

AUBURN-OAKLAND REGIONAL RAIL SERVICE

SERVICE CONCEPT AND IMPLEMENTATION PLAN

FINAL REPORT

Prepared for the

**Contra Costa Transportation Authority
Placer County Transportation Planning Agency
Sacramento Regional Transit District
Solano Transportation Authority
Yolo County Transportation District**

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PROJECT WORKING PAPERS (Separate Volume)

- Working Paper 1 – Preliminary Operations Concept**
- Working Paper 2 – Community Outreach Plan**
- Working Paper 3 – Vehicle Alternatives**
- Working Paper 4 – Dixon & Bowman Layover Facilities**
- Working Paper 5 – 2005 Ridership Forecast**
- Working Paper 6 – Baseline Funding Assessment**
- Working Paper 7 – Local Cost Allocation – Alternate Metrics**
- Working Paper 8 – Cost Allocation – Survey of Experience**
- Working Paper 9 – Updated Ridership**
- Working Paper 10 – Institutional Options**

- Technical Memorandum A – Alternatives Analysis**
- Technical Memorandum B – Capital Cost Details**
- Technical Memorandum C – Trackwork Improvement Schematics**

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EXECUTIVE SUMMARY

Background, Purpose, and Scope

This report documents a conceptual service plan and implementation strategy for provision of new regional rail (commuter) service in the urban corridor extending from Auburn to Oakland, California. The new service would augment existing Capitol Corridor intercity service by providing additional peak period capacity within the greater Sacramento urban area and between Sacramento and the Bay Area. The two services (Capitol Corridor and Regional Rail) would utilize the same equipment, staff, and fare structure, and thus would appear fully unified to the riding public.

Planning for the service is being spearheaded by a task force headed by agencies representing the five counties through which Regional Rail service would operate (Placer, Sacramento, Yolo, Solano, and Contra Costa, collectively, the “Project Sponsors”), plus the Capitol Corridor Joint Powers Authority (CCJPA), the Bay Area Rapid Transit District (BART), the Union Pacific Railroad (UP), Caltrans, and representatives of interested communities in the corridor.

Preparation of the Regional Rail Service Concept and Implementation Plan included the following tasks:

1. Definition of conceptual operating plans and costs;
2. Definition of improvements to mitigate adverse effect on existing UP and CCJPA service;
3. Estimation of costs for trackwork, systems, rolling stock, other capital investment needs;
4. Review of current funding availability and definition of a conceptual funding strategy;
5. Development of a phased implementation plan in order to match available funding;
6. Estimation of Regional Rail ridership;
7. Evaluation of alternative institutional and local cost-sharing arrangements; and
8. Development of an implementation/action plan for near-term and long-term objectives.

The results of these tasks are documented in this Final Report and collected working papers.

Service Concept and Operating Cost

A “base” Regional Rail service plan (timetable) has been developed that provides for five (5) new weekday round-trip trains, serving 19 stations between Bowman (five miles east of Auburn) and Oakland. When mixed with the Capitol Corridor trains, 30-minute intervals (headways) are provided during peak periods in both directions. By intent, Regional Rail equipment, staff, and fares will match those of the Capitol Corridor service, and thus both services will appear as a single, unified operation to the riding public.

The total cost of operating and maintaining the Regional Rail service will be approximately \$15.5 million annually (in 2004 dollars), including fees paid to the Union Pacific and Amtrak, vehicle and station maintenance, and administrative expenses.

Capital Requirements and Costs

Capital improvements necessary to initiate Regional Rail operations will include:

- Trackwork and Signals. Eight improvement projects have been identified to mitigate increased congestion arising from the introduction of new Regional Rail service in the corridor.
- Rolling Stock. The Regional Rail service will require six trainsets of equipment, equivalent to six locomotives and 30 coaches of various types.
- Maintenance Facilities and Other Systemwide Improvements. New and expanded maintenance/-layover capabilities will be located at (1) the existing Amtrak Oakland maintenance facility, (2) the new Bowman station, and a location east of Sacramento to be determined.
- Stations and Parking. The Regional Rail service plan calls for new stations at Bowman, Antelope, Swanston, West Sacramento, and Benicia, including addition of up to 750 new parking spaces.

The costs associated with these investments are (in 2004 dollars):

Trackwork and Systems	\$124,400,000
Rolling Stock	97,300,000
Maintenance Facilities	61,900,000
Stations and Parking	<u>96,400,000</u>
TOTAL	\$379,900,000

Funding Needs and Strategies

Federal decisions on funding applicable to the Regional Rail service are expected to be embodied in the pending transportation reauthorization (SAFETEA-LU). Identifying one or more Congressional sponsors for Regional Rail project funding should be a top funding priority of the Project Sponsors.

The current state budget condition makes it highly unlikely that new State Transportation Improvement Program (STIP) funds will be available in the 2006 cycle. This means that the next opportunity for programming STIP funds may be the 2008 cycle, when money might be available for the 2011/12 and 2012/13 fiscal years. Programming the next cycle of Regional TIP and Congestion Mitigation and Air Quality (CMAQ) funds through SAFETEA-LU is the next best opportunity to secure new funds for starting up Regional Rail service.

In total, the proposed allocation of project capital funding responsibility is:

Federal Discretionary	-	37%
State Discretionary	-	6%
CCJPA (Share of Maintenance Facilities)	-	4%
Locally-Controlled Funds (Including Federal and State Formula Grants)	-	53%

Funding for Regional Rail service start-up should comprise a mix of sources, customized for each Project Sponsor. After developing a five-year estimate of total project costs, the sponsoring agencies should allocate the total costs among themselves according to an agreed distribution formula or policy. A funding plan, with a unique element for each Project Sponsor, should be based on each sponsor's ability to obtain funds from the various fund sources.

Several possible methods for equitably allocating responsibility for locally-controlled funding among the five Project Sponsors ("cost-sharing") were explored and discussed by the Project Sponsors, leading to the following conclusions:

1. Allocation of funding responsibility among Project Sponsors should be based on the sum of population and employment by county – based on whole counties or on as-yet undefined subareas – for both (1) capital outlay and (2) ongoing operations and maintenance subsidy.
2. In order to encourage actions designed to maximize ridership, a "credit" against a Sponsor's operations and maintenance subsidy requirement should be calculated as the share of total fare revenue attributable to passengers boarding at stations located within the Sponsor's jurisdiction.

At present, the question of using whole counties versus partial counties (subareas) to calculate shares remains open. An early goal of subsequent project development efforts will be to reach a consensus view on this subject.

Project Phasing

Given the significant capital cost associated with the overall Regional Rail service plan, as well as the likelihood that funding from all sources will take some time to assemble, a three-phase implementation plan has been developed, with a first phase designed to take advantage of existing but unused Capitol Corridor operating "slots" between Oakland and Sacramento. The three phases, including their proposed opening dates and associated costs are as follows:

- Phase 1 (2010/\$67.8 million): The CCJPA currently has authority under its agreement with the Union Pacific (or will have by startup) to operate 18 daily round trips between those two cities, but at present is only utilizing 12 of the 18 slots due to a lack of funding to purchase needed additional rolling stock. The Regional Rail phasing strategy calls for Regional Rail sponsors to fund procurement of new rolling stock and cover the incremental cost of operating new Regional Rail service in the corridor. No track or systems improvements would be required, and no new stations would be funded outside of those already in progress at Fairfield/Vacaville and Hercules.
- Phase 2 (2015/\$232.0 million): To go beyond the 18-train limit, the second phase of activity will include major trackwork and signal projects to provide additional capacity and mitigate congestion in the corridor, purchase of additional rolling stock, construction of new and expanded maintenance facilities, and addition of one new station now under development at Dixon. A new agreement between Regional Rail sponsors and the Union Pacific Railroad will be required.
- Phase 3 (2020/\$80.1 million): The third and final phase will see construction of five (5) new stations, four with parking, plus improvements at three other stations.

Ridership Forecast

Forecasts of Regional Rail ridership are based on five principal considerations:

1. Growth in actual Capitol Corridor ridership to date;
2. New Regional Rail service *and* increased Capitol Corridor service;
3. New stations and parking, and improved transit connectivity throughout the corridor;
4. Anticipated population and employment growth; and
5. Expected increase in congestion on parallel routes and modes (especially I-80).

The forecasts also reflect the understanding that adding Regional Rail service to the Capitol Corridor will not only add ridership on Regional Rail trains, but will also increase ridership on Capitol Corridor trains due to the overall reduction in peak period headways. (Choice riders become more committed when they have more flexible schedule options.)

Estimated weekday and annual boardings by project phase are as follows:

**Auburn-Oakland Regional Rail Service
Estimated Weekday Boardings**

	Phase 1 (2010)	Phase 2 (2015)	Phase 3 (2020)
Daily			
Capitol Corridor	4,688	5,462	5,894
Regional Rail	972	2,883	6,908
Combined	5,660	8,345	12,802
Annual			
Capitol Corridor	1,500,160	1,747,840	1,886,080
Regional Rail	247,860	735,165	1,761,540
Combined	1,748,020	2,483,005	3,647,620

It is notable that, given six additional weekday round trips between Sacramento and Oakland in 2010, combined Regional Rail/Capitol Corridor annual ridership is projected to more than double current Capitol Corridor weekday ridership between those two cities. Increases to 2.48 million by 2015 and 3.65 million by 2020 represent further growth of 41 percent and 47 percent, respectively. While these rates may appear aggressive, the Capitol Corridor actually experiences this level of growth during two consecutive years (2000 and 2001).

Institutional Structure

Detailed options for institutional structure were evaluated for their potential applicability to the Regional Rail service, based in part on a survey of approaches used by other agencies. Of the structures surveyed, most involved the institution of a new agency or amendment to the charter of an existing agency such as the CCJPA. It was concluded that the functions invested in a new structure would largely duplicate those already invested in the CCJPA, an agency in which Regional Rail service sponsoring agencies are already represented. Thus, project sponsors agreed to explore the feasibility of modifying the existing

CCJPA agreement to permit that agency to assume responsibility for the proposed new Regional Rail service.¹ Failing this, a new JPA should be created.

In addition, project sponsors expressed a consensus view regarding the following supporting arrangements:

- That CCJPA staff be tasked to manage and operate the service, given the proposed “seamless” integration of the Capitol Corridor and Regional Rail services, and also given the Union Pacific’s strongly stated preference for a “single passenger operator” in the corridor.
- That actual operating responsibility will be contracted to Amtrak until such time that the CCJPA itself makes a change in operating contractor for the Capitol Corridor service.
- That the Sacramento Regional Transit District be the primary conduit for seeking funding support from the Federal Transit Administration.

Implementation Plan

Implementation of Regional Rail service in the Auburn-Oakland corridor will require that all principal project sponsors and stakeholders maintain and increase their coordinated efforts to:

1. Negotiate and execute agreements among project sponsors and stakeholders necessary to establish appropriate authority and institutional structures to guide and support project development functions, including funding, planning, design, procurement, and operations;
2. Secure necessary federal, state, and locally-controlled funding;
3. Negotiate and execute an agreement with the Union Pacific Railroad to permit operation of Regional Rail passenger service in the Auburn-Oakland corridor above that now allowed under the existing CCJPA/UP contract; and
4. Organize and mount a major outreach program to federal, state, and local elected officials in support of activities in Items 2 and 3.

Additional detailed recommendations for near-term and long-term activities are provided in Section 10.0 of this report.

¹ The CCJPA Board has, in fact, already agreed to provide these management functions with funding provided by Regional Rail sponsors, all of whom are also members of the CCJPA.

1.0 INTRODUCTION

This report documents a conceptual service plan and implementation strategy for provision of new regional rail (commuter) service in the urban corridor extending from Auburn to Oakland, California (see Figure 1.1, below). The new Regional Rail service would augment existing Capitol Corridor intercity service now operating between Auburn and San Jose by providing additional peak period capacity for two growing travel markets: (1) within the greater Sacramento urban area and (2) between Sacramento and the Bay Area. The two services (Capitol Corridor and Regional Rail), though differing in terms of funding sources and operating agreements with the Union Pacific Railroad (owner of the rail mainline on which the Regional Rail service would operate), would utilize the same equipment, staff, and fare structure, and thus would appear fully unified to the riding public.

Planning for the service is being spearheaded by a task force headed by agencies representing the five counties through which service would operate (from east to west):

- Placer County Transportation Agency
- Sacramento Regional Transit District
- Yolo County Transportation Authority
- Solano Transportation Authority
- Contra Costa Transportation Authority

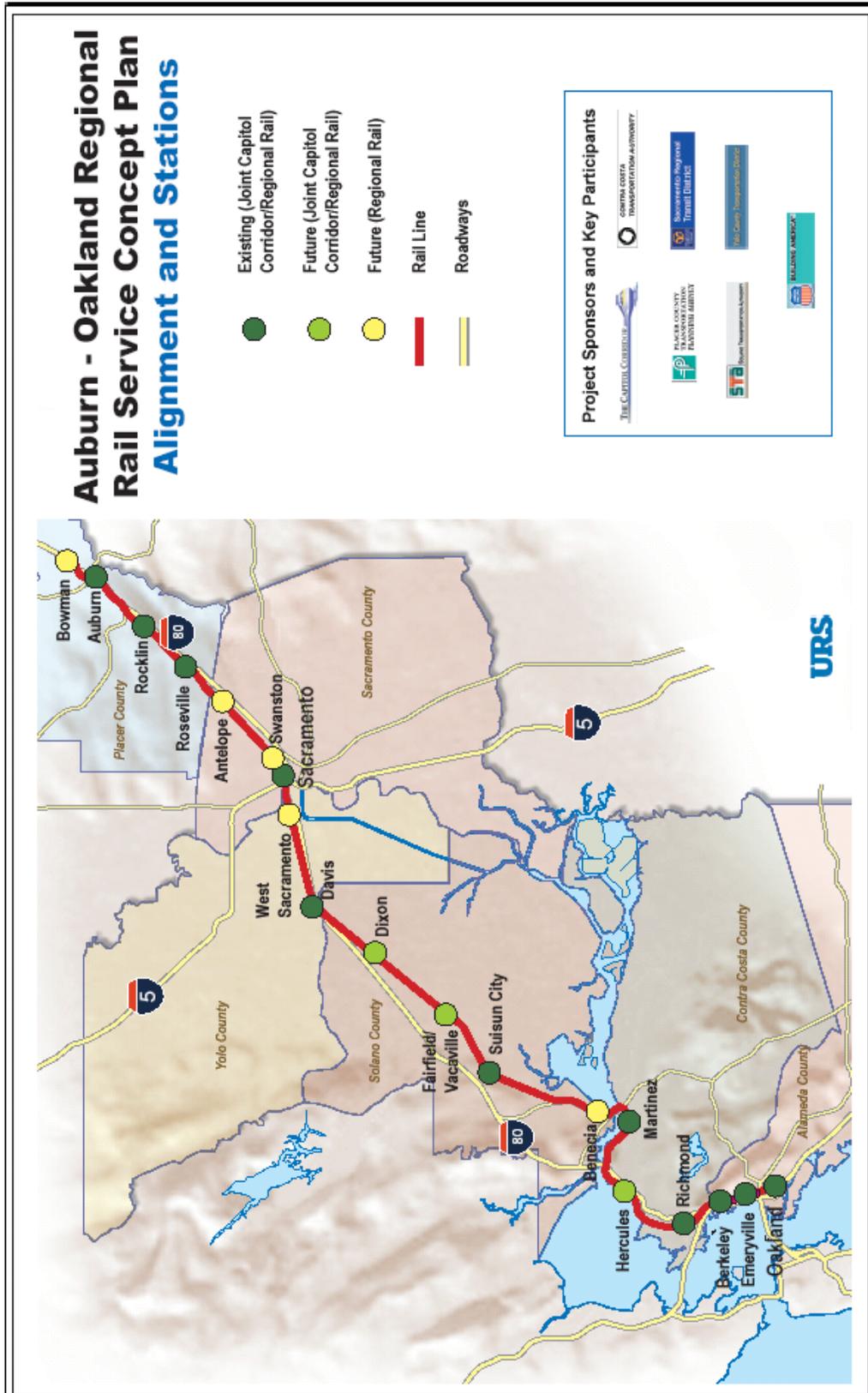
The task force also includes important participation by the Capitol Corridor Joint Powers Authority (CCJPA, operator of the Capitol Corridor service), the Bay Area Rapid Transit District (BART), the Union Pacific Railroad (UP), Caltrans, and representatives of interested communities in the corridor.

Analysis supporting the Regional Rail Service Concept and Implementation Plan documented in this report has included the following tasks:

1. Definition of conceptual operating plans (timetables) and associated costs;
2. Assessment of impacts on existing UP freight and Capitol Corridor passenger service and definition of track and other improvements designed to mitigate adverse effects;
3. Estimation of costs for trackwork, systems, rolling stock, other capital investment needs;
4. Review of current funding availability and definition of a conceptual funding strategy;
5. Development of a phased implementation plan in order to match available funding;
6. Estimation of Regional Rail service travel demand (ridership);
7. Evaluation of alternative institutional and local cost-sharing arrangements for Regional Rail operations and funding; and
8. Development of an implementation/action plan for near-term and long-term objectives.

This report is organized to generally follow the flow of work just described, beginning with, in Chapter 2.0, (1) a more detailed description of the proposed Regional Rail service in the context of existing passenger and freight service in the Auburn-Oakland corridor, and (2) a brief history of its evolution during the course of this study. Finally, ten working papers and three technical memoranda produced during the course of the study are compiled in a separate Appendix document.

FIGURE 1.1



2.0 PROJECT OVERVIEW

2.1 Location and Context

The factors influencing the proposed development of regional rail service in this corridor may be considered in two broad categories: (1) changes in the transportation environment, and (2) the rebirth of corridor rail service between the greater metropolitan Sacramento region and the Bay Area.

The most important characteristic in the overall transportation environment is the strong population growth of communities lying along Interstate 80, growth that is most striking east of the Carquinez Strait. As most of this growth has occurred in the last three decades, it has taken place in the period in which development is oriented to the automobile, so that work trips and non-work trips alike, even if short, must be made on the street and highway system. Despite the dispersed nature of the suburban trip patterns, and the flexibility of the automobile, trips still tend to concentrate themselves on major arteries, a phenomenon well documented in studies of “suburban gridlock.” I-80, like all freeways, performs best when the least demands are placed on it, but at hours when the requirement for public mobility is at its height, the inherent weakness of excessive reliance on the automobile system is all too apparent. I-80 is now congested for long periods of the day.

The high cost of housing in the Bay Area has reinforced urban development in this corridor, but it would be a mistake to think of Solano County as primarily a source of housing for people who work in central Bay Area jobs. Many work trips remain inside Solano County, but of those that are exported to other counties, a surprisingly large and growing percentage head east to Yolo and Sacramento counties rather than west to Alameda and San Francisco Counties. Superimpose on these work trips the even more numerous trips being made for other purposes, and the result is a large all-day volume of heavy traffic in both directions on I-80.

In response to these trends, the rail service reintroduced to serve this travel market has been a phenomenal success. Through the 1930s there were two competing passenger rail services between Sacramento and the Bay Area, but with the emphasis on highway modes of transportation this “local” service had died out by about 1960, leaving only a few long-distance trains, and bus service. Studies of corridor needs in the late 1980s highlighted the viability of non-automobile transportation alternatives in this corridor. Shortly thereafter, citizen initiative in the form of Proposition 116 in 1990 put funds at the disposal of the state to re-introduce Sacramento-Bay Area rail passenger service after a lapse of thirty years. The service began under Caltrans jurisdiction in 1991, and in 1998 was placed under local administrative management through creation of a Joint Powers Authority, a partnership of six major transit agencies along the line. Ridership has nearly tripled over the last six years, and is currently approaching 1.3 million annually (2004), making it the third most traveled in the Amtrak system.

2.2 Project History and Evolution

The Auburn-Oakland Regional Rail Service study is the result of a merger of two earlier study efforts: the Auburn-Dixon Regional Rail Service Implementation Plan, begun in 2002, and the I-80 Rail Feasibility Study of 2002-2003. Both were undertaken in light of the considerable success and public popularity of the Capitol Corridor intercity service.

The Auburn-Dixon study was undertaken to evaluate measures that could be taken to bring about early implementation of a rail service focused on Downtown Sacramento, and connecting it with the I-80 Corridor to the Northeast (Roseville and Auburn) and to the west (Richmond and Oakland). The I-80 Contra Costa-Solano corridor study evaluated a number of possible rail options connecting the Richmond BART station with the communities of Western Contra Costa County, South Solano County (Vallejo), and East-Central Solano County (Suisun-Fairfield-Vacaville). While South Solano options were left for further evaluation, the conclusions included a recommendation to move forward with short-term improvements in Capitol Corridor service, and to participate in a follow-up regional rail study with other Capitol Corridor counties. This Auburn-Oakland study is the composite result.

