Napa/Solano Passenger/Freight Rail Study

Final Report

Submitted To

Napa County Transportation Planning Agency
Solano Transportation Authority

Submitted By

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Rail Planners, Economists and Engineers

In Association With

Nelson\Nygaard Consulting Associates
Moore Iacofano Goltsman, Inc.
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EnviroTrans Solutions, Inc.
RailPros, Inc.

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EXECUTIVE SUMMARY

This study had four basic objectives:

1. To determine economic feasibility of possible passenger rail services;
2. To determine economic feasibility of enhanced rail freight activity;
3. To compare potential rail versus existing and potential bus service operating costs and
4. Examine the long run potential of connecting passenger rail services.

The study, by R.L. Banks & Associates, Inc. (RLBA) and six subcontractors (Consultant Team), started in May 2002. The study addresses all elements of a comprehensive new-start public rail transportation plan: route and equipment selection, station characteristics, capital and operating costs, freight and passenger operations on shared track and environmental impacts..

Start-up capital costs range from $99.4 million to $138.6 million per stand-alone service option, or a total of $216 million for all routes. There are significant capital cost reduction opportunities associated with implementing more than one commuter service and especially by operating commuter and visitor services over the same route(s).

All of the proposed services are technically feasible. They generally are less favorable in terms of cost effectiveness than existing and proposed commuter rail services surveyed. Those extant cost effectiveness measures all give great weight to ridership, thus the relatively modest ridership projections result in unfavorable comparisons.

Annual operating subsidy requirements would range from $3.6 million to $5.9 million per service were each service operated on a stand-alone basis (see Table ES-1). Considerable savings could be realized by operating more than one commuter service and especially by operating commuter and visitor services over the same routes.

Table ES-1
Projected Cost Effectiveness Measures, 2010
(Stand Alone Basis in 2002 Dollars)

Measure	Capital Costs[a/]	Annual Unlinked Trips	Capital Costs per Unlinked Passenger Trip[a/]	Operating Expenses[b/c]	Projected Revenues	Required Annual Subsidy[b/]	Passenger Miles	Operating Expenses per Unlinked Passenger Trip[b/]	Operating Expenses per Passenger – Mile[b/]
Suisun/Fairfield – Vallejo Commuter Service	$99,427,000	454,046	$ 218.98	$4,760,000	$1,147,000	$3,613,00	7,423,953	$10.48	$0.64
St. Helena – Vallejo Commuter Service	138,600,000	519,808	266.64	6,931,000	1,000,900	5,922,000	4,881,000	13.33	0.96
Suisun/Fairfield – Napa Commuter Service	99,783,000	459,810	217.01	4,881,000	983,000	3,898,000	11,052,994	10.62	0.44
Vallejo – Napa (Rutherford) Visitor Service	117,600,000	139,520	842.89	4,017,000	439,000	3,578,000	4,632,064	28.79	0.87
Suisun/Fairfield Napa Valley (Rutherford) Visitor Service	113,571,000	112,480	1,009.70	4,246,000	354,000	3,892,000	4,454,208	37.75	0.95

Notes:
[a/] Excludes acquisition cost of land for stations and rights-of-way.
[b/] Excludes track access costs.
[c/] Operating expenses include those associated with passengers on the two return trip trains from Vallejo to Fairfield/Suisun and Napa to Fairfield/Suisun

Source: RLBA.

Bus service to accommodate similar passenger volumes would be less expensive to operate than rail service but likely not as attractive to those in a position to choose between driving and using of public transportation

Map One on the next page shows the study area.

CHAPTER 1 – STUDY SCOPE, MANAGEMENT, SCHEDULE, PUBLIC INPUT PROCESS, AND PRESCREENING OF OPTIONS

Chapter 1 consisted of six basic elements:

- Producing a final Scope of Work and Project Schedule, Including Milestones;
- Establishing processes by which to obtain citizen, agency and organization input to the study;
- Attending monthly meeting of the Rail Technical Advisory Committee (RTAC), quarterly meetings of the Rail Policy Advisory Committee (RPAC) and other meetings as necessary;
- Interviewing selected stakeholders;
- Conducting public meetings, three early in the study to obtain input to shape the study and two after completion of the Draft Final Report to obtain public comments and
- Conducting a prescreening of rail passenger service options to concentrate the balance of study resources on options considered most likely to be feasible and cost-effective.

Key findings from the private sector stakeholder interviews are:

Market Potential & Service Characteristics for Commuter Rail

The commuter market is preferred by the Napa contingent for the most part, if it proves to be cost-effective. There is the need for both intra-regional rail for those who work in Napa County but live in Solano County as well as inter-regional rail (including connections to Sacramento, the Bay Area, San Francisco, BART, BayLink, and the 101 corridor). Specific stops were requested at several points.

Map One
Study Area

Market Potential & Service Characteristics for Visitor-Serving Rail

Stakeholders had differing opinions regarding the value of tourists and visitors. All Solano participants and several Napa participants see visitor-serving rail as a good possibility. Some saw the need to better manage the tourist trade, and were concerned that the railroad not just serve tourists. Others recognized the possibility of better connections between and among tourist and visitor destinations:

Market Potential & Service Characteristics for Freight Rail

With traffic congestion creating problems for truck movements in the region, freight rail is seen as desirable, but many doubt whether it can replace shipping by trucks to a significant degree.

Primary Planning Issues to Be Considered

Stakeholders shared concerns about noise, lights, traffic, parking, safety, productivity, property encroachment, crossings, funding, connectivity, price, management, preserving the right-of-way, paying for it now (rather than waiting for it to be more expensive later), low density, not using or taking any land from existing vineyards, extending rail only up to (and not beyond) St. Helena, using existing track, and the growth-inducing nature of rail. Many felt the need for a modal shift from trucks and automobiles to rail in order to alleviate traffic congestion, reduce air pollution and make better connections. It is clear that Napa Pipe Company operations must be avoided.

Information Needed in order to Properly Evaluate the Options

Most stakeholders felt that cost was one of the key factors needed to evaluate the options. Other factors included: service, regularity, reliability, price, managing capacity, levels of controls, and traffic reduction (the degree to which freight traffic could be shifted from truck to rail, and the number of automobile trips that would be replaced by rail).

Key findings from the public sector stakeholder interviews are as follows:

- Napa County communities generally support rail but are divided on whether to pursue tourist-focused or commuter-focused services. St. Helena and American Canyon support commuter rail over tourist rail. St. Helena is strongly opposed to tourist rail, while American Canyon simply thinks it is a less viable option. On the other hand, the Cities of Napa and Calistoga favor tourist rail

over commuter rail. The City of Napa views tourist rail service (with a station in downtown Napa) as an important component of its downtown revitalization and economic development efforts;

- Solano County communities are less supportive of and less interested in a Napa/Solano rail service than Napa County communities. In part, this is due to the perception that the majority of Solano County residents commute to jobs in the East Bay and the Tri-Valley. More people are interested in rail service to the East Bay or San Francisco than they are service to Napa County or between Vallejo and Suisun City/Fairfield and

- In both counties, the impression was that the public would not be willing to finance any type of rail project unless it could be demonstrated that it would induce substantial benefits by significantly reducing congestion or providing a faster and more convenient transportation alternative.

The first three public meetings were held in St. Helena, Napa and Vallejo on September 7th and 9th, 2002 following announcements mailed to over 200 individuals and agencies, advertisements in local daily and weekly newspapers and public service announcements on local radio stations.

Key findings from the public meetings are as follows:

- there is substantial support of the study effort and interest in determining the feasibility and cost-effectiveness of potential rail passenger services;
- the most common concern raised at the St. Helena meeting was that efforts to reconstruct the abandoned right-of-way would have a negative impact on property or business;
- common concerns raised at the Napa meeting included the cost of mitigating environmental impacts associated with a new rail alignment to bypass the Napa Pipe Company plant and
- the most commonly asked question at the Vallejo meeting concerned the best alignment by which to connect the existing rail line to the Ferry Terminal on Mare Island.

A second round of public meetings were held with one in Napa on April 21, 2003 and a second in Suisun on April 23rd.

Both meetings included a wide variety of comments and questions pertaining to such topics as rail service corridors and destinations, stations, rail equipment, ridership projections and system costs (capital and operating).

The prescreening process resulted in the selection of the options below; these are the focus of the balance of the study:

- Suisun/Fairfield – Vallejo
  - ✓ weekday, peak-hour, morning westbound and afternoon eastbound service;
- Napa – Vallejo
  - ✓ weekday, peak-hour, morning and afternoon bi-directional service;
- Vallejo – Napa Valley
  - ✓ seasonal, weekend/holiday, bi-directional service;
  - ✓ weekday off-peak, bi-directional service
- St. Helena – Napa
  - ✓ weekday, peak-hour, morning and afternoon bi-directional service and
- Suisun/Fairfield – Napa
  - ✓ weekday, peak-hour, morning northbound and afternoon southbound service
  - ✓ seasonal, weekday, off-peak and weekend service
- St. Helena – Calistoga
  - ✓ weekday, peak-hour, morning and afternoon bi-directional service

CHAPTER 2 – RAILROAD RIGHT-OF-WAY OWNERSHIP AND ACCESS

Key findings are:

- Union Pacific Railroad (UPRR) owns the rights-of way (ROW) between Suisun/Fairfield, Vallejo and Napa (at the North end of the Napa Pipe Company plant), all of which are leased to the California Northern Railroad (CFNR) for freight service only.

- UPRR would be interested in considering the sale of the study area lines, subject to the terms of its freight lease with CFNR.

- The Napa Valley Railroad (NVRR) owns the ROW between Napa and St. Helena used by the Napa Valley Wine Train (NVWT).

- NVRR would consider allowing passenger service over its line, providing it had the opportunity to bid on the provision of such services.

- None of the other lease agreements on the active rail lines appear to be detrimental to establishing rail passenger service.

- The former Southern Pacific Railroad ROW between St. Helena and Calistoga has been sold to a number of owners. Approximately 3.5 miles are owned by the City of Calistoga. Ownership of the remaining 4.5 miles is divided between various vineyards and wineries. Reacquiring this property for a rail line would be difficult and costly. An alternative alignment using a 1.7 mile portion of the SR 29 ROW would be feasible, but would still require difficult and costly acquisition of the 3.7 mile balance of required ROW.

The research found that restoration of a rail fixed plant between Calistoga and St. Helena would entail an expenditure of from $45 million to $110 million depending on the alignment selected, exclusive of an estimated ROW acquisition cost exceeding $14 million. Since the segment is only 8 miles long, the high absolute cost involved, together with a low ridership projection, discussed elsewhere, indicates that no further consideration be given a St. Helena - Calistoga segment.

CHAPTER 3 – PHYSICAL PLANT AND CAPITAL IMPROVEMENT PLAN

Chapter 3 examined the existing rail lines in four segments:

Vallejo-Napa Junction (7.3 miles);
Suisun/Fairfield-Napa Junction (12.5 miles);
Napa Junction-Napa (5.1 miles) and
Napa-St. Helena (18.1 miles).

Key findings are:

- Track, bridges and structures, while adequate to support current, slow speed, freight train movements, will require substantial upgrading to meet more demanding needs of private automobile-competitive passenger train speeds. In most cases, the entire track structure—rail, ties and ballast will have to be replaced, along with turnouts and road crossings.
- Many of the existing, at-grade crossings are old and will require rehabilitation. Faster passenger train speed will require adjustments at all grade crossings locations.
- Track and structure capital improvements are estimated to be slightly in excess of $93 million (see Table ES-2), including the cost of existing infrastructure rehabilitation, the construction of a new connection to/from the Vallejo Ferry terminal and the construction of a new bypass around the Napa Pipe facility.

- All existing turnouts (switches) will have to be replaced to accommodate higher speed passenger trains.

Table ES-2
Segment Capital Cost Summary

Segment	Length (Miles)	Segment Endpoints (in 2002 dollars)			Cost	Cost/Mile
1	7.3	Vallejo-Napa Junction			$ 23,728,000	$ 3,250,411
2	5.1	Napa Junction-Napa			23,931,000	4,692,353
3	18.1	Napa-St. Helena			25,788,000	1,424,751
4	12.5	Napa Junction-Suisun/Fairfield			19,699,000	1,575,920
Total	43.0			Total	$ 93,146,000	
					Average	$ 2,166,186

- Pending completion of additional efforts on equipment type and level of maintenance to be performed in-house, the consultant team tentatively recommends Napa Junction as the preferred location of an equipment maintenance shop and layover yard.

- Napa County Transportation Planning Agency/Solano Transportation Authority (NCTPA/STA) have several good options for passenger service dispatching, however, the consultant team recommends contracting dispatching services to the CFNR assuming that it could obtain from UPRR the rights to operate passenger service over that railroad.

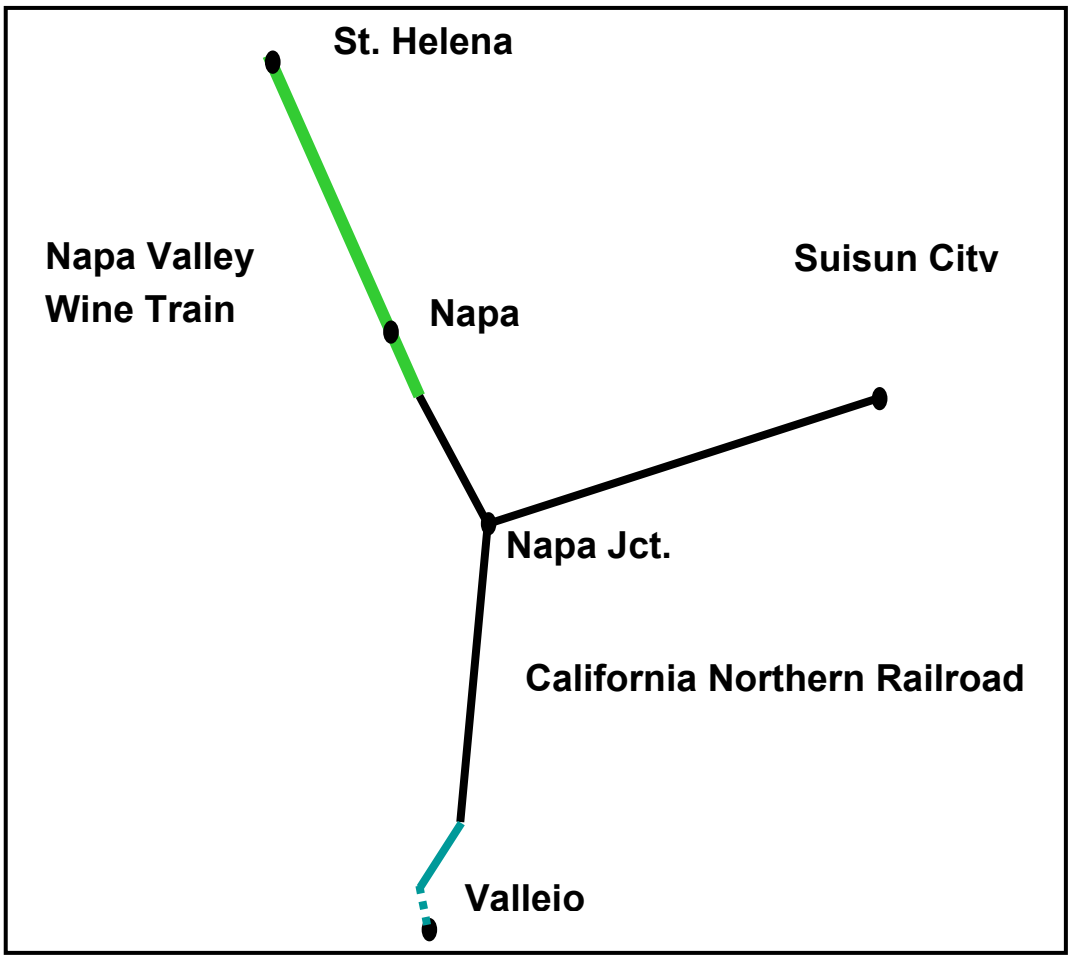
Map Two, on the following page, shows how the above – listed track segments connect with one another.

CHAPTER 4 – RECOMMENDED STATION PLAN TO SUPPORT COST EFFECTIVE RAIL PASSENGER SERVICES

There is a fundamental tradeoff in planning commuter rail stations: increasing the number of stations may make the service convenient to more potential customers but also lengthens train schedules thereby discouraging some potential riders. The approach first developed a service plan that incorporated stations deemed desirable

and feasible, then estimated passenger train running time and, finally, adjusted the station and service plan until a balance was found.

Map Two
Rail Segment Connectivity



An evaluation of potential station sites resulted in the establishment of three categories: “excellent,” “good” and “poor.” Station sites considered “excellent” or “good” were assembled into station groups, which were then evaluated from a systems perspective based on their impacts, trading off rail travel time (favoring fewer stations) versus access to the rail line (favoring more stations).

The recommended station plans recognize and incorporate three primary station types:

- **Major Intermodal**, locations at which to transfer to/from regional transit services or be co-located with a major bus transfer facility;
- **Basic Commuter/Visitor**, primarily commuter-oriented but also can be used in connection with visitor rail service and
- **Gateway**, serving as the primary visitor entry point into the Napa Valley, including such amenities as connecting shuttle services, short term parking, visitor information services, rest rooms, picnic areas and storage rooms.

The following Commuter Service stations are recommended:

Major Intermodal Stations

- Fairfield/Suisun City Amtrak Station
- Vallejo Ferry Terminal
- Downtown Napa

Basic Commuter Stations

- Red Top Road
- Sereno Transit Center
- American Canyon
- Napa Valley College (at Imola)
- North Napa (Trancas and Highway 29)
- Yountville and
- St. Helena.

Visitor Service station plan recommendations include the following:

Major Intermodal Stations

- Fairfield/Suisun City Amtrak Station
- Vallejo Ferry Terminal
- Downtown Napa and

Basic Visitor Stations

- Red Top Road
- American Canyon
- North Napa (Trancas and Highway 29)
- Yountville and

Gateway Station

- Rutherford.

In addition to these three primary station types, “excursion” stations, including very basic amenities and accommodating excursion or visitor shuttle buses and minimal parking, could be located at convenient tourist destinations throughout the Napa Valley. They were not sited in this study but could be based on previous studies undertaken on behalf of the NVWT.

Conflicts with freight operations at stations resulting from passenger train station stops would not be severe as envisioned and thus would not require construction of additional station tracks.

Total estimated capital costs associated with the recommended set of seven basic and five transfer, major intermodal or gateway stations are approximately $14,200,000, an amount incremental to the figures in Table ES-2.

CHAPTER 5 - EQUIPMENT REQUIREMENTS AND ALTERNATIVES

The key findings are:

- While numerous "light" diesel-multiple-unit (DMU) models, in which all cars have motors, as contrasted with trailer cars in a locomotive-hauled train, are available from several builders, none currently in service complies with Federal Railroad Administration (FRA) Section 238 crashworthiness standards, requiring a temporal or spatial separation waiver to operate such equipment in a shared passenger and freight use environment. It is considered highly unlikely that the owning railroads in the study rail corridors will agree to any time or spatial separation which would meet FRA requirements, thus requiring use of heavy DMU equipment.
- DMUs hold a capital cost advantage over locomotive-hauled train consists based on one power car and one trailer car compared with one locomotive and two coaches; however, as coaches are added in response to demand, the apparent DMU capital cost advantage diminishes and, at some length of train, disappears.
- Unit vehicle maintenance costs, to some extent, depend on fleet size, with larger fleets tending toward lower unit costs.
- Estimated annual unit vehicle maintenance costs associated with small fleets likely utilized on any of the proposed Napa/Solano corridors vary between $45,000 and $125,000 depending upon vehicle types. Equipment capital costs range from $ 5 million per two car single level heavy DMU set, to $6 million for a locomotive and two single level coaches. These amounts would be in addition to the fixed plant investment.
- The Consultant Team recommends focusing on "heavy" DMUs as best matching the desired characteristics of: 1) full interoperability with freight trains (i.e., no time separation requirement); 2) low-to-medium passenger carrying capacity and 3) probable lower initial cost of fleet acquisition. Leave open the possibility of locomotive-hauled trains, should suitable "heavy"

DMUs not be available at competitive prices and/or should the demand forecast suggest a need for higher capacity trains.

CHAPTER 6 – RAIL PASSENGER AND SHUTTLE OPERATING PLAN

The three commuter services would start the day with equipment moving without passengers from overnight storage at the central equipment maintenance facility to the initial terminals (St. Helena and Suisun/Fairfield). After making an initial peak direction trip, most trains would make a trip in the reverse direction followed by another peak direction trip. Trains would lay over at terminal stations during the midday period and then provide evening peak service similar to that in the morning. All trainsets would return to the equipment maintenance facility for servicing and overnight storage. Visitor service could operate in a similar manner or could share equipment and schedules with commuter service if both were implemented on the same route. Trips per day by route appear in Table ES-3 below.

Table ES-3
Trips per Day by Route

Route	Trips per Day
Suisun/Fairfield – Vallejo	4 trains peak direction – 2 reverse direction (12 trips/weekday)
Suisun/Fairfield – Napa	4 trains peak direction – 2 reverse direction (12 trips/weekday)
Vallejo – St. Helena	4 each direction at peak (16 trips/weekday)
Vallejo – Rutherford (Visitor Service)	2 each direction per day (4 trips/day)
Suisun/Fairfield – Rutherford (Visitor Service)	2 each direction per day (4 trips/day)
Total Weekday Trips [Weekend Trips]	48 [8]

Source: RLBA Team.

While all three peak services approach the 45 miles per hour average running time between stations specified for the study, using the presently recommended stops, the estimated St. Helena - Vallejo travel time (about 55 minutes) does not leave sufficient time and cushion to make a one way trip, turn and be ready to depart again reliably within the planned 60-minute headway. A more detailed engineering and operations analysis would be needed to verify whether a reliable 60-minute headway is realistic.

Table ES-4 on the following three pages depicts illustrative service schedules.

Additional freight facilities such as the passenger bypass at Napa Pipe (included in Chapter 3 capital cost estimates) will be required to support shared passenger-freight use. The nature and extent of those facilities should be addressed as part of any track access negotiations and agreement.

The majority of employment sites along the rail corridors are well served by existing transit. No dedicated public transit shuttles linking rail stations to employment sites are recommended. Smaller employment sites that may not be well served by transit would not attract significant ridership even if it were offered. A public shuttle system serving rail passengers who are visitors was described.

Operating plans and costs exclude the St. Helena – Calistoga corridor because the extremely high capital costs and the low ridership projected in the earlier analyses would make it a much less cost-effective route.

CHAPTER 7 – FREIGHT ENHANCEMENT OPPORTUNITIES

Chapter 7 examined the opportunities to increase freight traffic, removing vehicles from the roadways and reducing congestion. Key findings are:

- In 2001, the railroads moved a total of 17,500 freight carloads in the study area. This is the equivalent of 60,000 - 80,000 truckloads which would otherwise have moved on area highways. Seventy percent of this volume is for three customers (Napa Pipe, Budweiser and General Mills).

- The railroads expect to have moved a total of about 19,000 carloads in 2002 and forecast 15,000 in 2003 in the study area.

- The NVRR moved fewer than 40 carloads in 2001; none to or from points north of Napa. There is no realistic prospect of a significant increase in freight volume on the NVRR.

Table ES-4
Illustrative Vallejo - St. Helena Commuter Schedules

Stop	STATION	Miles from Vallejo	MORNING *Read Down* Southbound	Southbound	Southbound	Southbound	MORNING *Read Up* Northbound	Northbound	Northbound	Northbound
s	St. Helena	33.2	4:58 AM	5:58 AM	6:58 AM	7:58 AM	6:57 AM	7:57 AM	8:57 AM	9:57 AM
s	Rutherford	29.0	5:04 AM	6:04 AM	7:04 AM	8:04 AM	6:51 AM	7:51 AM	8:51 AM	9:51 AM
s	Yountville	23.6	5:12 AM	6:12 AM	7:12 AM	8:12 AM	6:43 AM	7:43 AM	8:43 AM	9:43 AM
s	Napa - Trancas	17.3	5:21 AM	6:21 AM	7:21 AM	8:21 AM	6:34 AM	7:34 AM	8:34 AM	9:34 AM
s	Napa - Downtown 3rd St	15.1	5:27 AM	6:27 AM	7:27 AM	8:27 AM	6:29 AM	7:29 AM	8:29 AM	9:29 AM
s	South Napa at Imola	13.9	5:30 AM	6:30 AM	7:30 AM	8:30 AM	6:25 AM	7:25 AM	8:25 AM	9:25 AM
	Napa Jct.	6.4	5:39 AM	6:39 AM	7:39 AM	8:39 AM	6:16 AM	7:16 AM	8:16 AM	9:16 AM
s	American Canyon	5.1	5:42 AM	6:42 AM	7:42 AM	8:42 AM	6:14 AM	7:14 AM	8:14 AM	9:14 AM
s	Sereno Transit Center	2.8	5:47 AM	6:47 AM	7:47 AM	8:47 AM	6:09 AM	7:09 AM	8:09 AM	9:09 AM
s	Vallejo Ferry Terminal	0	5:53 AM	6:53 AM	7:53 AM	8:53 AM	6:02 AM	7:02 AM	8:02 AM	9:02 AM

Stop	STATION	Miles from Vallejo	EVENING *Read Down* Southbound	Southbound	Southbound	Southbound	EVENING *Read Up* Northbound	Northbound	Northbound	Northbound
s	St. Helena	33.2	3:27 PM	4:27 PM	5:27 PM	6:27 PM	5:28 PM	6:28 PM	7:28 PM	8:28 PM
s	Rutherford	29.0	3:33 PM	4:33 PM	5:33 PM	6:33 PM	5:22 PM	6:22 PM	7:22 PM	8:22 PM
s	Yountville	23.6	3:41 PM	4:41 PM	5:41 PM	6:41 PM	5:14 PM	6:14 PM	7:14 PM	8:14 PM
s	Napa - Trancas	17.3	3:42 PM	4:42 PM	5:42 PM	6:42 PM	5:13 PM	6:13 PM	7:13 PM	8:13 PM
s	Napa - Downtown 3rd St	15.1	3:48 PM	4:48 PM	5:48 PM	6:48 PM	5:06 PM	6:06 PM	7:06 PM	8:06 PM
s	South Napa at Imola	13.9	3:50 PM	4:50 PM	5:50 PM	6:50 PM	5:05 PM	6:05 PM	7:05 PM	8:05 PM
	Napa Jct.	6.4	3:56 PM	4:56 PM	5:56 PM	6:56 PM	5:00 PM	6:00 PM	7:00 PM	8:00 PM
s	American Canyon	5.1	3:56 PM	4:56 PM	5:56 PM	6:56 PM	4:58 PM	5:58 PM	6:58 PM	7:58 PM
s	Sereno Transit Center	2.8	3:59 PM	4:59 PM	5:59 PM	6:59 PM	4:56 PM	5:56 PM	6:56 PM	7:56 PM
s	Vallejo Ferry Terminal	0	4:01 PM	5:01 PM	6:01 PM	7:01 PM	4:53 PM	5:53 PM	6:53 PM	7:53 PM

Table ES-4
Illustrative Suisun/Fairfield-Vallejo Commuter Schedules

Stop	STATION	Miles from Vallejo	MORNING Read Down Westbound	Westbound	Westbound	Westbound	MORNING Read Up Eastbound	Eastbound
s	Suisun-Fairfield	20.2	5:17 AM	6:17 AM	7:17 AM	8:17 AM	6:38 AM	7:38 AM
s	Red Top Road	12.7	5:27 AM	6:27 AM	7:27 AM	8:27 AM	6:28 AM	7:28 AM
	Napa Junction	6.4	5:35 AM	6:35 AM	7:35 AM	8:35 AM	6:20 AM	7:20 AM
s	American Canyon	5.1	5:38 AM	6:38 AM	7:38 AM	8:38 AM	6:18 AM	7:18 AM
s	Sereno Transit Center	2.8	5:42 AM	6:42 AM	7:42 AM	8:42 AM	6:13 AM	7:13 AM
s	Vallejo Ferry Terminal	0	5:49 AM	6:49 AM	7:49 AM	8:49 AM	6:06 AM	7:06 AM

Stop	STATION	Miles from Vallejo	EVENING Read Down Westbound	Westbound	EVENING Read Up Eastbound	Eastbound	Eastbound	Eastbound
s	Suisun-Fairfield	20.2	5:47 PM	6:47 PM	5:08 PM	6:08 PM	7:08 PM	8:08 PM
s	Red Top Road	12.7	5:57 PM	6:57 PM	4:58 PM	5:58 PM	6:58 PM	7:58 PM
	Napa Junction	6.4	6:05 PM	7:05 PM	4:50 PM	5:50 PM	6:50 PM	7:50 PM
s	American Canyon	5.1	6:08 PM	7:08 PM	4:48 PM	5:48 PM	6:48 PM	7:48 PM
s	Sereno Transit Center	2.8	6:12 PM	7:12 PM	4:43 PM	5:43 PM	6:43 PM	7:43 PM
s	Vallejo Ferry Terminal	0	6:19 PM	7:19 PM	4:36 PM	5:36 PM	6:36 PM	7:36 PM

Table ES-4
Illustrative Visitor Schedules

Vallejo-Rutherford

Stop	Location	Miles From Vallejo	*Read Up*		*Read Down*	
s	Rutherford	29	10:54 AM	12:24 PM	3:30 PM	5:30 PM
s	Yountville	23.6	10:46 AM	12:16 PM	3:37 PM	5:37 PM
s	Napa - Downtown 3rd St	15.1	10:32 AM	12:02 PM	3:52 PM	5:52 PM
	Napa Jct.	6.4	10:19 AM	11:49 AM	4:05 PM	6:05 PM
s	Vallejo Ferry Terminal	0	10:05 AM	11:35 AM	4:19 PM	6:19 PM

Fairfield-Rutherford

Stop	Location	Miles From Fairfield	*Read Down*		*Read Up*	
s	Suisun-Fairfield	0	10:15 AM	12:15 PM	4:51 PM	7:51 PM
	Napa Junction	13.8	10:32 AM	12:32 PM	4:33 PM	7:33 PM
s	Napa - Downtown 3rd St	21.5	10:45 AM	12:45 PM	4:21 PM	7:21 PM
s	Yountville	30	10:58 AM	12:58 PM	4:07 PM	7:07 PM
s	Rutherford	35.4	11:06 AM	1:06 PM	4:00 PM	7:00 PM

Source: RLBA.

- Discussion with 20 of 21 active rail freight customers, 25 possible future rail freight customers, the three currently active railroads (UPRR, CFRN and NVRR) and reference to a recent freight volume forecast prepared for the North Coast Railroad Authority revealed a potential in RLBA's judgement for a total of from 15,000 to 30,000 freight carloads annually in or through the study area looking ahead five to ten years.

- The most likely sources of additional rail freight are wine shippers (a potential increase to 2,200 carloads from only about 330 in 2001), municipal solid waste from the South Napa Waste Management Authority after 2007 (140 container loads per week now moving by truck under a contract expiring in 2007), construction aggregates (sand, gravel, etc.) possibly 3,000 or more carloads per year, and shipments from and to the railroad west of Schellville if the North Coast Railroad Authority is successful in restoring freight service (possible 5,000 to 10,000 carloads per year).

- Napa Pipe Company is currently operating at or near capacity. A downturn in line pipe demand to more normal levels will have a significant impact on future rail freight activity in the area.

- Lack of rail-served shipping and receiving facilities places significant limits on rail freight activity in the area. Given the public benefits of reducing highway congestion and air pollution, public agencies should encourage construction of more such facilities in the area.

- Any future rail passenger service in the area should be planned, and infrastructure constructed, so as not to impede the operations of Napa Pipe Company which currently requires continual crossing of the rail tracks through the plant for movement of pipe from production to storage facilities.

- The public benefits of reduced highway congestion and air pollution should be recognized by public agencies when they consider rail versus highway transportation options.

CHAPTER 8 – COMMUTER AND VISITOR RIDERSHIP AND REVENUE

Chapter 8 considers several alternatives and recommends the best by which to estimate commuter and visitor passenger rail patronage. To develop forecasts, specific service and fare assumptions were made. The service assumptions include 60-minute headways, four trains during the weekday peak period and travel speeds as described in

Chapter 6. Fares were developed that emulated the existing Napa and Vallejo bus transit fare structures, which are also very similar to those in effect on Caltrain's commuter rail system operating on the peninsula south of San Francisco.

