.

3. Travel Demand Model (TDM). The Planning Consultant shall verify calibration of the travel demand/ridership model used to forecast highway demand and transit ridership throughout the study area, based upon the model developed for the I-70 PEIS. The consultant will expand the model to use a smaller zone system in the Front Range. Some changes in GISDK code may be required to provide for the addition of these zones to the model and its databases. Depending upon the status of the DRCOG Model Development Program, the DRCOG Model may be incorporated into this model. A Stated Preference Survey may be conducted to develop new mode choice and distribution coefficients for the model. Any changes in the PEIS Model in the DRCOG area must be approved by DRCOG, CDOT and RTD. This task shall help explain the answer to FRA question 2 and question 4.

4. Forecast Travel. The Planning Consultant will forecast travel for 2016, 2035 and 2055, for all scenarios of the Rail Feasibility Study. The consultant shall create a TransCAD database for each scenario forecast. Economic forecasts by county shall first be obtained from the affected TPR and if not available, shall be obtained from the State Demographer. This task shall help explain the answer to FRA question 2 and question 4.

Figure 2, Organization of Rocky Mountain Rail Feasibility Study by Consultant and Task



5. Guideway Design. The Systems Consultant will examine various rail types and technologies, including but not limited to Diesel Multiple Units (DMUs) and magnetic levitation. The Systems Consultant will work with vehicle vendors to determine the speed, loading capacity and other verifiable operating characteristics of each of the various rail types and technologies. These selected technologies are intended to represent the envelope of characteristics for potential vehicles for which vendors will be asked to provide operating characteristics. Structural engineers will develop proposed aerial structures to carry each of these vehicles. Costs from suppliers, fabricators, installers and transporters will be requested to establish unit prices for each structure. The Systems Consultant will identify the costs associated with each guideway/vehicle technology in each alignment using these unit costs. This task will help in answering FRA question 1, 3, 5 and 6 by developing an affordable aerial guideway system.

6. Alignments of New System. The Systems Consultant, based upon the initial analysis of the systems and costs, will screen to a single, broad alignment in each corridor. This task will help in answering FRA question 1, 3, 5 and 6..

7. Physical Inventory for Existing System. The Systems Consultant will create a technical report that will define the curves and tangents of each existing line under consideration and will determine the speed and current and future capacity that can be maintained for the current rail system as shown on Map 1. The existing lines that will be studied will be selected in the corridor scoping reports. This task will help in answering FRA question 1, 3, 5 and 6 by developing a slower guideway system for the rest of the network.

8. HSR Project. The Systems Consultant and the Planning Consultant other will develop a Rail Project from a composite network for 2016, 2035 and 2055 that will identify areas in which system changes would be requested of the UP and the BNSF in order for a passenger rail system to operate within their ROW, as well as a systems plan where no change in the UP and BNSF would occur. Cost effectiveness analysis and decision analysis methods will be used to display the costs and benefits of each alternative, and each alternative's underlying assumptions for ROW availability. This task will use the alignment studies and existing system inventory and the ridership forecasts to develop operating plans for a variety of days of each year and for 2016, 2035 and 2055. Power systems and control systems will be developed by the Systems Consultant and the entire system costed, including yards, stations, alignments, vehicles and various standard overhead items and contingencies. All costing will be conducted by the Systems Consultant using unit costs from the guideway study and other data based information to prepare the standard cost sheet as developed by the Federal Transit Administration New Starts Program. This task will help in answering FRA question 1, 3, 5 and 6 by developing an affordable high speed and low speed networks.

9. Finance. The Planning Consultant shall develop a finance plan for the operating and capital cost of the systems developed in Task 8 in an iterative manner with the Systems Consultant. Based upon income streams forecasted for each scenario by the ridership model two finance plans will be developed, using both high and low economic forecasts. A simplified analysis of a public private partnership plan will also be developed assuming rail fares set by the TAC at a particular cost per passenger mile. This task will help in answering FRA question 5 by developing a reasonable finance plan.