The study has an important private sector dimension in the form of the Union Pacific Railroad. In common with other studies of the potential for publicly-sponsored passenger trains running on privately-owned freight railroad tracks, the underlying principle governing the purchase-of-access for passenger trains is that the sponsoring entity, usually the state, must pay for capacity improvements to the railroad's physical plant (track, signals, other infrastructure) that are the equivalent to or greater than the capacity used by the passenger train service. In general, if there are "easy" or relatively inexpensive capacity improvement alternatives, as well as higher cost alternatives, and if the railroad also forecasts freight growth, the public sector may be asked to pay for a share of the more expensive set of alternatives, even though their utility may not be demonstrated for some years.

The mechanism by which the efficacy of alternative sets of improvements is tested is a computerized capacity model of the railroad network. By agreement, the Union Pacific and the public agencies in Northern California involved in sponsoring or operating passenger trains jointly support application of such a model and the interpretation of its results by a mutually acceptable consulting firm, Washington Group. The present study, working through study participants, paid for Washington Group simulations and interpretation, and independently calculated the capital cost of improvement packages required to keep the railroad whole in matters of capacity. In the spring of 2004, the UP Railroad, for unrelated reasons, temporarily suspended this collaborative capacity modeling procedure for the corridor's most constrained segment east of Sacramento. The remaining cost estimation in this study has been based on work done up to that point, and an understanding of the railroad's operations gained through the course of the study. However, it has not yet been possible to achieve complete closure with the UP on all the capacity and physical improvement issues.

2.3 Service and Funding Philosophy

To fully understand the institutional nature of railroad passenger service in this corridor, two aspects of Amtrak operations should be understood. The first is that the rights given to Amtrak when it was created prohibited it from directly operating commuter trains. This was done to prevent Amtrak from becoming a federal funding source for certain commuter rail systems, the federal view being that commuter rail service is a form of regional transit service that should be the operational responsibility of local and regional government, although it would be eligible for transit capital grants just like other transit services. Amtrak later acquired the right to operate commuter service as a contractor to a state, regional, or local government entity, but that operation has to be fully funded by the non-federal governmental entity in order to prevent a federal subsidy to the commuter operation. Amtrak competes for these commuter rail contracts on a commercial basis, and if the operation is on the tracks of a freight

railroad, its favorable intercity access rate does not apply. The distinction between commuter trains and intercity trains is therefore an important one.

Further, a national intercity route structure was designated for Amtrak upon its formation. However, in the west, the route structure was fairly limited, and what we now know as the Capitol Corridor service was not part of the basic Amtrak system at the time it went into operation in 1971. The only service linking Sacramento to the Bay Area in the original Amtrak system was one tri-weekly long-distance train, now called the “California Zephyr,” which operates daily between Chicago and the Bay Area. However, from the beginning, it was foreseen that some states would want on their own initiative to sponsor additional intercity service, so the Amtrak act had a provision permitting that to happen as an augmentation of the Amtrak system. This has been the basis for sponsorship by the State of California of three passenger corridors that have been a great success – the San Diegans (now known as the Pacific Surfliners), the San Joaquin Corridor, and the Capitol Corridor. All three are intercity corridors, and operated under Amtrak’s authority and rights to run intercity trains.

In all three California cases, public funds have been applied to making capacity improvements on the railroads. On the Los Angeles-San Diego line, separate commuter agencies oversee commuter rail service with contract operators between Oceanside and San Diego and between Oceanside, Los Angeles, and San Luis Obispo. There, the railroad corridor is largely in public ownership, so that the capital programs to create capacity were largely a collaborative and ongoing effort of owner-operators. Under a recent policy innovation, the “Rail 2 Rail” program, a mutual cross honoring of some types of tickets is now permitted between Amtrak trains and commuter trains between common station pairs.

For the Capitol Corridor, a different approach is proposed. All current Capitol Corridor trains are intercity trains, despite the fact that some of them display obvious commuter train characteristics. Nonetheless, they are operated under Amtrak intercity authority, with access to Union Pacific track governed by an agreement that traded capital investment in the railroad for a number of trains per day operated during certain time periods of the day. The initial Caltrans/SP agreement provided for 20 daily trains in each direction (Oakland-Sacramento), a number that has been increased to 22 in exchange for the public investment in double-tracking the Yolo Causeway.¹ Currently, 12 of the available passenger train “slots” are used by the Capitol Corridor, with limitations of equipment and operating funds being the reason that further service expansion has not yet occurred.²

As a result of the merger of studies described above, the Regional Rail trains called for in this study have a route that completely overlays the “intercity” Capitol Corridor. They would be operated as a part of the existing Capitol Corridor system, with a single, combined management and uniform fleet of rolling stock. While the public would see this as a comprehensive service strategy with frequent all-day trains, in fact, distinctions would be made. For accounting and cost allocation purposes, certain trains would be designated internally as Regional Rail trains, and they would presumably be charged a different access fee by the UP, with a common operator (currently Amtrak) under a separate contract and a separately defined cost level.

¹ The Caltrans/SP agreement was retained as part of that railroad’s acquisition by the Union Pacific in the mid-1990s.

² It should be noted that Caltrans Division of Rail currently makes use of four of the 22 available slots between Martinez and Oakland for the San Joaquin service, leaving six available slots at this time.

3.0 REGIONAL RAIL SERVICE CONCEPT AND OPERATING COST

3.1 Summary

A “base” Regional Rail service plan (timetable) – one designed to accommodate and complement planned Capitol Corridor service of 18 daily roundtrips – has been developed that provides for five (5) new weekday round-trip trains, serving 19 stations between and including Bowman and Oakland. This base service timetable is shown in Figure 3.1 on page 9 below.

The principal organizing concept of the base service plan is that five new trains will depart Bowman and five will depart Oakland each weekday. When mixed with the Capitol Corridor trains, 30-minute intervals (headways) are provided during peak periods in both directions. By intent, Regional Rail equipment, staff, and fares will match those of the Capitol Corridor service, and thus both services will appear as a single, unified operation to the riding public, thereby maximizing public convenience (and ridership) and operational and cost efficiencies.

The gross cost of operating and maintaining the new Regional Rail service in this program is estimated to be approximately \$15.5 million annually, including fees to the Union Pacific and Amtrak, vehicle and station maintenance, and administrative expenses. More detail can be found in Section 3.5, below.

3.2 Service Objectives

As noted in Chapter 2.0, above, the proposed Regional Rail service concept is a comprehensive approach to meeting mobility needs in two regions served by the 170-mile Capitol Corridor: Metropolitan Sacramento and the Bay Area.

3.2.1 Sacramento Metropolitan Area

In the Sacramento Metropolitan Area, a regional light rail system performs the role of main transit trunk service in principal regional corridors. Looking to the future development of that system, the “Multi-Corridor Study,” undertaken in the late 1990s, evaluated modes for these corridors and prioritized light rail development. One outcome of the study was a conclusion that a “regional rail” overlay on the Capitol Corridor intercity service to link Downtown Sacramento with Placer and Yolo Counties could be the most cost-effective way to implement higher capacity rail connections in the I-80 Corridor, while light rail development was being pursued elsewhere in the Sacramento region. As Solano County’s role as an overlapping commuter shed came to be better understood, the extension of regional rail west of Davis to Oakland was added to the list of aspects of the regional rail service to be considered.

3.2.2 San Francisco Bay Area

In the Bay Area, Contra Costa and Solano Counties collaborated with BART to evaluate rail options in the “Contra Costa-Solano I-80 Rail Feasibility Study,” completed in 2003. A key short-term recommendation was to pursue a Regional Rail increment to the Capitol Corridor intercity service – integrated with the Capitol Corridor operation as much as possible – in order to maximize customer travel options and convenience, as well as operational efficiencies.

3.2.3 Combined Analysis

In late 2003, with the approval of all concerned, the two evaluations were combined into a focused study of implementing a regional service increment on the intercity Capitol Corridor. In this way, rather than two separate regional rail projects on what is really a single corridor, the strategy would be to provide a single coordinated set of improvements (both service improvements and capital improvements) benefiting multiple trip-making purposes and multiple destinations. The overall objectives are:

- Provide improved mobility to the Sacramento and Bay Area regional cores from their respective commuter sheds;
- Provide access from multimodal passenger terminals and major park-and-ride stations along the Capitol Corridor to other major on-line destinations;
- Provide more attractive service linking the Sacramento and Bay Area cores to one another; and
- As an additional benefit, improve rail freight capacity efficiency on this heavily-used mainline.³

3.3 Alternatives Considered

3.3.1 Current Capitol Corridor Service

The current service pattern for Capitol Corridor intercity service provides for four peak period/peak direction trips running approximately an hour apart, and two reverse commute trips also running about an hour apart. Less frequent service is provided in both directions during off-peak hours and on weekends. As noted earlier, two segments of the service corridor were being evaluated simultaneously, in both cases planning to create a 30-minute aggregate headway by operating additional trains in between the intercity train's already providing 60-minute headway. These segments were Auburn-Sacramento-Dixon, and Fairfield/Vacaville-Richmond-Oakland.

3.3.2 Sacramento Metropolitan Service

In the case of the Auburn to Dixon service originally considered, the desire to provide an added regional increment of service resulted from an evaluation of regional alternatives in the I-80 Corridor, including light rail and express buses. The proposed regional trains, when combined with through Capitol Corridor intercity trains running the length of the corridor would, when fully developed, effectively result in a 30-minute headway in both directions during peak weekday mornings and afternoons. Maintenance and overnight layover facilities would be required in the Auburn area (potentially at Bowman, approximately five miles east of Auburn), and also west of Dixon. The regional trains would wait for their departure time off line, and then enter onto the line 30 minutes behind the preceding intercity trains, and 30 minutes ahead of the following intercity train. The Dixon layover arrangements would have been located and designed to facilitate this maneuver.

³ Further opportunity is present to “partner” with other entities (such as the Port of Oakland) to make further capacity and facility improvements that would benefit both freight and passenger service.

3.3.3 Solano to Oakland Service

The Solano-Richmond-Oakland service plan would have been similar in nature – that is, “splitting” a 60-minute intercity headway by inserting regional trains exactly in between them, producing 30-minute headways. In this case, the interest was primarily in operating in the peak direction only, providing a commute-headway access from Solano County stations, including a new station at Peabody Road (Fairfield/Vacaville), to BART at Richmond. Since there is no reasonable way to turn trains back at Richmond or to access service facilities, the regional trains would continue to Oakland, making the Berkeley and Emeryville stops in order to provide a regular and predictable service pattern and generating at least some additional ridership and revenue.

In effect, the pattern that would have resulted from these “parallel” studies, had they been implemented separately, would have been a 60-minute intercity headway throughout the corridor, with additional trains inserted in between them to provide and aggregate 30-minute west of Vacaville and east of Dixon. There would have been a station gap of about 15 miles between Vacaville and Dixon where the only trains would have been the through intercity Capitols. There would have been layover and servicing facilities at both Dixon for regional service to the east and at Vacaville for regional service to the west. There would clearly have been some question as to whether this chopped-up approach to service provision would have been in the best public interest.

Operationally speaking, the institutional “merging” of the studies also represents a decision to merge the regional trains, and run them through the length of the corridor. Not only does this make more sense operationally, it also simplifies the support infrastructure required for regional rail services, provides more through service between the Bay Area and Sacramento, and makes possible an overall, comprehensively designed and marketed service that is an expansion of one that has proven market acceptance and public popularity. Further study will confirm that this approach will attract the greatest level of use while garnering the benefit of many cost efficiencies.

3.4 Recommended/Preferred Regional Rail Service Structure

After extensive analysis of alternative service concepts that tested various combinations of numbers of Regional Rail trains, Capitol Corridor trains, and stations, a “Base” service timetable, designed to accommodate and complement the planned Capitol Corridor 18 daily roundtrip timetable, was developed that provides for five (5) new Regional Rail weekday trains, serving 19 stations between and including Bowman and Oakland. The Base service timetable is shown as Figure 3.1, below.

The principal organizing concept of the base service plan is that five Regional Rail trains will depart Bowman each day, and five trains will depart Oakland each day. When mixed with the Capitol Corridor trains, 30-minute intervals are provided during peak periods in both directions. As an example of the interchangeability of the Regional Rail and Capitol Corridor services, note that three of the five Regional Rail trains departing Bowman and Oakland in the morning are in fact Capitol Corridor intercity trains. However, three of the five trains that will then lay overnight at Bowman in fact arrive in the evening as Regional Rail trains. Thus, in this case, a train that arrives as “Regional Rail” leaves the next morning as a “Capitol Corridor” train. Again, it will make no difference to the riding public whether any given train is designated Regional Rail or Capitol Corridor; equipment, staff, and fares will be the same on both services.

FIGURE 3.1

JOINT CAPITOL CORRIDOR + REGIONAL RAIL SERVICE
"BASE" TIMETABLE
 WEEKDAYS: 16' CAP CORRIDOR / Sacramento-Oakland plus
 5 REGIONAL RAIL Auburn/Bowman - Sacramento - Oakland
 WEST/SOUTHBOUND

■ = CAPITOLS

■ = REGIONAL RAIL TRAINS

STATION	COMMUTE PERIOD										COMMUTE PERIOD									
	521	523	R1	525	R3	527	R5	529	531	533	537	539	541	543	545	547	R9	549	551	553
Bowman Dep				5:25	5:55	6:25	7:05	7:35												
Auburn Dep				5:35	6:05	6:35	7:05	7:35												
Rocklin Dep				5:55	6:25	6:55	7:25	7:55												
Roseville Dep				6:04	6:34	7:04	7:34	8:04												
Antelope Dep				6:12	6:42	7:12	7:42	8:12												
Swanston Dep				6:24	6:54	7:24	7:54	8:24												
Sacramento Arr	5:03	5:33		6:33	7:03	7:33	8:03	8:33												
W. Sacramento Dep	5:05	5:35	6:05	6:35	7:05	7:35	8:05	8:35	9:35	10:35	12:35	1:35	2:35	3:35	4:35	5:35	6:35	7:35	8:35	
Davis Dep	5:21	5:51	6:21	6:51	7:21	7:51	8:21	8:51	9:51	10:51	12:51	1:51	2:51	3:51	4:51	5:51	6:51	7:51	8:51	
Dixon Dep	5:31	6:01	6:31	7:01	7:31	8:01	8:31	9:01	10:01	11:01	1:01	2:01	3:01	4:01	5:01	6:01	7:01	8:01	9:01	
FFIV* Dep	5:39	6:09	6:39	7:09	7:39	8:09	8:39	9:09	10:09	11:09	1:09	2:09	3:09	4:09	5:09	6:09	7:09	8:09	9:09	
Swain City Dep	5:44	6:14	6:44	7:14	7:44	8:14	8:44	9:14	10:14	11:14	1:14	2:14	3:14	4:14	5:14	6:14	7:14	8:14	9:14	
Beacons Dep	5:54	6:24	6:54	7:24	7:54	8:24	8:54	9:24	10:24	11:24	1:24	2:24	3:24	4:24	5:24	6:24	7:24	8:24	9:24	
Martinez Arr	6:02	6:32	7:02	7:32	8:02	8:32	9:02	9:32	10:32	11:32	1:32	2:32	3:32	4:32	5:32	6:32	7:32	8:32	9:32	
Martinez Dep	6:04	6:34	7:04	7:34	8:04	8:34	9:04	9:34	10:34	11:34	1:34	2:34	3:34	4:34	5:34	6:34	7:34	8:34	9:34	
Hercules Dep	6:32	6:52	7:22	7:52	8:22	8:52	9:22	9:52	10:52	11:52	1:52	2:52	3:52	4:52	5:52	6:52	7:52	8:52	9:52	
Richmond Dep	6:32	7:02	7:32	8:02	8:32	9:02	9:32	10:32	11:32	12:32	2:02	3:02	4:02	5:02	6:02	7:02	8:02	9:02	10:02	
Berkeley Dep	6:41	7:11	7:41	8:11	8:41	9:11	9:41	10:11	11:11	12:11	2:11	3:11	4:11	5:11	6:11	7:11	8:11	9:11	10:11	
Emeryville Arr	6:47	7:17	7:47	8:17	8:47	9:17	9:47	10:17	11:17	12:17	2:17	3:17	4:17	5:17	6:17	7:17	8:17	9:17	10:17	
Emeryville Dep	6:50	7:20	7:50	8:20	8:50	9:20	9:50	10:20	11:20	12:20	2:20	3:20	4:20	5:20	6:20	7:20	8:20	9:20	10:20	
Oakland Arr	6:58	7:28	7:58	8:28	8:58	9:28	9:58	10:28	11:28	12:28	2:28	3:28	4:28	5:28	6:28	7:28	8:28	9:28	10:28	

Note: PM times shown in bold

NORTHEASTBOUND

STATION	COMMUTE PERIOD										COMMUTE PERIOD									
	R2	518	R4	520	522	524	526	530	534	536	R6	538	R8	540	R10	542	544	546	548	550
Oakland Dep	5:10	5:40	6:10	6:40	7:10	7:40	8:10	8:40	9:10	9:40	10:10	10:40	11:10	11:40	12:10	12:40	1:10	1:40	2:10	2:40
Emeryville Arr	5:18	5:48	6:18	6:48	7:18	7:48	8:18	8:48	9:18	9:48	10:18	10:48	11:18	11:48	12:18	12:48	1:18	1:48	2:18	2:48
Emeryville Dep	5:21	5:51	6:21	6:51	7:21	7:51	8:21	8:51	9:21	9:51	10:21	10:51	11:21	11:51	12:21	12:51	1:21	1:51	2:21	2:51
Berkeley Dep	5:25	5:55	6:25	6:55	7:25	7:55	8:25	8:55	9:25	9:55	10:25	10:55	11:25	11:55	12:25	12:55	1:25	1:55	2:25	2:55
Richmond Dep	5:33	6:03	6:33	7:03	7:33	8:03	8:33	9:03	9:33	10:03	10:33	11:03	11:33	12:03	12:33	1:03	1:33	2:03	2:33	3:03
Hercules Dep	5:43	6:13	6:43	7:13	7:43	8:13	8:43	9:13	9:43	10:13	10:43	11:13	11:43	12:13	12:43	1:13	1:43	2:13	2:43	3:13
Martinez Arr	6:02	6:32	7:02	7:32	8:02	8:32	9:02	9:32	10:32	11:32	12:32	2:02	3:02	4:02	5:02	6:02	7:02	8:02	9:02	10:32
Martinez Dep	6:04	6:34	7:04	7:34	8:04	8:34	9:04	9:34	10:34	11:34	12:34	2:34	3:34	4:34	5:34	6:34	7:34	8:34	9:34	10:34
Beacons Dep	6:13	6:43	7:13	7:43	8:13	8:43	9:13	9:43	10:43	11:43	12:43	2:43	3:43	4:43	5:43	6:43	7:43	8:43	9:43	10:43
Swain City Dep	6:22	6:52	7:22	7:52	8:22	8:52	9:22	9:52	10:52	11:52	12:52	2:52	3:52	4:52	5:52	6:52	7:52	8:52	9:52	10:52
FFIV* Dep	6:27	6:57	7:27	7:57	8:27	8:57	9:27	9:57	10:27	10:57	11:27	11:57	12:27	12:57	2:27	2:57	3:27	3:57	4:27	4:57
Dixon Dep	6:31	7:01	7:31	8:01	8:31	9:01	9:31	10:01	10:31	11:01	11:31	12:01	12:31	2:01	2:31	3:01	3:31	4:01	4:31	5:01
Davis Dep	6:47	7:17	7:47	8:17	8:47	9:17	9:47	10:17	10:47	11:17	11:47	12:17	12:47	2:17	2:47	3:17	3:47	4:17	4:47	5:17
W. Sacramento Dep	6:57	7:27	7:57	8:27	8:57	9:27	9:57	10:27	10:57	11:27	11:57	12:27	12:57	2:27	2:57	3:27	3:57	4:27	4:57	5:27
Sacramento Arr	7:03	7:33	8:03	8:33	9:03	9:33	10:03	10:33	11:03	11:33	12:03	12:33	2:33	3:33	4:33	5:33	6:33	7:33	8:33	9:33
Sacramento Dep	7:05	7:35	8:05	8:35	9:05	9:35	10:05	10:35	11:05	11:35	12:05	12:35	2:35	3:35	4:35	5:35	6:35	7:35	8:35	9:35
Swanston Dep	7:14	7:44	8:14	8:44	9:14	9:44	10:14	10:44	11:14	11:44	12:14	12:44	2:44	3:44	4:44	5:44	6:44	7:44	8:44	9:44
Antelope Dep	7:26	7:56	8:26	8:56	9:26	9:56	10:26	10:56	11:26	11:56	12:26	12:56	2:56	3:56	4:56	5:56	6:56	7:56	8:56	9:56
Roseville Dep	7:40	8:10	8:40	9:10	9:40	10:10	10:40	11:10	11:40	12:10	12:40	2:40	3:40	4:40	5:40	6:40	7:40	8:40	9:40	10:40
Rocklin Dep																				
Auburn Arr																				
Bowman Arr																				

*Note: 2 of 18 Capitol Corridor trains (runs) not shown here.