Three different commuter rail ridership forecasting methods were used.

The first method, developed in Southern California, was recently applied to the proposed rail service in Sonoma and Marin Counties. The method is distance-based and oriented to serving long-distance commuters only.

The second method was based on the real-world rail system ridership experienced at Morgan Hill, a typical station on the Caltrain service between Gilroy and San Francisco served by four peak-period trains daily. While those trains operate in a somewhat more congested corridor than would those considered here, it is believed the comparison nonetheless is pertinent.

The third method is devised from a Metropolitan Transportation Commission formula. It demonstrates how transit ridership would change were faster travel times offered by rail.

Upon averaging the three methods, a composite commuter rail forecast by corridor was developed as shown in Table ES-5.

Table ES-5
Potential Commuter Riders by Corridor

			2010			2020		
Corridor	**Origin**	**Destination**	**AM Peak Period**	**Daily**	**Annual**	**AM Peak Period**	**Daily**	**Annual**
Route 12	Fairfield	Napa	751	1,502	378,500	629	1,258	316,600
	Napa	*Fairfield*	*126*	*252*	*63,300*	*164*	*328*	*82,500*
Route 29	St. Helena	Vallejo	716	1,432	360,700	913	1,826	460,200
	Vallejo	*St. Helena*	276	552	139,300	249	498	125,200
Route 80	Fairfield	Vallejo	726	1,452	365,900	828	1,656	417,200
	Vallejo	*Fairfield*	*140*	*280*	*70,700*	*139*	*278*	*70,000*
Total System			2,736	5,472	1,378,400	2,921	5,842	1,472,700

Note: Numbers may not add due to rounding.
Source: DKS Associates.

Applying a market share of five percent to multi-day or overnight visitors and three percent to "day-trippers" (both optimistic assumptions), passengers were apportioned to two proposed visitor trains each way during off-peak hours between Suisun /Fairfield or Vallejo and the Napa Valley. Daily and annual ridership, assuming four levels of tourist activity, is shown in Table ES-6, including visitors who might use weekday commuter trains.

Table ES-6

Potential Annual Visitor Ridership by Line and Season

Visitor Demand by Season	From Suisun/ Fairfield		From Vallejo		Total	
	Daily One-Way Trips by Season	Seasonal One-Way Trips	Daily One-Way Trips by Season	Seasonal One-Way Trips	Daily One-Way Trips by Season	Seasonal One-Way Trips
Low	140	15,260	160	17,440	300	32,700
Medium	260	33,020	340	43,180	600	76,200
Medium to High (Strong)	400	33,600	500	42,000	900	75,600
High	680	30,600	820	36,900	1,500	67,500
Total		112,480		139,520		252,000
Note: Annual totals are different from the annual total shown elsewhere due to rounding.						
Source: DKS Associates.						

A demand elasticity estimate of patronage at three fare levels was completed. U.S. studies show a "ridership elasticity" of -0.23, which means that a ten percent increase in fares would result in a 2.3 percent decrease in ridership. Bay Area transit ridership experience suggests that ridership fluctuates more dramatically because of economic conditions than from slight changes in fares.

An on-board proof-of-payment fare collection system is recommended, using ticket machines at stations to minimize the number of tickets sold on-board trains. This method is the most common on commuter rail systems, as the labor requirements are low and station dwell times are minimized.

The ridership demand at Calistoga was estimated using a variety of sketch planning methods. The Calistoga area contains less than 5,000 people, over three-quarters of

whom have a commute of less than 30 minutes. Thus, the available number of longer-distance commuters is small even before application of a rail service capture rate. The boardings would total only between 30 and 75 during the AM peak period.

CHAPTER 9 – CAPITAL AND OPERATING COSTS, FEASIBILITY, COST-EFFECTIVENESS, AND FUNDING

Start-up capital costs range from $99.4 million to $138.6 million per stand-alone service option, or a total of $216 million for all routes. There are significant capital cost reduction opportunities associated with implementing more than one commuter service and especially by operating commuter and visitor services over the same route(s).

All of the proposed services are technically feasible. They generally are less favorable in terms of cost effectiveness than existing and proposed commuter rail services surveyed. Those extant cost effectiveness measures all give great weight to ridership, thus the relatively modest ridership projections result in unfavorable comparisons. .

Annual operating subsidy requirements would range from $3.6 million to $5.9 million per service were each service operated on a stand-alone basis (see Table ES-1). Considerable savings could be realized by operating more than one commuter service and especially by operating commuter and visitor services over the same routes.

Bus service to accommodate similar passenger volumes would be less expensive to operate than rail service but likely not as attractive to those in a position to choose between driving and using of public transportation

Although local, state and federal budget uncertainties are currently pervasive, potential funding sources associated with a new-start rail service in Napa and Solano counties exist, including both public as well as public-private partnership opportunities. A regional sales tax was discussed as an excellent future funding source for the Napa/Solano Rail Project, provided there is political support for its implementation.

CHAPTER 10 – ENVIRONMENTAL ISSUES

Although an environmental document is not required for feasibility studies, such as this one, a survey was completed noting items of significant environmental interest. The following key environmental constraints were identified:

Agricultural Resources – The greatest potential to disrupt agricultural lands would occur in the Napa - St. Helena segment. The rail corridor in that segment is bordered on at least one side by established vineyards and associated wine production and tasting facilities. Agricultural resources also exist along the rail ROW in the area immediately to the south of Highway 29/12 where the rail crosses under the highway, in Jameson Canyon and in the area to the east of Cordelia, but disruption to these resources could be avoided through sensitive siting of rail facilities.

Biological Resources – Salt and brackish water marsh exists in the rail corridor between Cordelia and Suisun City and along the Napa River. Those marsh areas are the most sensitive along the corridor. There is the potential for habitat that supports sensitive natural communities along the river between Vallejo and Napa and the segments north of Napa and east of Napa Junction.

Cultural Resources – A total of 31 cultural resources were identified within 100 feet of the rail corridor. Between Cordelia and Suisun City and segments of the rail line between Napa and St. Helena, the railroad itself is identified as a historic resource. Unless activity occurs outside of the railroad ROW, significant impacts on the cultural resources would not be expected.

Geology – A fault line runs along the border of the proposed Red Top Road station site and a fault is mapped adjacent to the Napa Junction and American Canyon station sites. Several other proposed station locations are subject to moderate to extremely high ground shaking amplification which presents geologic constraints.

Hydrology – The Napa Pipe bypass, the Napa College station site, the NVRR maintenance yard and the two potential downtown Napa station sites are all located within the 100-year flood plain. The Napa River Flood Control Project, currently under construction, is intended to control flooding in Napa and reconfigure the flood control

system. The Sereno Transit Center is located in close proximity to the boundary of a 100-year flood plain. In addition, there are intermittent streams at the Red Top Road, Creston siding and Oakville siding locations.

Land Use – The agricultural zoning of the Rutherford station site could restrict station development options at that location. The proximity of productive agricultural uses to the rail at the Oakville siding and Yountville stations could constrain the development of those facilities. Construction of a new rail line along the Vallejo waterfront could reduce the amount of property currently used for open space and park purposes.

Noise – Sensitive noise receptors including residential uses, schools and hotels in close proximity to the rail were identified in every rail segment.

Transportation/Traffic – Presently, the greatest levels of congestion along the corridor occur in St. Helena and in the Jameson Canyon. While the potential of achieving an overall reduction in auto traffic exists given the introduction of passenger rail service, localized congestion necessitating the need for additional traffic controls would be expected at the Red Top Road, South Napa Junction, Rutherford and St. Helena stations.

Environmental constraints that could pose potentially significant impacts or potentially significant impacts unless mitigated are summarized in Table ES-7.

Table ES-7
Summary Table of
Environmental Issues

Environmental Issues	Rail Segments			
	Suisun City – Napa Junction	Vallejo – Napa Junction	Napa Junction – Napa	Napa – St. Helena
Aesthetics				
Agricultural Resources	***X***			***xx***
Air Quality				
Biological Resources/Wetlands	***X***	***x***	***x***	***x***
Cultural Resources			***x***	***x***
Geology/Soils	***X***	***x***	***x***	
Hazards/Hazardous Materials				
Hydrology/Water Quality	***X***	***x***	***x***	***x***
Land Use/Planning		***x***		***x***
Energy/Mineral Resources				
Noise	***X***	***x***	***x***	***x***
Population Housing				
Public Services/Utilities				
Recreation				
Transportation/Traffic	***X***	***x***	***x***	***xx***

Key:
x **=** Potentially significant impacts unless mitigation is incorporated.
xx **=** Potentially significant impacts.
Note: For those categories where no checks are present, the potential impacts are expected to be less than significant or there are no potential impacts.

Source: EnviroTrans Solutions.

* * * *

CHAPTER 11 – ACHIEVEMENT OF THE PRIMARY STUDY OBJECTIVES AND RECOMMENDED NEXT STEPS

Below are each of the primary objectives *(in italics)* and a concise statement of the results, findings and recommendations that demonstrate the Consultant Team's consideration and satisfaction of each objective.

1. *To determine the cost effectiveness of passenger rail service for commute and/or visitor related travel on existing rail (and abandoned R.O.W.) from Vallejo to Calistoga, from Vallejo to Suisun City through Jamieson Canyon, and from Suisun City to Calistoga.*

Passenger rail in Napa and Solano Counties is technically feasible. The study illustrates that given certain right-of-way improvements, passenger trains can carry riders between

stations along all three corridors. The UPRR, the NVRR and CFNR have indicated their willingness to consider hosting such services provided infrastructure improvements are provided which will allow the freight service and the Wine Trains to be operated efficiently. Given the commitment of sufficient resources, the project can be implemented.

However, there is no rule of thumb with regard to whether or not a contemplated passenger rail system is economically feasible. It is up to the citizens, elected leaders and the business communities in Napa and Solano Counties to decide as a matter of public policy whether the financial support necessary to support an attractive and reliable passenger rail system is justified given the passenger volume, revenue and cost estimates and potential environmental considerations. Using conventional cost-effectiveness performance measures such as operating expense per passenger trip, operating expense per vehicle mile, operating expense per passenger mile, subsidy per passenger trip and farebox recovery ratio, it appears that Napa/Solano passenger rail services are not as cost-effective as services already in operation.

It should be noted, however, that potential reductions in capital costs that might be achieved in future detailed design or potential private public partnerships that could be developed could have the potential of increasing the cost effectiveness of the system.

Regardless of what the citizens, elected leaders and business communities decide about the feasibility of passenger rail systems <u>today</u>, STA and NCTPA, separately or collectively, should undertake such limited studies as are necessary to be in a position to preserve all railroad lines in the study area in the event of rail line abandonment because passenger rail system feasibility is likely to improve in the <u>future</u>. Inasmuch as railroad abandonment actions may be executed within as short a period as 60 days, it is recommended that STA and NCTPA investigate abandonment risks and opportunities in advance so that they can be prepared to act rapidly.

Provided there is sufficient interest in examining further the feasibility of rail passenger service(s) within and between the counties, the Consultant Team recommends that a more intensive study of potential patronage be undertaken. While this study encompassed three independent analyses of commuter rail ridership estimation, it utilized many disciplines of which patronage estimation was merely one dimension that,

like all others, competed for constrained budget resources. A more comprehensive patronage forecast, in itself, could be a large study. Therefore, a larger and more focused look at potential ridership is recommended as it might result in significantly higher (or lower) estimates.

2. *To determine the economic feasibility of enhancing rail freight activity to reduce truck traffic on SR/29 and SR/12.*

Several opportunities to increase rail freight were identified in the study. It is possible, though optimistic, that total rail freight could double over time. However, it is also clear that very little existing truck traffic on SR/29 and SR/12 is likely to shift to rail. The introduction of passenger rail services along the study corridors could increase the attractiveness of railroad freight movements through the improvement of infrastructure and the sharing of fixed costs between freight and passenger rail systems.

3. *To conceptually examine the potential for long range passenger rail connections to Sonoma from Napa and Solano Counties.*

The long range passenger rail connection potential appears technically possible. Sonoma Marin Area Rail Transit (SMART) is planning the development of rail service between San Rafael and Cloverdale to begin as soon as 2007. SMART will own trackage connecting Napa and Marin counties, facilitating the development of connecting service. The Capitol Corridor could offer connecting service via the Fairfield/Suisun station.

4. *To prepare a cost comparison of rail versus existing bus service from Vallejo to Calistoga and future bus service from Napa to Fairfield/Suisun.*

Direct comparison of bus and rail operating costs is very difficult since it presumes that a bus transit system could be designed to attract the same number of riders as a parallel rail system. Rail services would be faster, more comfortable and more attractive to passengers than would “comparable” bus services even if the ten minute bus headways necessary to handle the volume of passengers projected to ride even one train every hour in peak periods could be purchased and operated. However, “comparable” bus operations would cost only ten to twenty percent as much as rail.

CHAPTER 1
STUDY SCOPE, MANAGEMENT, SCHEDULE, PUBLIC INPUT PROCESS AND PRESCREENING OF OPTIONS

This study had four basic objectives: to determine economic feasibility of possible passenger rail services; to determine economic feasibility of enhanced rail freight activity; to compare potential rail versus existing and potential bus service operating costs and to examine the long run potential of connecting passenger rail services.

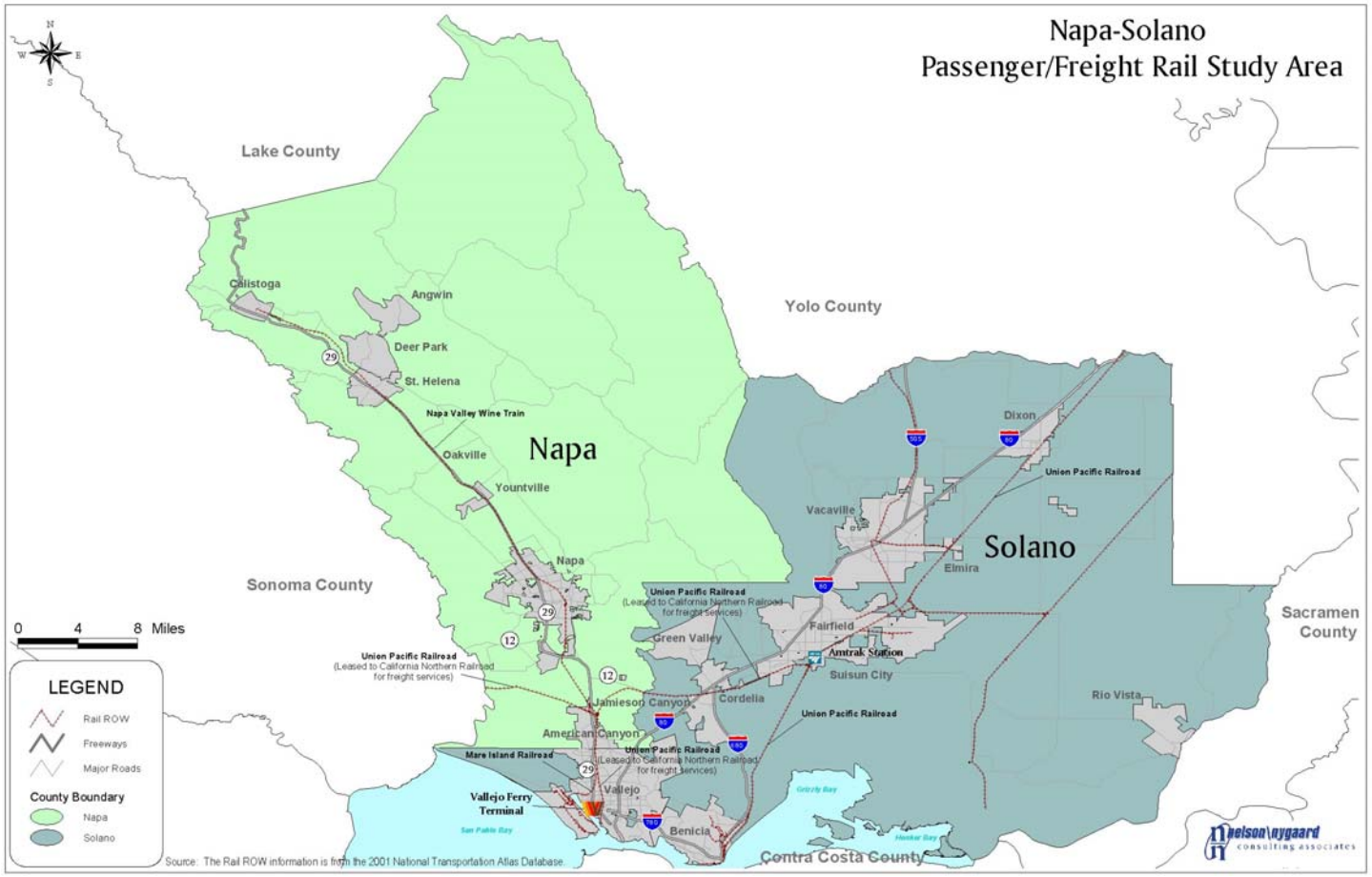
The study was conducted beginning in May 2002 in eleven, largely sequential tasks. Tasks 2 through 10 each resulted in the production of separate Working Papers which were incorporated into and became Chapters 2 through 10 of this Final Report, after they were reviewed by the sponsoring agencies (Solano Transportation Agency (STA) and Napa County Transportation Planning Agency (NCTPA)). Findings were presented over the course of several meetings members of a Rail Technical Advisory Committee (RTAC) and to a Rail Policy Advisory Committee (RPAC) and modified to reflect consideration of numerous written and oral comments.

Map Three shows Napa and Solano counties, the study area.

The first task consisted of several elements:

1. producing a final Scope of Work and Project Schedule Including Milestones;
2. establishing processes by which to obtain citizen, agency and organization input to the study;
3. attending monthly meetings of the RTAC, quarterly meetings of the RPAC and other meetings as necessary;
4. interviewing selected stakeholders;
5. conducting five public meetings, three early in the study to obtain input to shape the study and two after completion of the Draft Final Report to obtain public comments and

Map Three
Napa – Solano Passenger Freight Rail Territory



Map Three 1-2

6. conducting a prescreening of rail passenger service options to concentrate the balance of study resources on options considered most likely to be feasible and cost-effective.

SCOPE OF WORK

The final Scope of Work, including revisions made during Task 1, is shown in Appendix 1-A.

PROJECT SCHEDULE INCLUDING MILESTONES

The approved Project Schedule Including Milestones and scheduled RTAC, RPAC and public meetings is shown in Table 1-1.

Table 1-1
Revised Study Schedule Milestones

NTP	May 10, 2002
Task 1 - Begin	May 10, 2002
RTAC Meeting	May 23, 2002
Task 1 - Complete	June 24, 2002
Task 2 – Begin	June 24, 2002
Task 3 – Begin	June 24, 2002
Task 4 – Begin	June 24, 2002
Task 6 – Begin	June 24, 2002
Task 7 – Begin	June 24, 2002
Task 10 – Begin	June 24, 2002
Task 8 –Begin	July 8, 2002
RTAC Meeting	July 25, 2002
Task 2 - Complete	August 15, 2002
Task 2 - Working Paper	August 15, 2002
RTAC Meeting	August 22, 2002
RPAC Meeting	September 6, 2002
Public Workshops – Round I	September 9-13, 2002
Pre-Screening Complete	September 19, 2002
RTAC	September 26, 2002

Table 1-1

Revised Study Schedule Milestones
(continued)

Task 5 – Begin	October 1, 2002
Task 7 – Complete	October 16, 2002
Task 7 – Working Paper	October 16, 2002
RTAC Meeting	October 24, 2002
RTAC Meeting	November 21, 2002
Task 9 – Begin	December 2, 2002
RPAC Meeting	December 6, 2002
Task 3 – Complete	December 9, 2002
Task 3 – Working Paper	December 9, 2002
Task 5 – Complete	December 9, 2002
Task 5 – Working Paper	December 9, 2002
RTAC Meeting	December 19, 2002
Task 4 - Complete	January 10, 2003
Task 4 - Working Paper	January 10, 2003
Task 6 - Complete	January 10, 2003
Task 6 - Working Paper	January 10, 2003
RTAC Meeting	January 23, 2003
Task 8 – Complete	February 17, 2003
Task 8 – Working Paper	February 17, 2003
Task 9 – Complete	February 17, 2003
Task 9 – Working Paper	February 17, 2003
RTAC Meeting	February 27, 2003
RPAC Meeting	March 7, 2003
Task 10 – Complete	March 17, 2003
Task 10 – Working Paper	March 17, 2003
Task 11 – Begin	March 17, 2003
RTAC Meeting	March 27, 2003
Submit Draft Final Report	April 14, 2003
Public Workshops	April 21-23, 2003
RTAC	April 24, 2003
RTAC	May 22, 2003
Submit Final Report	June 9, 2003
RPAC	June 26, 2003

Source: NCTPA, STA and Consultant Team.

STAKEHOLDER INTERVIEWS

Interviews were conducted between July 31 and August 9, 2002, with ten private sector employers and advocacy organizations in Napa and Solano counties selected by NCTPA and STA. A list of those interviewed is shown in Table 1-2 with a summary of the interviews following.

Table 1-2
Private Sector Stakeholder Interviewees

Mr. Thomas Egidio
President and CEO
Vallejo Chamber of Commerce
Vallejo
707.644-5551
tom@vallejochamber.com

Mr. Steve Omdorf
Project and Administrative Sales Manager
Napa Pipe Corporation
Napa
707.257.5001
somdorf@napapipe.com

Mr. Jon-Mark Chappelett
Vice President
Napa County Farm Bureau
Napa
707.963.7136
jm@chappelett.com

Mr. Mark Essman
CEO/President
Fairfield-Suisun Chamber of Commerce
Fairfield
707.425.4625
messman@ffsc-chamber.com

Ms. Sandy Person
Interim President
Solano Economic Development Corp. (SEDCORP)
Suisun City
707.864.1855
Sandyp@sedcorp.org

Mr. Jeff Brown
Director of Human Resources
Jelly Belly Company
Suisun City
707.428.2800
jbrown@jellybelly.com

Ms. Celine Haugen
Executive Director
Napa Valley Economic Development Corp.
Napa
707.253.3212
celineh@nvedc.org

Mr. Daniel Howard
Executive Director
Napa Valley Conference and Visitor Bureau
Napa
707.226.3526
daniel@napavalley.org

Mr. Ed Schaffnit
Director of Real Estate
Syar Industries
Napa
707.252.8711
eschaffnit@syar.com

Mr. Frank Leeds
President
Napa Valley Grape Growers Association
Napa
707.944.8311
Frank@frogsleap.com

Source: NCTPA and STA.

The following summaries the stakeholders' key ideas, comments and concerns.

Market Potential & Service Characteristics for Commuter Rail

The commuter market is preferred by the Napa contingent for the most part, if it proves to be cost-effective. There is the need for both intra-regional rail for those who work in Napa County but live in Solano County (including connections between Suisun City, Benicia, Fairfield, Vacaville and Vallejo) as well as inter-regional rail (including connections to Sacramento, the Bay Area, San Francisco, BART, BayLink, and the 101 corridor). Specific stops were requested at the Vallejo waterfront, Gateway Industrial Park, General Mills, Napa Valley College, Napa Corporate Park, Lake Herman Parkway, and the Quarry.

Market Potential & Service Characteristics for Visitor-Serving Rail

All Solano participants and several Napa participants see visitor-serving rail as a good possibility. Stakeholders had differing opinions regarding the value of tourists and visitors. Some saw the need to better manage the tourist trade, and were concerned that the railroad not just serve tourists. Others recognized the possibility of better connections between the following tourist and visitor destinations: Napa Valley wineries, Sears Point raceway, Jelly Belly Factory, Anheuser Busch, Thompson's Candy, outlet malls, Napa Valley Visitor's Center, and San Francisco.

Market Potential & Service Characteristics for Freight Rail

With traffic congestion creating problems for truck traffic in the region, freight rail is seen as desirable, but many doubt whether it can replace shipping by trucks to a significant degree. There appear to be many opportunities for freight rail to potentially replace current shipping by trucks and even barge. It was suggested that freight rail could serve the Mare Island industrial area, the research and development park off of Highway 37, industrial sites in Solano County, Syar Industries, and wineries throughout the Napa Valley.

Primary Planning Issues to Be Considered

Stakeholders shared concerns about the following: noise, lights, traffic, parking, safety, productivity, property encroachment, crossings, funding, connectivity, price,

management, preserving the right-of-way, paying for it now (rather than waiting for it to be more expensive later), low density, not using or taking any land from existing vineyards, only extending rail up to (and not past) St. Helena, using existing track, and the growth-inducing nature of rail. Many felt the need for a modal shift from trucks and automobiles to rail in order to alleviate traffic congestion, reduce air pollution and make better connections. One stakeholder commented about the need to engage new residents that are moving into the area, as well as existing neighborhood and downtown associations. It is clear that we will need to avoid Napa Pipe Company operations.

Information Needed in order to Properly Evaluate the Options

Most stakeholders felt that cost was one of the key factors needed to evaluate the options. Other factors included: service, regularity, reliability, price, managing capacity, levels of controls, and traffic reduction (the degree to which freight traffic could be shifted from truck to rail, and corresponding reduction in the number of automobile trips that would be taken off the road).

Methods of Continued Stakeholder Involvement

While most of the stakeholders believed that remaining on the RLBA mailing list would be sufficient, a few suggested special treatment such as: holding a separate workshop for the Farm Bureau, or offering a “Good Morning Vallejo” breakfast meeting for business people. The Solano Economic Development Corporation (SEDCORP) agreed to serve as a link for future communications. It was recommended that RLBA try to engage city officials and connect with the South County Biz Committee.

Interviews also were conducted during July and August, 2002 with staff officials responsible for planning and transportation issues in Napa County and the cities of American Canyon, Napa, Yountville, St. Helena and Calistoga in Napa County as well as Solano County and the cities of Fairfield, Suisun City and Vallejo. A list of those interviewed is shown in Table 1-3.

Table 1-3
Public Sector Stakeholder Interviewees

Solano County

City of Fairfield:	Eve Somjen, Assistant Director Planning and Community Development
	Joe Lucchio, Project Manager Economic Development
	Kevin Daughton, Transit Manager
City of Suisun City:	Gary Cullen, Assistant City Engineer
	Mike Allen, City Planner
City of Vallejo:	Pam Belchamber, Transportation Superintendent
	John Harris, Transportation Planner – Finance
	Gary Leach, Assistant Director of Public Works
	Brian Dolan, Planning Manager
Solano County:	Charlie Jones, Director of Transportation
	Paul Weise, Manager Engineering

Napa County

City of American Canyon:	Chris Gustin, Planning Director
City of Napa:	Larry Pollard, Assistant Public Works Director
	Bob Hannah, Principal Planner
Town of Yountville:	Bob Tiernan, Planning Director
City of St. Helena:	Carole Poole, Planning Director
	Janet Walker, Assistant Engineer
City of Calistoga:	Rick Tooker, Planning Director
County of Napa:	Steve Lederer, Deputy Planning Director
	Buzz Kalkowski, Planner II

Source: NCTPA and STA.

Key Findings at those interviews can be summarized in three bullets.

- Napa County communities generally support rail but are divided on whether to pursue tourist-focused or commuter-focused service. St. Helena and American Canyon support commuter rail over tourist rail. St. Helena is strongly opposed to tourist rail, while American Canyon simply thinks it is a less viable option. On the other hand, the Cities of Napa and Calistoga favor tourist rail over commuter rail. The City of Napa views tourist rail service (with a station in downtown Napa) as an important component of its downtown revitalization and economic development efforts.

- Solano County communities are less supportive and less interested in a Napa/Solano rail service than are Napa County communities. In part this is due to the perception that the majority of Solano County residents commute to jobs in the East Bay and the Tri-Valley. More people are interested in rail service to the East Bay or San Francisco than they are in service to Napa County or between Vallejo and Suisun City/Fairfield.

- In both counties, the impression was that the public would be unwilling to finance any type of rail project unless it could be demonstrated that it would substantially benefit them by significantly reducing congestion or providing a faster and more convenient transportation alternative.

PUBLIC MEETINGS

The first three public meetings were conducted in St. Helena and Napa on September 7 and Vallejo on September 9, 2002 following announcements mailed to over 200 individuals and agencies, advertisements in local daily and weekly newspapers and public service announcements on local radio stations.

The meetings were attended by over forty citizens in St. Helena and over twenty each in Napa and Vallejo.

Substantial support of the study effort and interest in determining the feasibility and cost-effectiveness of potential rail passenger services was expressed at all three meetings. The most common concern raised at the St. Helena meeting, by property owners and residents near the abandoned rail right-of-way between St. Helena and Calistoga, was that reactivating the railroad would have a negative impact on their property or business. Specific questions were raised about noise, wetland impacts and safety. At the city of Napa meeting, the most common concerns raised related to the cost of mitigating environmental impacts associated with a new rail alignment to bypass

the Napa Pipe Company plant. At the Vallejo meeting, the most commonly asked questions concerned the best alignment by which to connect the existing rail line to the Ferry Terminal on Mare Island Way. Appendix 1-B is a detailed summary of comments at each 2002 public meeting.

A second round of public meetings were held in late April 2003 with one in Napa on the 21st and a second in Suisun on the 23rd as detailed in Appendix 1-C.

The meetings were attended by approximately twenty four people in Napa and approximately twenty in Suisun.

General support for the concept of passenger rail service remained good at both meetings.

In Napa, there were concerns about safety, at both private and public crossing and for the neighborhoods though with the rail would run. There were also some concerns about parking at stations, and the land-use implications of the stations, particularly in and nearby agricultural areas.

In Solano several individuals brought up the idea of the stations as a center for “smart growth’ land uses. There were also questions at both locations on the possible ‘induced land use’ effect of rail transit.

Both Napa and Solano meetings the public had questions on the accuracy and utility of the passenger estimates. Both groups asked for numbers on trips diverted from the roadways. In Solano, several expressed the opinion that perhaps the service might be initiated with only on the highest passenger volume segments

Both were generally in favor of the heavy DMU equipment recommendation with Solano more enthusiastic and Napa less so.

Both groups had questions on the costs and funding sources including federal, state, local (including a possible sale tax source) and passenger fares.

PRESCREENING OF RAIL PASSENGER SERVICE OPTIONS

A total of 21 potential rail passenger service options were identified as shown in Table 1-4.

Table 1-4

Passenger Service Options for Prescreening

1. Suisun/Fairfield - Vallejo	
	a. Weekday peak hour service WB AM EB PM
	b. Weekday off-peak service WB & EB
	c. Weekend/holiday service WB & EB
	d. Seasonal weekend/holiday service WB & EB
2. Napa - Vallejo	
	a. Weekday peak hour service SB AM, NB PM
	b. Weekday peak hour service NB AM, SB PM
	c. Weekday off-peak service SB & NB
	d. Weekend/holiday service NB & SB
	e. Seasonal weekend/holiday service NB & SB
3. St. Helena – Napa (Extension of Service to/from Vallejo/Suisun)	
	a. Weekday peak hour service SB AM, NB PM
	b. Weekday peak hour service NB AM, SB PM
	c. Weekday off-peak service SB & NB
	d. Weekend/holiday service NB & SB
	e. Seasonal weekend/holiday service NB & SB
4. Calistoga – St. Helena (Extension of Service to/from Vallejo/Suisun)	
	a. Weekday service, either direction
	b. Weekend/holiday service, either direction
	c. Seasonal weekend/holiday service, either direction
5. Suisun/Fairfield – Napa	
	a. Weekday peak-hour service NB AM, SB PM
	b. Weekday service NB and SB connecting from and to Capitol Corridor trains only
	c. Weekend/holiday service NB & SB connecting with Capitol Corridor trains only
	d. Seasonal weekend/holiday service NB & SB

Source: Consultant Team.

Screening criteria and a scoring system were devised and approved as shown in Table 1-5 on the next page.

Table 1-5

Screening Criteria

Service Option/Corridor/Scenario Being Evaluated:_____

Screening Criteria	**Scoring Basis**	**Score**
Ridership, including length of trip and train speed considerations	Maximum 5 points. (5 is highest ridership)	
Capital Cost	Maximum 3 points. (3 is lowest capital cost)	
Environmental Fatal Flaws	Maximum 3 points. (3 is no or least flaws)	
Public Acceptance	Maximum 2 points. (2 is no or least flaws)	
Other Significant Opportunities • High potential for congestion relief on crowded parallel roads? • Standout development opportunities and/or good match with planned land use or expected growth • Proximity to major origins or destinations including special events • Other	Maximum 3 points. (3 is most opportunities) Comments (What Opportunities?):	
Other Significant Challenges • Railroad freight, ownership or institutional issues • Unusually high expected operating costs or difficulties • Other	Maximum 2 points. (2 is no or least challenges) Comments (What Challenges?):	
Total	**Maximum possible points = 18**	

Source: Consultant Team.