10. Final Report, Phase One, High Speed Rail Feasibility Report and Rail Corridor Report. The PM and Systems Consultant will prepare a report summarizing the findings of Phase I.

11. Peer Review Panels. This study shall be developed within the review of 4 Peer Review Panels for the purpose of increasing study credibility, developing new ideas not hindered by existing institutional constraints and getting more people to think about the problem to identify areas of duplication and improving customer value through value engineering and other similar processes and suggesting ways to develop programs that increase collaboration and seamless flows between the affected agencies; local government, RTD, RFTA, PPRTA, CDOT and the Federal agencies. The Program Manager shall coordinate the panel meetings but the Panels will be independent of the RMRA. They will be open to the public, interested Board members and others. A transcript of their discussions will be made and a summary will be prepared as a technical report by the Program Manager. The Peer Review Panels will include the following:

- Travel Demand, Revenue, and Model integration
- Guideway Design and Cost
- Overall System Design, Cost, Finance and Implementation

Each panel will meet early in the process to suggest methods to follow with project development and late in the process to concur or disagree with the project findings.

12. Technical and Policy Outreach and Decision Making. The consultants will conduct at least one public meeting in each corridor and other meetings to enable public and governmental review of each corridor plan and identify areas of potential collaboration.

The tasks described above will be designed to answer the 6 FRA questions described earlier in Section III-C, as shown on Table 2.

Table 2, Relationship between Tasks and 6 FRA Questions, Phase One

Task	Speeds>90	Ridership	%Max Speed	Non Riders	Finance	Coop Owner
1. Manage						
2. Scoping						X
3. TDM Development		X				
4. Forecast		X		X	X	
5. Guideway	X		X			
6. Alignment	X		X			
7. Exist Rail						
8. HSR	X		X		X	X
9. Finance					X	
10. Final Report						
11. Peer						
12. Outreach						X

**F. Consultant Selection:** Consultants will be chosen through a process that ranks their responses to the Request for Proposal. All appropriate CDOT and FRA procurement and screening requirements and procedures will be used in the selection process.

**V. Project Budget**

The Project budget is \$1,557,500. The funding for the Project shall consist of the following:

Senate Bill 1 Funds	\$1,246,000
Local Match (Local governments and RTD/RFTA)	<u>311,500</u>
Total Colorado	\$1,557,500

RMRA does not have authority to levy taxes, so the local match funds are being provided by individual local governments. Letters of commitment from those governments was provided to the State prior to execution of this Agreement.

Because RMRA is an authority with a limited scope, it does not have a financial or accounting staff. RMRA will use the Roaring Fork Transportation Agency as its fiscal

agent, and will likewise use the financial management and procurement policies of the Roaring Fork Transportation Agency as its own.

It is understood that this Project may be part of a larger study that includes the Interstate 25 corridor in New Mexico and Wyoming. State, City and County governments from those two states may be contributing towards the cost of a study that will expand the scope of work of this Project study to include those other states. RMRA is proposing to obtain the following amounts from the two other states:

Wyoming cities and state government	396,000
New Mexico cities and state government	<u>548,000</u>
Total proposed from two other states	\$944,000

It is understood that RMRA will undertake all reasonable steps to ensure that the level of effort for the study corridors within Colorado is commensurate with the funding provided for the Project from Senate Bill 1 and the local government match.

**VI. Schedule**

The intent of the RMRA is to complete the Rail Feasibility Study in 18 months following signing of the CDOT Contract.

**VII. Deliverables**

A. **High Speed Rail Feasibility Report:** RMRA shall provide to the State a clear and concise document that answers each of the questions set forth in Section III G. above. RMRA shall also provide to the State copies of all related data and documents they were developed in the course of the study.

B. **Rail Corridor Report:** RMRA shall provide to the State a clear and concise document that sets forth all its findings relative to more specific corridor plans that could potentially be implemented based on the findings set forth in Section VI A above.

C. **Project Management Plan** - A PMP will be prepared at the beginning of the project to define and clarify the tasks, schedules and resource requirements needed to complete the Study. In particular, the PMP will include the responsibilities, roles and reporting structures of the various committees that are outlined herein.