
Caltrain Rapid Rail Program Work Plan

FINAL DRAFT

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Caltrain Rapid Rail Program Work Plan

Introduction

Caltrain proposes a three task workplan for implementing a series of rail modernization projects and for evaluating the feasibility of several exciting concepts for improving Caltrain service. This scope of work would be accomplished under the direction of the Peninsula Corridor Joint Powers Board and include significant input from the public. Technical input would be provided by staff from regional and JPB member agencies.

In addition to the medium and long-term run-time reductions this study will help define, the JPB will evaluate and implement a series of operating changes to reduce run-times in the short term. These changes could include changing schedules, changing station stopping patterns on selected trains and other operational changes.

The goal for Task 1 is to build a rail infrastructure capable of 79 mile per hour bi-directional operation. It will focus on track (including ballast, ties, rail, switches, and crossovers), structures (e.g. bridges), signals (e.g. Central Traffic Control systems) and communications. One way of looking at Task 1 is to evaluate the improvements needed without a change in vehicle technology. This goal is critical to Caltrain's overall success regardless of what long-term concept is eventually adopted for Caltrain.

The goal for Task 2 is to develop a long-term improvement program designed to best serve Caltrain's new and existing markets. Task 2 will focus on vehicle technology and major system operations improvement options including electrification, standard railroad improvements and vehicle design/technology. These concepts would be used to define a comprehensive program of capital improvements for inclusion in the 1998 Regional Transportation Plan (RTP).

Task 3 consists of completing the necessary environmental analysis of the long-term concepts. Each of the three tasks is outlined in detail below.

Task 1: Rail Infrastructure Improvement Program

The objective of Task 1 is to develop a program of capital improvements that will achieve two objectives: improve speed and operational flexibility on the Caltrain right of way. This capital improvement plan will serve as a multi-year work plan for construction and operational changes that will be implemented over the next several years. It will form the basis for Caltrain's requests for capital funding from local, state and federal funding programs.

In the very near-term, a series of improvements will be identified that can be implemented using the federal funds currently programmed in the region's Transportation Improvement Program (TIP) for environmental analysis and preliminary engineering on the Caltrain Downtown Extension project. These funds are programmed over the next several years and amount to approximately \$11 million. The goal would be to complete enough of this analysis in time to provide input to Caltrain's 1998-99 Capital Improvement Program.

Task 1 consists of the four subtasks:

- 1.1 Define Rail Infrastructure Improvement Projects;
- 1.2 Develop Financing and Operating Assumptions;
- 1.3 Prioritize Rail Infrastructure Projects; and
- 1.4 Rail Infrastructure Preliminary Engineering.

Each of these subtasks is described in more detail below.

Task 1.1 Define Rail Infrastructure Improvement Projects

The near-term objective of the Caltrain Rapid Rail Program will be to achieve a track and signal system that will enable Caltrain to operate at 79 miles per hour in both directions. The improvements necessary to achieve this objective will be critical to Caltrain's overall success regardless of what long-term concepts (e.g. new vehicles, electrification) are eventually adopted for Caltrain.

There are two reasons for focusing on rail infrastructure needed to achieve the 79 MPH operation: first, Caltrain's Operations Simulation Study shows that improving the system so that it can operate at 79 MPH would lead to a very significant reduction in running time; and, second, 79 MPH is the top speed allowed by the Federal Railroad Administration without advanced train control systems (ATCS). Introduction of an ATCS represents a significant technology change (and increase in cost) over the existing system.

Since Task 2 of this study focuses on long-term improvements to Caltrain, the costs and impacts of increasing speeds above 79 MPH will also be evaluated. The goal is to upgrade Caltrain's rail and signal infrastructure to achieve run-time reductions as cost effectively as possible.

In addition to increasing speed on Caltrain, the study's objective is to enable trains to operate in both directions on both tracks. This objective is important because it will provide Caltrain with increased speeds, operational flexibility and safety. Specifically it will allow express trains to pass local trains traveling in the same direction, it will enable Caltrain to improve its ability to recover from accidents and disabled trains, it will provide improved warning at grade crossings and it will improve the cost effectiveness of construction and maintenance along the Caltrain right of way.

Task 1.1 of the Rapid Rail Study consists of defining rail infrastructure improvements. The following studies will provide a basis for the Task 1.1 analysis:

- Fixed Inventory Assessment Study (July 1997);
- Caltrain Capital Improvement Program (September 1997);
- Operation Simulation Study (to be completed in December 1997); and
- On-Time Performance/Reliability Study (to be completed early 1998);

This task will include the entire Caltrain service area from San Francisco to Gilroy. However, the segment actually owned by the JPB (from San Francisco to Tamien) will be developed at a detailed level. The analysis of the Union Pacific owned railroad from Tamien to Gilroy will be completed at an order of magnitude level; this analysis will focus on the costs and issues associated with constructing a second mainline track between Tamien and Gilroy.