Members of the Consulting Team were furnished a set of preliminary data in connection with each option and asked to review and score each option based on their preliminary work with respect to their project technical responsibility and their general knowledge and experience. That process resulted in the following five options (Scenarios) being found most likely to be cost-effective and feasible thereby meriting focus through the balance of the study:

1. Suisun/Fairfield - Vallejo weekday, peak-hour, morning westbound and afternoon eastbound service;

2. Napa - Vallejo weekday, peak-hour, morning and afternoon bi-directional service;

3. Vallejo - Napa Valley seasonal, weekend/holiday, bi-directional service;

4. St. Helena - Napa weekday, peak-hour, morning and afternoon bi-directional service and

5. Suisun/Fairfield - Napa weekday, peak-hour, morning northbound and afternoon southbound service.

The results of the prescreening process with respect to all the potential service scenarios (options) are shown in Table 1-6 on the following page.

After consideration of those options by STA and NCTPA, it was decided to modify the Vallejo - Napa Valley seasonal, weekend/holiday service option to include weekday off-peak service; to add Suisun/Fairfield - Napa Valley seasonal, weekday, off-peak and weekend service and to further consider extension of weekday, peak-hour service to/from Calistoga until ridership projections and parallel, improved bus service operating costs were developed. The list of scenarios, as modified, became the basis of the detailed analyses subsequently conducted.

Table 1-6

Napa - Solano Service Options/Scenarios Screening Score

Criteria:	Ridership	Capital Cost	Environmental	Public Acceptance	Other Opportunities	Other Challenges	Total
Maximum Points:	5	3	3	2	3	2	18
1. Suisun/Fairfield - Vallejo							
a. Weekday peak hour service WB AM EB PM	1.5	2	2	1	0	1	7.5
b. Weekday off-peak service WB & EB	0	2	2	0	0	1	5
c. Weekend/holiday service WB & EB	0	2	2	0	1	1	6
d. Seasonal weekend/holiday service WB & EB	0	2	2	0	0	1	5
2. Napa - Vallejo							
a. Weekday peak period bi-directional service (See Note 1)	2	2	2	1.5	0	1	8.5
b. Weekday off-peak service SB & NB	1	1	2	1	1	0	6
c. Weekend/holiday service NB & SB	2	1	2	1.5	1	0	7.5
d. Seasonal weekend/holiday service Up Valley NB & SB (See Note 2)	3	1	2	1.5	1	0	8.5
3. St. Helena – Napa Incremental Costs Only							
a. Weekday peak period bi-directional service	1	3	2	2	2	0	10
b. Weekday off-peak service SB & NB	1	3	2	1	0	0	7
c. Weekend/holiday service NB & SB	1	3	2	1	0	0	7
d. Seasonal weekend/holiday service NB & SB	2	3	2	1	0	0	8
4. Calistoga – St. Helena Incremental Costs Only							
a. Weekday service, either direction	0	0	1	1.5	1	0	3.5
b. Weekend/holiday service, either direction	0	0	1	1	1	0	3
c. Seasonal weekend/holiday service, either direction	0	0	1	1	1	0	3
5. Suisun/Fairfield – Napa							
a. Weekday peak-hour service NB AM, SB PM (See Note 1)	2	2	3	1	0	1	9
b. Weekday service NB and SB connecting from and to Capitol Corridor trains only	0	2	3	0.5	0	1	6.5
c. Weekend/holiday service NB & SB connecting with Capitol Corridor trains only	1	2	3	0	0.5	1	7.5
d. Seasonal weekend/holiday service NB & SB	1.5	2	3	0	0.5	0.5	7.5

Note 1. For passengers wishing to use rail service between Suisun/Fairfield and the Vallejo ferry, although limited-stop bus service is already available, a potential transfer point at Napa Junction can be considered.

Note 2. It is contemplated that trains from and to Vallejo would terminate and originate at a station site to be identified, probably between Yountville and Rutherford, where passengers would transfer to and from shuttle vehicles for visits to various combinations of wineries

Source: Consultant Team.

CHAPTER 2

RAILROAD ROW OWNERSHIP

SECTIONS 2.1 AND 2.2: ROW Ownership, Leases And Encumbrances

This chapter addresses property ownership, leases, easements, encumbrances and alternative routes as well as access to and estimated ROW acquisition costs associated with potential operation of passenger rail services between Calistoga, Vallejo and Suisun/Fairfield.

ROW Ownership

Calistoga – St. Helena (Deer Park Lane)

The abandoned ROW between the Calistoga station and Deer Park Lane, where NVRR ownership begins, is approximately eight miles long. Current ownership of that corridor, hereinafter Alternative 1, from north to south is as follows:

City of Calistoga	=	1.77 miles
Private landowner(s)	=	3.71 miles
City of Calistoga	=	1.00 mile
Private landowner(s)	=	.24 miles
City of Calistoga	=	.75 miles
Private landowner(s)	=	.56 miles
Total		8.03 miles.

A list of the privately owned parcels and landowners of Alternative 1 is shown in Table 2-1 on the next page.

While a full title search was not conducted on the subject parcels, the last deed of record was pulled from Napa County Assessor's Office records encompassing all parcels constituting the abandoned SP ROW to help determine ownership. Napa County Assessor's Office records showed the name and address of owners of record of

Table 2-1
Parcel Holders of Former Southern Pacific Railroad ROW

Book	Page	Parcel	Owner	Mailing Address	Latest Deed of Record
22	20	20	Culinary Institute	255 Main St. St. Helena, CA, 94574	1992 33135
22	20	25	Beringer Wine Estates	P.O. Box 4500 Napa, CA 94558	2001 3179
22	22	23	Lewis G. Carpenter Jr.	701 Crystal Springs RD St. Helena, CA 94574	1983 1284-411
22	10	17	City of Calistoga (SP)		
22	11	18	Glenn G. Baker & Karen Baker	1195 Mee Lane St. Helena, CA 94574	1996 31393
22	11	17	Karen Baker	1195 Mee Lane St. Helena, CA 94574	1996 31394
22	11	20	Stevenson Yost & Barbara Barnhart	3256 Ehlers Ln St. Helena, CA 94574	2002 14238
22	11	19	Fred E. Cohen & Carolyn B. Klebanoff	767 Rhode Island St. SF, CA 94107	2002 14237
22	10	15	City of Calistoga (SP)		
22	1	15	City of Calistoga (SP)		2001 36552
22	3	2	Richard James & Marlou Schingler	4218 Pebble Beach Dr Stockton, CA 95219	200 27057
22	27	1	John Walker	2620 A Jackson St. SF, CA 9411115-1123	1997 2177
22	27	2	Mark Stuart & Nancy J. Bally	1104 Bale Ln Calistoga, CA 94515	1993 4758
22	1	29	Sterling Vineyards	c/o Greg Kryder 570 Gateway Napa, CA 94558	1979 832242
22	1	33	Duckhorn Wine Co.	1000 Lodi Ln St. Helena, CA 94574	2001 36801
20	24	7	Larkmead Vineyards	PO Box 309 St. Helena, CA 94574	1997 30039
20	29	7	Frank Ronbauer Cellars LLC	3522 Silverado Trail St. Helena, CA 94574	2000 28469
20	38	15	MT. LaSalle Vineyards	Attn. Dkrstal Tas Dept. 6 Landak Square P.O. Box 120076 Stamford, CT 06912	1999 9113
20	17	12	Patricia Drew	4104 St. Helena Hwy. Calistoga, CA 94515	1999 9113
20	17	11	Will J. & Patricia Drew	4104 St. Helena Hwy. Calistoga CA 94515	1999 9114
20	17	8	Will J Drew	4104 St. Helena Hwy. Calistoga, CA 94515	1976 992 315
20	21	25	Steven L. Smith & Juliana Dyson	2530 Vallejo St. SF, CA 94123	1998 18233
20	15	51	Sterling Vineyards	c/o Greg Kryder 570 Gateway Napa, CA 94558	1996 4674
20	15	50	Sterling Vineyards	c/o Greg Kryder 570 Gateway Napa, CA 94558	1996 4673
20	15	45	City of Calistoga (SP)		1984 1336697

Source: Napa County Assessor's Office

the subject parcels, as noted in Table 2-1. The last deeds of record indicated that the majority of the eight miles of ROW was held by private landowners. Four parcels were recorded as owned by SP (the list on page 2-1, by contrast shows segments) but those are parcels now owned by the City of Calistoga.

Three Napa area realtors were contacted via telephone in late July and early August, 2002 and asked their opinion of land values in the Napa Valley area. In particular, they were asked to provide an average price per acre of bare or vineyard land between St. Helena and Calistoga. All three cited a base price of $100,000 per acre but separately cited costs of $140,000, $150,000 and $300,000 per acre at the high end of the range. Given the long-term trend of escalating real estate costs in the Napa Valley area, the high-end cost of $300,000 was used to best approximate future ROW acquisition costs later in this Chapter.

St. Helena – Rocktram (South Napa)

The NVRR, owns the ROW between Krug (Deer Park Lane, St. Helena) and Rocktram (South Napa), a distance of about nineteen miles.

Rocktram – Napa Junction – Vallejo and Napa Junction – Suisun/Fairfield

UPRR owns the subject ROW between Rocktram (where the Napa Pipe Company is located) through Napa Junction and the end of the branch in Vallejo at the General Mills cereal plant, a distance of 12.77 miles. The track connecting Mare Island with the Vallejo Branch at Flosden Yard is owned by the City of Vallejo. UPRR also owns the ROW between Napa Junction and Suisun/Fairfield station, a distance of 12.5 miles.

All of the UPRR – owned ROW, a total of 25.27 miles, is currently leased for rail freight services only to the CFNR, a subsidiary of Rail America, Inc. The lease became effective in 1993 and expires in 2013. However, CFNR negotiated two consecutive ten year options to extend the lease with the consent of UPRR which retains all rail passenger service rights. Under the lease, CFNR has the responsibility to perform all maintenance and dispatching and has been delegated to handle all routine requests in connection with latitudinal crossing easements; UPRR continues to handle requests associated with higher revenue, longitudinal easements and leases, e.g. pipe and cable lines.

Significant Leases, Easements and Encumbrances

The City of Calistoga owns a twelve inch diameter water pipeline buried from three to fifteen feet deep which often lies under the abandoned ROW between Calistoga and Deer Park Lane. The pipeline meanders from the east to the west margin but always under the former SP ROW. Concerns have been raised that the operation of passenger trains could produce vibrations sufficient to cause leakage at pipeline joints. Whether relocation of the pipeline to one side of the ROW is feasible or would resolve current concerns requires further analysis if serious consideration is given to restoring the rail line on the subject ROW.

The City's sewer treatment plant, currently being expanded, is along the west side of the abandoned ROW between Simmons Creek and Dunaweal Lane. Sterling Vineyards' Visitor Center is on the abandoned ROW and a number of other wineries and vineyard owners (as shown on Table 2-1) have planted vineyards on or immediately adjacent to it or are using portions of it as an access road to their vineyards. Much of the abandoned ROW is in the Napa River flood plain or floodway.

On the NVRR, there is a coaxial cable line buried on the east side from Streblo Road north to Eighth Street in Napa (approximately 1.5 miles), then diagonally under and on the west side of the ROW to Main Street and Central Avenue (approximately 1.5 miles). The diagonal portion could be problematic in the event of frequent passenger train operations if the cable line required maintenance access. There are no other significant encumbrances on NVRR – owned ROW.

On UPRR–owned ROW, there are no longitudinal coaxial cable lines or pipelines. There are a number of latitudinal pipeline and cable crossing agreements as well as various other lease and easement agreements, none of which appear to be incompatible with the reconstruction of and operation over railroad ROW by passenger services. All of those agreements are listed in Table 2-2 on the following page.

Table 2-2
California Northern Railroad Lease Agreements

Contract	Lessee Name	City	Milepost	County	State	Type	Origination Date
CFNR 224337	CITY OF VALLEJO	CORDELIA	54.38	SOLANO	CA	PPL	3/19/02
RE-30146264	PACIFIC GAS & ELECTRIC	CORDELIA		SOLANO	CA	ROE	6/29/00
CX-171171	PACIFIC GAS & ELECTRIC	FLOSDEN	65.19	NAPA	CA	PLX	5/29/73
CX-1720305	PACIFIC GAS & ELECTRIC	FLOSDEN	65.19	NAPA	CA	PPL	6/29/73
CX-170919	PACIFIC GAS & ELECTRIC	FLOSDEN	65.74	NAPA	CA	PLX	1/4/73
RE-00023	CALTRANS	JAMESON CANYON	55.5	SOLANO	CA	ROE	9/17/99
TL-020204	CENTRAL VALLEY BUILDERS SUPPLY	LOMBARD	63+60'	NAPA	CA	ITA	2/2/02
CX-210075	DM GROUP VII	LOMBARD	63.82	NAPA	CA	CLV	12/11/89
CX-169650	PACIFIC GAS & ELECTRIC	LOMBARD	66.754	NAPA	CA	PLX	7/5/72
CX-169742	PACIFIC GAS & ELECTRIC	LOMBARD	66.8	NAPA	CA	PLX	7/5/72
TL-33101	POLYVINYL INDUSTRIES, INC	LOMBARD	62.1	NAPA	CA	ITA	12/1/82
CX-212344	AMERICAN CANYON WATER DISTRICT	NAPA JUNCTION	63.9	NAPA	CA	PPL	4/23/91
PX-177385	BERNICE NEWELL	NAPA JUNCTION	62.72	NAPA	CA	PRX	6/27/75
CX-198943	DM GROUP VII	NAPA JUNCTION	63.64	NAPA	CA	CLV	5/31/83
PX-177384	JACK NEWELL	NAPA JUNCTION	62.71	NAPA	CA	RWY	6/27/75
PX-177383	JACK NEWELL	NAPA JUNCTION	62.72	NAPA	CA	RWY	6/27/75
RE-2600	NIELSON UNDERGROUND & EXCAVATION	NAPA JUNCTION	60	NAPA	CA	MIS	10/2/96
RE-182853	PACIFIC BELL TELEPHONE COMPANY	NAPA JUNCTION	58.3	NAPA	CA	PLX	11/17/77
CX-190779	PACIFIC GAS & ELECTRIC	NAPA JUNCTION	60.26	NAPA	CA	PLX	3/27/80
CX-2610	PACIFIC GAS & ELECTRIC	NAPA JUNCTION	61	NAPA	CA	PPL	11/17/95
CX-173389	PACIFIC GAS & ELECTRIC	NAPA JUNCTION	61.69	NAPA	CA	PLX	11/21/73
CX-178292	PACIFIC GAS & ELECTRIC	NAPA JUNCTION	62.8	NAPA	CA	PPL	9/30/75
CX-155192	PACIFIC GAS & ELECTRIC	NAPA JUNCTION	63.02	NAPA	CA	CLX	3/3/83
CX-184286	PACIFIC GAS & ELECTRIC	NAPA JUNCTION	63.1	NAPA	CA	PPL	4/27/78
PX-182823	PETER KIEWIT SONS' COMPANY	NAPA JUNCTION	61.7	NAPA	CA	PRX	11/10/77
RE-26341	QWEST COMMUNICATIONS CORPORATION	NAPA JUNCTION	63.4	NAPA	CA	FIB	7/29/98
TL-32529	RAY CAVAGNARO COMPANY	NAPA JUNCTION	62.3	NAPA	CA	ITA	3/21/77
PX 96-2601	ROGER G. GUNN, GUNN RANCHES	NAPA JUNCTION	60.1	NAPA	CA	PRX	9/15/96
CX-176286	BASALT ROCK COMPANY	ROCKTRAM	66.71	NAPA	CA	PLX	2/13/75
CX-105748	BASALT ROCK COMPANY	ROCKTRAM	66.8	NAPA	CA	PPL	1/11/55
CX-173239	KAISER STEEL CORPORATION	ROCKTRAM	66.34	NAPA	CA	PLX	11/5/73
CX-186232	KAISER STEEL CORPORATION	ROCKTRAM	66.38	NAPA	CA	PLX	8/3/78
PX-211238	NAPA PIPE CORPORATION	ROCKTRAM	66.68	NAPA	CA	PRX	10/3/90
CN-26681	NAPA PIPE CORPORATION	ROCKTRAM	66.8	NAPA	CA	ITA	12/10/97
PX-708761	NAPA SANITARY DISTRICT	ROCKTRAM	65.2	NAPA	CA	PRX	4/24/92
EM-204221	PACIFIC GAS & ELECTRIC	ROCKTRAM	66.71	NAPA	CA	PLX	3/23/98
CX-153272	PACIFIC GAS & ELECTRIC	ROCKTRAM	67.48	NAPA	CA	PLX	3/21/67
CX-201300	PACIFIC GAS & ELECTRIC	ROCKTRAM	67.48	NAPA	CA	PLX	7/2/84
RE-266801	PRIMARY ELECTRIC COMPANY	ROCKTRAM	66.8	NAPA	CA	PLX	3/31/97
PX-153656	SYAR AND HARMS	ROCKTRAM	68.32	NAPA	CA	PRX	5/15/67
RE-26563	WILLIAMS COMMUNICATIONS	ROCKTRAM	65.63	NAPA	CA	FIB	4/20/00
RE-00018	BAUMAN LANDSCAPE, INC	SUISUN-FAIRFIELD		SOLANO	CA	ROE	
CX-195866	CITY OF FAIRFIELD	SUISUN-FAIRFIELD	51.28	SOLANO	CA	CLV	3/29/82
PX-182031	CITY OF FAIRFIELD	SUISUN-FAIRFIELD	53.97	SOLANO	CA	PRX	4/15/77
CX-708838	CITY OF VALLEJO	SUISUN-FAIRFIELD	55.55	SOLANO	CA	PPL	3/27/92
PX 00-350016	FAIRFIELD-SUISUN SEWER DISTRICT	SUISUN-FAIRFIELD	51.04	SOLANO	CA	PPL	4/24/00
RE-350016	FAIRFIELD-SUISUN SEWER DISTRICT	SUISUN-FAIRFIELD	51.04	SOLANO	CA	PPL	1/25/00
CL-350126	HOMAFAIR, LP C/O AMIR DEVELOPMENT COMPA	SUISUN-FAIRFIELD	51.6	SOLANO	CA	LND	2/1/01

Table 2-2
California Northern Railroad Lease Agreements

TL-350125	HOMAFAIR, LP C/O AMIR DEVELOPMENT COMPA	SUISUN-FAIRFIELD	51.6	SOLANO	CA	TRX	2/1/01
CX-712095	M.L. MEDIA PARTNERS, L.P.	SUISUN-FAIRFIELD	54.1	SOLANO	CA	FIB	6/14/93
RE-00022	MONTGOMERY WATSON	SUISUN-FAIRFIELD		SOLANO	CA	ROE	9/17/99
CX-171739	PACIFIC BELL TELEPHONE COMPANY	SUISUN-FAIRFIELD	49.48	SOLANO	CA	CLX	4/25/73
CX-171738	PACIFIC BELL TELEPHONE COMPANY	SUISUN-FAIRFIELD	51.04	SOLANO	CA	PLX	4/12/73
RE-177434	PACIFIC BELL TELEPHONE COMPANY	SUISUN-FAIRFIELD	51.07	SOLANO	CA	CLX	9/19/75
CX-165698	PACIFIC BELL TELEPHONE COMPANY	SUISUN-FAIRFIELD	54.45	SOLANO	CA	PLX	3/19/71
CX-153198	PACIFIC BELL TELEPHONE COMPANY	SUISUN-FAIRFIELD	55.74	SOLANO	CA	CLX	3/10/67
CX-184251	PACIFIC GAS & ELECTRIC	SUISUN-FAIRFIELD	49.3	SOLANO	CA	PLX	2/2/78
CX-194558	PACIFIC GAS & ELECTRIC	SUISUN-FAIRFIELD	49.5	SOLANO	CA	PLX	7/2/81
CX-168829	PACIFIC GAS & ELECTRIC	SUISUN-FAIRFIELD	50	SOLANO	CA	PLX	3/28/72
CX-168822	PACIFIC GAS & ELECTRIC	SUISUN-FAIRFIELD	50.16	SOLANO	CA	PLX	3/28/72
CX-153145	PACIFIC GAS & ELECTRIC	SUISUN-FAIRFIELD	50.48	SOLANO	CA	PPL	6/23/65
CX-184253	PACIFIC GAS & ELECTRIC	SUISUN-FAIRFIELD	51	SOLANO	CA	PLX	4/19/78
RE-209725	PACIFIC GAS & ELECTRIC	SUISUN-FAIRFIELD	51.06	SOLANO	CA	PLX	4/6/89
CX-67742	PACIFIC GAS & ELECTRIC	SUISUN-FAIRFIELD	51.27	SOLANO	CA	PPL	1/21/75
RE-5099	PACIFIC GAS & ELECTRIC	SUISUN-FAIRFIELD	51.3	SOLANO	CA	PLX	9/20/78
CX-178568	PACIFIC GAS & ELECTRIC	SUISUN-FAIRFIELD	51.99	SOLANO	CA	PLX	11/14/75
CX-169477	PACIFIC GAS & ELECTRIC	SUISUN-FAIRFIELD	52.9	SOLANO	CA	PLX	7/10/72
CX-179283	PACIFIC GAS & ELECTRIC	SUISUN-FAIRFIELD	53	SOLANO	CA	POL	1/20/76
CX-147711	PACIFIC GAS & ELECTRIC	SUISUN-FAIRFIELD	53	SOLANO	CA	PPL	6/23/65
CX-170603	PACIFIC GAS & ELECTRIC	SUISUN-FAIRFIELD	53.23	SOLANO	CA	PLX	11/21/72
CX-167102	PACIFIC GAS & ELECTRIC	SUISUN-FAIRFIELD	53.886	SOLANO	CA	PLX	7/27/71
CX-101999	PACIFIC GAS & ELECTRIC	SUISUN-FAIRFIELD	54	SOLANO	CA	PPL	5/1/53
RE-2541	PACIFIC GAS & ELECTRIC	SUISUN-FAIRFIELD	54.1	SOLANO	CA	POL	3/5/70
RE-187540	PACIFIC GAS & ELECTRIC	SUISUN-FAIRFIELD	54.2	SOLANO	CA	ANC	2/21/79
CX-170474	PACIFIC GAS & ELECTRIC	SUISUN-FAIRFIELD	54.45	SOLANO	CA	PLX	11/3/72
CX-187521	PACIFIC GAS & ELECTRIC	SUISUN-FAIRFIELD	54.5	SOLANO	CA	PLX	3/9/79
RE-198072	PACIFIC GAS & ELECTRIC	SUISUN-FAIRFIELD	54.617	SOLANO	CA	POL	11/24/82
RE-155037	PACIFIC GAS & ELECTRIC	SUISUN-FAIRFIELD	55.35	SOLANO	CA	PLX	10/5/67
CX-186865	PACIFIC GAS & ELECTRIC	SUISUN-FAIRFIELD	56	SOLANO	CA	PLX	2/21/79
CL 99-25061	PANATTONI DEVELOPMENT COMPANY	SUISUN-FAIRFIELD	50.61	SOLANO	CA	LND	6/1/99
TL 99-25016	PANATTONI DEVELOPMENT COMPANY	SUISUN-FAIRFIELD	51.6	SOLANO	CA	ITA	6/1/99
TL-33308	THE CONTINENTAL GROUP, INC	SUISUN-FAIRFIELD	54.6	SOLANO	CA	ITA	5/14/79
TL-30390	THE WICKES CORPORATION	SUISUN-FAIRFIELD	54.7	SOLANO	CA	ITA	1/6/74
PX-157781	WARREN'S TURF NURSERY	SUISUN-FAIRFIELD	51.55	SOLANO	CA	PRX	8/15/68
PX-159321	WARREN'S TURF NURSERY	SUISUN-FAIRFIELD	51.89	SOLANO	CA	PRX	2/28/69
RE-00021	WILLIAMS COMMUNICATIONS	SUISUN-FAIRFIELD	55.5	SOLANO	CA	ROE	9/17/99
TL-00002	APEX BULK COMMODITIES, INC.	VALLEJO		NAPA	CA	TRX	5/24/00
RE-264801	CALTRANS	VALLEJO	64.8	NAPA	CA	ROE	5/9/00
RE-00027	CALTRANS	VALLEJO		NAPA	CA	ROE	10/19/99
PX 00-350019	CAMENZIND DREDGING	VALLEJO	68.87	SOLANO	CA	PRX	10/1/00
CX-715405	CITY OF VALLEJO	VALLEJO	58.22	NAPA	CA	PPL	11/30/94
CX-707920	CITY OF VALLEJO	VALLEJO	55.55	SOLANO	CA	PPL	12/3/91
RE-00025	CITY OF VALLEJO PAVEMENT PROJECT	VALLEJO		NAPA	CA	ROE	
TL-1676	GENERAL MILLS, INC	VALLEJO	68.88	SOLANO	CA	ITA	6/13/80
CFNR 020506	HESS CONSTRUCTION COMPANY, INC.	VALLEJO	64.8	SOLANO	CA	ROE	6/10/02
CX-158857	JOANNE GRANT	VALLEJO	68.68	SOLANO	CA	CLV	12/30/68
CX-9608001	KAISER FOUNDATION HEALTH PLAN	VALLEJO	68.5	SOLANO	CA	CLX	2/15/96
CX-193138	MID VALLEY DAIRY COMPANY	VALLEJO	55.55	SOLANO	CA	PPL	2/24/81

Table 2-2
California Northern Railroad Lease Agreements

CX-152621	PACIFIC BELL TELEPHONE COMPANY	VALLEJO	64.25	NAPA	CA	CLX	12/23/66
CX-187532	PACIFIC BELL TELEPHONE COMPANY	VALLEJO	64.71	NAPA	CA	CLX	3/3/79
CX-179318	PACIFIC BELL TELEPHONE COMPANY	VALLEJO	67.39	SOLANO	CA	CLX	4/20/76
CX-150863	PACIFIC GAS & ELECTRIC	VALLEJO	54.5	SOLANO	CA	PPL	3/2/66
CX-153668	PACIFIC GAS & ELECTRIC	VALLEJO	66.8	SOLANO	CA	PPL	4/27/67
CX-194042	PACIFIC GAS & ELECTRIC	VALLEJO	68.1	SOLANO	CA	PLX	5/11/81
RE-155040	PACIFIC GAS & ELECTRIC	VALLEJO	68.4	SOLANO	CA	PPL	6/16/67
CX-204209	PACIFIC GAS & ELECTRIC	VALLEJO	68.5	SOLANO	CA	PLX	11/14/86
CX-166621	PACIFIC GAS & ELECTRIC	VALLEJO	68.5	SOLANO	CA	PPL	6/18/71
CX-155892	PACIFIC GAS & ELECTRIC	VALLEJO	68.8	SOLANO	CA	PLX	1/19/68
CX-199685	PACIFIC GAS & ELECTRIC	VALLEJO	68.83	SOLANO	CA	PLX	8/30/83

Table 2-2
California Northern Railroad Lease Agreements

Key
Type = Type of lease:

Code	Description
ANC	ANCHORS AND DOWN WIRES
BLD	BUILDING SPACE
CLV	CLVRT/DRAINAGE FACILITY/SEWER LINES
CLX	CABLE LINE CROSSING (NON-ELECTRIC)
CON	CONVEYOR
EAS	EASEMENT
FIB	FIBER OPTIC LINE CROSSING
FLE	FIBRE OPTIC LONGITUDINAL ENCROACHMENT
GPL	GENERAL PIPELINE AGREEMENT
GUY	GUY WIRES
ITA	INDUSTRIAL TRACK AGREEMENT
JNT	JOINT FACILITY
LBD	LAND & BUILDING LEASE
LND	LAND LEASE
LTX	LAND & TRACK LEASE
MCL	MASTER CABLE LINE CROSSING
MCX	MASTER CROSSING AGREEMENT
MIS	MISCELLANEOUS LEASE
MPL	MASTER POWER LINE AGREEEMENT
MPP	MASTER PIPELINE CROSSING
OVP	OVERPASS/UNDERPASS
PBU	PUBLIC UTILITY CROSSING
PBX	PUBLIC ROAD CROSSING
PBY	PUBLIC ROADWAY
PED	PEDESTRIAN CROSSING
PLX	POWER LINE CROSSING
POL	POLES, ANCHORS & OR CONDUITS
PPE	PIPE LINE - LONGITUDINUAL ENCROACH.
PPL	PIPE LINE CROSSING
PRX	PRIVATE ROAD CROSSING
ROE	RIGHT OF ENTRY PERMIT
RWY	PRIVATE ROADWAY AGREEMENT
SGN	SIGNBOARD AGREEMENT
SIG	SIGNALS/FLASHERS
TOW	CELL/MONO TOWER SITE
TRX	TRACK LEASE
TWR	MICROWAVE TOWER
WEL	WELLS & MONITORING WELLS
WLE	WIRELINE - LONGITUDINAL ENCROACH

Source: California Northern Railroad.

Section 2-3: Alternative Railroad Alignments Between St. Helena and Calistoga

Overview

The two primary potential alternative railroad alignments between St. Helena and Calistoga both primarily follow the former Southern Pacific Railroad (SP), which today hosts a water line along much of its length, are approximately eight miles in length, require the crossing of numerous streams and roads and deviate from that ROW twice, as necessary.

The slightly shorter Alternative 1 is the preferred alignment due to lower capital costs (not including ROW) as well as higher achievable operating speeds and the promise of a superior passenger ride experience due to less curvature.

The most likely alternative ROW hereinafter designated by Alternative 2 is the two-lane State Road (SR) 29 corridor. Although it is too narrow to accommodate a rail line along the most developed portions of Calistoga and St. Helena, the segment from just south of Dunaweal Lane to south of Lardmead Lane, approximately 2.7 miles, is at least 150 feet wide and readily could host both a single track rail line and SR 29. Caltrans, which owns the ROW, has no plans to widen this part of SR 29 and Napa County as well as the cities of Calistoga and St. Helena have no interest in seeing it widened.

Caltrans has informed NCTPA that it is willing to agree to construction of a publicly-owned line on the wide portion of the SR 29 ROW at no real property acquisition or use cost. However, Caltrans will require that any highway relocation necessary to accommodate a rail line be accomplished at no cost to Caltrans. Use of the subject portion of the SR 29 ROW by a rail line would require acquisitions of privately owned property or easements on such property totaling about 6,000 feet, to connect the new ROW with the former SP ROW.

No major civil works constrain either alignment with the result that the actual construction of either alternative would be relatively facile. There are constraints along both alignments associated with environmental issues that potentially could complicate the process of restoring rail passenger service along the investigated alignments. They should not, however, be construed as fatal flaws at this point.

Total costs (excluding ROW acquisition) of reconnecting Calistoga with existing railroad infrastrucutre to the south vary considerably, between $29,000,000 and $100,000,000, depending upon which alternative route (Alternative 1 or Alternative 2) is examined and whether it is assumed that the rail line and road crossings would interact at grade (A) or be grade-separated (B). All cost estimates reflect the assumption that a single track without any passing sidings would provide sufficient capacity to support reliable operation between the two cities because the segment length is short and service frequency is assumed to be modest.

Construction Cost Estimates

The following are very conceptual, budget-type estimates since no survey mapping or other engineering information is available.

Table 2-3

Estimated Total Construction Costs of Reconstructing Track Between St. Helena and Calistoga

Alignment Alternative	Number of Grade Separations	Estimated Construction Cost
Alternative 1A – Former SP	2	$45,000,000
Alternative 1B – Former SP	5	$69,000,000
Alternative 2A – Former SP + Highway 29	2	$86,000,000
Alternative 2B – Former SP + Highway 29	5	$110,000,000

Source: Rail Pros, Inc.

Alternatives 1A and 2A reflect the assumption that at least two road crossings would be grade separated and the rest would be at grade and no private crossing improvements would be made. At the other extreme, Alternatives 1B and 2B reflect the assumption that five road crossings will be grade-separated and half of all small crossings will be signal and gate protected. Ultimately, the extent to which some or all of the crossings would be grade separated will be a function of the California Public Utilities Commission (CPUC) process, community input and other factors.