*Fairfield/Vacaville

3.5 Annual Operations and Maintenance Cost

The estimated annual cost to operate the ultimate Regional Rail service timetable shown in Figure 3.1 is approximately \$15.5 million (in 2004 dollars). As shown in Table 3.1, below, this estimate is based on the following factors and assumptions:

- Union Pacific Trackage Fee. This is the fee charged by the UP for use of their facilities, including the services of their dispatch team and related activities. By contract, the UP charges the CCJPA \$2.00 per train-mile. However, recent experience with new regional rail/commuter services (e.g., the Altamont Corridor Express), suggests that their fee for new services will be at least \$6.00 per train-mile.
- Annual Train-Miles. These are calculated using the following factors: end-to-end distance – 129 miles; one-way trips per day – 10; operating days per year – 255.
- Union Pacific Maintenance Fee. This is a lump sum amount designed to recapture additional maintenance activity and cost arising from the new Regional Rail service. Based on past experience, it is assumed to be \$100,000 per train round trip per year.
- Amtrak Operations Fee. This estimate of \$35.00 per train-mile is based on recent Capitol Corridor experience, but has been adjusted downward to exclude certain Amtrak services that are not expected to become part of the Regional Rail contract.
- Station Maintenance. A nominal amount for station maintenance – \$50,000 per station per year – is included in the overall cost. More detailed analysis may later suggest that this budget should be increased.
- Fleet Overhaul Set-Aside. It is recommended that a sinking fund be established to fund vehicle overhauls approximately every seven (7) years. Based on a unit cost of \$400,000 per vehicle (in 2004 dollars), the annual set-aside for a fleet of 36 vehicles is calculated to total approximately \$1.3 million.
- The total annual O&M cost of \$15.5 million translates to slightly more than \$47.00 per train-mile. This figure is consistent both with current Capitol Corridor costs and with the experience of other regional rail/commuter services elsewhere.

TABLE 3.1
AUBURN-OAKLAND REGIONAL RAIL SERVICE
Base Service Plan --
Estimated Annual Operations and Maintenance Expenses
 (\$2004 in Millions)

Item	Units	Unit Cost	No. of Units	Total Cost (Millions)	Cost/ Train-Mile
UPRR Trackage	Train-Miles ¹	\$6.00	328,950	\$1.97	\$6.00
UPRR Maintenance	Round Trips	\$100,000	5	\$0.50	\$1.52
Amtrak Operations	Train-Miles	\$35.00	328,950	\$11.51	\$35.00
Station Maintenance	Stations ²	\$50,000	5	\$0.25	\$0.76
SUBTOTAL OPERATIONS				\$14.24	\$43.28
Fleet Overhaul (7 yr) ³	Vehicles ⁴	\$300,000	36	\$1.29	\$3.91
GRAND TOTAL				\$15.52	\$47.19
Estimated Annual Fare Revenue				(\$6.80)	--
Required Annual External Funding (Subsidy)				\$8.72	--

1. 10 daily one-way trips. 129 miles. 255 days/year.

2. New or enlarged stations only. Unit cost to be verified.

3. Figure is the annuity necessary to secure required resources by the desired year. Assumes annual compounding at 6%. Unit cost not verified.

4. Coaches and locomotives

4.0 CAPITAL IMPROVEMENT NEEDS AND COSTS

4.1 Summary

Capital improvements necessary to initiate Regional Rail operations will include (1) trackwork and signal improvements; (2) new rolling stock; (3) new and expanded maintenance facilities and other systemwide improvements; and (4) new stations. The costs associated with these investments are (in 2004 dollars):

Trackwork and Systems	\$124,400,000
Rolling Stock	97,300,000
Maintenance Facilities	61,900,000
Stations and Parking	<u>96,400,000</u>
TOTAL	\$379,900,000

Trackwork and Signals. Eight improvement projects have been identified to mitigate increased congestion arising from the introduction of new Regional Rail service in a corridor already suffering from delays in existing freight and passenger operations. The intent of these projects is to keep the new service from increasing average delay above the current level and, ideally, to improve it.

Rolling Stock. The new Regional Rail service will require six trainsets of equipment, equal to six locomotives and 30 coaches of various types. Equipment in one of the six trainsets will be used as spares for both scheduled maintenance and unscheduled incidents.

Maintenance Facilities and Other Systemwide Improvements. New and expanded maintenance and layover capabilities, necessary to accommodate the new Regional Rail rolling stock, have been identified at (1) the existing Amtrak Oakland maintenance facility, (2) at the new Bowman station, and at a location east of Sacramento to be determined. This category also includes an allowance for other, minor system improvements.

Stations and Parking. The Regional Rail service plan calls for new stations at Bowman, Antelope, Swanston, West Sacramento, and Benicia. Improvements will be made at existing stations, including Auburn, Roseville, and Berkeley. These improvements include the addition of up to 750 new parking spaces.

4.2 Rail Operations Analysis and Proposed Track/Systems Improvements

4.2.1 Approach

In order to determine the magnitude of potential trackwork and systems improvements necessary to accommodate the proposed addition of five new Regional Rail trains in the Auburn-Oakland service corridor, seven operating scenarios (“simulation cases”) were defined and evaluated using railroad operations simulation software. Under the auspices of the Northern California Rail Analysis and

Planning Group (RAP)⁴, seven simulation cases were modeled, covering the potential impact of (1) five new Regional Rail round trips between Auburn/Bowman and Oakland; (2) additional Union Pacific freight service resulting from general economic growth, and (3) increases in Capitol Corridor passenger service as follows:

- From 12 to 16⁽⁵⁾ Capitol Corridor round trips between Oakland and Sacramento;
- From 3 to 13 Capitol Corridor round trips between Sacramento and Roseville; and
- From 1 to 3 Capitol Corridor round trips between Roseville and Auburn/Bowman.

The index of performance used is Delay Percentage, which quantifies the degree to which trains must be held (stopped) for conflicts with other trains. Because it is a ratio, comparisons can be made between cases in which varying number of trains are run. Actual operation of trains over a seven-day period (or longer) is simulated, and the Delay Percentage is then calculated for the Base Case. The additional trains are then added and simulated. This typically increases the Delay Percentage. To decrease the Delay Percentage, certain physical and operating changes and improvements are made. The goal is to return the Delay Percentage to the Base Case level or below.

4.2.2 Proposed Trackwork and Systems Improvements

A total of eight (8) trackwork and systems improvement projects were defined to address congestion problems and other operating conflicts identified in the course of preparing and analyzing the operating simulations described in Section 4.2.1, above. Moving from east to west, the eight projects are:

- Improvement 1 – Rocklin to Bowman: Complete Traffic Control System. With this improvement, trains may run in either direction on either main track under signal authority from Rocklin to Bowman, a distance of over 19 miles. Universal interlockings, permitting trains traveling on one track to cross to the other track would be installed at Newcastle and Bowman. At Bowman a turnout would be provided in the interlocking permitting trains to move into the station and storage tracks off of the mainline track. By being able to run in either direction on either track, trains can meet trains moving in the opposite direction or slower moving trains operating in the same direction, thereby reducing delays.
- Improvement 2 – Roseville Yard: Receiving Tracks. This project calls for the installation of two additional receiving tracks in J. R. Davis Yard at Roseville. These tracks would be installed on the west end of the yard and permit freight trains entering the yard to clear the main tracks faster, reducing conflicts with scheduled passenger trains. In some peak periods, the number of freight trains currently trying to enter the yard exceeds the yard’s capacity, with a result that the trains for which there is no room often occupy main tracks until the congestion abates.

⁴ Under the sponsorship of Union Pacific Railroad, the Northern California Rail Analysis and Planning Group consists of all freight and passenger operators in Northern California, including the UPRR, Capitol Corridor Joint Powers Authority, Altamont Commuter Express, National Railroad Passenger Corporation (Amtrak), and many others. The RAP Group meets monthly to discuss areas of mutual interest, drawing on modeling and analysis prepared by Washington Group International using “Rail Traffic Controller”[®] modeling system, developed by Berkeley Simulation Software, Inc. This program is used by all North American Class I railroads and many rail transit systems for their internal capacity planning.

⁵ Sixteen (16) daily round-trips were simulated during this exercise, though the total number of round-trip “slots” was later increased to 18, a number which appears throughout this document.

- Improvement 3 – Swanston: Increase Track Spacing. This improvement will spread the track centers, increasing the space between the two main tracks, so that a passenger platform can be installed between them. Train dispatchers can then run the schedule passenger trains on any available main track, reducing conflicts with freight trains. Side platforms require the passenger trains to be on one specific track at a station. All passenger access is by stairs, ramps, or other means over/under the mainline tracks; no passenger access to tracks is permitted.
- Improvement 4 – Elvas: Double Track Wye. A second main track would be constructed at Elvas, permitting trains to move simultaneously from and to the San Joaquin Valley Line off the Roseville Subdivision. This will reduce the time such trains have to wait on main tracks near the Wye to use the existing single-track connection, creating more time for passenger operations.
- Improvement 5 – Davis: Provide Local Freight Track. By providing an extended track off the West Passing Siding, local freight trains will be able to pull into the West Pass and switch cars for the West Valley line without occupying the main tracks. A power turnout will be installed at the east end of the West Pass to permit local freights to move into and out of the track without the train crew having to stop the train and throw the switch by hand.

This improvement also contemplates putting in a number 20 universal interlocking at Davis, permitting trains to change from one main track to another at higher speeds than are now possible. The track speed on the curve at Davis would also be raised from 30 to 40 MPH. The improvements at Davis will reduce conflicts between passenger and freight trains.

- Improvement 6 – Bahia and Benicia: Construct Drill Track. This project would connect two separate existing tracks, one at Bahia, and one at Benicia lying alongside Track Two so that they form one continuous path for local freight operations. Two tracks would also be constructed to hold freight cars that would otherwise occupy the existing tracks. This improvement, like the one at Davis, provides a location where local freight operations can be conducted without blocking moves on the main track. It also involves the installation of a powered turnout at the east end of the drill track in Bahia, thereby speeding up trains entering and leaving.⁶
- Improvement 7 – Martinez to Ozol: Provide Station Track. At Martinez, there is an important railway junction, in addition to a major passenger station and a freight yard. The improvement proposed for Martinez will provide a station track to be lengthened and thereby by-pass the freight tracks and yard. Turnouts are included in the project to provide for connectivity at both ends of the construction.
- Improvement 8 – Shellmound to Giant: Upgrade Waterside Drill Track. This improvement calls for the creation of 15 miles of new main track through the congested areas of Oakland, Berkeley, Richmond, and San Pablo. For much of this distance, there is a track used for local switching service that will be utilized. For a short distance north of Richmond, a new track will be required. The track to be upgraded would have new continuous welded rail installed, new turnouts, and the replacement of 40 percent of the crossties. Reverse signaling would be installed on the upgraded track and it would be connected to the existing two main tracks at three interlocking locations. The

⁶ Some work on this project is now underway, funded through Regional Measure 2 and managed by the CCJPA.

purpose of this improvement is to provide an alternate path for freight trains moving through the area, so that the existing main tracks will have capacity made available for increased passenger train movements.

4.2.3 Proposed Operating Changes

In addition to the above-cited capital improvements, several adjustments to corridor freight operations were identified as having potential to improve overall operating efficiency and reduce congestion in the corridor:

- Oakland-Long Beach Reposition empties – Set back Oakland scheduled departure from 16:30 (4:30 pm) to 18:30 (6:30 pm) to avoid rush hour trains.
- BNSF growth train between Richmond and Denver, via Sparks – Set back Richmond scheduled departure from 16:00 (4:00 pm) to 18:00 (6:00 pm) to avoid rush hour trains.
- BNSF trains – Qualify all crews on both Sacramento and Valley Subdivisions.
- Eliminate Del Paso and Sacramento block swaps by operation of trains directly between Oakland and Lathrop to the east.

These freight operations changes were incorporated into the model and used to determine the overall effectiveness of the proposed capital improvements. The UPRR may actually be employing some these actions on their own, though this cannot be confirmed.

4.2.4 Results

The results of the operations analysis conducted to date are presented in Table 4.1, below. The key metric in this analysis is the “delay percentage,” which is an index of performance weighted by the number of trains operated, (which allows performance comparisons of cases in which different numbers of trains are operated). The delay percentage is defined as the percentage of the total scheduled run time that a train is being delayed for” meets” and “passes” with other trains. It does not include station dwell time or wait time that is built into a schedule.

The key figures to consider in Table 4.1 are those for the “freight” delay percentage. The figure for current conditions (“Base-1”) is approximately 20 percent, a “ceiling” target that the Union Pacific would not want to see increased as a result of adding new passenger service. It is notable that delay is likely to increase slightly without an new passenger service due to natural growth in UP freight traffic, as shown under cases “Base-2” and “Base-3”.

The proposed Regional Rail service is added in cases “Plan-1” through “Plan-4.” What differs in these cases is the set of proposed track and signal improvements. It is only with the combination of the eight improvement projects listed in Section 4.2.2 and freight service changes in Section 4.2.3 (above) that the freight delay percentage is kept under the baseline 20 percent.

It is important to note that the Union Pacific has reviewed these findings but has not, as of the date of this report, responded with comments to Regional Rail service sponsors. At present, it is anticipated that a response from the UP will come some time in late 2005.

TABLE 4.1

AUBURN - OAKLAND REGIONAL RAIL SERVICE
Operations Simulation - Modeling Cases

Case	Tracks	New Stations/ Operating notes	Total Trains	Delay Percentage			UP Freight	Number of daily round trips						Regional (Included in CCJPA totals)		
				All	Psg	Freight		Capitol Corridor JPA; + Amtrak								
								Auburn	Roseville	Roseville	Swanston	Swanston	Sacramento	Sacramento	Martinez	Oakland ²
4/28/03	Existing	None					Start and End stations	1	1 + 1	1 + 2	1 + 2	1 + 2	12 + 2	16 + 6	16 + 6	None
Base-1	Phase II; CTX; "Leslie"	None; Sacramento trains turn at SAC	2068	12.2%	0.8%	20.2%	Current	1	2 + 1	3 + 2	3 + 2	12 + 2	16 + 6	16 + 6	None	None
Base-2	Phase II; CTX; "Leslie"	Swanston; Sacramento trains turn at SWN	2136	13.5%	0.8%	21.9%	Current + Growth	1	2 + 1	3 + 2	3 + 2	12 + 2	16 + 6	16 + 6	None	None
Base-3	Phase II; CTX; "Leslie"	Swanston; Sacramento trains turn at SWN	2148	12.2%	1.5%	20.6%	Current	1	3 + 1	8 east; 9 west + 2	8 east; 9 west + 2	16 + 2	20 + 6	20 + 6	None	None
Plan-1	Phase II; CTX; "Leslie"	Bowman; W. Sacramento; Dixon; Fairfield; Benicia; Hercules; SAC trains turn at SWN.	2263	14.1%	1.6%	23.8%	Current + Growth	5 + 1	6 + 1	13 + 2	21 + 2	21 + 2	25 + 6	25 + 6	5 BOW-OKJ	5 BOW-OKJ
Plan-2	Phase II; CTX; "Leslie"	Bowman; W. Sacramento; Dixon; Fairfield; Benicia; Hercules; SAC trains turn at SWN.	2263	14.2%	1.6%	24.0%	Current + Growth	5 + 1	6 + 1	13 + 2	13 + 2	21 + 2	25 + 6	25 + 6	5 BOW-OKJ	5 BOW-OKJ
Plan-3	+ New station design (DIX, FFV, BEN).	Bowman; W. Sacramento; Dixon; Fairfield; Benicia; Hercules; SAC trains turn at SWN.	2259	14.8%	1.6%	25.3%	Current + Growth	5 + 1	6 + 1	13 + 2	21 + 2	21 + 2	25 + 6	25 + 6	5 BOW-OKJ	5 BOW-OKJ
Plan-4	+ Improvements and Operating changes (see list)	Bowman; W. Sacramento; Dixon; Fairfield; Benicia; Hercules; SAC trains turn at SWN.	2246	11.2%	1.3%	19.1%	Current + Growth	5 + 1	6 + 1	13 + 2	21 + 2	21 + 2	25 + 6	25 + 6	5 BOW-OKJ	5 BOW-OKJ

Notes

- TT "B"
 - Phase II
 - CTX
 - (1)
 - (2)
- Full CTX service; locals and expresses. SYSTRA Timetable "B"
2nd MT Hwy 101-CP Stockton; 2nd MT Yolo Causeway
Improvements around Roseville for operation of additional trains between Sacramento and Auburn.
CalTrain eXpress improvements between San Francisco and San Jose
Station for Regional trains only.
Includes San Joaquins

4.3 Other Capital Needs

In addition to the trackwork and systems improvements described in Section 4.2, above, other investment necessary to implement Regional Rail service will include:

- Rolling Stock;
- Maintenance Facilities; and
- Stations.

Each of these types of investments is described briefly, below.

4.3.1 Rolling Stock

The five new daily Regional Rail round trips included in the preliminary service plan (concept) described in Chapter 3.0 will require the acquisition of five trainsets (locomotive plus coaches or self-propelled coaches), plus one additional trainset to act as spare equipment, for a total of six trainsets. A review of vehicle technology options was conducted⁷, where it was concluded that it would be most efficient to procure rolling stock that matched the equipment now used for the Capitol Corridor service, particularly given the intent to operate the two services in a joint, unified fashion.

For cost estimation purposes, each trainset is assumed to consist of six vehicles, including the following equipment: one locomotive, one cab coach (for reverse operation), one café car (for food service), and three regular coaches. The quantities and unit costs of each type of vehicle required to make the six trainsets (36 vehicles total) are shown in Table 4.2, below.

Higher numbers of cab coaches and café cars were substituted for ordinary coaches due to (1) the higher levels of maintenance associated with these more complex vehicles (and, hence, greater “down time”), and (2) the requirement that each train have a working cab coach. While a given train could operate without a single coach or even a café car, a cab coach is needed on every train.

TABLE 4.2
Auburn-Oakland Regional Rail Service
Rolling Stock Procurement Cost
(\$2004 in Millions)

Vehicle	Quantity	Unit Cost
Locomotives	6	\$2.5
Cab Coaches	10	\$2.2
Café Cars	7	\$2.3
Coaches	13	\$1.9
Total	36	--

⁷ See Working Paper 3, “Vehicle Alternatives,” in the compiled working papers document for additional details.

4.3.2 Maintenance Facilities

A preliminary assessment of operations and vehicle maintenance requirements for the Regional Rail service was conducted. This assessment was based on three important assumptions:

1. “Heavy” maintenance for Regional Rail service rolling stock will be performed at the existing Amtrak Oakland Maintenance Facility where Capitol Corridor vehicles are maintained. Additional storage for Regional Rail service vehicles will be required.
2. In order to meet the proposed service plan, a layover facility with light maintenance capability will be installed at the eastern end of the Auburn-Oakland corridor at Bowman.
3. A new satellite maintenance facility will be located somewhere east of Sacramento Valley Station to accommodate both Regional Rail and Capitol Corridor maintenance needs.

As a result, three Regional Rail maintenance facility investments have been identified:

- Oakland Storage. Add storage track at the Oakland Maintenance Facility for the trainsets added to provide commuter operations.
- Bowman Layover. Current operating plans call for five train sets to spend the night at Bowman. A layover facility has been provided where trains can be cleaned and put on stand-by power at the end of the day’s schedule. The difficult topography in the area makes it unlikely that Bowman can accommodate the satellite facility mentioned below. Ideally, as the design phase moves forward, it may be possible to combine the two facilities.
- New Satellite Facility. Construct a regional service and inspection facility at a site to be determined in the Sacramento Region, perhaps at Bowman. With the addition of five new commuter trainsets and four additional round trips of the Capitol Corridor equipment, there will come a point when it will be necessary to undertake minor maintenance work at a location other than Oakland. This facility would be able to dump toilets, fuel, and service equipment. It would provide a place for light inspection and repair, but would not be capable of heavy maintenance.

4.3.3 Stations

The use of existing and new stations is outlined in Chapter 3.0, above. Capitol Corridor service currently stops at eleven (11) stations, including Auburn and Oakland. Details of the proposed eight new stations are listed in Table 4.3, below. Improvements to other (existing) stations will be required as well, including Auburn, Roseville, and Berkeley.

One notable figure in Table 4.3 is the proposed number of parking spaces at the West Sacramento station. This concept is based on the recognition that there is only limited opportunity for new parking in downtown Sacramento, and that parking in downtown Davis is limited as well. It is well understood by the Regional Rail Project Sponsors that the use of the West Sacramento station as parking interceptor must be carefully considered jointly with the City of West Sacramento. Traffic, noise, and other land use impacts must be properly assessed and mitigated effectively for this concept to work. The City of West Sacramento is encouraged to work with the Regional Rail Sponsors and consider potential

Regional Rail station needs when reviewing development applications for projects located near potential stations sites.

**TABLE 4.3
Auburn-Oakland Regional Rail Service
Proposed Station Improvements**

Location	Type	Parking	Sponsorship*
Fairfield/Vacaville	New	TBD	Capitol Corridor
Hercules	New	TBD	Capitol Corridor
Dixon	New	TBD	Capitol Corridor
Bowman	New	100	Regional Rail
Antelope	New	150	Regional Rail
Swanston	New	--	Regional Rail
West Sacramento	New	400	Regional Rail
Benicia	New	100	Regional Rail

*Stations listed as “Capitol Corridor” will see service from both Capitol Corridor and Regional Rail trains. Those stations listed as “Regional Rail” will have Regional Rail service only, though the CCJPA could elect to extend Capitol Corridor service to them at a future date. Under current policy, all new regional rail stations will be funded by host jurisdictions.