Task Management

Task 1.1 focuses on determining the existing condition of the railroad and identifying the improvements necessary to achieve the JPB's service objectives. Therefore, much of the work on Task 1.1 will be completed by the JPB's consultant team. The work will be supervised by JPB staff with input on the improvement identification and initial evaluation activities from a wider range of JPB departments and outside agencies.

Task Schedule

Task 1.1 should be completed by April 1, 1998.

Work Breakdown Structure Overall Organization

Work on Task 1.1 is categorized by system type and study activity. There are six types of systems that will be evaluated in Task 1.1:

- A. Rail Infrastructure;
- B. Signal and Communications Systems;
- C. Railroad Structures;
- D. Railroad Facilities;
- E. Stations and Parking; and
- F. Right of Way and Grade Crossings.

For each system type the following activities will be completed:

Assessment — This consists of identifying and evaluating the condition of the existing facilities (and programmed improvements). This task will be completed by reviewing the completed studies and completing field analyses to determine the existing conditions on the railroad. This assessment information will be placed on a map (Geographic Information System) with an associated database when appropriate.

Improvement Identification — This consists of identifying the improvements necessary to each of the systems to enable Caltrain to achieve the following JPB service objectives:

- i. Operate at 79 MPH in both directions (this includes all upgrades necessary to ensure that Caltrain operates at a state of good repair including safely within all appropriate regulations);
- ii. Operate at higher speeds (90 MPH) in both directions;

In simple terms, a base map will be prepared that compares existing speed limits with speed that could be achieved with a given infrastructure improvement for the entire Caltrain line. The map will show the incremental physical improvements and or policy changes are necessary to achieve the 79 MPH speed.

Initial Evaluation — This consists of an initial evaluation of the improvements in terms of capital cost, ability to construct and benefit. In Task 1.3 the proposed improvements will be evaluated in more detail and prioritized using criteria developed by the JPB.

Work Breakdown Structure: System Level

A. Rail Infrastructure

All areas of the rail infrastructure will be included: the mainline track (tangent and curves), station track, siding track and terminal track. The Rail Infrastructure system effort will be managed by the JPB Engineering Department and completed by the STV.

A1: Assessment

- A1.1 Rail Assessment: Type (jointed, CWR), Weight, Age, Wear, Condition, curvature, grade, speed, policy speed restrictions
- A1.2 Crossties: Type (wood, concrete), Age, Condition
- A1.3. Roadway and Roadbed: Ballast Condition, Roadbed Condition, Embankment Condition, Landscaping Condition
- A1.4 Drainage Facilities: Effectiveness, Physical Condition
- A1.5 Vegetation: Tree Trimming, Vegetation Control
- A1.6 Right of Way: width, clearances, ownership, easements

This data will be identified on a map and described in an associated database.

A2: Improvement Identification

- A2.1 Rail, Crosstie, Roadway and Roadbed Improvements
- A2.2 Drainage System and Vegetation Improvements
- A2.3 Curve Reductions (including curve reductions, spiral increases, superelevation)
- A2.4 Additional Tracks and Line Extensions (including passing track, double track to Gilroy, additional station tracks)
- A2.5 Clearance Improvements
- A2.6 High Speed Crossovers: Identify Locations

A3: Initial Evaluation

This consists of an order of magnitude evaluation of improvements identified to determine if they are at all feasible. Unfeasible improvements will be dropped from the analysis at this point.

B. Signal and Communications Systems

The Signal and Communications Systems analysis will be managed by the JPB Engineering Department and completed by Pacific Railway Enterprises (the JPB's Signal Systems specialty contractor). The JPB's Rail Operations Department will assist in the analysis process.

For purposes of this study signal systems are separated into three categories: train control (defined as the system that tells train operators what to do), grade crossings (defined as signals that warn cars and people of approaching trains and operate gates at grade crossings) and pedestrian crossings (defined as systems that warn people of approaching trains and operate gates at pedestrian crossings).

Communications systems are divided into two elements: those that are used as part of the train control or crossing signal system (e.g. ATCS) and basic information such as passenger information systems or dispatch-operator systems (e.g. Operator Radios).