Although the majority of roads that would be crossed using either alternative alignment are low use and rural, an informal discussion with CPUC staff revealed that CPUC might well require grade separations from two to five of the more heavily used crossings. The higher cost estimates include estimated grade separations for five

public corssings and signal and gate protection at half of the private crossings to allow for agreements to close many privae crossings. While the lower cost estimates include two grade separations but no private crossing protection costs. However, it is likely that at least some private crossing closures will be necessary. Summaries of estimated costs associated with each alternative are found in Table 2-3 above. More detailed capital cost estimates can be found in Tables 2-4 through 2-7, below.

Major Construction Project Components

Construction of the line segment along either alternative would include the following major cost components:

1. ROW (not included this report);
2. Site preparation;
3. Site utilities;
4. Grading;
5. Bridge construction;
6. Grade crossing and/or grade separation construction;
7. Track construction and
8. Highway relocation (Alternative 2 only).

Project Location and Area Description

Map Four on page 16 shows the project location, an eight-mile corridor between St. Helena and Calistoga. The area which would be traversed by either alignment is primarily rural, commonly occupied by residential and winery properties. Both corridor alternatives would be in a valley, with relatively flat grades.

Corridor Alternatives, Environmental Impacts, Crossings and Potential Conflicts

Aerial photographs of the Calistoga-St. Helena segment appear in a north to south sequence in Appendix 2-A in this Chapter and are subsequently referred to as Photos 2-1 through 2-11, respectively with surface shots at Photos 2-12 through 2-16.

Table 2-4

CALISTOGA TO ST HELENA					
ALTERNATIVE 1A ALIGNMENT					
PROPOSED ALIIGNMENT ON FORMER RAILROAD ROW					
(LOW ESTIMATE GRADE-SEPARATED ROAD CROSSINGS)					
	Item	**Unit**	**Quantity**	**Unit Price**	**SUBTOTAL**
CONSTRUCTION ITEMS					
	New Track on Former Railroad Right-of-Way	TF	32500	$160	$5,200,000
	New Track on New Alignment	TF	7500	$180	$1,350,000
	Upgrade Existing Track	TF	2500	$100	$250,000
	Railroad Bridges	TF	600	$8,000	$4,800,000
	Highway Overpasses (Two-Lane Roads)	EA	2	$5,000,000	$10,000,000
	Grade Crossings (Two-Lane Roads)	EA	5	$500,000	$2,500,000
	Upgrade Existing Grade Crossing (Two-Lane Roads)	EA	2	$200,000	$400,000
	Water Line Crossings	EA	2	$50,000	$100,000
	Water Line Relocation	LF	3900	$200	$780,000
SUBTOTAL					$25,380,000
	Mobilization and Demobilization at 10%				$2,538,000
CONSTRUCTION SUBTOTAL					$27,918,000
NON-CONSTRUCTION ITEMS					
	Engineering, Environmental Clearance, Permits @ 20%				$5,583,600
	Construction Management at 10%				$2,791,800
SUBTOTAL NON-CONSTRUCTION					$8,375,400
SUBTOTAL CONSTRUCTION AND NON-CONSTRUCTION					$36,293,400
	Contingency at 25%				$9,073,350
TOTAL WITH CONTINGENCY					$45,366,750
		PROJECT GRAND TOTAL			**$45,366,750**
		FOR BUDGET PURPOSES			**$45,000,000**

Source: Rail Pros, Inc.

Table 2-5

CALISTOGA TO ST HELENA					
ALTERNATIVE 1B ALIGNMENT					
PROPOSED ALIIGNMENT ON FORMER RAILROAD ROW					
(HIGH ESTIMATE GRADE-SEPARATED ROAD CROSSINGS)					
	Item	**Unit**	**Quantity**	**Unit Price**	**SUBTOTAL**
CONSTRUCTION ITEMS					
	New Track on Former Railroad Right-of-Way	TF	32500	$160	$5,200,000
	New Track on New Alignment	TF	7500	$180	$1,350,000
	Upgrade Existing Track	TF	2500	$100	$250,000
	Railroad Bridges	TF	600	$8,000	$4,800,000
	Highway Overpasses (Two-Lane Roads)	EA	5	$5,000,000	$25,000,000
	Grade Crossings (Two-Lane Roads)	EA	2	$500,000	$1,000,000
	Upgrade Existing Grade Crossing (Two-Lane Roads)	EA	2	$200,000	$400,000
	Water Line Crossings	EA	2	$50,000	$100,000
	Water Line Relocation	LF	3900	$200	$780,000
SUBTOTAL					$38,880,000
	Mobilization and Demobilization at 10%				$3,888,000
CONSTRUCTION SUBTOTAL					$42,768,000
NON-CONSTRUCTION ITEMS					
	Engineering, Environmental Clearance, Permits @ 20%				$8,553,600
	Construction Management at 10%				$4,276,800
SUBTOTAL NON-CONSTRUCTION					$12,830,400
SUBTOTAL CONSTRUCTION AND NON-CONSTRUCTION					$55,598,400
	Contingency at 25%				$13,899,600
TOTAL WITH CONTINGENCY					$69,498,000
		PROJECT GRAND TOTAL			**$69,498,000**
		FOR BUDGET PURPOSES			**$69,000,000**

Source: Rail Pros, Inc.

Table 2-6

CALISTOGA TO ST HELENA					
ALTERNATIVE 2A ALIGNMENT					
PROPOSED ALIIGNMENT ON FORMER RAILROAD ROW					
(LOW ESTIMATE GRADE-SEPARATED ROAD CROSSINGS)					
	Item	**Unit**	**Quantity**	**Unit Price**	**SUBTOTAL**
CONSTRUCTION ITEMS					
	New Track on Former Railroad Right-of-Way	TF	24000	$160	$3,840,000
	New Track on New Alignment	TF	17500	$180	$3,150,000
	Upgrade Existing Track	TF	2500	$100	$250,000
	Railroad Bridges	TF	600	$8,000	$4,800,000
	Highway Overpasses (Two-Lane Roads)	EA	2	$5,000,000	$10,000,000
	Hwy Overpasses (2-Lane Rds interfacing w/ Hwy 29)	EA	2	$10,000,000	$20,000,000
	Grade Xings (2-Lane Roads)	EA	3	$500,000	$1,500,000
	Upgrade Existing Grade Crossing (Two-Lane Roads)	EA	2	$200,000	$400,000
	New 2-Lane Highway 29	LF	3,600	$1,000	$3,600,000
	Water Line Crossings	EA	1	$50,000	$50,000
	Water Line Relocation	LF	3500	$200	$700,000
SUBTOTAL					$48,290,000
	Mobilization and Demobilization at 10%				$4,829,000
CONSTRUCTION SUBTOTAL					$53,119,000
NON-CONSTRUCTION ITEMS					
	Engineering, Environmental Clearance, Permits @ 20%				$10,623,800
	Construction Management at 10%				$5,311,900
SUBTOTAL NON-CONSTRUCTION					$15,935,700
SUBTOTAL CONSTRUCTION AND NON-CONSTRUCTION					$69,054,700
	Contingency at 25%				$17,263,675
TOTAL WITH CONTINGENCY					$86,318,375
		PROJECT GRAND TOTAL			**$86,318,375**
		FOR BUDGET PURPOSES			**$86,000,000**

Source: Rail Pros, Inc.

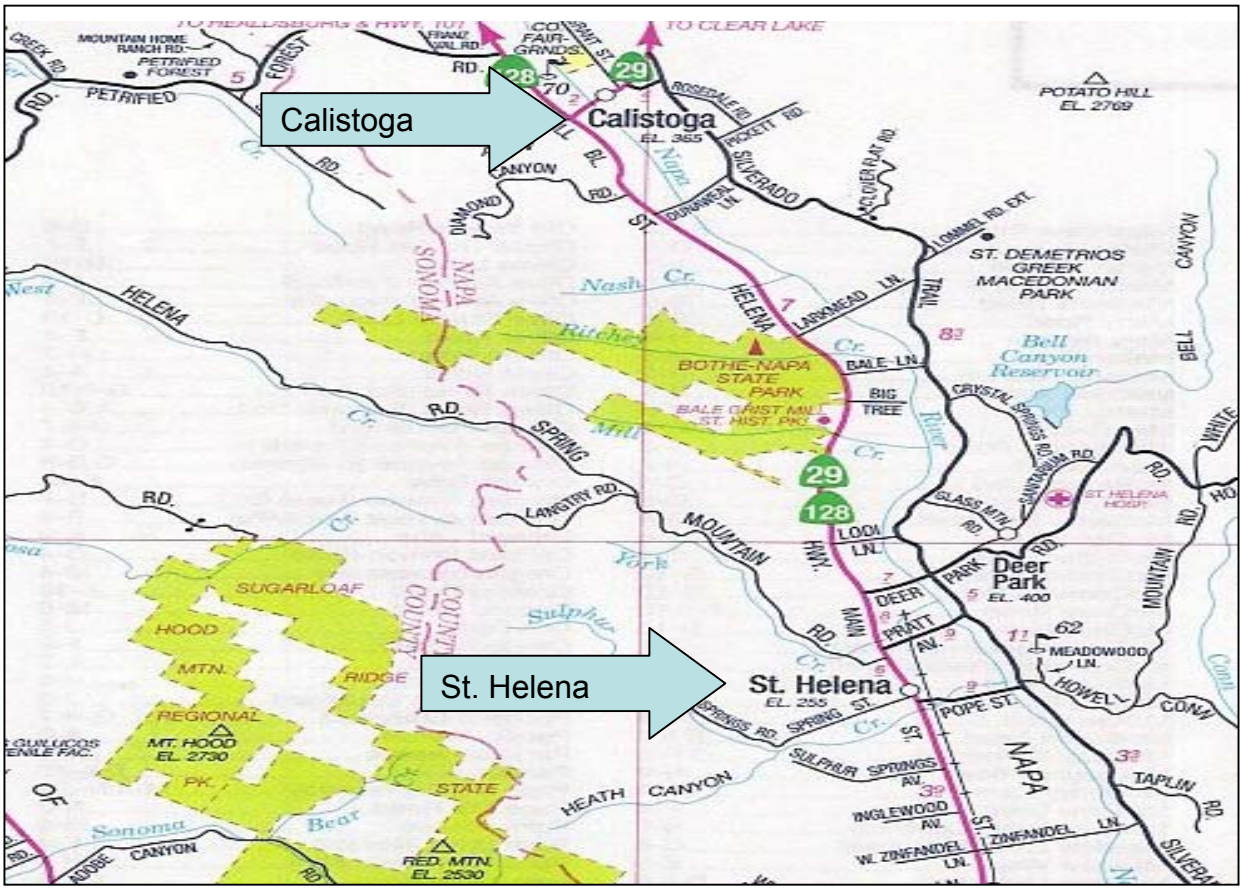
Table 2-7

CALISTOGA TO ST HELENA				
ALTERNATIVE 2B ALIGNMENT				
PROPOSED ALIIGNMENT ON FORMER RAILROAD ROW				
(HIGH ESTIMATE GRADE-SEPARATED ROAD CROSSINGS)				
Item	**Unit**	**Quantity**	**Unit Price**	**TOTAL**
CONSTRUCTION ITEMS				
New Track on Former Railroad Right-of-Way	TF	24000	$160	$3,840,000
New Track on New Alignment	TF	17500	$180	$3,150,000
Upgrade Existing Track	TF	2500	$100	$250,000
Railroad Bridges	TF	600	$8,000	$4,800,000
Highway Overpasses (Two-Lane Roads)	EA	5	$5,000,000	$25,000,000
Hwy Overpasses (2-Lane Rds interfacing w/ Hwy 29)	EA	2	$10,000,000	$20,000,000
Grade Xings (2-Lane Roads)	EA	0	$500,000	$0
Upgrade Existing Grade Crossing (Two-Lane Roads)	EA	2	$200,000	$400,000
New 2-Lane Highway 29	LF	3,600	$1,000	$3,600,000
Water Line Crossings	EA	1	$50,000	$50,000
Water Line Relocation	LF	3500	$200	$700,000
SUBTOTAL				$61,790,000
Mobilization and Demobilization at 10%				$6,179,000
CONSTRUCTION SUBTOTAL				$67,969,000
NON-CONSTRUCTION ITEMS				
Engineering, Environmental Clearance, Permits @ 20%				$13,593,800
Construction Management at 10%				$6,796,900
SUBTOTAL NON-CONSTRUCTION				$20,390,700
SUBTOTAL CONSTRUCTION AND NON-CONSTRUCTION				$88,359,700
Contingency at 25%				$22,089,925
TOTAL WITH CONTINGENCY				$110,449,625
	PROJECT GRAND TOTAL			**$110,449,625**
	FOR BUDGET PURPOSES			**$110,000,000**

Source: Rail Pros, Inc.

Map Four

Former Railroad Corridor between St. Helena and Calistoga



Source: RailPros, Inc.

Alternative 1

Alternative 1 uses the former railroad alignment with the exception of two detours on new alignments. One detours 4,000 feet around Sterling Vineyards (Photo 2-3) while the other skirts around Krug Vineyards (Photos 2-9 and 2-10), a distance of 3,000 feet. Those detours are required to ensure that passenger rail operations do not conflict with activities on vineyard properties.

The former SP railroad line running between St. Helena and Calistoga was abandoned in the early 1970's. In the early 1980's, the City of Calistoga constructed a water line located primarily within but below the former railroad alignment.

For purposes of inventorying both Alternatives 1 and 2, the stationing of the water line has been adopted. In Calistoga, the water line joins the former rail alignment at Station 15. The proposed rail line would terminate at Lincoln Avenue, which is 2,400 feet north of this location (Photo 2-1). The beginning stationing on the Calistoga-St. Helena rail alignment in this discussion is Station –9.

The water line permanently leaves the former rail alignment near St. Helena at Station 360 (Deer Park Road). Track exists just south of Deer Park Road (Photo 2-9) but is not in service. Existing track is in service at Fulton Road, just north of the Napa Wine Train Depot in St. Helena (Photo 2-11). Fulton Road is approximately 5,500 feet south of Deer Park Road. The end points of the St. Helena-Calistoga rail segment is Station 415.

Therefore, the proposed new rail segment using the former SP ROW would extend between Station –9 in Calistoga and Station 415 in St. Helena, resulting in an approximate length of 42,500 feet (about 8 miles), comprised of 32,500 feet of new track within former railroad ROW, 7,500 feet of new track outside former railroad ROW and 2,500 feet of upgraded existing track.

The water line swings to different sides of the former railroad ROW throughout its alignment. In areas where the track crosses over the water line at angles between approximately 45 and 90 degrees, the water line will require some protection-in-place (e.g. steel casing or concrete encasement). In areas where the proposed track would run directly on top (not to the side) of and parallel to the existing water line, the water line would need to be relocated.

Land Use

Since the abandonment of the former SP railroad ROW in the early 1970's, several new land uses have sprung up along the corridor. While those uses could be relocated, some of them are sensitive, e.g. a school, residences and vineyards that could be controversial and/or expensive to relocate. Some of the specific land use conflicts noted include: a nursery school/pre-school (reportedly with a ten-year lease) and

ballpark located in the ROW just south of Calistoga; buildings at the Calistoga sewage treatment plant located in the ROW; vineyards north of Dunaweal Lane in the ROW; Sterling Vineyards outbuildings, vineyards, parking lot and settling ponds; driveways to private residences located on the ROW and residences (estimated at fewer than ten) in very close proximity to the ROW.

Wetlands/Biological Resources

There are wetlands along the corridor through which the railroad ROW would need to be constructed. In the area immediately south of Calistoga, the railroad ROW is confined between a wetlands area and a ballpark, one or both of the uses would be impacted by the reintroduction of rail service. There are also intermittent wetlands located along the ROW.

Cultural Resources

Wapo Indian artifacts were uncovered during construction of the Calistoga Sewage Treatment plant adjacent to the railroad ROW. While major excavation is not envisioned in the event of rail track construction, the existence of said artifacts could delay construction of the project in the area.

Hydrology

The alignment crosses several streams and the Napa River, south of Sterling Vineyards, which would require special permitting in connection with rail line reconstruction.

Road-Rail Grade Crossings

One of the issues along the corridor will be numerous crossings of the rail ROW by rural roads. Many of the roads are privately owned, providing access to residences, vineyards and wineries. The number of crossings and potential conflicts between rail service and local access at such crossings will be evaluated further.

Crossings and Potential Conflicts, Alternative 1 (From North To South):

Sta 55: Simmons Creek – 100 Foot Railroad Bridge (photo 2-2)

Sta 57: Water Line Crossing

Sta 67: Dunaweal Lane – Two Lane Road Crossing (photo 2-3)

Sta 67 - 102: New Track Alignment Around Sterling Vineyards Facilities (photo 2-3)

Sta 111: Napa River – 300 Foot Railroad Bridge (photo 2-3)

Sta 130: Maple Lane – Two Lane Road Crossing (photo 2-4)

Sta 139: Water Line Crossing

Sta 162: Stream – 100 Foot Railroad Bridge (photo 2-4)

Sta 172: Larkmead Lane – Two Lane Road Crossing (photo 2-4)

Sta 172 - 176: Relocate Water Line

Sta 202 - 208 Relocate Water Line

Sta 213: Bale Lane – Two Lane Road Crossing (photo 2-5)

Sta 217 - 224: Relocate Water Line

Sta 236: Big Tree Lane –Two Lane Road Crossing (photo 2-6)

Sta 252 - 257: Relocate Water Line

Sta 266: Mill Creek – 100 Foot Railroad Bridge (photo 2-7)

Sta 294 - 302: Relocate Water Line

Sta 309 - 313: Relocate Water Line

Sta 330: Lodi Lane –Two Lane Road Crossing (photos 2-8 and 2-9)

Sta 341 - 346: Relocate Water Line

Sta 350 - 390: New Track Alignment Around Krug Vineyards Facilities (photos 2-9 and 2-10)

Sta 360: Deer Park Road –Two Lane Road Crossing [Track Exists South of this Road] (photo 2-9)

Sta 400: Pratt Road –Two Lane Road Crossing, Existing Gates and Flashers (photo 2-10)

Sta 415: Fulton Road –Two Lane Road Crossing, Existing Gates and Flashers (photo 2-11).

Alternative 1 Summary:

New Track Within Former Railroad ROW:	32,500 Track Feet
New Track Outside Former Railroad ROW:	7,500 Track Feet
Upgrade Existing Track:	2,500 Track Feet
Total	42,500 Track Feet

Railroad Bridges: 600 Track Feet
Water Line Relocation: 3,900 Linear Feet
Water Line Crossings: 2 each
New Two Lane Road Crossings: 7
Existing Two Lane Road Crossings: 2

Alternative 1 would require purchase of 4.5 miles of ROW from private owners and 3.5 miles from the City of Calistoga at an estimated combined cost of $14.4 million. The ROW acquisition cost and that calculated in connection with Alternative 2 reflect the assumption that the California Department of Transportation (CALTRANS) would allow use of its SR 29 ROW at no acquisition cost, so long as it did not involve highway relocation.

Alternative 2

Alternative 2 also uses the former railroad alignment extensively, except in two new detours. One detour of 1.7 miles is between Dunaweal Lane and Ritchie Creek (north of Bale Lane) in which available land within a portion of the existing SR 29 ROW is used (Photos 2-2 through 2-5). Three thousand feet are required to transition between the former SP ROW and SR 29 at its north end. An identical length is needed to transition back to the former SP ROW at the south end for a total of 6,000 feet of detour surrounding use of excess SR 29 ROW. The other new alignment detours 3,000 feet around Krug Vineyards facilities (Photos 2-9 and 2-10, same as in Alternative 1).

In the first detour, from north to south, the alignment would: diverge in a southeast direction towards SR 29 at Dunaweal Lane (Photo 2-2). Then cross the Napa River; then join the SR 29 ROW 3,200 feet south of the Dunaweal/SR 29 intersection (Photo 2-3) and stay within the SR 29 alignment for approximately 1.7 miles. Approximately 1,200 feet south of the Larkmead/SR 29 intersection, the alignment

would diverge in a northeasterly direction, rejoining the former railroad ROW at Ritchie Creek (Photo 2-5).

Within the SR 29 ROW detour segment, the highway ROW is approximately 150 feet wide, more than needed by the two lane highway. The excess highway ROW is on the west side of SR 29 between the northerly location where the rail detour joins the highway ROW and Maple Lane (Photo 2-3). Between Maple Lane and where the detour leaves SR 29 ROW on the south, excess ROW is on the east side of the highway (Photos 2-4 and 2-5). In order to avoid a grade crossing of SR 29, approximately 9,000 linear feet of track could be constructed on the existing highway embankment north of Maple Lane, relocating the highway on to the vacant ROW on the west side. The transitions between the existing SR 29 alignment and the new highway alignment at both ends would be approximately 700 linear feet total. Thus, the length of new highway to be constructed would be approximately 9,700 linear feet.

At 44,000 feet (approximately 8.3 miles), the total Alternative 2 alignment is approximately 1,500 feet longer than the Alternative 1 alignment.

Environmental Impacts

With the single major exception of the Sterling Vineyards un-affected by Alternative 2, all of the environmental impacts noted earlier in connection with Alternative 1 generally also apply in connection with Alternative 2, although somewhat fewer residences and at-grade crossings would be affected by Alternative 2.

Highway Alignment

The preliminary environmental impacts associated with the alignment primarily would be associated with disruption to traffic during relocation of the highway and potential removal of vegetation. Further analysis of the alternative will be required.

Crossings and Potential Conflicts, Alternative 2 (From North To South):

Sta 55: Simmons Creek – 100 Foot Railroad Bridge (Photo 2-2)

Sta 57: Water Line Crossing

Sta 67: Dunaweal Lane –Two Lane Road Crossing (Photo 2-2)

Sta 67 - 203: New Track Alignment Off of Former Railroad ROW, Portion on SR 29 ROW [Actual Length of this Detour is Approximately 1,500 Feet More Than the Water Line Stationing Indicated] (Photos 2-2 through 2-5)

Relocated Portion of SR 29 North of Maple Lane: 3,600 Linear Feet (Photo 2-3)

Napa River – 300 Foot Railroad Bridge (Photo 2-3)

Maple Lane – Two Lane Road Crossing Interfacing with SR 29 (Photo 2-3)

Larkmead Lane – Two Lane Road Crossing Interfacing with SR 29 (Photo 2-5)

Sta 202 - 208: Relocate Water Line

Sta 213: Bale Lane – Two Lane Road Crossing (Photo 2-5)

Sta 217 - 224: Relocate Water Line

Sta 236: Big Tree Lane –Two Lane Road Crossing (Photo 2-6)

Sta 252 to 257: Relocate Water Line

Sta 266: Mill Creek – 100 Foot Railroad Bridge (Photo 2-7)

Sta 294 - 302: Relocate Water Line

Sta 309 - 313: Relocate Water Line

Sta 330: Lodi Lane –Two Lane Road Crossing (Photo 2-8)

Sta 341 - 346: Relocate Water Line

Sta 350 - 390: New Track Alignment Around Krug Vineyards Facilities
(Photos 2-9 and 2-10)

Sta 360: Deer Park Road –Two Lane Road Crossing [Track Exists South of this Road] (Photo 2-9)

Sta 400: Pratt Road –Two Lane Road Crossing, Existing Gates and Flashers (Photo 2-10)

Sta 415: Fulton Road –Two Lane Road Crossing, Existing Gates and Flashers (Photo 2-11)

Alternative 2 Summary:

New Track Within Former Railroad ROW:	24,000 Track Feet
New Track Outside Former Railroad ROW	
Within SR 29 ROW:	9,000 Track Feet
Outside SR 29 ROW:	8,500 Track Feet
Upgrade Existing Track	2,500 Track Feet
Total	44,000 Track Feet

Railroad Bridges: 600 Track Feet
Water Line Crossings: 1 Each
New Two Lane Road Crossings: 5
New Two Lane Road Crossings Interfacing with SR 29: 2
Existing Two Lane Road Crossings: 2
New Two Lane SR 29: 3,600 Linear Feet
Relocate Water Line: 3,500 Linear Feet[1]

Though slightly longer, Alternative 2 would require acquisition of 7.2 miles of ROW (3.7 miles of ROW from private land owners and 3.5 miles owned by the City of Calistoga) at an estimated cost of $13.0 million. The balance of the segment traverses the 1.7 miles of SR 29 ROW.

[1] The amount of water line relocation in Alternative 2 is less than Alternative 1 because less of the former Southern Pacific Railroad right of way (on which the water line is located) is used in Alternative 2.

Other Alternatives

The area between Calistoga and St. Helena is in a valley with flat grades having minimal geographic or other physical impediments. An infinite combination of other alternative alignments using private property, the former SP alignment and/or the 150 foot wide portion of the SR 29 ROW could be developed if environmental, community, or other stakeholder concerns require the consideration of more expensive alignments. Photos 2-12 through 2-15 illustrate the general character of the territory.

For example, another mile of 150 foot-wide, SR 29 ROW exists just north of the 1.7 miles assumed in the Alternative 2 alignment. However, there are several disadvantages of using that ROW including:

- greater transition length across private property to get back to the former railroad ROW just south of Calistoga and
- more curvature, equating to slower speed rail service.

In addition, the existing highway on the additional mile of the 150 foot-wide corridor is on the east side of the ROW. It is doubtful that the CPUC would approve new at-grade crossings of SR 29. Thus, either the highway would have to be relocated to the west side of the ROW or two grade separations would need to be built at estimated costs of approximately $10 million and $18 million, respectively.[2]

Section 2.4: Access and Trackage Rights Agreements

"Trackage rights" refers to a grant by the owner of a rail line to another railroad of the right to use specific segments of the owner's tracks, generally for explicitly limited purposes. The grant by the owner of a rail line to a non-railroad, regional or commuter passenger rail service agency to operate over the owner's tracks is often conveyed in an "access agreement" or an "operating access agreement." The term "access agreement" is used primarily in this report as it is more generic and appropriate regardless of whether the non-owning user of trackage is, in fact, a railroad or not. Before turning to access rights granted to facilitate passenger service, a brief review of freight trackage rights is presented as context.

[2] These estimates are based on unit costs consistent with those employed in the development of Tables 2-4 through 2-7 (adding mobilization, demobilization, engineering, environmental clearance, permits, construction management and contingency).

Freight trackage rights may be in either of two forms. They may be structured to permit the grantee only the right to operate trains between terminals or junctions, prohibiting service to on-line customers. Such rights are known as "bridge" or "overhead" rights. Alternatively, trackage rights may allow the grantee "traffic rights" to pick up and deliver cars to and from on-line customers in addition to bridge rights.

In either case, freight trackage rights are created in today's rail industry under a variety of circumstances: 1) as a cost-saving and cost-sharing measure; 2) arising from a merger proceeding; 3) as part of a rail line sale transaction and 4) in order to eliminate short segments of operationally undesirable trackage, as through city streets or over multiple, busy, road crossings. For example, as part of the merger proceeding in which UPRR acquired SP, Burlington Northern Santa Fe (BNSF) negotiated the right to bridge certain UPRR routes and originate and/or terminate traffic along others.

Passenger operating access or trackage rights permit the operation of intercity, commuter, or recreational passenger service by one entity or railroad over lines owned by another. Passenger access rights generally arise in one of two ways. Amtrak enjoys a unique, statutory right to use track belonging to freight carriers or regional transportation authorities as it deems necessary to provide intercity rail passenger services. The right, which arose from its creation by the Rail Passenger Service Act of 1970, is generally understood to be limited to intercity service and has not been used to establish track access on behalf of any commuter or regional rail services, including those for which Amtrak serves as contract operator.

Other passenger service sponsors obtain access or trackage rights through direct, voluntary negotiation with rail line owners. (Except for Amtrak's access rights, no Federal laws or regulations require a line owner to grant access to passenger services on any terms.) Legislation requiring railroads to negotiate access arrangements with existing or prospective rail passenger service sponsors was introduced by Congressman Bob Clement (D-Tennessee) on several occasions over the last few years; however, its passage is unlikely. Specifically, Congressman Clement, the ranking Democrat on the Rail Subcommittee of the House Transportation and Infrastructure (T&I) Committee, authored H.R. 4507, nicknamed "TRAINS" (Transit Rail Access Improvement and Needs Act) basically would give commuter rail services the

same recourse that Amtrak enjoys under the Surface Transportation Board (STB), that would adjudicate issues of rates, access and operation of passenger traffic over tracks owned by freight railroads. Federal jurisdiction over interstate commerce, vested in the STB, protects rail line owners from having lines condemned in state courts; hence, prospective passenger service sponsors must arrange access through voluntary negotiations with owning railroads.)

Willingness of Railroads to Allow Use of Their Rights-of-Way By Rail Passenger Services

The owner of the NVRR informally stated to RLBA that he would be willing to discuss an operating or trackage rights agreement allowing use by rail passenger services of ROW and existing railroad infrastructure owned by NVRR in exchange for the right to bid on operating such services on all study corridors.

Mr. Jerry Wilmoth, General Manager, Network Infrastructure at UPRR, advised RLBA and NCPTA at a meeting on July 31, 2002 that UPRR was reassessing its long-term interest in all of its light density and branch line properties, including the lines leased to CFNR. He later indicated that UPRR would be willing to consider the sale of the study area lines, subject to the terms of its freight lease with CFNR, reinforcing his earlier indication that any such transaction would have to satisfy UPRR that passenger services would in no way constrain either existing or potential increased freight operations, as well as satisfy any CFNR concerns.

Commuter Rail Agreements

Agreements between commuter rail sponsors and railroads may be described as access or trackage rights agreements, purchase of service agreements and operating contracts. Each agreement is tailored to a specific situation but in the commuter rail context the three generally may characterized as follows:

- **access agreements/trackage rights agreements** convey to commuter rail sponsoring organizations (or their designated service operator) the right to operate commuter trains on tracks of the granting railroad;

- **purchase of service agreements** establish the relationship between a commuter rail sponsor and a rail line owner (or operator, in the case of Amtrak) that has consented to provide commuter rail services <u>on tracks that it owns</u> for has, as an operator, rights to operate on behalf of a sponsoring

agency, specifying the service to be operated, quality standards, rights, obligations and compensation and

- **operating contracts** specify the terms governing the relationship between a commuter rail sponsor and a railroad operating company that is going to provide commuter rail service on tracks of (one or more) *other* railroads.

Access Agreements

This section of Chapter 2 focuses on access agreements (which are similar in intent to trackage rights agreements). Access agreements normally cover most or all of the following:

- compensation;
- operating priorities;
- liabilities and risk management;
- escalation;
- right to audit;
- station and other construction;
- equipment;
- access to property;
- dispute resolution;
- duration of agreement;
- right of first refusal to acquire railroad's property and
- insurance provisions.

The first three of those items will receive further explication because of their relative importance in the negotiation process and nuances peculiar to railroad operations. Many provisions of access agreements are generally standard in intent. For example:

- owners retain the right to control and dispatch the rail lines;
- owner's operating rules apply;
- owners may permit use of the line by other railroads;
- owners may bar from the line, commuter rail employees who have committed serious rule violations;
- owners are free to conduct freight operations without restriction (usually);
- owners are responsible for performing infrastructure maintenance;
- each party is responsible for maintaining its own equipment to FRA standards;

- owners have the right to approve the entity designated to exercise the commuter (or another single type of passenger) rail operating rights (usually with approval not to be unreasonably withheld);
- sponsor's use of the rail line is limited to commuter (or another single type of passenger) rail service;
- operator's employees are to be qualified on owner's operating rules and instructions and
- infrastructure improvements requested by passenger rail sponsors are generally paid for by the sponsors. Occasionally, costs are shared where the owner agrees that it too will benefit from the improvements.

The three critical terms of compensation, operating priorities and liabilities are addressed below.

Compensation

Charges assessed by track owners to tenants for exercise of track operating rights generally vary with train-miles, car-miles or cars handled. A fixed charge may be appended as well, creating, in effect, a two-part tariff. The level of charges often reflects a tenant's share on an average cost basis of the landlord's operating and maintenance expenses and an annual fixed percentage of/return on property value, plus a profit component.

One common form of payment terms is the "rental plus maintenance and operations agreement." Under such arrangements, tenants pay a fixed amount representing a proportion of property value and a "wheelage" portion designed to cover maintenance and operating expenses incurred by property owners. The designation of rail property in connection with rent purposes is normally very specific: tracks, buildings, other appurtenances will be listed in an agreement, requiring relatively complex accounting.