Project costs (described in Section 4.4, below) have been disaggregated to list parking separately from stations, with the express purpose of allowing for potentially different funding approaches to different project elements. One example of this would be funding for parking and related facilities at the West Sacramento station, where the cost for a larger, “regional” parking facility could be borne collectively by all Project Sponsors, rather than the single hosting jurisdiction, which is the funding policy most commonly applied to rail stations.

It should be noted that a number of specific location and design issues affecting existing Capitol Corridor stations will require attention as development of the Regional Rail service moves forward. These will include, for example, siting and parking issues in Davis, platform, and track issues in Roseville, and rail operations at the Sacramento Valley Station in downtown Sacramento.

4.4 Estimated Capital Costs

Planning level (order-of-magnitude) capital cost estimates were prepared for the improvements and equipment necessary to implement the Regional Rail service, including trackwork, systems, maintenance facilities, stations, and rolling stock. These estimates, including rolling stock, are summarized in Table 4.4, below. The estimates are expressed in terms of prevailing 2004 prices and are based on basic unit measurements such as linear feet of track, number of turnouts, area of station and parking, maintenance area capacity, etc.⁸

⁸ Details of the trackwork, systems, maintenance, and station costs can be found in Technical Memorandum B, “Capital Costs.” Note that the listing of projects by county is to show the location of the improvements only, and does not imply an allocation of funding responsibility.

The total estimated capital cost of the Regional Rail program is approximately \$380 million (\$2004), including construction (procurement), planning, environmental clearance, design, construction management, and contingency. Direct construction/procurement costs in Table 4.4 are listed by county of location or, where applicable, as being “systemwide.” Factors for (1) “soft” costs (pre-construction and management) and (2) contingency are shown for each line item, and represent the difference between the “Direct” and “Total” figures.

Trackwork and systems improvements account for approximately one-third (\$124 million) of the total program cost, while stations/parking and rolling stock each account for 25 percent of the total (\$96 million and \$97 million, respectively). The remaining 17 percent of the cost (\$62 million) is accounted for by vehicle maintenance and storage facilities.

TABLE 4.4
AUBURN-OAKLAND REGIONAL RAIL SERVICE
Conceptual Capital Cost Estimate
(\$2004 in Millions)

Project Element	Placer	Sacramento	Yolo	Solano	Contra Costa	Systemwide	TOTALS	
							DIRECT	TOTAL ¹
Trackwork & Signals								
Project 1 (Rocklin-Bowman)	15%	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$8.9	\$12.9
Project 2 (Roseville Yard)	15%	\$10.9	\$0.0	\$0.0	\$0.0	\$0.0	\$10.9	\$15.8
Project 3 (Swanston)	15%	\$3.7	\$0.0	\$0.0	\$0.0	\$0.0	\$3.7	\$5.4
Project 4 (Elvas)	15%	\$10.6	\$0.0	\$0.0	\$0.0	\$0.0	\$10.6	\$15.3
Project 5 (Davis)	15%	\$0.0	\$13.8	\$0.0	\$0.0	\$0.0	\$13.8	\$20.0
Project 6 (Martinez-Ozol)	15%	\$0.0	\$0.0	\$0.0	\$20.7	\$0.0	\$20.7	\$30.0
Project 7 (Shellmound-Giant)	15%	\$0.0	\$0.0	\$0.0	\$3.5	\$0.0	\$3.5	\$5.0
Project 8 (Oakland/Embarc)	15%	\$0.0	\$0.0	\$0.0	\$0.0	\$13.8	\$13.8	\$20.0
Subtotal		\$8.9	\$25.1	\$0.0	\$24.2	\$13.8	\$85.8	\$124.4
Stations (Parking)								
Bowman/Other (+100)	15%	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$8.1	\$11.7
Auburn (No Change)	15%	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$2.8	\$4.0
Roseville (No Change)	15%	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$1.5	\$2.2
Antelope (+150)	15%	\$13.5	\$0.0	\$0.0	\$0.0	\$0.0	\$13.5	\$19.6
Swanston (No Change)	15%	\$4.2	\$0.0	\$0.0	\$0.0	\$0.0	\$4.2	\$6.0
West Sacramento (+400)	15%	\$0.0	\$21.7	\$0.0	\$0.0	\$0.0	\$21.7	\$31.4
Benicia (+100)	15%	\$0.0	\$0.0	\$4.8	\$0.0	\$0.0	\$4.8	\$6.9
Berkeley (No Change)	15%	\$0.0	\$0.0	\$0.0	\$3.4	\$0.0	\$3.4	\$5.0
Other Stations	15%	\$0.0	\$0.0	\$0.0	\$0.0	\$5.0	\$5.0	\$7.3
Subtotal		\$12.3	\$17.6	\$4.8	\$3.4	\$5.0	\$64.9	\$94.1
Parking								
Total	15%	\$0.2	\$0.3	\$0.8	\$0.2	\$0.0	\$1.6	\$2.3
Maintenance Facilities and Other Systemwide								
Bowman/Satellite	15%					\$31.5	\$31.5	\$45.7
Oakland (Storage Track)	15%					\$5.0	\$5.0	\$7.3
Other Systemwide	15%					\$6.2	\$6.2	\$9.0
Subtotal						\$42.7	\$42.7	\$61.9
Rolling Stock²								
Locomotives (6 @ \$2.5M)	10%					\$15.0	\$15.0	\$18.8
Cabs (10 @ \$2.2M)	10%					\$22.0	\$22.0	\$27.5
Café Cars (7 @ \$2.7M)	10%					\$16.1	\$16.1	\$20.1
Coaches (13 @ \$1.9M)	10%					\$24.7	\$24.7	\$30.9
Subtotal						\$77.8	\$77.8	\$97.3
GRAND TOTAL COST		\$21.5	\$43.1	\$5.0	\$27.6	\$139.3	\$272.7	\$379.9

1. Includes mark-up factors shown to right of item descriptions. NOTE: Items may not add to totals due to rounding.
2. Six 6-car trains (including locomotive) plus spares.

5.0 FUNDING NEEDS AND STRATEGIES

5.1 Summary

This section combines the contents of preceding technical memoranda in a discussion of the estimated costs of the Regional Rail service, potential sources of funding to start the service and subsidize its operation, and means of allocating costs among the sponsoring agencies.

Cost estimates developed in earlier work have been used for the evaluation of funding and cost allocation strategies. The estimated capital cost for implementing Auburn-Oakland regional passenger rail service is approximately \$380 million.

Funding for start-up should comprise a mix of sources, the mix customized for each project sponsor. After developing a five-year estimate of total project costs, the sponsoring agencies should allocate the total costs among themselves according to an agreed distribution formula or policy. A funding plan, with a unique element for each project sponsor, should be based on each sponsor's ability to obtain funds from the various fund sources.

Federal decisions on funding applicable to the Regional Rail service are embodied in the recently reauthorized federal surface transportation program (SAFETEA-LU). Identifying one or more congressional sponsors for continue the effort to secure funding for Regional Rail should be the top priority of project sponsors. Potential projects include track improvements between Sacramento and Roseville and a joint CCJPA/AORR maintenance and storage facility.

The current state budget crisis makes it highly unlikely that new STIP funds will be available in the current cycle. This means that the next opportunity for programming STIP funds may be the 2008 cycle, when money might be available for the 2011/12 and 2012/13 fiscal years. Programming the next cycle of RSTP and CMAQ funds through SAFETEA-LU is the next best opportunity to secure new funds for starting up Regional Rail service.

Capitol Corridor trains would operate and be paid for, as at present, while Regional Rail trains would be charged to the constituent counties through a cost sharing agreement. Stations, and trainsets used for the regional service, could be eligible for Federal Transit Administration funds for capital purposes.

5.2 Funding Sources and Available Funding

The funding programs that are most applicable to the Regional Rail are grouped in four basic categories: federal, state, regional, and local sources. Inclusion of a funding program within any given category is determined by the level of government that has actual decision-making power over the programming of that program's funds, regardless of the actual source of the funds.

5.21 Federal Programs

High Priority (Demonstration) Project Program. SAFETEA-LU includes more than 5,100 projects specified by Congress as 'high-priority.' Funding for these projects is authorized at \$14.8 billion over six years with a portion of the funding made available each year. The larger grants awarded to transit

projects are in the range of \$10 million to \$20 million. The federal share of these projects was 80 percent.

- The grants awarded for individual projects ranged from under \$1 million to \$40 million.
- The overwhelming majority of grants ranged from \$1 to \$10 million.
- A large majority of the grants were to highway, bridge, airport, and/or port projects.
- A limited number of grants were made to rail or bus transit projects.
- Most of the grants exceeding \$20 million were made to projects in major southern, northeastern, or northern industrial states.

The project sponsors should review the current proposed reauthorization of the federal transportation program (SAFETEA-LU) to identify funding that may be applicable to the implementation of the Regional Rail service, and maintain contact with their Congressional delegates to ensure the project is advocated in Washington.

New Starts (Section 5309) Program. SAFETEA-LU authorizes approximately \$7.5 billion in spending for the New Starts Program for the period FY2005-09. The maximum federal share of these projects was 80 percent. The federal match for this program was typically limited to 50 percent, however. SAFETEA-LU requires the Secretary of Transportation to evaluate and rate New Starts projects and make annual reports on his recommendations. Factors to be considered in these evaluations include population density and current transit ridership in the corridor, the technical capability of the applicant to construct the project, and factors that reflect differences in local land, construction, and operating costs.

Again, the project sponsors should maintain contact with their Congressional delegates to ensure that authorization for new starts funding for the Placer County Corridor is translated into actual funding.

5.2.2 State Programs

STIP Interregional Improvement Program (STIP - IIP). The State Transportation Improvement Program (STIP) is a 5-year programming document that includes all highway and transit projects. The Interregional Improvement Program (IIP) funds projects that facilitate the interregional movement of people and goods. The IIP receives 25% of the total STIP funding. Caltrans nominates projects for funding to the California Transportation Commission (CTC) in their Interregional Improvement Program.

As of April 2005, a total of \$304 million has been programmed or voted to date in the IIP for intercity rail and grade separation projects. State law requires that at least nine percent of the interregional program funds be programmed for intercity rail projects (e.g., San Diegans, San Joaquins, Capitols). The intercity rail grant sizes range from \$250,000 to \$25 million.

The only commuter rail service in California that has successfully programmed IIP funds is Metrolink. Approximately \$30 million in IIP funds are now programmed for rolling stock purchase and station improvements in southern California. The CCJPA has had some success in programming limited IIP funds for improvements for the inter-city Capitol corridor service, and continues to request additional funding for capital improvements. There is significant competition for IIP funds, and successfully programming funds for the Auburn-Dixon Regional Rail Project will almost certainly require that other

funding (i.e., STIP-RIP, RSTP, CMAQ, etc.) be committed as a match for IIP funds. The project sponsors should consider requesting IIP funds for capital improvements during the future/upcoming STIP cycles. It should be noted that in the next programming cycle, funding applicable to implementing Regional Rail service might actually be deleted from the STIP.

Public Transportation Account (PTA). The Public Transportation Account (PTA), which derives its revenue from a ¼ cent portion of the state’s general retail sales tax, is provided as a major source of funding of public transportation. The PTA is used to fund state operations, local assistance, inter-city rail operations, and capital outlay. Given the current state budget crisis, it is highly unlikely that any new funding will be available from the PTA for commuter rail projects.

Highway/Railroad Grade Crossing Safety Improvement Project Program. This program, from the state’s 10 percent safety set-aside of Surface Transportation Program (STP) funds, provides funding for improvements to at-grade highway/railroad crossings. To be considered, projects have to be recommended by the California Public Utilities Commission. Applications are submitted annually by local agencies, Caltrans and/or rail operators for inclusion on a statewide priority list compiled by Caltrans and the PUC. Although small, this program does provide an ongoing source of funds for safety improvements at grade crossings and is an appropriate candidate for the Start-up Funding Plan.

5.2.3 Regional and Local Programs

Regional Surface Transportation Program (RSTP). The Surface Transportation Program provides flexible funding that may be used on any federal aid-highway, bridge projects, transit capital projects, and public bus terminals and facilities. In the SACOG region, approximately \$22 million in RSTP funds are awarded annually.

Although transit projects are eligible for RSTP funds, the funds have traditionally been programmed for road projects in the SACOG region and in Solano County. Despite this, the RSTP program could be one of the best near-term candidates for capital funds for the Start-up Project because it is funded by federal rather than state dollars.

Congestion Mitigation and Air Quality (CMAQ) Program. The Congestion Mitigation and Air Quality Improvement (CMAQ) Program is designed to fund projects and programs that reduce transportation-related emissions in air quality non-attainment and maintenance areas for ozone, carbon monoxide and small particulate matter. In the SACOG region, approximately \$23 million in CMAQ funds are awarded annually.

In the Bay Area, MTC controls CMAQ funding and applies most of it to “off the top” regional projects and programs, leaving little for discretionary use by cities and counties. In March of this year, MTC has proposed a slate of transportation projects for supplemental funding via the CMAQ program, including \$4.2 million for Capitol Corridor Improvements. It is possible that some of this funding may be applied to a use that benefits the Regional Rail service.

It should be kept in mind that CMAQ funding for operations would only be available on a “demonstration basis” for a limited period of time (three years). Another source of funding would be required after that point.

Transportation Enhancement Activity (TEA) Program. The Transportation Enhancement Activity (TEA) Program is designed to fund projects that strengthen the cultural, aesthetic, and environmental aspects of the intermodal system. In the SACOG region, approximately \$3 million in TEA funds are awarded annually. Although small, this program does provide an ongoing source of funds for capital enhancement projects and is an appropriate candidate for the Start-up Funding Plan. Due to changes at the state level, TEA funding is now administered as part of the larger STIP process.

STIP Regional Improvement Program (STIP – RIP). The Regional Improvement Program (RIP) of the STIP funds projects that cover a broad range of transportation-related capital improvement projects. The RIP receives 75% of the total STIP funding. For the study corridor, SACOG and the MTC nominate projects for funding to the California Transportation Commission (CTC) in their Regional Improvement Programs.

Despite the potential for little or no funding to be available in the STIP due to the state budget crisis, the RIP is an appropriate candidate for funding capital projects that are a component of the Start-up Funding Plan. Though this is not a significant funding source in the near-term for Placer County, approximately \$6.53 million was included in the 2004 STIP for track improvements in Roseville area (\$3 million in the RIP, \$3.53 million in the IIP).

State Proposition 42, passed by 69% of California voters in 2003 as the Transportation Congestion Improvement Act, created a constitutional amendment requiring that revenues from state motor vehicle fuel taxes be used for transportation purposes. Of those revenues, the amendment stipulates that 40 percent go to cities and counties, 40 percent to the state transportation improvement program and 20 percent to public transit. The constitutional provisions of the amendment, however, do not become effective until 2008. The law requires a two-thirds vote by the Legislature to suspend or modify the annual percentage allocation of the revenues. In every year since the Proposition's passage, the Governor has recommended, and the legislature has approved this suspension, sending the automobile fuel sales tax revenues to the General Fund to help relieve the State's debt. This funding could provide a substantial additional source of funding for the Regional Rail service, when it is finally made available for its intended purpose.

5.2.4 Local Programs

Local Transportation Fund (LTF)/Transportation Development Account (TDA) Program. The Local Transportation Fund (LTF), which derives its revenue from a ¼ cent portion of the state's general retail sales tax, is provided as a major source of funding of public transportation. If an annual evaluation of transit needs indicates that there are no unmet transit needs, a portion of the funds can be used for streets and roads projects. In general, LTF funds are returned to the county of origin and then apportioned to local jurisdictions according to their relative share of total County population. In the Bay Area, however, these funds are returned to MTC for allocation at the regional level, rather than local level.

In the SACOG region, approximately \$49 million in LTF funds are allocated annually, much of it to highways. (For example, approximate 40% of LTF funding in Placer County is used for roads. Outside of West Sacramento and Davis, that figure is 80% in Yolo County.) It is possible that a greater proportion of these funds could be designated for transit, and could thereby support the Regional Rail

service. However, this shift may be more likely in the long-term, especially if new revenues established by the passage of Proposition 42 are at last made available in 2009 as promised by state officials.

Placer Regional Transportation Improvement and Air Quality Mitigation Fee Program. The South Placer Regional Transportation Authority (SPRTA) was formed in 2002 with the purpose of implementing a Regional Transportation and Air Quality Mitigation Fee Program. The Fee Program is forecast to generate \$125 million in revenues through the year 2020. A total of \$3 million in fee program revenue is dedicated for future use on commuter rail projects. Although small, this program does provide a source of funds for capital improvements and is an appropriate candidate for the Start-up Funding Plan.

Other Local Development Impact Fee Programs. Many of the jurisdictions with the member agency counties levy a fee on new development to help fund roadway and transit capital improvements. Revenues from these programs can't be used for roadway and transit maintenance and operation expenses. Where transit improvements are included in development fee programs (e.g., County of Sacramento), the fee revenues available for transit capital improvements represent from 5-20 percent of the total funds available for transportation improvements. None of the local development fee programs has yet to identify the Auburn-Oakland Regional Rail Project as a candidate project for fee program funds.

Although small, this program could provide a limited source of funds for local station improvements and is an appropriate candidate for the Start-up Funding Plan.

Sacramento County Sales Tax: In the November 2004 election, 75% of voters in Sacramento County approved Measure A, the extension of a half-cent sales tax dedicated to transportation improvements. Measure A extends the sales tax initiated in 1988 to support expansion of transit, including improved bus service as a feeder to LRT. Rail transit projects in Measure A include the South Sacramento and Amtrak-Folsom corridors, as well as express light rail service in the Northeast or Roseville corridor. Measure 'A' funds may also be used to fund implementation of the Regional Rail service.

Solano County Sales Tax: In November 2004 election, the voters of Solano County very narrowly rejected a proposed 1/2-cent sales tax increase that was targeted principally toward highway investment, but which also included funding for Regional Rail service. A similar measure, now under active discussion by elected officials and stakeholders, could go before to voters in 2005 or 2006.

Contra Costa County Sales Tax: In November 2004, 71% of Contra Costa voters approved Measure J, the continuation of the county's half-cent Measure C transportation sales tax for 25 years, starting in 2009. Both the existing sales tax spending plan and that for the extension focus on highway and local road improvements, but both leave some discretionary funding that might be made available for expanded regional rail service. Further, the spending plan does include \$7.5 million for station improvements at Hercules and \$10.0 million for improvements at Martinez (including parking and pedestrian improvements). The plan's wording allows flexibility in the use of the \$7.5 million designated for Hercules, stating that it may be used for track improvements, rolling stock, or for rail operations on the Capitol Corridor line in Contra Costa County.

Transit-Oriented Development: An emerging criterion for investment in transit systems is the ability of stations to catalyze mixed-use development and to generate community and ridership in their proximity.

MTC is developing criteria for investment in TOD projects, and BART and other agencies are increasingly framing transit investments in terms of complementary land uses. Programs such as these should be monitored for their potential applicability to the Regional Rail service.

Farebox Revenue. Transit passenger fares are collected to partially offset the cost of transit operations. The farebox recovery ratio for Metrolink, southern California's commuter rail system, has risen from 14.2 percent in fiscal year 1992/93 to 45.2 percent in fiscal year 2001/02. The current farebox rate for the ACE train service – linking San Joaquin County, Alameda County, and Santa Clara County – is 50 percent, while Capitol Corridor farebox recovery has risen from 30 percent to its current 45 percent.

5.3 Funding Strategy for Service Start-Up

Table 5.1 identifies the estimated probability of obtaining funds from each of the sources assessed, ranked by a score of high, medium or low. The potential funding level for each source is also identified. Table 5.1 also provides an estimate of the timing of when funds might be available.

5.3.1 General Recommendations

A funding plan for start-up, given the current state of transportation funding, should be comprised of a mix of sources that will likely vary by project sponsor. As such, locally customized funding plans should be developed for each project sponsor. The first step in the process should involve developing a five-year estimate of total project costs (i.e., capital, vehicle procurement, and operating & maintenance costs). A cost allocation formula would then be developed that distributes the total costs among the project sponsors. A funding plan would then be developed, with a unique element for each project sponsor. The funding plan for each project sponsor would be based on the sponsor's ability to obtain funds from the various fund sources.

5.3.2 Suggested Near-term Actions

Federal decisions on key issues such as funding for the High Priority Projects are expected to be embodied in the pending transportation reauthorization program (TEALU). It is recommended that members of the local delegation to Congress be apprised of this project's top funding priority in the view of sponsors and other local stakeholders. Potential projects that may be candidates for the High Priority Project funds include track improvements (e.g., "commuter and freight rail congestion and mitigation project") between Sacramento and Roseville and/or a joint maintenance/vehicle storage facility along the corridor that might be shared with the CCJPA service. Both would jointly benefit the CCJPA and the Regional Rail Service.