B1: Assessment

- B1.1 Train Control Signal Equipment Inventory: Type, Age, Condition
- B1.2 Train Control Interlockings Inventory: Type, Age, Condition
- B1.3 Grade Crossing Signal Equipment Inventory: Type, Age, Condition
- B1.4 Pedestrian Crossing Signal Equipment Inventory: Type, Age, Condition
- B1.5 Communications System: Train Control and Grade Crossing, Information
- B1.6 Wayside Safety Devices

All this data will be mapped and described in an associated database.

B2: Improvement Identification

- B2.1 Train Control System Overview: Type of Train Control (ABS, CTC etc.)
- B2.2 Train Control Equipment Improvements
- B2.3 Interlocking Improvements
- B2.4 Grade Crossing Signal Improvements
- B2.5 Pedestrian Crossings Signal Improvements
- B2.6 Train Control and Grade Crossing Communications Improvements
- B2.7 Information Communications System Improvements
- B2.8 Wayside Safety Devices Improvements

B3: Improvement Evaluation

This consists of an order of magnitude evaluation of improvements identified to determine if they are at all feasible. Unfeasible improvements will be dropped from the analysis at this point.

C. Railroad Structures

The Railroad Structures analysis will be managed by the JPB's Engineering Department. It will be completed by CH2M Hill (one of the JPB's Specialty Contractors) with input from STV.

The Railroad Structures category includes vehicle and pedestrian overpasses. Grade crossings are included in their own category.

C1: Assessment

- C1.1 Bridges: Age, Capacity, Size, Condition
- C1.2 Tunnels: Age, Size, Condition
- C1.3 Street and Pedestrian Overpasses: Age, Size, Condition

- C1.4 Pedestrian Tunnels: Age, Size, ADA Regulations, Condition, Safety, Responsibility (maintenance, ownership), Lighting
- C1.5 Street Underpasses: Age, Size, Conditions, Responsibility
- C1.6 Culverts and Lined Channels: Age, Size, Conditions, Responsible Party
- C1.7 Minor Bridges: Age, Capacity, Size, Condition
- C1.8 Retaining Walls: Type, Age, Condition

This data will be placed on a system map and described in an associated database.

C2: Improvement Identification

In the case of railroad structures most of the improvements will be of the type that must be done to keep the railroad operating. For example, the railroad cannot operate if one of the tunnels caves in. Therefore, improvements will be classified in terms of when they must be addressed to keep the railroad operating.

- C2.1 Immediate Improvements — Needed within the next two — three years to keep the railroad operating;
- C2.2 Mid-Term Improvements — Needed within the next four — seven years;
- C2.3 Long-Term Improvements -- Needed within the next seven -- twenty years;
- C2.4 Railroad Structures Database -- Develop an on-going asset replacement tracking database.

C3: Initial Evaluation

This consists of an order of magnitude evaluation of improvements. Because prioritization of improvements will be done as part of the identification process this task may be unnecessary.

D. Railroad Facilities

The Railroad Facilities analysis will be managed by the JPB's Engineering Department with significant input from the Rail Operations Department. Most of the analysis will be completed by STV.

Railroad facilities are defined as facilities used by railroad administration and operations. Stations (including passenger facilities at San Francisco Terminal, San Jose Diridon and Gilroy) are included in a separate section.

D1: Assessment

- D1.1 New Maintenance Facility (Santa Clara County): Project Status
- D1.2 San Jose Diridon (Yard, Administration): Assess Existing Facility, Assess Future Needs, Is a facility included in New Maintenance Facility?
- D1.3 San Jose Maintenance of Way Facility: Assess Existing Facility, Assess Future Needs, Is facility included in New Maintenance Facility?
- D1.4 San Francisco Terminal (Yard, Administration): Assess Existing Facility, Assess Future Needs, Status of near-term improvement projects
- D1.5 Gilroy Terminal (Yard, Administration): Assess Existing Facility, Assess Future Needs
- D1.6 Short Term Storage: Status of short term storage study

D2: Improvement Identification

- D2.1 New Maintenance Facility: Given assessment are there any changes to plans recommended?
- D2.2 San Jose Diridon
- D2.3 San Jose Maintenance of Way
- D2.4 San Francisco Terminal
- D2.5 Gilroy Terminal
- D2.6 Short Term Storage: Given assessment are there any changes to plans recommended?

D3: Initial Evaluation

This consists of an order of magnitude evaluation of improvements identified to determine if they are at all feasible. Unfeasible improvements will be dropped from the analysis at this point.

E. Stations and Parking

The Stations and Parking analysis will be managed by the JPB's Engineering Department with significant input from the Planning Department and the Rail Services Department. The analysis will be completed by STV (Stations), DeLeuw Cather (Parking), __?__ (Joint Development).