Incremental capital costs include expenses associated with bringing lines up to necessary standards of curvature, gradient, rail wear and spacing, large-scale tie replacement, etc. Costs associated with higher standards of track components such as switches, frogs and the costs of additional sidings, station sites and facilities to be leased by a service sponsor as well as any major track or signal improvements projects undertaken on the sponsor's behalf are generally covered by separate agreements which are not part of an operating rights cost allocation agreement. Such an approach

allows appropriate terms and cost sharing of each project to be established without complicating the allocation of normal maintenance of way expenses.

As to the use of track, important costs to consider (and for which to develop appropriate negotiating strategies) include shared maintenance of way costs. In return for assuming a portion of such expenses, a sponsor is entitled to explicit assurance that track will be maintained to some established standard. Existing condition and maximum authorized passenger train speeds, if satisfactory to the sponsor, represent potential standards.

Numerous means of allocating operating rights costs have been used in access agreements. Common approaches include fixed fee per car-mile or train-mile, gross ton-miles and speed-factored gross tons. The last means is attractive from a technical standpoint but challenging from an administrative perspective and is neither widely used nor recommended.

Operating Priorities

The party with operating control of a railroad line generally assumes responsibility for dispatching trains, providing direct and immediate knowledge of the progress and status of all trains on the line. Such information is critical to enable prompt reaction to mitigate the effects of service delays or interruptions. In addition, the dispatching entity usually enjoys priority treatment in the event of train meets and conflicts. Such positive impacts from dispatching may be (or may be considered) crucial to establishing and maintaining a good commuter service quality and image. In addition, care must be given to the contractual elements associated with dispatching rights. Negotiation should cover, at a minimum: 1) priority to be given to commuter trains vis a vis freight and Amtrak intercity trains; 2) penalties and incentives applied to expeditious handling of commuter trains; 3) non-dispatching party's right to monitor dispatching operations and 4) the right of all parties to add trains or alter schedules. Some agreements assign different rights during peak periods than off-peak. Others make provision to accommodate a specific freight service. Still others are relatively silent as to priorities with the railroad accepting a duty to protect the commuter service schedule. A thorough understanding of both the passenger service to be operated as well as existing and expected freight operations is essential to developing priority terms (and associated capital improvements) necessary to facilitate successful commuter rail service.

Liabilities and Risk Management

The topic of liabilities is usually the longest section of an access agreement, extending over numerous pages. While details differ in every agreement and are not all reviewed in this report, the central theme may be expressed simply. The standard position adopted by railroads with respect to liability is often termed a "but for" provision. Railroads take the stance that "but for" the presence of commuter operations, an incident would not have occurred and, therefore, the commuter operation is responsible for all liability arising from any incident involving passenger and freight trains. That position, worded in a variety of ways, is the standard basis for apportioning liability in newly established commuter rail access agreements. Agreement language usually makes it clear that the standard applies even if the host railroad is at fault for the incident from which injury or damage arises.

Railroads usually require that a commuter rail sponsor maintain a specified level of property and liability insurance or an approved, fully funded trust fund or a combination of the two. The required level of insurance is often $200 million, although one major railroad is said to be seeking $500 million coverage in new agreements. The specified coverage level sometimes escalates through the contract life, based on changes in one or another government-published cost index.

Current Access/Trackage Rights Agreements

Virginia Railway Express Operation on Norfolk Southern Railway

Virginia Railway Express (VRE) operates commuter rail service over lines of Norfolk Southern Railway Company (NS) and CSX Transportation in Northern Virginia under terms of separate operating access agreements. Key features of the *Operating Access Agreement* between NS and the Northern Virginia Transportation Commission and the Potomac and Rappahannock Transportation Commission (VRE's sponsors) are set forth in this section. The December 1994 agreement is reviewed because it contains two interesting provisions (detailed below) concerning retention of trackage and possible acquisition of the rail line. Terms of subsequent agreements, including that currently in effect are substantially the same as the 1994 agreement.

The NS agreement addresses most of the topics listed above as typical of access agreements. Escalation and right to audit are not covered, probably because of the short duration of the contract (less than two years) and because compensation was not to be based on cost-based bills submitted by NS that VRE reasonably might need to audit. The agreement lists the station sites but notes that separate commuter facility agreements exist regarding stations, platforms and other commuter service facilities.

An unusual provision of the contract is the requirement that the sponsors work in good faith to develop a plan to purchase the line, with NS retaining freight operating rights. At the time the agreement was executed, NS routed most of its freight via an alternate route and sought to extract the value of what was apparently becoming a predominantly passenger rail line. Events in the form of Conrail's acquisition by NS and CSX changed NS's perspective concerning the line and the purchase planning process was terminated. Even so, the term remains a useful example of incorporating the parties' long term intentions in an access agreement.

Important agreement terms follow.

Compensation, due monthly, is a combination of a Base Fee and a Train-Mile Lease Fee. The Base Fee is fixed over the duration of the contract. It is explicitly calculated in the agreement and includes separate components re dispatching, clerical, improvement maintenance and commuter facilities rental. It also includes a unique Track Retirement Deferral Fee, which compensates NS for retaining and maintaining a segment of second main track that NS planned to retire but VRE wanted maintained to protect service reliability. The parties agreed upon the (opportunity) cost of retaining the trackage with the Track Retirement Deferral Fee representing that amount.

The Train-Mile Lease Fee is a negotiated amount applied to each commuter train-mile operated.

Operating Priorities are strictly in favor of NS, with VRE's sponsors agreeing not to assert that commuter trains are entitled to preference over any other trains on the line. However, NS agreed to make "reasonable efforts to avoid unnecessary interference with, and to maintain" the service. As is often the case in access agreements, there are no performance incentives.

Liabilities and Risk Management terms conform with industry norms, with the sponsors indemnifying NS against any loss "… which is attributable in any way

to, or which is exacerbated by, the institution, operation, maintenance, or discontinuance of the commuter rail service …." Liability insurance coverage of at least $200 million is required of the commuter rail sponsors.

Vermont Transportation Authority Operation on Vermont Railway

Champlaign Flyer commuter service between Charlotte and Burlington, Vermont was operated on trackage of the Vermont Railway (VTR) on behalf of the Vermont Transportation Authority (VTA) when a draft of this Chapter was first prepared. VTR also was the contract service operator on behalf of VTA. The service was governed by two agreements: an *Access Agreement* and an *Agreement for Operation of Passenger Rail Services*. Important terms of the A*ccess Agreement* were as follows.

Compensation included: 1) a Track Maintenance Fee assessed on a per-trip basis and adjusted every six months based on actual maintenance expense; 2) an Inspection Fee to cover one additional track inspection per week; 3) a Dispatching Fee to cover two shifts per day, subject to a specified maximum and 4) Miscellaneous including Sperry (rail defect) inspections, other train costs and special train service.

Operating Priorities were favorable to the commuter service, with "absolute priority" granted to peak hour trains and priority to off-peak hour trains, subject to the completion of specified track improvements.

Liabilities and Risk Management were left to be negotiated separately. In the subsequent operating agreement, the State of Vermont was required to procure commercial and general liability insurance in the amount of $200 million. VTA also was required to provide all other required coverages including insuring VTR property.

METRA Operation on Canadian National (former Wisconsin Central)

METRA, Chicago's commuter rail service, commenced a new service over the Canadian National (then Wisconsin Central Ltd. (WCL)) line to/from Antioch, Illinois under provisions of a trackage rights agreement executed in August, 1995. Unlike the two access agreements reviewed above, the METRA-WCL agreement is a trackage rights agreement. METRA is a railroad and hence does not need to negotiate access on behalf of a contract operator but rather can enter into trackage rights agreements directly with other railroads.

Compensation, paid monthly, includes three components: 1) base rental, 2) base maintenance and operations compensation and 3) an incentive. The first two are fixed amounts while the incentive varies based on each percent by which on-time performance exceeds 95 percent. (Incentive fees are the exception rather than the rule in access agreements, while the reverse is true in operating contracts.) All three compensation elements escalate based on changes in the Consumer Price Index.

Operating Priorities are not addressed in terms of priority accorded to commuter trains compared with any other types of trains. WCL committed to using its best efforts to preserve the scheduled timetable during peak periods. Movement of its trains was to be coordinated with commuter rail operations during peak periods but WCL was not restricted from operating during those periods. The agreement was silent as to commuter trains not operated in peak periods. (Incentive payments are not restricted to peak period trains and hence provide an inducement to operate all trains in a timely manner.)

Liabilities and Risk Management terms are standard commuter rail access arrangements. METRA indemnifies WCL re any loss involving METRA operations, equipment or employees. An exception was made were WCL found guilty of willful and wanton misconduct, in which case responsibility would be determined under governing law.

Conclusion

Crucial to development of an effective access agreement is a clear vision of a long-term passenger service plan and the attitude that the access agreement is the beginning of an enduring partnership between a passenger rail sponsor and a host railroad. Some agreement terms are virtually standard; an understanding of those and prior consideration as to which are acceptable and which passenger service sponsors should attempt to alter will make any negotiating process smoother and faster. Contract terms, especially compensation terms, should be designed to foster and reward efficient performance and deliver high quality service to the passenger.

CHAPTER 3

PHYSICAL PLANT AND CAPITAL IMPROVEMENT PLAN

The study addresses the potential to restore rail passenger service and/or enhance railroad freight operations on any or all of the following four segments from south to north:

1. 7.3 miles between the Vallejo Ferry Terminal and Napa Junction comprised of:
    a. a new extension constructed along Mare Island Way between the Vallejo Ferry Terminal and the end of existing track (depicted in dashed blue on Figure 3-One on the next page);
    b. former Navy property featuring existing trackage connecting to Mare Island now owned by the City of Vallejo (depicted in solid blue) and
    c. UPRR Railroad-owned trackage operated by CFNR (depicted in black);

2. 5.1 miles between Napa Junction and Napa comprised of:
    a. CFNR trackage between Rocktram and Napa Junction;
    b. NVRR-owned trackage between Rocktram and Napa (depicted in green) and
    c. a potential bypass route around Napa Pipe;

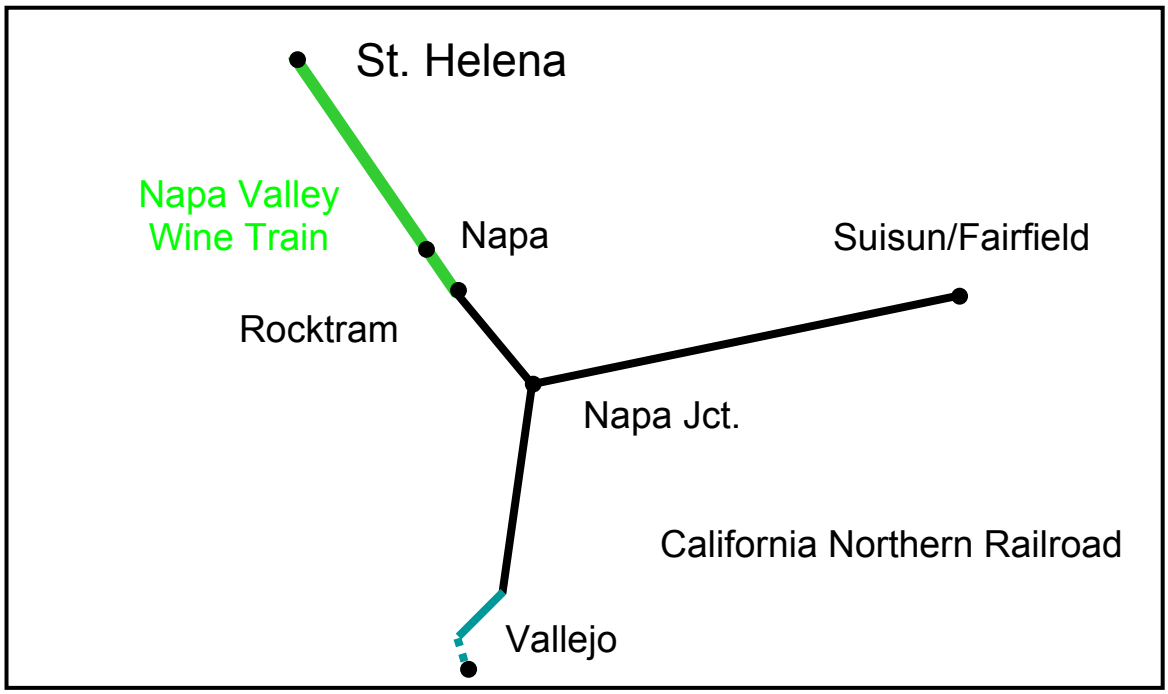
3. 18.1 miles of NVRR-owned trackage between Napa and St. Helena; and to the east

4. 12.5 miles of UP owned, CFNR operated trackage between Napa Junction and Suisun City.

The railroad segments, in terms of geometric alignment, can be upgraded without major change. The existing and prospective freight and excursion trains operate at very low track speeds (generally 10 mph) and, therefore, are tolerant of relatively poor track conditions. At 10 mph, operations are under the limit of FRA Class II Track Standards, which allow for freight operations up to 25 mph and 15 mph for passenger operations. In contrast, commuter services will require a safe, reliable route that can be maintained

at a much higher maximum speed—probably 60 miles per hour wherever feasible. Thus, major rehabilitation of the track condition will be required most likely to FRA Class III Track Standards, which would allow for up to 40 mph freight operation and 60 mph passenger operation.

Figure 3-One
Rail Segment Connectivity



Source: Consultant Team.

In most cases, the entire track structure—rail, ties and ballast will have to be replaced, along with turnouts and road crossings. Road crossing protection also will have to be upgraded to handle the faster trains. However, no significant bridge or structures work is anticipated.

Although Federal regulations do not directly require signalization, the study team recommends installation of a signal system because even a basic system, such as Centralized Traffic Control (CTC), provides significant safety improvements over the absence of same.

SECTION 3.1: Condition Of Existing Track, Bridges And Structures

Overview

Overall, the subject existing track is low-speed, low priority freight trackage, with maximum-speeds of ten and twenty miles per hour. The entire track structure is designed to support such low-speed activities with minimum cost and maintenance. Speed increases will mean constructing a more robust, dependable track. As can be seen in the representative photo at right, the track surface is irregular and the overall track structure is not elevated above the surrounding area. Such track structures are unable to withstand the dynamic loading of higher speeds and will not perform reliably.

Additional details are discussed below.

Track

The rail is generally jointed, some of it weighing less than 90 pounds per yard. Tables 3-1 and 3-2 denote the weight of rail in place on the CFNR and NVRR, respectively, to the nearest tenth of a mile. The ties are in fair condition, while the ballast section is providing very limited utility in supporting the ties. The existing track will not reliably support a 60 miles per hour commuter operation.

Rail condition on the Vallejo-Napa Junction segment is particularly bad, with numerous battered and broken rail ends. A typical joint is shown above.

TABLE 3-1
WEIGHT OF RAIL IN PLACE
CALIFORNIA NORTHERN RAILROAD
June 2002

Beginning Milepost	Ending Milepost	Rail Weight (Pounds/yard)
48.9	49.0	119
49.0	49.1	132
49.1	49.7	136
49.7	49.9	131
49.9	52.6	132
52.6	52.9	131
52.9	53.3	132
53.3	54.1	131
54.1	54.2	136
54.2	55.1	131
55.1	55.5	132
55.5	56.6	132
56.6	56.9	132
56.9	58.8	131
58.8	59.2	132
59.2	59.5	131
59.5	59.6	132
59.6	59.8	131
59.8	59.9	130
59.9	61.4	112
61.4	61.5	115
61.5	61.6	113
61.6	62.0	132
61.9	64.0	112
61.6	62.3	134
62.3	63.8	90
63.8	64.8	90
64.8	67.0	136
67.0	67.5	90
61.4	63.2	90
63.2	63.9	90
63.9	64.5	110
64.5	65.0	113
65.0	66.0	90
66.0	67.3	110
67.3	67.7	90
67.7	68.5	?
68.5	68.9	?

Source: Prepared by RailPros based on information provided by RLBA from the California Northern Railroad.

TABLE 3-2
WEIGHT OF RAIL IN PLACE
NAPA VALLEY WINE TRAIN
June 2002

Beginning Milepost	Ending Milepost	Rail Weight (Pounds/yard)
67.5	70.9	90
70.9	71.1	112
71.1	71.3	90
71.3	71.4	113
71.4	77.5	90
77.5	77.7	130
77.7	77.8	113
77.8	78.1	130
78.1	78.6	113
78.6	84.8	90
84.8	84.9	112
84.9	85.2	62
85.2	85.5	113
85.5	85.7	128
85.7	87.6	90
87.6	88.8	62

Source: Prepared by RailPros based on information provided by Napa Valley Wine Train.

Bridges and Structures

There are numerous bridges and structures on the study area rail lines, as detailed in Tables 3-3 and 3-4, concerning the CFNR and NVRR, respectively, on the two following pages. The bridges and structures on all routes are in relatively good condition but may require some work. Necessary repairs to bridges and structures are minor and subsumed within the cost of upgrading the overall track structure. There are a number of highway bridges and one major railroad bridge over the Napa River in the city of Napa. The highway bridges are in good condition and the Napa River bridge will be replaced as part of an Army Corps of Engineers project.

Section 3.2: At-Grade Road Crossings

The railroad milepost, crossing type (public or private), protection type, Federal Department of Transportation number, street location, city and county associated with each railroad/road at-grade crossing are set forth in Tables 3-5 on and 3-6 with respect to the CFNR and NVRR, at pages 3-9 and 3-10, as well as 3-11, respectively.

Section 3.3: Necessary Capital and Capacity Improvements

One of the key assumptions set forth in the scope of services to which the entire study effort responds, is that an average speed of 45 miles per hour would be achievable between stations. Regardless of the theoretical maximum speed limit to which the subject track segments could be improved, the number of and spacing between stations is the primary driver of overall segment speed and running time, because significant time is lost accelerating and decelerating between stations. Even were station stops limited to one minute, the total time “lost” as compared with 60 miles per hour operation is two to three minutes per stop, depending on vehicle acceleration/deceleration performance characteristics.

For example, with a typical station spacing of five miles and assuming a maximum 60 miles per hour track speed between stations, the average 45 miles per hour speed is barely reached in the rail service operating plan detailed in Chapter 6. A higher maximum speed between stations has little impact, since higher speeds translate into only a few seconds per mile in time savings.

TABLE 3-3
STRUCTURES LIST
CALIFORNIA NORTHERN RAILROAD
June 2002

MILEPOST	LENGTH (FEET)	DESCRIPTION
52.37	30	Concrete Bridge
52.55	67	Steel Bridge
52.57	45	Open Deck Trestle
52.96		Tunnel
53.89	45	Open Deck Trestle
53.93	90	Open Deck Trestle
55.18	398	Underpass (U.S. 80)
57.04	90	Open Deck Trestle
61.76	32	Timber Pile Trestle - Open Deck
62.49	15	Timber Pile Trestle - Open Deck
63.46	45	Timber Pile Trestle - Open Deck
63.77	15	Ballast Deck Trestle
64.66	60	Timber Pile Trestle - Open Deck
64.84	15	Timber Pile Trestle - Open Deck
65.47	45	Timber Pile Trestle - Open Deck
66.91	45	Timber Pile Trestle - Open Deck

Source: Prepared by RailPros based on information provided by RLBA from the California Northern Railroad.

TABLE 3-4
STRUCTURES LIST
NAPA VALLEY WINE TRAIN
June 2002

MILEPOST	LENGTH	DESCRIPTION
	FEET	
68.27	75	Precast Concrete Bridge
68.68	70	Concrete Bridge
69.62	59	Timber Pile Trestle - Open Deck
69.62	80	Steel Through Plate Girder
69.62	74	Timber Pile Trestle - Open Deck
69.81	195	Timber Pile Trestle - Ballast Deck
72.81	45	Timber Pile Trestle - Ballast Deck
75.18	105	Timber Pile Trestle - Open Deck
80.37	15	Timber Pile Trestle - Ballast Deck
82.21	15	Timber Pile Trestle - Open Deck
84.03	45	Timber Pile Trestle - Open Deck
87.13	25	Timber Pile Trestle - Open Deck
88.38	30	Timber Pile Trestle - Open Deck

Source: Prepared by RailPros based on information provided by Napa Valley Wine Train.

Table 3-5
Grade Crossing Inventory
California Northern Railroad Company

Schellville Subdivision Crossing List						
Milepost	Crossing Type	Protection	DOT Number	Street	City	County
49.2	Public	Gated	751299L	Cordelia Road U.P. Wye	Cordelia	Solano
49.5	Public	Gated	751300L	Pennsylvania Road	Cordelia	Solano
50.1	Public	Gated		Beck Ave.	Cordelia	Solano
51.0	Public	Gated	751302A	Cordelia Road/Chadbourn	Cordelia	Solano
AA 52.1C			751305V	Cordelia Road/Busch	Cordelia	Solano
51.3	Public	Bulk Board				
51.5	Private	Stop Sign				
52.6	Private	Stop Sign				
52.7	Private	Stop Sign				
53.1	Private	Stop Sign				
53.9	Private	Stop Sign				
54.2	Public	Gated	751311Y	Bridgeport Road	Cordelia	Solano
54.5	Public	Gated	751313M	Lopes Road	Cordelia	Solano
AA 54.7C			751314U	Cordelia Road (Spur)	Cordelia	Solano
AA 54.81C			751315B	Cordelia Road (Spur)	Cordelia	Solano
55.5	Public	Gated	751317P	Red Top Road	Cordelia	Solano
57.1	Private	Stop Sign				
58.1	Private	Stop Sign				
58.2	Private	Stop Sign				
60.3	Private	Stop Sign				
61.0	Private	Stop Sign				
62.8	Private	Stop Sign				
62.2	Public	Gated				

Napa Subdivision Crossing List						
Milepost	Crossing Type	Protection	DOT Number	Street	City	County
62.0	Public	Gated				
AB 62.01				Green Island Road	American Canyon	Napa
AB 63.9	Public	Gated	7513149V	Airport Road	American Canyon	Napa
65.4	Private	Stop Sign				
65.6	Public	Stop Sign				

Table 3-5
Grade Crossing Inventory
California Northern Railroad Company

(concluded)

Vallejo Subdivision Crossing List						
Milepost	Crossing Type	Protection	DOT Number	Street	City	County
61.9	Private	Stop Sign				
62.7	Private	Stop Sign				
62.8	Private	Stop Sign				
63.1	Public	Gated	751461G	American Canyon	American Canyon	Napa
64.0	Public	Gated	751462N	Mini Drive	Vallejo	Solano
64.8	Public	Gated	751483V	Hwy. 37	Vallejo	Solano
68.5	Private	Stop Sign				
N/A			N/A	Broadway Ave.	Mare Island	Solano
N/A			N/A	Sereno Drive	Mare Island	Solano
N/A			N/A	Redwood Street	Mare Island	Solano
N/A			N/A	Valle Vista Ave.	Mare Island	Solano
N/A			N/A	State Route 29	Mare Island	Solano
N/A			N/A	Mississippi Street	Mare Island	Solano
N/A			N/A	Nebraska Street	Mare Island	Solano
N/A			N/A	Old Wilson Ave.	Mare Island	Solano
N/A			N/A	New Wilson Ave.	Mare Island	Solano

Source: California Northern Railroad Company.

TABLE 3-6
GRADE CROSSING INVENTORY
NAPA VALLEY WINE TRAIN

MILEPOST	CROSSING	NOTES
67.50	STREBLOW DR.	GATED SIGNAL
68.15	PRIVATE	
68.30	IMOLA AVE	GATED SIGNAL
69.08	OIL CO RD	
69.25	EIGHTH ST	GATED SIGNAL
69.40	S SOSCOL AVE	GATED SIGNAL
69.50	THIRD ST	GATED SIGNAL
69.70	FIRST ST	GATED SIGNAL
69.90	N. SOSCOL AVE	GATED SIGNAL
70.00	NAPA ST	GATED SIGNAL
70.10	VALLEJO ST	GATED SIGNAL
70.26	JACKSON ST	GATED SIGNAL
70.40	LINCOLN AVE	GATED SIGNAL
70.60	YAJOME ST	GATED SIGNAL
70.70	MAIN & CENTRAL	GATED SIGNAL
70.78	JEFFERSON ST	GATED SIGNAL
71.10	PUEBLO AVE	GATED SIGNAL
71.60	CALIFORNIA BLVD	GATED SIGNAL
71.70	HIGHWAY 27	GATED SIGNAL
71.80	REDWOOD RD	GATED SIGNAL
72.60	TROWER AVE	GATED SIGNAL
73.01	WINE COUNTRY RD	GATED SIGNAL
73.20	SALVADOR AVE	GATED SIGNAL
74.30	OAK KNOLL AVE	GATED SIGNAL
75.32	DARMS LN	GATED SIGNAL
76.73	HOFFMAN LN	GATED SIGNAL
77.80	CALIFORNIA DR	GATED SIGNAL
78.65	MADISON ST	GATED SIGNAL
79.41	PRIV XING	PHILLIPS
79.87	PRIV XING	TODDEI
80.33	DWYER RD	GATED SIGNAL
80.58	PRIV XING	
80.87	PRIV XING	
81.11	PRIV XING	
81.18	PRIV XING	PLUM CREEK
81.24	OAKVILLE GRADE RD	GATED SIGNAL
81.44	WALNUT DR	
81.55	PRIV XING	
81.89	PRIV XING	SOUTH MONDAVI
81.97	PRIV XING	NORTH MONDAVI
82.17	PRIV XING	B. V.
82.35	PRIV XING	
82.42	PRIV XING	HUDSON
82.58	BELL OAKS LN	GATED SIGNAL
82.78	MANLEY LN	GATED SIGNAL
82.98	PRIV XING	

MILEPOST	CROSSING	NOTES
83.94	PRIV XING	GALEN HOUSE
83.17	NEIBAUM LN	GATED SIGNAL
83.31	PRIV XING	COPPOLA
83.34	PRIV XING	FIRE HOUSE
83.44	PRIV XING	TUCKER
83.50	PRIV XING	INGLENOOK
83.62	PRIV XING	SULLIVAN
83.78	PRIV XING	
83.84	PRIV XING	GREICH HILLS
84.31	PRIV XING	BEAUCANON
84.35	PRIV XING	MORGAN
84.46	RUTHERFORD GROVE	GATED SIGNAL
84.67	PRIV XING	FRANK
84.80	HWY 27 WHITEHALL LN	GATED SIGNAL
84.82	PRIV XING	HERIFELLE
85.20	PRIV XING	
85.30	ZINFANDEL LN	GATED SIGNAL
85.52	SPICE LN	GATED SIGNAL
85.66	PRIV XING	SUZANNE'S
85.86	WHITE LN	SATIUI
85.92	PRIV XING	MONTELLI
86.01	PRIV XING	FELIZ
86.06	PRIV XING	SOUTH MARTINI
86.18	PRIV XING	NORTH MARTINI
86.20	PRIV XING	S CHRISTIAN BROS
86.42	PRIV XING	N CHRISTIAN BROS
86.58	VINTAGE AVE	GATED SIGNAL
86.68	BOWDELL LN	GATED SIGNAL
86.81	MILLS LN	
86.87	PRIV XING	ST HELENA TOW
86.98	PRIV XING	BELLANI
87.02	CHARTER OAKS AVE	GATED SIGNAL
87.08	McCORKLE	
87.10	PRIV XING	MARYVALLE
87.20	POPE ST	GATED SIGNAL
87.40	HUNT ST	GATED SIGNAL
87.50	ADAMS ST	GATED SIGNAL
87.62	PRIV XING	
87.67	FULTON LN	GATED SIGNAL
88.00	PRATT AVE	GATED SIGNAL
88.47	PRIV XING	
88.51	PRIV XING	CHARLES KRUG
87.53	PRIV XING	CHARLES KRUG
87.59	PRIV XING	CHARLES KRUG

Source: Prepared by RailPros, Inc. based on information provided by the Napa Valley Wine Train.

As a result of the trade-off between achieved maximum/average speed and number of stations, over a segment such as St. Helena-Napa, the 45 miles per hour average speed only could be sustained were the total number of intermediate stations limited to two.

Improvement of Existing Track

The general criteria recommended with respect to track upgrades are:

- continuous welded rail—115 pound per yard or heavier; new or relay quality second hand;
- tie renewals to support FRA class 3 operation (60 miles per hour) maximum speed;
- additional ballast providing eight inches of clean ballast below the ties;
- turnouts—115 pound minimum; and
- signals.

Improvement of Existing Bridges and Structures

Structures such as bridges, culverts, etc., are assumed to require upgrading to a condition consistent with the overall speed of operation and passenger safety.

Improvement of Existing At-Grade Crossings

The above-described track upgrades will necessitate the replacement of the track structure and roadway surface at all at-grade crossings. Many road crossings, particularly those on NVRR property, are equipped with modern circuits and automatic gates. Older, less reliable, crossing warning equipment will have to be replaced. Regardless of their age, warning systems also will have to be improved to provide the proper, timely warning associated with higher speeds. Overall, most of the crossing work will involve three major activities:

- replacement of the crossing surface when the rail is replaced;
- upgrading (extending) warning circuits so that crossing gates are activated with adequate warning time given higher commuter train operating speeds and
- replacement of old and outdated crossing equipment.

Sidings and/or double track can be used to mitigate the impact of commuter service on freight operations and also can be used to provide additional passenger service operation capacity/flexibility.

New Construction - Vallejo Ferry Connection

No track connection exists to/from the ferry terminal in Vallejo. CFNR track passes to the east of the terminal while the former Navy track to Mare Island passes to the northwest. The consultant team reviewed and compared the potential of constructing physical connections from both directions and concluded that construction of a connection to the east would be very difficult, mostly because the CFNR track curves away to the east as it goes north in the subject area. There is an industrial track in place over a portion of the distance but its alignment is unsuitable for the subject purpose.

The western connection is more feasible. As shown in Figure 3-Two, the track would proceed north from the ferry terminal, along Mare Island Way depicted in red, connecting to the former Navy trackage depicted in blue at the intersection of Tennessee Road and Mare Island Way. The new track would be on the ocean side of Mare Island Way and would be slightly less than one mile long.

New Construction - Napa Pipe Facility Bypass

CFNR also utilizes its main track through the Napa Pipe Company facility as a storage and switching track. Plant equipment crosses the track frequently and there is constant activity in the immediate vicinity of the tracks. The arrangement works adequately today given the limited number and slow speeds at which CFNR freight trains operate. However, both to promote the higher speeds necessary to provide competitive rail passenger travel times and to allow the pipe operation to continue as it does today, a bypass around Napa Pipe is recommended. As shown in green on Figure 3-Three on page 15, a new main track is proposed to be built around the east side of the facility, allowing the existing main track to continue as a switching track in the plant.

FIGURE 3-Two
Vallejo Ferry Connection

Source: Rail Pros, Inc.

FIGURE 3-Three
Napa Pipe Bypass

Source: Rail Pros, Inc.

Capacity-Enhancing Capital Improvements

Passing tracks are required both to facilitate freight operations and potential recovery of passenger services as well as to provide passenger meet locations in the event passenger trains get delayed. Accordingly, there are two sidings proposed; one between Napa Junction and Suisuin at Creston, an old siding location, between mileposts 57.5 and 58.5 and one between Napa and St. Helena near Oakville between mileposts 80.3 and 81.0. The locations at which new passing sidings would be required to facilitate meets between passenger trains are discussed in Chapter 6. Costs associated with such sidings are included in Chapter 9 capital cost estimates.