TABLE 5.1

Assessment of Revenue Potential from Available Funding Sources

Funding Source	Probability of Success	Potential Funding Level ¹	Availability
Capital			
Regional Measure 2 (Trackwork and FF/V Station)	High	3	Near-Term
Contra Costa County Measure J Sales Tax	High	3	Near-Term
Sacramento County Measure A Sales Tax	High	3	Mid-Term
S. Placer Regional Fee Program	High	1	Near-Term
Congestion Mitigation & Air Quality (CMAQ)	Medium	3	Near-Term
Regional Surface Transportation Program (RSTP)	Medium	2	Mid-Term
Transportation Enhancement Activities (TEA)	Medium	1	Mid-Term
STIP - Regional Improvement Program (RTIP)	Medium	3	Long-Term
STIP - Interregional Improvement Program (ITIP)	Medium	3	Long-Term
FTA New Starts Program	Medium	3	Mid-Term
High Priority Project Program	Low-Medium	1	Mid-Term
Local Transportation Fund (TDA/LTF) ²	Low-Medium	1	Long-Term
Highway/Rail Grade Separation Program	Low	1	Mid-Term
Local Development Fees	Low	1	Mid-Term
Public Transportation Accounts (PTA)	Low	1	Long-Term
Operations and Maintenance			
Congestion Mitigation & Air Quality (CMAQ) ³	High	3	Near-Term
Fare Revenue	High	2	Near-Term
Sacramento County Measure A Sales Tax	Medium	1	Mid-Term
Local Transportation Fund (TDA/LTF) ²	Low-Medium	1	Long-Term

1 = \$1-5 million; 2 = \$6-10 million; 3 = \$10+ million

2. As of the date of this report, state legislation has been introduced (SB 1020) to double funding to the LTF with voter approval.

Simultaneously, discussions and collaboration with FTA staff should begin with the goal obtaining, first, Section 5309 “Small Starts” funding for a first phase of development (see Chapter 6.0, below) and, subsequently, a larger “New Starts” contribution during a later phase.

The current state budget crisis makes it highly unlikely that new STIP funds will be available to be programmed in the 2006 cycle. This means that the next opportunity for programming STIP funds may be the 2008 cycle, when money might be available to be programmed for the 2011/12 and 2012/13 fiscal years. However, It should be noted that in the 2006 programming cycle, funding applicable to implementing Regional Rail service might actually be *removed* from the STIP.

Finally, the programming of the next cycle of RSTP and CMAQ funds provided through SAFETEA-LU provides the next best opportunity for securing new funds for project start-up.

6.0 PROJECT PHASING

Given the significant capital cost associated with the “base” Regional Rail service plan in the Auburn-Oakland corridor, as well as the likelihood that funding from all sources would take some time to assemble, the Auburn-Oakland Regional Rail Service project sponsors investigated a number of options for phasing the implementation of service, either through a reduced service frequency, fewer stations, or some combination of these. Ultimately, a strategy was developed to take advantage of existing but unused Capitol Corridor operating “slots” between Oakland and Sacramento.

The CCJPA currently has authority through its agreement with the Union Pacific to operate up to 22 daily round trips between those two cities, including four slots now used by the San Joaquins, but at present is only utilizing 12 of the 22 slots. In addition, the CCJPA presently lacks adequate funding to purchase the additional rolling stock it would need to provide the additional service (though some operational options to better utilize existing rolling stock are now being explored). As a result, the phasing strategy calls for the Regional Rail sponsors to fund the procurement of new rolling stock and the incremental cost of running new Regional Rail service in the corridor. No track or systems improvements would be required; only a minor outlay for expanded storage at the Oakland maintenance facility would be necessary. No new stations would be funded outside of those already in progress at Fairfield/Vacaville and Hercules.

In order to go beyond the 18-train limit discussed previously, the second phase of activity would include the major trackwork and signal projects, additional rolling stock, new and expanded maintenance facilities, and one new station now under development at Dixon. This phase would require negotiation of a new agreement with the Union Pacific Railroad.

A third and final phase would provide for construction of five (5) new stations, plus improvements at three other stations.

Key elements of the proposed Regional Rail phasing plan are listed in Figure 6.1, immediately below, along with target implementation dates. Estimated capital outlay by phase and assumptions regarding non-local sources of funding⁹ are detailed in Table 6.1, while projected annual operations and maintenance expenses are shown in Table 6.2 for Phase 1 and Table 6.3 for Phases 2 and 3. Illustrative timetables for each phase of operation (Figures 6.2, 6.3, and 6.4) can be found beginning on page 33.

It should be noted that the schedule for Phase 1 could be advanced in at least two ways, namely: (1) add new service incrementally as even partial funding is secured, or if operational efficiencies are implemented in the Oakland-San Jose segment of the Capitol Corridor service, thereby allowing the use of existing equipment on the Oakland-Sacramento segment; and (2) identify new sources of state and/or local funding, thereby obviating the need to make use of the more time-consuming federal funding process.

⁹It is assumed that the CCJPA will share the “net” cost (remaining after non-local funding contributions) of new maintenance facilities equally with Regional Rail Service sponsors.

FIGURE 6.1
Auburn-Oakland Regional Rail Service
SUMMARY OF PROPOSED REGIONAL RAIL PHASING PLAN

• **Phase 1 (2010)**

- Utilize capacity under existing UP agreement
- 18 daily Sacramento-Oakland round trips: 4 – Regional Rail / 14 – Capitol Corridor
- No increase in Sacramento-Auburn service via Regional Rail funding
- New Capitol Corridor stations at Fairfield/Vacaville and Hercules (13 total stations)
- \$68 million capital outlay (mostly rolling stock)
- \$8.7 million gross annual operations and maintenance expense

• **Phase 2 (2015)**

- Corridor passenger rail capacity expanded per agreement with UP
- 23 Daily Sacramento-Oakland round trips: 5 – Regional Rail / 18 – Capitol Corridor includes four (4) new Auburn-Oakland round trips (total of 5)
- One (1) new Capitol Corridor station at Dixon (14 total stations)
- \$232 million capital outlay for trackwork, maintenance facilities, other system improvements
- \$15.5 million annual operations and maintenance expense

• **Phase 3 (2020)**

- Same service/timetable as in Phase 2
- Five new Regional Rail-funded stations at Bowman, Antelope, Swanston, West Sacramento, and Benicia (19 total stations)
- \$80 million capital outlay for stations and parking
- Same operations and maintenance expense as in Phase 2 (\$15.5 million)

TABLE 6.1
AUBURN-OAKLAND REGIONAL RAIL SERVICE
Conceptual Capital Costs and Non-Local Funding, By Phase
 (\$2004 in Millions)

Project Element	TOTAL	Phase 1	Phase 2	Phase 3
Trackwork & Signals	\$124.4	\$0.0	\$124.4	\$0.0
Stations	\$94.1	\$0.0	\$16.3	\$77.8
Parking	\$2.3	\$0.0	\$0.0	\$2.3
Maintenance Facilities and Systems	\$61.9	\$3.0	\$58.9	\$0.0
Rolling Stock	\$97.3	\$64.8	\$32.5	\$0.0
GRAND TOTAL COST	\$379.9	\$67.8	\$232.0	\$80.1
Non-Local Funding				
	TOTAL	Phase 1	Phase 2	Phase 3
Federal¹	\$141.8	\$33.9	\$107.9	\$0.0
State²	\$23.9	\$9.9	\$14.0	\$0.0
CCJPA³	\$13.9	\$0.7	\$13.3	\$0.0
Total Non-Local Funding	\$179.6	\$44.4	\$135.2	\$0.0
Locally-Controlled Funding	\$200.3	\$23.3	\$96.9	\$80.1

Note: Figures may not total exactly due to rounding.

1. 50% for trackwork, maintenance facilities, and rolling stock.
2. 5% for trackwork and maintenance facilities, 15% for rolling stock.
3. 22.5% for maintenance facilities and other systemwide improvements.

TABLE 6.2
AUBURN-OAKLAND REGIONAL RAIL SERVICE
Estimated Gross Annual Operations and Maintenance Expenses
(\$2004 in Millions, Before Fare Revenue)

PHASE 1 (2010)

Item	Units	Unit Cost	No. of Units	Total Cost (Millions)	Cost/ Train-Mile
UPRR Trackage	Train-Miles ¹	\$4.00	188,496	\$0.75	\$4.00
UPRR Maintenance	Round Trips	\$100,000	4	\$0.40	\$2.12
Amtrak Operations	Train-Miles	\$35.00	188,496	\$6.60	\$35.00
Station Maintenance	Stations ²	\$50,000	0	\$0.00	\$0.00
SUBTOTAL OPERATIONS				\$7.75	\$41.12
Fleet Overhaul (7 yr) ³	Vehicles ⁴	\$300,000	24	\$0.86	\$4.55
GRAND TOTAL				\$8.61	\$45.67
Estimated Annual Fare Revenue				(\$2.30)	--
Required Annual External Funding (Subsidy)				\$6.31	--

1. 8 daily one-way trips. 92 miles. 255 days/year.

2. No new stations in Phase 1.

3. Figure is the annuity necessary to secure required resources by the desired year. Assumes annual compounding at 6%.

4. Coaches and locomotives

TABLE 6.3
AUBURN-OAKLAND REGIONAL RAIL SERVICE
Estimated Gross Annual Operations and Maintenance Expenses
(\$2004 in Millions, Before Fare Revenue)

PHASES 2 & 3 (2015 & 2020)

Item	Units	Unit Cost	No. of Units	Total Cost (Millions)	Cost/ Train-Mile
UPRR Trackage	Train-Miles ¹	\$6.00	328,950	\$1.97	\$6.00
UPRR Maintenance	Round Trips	\$100,000	5	\$0.50	\$1.52
Amtrak Operations	Train-Miles	\$35.00	328,950	\$11.51	\$35.00
Station Maintenance	Stations ²	\$50,000	5	\$0.25	\$0.76
SUBTOTAL OPERATIONS				\$14.24	\$43.28
Fleet Overhaul (7 yr) ³	Vehicles ⁴	\$300,000	36	\$1.29	\$3.91
GRAND TOTAL				\$15.52	\$47.19
Estimated Annual Fare Revenue				(\$6.80)	--
Required Annual External Funding (Subsidy)				\$8.72	--

1. 10 daily one-way trips. 129 miles. 255 days/year.

2. New or enlarged stations only.

3. Figure is the annuity necessary to secure required resources by the desired year. Assumes annual compounding at 6%.

4. Coaches and locomotives

FIGURE 6.2

JOINT CAPITOL CORRIDOR/AUBURN-OAKLAND REGIONAL RAIL SERVICE
ILLUSTRATIVE PHASE 1 (2010)
 WEEKDAYS - 14 CAP CORRIDOR Sacramento-Oakland +
 4 REGIONAL RAIL Sacramento-Oakland

WEST/SOUTHBOUND

Legend:
 = CAPITOLS
 = REGIONAL TROUS
 = Phase 2 & 3 Stations

STATION	COMMUTE PERIOD																	
	319 AM	321 AM	323 AM	325 AM	327 AM	329 AM	331 AM	333 AM	335 AM	337 AM	339 AM	341 PM	343 PM	345 PM	347 PM	349 PM	351 PM	353 PM
Bowman	DP																	
Auburn	DP																	
Rochlin	DP																	
Roseville	DP																	
Aubrey	DP																	
Swanson	DP																	
Sacramento	AR																	
Sacramento	DP	4:20	5:00	5:40	6:20	7:00	7:40	8:20	9:10	10:40	12:10	1:40	2:40	3:40	4:40	5:40	6:40	8:40
III Sacramento	DP																	
Davis	DP	4:38	5:16	5:56	6:36	7:16	7:56	8:36	9:26	10:56	12:26	1:36	2:36	3:36	4:36	5:36	6:36	8:36
Dixon	DP																	
FFM*	DP																	
Suisun City	DP	4:59	5:39	6:19	6:59	7:39	8:19	8:59	9:49	11:19	12:49	2:19	3:19	4:19	5:19	6:19	7:19	9:19
Banks	DP																	
Marinez	AR	5:17	5:57	6:37	7:17	7:57	8:37	9:17	10:07	11:37	1:07	2:37	3:37	4:37	5:37	6:37	7:37	9:37
Marinez	DP	5:19	5:59	6:39	7:19	7:59	8:39	9:19	10:09	11:39	1:09	2:39	3:39	4:39	5:39	6:39	7:39	9:39
Hercules	DP																	
Rickmond	DP	5:47	6:27	7:07	7:47	8:27	9:07	9:47	10:37	12:07	1:37	3:07	4:07	5:07	6:07	7:07	8:07	10:07
Bellevue	DP	5:56	6:36	7:16	7:56	8:36	9:16	9:56	10:46	12:16	1:46	3:16	4:16	5:16	6:16	7:16	8:16	10:16
Emeryville	AR	6:02	6:42	7:22	8:02	8:42	9:22	10:02	10:52	12:22	1:52	3:22	4:22	5:22	6:22	7:22	8:22	10:22
Emeryville	DP	6:05	6:45	7:25	8:05	8:45	9:25	10:05	10:55	12:25	1:55	3:25	4:25	5:25	6:25	7:25	8:25	10:25
Oakland	AR	6:15	6:55	7:35	8:15	9:00	9:40	10:20	11:05	12:40	2:05	3:40	4:40	5:40	6:40	7:35	8:40	10:40

NORTHEASTBOUND

STATION	COMMUTE PERIOD																	
	R918 AM	R920 AM	322 AM	324 AM	326 AM	328 AM	330 AM	R334 PM	336 PM	338 PM	340 PM	342 PM	344 PM	346 PM	R348 PM	350 PM	352 PM	
Oakland	DP	5:05	5:45	6:25	7:05	7:45	8:15	10:45	12:15	1:45	2:45	3:30	4:10	4:30	5:30	6:10	6:30	8:40
Emeryville	AR	5:08	5:53	6:33	7:13	7:53	8:23	10:53	12:23	1:53	2:53	3:38	4:18	4:38	5:38	6:28	7:03	8:33
Emeryville	DP	5:15	5:55	6:35	7:15	7:55	8:25	10:55	12:25	1:55	2:55	3:40	4:20	4:40	5:40	6:20	7:05	8:35
Bellevue	DP	5:19	5:59	6:39	7:19	7:59	8:29	10:59	12:29	1:59	2:59	3:44	4:24	4:44	5:44	6:24	7:09	8:39
Rickmond	DP	5:27	6:07	6:47	7:27	8:07	8:37	11:07	12:37	2:07	3:07	3:42	4:32	5:12	6:32	7:17	8:03	9:07
Hercules	DP																	
Marinez	AR	5:52	6:32	7:12	7:52	8:32	9:02	11:32	1:02	2:32	3:32	4:27	5:37	6:17	6:37	7:42	8:32	9:32
Marinez	DP	5:54	6:34	7:14	7:54	8:34	9:04	11:34	1:04	2:34	3:34	4:29	5:39	6:19	6:39	7:44	8:34	9:34
Banks	DP																	
Suisun City	DP	6:13	6:53	7:33	8:13	8:53	9:23	11:53	1:23	2:43	3:43	4:46	5:46	6:36	7:16	8:03	9:33	11:33
FFM*	DP																	
Dixon	DP																	
Dixon	DP																	
Davis	DP	6:37	7:17	7:57	8:37	9:17	10:47	12:17	1:47	3:17	4:17	5:10	6:22	7:02	8:27	9:17	10:17	12:17
III Sacramento	DP																	
Sacramento	AR	7:05	7:45	8:25	9:05	9:45	11:15	12:45	2:15	3:45	4:45	5:30	6:10	7:30	8:10	8:33	10:45	12:45
Sacramento	DP																	
Swanson	DP																	
Aubrey	DP																	
Roseville	DP																	
Rochlin	DP																	
Auburn	DP																	
Bowman	AR																	

FIGURE 6.3

JOINT CAPITOL CORRIDOR/AUBURN-OAKLAND REGIONAL RAIL SERVICE
ILLUSTRATIVE PHASE 2 (2015)
 WEEKDAYS - 18 CAP CORRIDOR Sacramento-Oakland +
 5 REGIONAL RAIL Auburn/Bouman-Sacramento-Oakland

WEST/SOUTHBOUND

Legend:
 = CAPITOLS
 = REGIONAL RAIL TRAINS
 = Phase 3 Stations

STATION	COMMUTE PERIOD																							
	419	421	423	R1	425	R3	427	R5	429	431	433	435	437	439	441	443	445	R7	447	R9	449	451	453	
Bouman																								
Auburn																								
Rocklin																								
Roseville																								
Antelope																								
Stanton																								
Sacramento	AR	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	
W. Sacramento																								
Davis	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	
Ukon	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	
FFN*	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	
Suisun City	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	
Berkeley	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	
Richmond	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	
Hercules	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	
Emeryville	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	
Energyville	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	
Oakland	AR	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	

STATION	COMMUTE PERIOD																						
	316	R4	320	322	324	326	328	330	332	334	336	R6	338	R8	340	R10	342	344	346	348	349	350	352
Oakland	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP
Emeryville	AR	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP
Energyville	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP
Richmond	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP
Hercules	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP
Martinez	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP
Martinez	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP
Berkeley	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP
Suisun City	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP
Berkeley	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP
Richmond	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP
Hercules	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP
Emeryville	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP
Energyville	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP
Oakland	AR	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP	DP

7.0 RIDERSHIP FORECAST

7.1 Summary

Ridership forecasts prepared for each of the three implementation phases described previously in Chapter 6.0 are presented and discussed in this chapter. These weekday estimates are summarized by mode, direction, and time of day in Table 7.1, on the following page. Weekday boardings are annualized in Table 7.1 by applying a six-day factor for Capitol Corridor service (320 days per year) and a five-day factor for Regional Rail service (255 days per year).

The forecasts, described in more detail below, are based on five principal considerations:

1. Growth in actual Capitol Corridor ridership to date;
2. New Regional Rail service *and* increased Capitol Corridor service;
3. New stations and parking, and improved transit connectivity throughout the corridor;
4. Anticipated population and employment growth; and
5. Expected increase in congestion on parallel routes and modes (especially I-80).

Baseline (2005) Capitol Corridor ridership was calculated to match actual ridership in the winter of 2004-05. Weekday Capitol Corridor boardings between Auburn and Oakland are currently running at an annual rate of approximately 867,000.¹⁰ It is notable that, given six additional weekday round trips between Sacramento and Oakland in 2010, combined Regional Rail/Capitol Corridor annual ridership is projected to slightly more than double, to 1.75 million. Increases to 2.48 million by 2015 and 3.65 million by 2020 represent further growth of 41 percent and 47 percent, respectively.

7.2 Forecasting Process

7.2.1 Overview and Approach

The development of ridership forecasts is important, as it leads to essential analysis of feasibility of operating a transit service. Ridership projections are used to determine the potential revenue generation from fares (and potential subsidy amounts), and to size the facilities such as parking areas and station platforms.

The proposed new Auburn-Oakland Regional Rail service consists of new train sets that would run in the peak hours between Auburn and Oakland (or Auburn and Richmond). By introducing these train sets, the commuter rail service would operate at 30-minute headways for stations that have both Capitol Corridor and Regional Rail service, and 60-minute headways for stations that have just the Regional Rail service.

¹⁰Note that this figure does not include Saturday riders or those riding between Oakland and San Jose. Monday-Saturday ridership for the entire Capitol Corridor Auburn-San Jose system is currently running at an annualized rate of 1.3 million.

TABLE 7.1
 Auburn-Oakland Regional Rail Service
 Estimated Weekday Boardings, By Direction and Time of Day

Period	Direction	Capitol Corridor			Regional Rail (Increment)			CC/RR Combined		
		Phase 1 (2010)	Phase 2 (2015)	Phase 3 (2020)	Phase 1 (2010)	Phase 2 (2015)	Phase 3 (2020)	Phase 1 (2010)	Phase 2 (2015)	Phase 3 (2020)
AM Peak (Daily)	WB	1,327	1,494	1,555	330	819	2,409	1,657	2,313	3,964
	EB	296	386	452	169	556	968	465	942	1,420
	Total	1,623	1,880	2,007	499	1,375	3,377	2,122	3,255	5,384
PM Peak (Daily)	WB	297	388	456	110	610	1,033	407	998	1,489
	EB	1,334	1,505	1,570	363	898	2,498	1,697	2,403	4,068
	Total	1,631	1,893	2,026	473	1,508	3,531	2,104	3,401	5,557
Total Daily	WB	2,344	2,731	2,947	440	1,429	3,442	2,784	4,160	6,389
	EB	2,344	2,731	2,947	532	1,454	3,466	2,876	4,185	6,413
	Total	4,688	5,462	5,894	972	2,883	6,908	5,660	8,345	12,802
Total Annual	WB	750,080	873,920	943,040	112,200	364,395	877,710	862,280	1,238,315	1,820,750
	EB	750,080	873,920	943,040	135,660	370,770	883,830	885,740	1,244,690	1,826,870
	Total	1,500,160	1,747,840	1,886,080	247,860	735,165	1,761,540	1,748,020	2,483,005	3,647,620

Notes: Annual derived by multiplying by 320 times daily total for Capitol; 255 for Regional Rail

This corridor continues to experience population and employment growth, as well as the construction of several new stations. The analysis must include the impacts of adding new stations on the corridor and the increasing attractiveness of using rail for longer-distance trips.