E1: Assessment

- E1.1 Station Inventory: All stations will be assessed using a checklist (TBD). The checklist will include type of boarding platforms, center fence, TVMs, street furniture (benches, shelters, trash cans), amenities (telephones), structures, etc.
- E1.2 Station Parking Demand & Supply Assessment: All stations.
- E1.3 Station Passenger Demand: All stations.
- E1.4 Station Access Summary: All stations will be evaluated based upon types of access and capacity of access modes.
- E1.5 Opportunity Sites: The area around all stations will be assessed to determine whether there are opportunities for major station improvements, addition of new parking facilities and joint development.

This data will be identified on a map and described in an associated database.

E2: Improvement Identification

- E2.1 Major Station Improvement Program: Designate major stations and outline large scale improvement projects (e.g. new stations to replace existing stations etc...). Including: San Francisco Terminal, San Francisco Hunters Point, Millbrae, Hillsdale, Palo Alto, Mountain View, San Jose Diridon.
- E2.2 Potential Station Closing Program: Identify stations that could be closed or combined with other stations. Including: SF 22nd Street, SF Paul, Broadway, Racetrack, Hayward Park, Atherton, College Park
- E2.3 Potential Station Relocation Program: Identify opportunities to re-locate stations. Including: South SF
- E2.4 Station Improvement Program: Potential improvements to all existing stations.
- E2.5 Station Joint Development Opportunities
- E2.6 Station Parking Opportunities

E3: Initial Evaluation

This consists of an order of magnitude evaluation of improvements identified to determine if they are at all feasible. Unfeasible improvements will be dropped from the analysis at this point.

F. Right of Way and Grade Crossings

The Right of Way and Grade Crossings analysis will be managed by the JPB's Engineering Department with significant input from the Rail Services Department. The analysis will be completed by STV.

This category of improvement includes both grade crossings and access to the right of way. The grade crossings work includes the physical crossing only, warning devices and signals are included in a separate category.

F1: Assessment

- F1.1 Vehicle Grade Crossing Assessment: Type (concrete, rubberized, concrete), Age, Condition, Vehicle Traffic Volume, Pedestrian Volume, Bike Volume, Safety Record
- F1.2 Pedestrian Grade Crossing Assessment: Type, Age, Condition, Pedestrian volume, Safety Record, Demand Issues (access to pedestrian magnets)
- F1.3 Fence Assessment: Type (chain link, others), Condition, Other Means to Prevent Access (e.g. on embankment)
- F1.4 Maintenance Access to Right of way: How Caltrain workers can access ROW for regular maintenance
- F1.5 Access Safety Assessment: Identify perceived access hot spots working with train operators, MOW personnel and public safety departments

This data will be identified on a map and described in an associated database. For example, the map will show the type of access control (e.g. fence) along the entire right of way.

F2: Improvement Identification

- F2.1 Vehicle Grade Crossing Improvements
- F2.2 Pedestrian Grade Crossing Improvements
- F2.3 Fencing Improvements
- F2.4 MOW Access Improvements
- F2.5 Access Safety Improvements

F3: Initial Evaluation

This consists of an order of magnitude evaluation of improvements identified to determine if they are at all feasible. Unfeasible improvements will be dropped from the analysis at this point.

Task 1.2 Develop Financing and Service Assumptions

Task 1.2 consists of confirming assumptions regarding financial capacity for making capital improvements and service planning (Caltrain service patterns and schedule).

Caltrain staff will work closely with MTC staff, San Mateo County Transportation Agency and Valley Transportation Authority to develop estimates of year-by-year funding availability. A starting point for this task will be analysis completed as part of Caltrain's recently completed Capital Improvement Program and the Downtown Extension Study.

Caltrain's SCC will develop recommendations on service patterns and scheduling improvements. Specific attention will be given to near-term rail connections with Caltrain including the Muni Metro King Street station and the Santa Clara VTA Tasman connection in Mountain View (scheduled for late 1999).

As part of Task 1.2 specific criteria and data regarding funding and service planning will be developed to assist in the prioritization process for rail infrastructure projects (Task 1.3).

Task Management

Task 1.2 will be completed by staff members from the JPB, partner agencies and other interested agencies with limited technical assistance and input from the overall study consultants.

Task Schedule

Task 1.2 will be completed in parallel with Task 1.1 and should be completed by April 1, 1998.