Cost of Capital Improvements

Table 3-7 below summarizes into four segments the $93 million investment required to accomplish the upgrading of railroad infrastructure components discussed immediately above. The segmentation is designed to facilitate the calculation of total capital costs in later phases of this study associated with particular service scenarios. Tables 3-8 through 3-11 detail the development of capitol costs associated with each of the four

TABLE 3-7
TOTAL AND UNIT TRACK STRUCTURE CAPITAL COSTS
SELECTED SEGMENTS AND ENTIRE ROUTE

Segment	Length (Miles)	Endpoints			Cost	Cost/Mile
1	7.3	Segment 1 Vallejo-Napa Juction			$ 23,728,000	$ 3,250,411
2	5.1	Napa Junction-Napa			27,234,000	5,340,000
3	18.1	Napa-St. Helena			25,788,000	1,424,751
4	12.5	Napa Junction-Suisun City			27,488,000	2,199,040
Total	43.0			Total	$ 104,238,000	
					Average	$ 2,424,140

Table 3-8
TOTAL AND UNIT TRACK STRUCTURE CAPITAL COSTS
VALLEJO-NAPA JUNCTION SEGMENT

Segment	1	Vallejo-Napa Junction		
Length (Mi.)	7.3			
Length (TF)	38,544			
ITEM	**QUANTITY**	**UNIT**	**UNIT COST (in 2002 dollars)**	**TOTAL COST**
Land and Environmental				
Purchase Land		AC	$ -	$ -
Project Clearance		LS		$ -
Track				
Tie Replacement @ 1000/mi.	7,300	EA	75	547,500
Rail Relay	77,088	LF	30	2,312,640
Crossings (Est.) Total footage	600	TF	400	240,000
Turnouts (Est.)	10	EA	40,000	400,000
Signals				
CTC	7	MI	350,000	2,555,000
Control Points (Napa Jct.)	1	EA	600,000	600,000
Crossing Upgrades (Est.)	18	EA	175,000	3,150,000
Additional Construction				
Ferry Connection	1	EA	1,300,000	1,300,000
Upgrades to Navy Trackage	1	EA	800,000	800,000
Siding	1	EA	1,500,000	1,500,000
				$ -
Subtotal				**$ 13,405,000**
Mobilization/Demobilization	8%			1,072,000
Construction Contingency	10%			1,341,000
Total Construction Estimate				**$ 15,818,000**
Engineering and Permits	12%			1,898,000
Construction Management and Flagging	10%			1,582,000
Agency Costs	3%			475,000
Project Contingency	25%			3,955,000
Total				**$ 23,728,000**

Costs are rounded to the nearest thousand dollars.

Key: AC = Acreage
EA = Each
LF = Lineal Feet
LS = Lump Sum
TF = Track Feet

Source: RailPros.

Table 3-9
TOTAL AND UNIT TRACK STRUCTURE CAPITAL COSTS
NAPA JUNCTION-NAPA SEGMENT

Segment	**2**	**Napa Junction-Napa**		
Length (Mi.)	**5.1**			
Length (TF)	**26,928**			
ITEM	**QUANTITY**	**UNIT**	**UNIT COST**	**TOTAL COST**
Land and Environmental				
Purchase Land	12	AC	$ 200,000	$ 2,400,000
Project Clearance		LS		$ -
Track				
Tie Replacement @ 1000/mi.	5,100	EA	75	382,500
Rail Relay	53,856	LF	30	1,615,680
Crossings (Est.) Total footage	80	TF	400	32,000
Turnouts (Est.)	6	EA	40,000	240,000
Signals				
CTC	5	MI	350,000	1,785,000
Control Points	1	EA	600,000	600,000
Crossing Upgrades (Est).	2	EA	225,000	450,000
Additional Construction				
Napa Pipe Bypass	1	EA	5,000,000	5,000,000
Passenger Bypass	24,000	TF	$ 120	2,880,000
				$ -
Subtotal				**$ 15,385,000**
Mobilization/Demobilization	8%			1,231,000
Construction Contingency	10%			1,539,000
Total Construction Estimate				**$ 18,155,000**
Engineering and Permits	12%			2,179,000
Construction Management and Flagging	10%			1,816,000
Agency Costs	3%			545,000
Project Contingency	25%			4,539,000
Total				**$ 27,234,000**

Costs are rounded to the nearest thousand dollars.

Key: AC = Acreage
EA = Each
LF = Lineal Feet
LS = Lump Sum
TF = Track Feet

Source: RailPros.

Table 3-10
TOTAL AND UNIT TRACK STRUCTURE CAPITAL COSTS
NAPA-ST. HELENA SEGMENT

Segment	3	Napa-St. Helena		
Length (Mi.)	18.1			
Length (TF)	95,568			
ITEM	**QUANTITY**	**UNIT**	**UNIT COST**	**TOTAL COST**
Land and Environmental				
Purchase Land		AC	$ -	$ -
Project Clearance		LS		$ -
Track				
Tie Replacement @ 800/mi.	15,000	EA	75	1,125,000
Rail Relay	191,136	LF	30	5,734,080
Crossings (Est.) Total footage	1,600	TF	400	640,000
Turnouts (Est.)	8	EA	40,000	320,000
Signals				
CTC	10	MI	350,000	3,500,000
Control Points	-	EA	600,000	0
Crossing Upgrades (Est.)	10	EA	175,000	1,750,000
Additional Construction				
Siding	1	EA	1,500,000	1,500,000
				$ -
Subtotal				**$ 14,569,000**
Mobilization/Demobilization	8%			1,166,000
Construction Contingency	10%			1,457,000
Total Construction Estimate				**$ 17,192,000**
Engineering and Permits	12%			2,063,000
Construction Management and Flagging	10%			1,719,000
Agency Costs	3%			516,000
Project Contingency	25%			4,298,000
Total				**$ 25,788,000**

Costs are rounded to the nearest thousand dollars.

Key: AC = Acreage
EA = Each
LF = Lineal Feet
LS = Lump Sum
TF = Track Feet

Source: RailPros.

Table 3-11
TOTAL AND UNIT TRACK STRUCTURE CAPITAL COSTS
NAPA JUCTION-SUISUN/FAIRFIELD SEGMENT

Segment	**4**	**Napa Junction-Suisun**		
Length (Mi.)	**12.5**			
Length (TF)	**66,000**			
DESCRIPTION	**QUANTITY**	**UNIT**	**UNIT COST**	**TOTAL COST**
Land and Environmental				
Purchase Land		AC	$ -	$ -
Project Clearance		LS		$ -
Track				
Tie Replacement @ 600/mi.	9,000	EA	75	675,000
Rail Relay (25% only)	40,000	LF	30	1,200,000
Crossings (Est.) Total Footage	350	TF	400	140,000
Turnouts (Est.)	6	EA	40,000	240,000
Signals				
CTC	15	MI	350,000	5,250,000
Control Points	1	EA	600,000	600,000
Crossing Upgrades (Est.)	3	EA	175,000	525,000
Additional Construction				
Siding (Creston)	1	EA	2,500,000	2,500,000
				0
Subtotal				**$ 11,130,000**
Mobilization/Demobilization	8%			890,000
Construction Contingency	10%			1,113,000
Total Construction Estimate				**$ 13,133,000**
Engineering and Permits	12%			1,576,000
Construction Management and Flagging	10%			1,313,000
Agency Costs	3%			394,000
Project Contingency	25%			3,283,000
Total				**$ 19,699,000**

Costs are rounded to the nearest thousand dollars.

Key: AC = Acreage
EA = Each
LF = Lineal Feet
LS = Lump Sum
TF = Track Feet

Source: RailPros.

segments: 1) Vallejo-Napa Junction; 2) Napa Junction-Napa; 3) Napa-St. Helena and 4) Napa Junction-Suisun.

Table 3-12 lists all the unit costs, units, markups and contingencies employed in the development of Tables 3-8 through 3-11.

Revised capital costs related to an extended passenger bypass in Napa and one in Suisun were determined. Extending the bypass 4.5 miles would increase capital costs on the Napa Junction - Napa Segment from $23,931,000 to $27,234,000. Constructing the bypass in Suisun would increase capital costs in the Napa Junction - Suisun segment from $19,699,000 to $27,488,000. Total system capital costs would rise from $93 million to approximately $104 million. These revised costs address concerns raised by UPRR and CFNR and could become the subject of future negotiations were service to be implemented. At this time they are considered possible requirements but not included in the total capital cost estimates shown later in Chapter 9 in Table 9-6.

Section 3.4: Improvement of Existing Turnouts (Switches)

Existing turnouts (switches) on all of the existing subject lines are adequate only to accommodate existing track speeds. Because train speeds will be increased to as much as 60 miles per hour, all existing turnouts will need to be replaced with new turnouts that can accommodate higher speeds.

Section 3.5: Alternative and Optimum Equipment Maintenance Shop and Layover Yard Sites

This section provides a review of commuter rail vehicle maintenance requirements, alternative approaches to accomplishing needed work, alternative locations where shop and yard facilities might be placed and the basic parameters of a minimum-sized facility.

Underlying Assumptions and Understandings

Consistent with the demand forecast and associated service plan, it was assumed that trains of low-to-medium carrying capacity would be used, with each train consisting of either two self-propelled diesel multiple unit (DMU) passenger cars or two unpowered coaches drawn by a diesel locomotive.

TABLE 3-12
UNIT COSTS, UNIT AND MARKUPS/CONTIGENCIES EMPLOYED IN THE DEVELOPMENT OF INFRASTRUCTURE CAPITAL COSTS ALONG THE ENTIRE ROUTE

ITEMS	UNIT COST (in 2002 dollars)	UNIT
Structures		
S&I Building	$ 150	SF
Service Building	200	SF
RCB Reinforced Concrete	700	CY
Pit Track	550	TF
Lights	7,000	EA
Bridge, Concrete	8,000	TF
Bridge, Steel	10,000	TF
Site		
Clearing & Grubbing	10,000	AC
Grading	8	CY
Paving	65	Ton
Land	300,000	AC
Aggregate base	35	CY
Track		
Track	120	TF
Turnout, #8	40,000	EA
Turnout, #15	95,000	EA
Turnout, #20		
Crossing Surface	400	TF
Crossing Frog	80,000	EA
Ties	75	EA
Rail	30	FT
Signals		
CTC	350,000	TM
Control Point	600,000	EA
Crossing, Basic	175,000	EA
Crossing, Standard	225,000	EA
Aggregate base	35	CY
Civil		
Fence	50	FT
Fire Hydrants	5,500	EA
Drip Pans	4,000	EA
Derails	1,200	EA
Markups		
Mobilization/Demobilization	8%	
Engineering & Permits	12%	
Construction Management & Flagging	10%	
Agency Costs	3%	
Construction Contingency	10%	
Project Contingency	25%	
Escalation	5%	

Source: Rail Pros, Inc.

It was further assumed that all rolling stock would comply fully with current Federal Railroad Administration (FRA) requirements associated with equipment to be used on the "general railroad system" and that a "railroad" type of maintenance program would be implemented.

Issues and Choices

Two significant choices need to be made. The first addresses whether most vehicle maintenance work will be contracted out or performed by employees. The second relates to selection of the most appropriate facility site.

Key Findings

It is prudent to assume that most routine work, including component change-outs, would be done by employees, with component repairs contracted out to the maximum feasible extent, and to locate and size a facility to accommodate those assumptions.

Generic facilities to meet the maintenance needs of a small vehicle fleet are illustrated in Appendixes 3-A and 3-B, which respectively provide a schematic of service and inspection shop and a yard which performs similar functions. The size of the facility may need to be adjusted as projected fleet size becomes better known and the layout, likewise, may need to be tailored to a specific location, once one is chosen. In the interim, because a suitable site appears to be available, it is recommended that Napa Junction be selected tentatively as the preferred location of a layover yard and shop facility.

Maintenance to be Performed

The first step in developing a maintenance facility is to determine the system's vehicle maintenance and storage requirements. The following discussion of maintenance activities is keyed to a system adhering to "railroad" type operating and maintenance rules, procedures and FRA regulations. A "transit" operation might organize vehicle maintenance activities somewhat differently but the basic functions in the sub-sections below would still need to be accomplished.

Daily Service and Inspection (S&I)

New FRA Rules and Regulations in effect as of October 31, 2001 and existing locomotive daily inspection rules require that the following inspections be performed each calendar day:

- exterior calendar day mechanical inspection (FRA reference 238.303);
- interior calendar day mechanical inspection (FRA reference 238.305);
- Class I brake test (FRA reference 238.313) and
- daily Inspection – locomotives (FRA reference 229.21).

Those inspections and tests would be conducted on the selected equipment each calendar day on the Servicing and Inspection (S&I) track in the shop. Trains would be processed through the S&I track after the last run of the day or during the day on any trains scheduled to lay overnight at a remote terminal. All trains would be washed either before or after they cycled through the S&I facility. When trains were cycled through the S&I facility, calendar day inspections, interior coach cleaning, toilet servicing and sanding all would be performed simultaneously, organized as a train consist inspection and servicing procedure, to insure that activities not interfere with each other. However, it would be necessary to keep separate records associated with each vehicle, as required by federal regulations.

Locomotives or DMUs would be refueled as needed. Fueling would take place on storage tracks, with a fuel truck from a local dealer under contract assumed to make direct deliveries to rail vehicles.

Periodic, Scheduled Inspections and Maintenance

In addition to calendar day requirements, the FRA also requires additional coach and locomotive inspections and record-keeping activities at 92 day (quarterly), 184 day (semi-annual), 368 day (annual), two year and four or five year intervals. (DMUs function as passenger-carrying coaches but, since they are self-powered, are classified as locomotives for S&I purposes.) Some annual periodic requirements vary depending on the type of air brake equipment with which the powered coaches and locomotives are equipped. Other scheduled maintenance and inspection activities will be based on recommended industry practice and those required by the selected vehicle and component manufacturers. Those activities will be integrated with the periodic,

scheduled FRA requirements in order to simplify the record keeping, improve the utilization of the maintenance personnel and reduce equipment out-of-service time.

Several options are available to accomplish those requirements. It is recommended that locomotive and coach quarterly and semi-annual inspections be performed by system personnel in the maintenance facility. It would be possible to perform most of the activities on a complete train consist on the S&I track (shop track #1) during off-peak periods. Annual and lesser periodic locomotive inspections can be outsourced to a nearby railroad or performed on the heavy repair track (shop track #2), if built, by the passenger service's maintenance personnel. It is further recommended that system personnel perform all required coach equipment inspections and that air brake exchange kits be provided by the system manufacturer as described in a following paragraph on outsourcing.

Unscheduled Maintenance

Unscheduled maintenance falls into two categories

Running Repairs - Running repairs are unscheduled maintenance tasks that may involve minor trouble shooting and minor repair or a simple reset of electrical equipment or a mechanical adjustment that normally will be performed during periodic inspections and will not delay the equipment from its scheduled performance. Such repairs can be performed in the S&I facility or storage yard. During times when there are no maintenance personnel at the layover facility, unscheduled maintenance will be performed by dispatching maintenance personnel by truck from the S&I facility.

Heavy Repairs - This type of repair normally takes longer than four hours and usually requires component exchange and would be performed on the heavy repair track in the maintenance facility.

Component Change-out

The maintenance philosophy recommended is to change out defective components, thereby returning rolling stock to service as quickly as possible. Components and worn assemblies would be shipped to the original equipment manufacturer (OEM) or re-manufacturing facilities on a pre-arranged unit exchange agreement. The need to change out a component can result from:

- a failure of the unit;
- a scheduled exchange to rehabilitate the component because it has met or exceeded the time performance expectations, a practice known as "predictive maintenance" or
- it is worn beyond acceptable limits, such as wheel sets that need re-profiling to enable their continued use, or are worn out and must be replaced.

The heavy repair position(s) in the maintenance facility should be designed to permit removal of any component from passenger coaches including those that are roof-mounted, under car, on the sides of and inside the car. Heavy repair spot(s) will be equipped with a ten-ton, overhead crane to remove roof equipment and portable jacks to raise a locomotive, car or DMU married pair to allow removal of the trucks and provide access to under-car equipment.

Equipment Modifications, Vehicle Acceptance and Warranty

During the period of accepting new railway equipment and as a result of aging during normal operation, modifications to some systems or components may be necessary to increase their reliability and performance or increase their capability by adding additional features. Some modifications may involve a simple electrical or mechanical device change. Others may require minor rewiring or piping and a change out of a component that can be modified by the manufacturer. Such activities would be conducted at heavy repair positions. During the period of new railway equipment acceptance prior to the start-up of revenue service, it would be necessary to have a shop area available to the vehicle supplier, that can be monitored by project staff, at which to perform trouble shooting of the vehicle systems, preparing the vehicles prior to testing, making adjustments and minor repairs and changing out components. It is also important that the passenger service's staff have its own facilities during the warranty period when it will be necessary to document the performance of the equipment systems, keep records of mileage and cause of major component failures and an area in the shop in which to process the exchange of said components with manufacturers.

Maintenance Performed through Outsourcing

Outsourcing may prove appropriate regarding two types of maintenance: 1) maintenance that can be performed by an area railroad or other contractor and 2) maintenance by a manufacturer of vehicles or their components.

Maintenance Done by an Area Railroad or Other Contractor Host railroads and other area freight railroads may have an infrastructure available at which to process high wear components requiring frequent maintenance, such as wheels. Due to the high cost of machinery, the need for specially skilled personnel and the requirement that wheel renewal work be certified, it is not economical to equip the S&I facility with such capability. Further, the high cost of installing a wheel-truing machine is prohibitive given the small number of vehicles assumed to comprise the subject fleet. Other prime-mover components of locomotives or DMUs, such as air compressors, diesel engines and transmissions may be candidates for unit maintenance by local railroads or, more likely, OEM service shops or other third-party contractors.

Locomotive periodic maintenance as well as annual and more frequent locomotive inspections should be outsourced to a local railroad. However, since local railroad freight locomotives do not have head-end power (HEP) units needed to provide lights and other auxiliary items on coaches, it is recommended that the system should:

- train its own maintenance personnel to perform scheduled maintenance;
- change-out (the HEP unit) component when heavy repairs are required and
- arrange a unit exchange with the OEM or a local distributor to repair HEP assemblies.

One option is to utilize Napa Valley Railroad's locomotive maintenance facility in Napa. As principally a passenger operation, NVRR has the capability to perform passenger equipment maintenance, such as on HEP units, a specialty not found at most freight-only shortlines. NVRR performs the vast majority of its passenger locomotive maintenance with its own employees; NVRR may therefore, be a good candidate to which the contemplated passenger services may contract passenger equipment maintenance.

Maintenance Done by Manufacturer of Vehicles or Components Set out below is a sample list of components recommended for unit exchange with the manufacturer. However, the system's maintenance personnel will require maintenance experience with said components to trouble-shoot, make minor adjustments and service the components on the vehicles and in the shop heavy repair area:

- diesel engine prime movers and transmissions;
- HVAC (heating, ventilating, air conditioning) units;
- HEP alternators and engines;
- air brake components and controls and
- train control and communication equipment.

Alternative Yard and Shop Locations

This sub-section addresses the design elements necessary to describe, size and locate a project maintenance facility. Basic choices will need to be made considering the system's approach to maintenance (largely contracted or largely with its own staff) and, depending on that selection, the extent and location of facilities that must be provided.

There are several alternatives available under the "largely contracted" approach:

- contract with a local freight railroad, such as the CFNR whose shop is at Napa Junction or the NVRR, whose shop is at Napa or
- contract with Amtrak, whose shop is at Oakland.

Napa Junction (California Northern) - Performing vehicle maintenance at Napa Junction would be attractive given that: 1) the CFNR already uses a basic maintenance facility there and 2) it is the nexus of the three line segments under study. The latter is an important attribute in a project that continues to weigh alternative service plans which may or may not serve one or another of the three line segments. Just west of the wye and CA 29, there is a 25-acre site adjacent to the rail line that could serve as a commuter train storage yard, with or without a maintenance facility. The owner of the parcel is reported to be "willing" to consider a sale for said purpose.

Napa (Napa Valley Railroad) - The NVRR is expanding its yard facility at Napa and there appears to be land in the immediate vicinity that could support a further

expansion were Napa chosen as the location at which to store and maintain commuter trains. Placing the facility at a location where passenger cars and locomotive maintenance skills and facilities are already in place could be a significant advantage. However, Napa is several miles distant on one of the branches and would be somewhat remote were trains only to operate on a Vallejo-Suisun/Fairfield line.

Suisun/Fairfield - Several potential sites have been identified on the CFNR's line between Napa Junction and Suisun-Fairfield. Each would be a new rolling stock maintenance location, so all facilities and skills would have to be provided from scratch. Also, since identified available locations are all at the far end of the Suisun/ Fairfield "branch," it would be quite remote from trains running only between Vallejo and Napa. It must be noted that sites along the UPRR main line would be more difficult to access, owing to the need to thread movements to/from such a yard through the UPRR's mainline traffic pattern. Also, such locations would be unsuitable in the event "light" DMUs were operated.

Oakland (Amtrak) - A new Amtrak maintenance facility is being built at Oakland. Although Oakland is too distant to consider it in regard to overnight storage and servicing, it might be a reasonable location at which to perform 92-day inspections and other FRA-required work on locomotives and cab cars or DMUs, as well as heavier repairs. Equipment would deadhead between Suisun/Fairfield and Oakland, either as a separate movement, or in tow on other trains. In this manner, Oakland could serve as part of the vehicle maintenance program but one or more overnight train storage yards featuring the capabilities with light servicing, inspections and repairs also would be needed within the Napa/Solano service area.

Coordinated Facility with SMART (Sonoma-Marin Area Rail Transit)

In previous planning phases, the SMART project has identified and preferred potential yard and shop sites in Windsor and Cloverdale, respectively 55 and 87 miles from Napa Junction. This is much too far to be "deadheading" equipment back and forth on a regular basis; so at least one layover yard and S&I facility would be needed within the Napa-Solano service area. However, coordination with SMART re heavy overhaul work should be pursued as both projects develop, especially if a common type of rolling stock is contemplated and if the combined fleets are large enough to justify such a facility as opposed to sending vehicles out to contractors.

Local Facility Requirements

A service and inspection (S&I) facility would be needed to provide a central location at which to coordinate the operations and maintenance functions as required on a day-to-day basis. The assignment of train crews, make-up of trains, scheduled maintenance of trains and more periodic inspection requirements are examples of activities to be performed at such a facility. One or more of the facilities discussed above will need to be selected.

The S&I facility should include a yard providing overnight storage of trains that are dispatched in the morning and also serving as a layover facility during off-peak hours. Sufficient yard trackage should be built to store the entire Napa/Solano fleet during weekends and in the event of work stoppages.

The maintenance building ("shop") itself should be long enough to enclose a full consist of the selected rolling stock alternative on the S&I track within the shop building, e.g., a locomotive plus two coaches, two DMUs, etc. The position of the building and the track configuration should allow for future expansion of S&I track(s) to provide additional tracks in the shop building. In addition to a basic S&I track, it would be desirable to build a second track, on which to perform heavy repairs, as part of the initial construction but it could be deferred if needed to meet a constrained capital budget.

Service and Inspection Facility ("Shop")

The sketch in Appendix 3A, provides a conceptual layout of the S&I building and the shop facility floor plan. It assumes that all areas are at ground level, with an overall building footprint of 300 feet (arranged in modular 30-foot bays) by 160 feet (200 feet including the adjacent wash track and pad). The latter dimension could be reduced to 120 feet were employee and administrative areas "stacked" above ancillary shop areas. The lengths of the main shop bays may be increased or decreased to match the actual lengths of the train consists selected. Depending on the rolling stock and train consists used, trains might vary between as little as 170 feet (two, 85-foot "heavy" DMUs) and as much as 315 feet (three, 85-foot coaches plus one 60-foot diesel locomotive).

In terms of height above ground level, the overhead crane-equipped main bay(s) will rise to about 40-45 feet (based on single-level cars about 13 feet high and bi-level cars

about 16 feet high). The component shops area will rise to about 30 feet and the office wing to about 20 feet.

The S&I facility is developed as a set of five parallel rows of activity, of which four are within the building:

- administrative offices and employee locker rooms;
- component repair shops and parts storage areas;
- track 1, the S&I track and
- track 2, the heavy repair track.

The fifth activity area is the train washing track and pad, which is next to but outside the S&I building. The wash area should be equipped with a car washer and water recovery/recycling system. That portion of the S&I facility may be provided with a shed-type roof but need not be fully enclosed.

The S&I building is roughly designed as a set of 40-foot wide by 30-foot long structural modules, to facilitate its construction, using a prefabricated building system and also to enable easy adjustments to accommodate actual train length(s) to be made during design when the actual rolling stock to be used in the service is established. As may be needed, one or more 30-foot modules may be added or deleted from the building.

Overall Facility

Appendix 3-A is a schematic drawing depicting a prototypical service and inspection (S&I) facility or “shop” including the functional areas described above, while Appendix 3B illustrates the sizing and relationships of the train storage yard. It depicts the minimum facility that should be considered.

The complete facility shown in Appendices 3-A, and 3-B requires a site totaling a little less than twenty acres. The shop building and yard tracks are sized to accommodate the longest train consists the system is assumed to operate.

Each yard storage track is long enough to hold two trains. Tracks could be lengthened, or additional tracks built to store more trains. If more than two trains are stored on one track, it is desirable that such tracks be double-ended, to avoid too many trains

becoming trapped in a stub-ended track. Actual yard track lengths should be adjusted during design to fit the actual type of rolling stock and maximum train length selected on the system.

The facility shown has the storage yard and shop building in a "nested" layout, which fits on an assumed 400-foot wide by 2,000-foot long site. If the actual site is wider but shorter, the shop and storage yard might be placed next to each other and served from a single fan of track switches. Conversely, if a longer but narrower site must be used, the shop could be moved to the opposite end of the main lead track from the yard.

Functional Areas and Space Requirements

Set out below is an initial estimate of spaces required to perform the various functions it is anticipated would be housed at the S&I facility, considering the needs of the project as well as facilities provided on similar projects elsewhere.

Vehicle Work Area(s) Trains will consist of a locomotive and two coaches, or two DMUs, each approximately ten feet wide by 170 to 255 feet long. Allowing twenty feet of circulation space at each end of the work area and fifteen feet on either side of the pair, results in overall bay dimensions of 210-295 feet by 40 feet. At least one such bay should be provided, i.e., shop track #1, the S&I track, furnished with a pit to provide under-car access.

A second 170 to 255-foot by 40-foot bay, i.e., shop track #2, the heavy repair track, should be furnished with a flat floor and portable jacks to enable a locomotive, car or DMU to be lifted to facilitate removal and re-attachment of trucks. It is possible that construction of that track might be deferred but its inclusion in the initial project build-out would be most desirable to support efficient vehicle maintenance activities.

Ancillary Shop Areas and Building Mechanical/Electrical Rooms (Ground Floor) Spaces to accommodate three work and/or equipment areas must be provided at ground level:

- component repair shops, 3,600 square feet;
- parts storage requiring an enclosed room of 2,400 square feet and

- building mechanical and electrical systems, requiring an enclosed mechanical equipment room of 1,200 square feet including within that total a second enclosed electrical room of approximately 125 square feet.

Staff Offices and Support Facilities

Spaces to accommodate offices, a conference room, a reception area, rest rooms, employee locker and break rooms, which may be built at ground level, or on a second floor over the ancillary shop areas include:

- locker, break and telephone rooms, requiring 2,400 square feet and
- managerial and supervisory offices, requiring 3,600 square feet.

Further information on specific rooms and recommended sizes of each is provided in Table 3-13.

TABLE 3-13
Approximate Areas Of Employee And Administrative Areas In S&I Facility

Employee Welfare Facilities		Administrative Offices	
Functional Area	**Approx. Area (Square Feet)**	**Functional Area**	**Approx. Area (Square Feet)**
Men's Lockers/Restroom	400	Office - Rail Manager	300
Women's Lockers/Restroom	400	Offices [a]	1,500
Break Room	425	Conference Room	450
Other Spaces and Corridors	1,175	Other Spaces and Corridors	1,350

[a] Transportation Manager, Maintenance Manager, Technical Support Engineer, Operations Coordinator (Dispatcher), Secretaries and Clerks.

Source: LTK.

Section 3.6: Approach, Location and Operator of Rail Dispatching System

Rail dispatching is defined by Webster's dictionary as "the process by which an employee of a transportation company directs the departures of trains according to traveling conditions and in the best interest of service." The definition is slightly dated, as the trend of rail transportation outsourcing requires the above definition be amended to include not only railroad employees but also an agent or contractor acting on behalf of a rail carrier(s).

The type of dispatching arrangement and approach largely depends upon the operation contemplated. A key factor in the success of passenger rail service is timely operation and high reliability experienced by its users. If patrons cannot rely upon the published schedule, the pool of potential riders decreases greatly. Thus, dispatching becomes much more difficult in instances where passenger trains must share their routes with freight railroads due to the fact that freight railroads rarely adhere exactly to schedule, if they are scheduled at all. Further complicating matters is the fact that, in most cases, with a few exceptions, freight railroads that share their routes with passenger trains are expected to receive lower movement authorization priority on routes they own. As the number of trains that traverse a given route increases, so too, does the resistance of freight railroad track owners to the idea of hosting passenger service.

It is first important to note that, as discussed in Chapter 2 of this report, CFNR operates freight service over various lines it leases from Union Pacific Railroad (UPRR). CFNR does not enjoy the right to operate passenger services on the lines over which it has the right to conduct railroad freight operations nor does it enjoy the right to allow others to provide commuter or intercity passenger rail services over CFNR-leased tracks, absent the acquiescence of UPRR; either UPRR did not bequeath passenger rights to CFNR or the latter did not ask to obtain them.

As a result, NCTPA/STA have five options re passenger service dispatching. In the first option, UPRR would dispatch the line on their behalf. RLBA does not recommend this option, however, for two basic reasons. First, UPRR dispatches all of its train movements from a centralized dispatching control center in Omaha, Nebraska. Potential dispatching problems that could arise likely would be given low priority by UPRR given the fact that the compensation it likely would receive in connection with dispatching such services would be miniscule compared to the profits the railroad earns on its own freight services. It is highly desirable, and usually RLBA's recommendation to its new-start passenger rail clients, to maintain local control of dispatching whenever possible. Second, it is likely that UPRR would charge more to dispatch the service than would another entity. A large railroad like UPRR which earns substantial profits may not be able to perform the contemplated services as competitively as required by the scope and budget desired by NCTPA/STA.

A second option is that CFNR could continue to dispatch the line(s) as it does today on the majority of the miles. CFNR would understand that NCTPA/STA would expect their trains to enjoy priority over CFNR freight service. The consultant team's experience has shown that working with short line railroads in many facets of passenger rail development is generally much easier than dealing with larger Class I railroads. One of the main reasons that short line railroads generally have proven to be more willing partners than their larger brethren is due to their generally weaker financial strength and the ability of public agencies to offer capital contributions of track and other facility upgrades in exchange for access; short lines often operate well below their available capacities and are aggressive in accepting funds to help offset the cost of track and related facility upgrades that might not otherwise be cost effective.

Third, Napa Valley Railroad, like CFNR, also could provide dispatching services. Unlike CFNR, however, NVRR owns its route and would not be subject to the constraints that potentially could be imposed by CFNR's track owner, UPRR.

Notwithstanding the fact that either NVRR or CFNR could dispatch the service, however, the greatest concerns of any prospective host of passenger service (owner or operator) should be safety, reliability and ease of operation. While the opportunity to utilize the dispatching capabilities of either railroad exists, the fact remains that it is in the best interest of NCPTA/STA, were the contemplated passenger service implemented, to contract dispatching to only one railroad, not both. Since neither railroad is likely to relinquish control over its dispatching operations to the other railroad due to institutional and other considerations mentioned above, the best course of action is to await NCTPA/STA decisions re final service scenario(s), which will ultimately determine the railroad(s) likely to host a prospective passenger service.

Fourth, NCTPA/STA could assume control of dispatching duties either on its own or fifth, via a contract operator. It is likely, however, that were NCTPA/STA to assume dispatching duties, the capital and (separate) operating costs associated therewith would be greater than if they chose to contract with a firm to provide the service. Computers and related technology have enabled dispatching to be undertaken with as little as a desktop computer and dispatcher's console, appropriate software and a two-way radio. Nevertheless, someone unfamiliar with dispatching will be required not only to be educated as to how the system works, but also to purchase all of the necessary

equipment and comply with Federal Railroad Administration (FRA) dispatching regulations. It may cost more in the long run for NCTPA/STA to acquire all of the equipment and familiarize themselves with FRA regulations than to contract the service to a railroad or a dispatching agent with respect to higher potential operating costs, that the assumption of dispatching by NCTPA/STA might well trigger. In addition, if NCTPA/STA employees carried out the dispatching function, they would be subject to FRA regulatory jurisdiction and its is possible that they would be deemed "railroad employees" subject to Railroad Retirement and other costly federal labor statutes. It is also possible that their activities could cause many or all other NCTPA/STA employees also to fall under those statutes.

Thus, it would be the RLBA Team's recommendation to contract dispatching services to the CFNR assuming that it could obtain from UPRR the rights to operate passenger service over its railroad or to the NVRR. Dispatching thereby would be maintained at a local level, the location of which should be discussed at the appropriate time with CFNR and NVRR, a discussion which will depend upon future NCTPA/STA service planning choices; NCTPA/STA would not be required to purchase dispatching equipment and it likely would be most cost efficient for NCTPA/STA and their stakeholders.