Currently, about half of daily Capitol Corridor riders within the Auburn-Oakland segment travel between the Sacramento and Bay regions. Another 35 percent occur in the Bay Area, while the remaining 15 percent occur in the Sacramento region.

New stations at Fairfield/Vacaville and Hercules are programmed with the Capitol Corridor service by 2010, with Dixon in place by 2015. New stations that have either Capitol Corridor and Regional Rail or new Regional Rail service include Bowman, Antelope, Swanston, West Sacramento, and Benicia. These are in addition to existing stations at Auburn, Rocklin, Roseville, Sacramento, Davis, Suisun City, Martinez, Richmond, Berkeley, and Oakland. The addition of new rail stations beyond the current 10 in the project corridor will increase ridership.

Weekday ridership forecasts for the Regional Rail service have been developed for 2010, 2015, and 2020 conditions. In each of these years, a different set of operations and station assumptions were developed for anticipated Capitol Corridor service, and the combined Capitol Corridor plus Regional Rail service. The additional ridership created by the Regional Rail service can then be derived by comparing the two scenarios.

Because the Regional Rail trains are estimated to be added during the morning and afternoon peak periods, the bulk of the analysis projects ridership changes during these two times. A third non-peak period forecast was also developed to enable a total typical weekday comparison of the forecast train ridership between the two rail operating scenarios.

Forecasting ridership for this service involves calibrating the demand for rail transit in terms of the larger demand for travel in the corridor. Once the corridor rail ridership has been “calibrated” to the market shares estimated by regional agencies, the forecasting tool can be applied for future conditions.

The next step is to determine how the growth of traffic congestion would make travel in the corridor more attractive. To determine this growth, overall mode share increases estimated from local regional models are applied, and the increment of growth between the 2000 and 2025 horizon years was applied to each of the five years in study. The corridor has enjoyed demand growth, even at a time when other regional transit systems have either had steady or declining ridership. Part of this is related to the addition of trains and stations, the marketability of the service, and the general interest in avoiding travel congestion for longer-distance trips.

Once the overall result of growth is estimated, the next step is to examine how the introduction of several new stations will create additional demand for the rail service. This increase can be developed by examining the catchment areas of the new stations, the likelihood of attracting trips of varying distances from each station, and applying constraints to some stations (such as station-switching).

Once the additional station impacts are in place, the result of increasing rail headway from 60 to 30 minutes must be examined. The addition of these headways makes rail travel more attractive, especially for shorter “commuter” trips. Each of these setups is discussed in subsequent sections.

7.2.2 Calibrating 2005 Capitol Corridor Service

The current Capitol Corridor service has been expanding at a significant rate over the past five years. The increasing demand on this corridor is a result of new commuter trips, more frequent train service, and better track operations for the service. Capitol Corridor trains currently provide approximately 60-minute service between Sacramento and Oakland at peak hours. There is also one train from Auburn to Sacramento.

The Capitol Corridor Joint Powers Authority (CCJPA) routinely tracks ridership patterns in station-to-station pairs to determine subsidy amounts. In addition, CCJPA conducts surveys of riders to determine key demographic and trip-making characteristics. Results of these different types of data are reported here.

Detailed breakdowns of data by train number and origin/destination pair were obtained for each direction. In this way, it was possible to assign the proportions of typical weekday trips that are occurring in the commute time periods.

An additional item used is mode of access reported for different stations from rider surveys. These surveys contribute to the parking demand estimates that are summarized at the end of this chapter. The survey shows the predominance of parking and drop-off commuters, although the system relies on a combination of access modes to achieve its daily ridership.

Monthly station-to-station Capitol Corridor data provided for this study was provided by the CCJPA to represent October 2004 conditions. Using data from detailed records from each train available from 2003 studies, the estimated trips were allocated to specific time slices, and the overall shares of transit riders were assigned. Table 7.2 summarizes the data calibrated for 2005 conditions. More details establishing train directionality and station-to-station pairs are available in supporting technical material.

This table shows that the estimated weekday activity in the Capitol corridor is about 3,400 rider trips a day. About two-thirds of these trips are estimated to occur in the AM and PM peak periods, which are generally defined between 5:30 and 9:30 AM, and between 3:30 and 7:30 PM.

The Metropolitan Transportation Commission (MTC) routinely provides estimates of county-to-county worker flows based on Census data and overall countywide growth in employees and employed residents.

These data were compared to the county-to-county work trip tables provided by MTC to derive a relationship between riders and market share. While other trips use the Capitol Corridor, the change in work trips provides a point from which growth in riders based on trip growth projections and mode share increases can be made.

7.2.3 Developing 2010, 2015, and 2020 Estimated Capitol Corridor Riders

To develop ridership forecasts for the Regional Rail for 2005 and 2010, the existing Capitol Corridor service demand to first be determined once additional corridor travel growth is considered, and once new stations are opened. While there are many reasons why riders choose Capitol Corridor service, a

TABLE 7.2
 Capitol Corridor Rail Service
 Estimated Weekday Boardings, By Station and Time of Day: 2005

Boardings by Station	Capitol Corridor Only			Capitol Corridor + Regional Rail		
	AM Peak	PM Peak	Total Daily	AM Peak	PM Peak	Total Daily
Bowman						
Auburn	69	0	73			
Rocklin	79	0	79			
Roseville	85	0	90			
Antelope						
Swanston						
Sacramento	382	316	1,078			
West Sacramento						
Davis	254	102	478			
Dixon						
Fairfield/Vacaville						
Suisun City	91	42	174			
Benicia						
Martinez	62	132	296			
Hercules						
Richmond	33	126	234			
Berkeley	16	57	103			
Emeryville	63	267	505			
Oakland	43	134	290			
TOTAL DAILY	1,176	1,176	3,399			

primary purpose is to use the service to get to or from work. These longer distance commuters make trip choices for a number of reasons including convenience, cost, and congestion.

The rise in mode shares was developed by examining general county-to-county mode share increases in the corridor. For example, the MTC model forecasts an increase in mode share from Solano to Alameda Counties.

When new Capitol Corridor service begins to new stations at Fairfield/Vacaville and at Hercules by 2010 and to Dixon in 2015, additional riders will be on the trains. Base station forecasts were determined as follows:

- **Fairfield/Vacaville.** Ridership projections for this station are based on the I-80 Rail Feasibility Study for trips heading towards Oakland. Ridership projections with Sacramento region stations are based on comparing the Suisun City/Fairfield catchment area population and employment to this area.
- **Hercules.** Ridership projections to the Sacramento region from Hercules are based on comparing catchment area populations of the Hercules catchment area to Martinez and using Martinez market

shares for the Bay Area. Ridership projections to the Sacramento region were developed by comparing the catchment area populations of Richmond station.

- **Dixon.** Ridership projections for this station are based on comparing the trip mode shares of the Suisun City/Fairfield station for the Bay Area and the Sacramento Region. In addition, a small diversion from the Davis station was assumed.

7.2.4 Developing Demand at New Stations

The addition of the new Regional Rail service will result in a number of new communities having commuter rail service that currently do not have it. These include stations at Bowman, Antelope, Swanston light rail station in Sacramento, West Sacramento, Dixon, and Benicia. Clearly, the addition of five new stations beyond the current 11 (and future 14) Capitol Corridor stations in the corridor will increase ridership, the small increase in running time (from station dwells) notwithstanding.

Because these are not currently operating stations, there is no comparable ridership available for to directly estimate ridership changes. In addition, some of these stations are within catchment areas of other stations, so that there may be some diverted park-and-ride trips to these stations. As a result, the unique situations posed by each station have had to be adjusted based on existing ridership.

In order to account for the unique characteristics of each station, the station assumptions were adjusted as follows:

- **Bowman.** The new end-of-the-line station should have ridership characteristics similar to the Auburn station. The ridership was estimated by using the market shares from the Auburn Station derived from ridership data, and applying them to the Bowman catchment area population.
- **Antelope.** This new station in Citrus Heights represents a possible diversion for commuters who could park at the Roseville Station. As this station would be close to Sacramento RT express bus service that operates at 30-minute frequencies, the ability of an hourly train to compete and be more attractive is minimized for persons destined to Downtown Sacramento. However, the station could attract new riders for persons traveling to the Bay Area.
- **Swanston.** This new station would interface with the existing Sacramento light rail system. The major advantage of this station is that it would attract riders who are destined for locations on the light rail line, supported by a large supply of available parking. The ridership for this station was determined by using the SACMET model from the prior Auburn-Dixon studies. No trips were assigned to go between Swanston and Sacramento Valley, as the parallel light rail service runs at a much greater frequency, making rail use less attractive.
- **West Sacramento.** This new station would provide a new service area, although West Sacramento users could use the Sacramento Valley or Davis Stations. The ridership for this station was determined by using the SACMET model from the prior Auburn-Dixon studies. Additional adjustments were made included possible station-switching for persons who would otherwise park at the Sacramento Valley station, and for the additional trips that would be going to and from the Bay area. Finally, no trips were assigned to go between West Sacramento to Sacramento Valley station, as parallel bus transit service runs at a much greater frequency, making rail use less attractive.

- **Benicia.** Ridership for trips southward towards Oakland were developed using data provided by the I-80 Rail Feasibility Study. Ridership to the Sacramento Region for the proposed Benicia station was determined using a comparison to the Suisun City/Fairfield population and market share.

7.2.5 Developing Demand for Increased Service

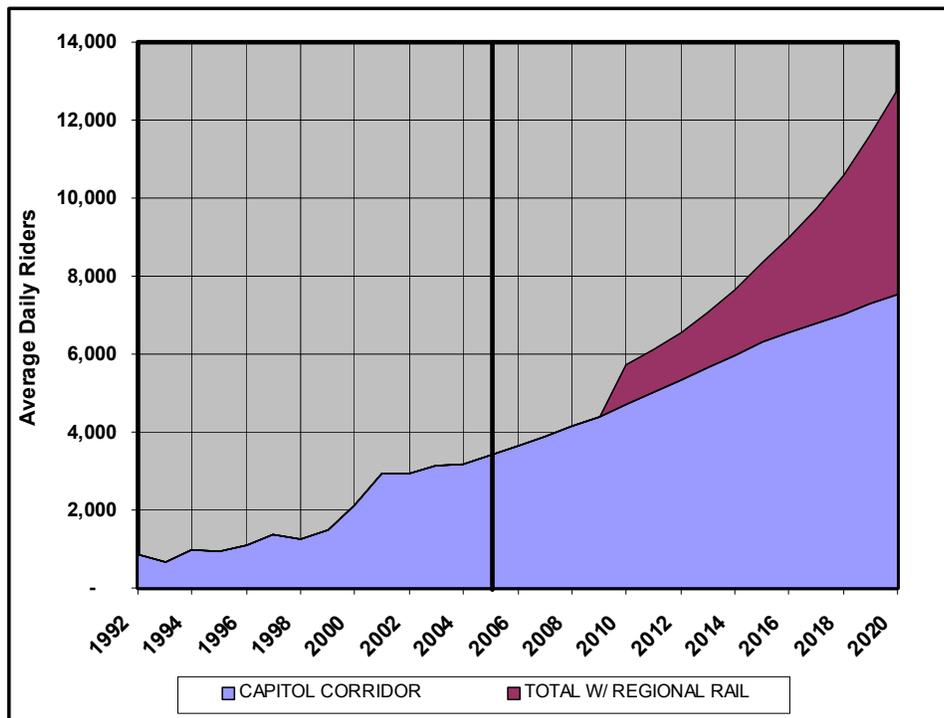
The proposed Regional Rail service from Auburn to Oakland will complement the Capitol Corridor service, effectively creating a 30-minute headway for the route during peak periods. In addition, these trains will also provide service to five new stations, as mentioned above.

The result of having a reduced headway is to attract shorter trips to the Capitol Corridor service. The forecasts are based on an attractiveness of the shorter trips according to distance between the stations. This is the method recently applied to forecast riders in a number of corridors in California. It should be noted that these forecasts did not involve assumptions in parallel bus services in the corridor, and the resulting rail ridership could vary significantly depending on the frequency, span of service and routing of parallel bus routes.

7.3 Estimated Ridership

The resulting ridership for the weekday Capitol Corridor service during the AM, PM, and daily time periods is summarized in Tables 7.3 through 7.5. Also, a graph showing both historical Capitol Corridor ridership and projected Capitol Corridor and Regional Rail ridership is provided as Figure 7.1, immediately below.

**FIGURE 7.1
Capitol Corridor and Regional Rail Ridership: 1992-2020**



7.3.1 Year 2010 Riders

By 2010, overall growth in travel, a slight growth rail mode share, and the introduction of new stations at Fairfield/Vacaville and Hercules results in an increase of 38 percent during peak periods when compared to 2005 ridership.

The addition of the Regional Rail service at the proposed 40-minute headway would increase the corridor ridership to 80 percent beyond the 2005 estimates. While this may seem ambitious, it is important to remember that the introduction of new stations at Fairfield/Vacaville and Hercules will open new markets for Capitol Corridor rail service, and that Capitol Corridor ridership has nearly tripled in only 72 months, with two consecutive years of back-to-back 40 percent/year growth.

Weekday boarding activity by station is summarized in Table 7.3, below.

**TABLE 7.3
Auburn-Oakland Regional Rail Service
Estimated Weekday Boardings, By Station and Time of Day: 2010**

Boardings by Station	Capitol Corridor Only			Capitol Corridor + Regional Rail		
	AM Peak	PM Peak	Total Daily	AM Peak	PM Peak	Total Daily
Bowman						
Auburn	92	0	101	92	0	101
Rocklin	103	0	101	103	0	101
Roseville	92	3	104	92	3	104
Antelope						
Swanston						
Sacramento	510	389	1,405	653	517	1,676
West Sacramento						
Davis	335	122	612	397	201	753
Dixon						
Fairfield/Vacaville	112	40	204	240	77	369
Suisun City	84	30	153	181	58	277
Benicia						
Martinez	64	143	344	83	186	405
Hercules	64	182	364	83	236	437
Richmond	35	137	217	45	177	268
Berkeley	17	70	124	20	86	142
Emeryville	68	349	618	80	430	711
Oakland	45	165	342	53	205	391
TOTAL DAILY	1,622	1,631	4,689	2,121	2,178	5,734

7.3.2 Year 2015 Riders

By 2015, the opening of Dixon as a rail station and continued growth in demand and mode share of the Capitol Corridor will increase the number of total peak period riders. The base ridership growth is forecast to grow 15 percent beyond the 2010 forecasts.

The addition of the Regional Rail begins to significantly attract more short-distance trips, providing a growth of 54 percent more trips than in the 2010 service. Much of this increase is a result of providing much greater train service between Auburn and Sacramento in the Regional Rail scenario. The resulting typical weekday ridership is estimated to be greater than 8,300. Another boost would result from increasing service frequencies from 40 minutes to 30 minutes.

Year 2015 activity by station is summarized in Table 7.4, below.

**TABLE 7.4
Auburn-Oakland Regional Rail Service
Estimated Weekday Boardings, By Station and Time of Day: 2015**

Boardings by Station	Capitol Corridor Only			Capitol Corridor + Regional Rail		
	AM Peak	PM Peak	Total Daily	AM Peak	PM Peak	Total Daily
Bowman						
Auburn	98	1	112	224	12	249
Rocklin	111	0	112	258	6	265
Roseville	97	7	114	212	333	554
Antelope						
Swanston						
Sacramento	534	448	1,549	1,008	987	2,562
West Sacramento						
Davis	348	142	671	352	198	731
Dixon	24	9	45	142	109	263
Fairfield/Vacaville	171	64	319	333	114	530
Suisun City	129	48	239	250	86	398
Benicia						
Martinez	79	163	399	106	221	485
Hercules	79	208	424	106	281	526
Richmond	42	156	255	57	211	325
Berkeley	22	78	142	27	101	170
Emeryville	87	386	696	107	503	832
Oakland	58	183	387	71	240	456
TOTAL DAILY	1,879	1,893	5,463	3,254	3,401	8,345

7.3.3 Year 2020 Riders

By 2020, the weekday growth in a base Capitol Corridor service is still expected, with an additional 430 riders a day expected in that five-year increment. The full Regional Rail service at 30-minutes and the addition of five new Regional Rail stations on the route combine to show much great increases in

ridership, suggesting a doubling from not providing the Regional Rail service. Again, it is important to recognize that a sizeable percentage of this results from a four-fold increase in trainsets from Auburn to Sacramento, and the addition of five new stations.

Activity in 2020 by station is summarized in Table 7.5.

**TABLE 7.5
Auburn-Oakland Regional Rail Service
Estimated Weekday Boardings, By Station and Time of Day: 2020**

Boardings by Station	Capitol Corridor Only			Capitol Corridor + Regional Rail		
	AM Peak	PM Peak	Total Daily	AM Peak	PM Peak	Total Daily
Bowman				10	8	18
Auburn	104	1	122	308	118	444
Rocklin	118	0	124	350	0	356
Roseville	102	11	124	379	158	548
Antelope				498	132	631
Swanston				59	57	116
Sacramento	543	500	1,655	90	2,005	2,707
West Sacramento				1,506	48	1,554
Davis	358	161	724	372	243	820
Dixon	26	10	50	176	165	354
Fairfield/Vacaville	188	72	356	436	183	715
Suisun City	141	54	268	328	137	537
Benicia				88	37	124
Martinez	90	172	435	169	331	673
Hercules	90	219	464	169	420	744
Richmond	49	164	279	91	315	472
Berkeley	26	80	151	47	149	241
Emeryville	103	393	734	182	699	1,120
Oakland	68	187	408	124	352	628
TOTAL DAILY	2,008	2,027	5,894	5,384	5,557	12,801

7.4 Comparison With Other Commuter Rail Systems

The estimated performance of the Regional Rail service is comparable to, though generally in the lower range of, ridership levels currently being experienced by many commuter rail systems operating today (see Table 7.6, below). Some possible reasons that Regional Rail service might not be attracting more riders include:

- Many commuter rail services have peak period headways of 30 minutes or less in the peak direction; the Capitol Corridor/Regional Rail system would not achieve this until 2020.
- Many commuter rail systems have no parallel express bus service. Thus, the entire transit mode share is being carried by rail.

- Most commuter rail systems operate on tracks that they do not share with peak period freight traffic, so that schedules can be adjusted to fit the various demands.

It should be highlighted that commuter rail systems are often subject to large fluctuations in ridership growth or decline from one year to the next, as a result of economic conditions.

**TABLE 7.6
Average Weekday Ridership on Selected U.S. Commuter Rail Systems**

Operator	Region	Line	Average Weekday Ridership	Peak Direction Headway	Source	Source Date
MBTA	Boston	Rockport	7,800	40	MBTA	FY 2004
MBTA	Boston	Newburyport	10,800	30	MBTA	FY 2004
MBTA	Boston	Haverhill	10,900	30	MBTA	FY 2004
MBTA	Boston	Lowell	11,100	30	MBTA	FY 2004
MBTA	Boston	Fitchburg	9,000	30	MBTA	FY 2004
MBTA	Boston	Attleboro/ Stoughton	28,100	20	MBTA	FY 2004
MBTA	Boston	Framingham/ Worcester	18,800	15	MBTA	FY 2004
MBTA	Boston	Needham	9,200	30	MBTA	FY 2004
MBTA	Boston	Franklin	15,200	20	MBTA	FY 2004
MBTA	Boston	Fairmount	2,400	30	MBTA	FY 2004
MBTA	Boston	Middleborough/ Lakeville	9,800	45	MBTA	FY 2004
MBTA	Boston	Plymouth/ Kingston	10,000	45	MBTA	FY 2004
NCTD	San Diego	Coaster	5,388	30	NCTD	Jun-04
Sod Transit	Seattle	Souder	2,800	30	Souder	Fall 2004
Metrolink	Los Angeles	Ventura County	4,221	45	Metrolink	Fall 2003
Metrolink	Los Angeles	Antelope Valley	6,817	40	Metrolink	Fall 2003
Metrolink	Los Angeles	San Bernardino	10,728	20	Metrolink	Fall 2003
Metrolink	Los Angeles	Riverside	4,629	30	Metrolink	Fall 2003
Metrolink	Los Angeles	Orange County/ LA	6,314	30	OCTA	2004
Metrolink	Los Angeles	Inland Empire/OC	3,772	60	OCTA	2004
Metrolink	Los Angeles	Rivers./ Fuller. /LA	2,007	30	OCTA	2004
VRE	Washington	Fredricksburg	6,574	30	VRE	2002
VRE	Washington	Manassas	5,644	30	VRE	2002
Caltrain	SF/San Jose	Caltrain	28,200	15	Caltrain	2004
MARC	Wash./ Balt.	Penn Line	16,733	30	MARC	May-04
MARC	Washington	Brunswick	6,596	25	MARC	May-04
MARC	Wash./ Balt.	Camden	3,867	40	MARC	May-04
RTA	Miami/Ft. Laud.	Tri-Rail	9,700	60	Tri-Rail	Fall 2004
NICTD	No. Indiana	South Shore	12,100	30	NICTD	Fall 2004
TRE	Dallas	Trinity Rway Exprs	7,300	20	TRE	Fall 2004

7.5 Parking Demand

Based upon the ridership estimates presented above, parking demand based on AM ridership and mode of access percentages was developed. This demand is provided for persons who are parking at the station and riding the train. A 25 percent allowance to include taxicab spaces, kiss-and-ride spaces, midday parking spaces, spaces for car sharing programs, or spaces that may be demanded for mixed-used development association with particular stations was also made. The resulting parking forecasts are developed for the 30-minute combined Capitol Corridor plus Regional Rail train service. The results are summarized in Table 7.7.