Work Breakdown Structure

G. Financial and Operational Assumptions

- G1 Assessment: Identify existing financial and service assumptions;
- G2 Brainstorming: Identify short term changes to financial and service assumptions;
- G3 Agreement: Agree on financial and operating assumptions for use in study;

Task 1.3 Prioritize Rail Infrastructure Projects

Following the basic assessment of the existing rail line, identification of infrastructure improvements and development of financial and operating assumptions, the improvement projects will be prioritized.

Priorities will be set based upon the following criteria:

- **Cost/Benefit** -- Improvements that provide Caltrain passengers with the largest potential run-time reduction for a given investment;
- **Ridership Increases** -- Improvements that will increase Caltrain's ridership;
- **Customer Convenience** -- Improvements that will provide Caltrain passengers with a more pleasant and comfortable ride;
- **Operational Flexibility** -- Improvements that will increase Caltrain's flexibility to recover from system disruptions and to improve maintenance (including construction) on the right of way;
- **Safety** -- Improvements that are consistent with Caltrain's System Safety Plan;
- **Operating Cost Reduction** -- Improvements that will reduce Caltrain's operating cost for a given level of service;
- **Economies of Construction** -- Improvements that might not rank as high in terms of cost/benefit but that can be completed efficiently while other improvements are being completed (e.g. replacing a larger amount of rail at one time or rehabilitating the track bed where new rail is being placed);
- **State of Readiness** -- Improvements that can be constructed quickly or added to existing construction projects;
- **Implementability** -- The impact of improvements construction on day to day operation of the railroad;
- **Regulations** -- Improvements that are required to comply with regulations that impact Caltrain (e.g. signaling, safety, ADA);
- **Consistency with Long-Term Vision and Service Objectives** -- How the improvements fit within Caltrain's long-term vision and service objectives; and,
- others defined in Task 1.2.

Following the prioritization of individual improvements, the improvements will be grouped into projects for implementation. For example, the highest priority improvements will be packaged into a project that will be done first.

The goal of this task is to develop a five-to-seven year program of coordinated capital improvement projects in sufficient detail to begin preliminary engineering. Projects for the period beyond seven years will be developed in less detail.

Task Management

Task 1.3 focuses on prioritizing improvements to the railroad. Work on this task will be completed by staff members from the JPB, partner agencies and other interested agencies (a group referred to as the SCC below) with significant technical assistance and input from the all the study consultants.

Task Schedule

Task 1.3 should be completed by June 1, 1998.

Work Breakdown Structure

H1: Develop and Refine Evaluation Criteria

The SCC will develop detailed criteria for evaluation of improvements. As part of this effort the SCC will develop a process for completing the prioritization process including discussion and agreement on criteria weighting and evaluation strategies.

H2: Initial Prioritization

The SCC will review an initial prioritization completed by the JPB staff and consultants using the evaluation criteria and results from Tasks 1.1 and 1.2. The SCC will recommend changes to the prioritization and ask for additional technical evaluations when necessary.

H3: Additional Technical Information

The JPB's consultants will develop additional technical information for review by the SCC.

H4: Prioritization and Initial Phasing

The SCC will continue the process of prioritizing projects and will develop an initial phasing plan for improvements. The phasing plan will place improvement projects into the following five phases:

- Immediate;
- Near-term (four to seven years);
- Mid-Term (eight to ten years);
- Long-Term (eleven to twenty years); and
- Very long-term (over twenty years).

H5: Additional Technical Analysis

The JPB's consultants will review the initial phasing plan to identify construction economies and operational impacts of improvement project phasing.

H6: Phasing Plan

The SCC will recommend a phasing plan to the JPB for implementation.

Task 1.4 Rail Infrastructure Preliminary Engineering

Task 1.4 consists of completing preliminary engineering on the highest priority improvements (immediate and near-term phases). Since Caltrain is an operating railroad, it will be critical to consider just how the construction could be completed most efficiently as part of this task. Issues to be addressed are windows for construction, installing facilities (signals, crossovers and grade crossing warnings) for reverse running, temporary station closures, weekend shutdowns (with replacement bus service), etc.

An important part of the preliminary engineering would be to evaluate construction planning to determine whether the construction staging supports making additional upgrades at the same time. The idea is that while the track on a segment was being upgraded other elements that need upgrading (perhaps not so critically) in the same area would be improved. This would enable the work to be done efficiently and provide our customers with a finished product in the improvement area to make-up for any service disruption caused during construction.

This process would be completed for the immediate and near-term phase improvements. Engineering for longer term projects would be completed as their implementation date neared.

Task Management

Work on this task will be managed by the JPB's Engineering Department with input from the Rail Services Department. It will be completed by the JPB's consultants.