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Thus, it would be the RLBA Team's recommendation to contract dispatching services to the CFNR assuming that it could obtain from UPRR the rights to operate passenger service over its railroad or to the NVRR. Dispatching thereby would be maintained at a local level, the location of which should be discussed at the appropriate time with CFNR and NVRR, a discussion which will depend upon future NCTPA/STA service planning choices; NCTPA/STA would not be required to purchase dispatching equipment and it likely would be most cost efficient for NCTPA/STA and their stakeholders.

CHAPTER 4

RECOMMENDED STATION PLAN TO SUPPORT COST EFFECTIVE RAIL PASSENGER SERVICE

SECTION 4.1: Station Location Evaluation Criteria

This Section outlines the station types and station location criteria along potential new passenger rail routes in and between Napa and Solano Counties. New rail service would serve two primary passenger markets: 1) commuters traveling between Napa and Vallejo, Suisun/Fairfield and Napa and Suisun/Fairfield and Vallejo during weekday peak periods and 2) visitors traveling between Vallejo or Suisun/Fairfield and the Napa Valley on weekends and holidays.

Three station types are envisioned along these potential routes:

- **Major Intermodal Stations** will serve as locations at which to transfer to/from regional transit services or be co-located with a major bus transfer facility;
- **Basic Commuter/Visitor Stations** will be primarily commuter-oriented but also can be used in connection with visitor rail service. Although the Consultant Team has assumed that the majority of commuters will drive to and park at these stations, the Team also assumed that connecting bus and shuttle services, bicycle facilities and passenger drop-off areas would be provided and
- **The Gateway Station** will serve as the primary visitor entry point into the Napa Valley via the proposed rail service. Station amenities and facilities will be oriented toward serving visitor needs and interests, including connecting shuttle services, short-term parking, visitor information services, rest rooms, picnic areas and storage rooms.

In addition to these three primary station types, additional “excursion stations,” which would include very basic amenities and accommodate excursion or visitor shuttle buses

and minimal parking, could be located at convenient tourist destinations throughout the Napa Valley. "Excursion stations" would be used only in connection with visitor-oriented trips. Excursion stations are not sited as part of this chapter but could be based on previous studies undertaken on behalf of the NVWT.

A three-stage process was used to evaluate potential sites of Basic Commuter/Visitor Stations (which will comprise the majority of stations along the Napa/Solano line):

1) conducting a fatal flaw analysis on an initial list of all possible sites;
2) evaluating the sites that passed the fatal flaw analysis against a comprehensive set of criteria and
3) ranking site alternatives based on the extent to which they satisfy the station criteria.

From the short-list of site alternatives, various station groups were evaluated against their impact on overall rail travel time. While a greater number of stations tends to provide enhanced access to rail services, it negatively impacts rail travel time. Thus, station groups that best balanced the tradeoff between travel time and access were included in the recommended commuter-oriented service station plan. Because the visitor market is less sensitive to longer travel times, greater emphasis in the evaluation of those station groups was placed on access to both rail service and visitor attractions. The recommended station plans of both service types are discussed in detail in Section 4.2.

Only a limited number of potential Major Intermodal and Gateway Station sites exist. The fatal flaw criteria applied to those station types focus on minimum requirements at those stations. The evaluation criteria provide additional factors that were used to rank the relative merit of sites that met or surpassed the fatal flaw screening.

Details of station location fatal flaw and evaluation criteria follow. Since the required land area and access needs vary considerably between different station types, the evaluation criteria are specific to station type. Also included is a prototypical site plan of each station type that illustrates how necessary facilities and amenities associated with each station type might be arranged on a potential (and, in some cases, unidentified) site.

Major Intermodal Stations

Major Intermodal Stations will serve as transfer points between the proposed Napa/Solano rail service and other regional transit or important connecting services, such as the Amtrak Capitol Corridor rail service and ferry service to/from San Francisco. Major Intermodal Stations also include those that are co-located with major bus transfer facilities, enabling rail passengers to transfer to/from a number of local bus and shuttle routes. The stations are a key component of both visitor- and commuter-oriented rail service.

Fatal Flaws

Major Intermodal Station locations are limited to those where connections to regional transit services or multiple local bus and shuttle routes are possible. At those locations, a significant number of rail passengers can be expected to use connecting bus, shuttle, rail or ferry transit to either access a rail station or their final destination. Furthermore, existing regional transit facilities in Solano County already feature parking spaces which can be shared with Napa/Solano rail passengers. Consequently, construction of parking lots specifically to support Major Intermodal Stations may not be necessary.

Major Intermodal Station locations were subjected to five fatal flaw criteria:

1) **Size -** Space must be adequate to accommodate tracks and platforms, easy, convenient connections to regional and local transit services and passenger amenities and services.

   a) Side rail platforms (i.e., those at the margin of the right-of-way) should be at least twelve feet wide, as recommended by Amtrak and at least 295 feet long, enabling three, 85-foot cars to be accommodated plus a 40 foot braking distance. Platforms also should be located so that there is space to construct double track at some future date, together with an additional twelve-foot wide side platform or a fifteen-foot wide island platform (i.e., those at the center of the right-of-way).

   b) Space must be available to fit bus and shuttle bays, passenger drop-off facilities and on-site maneuvering of buses, shuttles and cars. If facilities serving existing regional transit already exist and can be shared, space will be needed only to accommodate rail services and pedestrian connections.

   c) Space also is necessary to support passenger amenities and services, including information kiosks or manned counters, ticket machines,

automated teller machines, public phones and restrooms, benches or other seating and shelters.

2) **Access -** Buses and shuttles need to be able to enter and exit the site safely without unduly impeding surrounding pedestrian and vehicular traffic or encountering significant delays.

3) **Availability -** The site must be available (to be purchased or leased and used) within the project timeframe.

4) **Geography/topography -** There cannot be any engineering constraints that cannot be resolved, particularly in terms of grades and track curvature. Platforms should be located only on level and tangent track segments. In addition, platforms need to be located so that standing trains do not physically or visually obstruct any grade crossing. No part of a stopped train should be closer than 50 feet from a crossing.

5) **Environmental constraints -** There cannot be irremediable site contamination that would impede use of the parcel nor can there be endangered or other protected animal or plant species that would be harmed by the project, nor sensitive habitat (e.g. wetlands) issues that cannot be resolved.

Evaluation Criteria

Additional evaluation criteria were considered in selecting Major Intermodal Station sites. For the most part, the criteria focus on creating conditions that will encourage and facilitate transit use.

1) **Safe and attractive pedestrian connections to activity and/or population centers -** There should be no significant barriers to pedestrians and cyclists in the station neighborhood, such as a lack of sidewalks or wide arterials with fast-moving traffic unless such barriers are removed. There should be direct pedestrian routes between activity and/or population centers and the station or such routes should be created if they do not exist.

2) **Visibility and proximity to activity and/or population centers -** Stations should be within a five to ten minute walk of activity and/or population centers and easily visible from activity centers in order to maximize the impact of transit service publicity.

3) **Shared parking facilities opportunities -** Space should be available to construct additional parking, particularly if it can be shared with neighboring retail, employment or visitor-oriented uses.

4) **Potential to catalyze land use change -** There should be a market to facilitate transit-supportive development within a half-mile of all stations and local communities should see rail services as a catalyst for new development that is less reliant on the private automobile, with local jurisdictions willing to rezone to encourage such development. There should not be major barriers to new development that will be difficult to overcome, such as an adjacent freeway.

5) **Community support -** Local communities should favor a station.

Major Intermodal Station Conceptual Site Plan

Figures 4-One and 4-Two show Major Intermodal Station conceptual site plans that combine rail service with a major bus transfer facility. While the site plans are based on actual sites near Downtown Napa, they are only conceptual plans, intended to illustrate how station facilities and amenities might be arranged on a site. They do not represent planned or even proposed development.

The conceptual site plan shown in Figure 4-One includes space to accommodate ten bus bays, shuttle and private vehicle, curbside drop-off space, passenger facilities and a direct connection between bus and rail services. The plan also includes a building in which to house transit operations and planning staff. Parking facilities are not included on-site in the concept drawing. It should be noted that access to and from Third Street and Soscol Avenue may be problematic – further study is needed to determine the feasibility of the site as a Major Intermodal Station location.

Figure 4-Two shows a conceptual site plan based on a site located on the east side of the railroad tracks but within the same general vicinity. This larger site includes all the facilities shown in Figure 4-One and, in addition, allows room to facilitate joint use development (such as retail or other commercial facilities) and shared parking. Bus facilities are located considerably farther away from the intersection of Third Street and Soscol Avenue, making it somewhat more difficult for passengers to walk to/from Downtown Napa.

Figure 4-One

Major Intermodal Station Conceptual Site Plan A

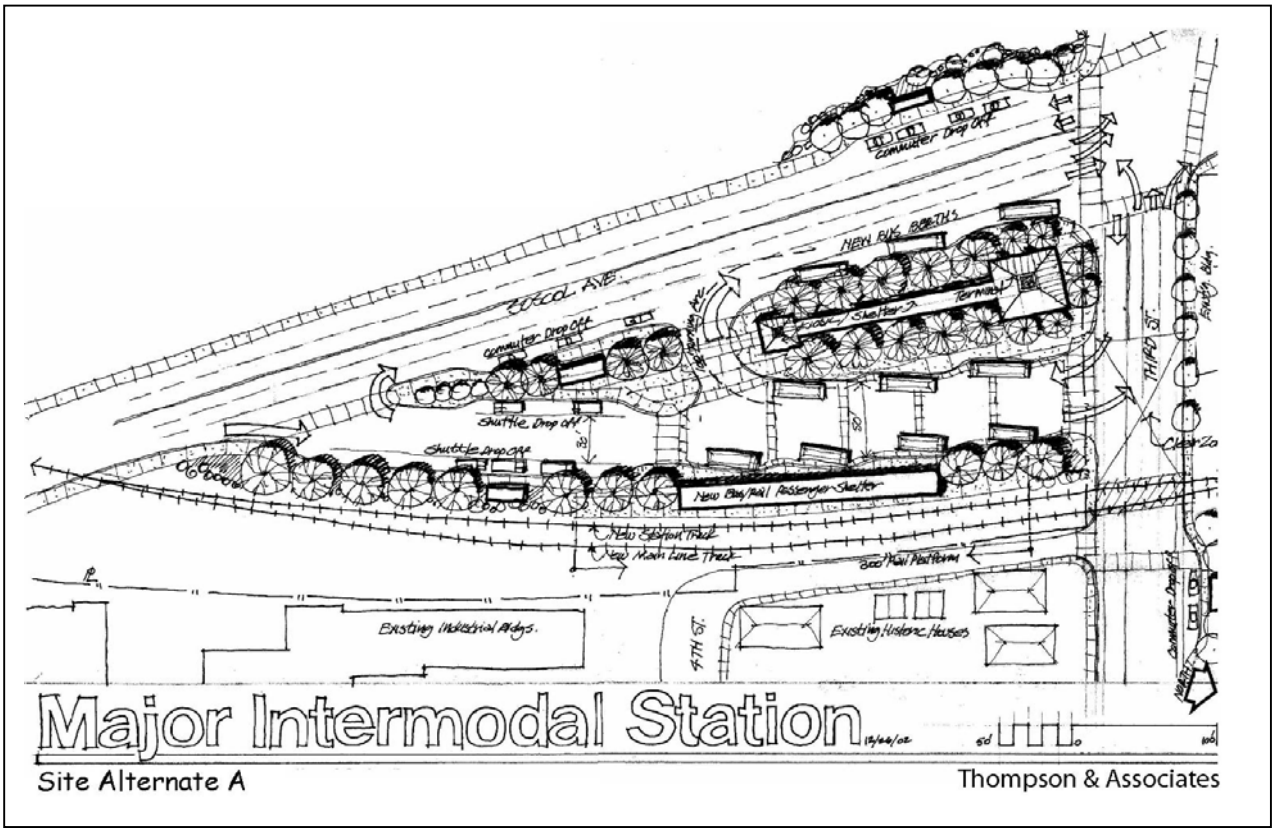
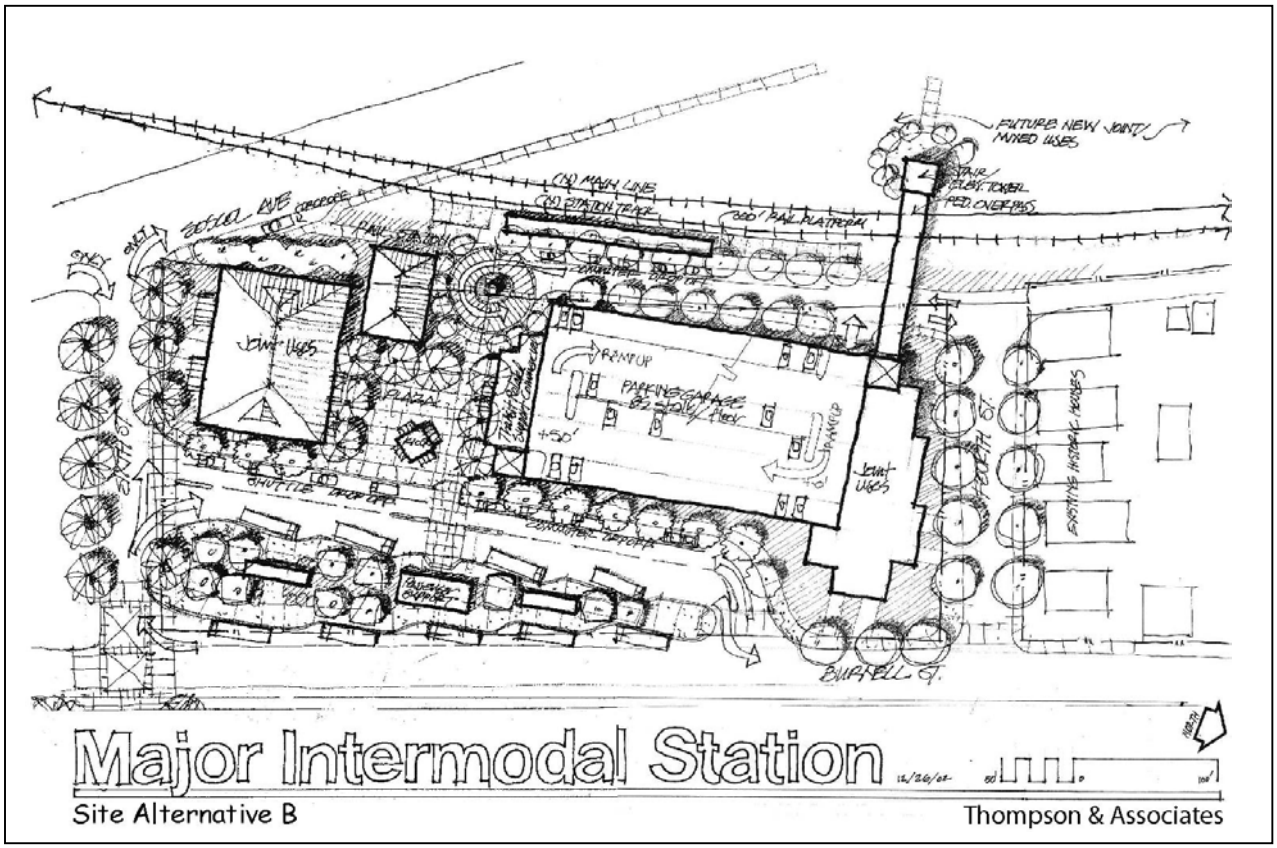


Figure 4-Two

Major Intermodal Station Conceptual Site Plan B



Basic Commuter/Visitor Station

Basic Commuter/Visitor Stations are assumed to be primarily commuter-oriented, with more limited connections to local bus and shuttle routes. Access to and from the stations primarily will be via private automobile, although some passengers also will travel by bus, bicycle and foot. Station facilities can be minimal, with simple platforms and basic amenities such as public phones and benches, along with an information kiosk, passenger drop-off area and a bus or shuttle stop.

Fatal Flaws

The fatal flaw analysis is designed to exclude potential sites that do not meet the absolute minimum requirements of a Basic Commuter/Visitor Station. Six essential criteria were identified, five of which, size, access, availability, geography/topography and environmental constraints are identified with the flaws associated with Major Intermodal Stations, the sixth flaw is current use. Napa County may need to rezone agricultural land to a public use or grant a special use permit to accommodate station construction. Because such action would be controversial politically, it is likely that such a change in use ultimately would be decided through a public referendum. Consequently, sites zoned “Agricultural Preserve” may be flawed fatally since an action to modify their use could result in a costly and, ultimately, unsuccessful, political battle.

Evaluation Criteria

A number of Basic Commuter/Visitor Stations are expected to be developed along the line, drawing riders from individual catchment areas that may overlap to some extent. As a result, in addition to evaluating individual station sites, groups or “packages” of station combinations need to be assessed against operating criteria. For example, two individual station sites may each score extremely well but may be so close together such that only one is warranted. Another area may have no highly promising station sites but may be accorded a recommended station anyway, to assure that a ridership node is captured.

Sites that passed the fatal flaw analysis were analyzed individually and ranked according to the evaluation criteria on a simple three-point scale – excellent, good or poor. Sites were then assembled into several alternative station combinations and

subjected to a second stage of analysis, which involved assessing each complete "package" against the same evaluation criteria. For example, rather than assessing the catchment area of each individual station, the catchment area of a group of stations was estimated, taking care not to double-count overlapping catchment areas. Similarly, while an important function of passenger rail service will be to stimulate transit-oriented development along a corridor, not every station needs to suggest the potential to catalyze such land use changes. Assessing stations as a "package," rather than individually, allows different stations to fulfill different roles on the line, rather than taking a "one size fits all" approach.

Four essential evaluation criteria encompassing thirteen sub-criteria were employed.

Location Criteria encompassed seven sub-criteria.

1) **Size of catchment** – The number of potential riders who live or work in a station catchment area is a key criterion regarding employees. The measure is equivalent to the number of jobs within a half-mile radius (walking distance) of the station, plus any additional areas served by shuttles or other transit connections. As regards residents, the calculation is more complex since many riders will drive to a station. The size of catchment areas will depend on relative door-to-door travel times via rail versus other modes and the number of transfers involved in a total trip (e.g. car to rail to ferry). While some people will be willing to drive farther to ride a train for an hour directly to their work site, they may be willing to travel only a short distance to catch a ride on a train that would take only 30 minutes and require them to transfer to another transit mode to reach their final destination. Thus, a catchment area driving distance could vary from five to twenty minutes depending on riders' final destinations.

2) **Intermodal potential** – The frequency with which bus or other rail services are provided at a station or whether a station offers the possibility of providing such connections in the future also was evaluated.

3) **Transit-supportive land uses** – The number of residents and employees located within a half-mile walking distance of a station (about a ten-minute walk) was another factor considered along with whether there are significant barriers to pedestrians and cyclists in a station neighborhood, such as a lack of sidewalks or wide arterials with fast-moving traffic.

4) **Potential to catalyze land use change** – Whether there is the possibility of transit-supportive development within a half-mile of a station also was evaluated as was whether the local community saw rail services as a

catalyst to new development that is less reliant on private automobiles and if the local jurisdiction were willing to rezone to encourage same. Whether there were major barriers to new development that will be difficult to overcome, such as an adjacent freeway, also was reviewed.

5) **Mix of uses –** If a station's catchment area included a mix of uses, helping to generate rail ridership in both directions during each peak, its evaluation was higher.

6) **Community support –** Local community support of a station also was weighed.

7) **Ease of access –** The ease and safety with which turns into a station could be made, both by private cars and buses, was reviewed as was whether there was sufficient right-of-way to add turn lanes if needed. Finally, whether the location of a station would create a major congestion impact, whether a station would be visible from a major vehicle corridor and whether it would be located within a transit/pedestrian-friendly environment also were scrutinized.

Parcel size criteria spanned two sub-criteria.

8) **Ability to accommodate parking –** The number of parking spaces that can be provided to support rail ridership, either on the station site itself, on-street or shared with other users is important. In general, each station should be able to accommodate a minimum of 100 vehicles during the weekday although additional parking may be needed at stations with large catchment areas or stations located at the end of line on which passenger service is instituted. If all spaces are provided in dedicated surface lots, 100 spaces would require approximately 0.85 acres, including space to accommodate aisles and maneuvering.

9) **Ability to build longer platforms –** The minimum platform length of 295 feet specified in the fatal flaw analysis would accommodate three-car trains. Sites, preferably, should be able to accommodate a platform length of 590 feet, giving the flexibility to handle six-car trains.

Costs and acquisition criteria included three sub-criteria.

10) **Land acquisition –** How much land would cost to acquire and whether it already was owned by public sector also were examined.

11) **Site preparation and construction cost –** How much the station and associated facilities would cost to construct on a given parcel was another variable taken into consideration.

12) **Ability to buy or option versus lease a site –** Ownership of or an option to buy a site was deemed more attractive in order to establish autonomy and a permanent location.

Rail travel time criteria focused entirely on that single sub-criterion.

13) **Rail travel time -** The travel time by rail from one end of the line to the other, including all station stops is a criterion not intended to evaluate individual station sites but rather "packages" of station combinations. While a greater number of stations tends to provide greater access to rail services, it negatively impacts travel time.

Basic Commuter/Visitor Station Prototype

Figure 4-Three shows a prototypical Basic Commuter/Visitor Station site plan. It illustrates how the fatal flaw and evaluation criteria listed previously can be applied to "on-the-ground" facilities. The plan shows a simple platform and shelter, parking for twenty cars, bike racks, a public telephone and one bus stop. The prototypical site plan is not specific to any particular location.

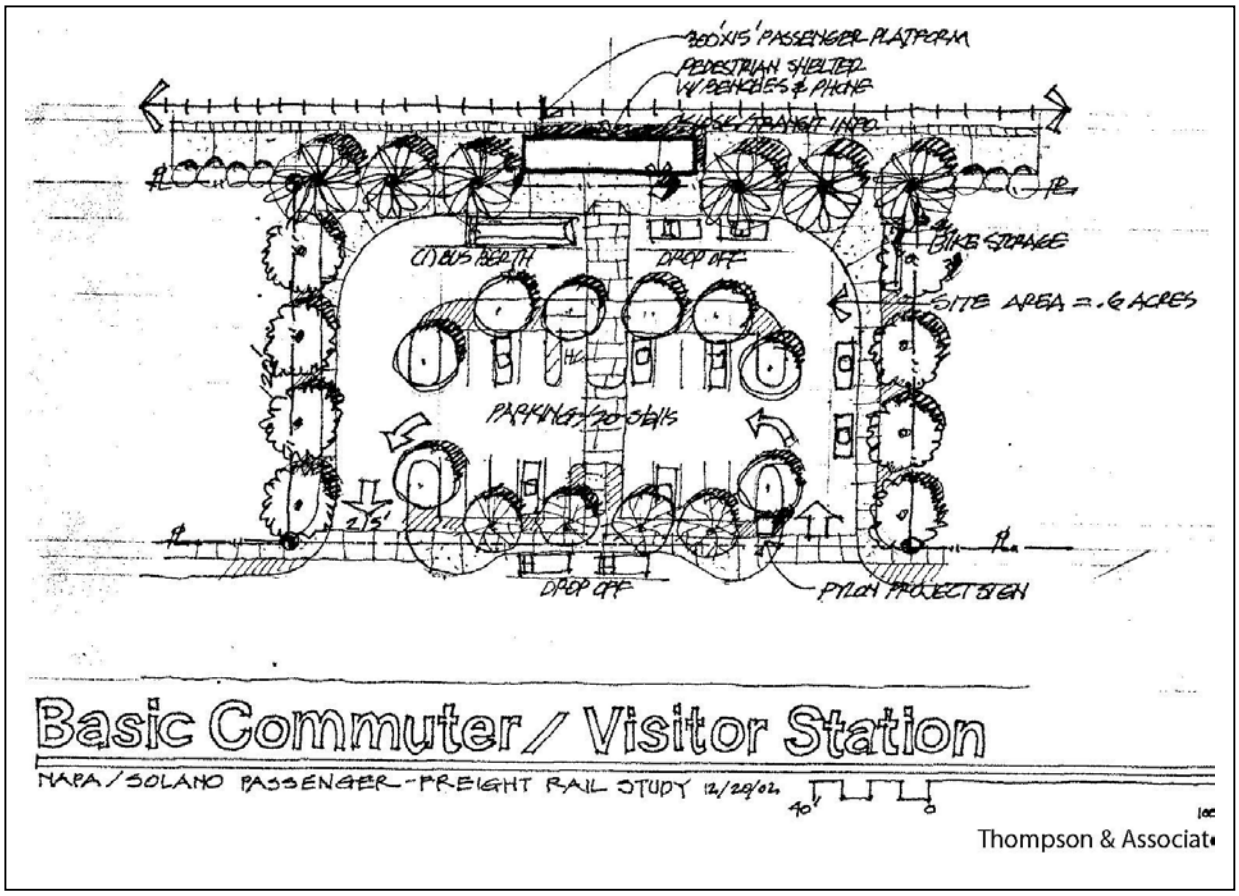
Gateway Station

The Gateway Station is intended as the "point of arrival" for visitors traveling by rail to the Napa Valley. Passengers might travel by ferry from San Francisco and transfer to rail in Vallejo, where they then would board a train destined to the Gateway Station. Passengers also might travel from the Fairfield/Suisun area by either driving to rail stations in that area or transferring from Capitol Corridor service.

From the Gateway Station, shuttles and private limousines would take visitors to individual wineries and other destinations. Although the precise details of shuttle operations and related public and private transportation were considered later in this study, certain assumptions were made about the number of buses and other vehicles that would need to be accommodated. Passengers would not necessarily need to return to the Gateway Station if shuttles also connected with additional stations, maximizing visitor flexibility and trip enhancement.

Figure 4-Three

Basic Commuter/Visitor Station



While it was assumed that most visitors would detrain at the Gateway Station, the train also may make a number of intermediate "excursion" stops to serve a diversity of visitor interests and needs. Such diversity is further discussed in Section 4.2.

Fatal Flaws

The fatal flaw analysis was designed to exclude potential sites that do not meet absolute minimum Gateway Station requirements. Six essential criteria were identified.

1) **Location -** If rail services are to constitute an attractive option to visitors, the Gateway Station must convey a sense of "arrival" in the Napa Valley. Visitors need to feel that the train has taken them into the heart of their destination. As such, the location must not be adjacent to land uses that do not convey the expected character (e.g. an industrial park).

2) **Size -** Parcel size covers two sub-criteria that are useful to consider separately: a) space to accommodate tracks and platforms and b) space in which to fit pick-up, parking and visitor services.

   a) **Tracks and platforms -** Side rail platforms should be at least twelve feet wide, as recommended by Amtrak and at least 295 feet long, enabling three, 85-foot cars to be accommodated plus a 40-foot braking distance. Longer platforms would be highly desirable, as discussed below under "Evaluation Criteria." Platforms also should be located so that there is space to construct double track at some future date, together with an additional twelve-foot wide side platform or a fifteen-foot wide island platform.

   b) **Access and amenities -** The parcel must be at least 1.5 acres, in addition to the space required by tracks and platforms, allowing access arrangements and visitor amenities to be accommodated. Site efficiency is also an important consideration. Triangular or odd-shaped parcels will need to be larger to compensate for the loss of usable space. It should be noted that many other important passenger amenities, such as shuttle schedules, trash cans, telephones and clocks, require little or no space and do not need to be considered at the site evaluation stage.

      A 1.5-acre site would allow provision of the following:

      i) four shuttle bays (one northbound and one southbound for each of Highway 29 and the Silverado Trail). Were the Gateway Station at the north end of the valley, only two

shuttle bays (i.e. two northbound or two southbound) would be required. A loop route would reduce the requirements to one shuttle bay but would be less attractive to potential riders;

ii) pick-up locations in which to park five limousines or private shuttles, plus a staging area that would hold approximately fourteen more. Such spacing would enable up to one-third of the approximately 60 Napa Valley wineries to provide limousine or private shuttle service meeting each rail trip. Particularly if rail service frequencies were very low, all shuttle and limousine services could be expected to connect with every trip, in which case pick-up and drop-off bays would have to be sized accordingly;

iii) associated passenger waiting/queuing areas and pedestrian circulation;

iv) turning and maneuvering space;

v) short-term parking accommodating approximately twenty cars, enabling visitors who drive to the Napa Valley to take advantage of any information facility;

vi) guest/visitor services (e.g. tourist information, bicycle rental and perhaps a retail area);

vii) rest rooms;

viii) small picnic area and

ix) a bank of lockers or other convenient and secure storage area.

3) **Availability -** The site must be available (to be purchased or leased and used) within the project timeframe.

4) **Geography/topography -** There cannot be any engineering constraints that cannot be resolved particularly in terms of grades and track curvature. Platforms should be located only on level and tangent track segments. In addition, platforms need to be located so that standing trains do not physically or visually obstruct any grade crossing. No part of a stopped train should be closer than 50 feet from a crossing.

5) **Environmental constraints -** There cannot be irremediable site contamination that would impede use of a parcel nor can there be

endangered or other protected animal or plant species that would be harmed by the project, nor sensitive habitat (e.g. wetlands) issues that cannot be resolved.

6) **Current use -** Napa County may need to rezone agricultural land to a public use or grant a special use permit to accommodate station construction. Because such action would be politically controversial, it is likely that such a change in use ultimately would be decided through a public referendum. Consequently, sites zoned "Agricultural Preserve" may be flawed fatally since an action to modify their use could result in a costly and, ultimately, unsuccessful political battle.

Evaluation Criteria

The following criteria were applied to sites that passed the fatal flaw analysis, enabling a shortlist of potential locations to be generated. Each potential site was ranked against each of the criteria on a simple three-point scale – excellent, good or poor.

In some cases, the evaluation criteria are the same as the fatal flaw screening criteria discussed earlier. In those instances, the aim was to rank the relative merits of specific sites once minimum requirements in the fatal flaw analysis were met. Three of four essential evaluation criteria employed previously were employed again, encompassing thirteen sub-criteria.

Location evaluation criteria encompassed seven sub-criteria.

1) **Arrival -** How strongly a location conveyed a sense of "arrival" to the valley, for example, whether vineyards were readily visible from the station.

2) **Centrality -** The location of a site near a "cross-road" linking it with Highway 29 and the Silverado Trail, allowing easy access to both sides of the Valley and the number of wineries and other destinations located within a five-mile and ten-mile radius also was taken into consideration. As a point of reference, there are approximately 60 wineries located in the Napa Valley between St. Helena and Napa, a distance of seventeen miles via Highway 29.

3) **Travel advantage -** Another important consideration is how much travel time or traffic congestion can be avoided by taking a train to the Gateway Station.

4) **Visibility -** Whether the site would be visible clearly from Highway 29 and/or other arterials, maximizing publicity of the service was another evaluation criterion.

5) **Ease of access -** How easy and safe turns would be into a station from Highway 29 or other arterials, particularly by shuttle buses, whether there exists sufficient right-of-way to add turn lanes if needed, whether construction and operation of a station would cause major congestion impacts and whether vehicles accessing the station would conflict with local or other visitor traffic are all access factors which were analyzed.

6) **Compatibility with neighboring uses -** The extent to which surrounding land uses are compatible with the Gateway Station also was examined. For example a less attractive strip shopping center would not rule out a location (especially if the shopping center could be redeveloped in the future) but would not be an ideal neighbor due to its aesthetic impact on the sense of arrival in the wine country. Similarly, a land use that offered no destinations to beckon train passengers (e.g. a middle school) would be less compatible than an adjacent winery which might be accessible by foot from a station.

   The compatibility of neighboring use also may be related to traffic volumes and driveway placement. A neighboring land use that would compound turning-movement traffic queues on Highway 29 was judged to be less desirable than one which would not conflict or one that could share infrastructure effectively (e.g. the addition of a left-turn pocket). Finally, the availability of parking on adjacent land could impact the success of the Gateway Station. A generous supply of adjacent, vacant, weekend parking might encourage visitors to use the Gateway Station as a park and ride facility from which they could take shuttles within the valley, though that is not the intended function of the Gateway Station.

7) **Community support -** Local community support of a Gateway Station obviously is important.

Parcel size criteria spanned three sub-criteria.