Some of the stations that are shown in Table 7.7 include stations where multiple rail services meet. In those instances, the parking demand is estimated for only the Capitol Corridor riders, and not demand for parking for other rail services at the station. Significant demand would occur at these intermodal stations as a result of additional rail transit service -- Swanston (Sacramento RT light rail), Sacramento (Amtrak and Sacramento RT light rail), and Richmond (BART).

It is also important to note that station-switching is possible with several of these stations, so that riders may choose to go to a different station if they feel that they cannot park at the closest one. Parking demand requirements presented here should be thought of as order of magnitude, and specific issues such as surrounding land use development plans, on-street parking potential, and other items should be studied on a station-by-station basis.

TABLE 7.7
Auburn-Oakland Regional Rail Service
Estimated Weekday Unconstrained* Parking Demand

Station	2010			2015			2020		
	Parking for Riders	Allowance for Other Activity	Total Parking Demand	Parking for Riders	Allowance for Other Activity	Total Parking Demand	Parking for Riders	Allowance for Other Activity	Total Parking Demand
Bowman							7	9	16
Auburn	62	15	77	150	38	188	207	52	259
Rocklin	86	22	108	215	54	269	292	73	365
Roseville	63	16	79	146	36	182	261	65	326
Antelope							343	86	429
Swanton							41	10	51
Sacramento	334	87	421	515	134	649	46	12	58
West Sacramento	0	0	0	0	0	0	770	192	962
Davis	226	57	282	200	50	250	211	53	264
Dixon				81	20	101	100	25	125
Fairfield/ Vacaville	156	39	195	216	54	270	283	71	354
Suisun City	106	26	132	147	37	184	192	48	240
Benicia							51	13	64
Martinez	49	12	61	62	16	78	99	25	124
Hercules	49	12	61	62	16	78	99	25	124
Richmond	17	4	22	22	6	28	36	9	45
Berkeley	8	2	10	11	3	14	20	5	25
Emeryville	39	10	48	52	13	65	88	22	110
Oakland	27	7	34	37	9	46	64	16	80
Total:	1,221	310	1,531	1,916	485	2,401	3,210	811	4,021

*Actual available parking may be less than figures shown. Also note that parking for other purposes may be present and not included in these counts.

8.0 INSTITUTIONAL STRUCTURE

8.1 Summary

This section presents a comparative analysis of alternative institutional arrangements to manage start-up and operation of the Auburn-Oakland Regional Rail Service. During the course of the study, detailed options for institutional structure were evaluated for their potential applicability to the Regional Rail service. A survey of approaches used by other agencies was provided to facilitate review and discussion by project sponsors, and after initial review, five options were established:

- Modification of the Capitol Corridor JPA (CCJPA);
- Formation of a new Joint Powers Authority (JPA);
- Statutory Agency – Modification of Existing Member Agency or New Subsidiary;
- Statutory Agency – Legislated New Entity; and
- Memorandum of Understanding.

Of the structures surveyed, most involved the institution of a new agency or amendment to the charter of an existing agency. Of these options, the project Technical Committee focused on the joint powers models, either modifying the existing Capitol Corridor Joint Powers Agency (JPA) or creating a new JPA. It was believed that the functions invested in a new structure would largely duplicate those already invested in the CCJPA, in which Regional Rail service sponsoring agencies are already represented. Study participants agreed, therefore, that the most timely and efficient approach would be to evaluate the feasibility of modifying the existing CCJPA agreement to take on the proposed new Regional Rail service.

In addition, project sponsors expressed a consensus view regarding the following supporting arrangements:

1. That the CCJPA be tasked to manage and operate the service, even if a separate governing entity were created. Given the proposed “seamlessness” of the Capitol Corridor and Regional Rail services, and also given the Union Pacific’s strongly stated preference for a “single passenger operator” in the corridor, there appeared to be no viable alternative – and no material drawbacks – to employing CCJPA staff for this purpose.
2. That actual operating responsibility would be contracted to Amtrak until such time that the CCJPA itself made a change in operating contractor for the Capitol Corridor service.
3. That the Sacramento Regional Transit District be the primary conduit for seeking funding support from the Federal Transit Administration.

8.2 Objectives and Principles

This part of the study has sought to define an institutional structure that fulfills these objectives:

- Encompass the joint interests of the five sponsoring counties in providing efficient regional transportation;

- Assure the standing and authority of a transit service provider in dealing with other government and private entities;
- Equitably distribute the interests, responsibilities and risks of the sponsoring counties;
- Impose no financial or organizational burden on the sponsoring agencies that detracts from existing services or functions

Throughout this planning exercise, a number of principles and themes have emerged that bear on the determination of an institutional structure. These principles are the basis of the evaluation and comparison among the institutional options.

Service Transparency. The new Regional Rail service would be designed and managed in order to make it indistinguishable from the Capitol Corridor service from the perspective of the rider. The two services would share equipment, personnel, and fare structure, among other things. This transparency will facilitate ridership and revenue development, simplify standards of operations and service, and enable joint management of the combined services at the lowest capital and operating costs.

Simplicity. Governance and management of the Regional Rail service should be as simple as possible. Funding for any of the individual sponsoring agencies may be limited at the outset or in the future. The institutional structure should be designed such that operating, maintenance, and administrative costs for the service may be easily estimated and controlled.

Expediency. Upon determination that implementation is feasible, it will be in the interest of the sponsoring agencies to organize and charter their institutional structure as quickly as possible, to establish their standing and qualifications for funding.

Self-Determination. Within the umbrella of the JPA, the powers and authorities of the sponsors should be used to the extent possible, without recourse to external agencies or new statutes. This will enable the sponsoring agencies to define their requirements, roles and responsibilities to their mutual satisfaction, and in as timely a manner as they can accomplish.

Use of Existing Structures. Wherever possible, the Regional Rail service should make use of existing agreements and infrastructure for start-up and operation, such as those instituted by the CCJPA, Caltrans, Amtrak, or any of the individual sponsoring agencies. This will both obviate duplication and redundancy, and minimize the new terms that must be developed.

“Amendability.” The institutional structure should allow flexibility over the life of the service. The experiences of other multi-agency services illustrate that conditions change over time for every agency. The institutional structure for the Regional Rail must therefore enable adaptation to changing conditions, with minimal disruption to the service.

8.3 Options Considered

The Regional Rail working group has investigated a range of institutional structure options, as listed above. The following sections describe the each of these options, in terms of their responsiveness to the Regional Rail agencies’ objectives and principles.

8.3.1 Establish a New Joint Powers Agency (JPA)

A new JPA must file articles of its incorporation with the Department of State, demonstrating compliance with State corporation law. Alternately, a JPA may be established by legislation, with the same terms and powers as a self-established JPA. Under a JPA, decision-making and administration can be efficiently managed, and the governmental (as opposed to contractual) nature of the implementing agreements can help ensure that conflicts are resolved expeditiously.

The powers of a joint powers board or commission can be determined by inter-agency agreement. Similar to a statutory agency, it generally has the power to enter into contracts with other public entities and private parties, to sue and be sued, and to manage its affairs. The governing body is subject to appointment and with voting/quorum and other rights determined by the agreement.

Administration of the project or service may be delegated to: (1) one or more of the parties to the agreement; (2) a commission or board constituted pursuant to the agreement; or (3) a person, firm, or corporation, including a nonprofit corporation, designated in the agreement.

Examples. JPA structures established specifically for implementing and operating passenger rail services include the Southern California Regional Rail Authority (SCRRA), Peninsula Corridor Joint Powers Board (PCJPB), and Capitol Corridor Joint Powers Authority (CCJPA). The key difference among the three agencies is that SCRRA and PCJPB are owner-operators, while CCJPA manages service via a contract operator (Amtrak) over privately-owned trackage (UPRR). In other respects, their responsibilities are similar.

Characteristics (Based on Principles).

Service Transparency. If agencies sponsoring the Regional Rail intend it, their trains need not be differentiated from Capitol Corridor trains. The new JPA could contract jointly for the services procured by the CCJPA, using the same contract vehicles. However, separate financing, contracting or managing the new services by a new JPA could result in some differentiation of the Regional Rail service, particularly if the new JPA had to follow a separate procurement process. Alternately, designation of “Regional Rail” service in the public timetables would be possible, should the sponsors desire a greater visibility for the new JPA (e.g., to demonstrate use of local funds).

Simplicity. The member agencies of a JPA set up independently of State legislation will determine its complexity. The agreement among JPA member agencies generally defines the powers and limitations of the particular JPA, and can be used to limit the complexity of the organization and its processes.

Expediency. In California, there are no requirements for legislative or local electoral approval for the creation of a JPA, and the structure can be put in place as quickly as the parties can agree on the terms and conditions to be included in their agreement. However, formation of a new agency requires a review of potential overlaps or conflicts with other agencies, and may require disproportionate time and effort to negotiate.

Self-Determination. The JPA structure enables the participating agencies to define the extent of their purpose and powers. The participants jointly exercise existing powers shared in common. It is not necessary that any power common to the contracting agencies be exercisable by each contracting party

with respect to the geographical area in which the power is to be jointly exercised. For example, two or more public agencies, each of which has the power to administer a fare payment system within its respective jurisdiction, may create a JPA pursuant to the act to serve all affected jurisdictions.

Use of Existing Structures. All of the privileges and immunities from liabilities, exemptions from laws, ordinances and rules, and other benefits that apply to member agencies of a JPA, apply to them to the same degree and extent while performing their functions under the agreement. While a new JPA set up to start and operate the Regional Rail service could negotiate for trackage rights, contract for train operations and represent the interests of the service with the CCJPA. However, since these agencies are already represented on the CCJPA, this would duplicate structures already in place.

“Amendability”. The JPA can be a more flexible structure than a statutory agency. An advantage of a JPA is that the participating public agencies have the flexibility to specify in the agreement the types of common powers allocated to the agency, and the method of exercising such powers. The parties may provide for the method by which the agreement may be amended, rescinded, or terminated and for parties to join the JPA or withdraw from participation. In negotiating for the termination provision, the participants should take into account such issues as the maturity date of any bonds issued by the agency, payment dates of other forms of indebtedness incurred, the disposition of other claims, and the distribution of assets of the joint powers agency upon the termination of the agreement.

8.3.2 Modify an Existing JPA

The scope of an existing JPA may be increased to encompass the implementation and management of new regional rail services. The existing JPA provisions would require review to ensure they are appropriate to the goals of the rail program, including membership, organization and decision structure, source(s) of funding, and administrative structure. The authority of the Capitol Corridor JPA could be expanded to include the new Auburn-Oakland service, under the management of Capitol Corridor staff or another JPA member. There are clear efficiencies in this arrangement, particularly since all of the counties involved in planning the Regional Rail are already represented by member agencies of the CCJPA.

Characteristics (Based on Principles)

Service Transparency. Merging the proposed new services with existing services under the administration of an existing JPA offers the greatest assurance of service transparency, particularly the existing CCJPA. The operation of the expanded service would remain the responsibility of a single governing entity, so all operations and service policies would apply equally to every train.

Simplicity. Expanding the role of an existing JPA offers the greatest simplicity, from the perspective of governance, administration, policy, inter-government relations, and acquisition. Under the auspices of a single existing JPA, the interests of the entire operation would be unified. The governing JPA would represent the total service in working with other public entities, negotiating with the host railroad(s), and procuring material and services.

Expediency. Modifying an existing JPA would most likely be the least time-consuming option, in that expanding the scope and responsibility of an existing JPA would entail less legal or legislative work than establishing an entirely new entity. Because the CCJPA is enabled by State legislation, however,

the expansion of its jurisdiction and operational scope might require amending legislation, though this has not been confirmed.

Self-Determination. If the interests of the Regional Rail sponsoring agencies are determined to be different from those of the member agencies of an existing JPA, modifying the existing JPA may not serve their purpose as well as establishing a new, dedicated JPA. The Regional Rail sponsoring agencies would need to review the CCJPA joint powers agreement to assess its responsiveness to their goals and needs.

Use of Existing Structures. Use of the CCJPA's governance, financing and contractual structures may offer the greatest potential for economy and efficiency, in that new structures do not need to be created, and the existing structures have been refined and proven.

"Amendability". If the Regional Rail sponsoring agencies were to be included in an expanded CCJPA, they would either be subject to the terms of the existing CCJPA agreement with regard to its "amendability," or would need to negotiate new terms with the CCJPA member agencies.

8.3.3 Increase the Powers of an Existing Agency or Establish a Subsidiary

Modifying the powers of an existing statutory agency enables the service to use existing functions and capabilities, and may not take as long as creation of a new agency. However, legislation might be required to statutorily expand the powers of an existing agency to fulfill the goals of the project. Adding the responsibility for a multi-county regional service may be seen to conflict with the local charter of an existing transit operator, particularly if separation between funding sources and uses is not clearly maintained.

As an alternative, implementation and operation of a new regional rail service could be accomplished via a subsidiary organization. A wholly-owned subsidiary could manage implementation and operation, separate from the agency's day-to-day operations. In addition, MOUs or cooperative agreements with certain affected agencies could be negotiated for the subsidiary to exercise powers that may be outside the parent agency's jurisdiction.

Examples. Existing transit agencies are occasionally responsible for introducing a new technology, mode, or service. A current example would be the Santa Clara Valley Transportation Authority (SCVTA) having responsibility for design and construction of an extension of the BART system from Warm Springs to downtown San Jose. In this case, SCVTA controls and manages the design and construction of the BART extension, while operationally it will be an extension of the existing BART system.

Transit Authority subsidiaries can be formed for various purposes, including construction management for new infrastructure projects and for system operation and maintenance. Examples of subsidiary organizations to existing transit agencies include the Rail Construction Corporation (RCC - Los Angeles), the San Diego Trolley (SDTI), and the Port Authority Trans-Hudson (PATH - New York).

Other transit agencies have established structures to gain the benefits of a subsidiary for construction management on new infrastructure projects short of officially forming subsidiaries. Examples include New Jersey Transit establishing a separate project administration to manage the Hudson Bergen light

rail DBOM project, and BART's establishing a separate construction entity to manage the SFO airport extension construction project.

Characteristics (Based on Principles).

Service Transparency. Investing responsibility for implementation and operation in a single existing transit agency or subsidiary does not assure that the Regional Rail service will be indistinguishable from the existing Capitol Corridor service. Competitive procurement requirements for either an existing transit agency or a subsidiary could result in differences in rolling stock or operations, though this might be avoided by requiring the contract operator to provide rolling stock identical to the existing fleet as part of its contract.

Simplicity. This option would not require the formation of a new agency, instead using the capabilities of an existing agency to implement and operate the service. At the same time, the enabling legislation for the existing agency might need to be amended to allow regional jurisdiction and operational responsibility, particularly if this added responsibility may be seen as conflicting with the current, local mission of the agency.

Expediency. Either increasing the powers of an existing agency or establishment of a subsidiary would require significant work to define new staffing and administrative requirements, just at the level of the agency and its board or commission. In comparison with expanding the existing CCJPA, the time spent would not be worth the benefit.

Self-Determination. Investing responsibility for implementation and operation in a single entity, whether an existing agency or subsidiary, may enable greater autonomy and control over the Regional Rail service than use of other existing agency structures. This may not be appropriate for a service sponsored jointly by a number of counties, particularly given their involvement already in the CCJPA.

Use of Existing Structures. Increasing the powers of an existing agency or creating a subsidiary may enable the use of existing agency structures, though such structures exist in the CCJPA. This option may thus result in duplication of functions that are already in place and proven for this purpose.

"Amendability". These options would invest implementation and operation responsibility in a single local entity, which would still need to be responsive to the regional sponsoring agencies. Affiliating the Regional Rail service with an existing agency may limit the ability to change or amend structure, policies, or practices.

8.3.4 Establish a New Authority via State Legislation

Creation of a statutory agency dedicated to implementing and managing an Auburn-Oakland regional rail service would require drafting a bill, identifying and enlisting sponsorship in the legislature, passage by both houses of the Legislature, and signing into law by the Governor. Governance structures can include boards either directly elected (either at large or by wards within the territory of the statutory agency) or appointed. Statutory agencies customarily can employ staff, enter into contracts and other agreements with other public agencies and with private entities, sue and be sued, and generally exercise any other powers of public agencies. Subcategories include agencies for a special purpose (such as implementing and operating a regional rail service), and generic agencies, the enabling statutes of which

then permit the organization of specific, subordinate agencies for limited purposes in accordance with the conditions of the statute.

Examples. Examples of State legislated transportation entities include the Bay Area Water Transit Authority (BAWTA), the Bay Area Rapid Transit District (BART), the Los Angeles County Metropolitan Transit Authority (LACMTA), and the Denver Regional Transit District (RTD).

Characteristics (Based on Principles).

Service Transparency. Formation of a new agency via state legislation need not preclude new Regional Rail services from being indistinguishable with those of the Capitol Corridor. It is possible that a new agency would be required to have discrete procurement processes and rules that would make integration with the CCJPA less certain.

Simplicity. Formation of a new agency adds a new degree of complexity that is otherwise avoided by the use of an existing agency to implement and operate the service.

Expediency. For a legislated, new entity, a significant amount of time is likely to elapse between introduction of the legislation, enactment, and organization of the entity. Absent an urgency clause, enacted legislation would become effective the first day of the next calendar year. It would still be necessary to organize the entity, a process that could take several months.

Self-Determination. One important advantage of a legislated agency is that the participants, especially at the initial stage, have the freedom to define the powers expected of the new agency according to their needs and objectives. For example, unlike other institutional options, the new, legislated agency could have broad authority beyond those of the participants, individually or collectively.

Use of Existing Structures. By definition, a new agency is typically created by state legislation to have its own, discrete authority and functions. An agency formed to administer the Regional Rail service would necessarily duplicate many of the functions already granted to the CCJPA.

“Amendability”. Critical terms and provisions for a new agency can be embedded in statutory language. Amending these provisions would require further legislation, which would require a much higher level of effort, with a less predictable outcome, than amending the charters of other types of organization.

8.3.5 Execute a Memorandum of Understanding (MOU)

A non-legislative statutory alternative to formation of a JPA would be implementing and managing the service using either a cooperative agreement or Memorandum of Understanding (MOU). These arrangements are similar to a joint exercise of powers agreement in that the powers available under the contract would be limited to those held by or implicit in the powers retained by the parties to the agreement. By contrast with a JPA, however, all actions and risks, including those related to operations, fundraising, payments, etc. must be assumed by individual parties to the MOU.

Examples. Examples of services of started or operated under the terms of an MOU include the Trinity Rail Express (TRE) and the Altamont Commuter Express (ACE).

Characteristics (Based on Principles).

Service Transparency. The agencies joined under a memorandum of understanding could adopt as a basic principle their intent to simply fund and promote expanded Capitol Corridor services, and negotiate as an entity with the CCJPA to implement the additional service. However, as most of these agencies are already represented on the CCJPA, directly or indirectly, this additional structure would be largely duplicative.

Simplicity. This approach would offer a number of advantages of a JPA without the legal, political, and administrative complexity of that structure. As with the JPA, administration of an MOU could be undertaken by one of the signatory agencies, or other entity satisfactory to all parties. Again, such a structure would duplicate functions of the CCJPA.

Expediency. Negotiation of an MOU would not result in the creation of a separate entity, or governing body, but the delegation of functions to one or more of the contracting parties. Since there are no governmental review or approval requirements other than the internal processes of the participants, the structure can be put in place as soon as the parties can come to agreement.

Self-Determination. The signatories to an MOU do not create a new entity, but delegate functions and responsibilities among themselves. This enables each agency to respond to its own concerns, but does not create a dedicated entity with the Regional Rail as its sole purpose.

Use of Existing Structures. Because there is no separate entity, there is no governing body; however, the parties can establish committees with the same functions, duties, responsibilities, and powers. Since there is no separate entity, contracts for goods and services would have to be made by one or more of the participants, presenting the potential for some complexity in the allocation of risks and indemnification. Again, such a structure would duplicate functions of the CCJPA.

“Amendability”. There are few restrictions on the terms and conditions that the parties can agree to. Because the "lowest common denominator" or "weakest link" rule applicable to JPA agreements is inapplicable, the parties may have slightly broader authority to craft an agreement that meets their needs, including amendability. The MOU approach, however, presents a somewhat greater risk of fracturing due to unresolved disagreements.

8.5 Recommended/Preferred Approach

Of the alternative institutional structures surveyed, the project Technical Committee focused most on the joint powers models – either modifying the existing Capitol Corridor Joint Powers Agency (JPA) to include responsibility for operating the Regional Rail service, or creating a new JPA for this purpose. Further, it was believed that the functions invested in a new structure would largely duplicate those already invested in the CCJPA, in which Regional Rail service sponsoring agencies are already represented. Study participants agreed, therefore, that the most timely and efficient approach would be to evaluate the feasibility of modifying the existing CCJPA agreement to take on the proposed new Regional Rail service.