Task Schedule

Task 1.4 will be completed during the second half of 1998. A schedule for completing preliminary engineering on a project by project basis will be developed following adoption of the phasing plan by the JPB.

Work Breakdown Structure

Preliminary engineering will be completed for specific improvement projects or several projects that are grouped together for some reason (same type of project, same area, etc...).

Task 2: Feasibility Studies and Long Range Planning

The goal of Task 2 is to refine Caltrain's long-term vision and prepare a detailed implementation schedule for the specific capital improvements necessary to achieve that vision. This will be accomplished by evaluating a series of different options for long-term implementation including electrification, new vehicle technology and standard railroad improvements. The evaluation will include analysis of the impacts of these concepts on plans for high speed rail service and continued freight service along the Caltrain corridor.

A starting point for defining the improvement options to be studied in Task 2 will be the following recently completed Caltrain studies:

- **Caltrain Electrification Study (1992);**
- **Caltrain Market Demand Study (1996);**
- **Caltrain 20-Year Strategic Plan (1997);**
- **Caltrain Downtown San Francisco Extension DEIS/DEIR (1997); and**
- **Operation Simulation Study (to be completed in December 1997).**

This task will be separated into the following six subtasks:

- 2.1 Electrification Analysis;
- 2.2 Vehicle Design and Technology Analysis;
- 2.3 Standard Railroad Improvements Analysis;
- 2.4 Caltrain Service Planning and Financing Assumptions;
- 2.5 Evaluation and Adoption of Long-Term Strategies; and
- 2.6 Implementation Planning.

The first three sub-tasks consist of clearly defining the potential improvements and preparing a summary evaluation of them. This evaluation would include assessing technical and institutional feasibility, evaluating capital and operating costs, considering how they would interact, and identifying their benefits (e.g. ridership growth, improved transit coordination, travel time reductions, etc.). The fourth sub-task consists of developing long-term Caltrain operating concepts and financing assumptions. The first four sub-tasks would be completed concurrently.

The fifth sub-task consists of evaluating long-term options for Caltrain and selecting a preferred option. This will be the most critical and controversial sub-task as it is where individual improvement projects will be compared to one another and evaluated in greater detail. The preferred option might be a combination of elements considered in each of the first three sub-tasks. The final sub-task consists of developing a plan for implementing the preferred option.

The goal is to complete Task 2 by Spring, 1998. This would enable the Caltrain improvements to be included in the 1998 Regional Transportation Plan.

A critical part of this task will be developing a year-by-year funding plan for implementing the preferred long-term option. It is anticipated that capital improvements identified in Task 2 will be implemented as part of Caltrain's on-going capital projects when possible, and with resources previously set aside for the downtown SF extension project in Metropolitan Transportation Commission (MTC) Resolution 1876.

Because of the strong interest in these projects, significant public input opportunities are planned through a series of public workshops on the improvements. The six sub-tasks are presented in more detail below.

Task 2.1 Electrification Analysis

Caltrain has considered electrification in several recently completed studies. In Task 2.1, results of these studies will be summarized and reviewed. The goal will be to provide a complete analysis of the costs (operating and capital), physical improvements, rolling stock options (to be developed as part of Task 2.2), benefits and environmental considerations of electrification.

Task Management

Task 2.1 will be completed by ICF Kaiser/DeLeuw Cather (follow-up on analysis included in Caltrain Downtown Extension Locomotive Propulsion Technology report). The work will be supervised by JPB staff with input on the on critical issues to be considered from the SCC.

Task Schedule

Task 2.1 should be completed by April 1, 1998.

Work Breakdown Structure

J1: Identify Electrification Issues

The SCC will develop a detailed list of issues to be considered in electrification.

J2: Develop Electrification Issues Paper

ICF Kaiser/DeLeuw Cather will summarize existing electrification concepts and fill-in knowledge gaps to address all issues identified by the SCC. Documents to be included in the analysis are: 1992 Caltrain Electrification Study, 1997 Caltrain Downtown Extension Study Locomotive Propulsion Analysis and Los Angeles Metrolink Electrification Analysis.

J3: Review and Revise Electrification Issues Paper

The SCC will review technical information on electrification and request clarification when necessary. ICF Kaiser/DeLeuw Cather will revise the working paper as necessary.

Task 2.2 Vehicle Design and Technology Analysis

An important part of long range planning for Caltrain is determining what type of vehicle or combination of vehicle types will operated on the right of way. In recent years there has been a significant amount of interest in development of hybrid rail vehicle technology options. This has been especially true in terms of diesel and electric multiple unit (DMU, EMU) vehicles. Also there are changes that could be made to the existing vehicles to improve their efficiency and passenger convenience.

In Task 2.2, new types of vehicle technologies and vehicle design issues will be evaluated for their potential application on Caltrain. The goal will be to obtain information and evaluate these ideas with the objective of developing an approach to improving system connectivity that could be implemented. It is anticipated that this will be an iterative process with the SCC in which technical, regulatory and system compatibility questions are addressed at increasingly detailed levels.

Task Management

Task 2.2 will be completed by Booz Allan (as a subconsultant to the JPB's General Engineering Contractor STV). The work will be supervised by JPB staff with input on the on critical issues to be considered from the SCC.

Task Schedule

Task 2.2 should be completed by April 1, 1998.

Work Breakdown Structure

K1: Brainstorm Vehicle Design and Technology Options

The SCC will hold a brainstorming session to consider various types of vehicle design and technology options for use on the Caltrain right of way. The meeting result will be a specific list of technology options that will serve as a starting point for the analysis.

K2: Develop Vehicle Design and Technology Issues Paper

The JPB's technical consultants will develop an issues paper describing systems level issues regarding vehicle design and technology options. Systems level issues include such things as physical compatibility, institutional issues, operating characteristics, costs (operating and capital), major infrastructure changes, impacts on station design (e.g. high platforms), fare collection, etc.

K3: Review and Revise Vehicle Technology Issues Paper

The SCC will review the issues paper and request clarification when necessary. The consultant team will revise the report.

Task 2.3 Standard Railroad Improvement Analysis

Several previous studies have identified a series of standard railroad improvements that could be made to the Caltrain system that could lead to significant improvement in service. For example, high level platforms would speed boarding and alighting. In Task 2.3, potential standard railroad improvements will be evaluated for their potential application at Caltrain.

Task Management

Task 2.3 will be completed by STV. The work will be supervised by JPB staff with input on the on critical issues to be considered from the SCC.

Task Schedule

Task 2.3 should be completed by April 1, 1998.

Work Breakdown Structure

M1: Brainstorm Standard Railroad Improvement Options

The SCC will hold a brainstorming session to consider various types of standard railroad improvements for implementation at Caltrain. The meeting result will be a specific list of improvements that will serve as a starting point for the analysis.

M2: Develop Standard Railroad Improvement Options Issues Paper

STV will develop an issues paper describing systems level issues regarding standard railroad improvement options identified by the SCC in their brainstorming. Systems level issues include such things as physical compatibility, institutional issues, operating characteristics, costs (operating and capital), major infrastructure changes, etc.

K3: Review and Revise Standard Railroad Improvement Options Issues Paper

The SCC will review the issues paper and request clarification when necessary. The consultant team will revise the report.

Task 2.4 Caltrain Service Planning and Financial Assumptions

In Task 2.4 long-term Caltrain service planning and financial assumptions will be identified and refined. This task will simply be an extension of Task 1.2 were short-term service planning and financial assumptions were identified. Due to the longer term nature of Task 2.4, more significant changes to Caltrain's service patterns and schedule assumptions will be considered.

Caltrain staff will work closely with MTC staff, San Mateo County Transportation Agency and Valley Transportation Authority to develop estimates of year-by-year funding availability. A starting point for this task will be analysis completed as part of Caltrain's recently completed Capital Improvement Program and the Downtown Extension Study.

Caltrain's SCC will develop recommendations on service patterns and scheduling improvements. Specific attention will be given to longer-term rail connections with Caltrain including Millbrae BART/Caltrain station and improved commuter rail service in the San Jose area. An important consideration in this task is what type of services could be operated on both Caltrain and other operators' tracks.

Task Management

Task 2.4 will be completed by staff members from the JPB, partner agencies and other interested agencies with limited technical assistance and input from the overall study consultants.

Task Schedule

Task 2.4 will be completed in parallel with Tasks 2.1, 2.2 and 2.3. It should be completed by April 1, 1998.

Work Breakdown Structure

N1: Develop Long-Term Financial Assumptions

JPB and MTC staff will develop a year-by-year financial capacity analysis for years 6 through 20. The SCC will review and approve the assumptions.

N2: Develop Long-Term Caltrain Service Planning Assumptions

The SCC will hold a series of meetings to develop long-term service planning assumptions for Caltrain.

Task 2.5 Evaluation and Adoption of Long-Term Strategies

Task 2.5 is the most interesting and controversial task in the study. It consists of evaluating various different types of improvement strategies and adopting a long-term strategy for Caltrain.