In addition, all project participants were unanimous in preferring that the CCJPA be tasked to manage and operate the service, even if a separate governing entity were created. Given the proposed

“seamlessness” of the Capitol Corridor and Regional Rail services, and also given the Union Pacific’s strongly stated preference for a “single passenger operator” in the corridor, there appeared to be no viable alternative – and no material drawbacks – to employing CCJPA staff for this purpose. It was further stated by Regional Rail service sponsors that actual operating responsibility would be contracted to Amtrak until such time that the CCJPA itself made a change in operating contractor for the Capitol Corridor service.

At present, the Sacramento Regional Transit District (RT) is the only Regional Rail project sponsor that is a designated Federal Transit Administration (FTA) grant recipient. Thus, all study participants have expressed support for the strategy that RT take the lead in pursuit of FTA “New Starts” funding.

9.0 LOCALLY-CONTROLLED FUNDING (COST) SHARING POLICY

9.1 Summary

The fundamental principle to be used in defining measures and formulas for cost allocation is one of fairness – that is, financial burden should be assessed in proportion to benefit received. There can be variations on this approach, such as ability to pay (based on economic, fiscal, and/or legal considerations), and agreement to bear a disproportionate share as part of a larger negotiation. It is also possible – and often appropriate – to define burden shares based on the amount of service provided, whether or not the service is utilized to the same extent in all jurisdictions.

Actual costs may be allocated among the participating entities by means of agreed formulae, pre-determined proportions, or flat monetary values, or may be negotiated on a case-by-case basis. To depict a range of cost allocation models that may be considered for a new Auburn-Oakland regional rail service, a preceding technical memorandum surveyed a number of regional rail authorities and the means by which they allocate their capital and operating costs.

After extensive discussion by the project Technical Committee and review by the Steering Committee, no single approach received a complete consensus. There was broad support for using the sum of population and employment to allocate local responsibility for capital outlay and ongoing operations and maintenance support. However, there was less agreement on whether those calculations should be based on entire counties, or rather on service area corridors representing less than whole counties.

There was also agreement that, in order to encourage actions designed to maximize ridership, a “credit” against a sponsor’s O&M subsidy requirement will be calculated as the share of total fare revenue attributable to passengers boarding at stations located within the sponsor’s jurisdiction (county).

Further discussion, including consideration of the use of whole or partial counties for purposes of calculating population and employment, is anticipated during the next phase of project development.

9.2 Principles of Cost Allocation

A few basic considerations must be addressed when defining a fair and reasonable arrangement. These are briefly described in the following paragraphs.

9.2.1 Operating Costs

Operating costs are in every case paid by a combination of passenger farebox revenue, subsidies paid by the sponsoring agencies, and other revenue or grant sources. The bases used for allocating operating costs among subsidizing agencies represented by these examples include:

- Formula based on passenger boardings and alightings in participating jurisdictions;
- Formula based on AM peak period passenger boardings in participating jurisdictions;
- Formula based on train operating miles in participating jurisdictions;
- Formula based on revenue passenger seat miles in participating jurisdictions; and
- Negotiated annual financial commitments.

Other sources of operating cost subsidies could include:

- Trackage right fees;
- Federal and state formula grant funds; or
- Local private development partners (e.g. employer shuttle bus services).

9.2.2 Capital Costs

The allocation of capital costs is less formulaic than that of operating costs, owing to the range of projects, whether they are fixed or mobile, and the sources of capital funds. Capital costs may be allocated among sponsoring agencies according to:

- Geographic jurisdiction;
- Negotiated project-by-project funding agreements;
- The agency or partner that requires or desires the project;
- The agency obtaining capital grants, and the conditions of grants; or
- Formulae similar to those used for allocating operating costs.

Additional funding for capital projects may be provided by project partners other than the agencies sponsoring the service, including transit authorities, economic development authorities, individual municipalities or counties, or private entities participating via public-private development agreements.

9.3 Types of Beneficiaries and Measures of Benefit

Allocation on the basis of benefit received can be quantified only after all important classes of beneficiaries can be enumerated. In the transportation policy arena, beneficiaries are typically viewed as falling into four or five categories, namely:

- Service users (transit riders);
- Property owners;
- Personal service and retail business owners;
- Other employers; and
- All jurisdictional residents.

Measures of user benefit are defined to conform to the classification of beneficiaries, and thus fall into the following categories:

- Accessibility/travel time;
- Rider out-of-pocket cost;
- Property values;
- Business sales, costs, and profits; and
- Social welfare, generally.

A common alternative or supplemental method for allocating cost is that based on the relative amount of service provided. In services such as public transit, where usage is highly variable and sometimes difficult to measure directly, this approach can serve as an effective proxy for allocation of benefit.

Indeed, it can and often is seen as a legitimate measure of fairness in its own right when applied to a “market” service such as transit (as compared with, for example, water supply or wastewater treatment).

Further, the provision of transit service can be measured directly, through quantification of operating data, or indirectly, through measurement of the actual and potential “market” for the service, that is, actual and potential riders.

9.4 Metric Selection Criteria

Selecting metrics (measures) for inclusion in a cost allocation formula, several characteristics are desirable. Among the most important of these are:

- Apparent relationship to benefit(s) being measured;
- Direct utility (applicability) to one or more type(s) of service;
- Simplicity;
- Effectiveness (precision and reliability); and
- Availability of data and cost.

These criteria are employed in the review and discussion of candidate metrics, below.

9.5 Evaluation of Candidate Metrics

A review of approaches taken to defining cost allocation formulas in other contexts suggests that the service provided, or “provider value-added,” approach is appropriate in situations where resources are limited and the size of the overall operation does not warrant expensive, complex methods. As a result, a number of candidate metrics have been defined based on this approach. In all cases, the discussions implicitly focus on the utility of a measure with respect to cost allocation among Regional Rail member jurisdictions. The discussions are organized as follows:

- Service Level Provided
- Actual Use
- Potential Use

9.5.1 Service Level Provided

Track Miles (Length). This metric has the advantage of great simplicity, but this is offset by its poor relationship to either actual service delivered or aggregate user benefit received.

Train-Miles, Hours, or Both. Vehicle (train) miles or hours by jurisdiction can provide an improved metric when service varies across multiple routes. Either measure (miles, hours) can be used; an average of the two can be used when there is a perception that unusual routing may skew the results.

9.5.2 Actual Use

Passenger Boardings, Alightings, or Both. This metric provides an indication of the degree of transit use by jurisdiction, but can be somewhat of an indirect measure, given that riders can cross-jurisdictional

boundaries to use the closest or otherwise most convenient station. In commuter service, daily boardings and alightings generally balance, so boardings alone are usually adequate.

Passenger Origin-Destination Pairs (Home-Based). This approach links specific boardings with specific destinations, and thus can provide more insight into the distribution of benefits among non-user beneficiaries (businesses, property owners, etc). It is useful for measuring commuter service provided and benefits received, in that the actual origins of riders are used. There would be considerably greater cost associated with data collection and analysis for this metric.

9.5.3 Potential Demand (Use)

Population/Employment (Both). This approach provides a very simple measure of the potential transit market in each jurisdiction. By itself, however, it cannot address variations in the relative level of transit service provided in each jurisdiction, and the fact that the propensity to use transit will vary by jurisdictions.

Transit Dependent Population. This measure, while useful for fixed route bus and paratransit services, has little if any utility for the commuter service.

9.5.4 Service Provided and Potential Demand

Number of Stations. This is a simplified approach to addressing both service supplied and potential demand (benefit received). This basic metric is fairly crude, and ridership is usually a better substitute when data are available.

Population/Employment Within Fixed Distance of Station. A more elaborate variation of the number of stations measure is to count population and/or employment within some fixed distance or fixed travel time from stations, then aggregate to the jurisdiction level. This metric can in fact be used to measure potential service efficiency in the form of population or employment per route mile or train mile.

9.6 Recommended/Preferred Cost/Funding Allocation Metric

After extensive discussion by the project Technical Committee and review by the Steering Committee, no single approach received a complete consensus. There was broad support for using the sum of population and employment to allocate local responsibility for both capital outlay and ongoing operations and maintenance support. However, there was less agreement on whether those calculations should be based on entire counties, or rather on a service area corridor representing less than whole counties.

There was also agreement that, in order to encourage actions designed to maximize ridership, a “credit” against a sponsor’s O&M subsidy requirement will be calculated as the share of total fare revenue attributable to passengers boarding at stations located within the sponsor’s jurisdiction (county).

At present, the question of using whole counties versus partial counties (subareas) to calculate shares remains open. It is anticipated that a consensus view will be reached after further review and discussion by the sponsors.

10.0 IMPLEMENTATION ACTION PLAN

10.1 Objectives

Implementation of Regional Rail service in the Auburn-Oakland corridor will require that all principal project sponsors and stakeholders maintain and increase their coordinated efforts to:

1. Negotiate and execute agreements among project sponsors and stakeholders necessary to establish appropriate authority and institutional structures to guide and support project development functions, including: funding, planning, design, procurement, and operations;
2. Secure necessary federal, state, and locally-controlled funding;
3. Negotiate and execute an agreement with the Union Pacific Railroad to permit operation of Regional Rail passenger service in the Auburn-Oakland corridor above that now allowed under the existing CCJPA/UP contract; and
4. Organize and mount a major outreach program to federal, state, and local elected officials in order to facilitate Tasks 2 and 3.

10.2 Near-Term Actions

With these four objectives in mind, immediate and near-term Regional Rail service implementation actions should include the following, at a minimum:

- Complete Regional Rail Service Concept and Implementation Plan report and present to sponsor Policy Boards. (Prepare a press release to coincide with Board presentations.)
- Confirm and monitor that the Regional Rail project remains included in the TEALU legislation.
- Update Union Pacific staff and other stakeholders on the project's status.
- Prepare an action plan to seek and obtain federal discretionary funding (e.g., FTA Section 5309) for project Phase 1 and Phase 2.
- Prepare an action plan to seek and obtain state funding through the STIP process and other discretionary means.
- Individual project sponsors prepare coordinated action plans to secure locally-controlled funding.
- Negotiate an extension of the five-party MOU, with additional funding, to support near-term project development efforts until a more permanent institutional arrangement and external development funding can be secured.
- Present the proposed Regional Rail Service Concept and Action Plan to the CCJPA Board for consideration of the proposal that the CCJPA to assume responsibility for development and eventual operation of the Regional Rail service. If received positively, begin legal review of necessary changes to Capitol Corridor Joint Powers Agreement and initiate a process to amend the Agreement.

10.3 Ongoing Activities and Long-Term Actions

Ongoing and longer-term Regional Rail service implementation activities should include, but not be limited to:

- Restart coordination with the Union Pacific Railroad to expedite operations analysis review and begin negotiations to reach agreement on service impacts, mitigation/improvement projects, and other matters pursuant to executing an agreement to permit additional service on the UP mainline between Bowman and Oakland.
- Begin discussions with FTA staff regarding funding opportunities and specific grant request procedures. In particular, assess the potential for securing “Small Starts” funds. With FTA participation, begin work on updating ridership forecasts using more detailed modeling techniques.
- Meet with senior Caltrans and California Transportation Commission (CTC) staff to review options for discretionary state funding support, and to assess the general funding outlook over the next two or three years.
- Implement detailed locally-controlled funding plans, including specific actions in support of local tax elections, allocation of regional funds by MPOs, etc.
- Begin research and review leading to development of rolling stock acquisition specifications of each type of vehicle named in this report. Identify opportunities for executing a joint procurement with one or more other rail operators.
- Implement and maintain a moderate public outreach program to build support for the Regional Rail project at the public, stakeholder, and political levels.

10.4 Roles and Responsibilities

Assignment of specific roles and responsibilities should be one of the first actions taken by the Regional Rail Steering Committee with support from the Technical Committee. While most roles and responsibilities should be delegated only after thorough review and discussion, a few such assignments are suggested here:

Role/Responsibility	Assignment
FTA Funding Coordination	Sacramento RT Staff
State Funding Coordination	CCJPA (Future JPA) Staff
Locally-Controlled Funding Initiatives Coordination	Technical Committee Members
Elected Official and Stakeholder Outreach	Steering Committee Members
UP Coordination and Negotiations	CCJPA Staff

APPENDIX – QUESTIONS FROM MEMBER POLICY BOARDS AND RESPONSES

Contra Costa Transportation Authority

1. *How the corridor stations are prioritized to determine which of them receive funding?*

The Hercules and the Fairfield-Vacaville stations are included to reflect the fact that they will exist, and it was not to be assumed that there was any direct regional rail funding for the stations. They are being developed separately with funding that has been or will be secured.

2. *Who would own the new stations if Union Pacific is not providing the funding? Also, there needs to be a guarantee to ensure that the Authority's investment would not be a gift of public funds.*

This issue will be negotiated with the Union Pacific. It was likely that UP will sell off land for the station building and access to it.

3. *Can you provide more information about the operating costs and the annual subsidy of approximately 60 percent?*

The State is not in a position to provide additional subsidies; local entities (such as the Authority) will need to assume the responsibility to fund the added service.

4. *Can you clarify the land cost and ridership estimates? Ridership and subsidy are very closely related.*

An estimate for land costs for the five regional rail stations is included in the Project Capital Costs Summary. The ridership daily averages represent boardings as opposed to round-trips.

5. *The Authority should not discuss next steps until some agreement or level of participation is established with Union Pacific.*

The process will not move forward until Union Pacific engages in a dialogue on the specifics of the project.

Placer County Transportation Planning Agency

1. *Include language on page 63 of the report to specify that new ridership modeling be undertaken.*

The requested language has been added.

Sacramento Area Council of Governments

Regional Planning Partnership

1. *Consider a stop at McClellan Field.*

It may be that as the McClellan project grows that it will develop into a significant work center with high potential as a Regional Rail stop. Note, however, that stations are planned at Swanston and Antelope, so that close spacing of stations could become an issue. This is a concept that can be more fully explored in the next iteration of the study.

2. *Explore opportunities to join forces with private sector entities pushing for track improvements for freight rail that would, in the process, benefit passenger rail.*

All opportunities to make track improvements for passenger rail should be explored. In particular, Regional Rail sponsors will seek to work with the Union Pacific to identify improvements with benefits to both modes.

3. *The proposed service should result in an air quality benefit to the region.*

One of the main benefits of this project, in addition to relieving congestion, is the improvement of air quality in the region through reduced vehicle trips and the acquisition of new generation, low-emission locomotives.

Transportation and Air Quality Committee

1. *Do the Operations and Maintenance (O&M) costs identified in the study include the equipment replacement costs?*

O&M costs shown in the report do include a set-aside (“sinking fund”) for major overhauls of rolling stock. However, they do not include set-asides for replacing capital investments. Purchases of new rolling stock are generally funded on a pay-as-you-go basis with support from the Federal Transit Administration (FTA).

2. *What is the ultimate subsidy for this service and why should it be supported by agencies that will not be served by the proposed commuter trains?*

The Regional Rail service will reduce congestion and improve air quality throughout the entire SACOG six-county area. While it will most directly benefit the I-80 and Business 80 corridors, it will indirectly benefit I-5, U.S. 50, and U.S. 99. While not be inexpensive to implement, it would be significantly less expensive than several projects which it could arguably replace: additional lanes on I-80 from Auburn to Dixon, light rail service from Sacramento to Davis, and light rail service from Watt Ave. to Roseville.

3. *Isn't it counter to Blueprint principles that no service is proposed by the Capitol Corridor trains to the new commuter stations in Antelope, Swanston, and West Sacramento?*

Adding Capitol Corridor service to the new stations is certainly feasible, and it is reasonable to expect that the Capitol Corridor Board will take the matter up at an appropriate time in the future. Issues requiring consideration in any such evaluation would be (1) whether stops in such close proximity could jeopardize Capitol Corridor's funding status as *intercity* service; and (2) whether intercity trains could maintain effective schedules given the additional station dwell time.

4. *Why is there such a large and expensive parking lot at the West Sacramento station? Isn't West Sacramento providing more than its "fair share" of parking for the system?*

The proposed parking facility at the West Sacramento station represents only about 10% of the total cost of the project identified in the final report. The total cost estimate is high mainly due to grade differences on the site that was selected and the requirement for more extensive earthmoving and structural elements. It is important to note that project sponsors propose that parking at this station be considered a "shared resource" and be shared among all participating agencies. It is anticipated that many Regional Rail stations will have large lots in order to attract as many riders as possible.

5. *How does the subsidy for this proposed service and its riders compare to subsidies for other modes?*

On a rule of thumb basis, the required operating subsidy for Regional Rail should be competitive with other commuter services around the country and less than that for most other modes, including auto, light rail, and heavy rail. A cost-effectiveness comparison of Regional Rail with other modes was not a part of this study; however, it is expected that such a comparison will be made as part of an application to the FTA for federal funding support.

Sacramento Regional Transit District

1. *How feasible is Regional Rail service, given the rail traffic congestion that already exists on the UP mainline between Auburn and Oakland?*

The Union Pacific has committed to maintaining a high level of on time performance for Capitol Corridor service, including those slots that are authorized but not yet being used. CCJPA expects that UP to honor that commitment, regardless of freight traffic demand. With respect to service above and beyond those slots currently under contract, it is clear that significant capital improvements in track, signals, and storage will be required to maintain on time service. The Regional Rail Steering Committee continues to seek to engage the UP in a dialog on how these improvements can best be achieved.

2. *The institutional concept makes sense: Create a separate division of Capitol Corridor rather than an entirely new entity. Also, it is the best plan for getting more service to Roseville quickly.*

Comment noted and appreciated.

3. *Does the concept plan allow other cities to build stations in addition to the ones listed in the report (e.g., Loomis)? Is there an upper limit on the number stations?*

The question of how many stations to build and where to put them involves a trade-off between (1) providing better access to more potential riders and (2) keeping scheduled running time at an absolute minimum in order to attract and keep riders. There is considerable flexibility in where stations can be located. Any request for a station will be given careful consideration by Regional Rail management.

- 4. Are there opportunities for high-density development near stations in order to tap developer funding?*

Yes. A number of stations offer potential for higher density development. One recommendation of the study team is to do local funding plans for each participating agency. Joint development and other development-related funding mechanisms should be a part of those funding plans.

- 5. The ridership estimates are “solid,” although probably too conservative. Ridership growth in the past few years has been running higher than that assumed for the future. This could affect federal funding, fare revenue and operating subsidy requirements, and overall implementation timing due to the assumed need for federal funds).*

Those entities charged with seeking FTA funding for Regional Rail service will work with the FTA and local stakeholders to develop more detailed ridership forecasts. With respect to the use of federal funds, an important next step will be to formulate one or more strategic funding plans to better address the question of whether federal funds are needed.

- 6. Regional Rail supporters will need to address the concerns of potential opponents who seek other uses for local funds and/or are concerned that Regional Rail service will take too long to implement.*

The next phase of work will result in detailed funding plans, schedules, and institutional arrangements designed to allay concerns regarding schedule and competition from other projects. As part of the SACOG and MTC Regional Transportation Plans, spending for Regional Rail should be prioritized along with that for other modes.

- 7. Sacramento RT should be the lead agency for implementation.*

As a designated grant recipient for FTA funding, it is clear that SRTD will work closely with and as a part of the overall Regional Rail service managing entity.

Solano Transportation Authority

- 1. What percentage of local match funds will be needed?*

The study assumes 11.5% for capital match. All operating support will be local, except for the potential to use CMAQ or similar funds on a “demonstration,” or temporary basis.

- 2. What is the likely competitiveness of commuter train funding to be received from federal or state funding sources? Prematurely adding the Regional Rail service could marginalize the existing rail service.*

The Capitol Corridor is eligible only for state, not federal funding, so there is no direct competition. The funding of local commuter rail service will be a local decision.

- 3. We support continuing the evaluation process. The commuter rail and Capitol Corridor would enhance each other's services.*

Comments noted and appreciated.

Yolo County Transit District

- 1. Why are 400 parking spaces being provided at the proposed West Sacramento station in lieu of more parking at other stations?*

The allocation of 400 parking spaces to the proposed West Sacramento station was based on a concept of capturing additional riders who would use the service but cannot find a place to park at the Sacramento Valley (Downtown) station. Project planners appreciate that this amount of parking would pose design challenges and a need to carefully mitigate traffic and air quality impacts. If done appropriately, the station could provide significant economic development benefits to the City, and would well-serve its growing population of Bay Area "expatriates." Project planners assume that the cost of the parking would be funded in a shared manner, and not by Yolo County alone.

- 2. Why are some stations shown as Regional Rail only, rather than also serving Capitol Corridor trains?*

The stations designated as "Regional Rail only" could potentially serve Capitol Corridor trains as well. However, that will be an operational decision for the CCJPA to make when new station development is closer to implementation.

- 3. What input has the Union Pacific had about the plan?*

The Union Pacific began the study process as a full technical participant. Due to a number of factors, they discontinued their participation approximately 18 months ago. Efforts will be made to have them rejoin in the near future.

- 4. The pursuit of regional rail is needed due to ever increasing traffic along Interstate 80.*

Comment noted and appreciated.