This task will be completed in a series of steps. First, the SCC will consider information developed in the first four sub-tasks and prepare a summary comparison of the improvement options. This comparison will likely have several iterations. As part of the summary comparison the improvement options will be evaluated using the criteria developed as part of Task 1.3 and long-term operating and scenarios and financial assumptions developed as part of Task 2.4.

Next, the improvement options would be presented to the public in a workshop format. The objective of this workshop would not be to simply solicit testimony. Instead, members of the public could break-up into small groups to discuss particular options with members of the technical staff. These discussions would be two-way information sharing designed to inform the public as well as solicit new ideas from them.

Following the public workshop, the SCC would refine the improvement options and potentially hold another public workshop. The final step in the process would be for the JPB to adopt a long-term improvement strategy.

A key aspect of Task 2.5 is to develop an improvement program that fits within Caltrain's anticipated financial constraints. The current financial assumptions are that Caltrain will receive approximately \$109 million (1986 dollars) in Federal Rail Modernization funds, approximately \$132 million (1995 dollars) in funds from the San Mateo County Transportation Authority, approximately \$50 million (1997 dollars) from Santa Clara County's 1996 sales tax measure (these funds would be spent on improvement projects within Santa Clara County) and a limited amount of regional transportation plan funding from the member agencies

Task Management

Task 2.5 will be completed by staff members from the JPB, partner agencies and other interested agencies with technical assistance and input from the overall study consultants.

Task Schedule

Task 2.5 will be completed following Tasks 2.1, 2.2, 2.3 and 2.4. It should be completed by June 1, 1998.

Work Breakdown Structure

O1: Develop Summary Comparison of Long-Term Improvement Options

The SCC will work closely with the study consultants to complete this step. The first step in this task is to combine potential improvements identified in the areas of electrification, rolling stock and railroad improvements from Tasks 2.1, 2.2 and 2.3 into logical packages

of improvements. These packages would be evaluated by the SCC from technical, financial and institutional perspective using the criteria developed in Task 1.3 in an iterative process.

As part of these packages specific technologies would be linked to specific right of ways. For example, a package could be: light rail vehicles operated on the Caltrain right of way between San Francisco and San Francisco Airport by creating passing tracks for Caltrain at specified locations and dedicating one mainline Caltrain track to light rail vehicles during specified operating hours. Part of the evaluation would consider the potential for implementation given fiscal and institutional constraints.

Following completion of the iterative process, a summary comparison would be developed for public presentation. This summary would be designed to be accessible to the public and clearly outline the costs, benefits and policy issues surrounding various improvement options.

O2: Public Workshop

The second step in this task is a public workshop to discuss the improvement options. As outlined above, these workshops would not be formally structured hearings, but instead would be opportunities for interested members of the public to discuss ideas in the improvement options, ask detailed questions (and get detailed responses) and provide additional ideas. The workshops would be designed to be two-way information sharing with immediate feedback.

O3: Refine Long-Term Options and Develop Recommendations

Using input from the public workshop the SCC would refine the long-term option comparison and develop a recommended long-term strategy for the JPB to adopt. Depending on the results of the first public workshop, a second workshop could be scheduled to discuss refinements and recommendations.

O4: Adopt Long-Term Caltrain Improvement Plan

The final step in this task would be to present a recommended improvement program to the JPB for approval and adoption. This program will serve as a piece of Caltrain's long-term strategic plan. As a part of the strategic plan it should be re-evaluated on a regular basis.

Task 2.6 Implementation Planning

Task 2.6 consists of developing an implementation plan for Caltrain's long-term improvement program. The key element of this task is blending the results of Caltrain's short range improvements (developed in Task 1) with the longer range options (Task 2).

The goal of Task 2.6 will be to develop a 20+ year capital improvement program for Caltrain. Staff will work very closely with the consultant team to insure that the program structure developed in this task can be easily utilized by Caltrain's planning, capital budgeting and engineering departments to simplify and expedite the capital improvement implementation process.

The capital improvement program will vary in level of detail from very detailed in the near-term years to less detailed in the later term.

Task Management

Task 2.6 will be completed by staff members from the JPB, partner agencies and other interested agencies with limited technical assistance and input from the overall study consultants.

Task Schedule

Task 2.6 will be completed following Task 2.5. It should be completed by September 1, 1998.

Work Breakdown Structure

P1: Develop Long-Term Implementation Program

The JPB staff and SCC will develop the long-term implementation program with limited assistance from technical consultants.

P2: Adopt Long-Term Implementation Program

The JPB will adopt the long-term implementation program as the new Capital Improvement Program.