8) **Ability to accommodate future growth -** The ability to expand in line with potential future needs and/or to function as a Minor Intermodal station during the week was considered a valuable attribute. Potential needs might include:

   - additional shuttle and limousine pick-up/drop-off space;
   - additional short-term parking;
   - tour bus parking;

- long-term parking during the weekday (this could be accommodated in weekend short-term and tour bus parking zones) and
- limousine and/or shuttle layover space.

An additional half acre over the minimum requirements employed in the fatal flaw analysis, yielding a total parcel size of approximately two acres in addition to platform and track space, would accommodate 40 cars and five, 40-foot tour buses in short-term parking and a staging or layover area in which approximately twenty shuttles or limousines would fit.

9) **Ability to accommodate longer platforms -** The minimum platform length of 295 feet specified in the fatal flaw analysis would accommodate three-car trains. Preferably, sites should be able to accommodate a platform length of 590 feet, allowing the use of six-car, special event trains.

10) **Conflicts at grade crossings -** The majority of sites ideally should be situated between the highway and railroad tracks, in order to avoid delays at grade crossings.

Cost and acquisition criteria included three sub-criteria.

11) **Land acquisition -** How much land would cost to acquire and whether it already was in public ownership also were examined.

12) **Site preparation and construction cost -** How much the station and associated facilities would cost to construct on a given parcel was another variable taken into consideration.

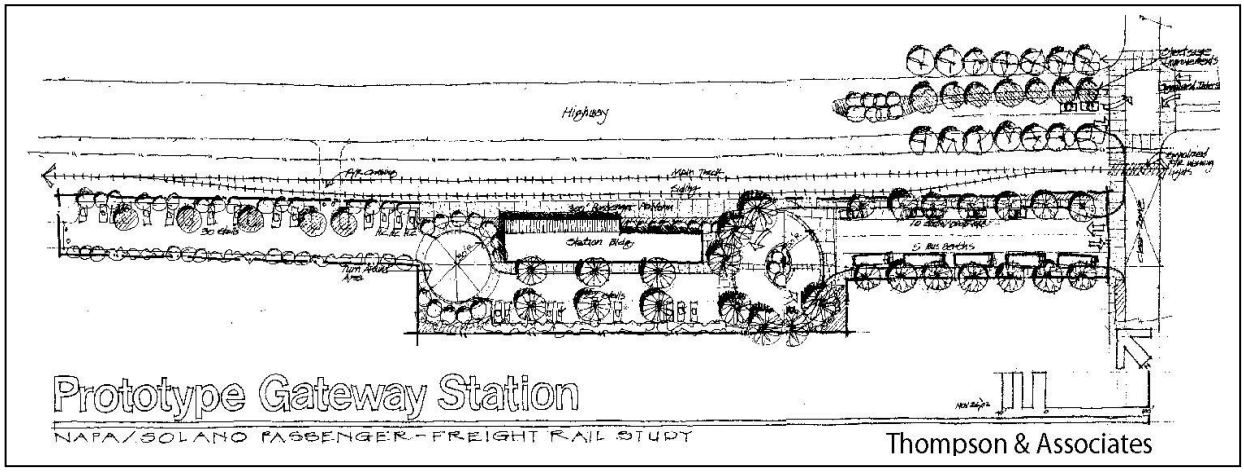
13) **Ability to buy or option versus lease a site -** Ownership of or an option to buy the site would be preferable in order to establish autonomy and a permanent location.

Gateway Station Prototype

Figure 4-Four shows a prototypical Gateway Station site plan in the Napa Valley. The plan provides an “on-the-ground” illustration of the criteria listed above.

Figure 4-Four

Gateway Station Prototype



Section 4.2: Recommended Station Plans

This Section describes the process used by the Consultant Team to identify potential station locations, gather information on each location and develop recommended commuter- and visitor-oriented passenger rail service station plans. The Section is organized into the following sub-sections:

- identification of potential station sites;
- elimination of fatally flawed station sites;
- evaluation of remaining station sites;
- evaluation of station groups and
- recommended station plans re: 1) commuter- and 2) visitor-oriented rail services.

In addition to the information presented in this Section, Appendix 4-A provides photographs and a brief description while Appendix 4-B provides a detailed evaluation of, all potential locations investigated in this study.

Identification of Potential Station Sites

To develop a list of potential station locations, the Consultant Team interviewed project stakeholders, including city and county planning and public works staff in Napa and Solano counties as well as representatives of the NVWT, the Napa Valley Vintners Association and the Napa Valley Conference and Visitors Bureau. In each case,

stakeholders were presented with preliminary station criteria and asked about potential locations that might meet those criteria. Stakeholders also were asked about ridership potential and community support of both the potential new passenger rail service and particular station locations.

Planning and zoning data, information from other agencies and parcel maps supplemented location information obtained through the stakeholder interviews. The consultant team also conducted site visits to verify and document existing conditions at each potential site.

Elimination of Fatally Flawed Station Sites

Table 4-1 summarizes the sites that were eliminated immediately due to their failure to meet fatal flaw criteria. A more detailed description of those sites can be found in Appendix 4-A.

Table 4-1

Sites Eliminated Due to Fatal Flaws

Station Locations	Potential Station Type	Fatal Flaws
Peabody Road, Fairfield	Major Intermodal Station (connection with Capitol Corridor service)	The location would require the Napa/Solano service and the Capitol Corridor service to share track, which is not feasible.
Oakville, Napa County	Gateway Station or Basic Visitor Station	No site was identified as potentially available.
Napa Valley Gateway Business Park	Basic Commuter Station	No site was identified as potentially available. The track travels through the Napa Pipe facility at this location. Were a bypass constructed around Napa Pipe a station may be feasible in the vicinity.

Source: Nelson\Nygaard Consulting Associates.

Evaluation of Remaining Station Sites

Table 4-2 summarizes the results from the evaluation of the remaining potential station sites and overall evaluation of their suitability based on the cumulative evaluation results associated with each of the individual criteria presented in Section 4.1.

Table 4-2

Evaluation of Remaining Potential Station Sites

Station Location	Potential Station Type	Overall Evaluation of Individual Site
Suisun City Amtrak Station	Major Intermodal Station	Excellent – After eliminating the Peabody Road site, this is the only site at which transfers between the Napa/Solano and Capitol Corridor lines would be possible. Existing and planned development are transit-supportive.
Solano Business Park, Fairfield	Basic Commuter Station	Poor – Given the cost and difficulty of obtaining a site as well as the lack of transit-supportive land uses, this is a poor station site.
Red Top Road, Fairfield	Basic Commuter/ Visitor Station	Good – A station at this location would be accessible easily from I-80 and Highway 12 and may be cost-effective because of the potential to share facilities with the park-and-ride lot planned at the location. Site may be environmentally constrained by Jameson Canyon Creek.
American Canyon Planned Town Center	Basic Commuter/ Visitor Station	Excellent – The community strongly supports a station at the location which could help catalyze the city's development plans for the area. Planned land uses are transit-supportive.
Intersection of Highways 29 and 37	Basic Commuter Station	Poor – Although the site would provide access to northern Vallejo residents, surrounding land uses are not transit–supportive and there are no plans to redevelop the area. Additionally, it may be difficult and costly to assemble a large enough station site.
Sereno Transit Center	Basic Commuter Station	Excellent – There is strong potential for transit-supportive land uses in the station area. Location of a station in the area will help to catalyze the city's plans to develop a transit village in the area.
Vallejo Ferry Terminal	Major Intermodal Station	Excellent – The location of a station at the site is a key component of Napa/Solano passenger rail service. Commuters from Napa and Solano counties would use rail service to access the ferry while visitors from San Francisco would use the ferry to access rail service to Napa and Solano counties. Vallejo has extensive redevelopment plans for its waterfront which include transit-supportive design and land use. The site is owned by the Vallejo Redevelopment Agency.
Mare Island	Basic Commuter Station	Poor – Although redevelopment plans for the island include a sizable employment concentration and mix of other uses, it may be more cost-effective to link the Vallejo Ferry Terminal to Mare Island via ferry or bus/shuttle service.
Napa County Airport Business Center	Basic Commuter Station	Poor – The lack of employment density, connecting transit and pedestrian amenities at the location does not make it a favorable station site.
Napa Valley College (at Imola Avenue)	Basic Commuter Station	Good – A station at the location could provide service to southern Napa residents, the College and Napa State Hospital. Land uses in the immediate area are not transit-supportive, however.

Table 4-2

Evaluation of Remaining Potential Station Sites (continued)

Station Location	Potential Station Type	Overall Evaluation of Individual Site
Downtown Napa (Third Street and Soscol Avenue)	Major Intermodal Station	Excellent – The Napa County Transportation Planning Agency would like to relocate the VINE transfer center to the location and develop an intermodal bus/shuttle/rail station. The City of Napa will facilitate and assist in efforts to assemble and acquire the site. It is within a ten-minute walk of Downtown Napa with its shops, hotels, restaurants and other visitor services. The Napa Fairgrounds are just east of the site.
Highway 29 and Trancas Road, North Napa	Basic Commuter/ Visitor Station	Good – The site would provide access to residents in north Napa and would be accessible easily from Highway 29. It is also within walking distance of hotels and other retail uses. NVWT Final Environmental Impact Report (1993) proposed a new NVWT station at the site.
Yountville (current NVWT station at California Avenue)	Basic Commuter/ Visitor Station or Gateway Station	Good (Basic Station) – The location could provide access to commute service by Yountville residents as well as access to hotels, shops and restaurants by visitors. Providing additional parking beyond the seven spaces currently permitted by the town would require acquisition or lease of additional land. Poor (Gateway Station) – While the site is within walking distance or a brief shuttle ride of visitor-serving uses, the location is too far south to serve as a Gateway Station. It is assumed that the majority of visitors would want to travel farther up-valley before disembarking due to the fact that it would enable them to avoid traffic on Highway 29 and put them in closer proximity to a greater number of wineries.
Rutherford (at Highway 29 and Rutherford Cross Road)	Gateway Station	Good – The site satisfies the majority of Gateway Station criteria and is the only location likely to be accepted by the community. The feasibility of the site is dependent on installation of a signal at the intersection.
St. Helena (at Fulton Lane and Railroad Avenue)	Basic Commuter/ Visitor Station or Gateway Station	Good (Basic Commute Station) – Community support of a commuter-oriented station is good and the location would serve residents of St. Helena and communities to the north. Poor (Basic Visitor Station) – The St. Helena community would not support construction of a visitor-oriented rail station unless additional public facilities were provided to mitigate the impacts of additional visitors. Poor (Gateway Station) – It is very unlikely that the community would support location of a Gateway Station in St. Helena.

Table 4-2

Evaluation of Remaining Potential Station Sites (concluded)

Station Location	Potential Station Type	Overall Evaluation of Individual Site
Napa Junction, Napa County	Transfer Station	A proposed operation plan that consists of two lines meeting at Napa Junction would require a transfer station at the location. The station would be used primarily (if not exclusively) to facilitate transfers between the lines. Although the land required to support a transfer facility would be minimal (about 0.75 acres), land is currently in agricultural use and is zoned "Agricultural Preserve" by the county. Constructing a transfer facility at the site could be costly and may be politically infeasible.

Source: Nelson\Nygaard Consulting Associates.

Were the rail segment between St. Helena and Calistoga reconstructed and rail service extended to Calistoga, a Basic Commuter/Visitor station could be located at one of the following two potential sites in the City of Calistoga:

- at the historic depot building near the intersection of Fair Way and Lincoln Avenue or
- at a site on the southern end of Washington Street.

Both sites fulfill Basic Commuter/Visitor Station criteria, although both may be impacted by a floodway. The Fair Way site would be the better visitor-oriented rail service station location because of its proximity to and visibility from downtown Calistoga. A Washington Street site may be able to accommodate more parking and thus may be a better a commuter-oriented rail station location. Appendix 4-B provides a more detailed evaluation of both sites.

Evaluation of Station Groups

Station sites evaluated as being either "good" or "excellent" were assembled into station groups. Those groups were then evaluated as a whole considering their effects on rail travel time and access to the rail line. Table 4-3 presents the outcomes of the station group evaluations, which are organized into three main categories:

- commute service with minimum travel time (least number of stations). This station plan is intended to meet the 45 mile per hour speed limit between stations, with stations spaced approximately five miles apart, or more;
- commute service with maximum ridership potential (greatest number of stations). This station plan allows closer spacing between stations where needed to maximize commute ridership and
- visitor service.

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Table 4-3

Evaluation of Station Groups

Commute Service (Minimum Travel Time)	**Evaluation**
Major Intermodal Stations o Suisun/Fairfield Amtrak Station o Vallejo Ferry Terminal o Downtown Napa Basic Commuter Stations o Red Top Road o American Canyon o Yountville o St. Helena	The distance between stations in the group is no less than five miles. Spacing of at least five miles between stations will enable average travel speeds of 45 miles per hour, minimizing rail travel time. The station group represents the minimum number of commute service stations.
Commute Service (Maximum Ridership)	**Evaluation**
Major Intermodal Stations o Suisun City Amtrak Station o Vallejo Ferry Terminal o Downtown Napa Basic Commuter Stations o Red Top Road o Sereno Transit Center o American Canyon o Napa Valley College (at Imola) o North Napa (Trancas and Highway 29) o Yountville o St. Helena	The station group represents the maximum number of commute service stations and makes a tradeoff between travel time and increased accessibility to the rail line (and potentially greater ridership). The presence of a station in Vallejo in addition to the Ferry Terminal provides better rail access to Vallejo residents. It is unlikely that Vallejo residents, who would use the train to travel to the Ferry Terminal or Napa, would drive to an American Canyon station. However, a station at the Sereno Transit Center would be less than five miles from the Vallejo Ferry Terminal and would lengthen travel times. Although the three stations in the City of Napa are located less then five miles from one another, they each serve a different catchment area. The North Napa station would be

Table 4-3

Evaluation of Station Groups
(concluded)

Visitor Service	Evaluation
	a commuter-oriented station serving residents in the northern part of the city. Similarly, the Napa Valley College station would serve people living in southern Napa, and it would also serve the college and the Napa State Hospital. The downtown Napa station would have minimal (if any) parking due to the fact that it would be the new location for the VINE bus transfer center. It also would be the primary Greyhound and Amtrak bus stop.
Major Intermodal Stations o Vallejo Ferry Terminal o Downtown Napa o Suisun City Amtrak Station Basic Visitor Stations o Red Top Road o American Canyon o North Napa (Trancas and Highway 29) o Yountville Gateway Station Rutherford Additional Winery Excursion Stops* o De Moor o Robert Mondavi o Grgich Hills o Rutherford Vineyards o V. Sattui **Identified from the NVWT Final EIR (1993)*	It was assumed that most visitors would start their trips at major intermodal stations or from the American Canyon, Red Top Road or North Napa stations and that the majority of visitors would travel to the Gateway Station at Rutherford before disembarking.

Source: Nelson\Nygaard Consulting Associates.

Proposed commute service may consist of:

- bi-directional, weekday, peak period service between Vallejo and St. Helena;
- peak, direction, weekday, peak period service between Suisun/Fairfield and Napa (northbound in the AM peak and southbound in the PM peak) and
- bi-directional, weekday, peak period service between Vallejo and Suisun/Fairfield.

Similarly, visitor service might consist of bi-directional service between Vallejo and Suisun/Fairfield and the Napa Valley, seasonally and/or on weekends and holidays.

Because visitor service is less sensitive to travel time than commute service, stations were included in the visitor service group based on the extent to which they provided access to the rail line (origin stations) or to visitor attractions (destination stations). In addition to visitor stations, additional excursion stops at wineries along the rail line also could be made (provided that there are adequate facilities).[1]

Recommended Station Plans

The recommended commute service station plan is based on the maximum ridership scenario described previously. Although increases in overall travel time will result from the additional Napa and Vallejo stations, potential ridership gains may be significant. The recommended visitor service station plan includes all of the stations listed under the visitor service station group in Table 4-3.

Appendix 4-A provides a description of each station site, including existing land uses, current ownership and a list of station facilities that will be required (including the total land area needed to accommodate station facilities). A photograph of existing site conditions is also included. Recommended station sites are shown on Map Five.

[1] The Napa Valley Wine Train Final Environmental Impact Report (1993) specified that such excursion stops should have a minimum of 1,000 feet of track available and that detraining passengers be escorted to winery facilities in order to minimize any potential impacts to agricultural production.

Map Five

Recommended Station Plan

Section 4.3: Station Design Guidelines Compatible with Continued Freight Operations

The primary regulatory restriction on station design is that station platforms must be designed in accordance with clearances identified in California Public Utilities (PUC) Commission General Order 26-D. Specifically, that regulation designates a minimum horizontal distance of four feet eight inches between the outer face of the platform and track centerline where platforms are no more than eight inches above the top of rail. However, most freight railroad track owners in California require a greater distance, typically about five feet, four inches in return for their support of commuter and/or intercity passenger rail development. Higher platforms may be constructed to accommodate faster/safer passenger loading/unloading only if those platforms are adjacent to a separate, passenger-only track. No high platforms are recommended in the study area given foreseeable passenger volumes. PUC General Order 26-D also specifies other clearance standards that must be adhered to at stations and elsewhere.

The important operational guideline is that station activity should not impact freight operations any more than necessary. The cardinal rule is: "no passenger train parking on the main (through) track at stations." Passenger trains must slow down to arrive at stations, dwell there while passengers board and alight and then depart. Conflicts with freight operations at stations resulting from passenger train station stops would not be severe as envisioned and would not require the construction of additional tracks at stations. Passenger train obstruction of freight operations by laying over or otherwise parking on main (through) track at any station is not necessary and not acceptable.

In the commuter scenarios currently under evaluation, passenger trains would be stored only at terminal stations (Vallejo, Fairfield and St. Helena). The Consultant Team also assumed that trains operated in visitor scenarios terminating at any other locations (such as Yountville) also would have to be stored off of the main line, either by proceeding to a terminal equipped with storage or stub tracks immediately upon unloading or by use of storage tracks constructed for that purpose at the visitor terminal.

Section 4.4: Estimated Capital Cost Of Recommended Stations

Cost estimates were developed in connection with the seven "basic" stations identified earlier, used in association with either or both commuter and visitor services. Basic stations differ from one another only in the amount of parking provided and in connection with the land to be acquired. The cost estimation process is detailed below, followed by a description of stations that vary significantly from the basic design.

Separate cost estimates were developed in connection with each of the following construction and non-construction costs, followed by application of a contingency factor:

construction costs	non-construction costs
"kiss and ride" lanes;	design;
parking stalls (twenty automobiles);	construction management;
lighting and amenities;	flag protection;
rail passenger shelters;	agency administration and
rail platforms (300 feet long);	contingencies.
landscaping;	
benches;	
pedestrian walkways;	
bike racks;	
signage;	
site-specific improvements;	

"Kiss and ride" facilities were assumed to be two lanes wide and approximately 300 feet long. They would be built between the walkway access to the platform and the small, short-term parking area. Standard curbs with drainage capabilities were included in the estimate. Also included in the cost estimate were painted markings to specify bus, drop-off and parking access. The lanes were expected to be constructed of cast-in-place concrete.

Parking cost estimates were calculated assuming twenty spaces along with a curb and standard 64-inch wide walkway separating the parking area from the "kiss and ride" lanes and the main access road to the station. (The number of parking spaces specified elsewhere in this chapter at various stations ranged between 0 and 100. Cost estimates were based on those site-specific recommendations.) Walkway width was set at 64 inches to comply with Americans with Disabilities Act (ADA) recommendations

to accommodate passage of two wheelchairs at the same location without interference to either party. Parking areas were assumed to be paved with asphalt.

Lighting and amenities encompassed all electrical and water-related expense estimates. Basic conveniences such as telephone service, vending machines, trash receptacles, fire extinguishers and newspaper dispensing boxes also were in the category. Security cameras, a public address system and ticket machines were assumed to be included at each station location.

Two, basic metal, canopy-covered and open-air shelters common to commuter rail stations were assumed to be protect passengers. They provide protection from the elements but allow passengers to enjoy the outdoor experience, weather permitting.

The platform was designed to be 300 feet long and included the lump sum amount that would be experienced by a contractor mobilizing and demobilizing at a station site. The platform is assumed to be twelve feet wide, an Amtrak minimum standard and should allow extension to 600 feet in length should ridership increase to levels that would warrant such expansion.

Landscaping encompasses returning the surrounding area to pre-construction or better condition via use of trees, shrubs, plants and sodding to make the station area appealing to the eye and thus creating good community relations and being aesthetically pleasing to the rail passenger. Walkway widths were again set at 64 inches to comply with ADA standards. Handrails protect ramps and steps and an allotment covering ADA compliant ramps also was included in the estimate.

Bike racks, which could secure between 25 and 50 bicycles depending on placement in the surrounding area and configuration settled upon, were included in the estimate.

Motor vehicle traffic safety and flow signs and those specifying restrictions to certain areas are included in the estimation. Electronic signs were assumed to display commuter information about schedules, fares and other pertinent matters

Non-construction estimates included design, construction management, agency administration costs and flagging to protect train movements during periods of

construction. Lastly, a contingency figure was assigned to cover unforeseen obstacles such as necessary drainage structures, excessive earthwork requirements, shipping delays, plan modifications that are site specific, etc.

Combining the estimates yielded the aggregate cost associated with each basic station, including site-specific parking and land acquisition. Estimated costs of a basic station, including 100 parking spaces, are shown in Table 4-4.

Stations that varied from the basic design included Fairfield/Suisun City, Vallejo Ferry Terminal, Napa Junction, Downtown Napa and Rutherford as described below.

The Fairfield/Suisun station would share facilities at the existing Amtrak station. A new platform would be required with associated lighting and amenities. In addition, a pedestrian overpass was assumed to be constructed to allow passengers safe crossing of the UP tracks and access to the station building.

The rail station at Vallejo would share facilities with the Ferry Terminal. Rail improvements assumed to be needed include a platform with lighting and amenities and a covered walkway connecting the rail platform with the Ferry Terminal.

The rail station at Napa Junction would serve as a transfer point between services. It is not intended to host the origination or termination of any passenger trips and thus was assumed to not require parking or drop-off facilities.

The Downtown Napa station was deemed a major intermodal station to be shared with bus service. Accordingly, station improvement costs that would benefit both services were assumed to be shared.

The rail station at Rutherford would only feature twenty parking spaces.

Estimated capital costs associated with basic design at each station are summarized in Table 4-5.

Table 4-4

Estimated Basic Station Capital Cost, By Element

Kiss and Ride Lanes	$103,000
Lighting and Amenities	194,000
Rail Passenger Shelters	100,000
300-Foot Rail Platform (includes mobilization/demobilization)	50,000
Landscaping, Benches, Pedestrian Walkways	80,000
Bike Racks	5,000
Signage (Bus, Shuttle and Train Services)	13,000
Total Construction Costs	$545,000
Design (10 Percent of Total Cost)	$55,000
Construction Management (6 Percent of Total Construction Cost)	33,000
Flagging Protection During Construction	54,000
Agency Administration (2 Percent of Total Cost)	11,000
Non-Construction Costs	$153,000
Subtotal	$698,000
Contingency (20 percent)	$140,000
Subtotal	$838,000
100 Parking Spaces (@ $3,100)	$310,000
Land Acquisition	Varies by Location
Total Cost, excluding Land Acquisition	$1,148,000

Sources: RLBA, Rail Pros.

Table 4-5

Estimated Station Costs, By Station
(Including land acquisition costs and parking, if any)

Basic Stations	
Red Top Road	$ 1,598,000
Sereno Transit Center	1,598,000
American Canyon	1,598,000
Napa Valley College/Imola	1,598,000
North Napa	1,288,000
Yountville	1,598,000
St. Helena	1,350,000
Transfer, Major Intermodal or Gateway Stations	
Fairfield/Suisun City	784,000
Vallejo Ferry Terminal	802,500
Napa Junction	411,500
Downtown Napa (costs shown are rail share)	759,000
Rutherford	838,000
Total	$14,223,000

Source: RLBA, Rail Pros.

Section 4.5: Station Spacing - Impact On Operational Productivity

There is a fundamental tradeoff in planning commuter rail stations: increasing the number of stations may make the service convenient to more potential customers but also will lengthen train schedules and may discourage potential riders. In addition, where bi-directional service is operated, lengthening running time could cause a need to acquire additional trainsets and train crews to execute the service plan. Several planning considerations and a recommended approach to addressing the issue are presented below.

Station spacing differs between commuter rail systems (such as Caltrain) and light rail transit systems such as Santa Clara Valley Transportation Authority (San Jose) or Muni

(San Francisco). The American Railway Engineering and Maintenance Association (AREMA) specifies typical rail transit system design criteria as:

Design Criteria	Commuter Rail	Light Rail
Station Spacing - Downtown	1 Mile	1 or 2 Blocks
Station Spacing - Outlying	5 Miles	0.5 - 1 Mile

Source: AREMA Manual for Railway Engineering, 2002, Volume 3, Table 12-2-4.

Each station stop adds deceleration, station dwell and acceleration time to train schedules. Adding a stop in a segment where trains travel at low speeds impacts schedules less than adding a stop where trains are traveling at high speeds because of the increased acceleration and deceleration time in the latter instance. Notwithstanding such differences, a total of two additional minutes per stop is a representative planning assumption.

Another consideration is that adding a stop in an outlying area where fewer riders are on board the train affects a lesser number of passengers than adding a stop near inbound destinations at a point where more or most passengers are on board. Thus adding or deleting a station near Yountville would affect fewer potential passengers than adding or deleting a station near Vallejo. Such effects diminish or vanish if travel patterns are balanced in both directions.

Despite these and other similar guidelines, a new service should be designed to meet the transportation needs of its constituents rather than to slavishly conform with standard practices. A common sense approach is first to develop a service plan that incorporates stations deemed desirable and feasible, then to estimate train running times and finally to adjust the station and service plan until a balance acceptable to project sponsors is found.

This study specified an average service speed of 45 miles per hour, later clarified to apply to average running time between stations. Based on the stations recommended

in this chapter, preliminary running time estimates associated with the three peak period services are as follows:

Service	Overall Average Speed (miles per hour)	Average Speed Between Stations (miles per hour)
St. Helena - Vallejo	36	41
Fairfield - Vallejo	38	42
Fairfield - Napa	41	45

All three peak period services are near the goal established in the RFP. However, using the presently recommended stops, the estimated St. Helena-Vallejo travel time (about 55 minutes) does not leave sufficient time and cushion to make a one way trip, turn and be ready to depart again reliably within the planned 60-minute headway. As a result, more trainsets and crews would be required to provide 60-minute headway service than if the one-way trip time were a few minutes less.

CHAPTER 5

SERVICE EQUIPMENT REQUIREMENTS AND ALTERNATIVES

Section 5.1: Passenger Vehicle Options and Evaluation

If instituted, Napa/Solano passenger rail service would operate on lines owned by UPRR and NVRR. Currently, freight service over UPRR lines south and east of Rocktram is operated under lease by the CFNR, a short line. That line is part of the so-called "general railroad system" which is the interconnected network of all the country's standard gauge rail lines that are:

- regulated by the Federal Railroad Administration (FRA);
- operated by common-carrier railroad companies, Amtrak, or commuter railroads and
- available to be used by public freight and/or passenger services[1].

Three basic categories of rolling stock may be considered: trains of unpowered cars hauled by diesel locomotives and two generic "classes" of self-propelled cars called diesel multiple units (DMUs).[2] "Heavy" DMUs are designed to meet all federal requirements covering rail passenger cars to be operated in mixed service with freight trains and other passenger trains on the so-called "general railroad system" of North America while "light" DMUs might achieve compliance with federal regulations through a waiver process, requiring time and/or spatial separation from other types of railroad equipment. Technical specifications of each equipment type or discussed later in this chapter.

[1] Specifically excluded from the "general system" are "urban rapid transit operations" (e.g., BART, San Francisco Municipal Railway light rail), private industrial switching tracks within plants and lines operated only as tourist railroads.
[2] The multiple units refers to the practice of coupling two or more passenger cars together with provision made to control the operation of the cars from a single controller.

With respect to passenger rail services, therefore, there are basically two rolling stock alternatives compatible with freight train operations:

- vehicles complying with FRA passenger car construction rules, as listed in CFR 49, Section 238, so-called "compliant vehicles" and
- vehicles that can be operated on the general railroad system only if a waiver is obtained, as provided in CFR 49, Part 211, Appendix A, so-called "less than fully compliant" or "non-compliant" vehicles.

A key issue is the choice between a "railroad" or "transit" type of vehicle and its related operating scenario. While "railroad" vehicles would accommodate interoperability service on tracks or in trains carrying or hauling both passengers and freight most readily, "transit" vehicles are more likely to offer the possibility of more efficient train crew staffing (one operator per train instead of a crew of two) and better fuel economy. The lack of a new (as opposed to rebuilt), in-service, "heavy" DMU is a difficulty with respect to this otherwise attractive alternative.[3] The introduction during 2002 of a prototype "heavy" DMU by one supplier is a positive development that should be monitored as Napa/Solano project planning continues. The vehicle decision must balance these and other considerations discussed in the body of this and the following parts of this chapter.

The issue of interoperability is a crucial consideration. The choice will affect where and when various types of trains can be operated under FRA's regulatory authority and the level and attractiveness of service any project can offer prospective passengers.

One aspect of interoperability affecting operation of alternative rail vehicles on the candidate lines is their structural design and resulting crashworthiness. The Napa/Solano rail lines function as an integral part of the national freight railroad system, and it is the intent of local authorities that the lines continue to play such a role.

Vehicles constructed per Section 238 may be operated intermixed with other passenger and freight trains and result in no regulatory constraints on other rail services. Such vehicles are currently available as bi-level and single-level locomotive-hauled (i.e., non-powered trailer) cars. Locomotives used to haul passenger trains also might be employed to pull freight trains outside of passenger service hours, resulting in substantial operating and capital cost savings if schedule coordination can be achieved.

[3] The manufacture of heavy DMUs ceased about 30 years ago with the decline in rail passenger service.

"Light" DMUs are widely used in Europe but not in North America. In the US, their operation requires a waiver under Part 211. Successful negotiation of such a waiver among interested parties, including the FRA, is likely to require rigid "time separation" (most likely as "day passenger service, night freight operation") between Part 238 and "light" equipment operation on shared (passenger and freight) use tracks.

A 5.5-mile project in Ottawa, Canada introduced "light" DMUs in late 2001 on shared use track in North America. At least two other projects using such equipment are in advanced stages: 1) the 34-mile Southern New Jersey Light Rail Transit System line between Camden and Trenton, New Jersey, for which twenty cars are being manufactured and 2) the 22-mile service between Oceanside and Escondido, with a specification prepared and ready to enter the procurement process for approximately ten to twelve DMUs. All three of these operations involve light-density lines on which freight trains are or will be limited to night operation during hours when passenger service is or will be shut down.

A comparative summary of issues related to compatibility and interoperability of candidate rail passenger vehicles is presented in Table 5-1.

Table 5-1

Vehicle Compatibility Issues

Criteria	Locomotive-Hauled		Heavy DMU		Light DMU	
	Bi-Level	Single-Level	Bi-Level	Single-Level	Railway	Transit
Interoperability:						
- Mix with/Other Trains	Yes	Yes	Yes	Yes	No	No
- Engines also available for Freight	Yes	Yes	No	No	No	No
Institutional Limitations:						
- Freight	None	None	None	None	Separate	Separate
- Other Passenger	None	None	None	None	Separate	Separate
Crashworthiness:						
- End-of-car buff strength[a]	800.000	800,000	800,000	800,000	400,000	<200,000
- Complies w/Section 238	Yes	Yes	Yes	Yes	No	No
- Needs Part 211 Waiver	No	No	No	No	Yes	Yes

[a] Under CFR 49, Section 238, a car frame must be able to absorb an 800,000-pound force applied at the end of the frame without permanent deformation of the car body.

Source: LTK Engineering Services.

The vehicle issues discussed above can be addressed but the results are likely to be different approaches to integrating operation of passenger and freight trains on any given line. At this time, it appears to be the preference of the parties involved that time separation of passenger and freight operations should not be required. If this persists, "light" DMUs will not be a feasible solution.

A second issue in selecting rolling stock is to match the carrying capacity of equipment to the demand forecast. DMUs offer low-to-medium capacity, while locomotive-hauled trains are more efficient when medium-to-high capacity is required. Based on the ridership estimates appearing in Chapter 8, it was assumed that low-to-medium carrying capacity is likely to suffice. Therefore "heavy" DMUs may provide the best choice.

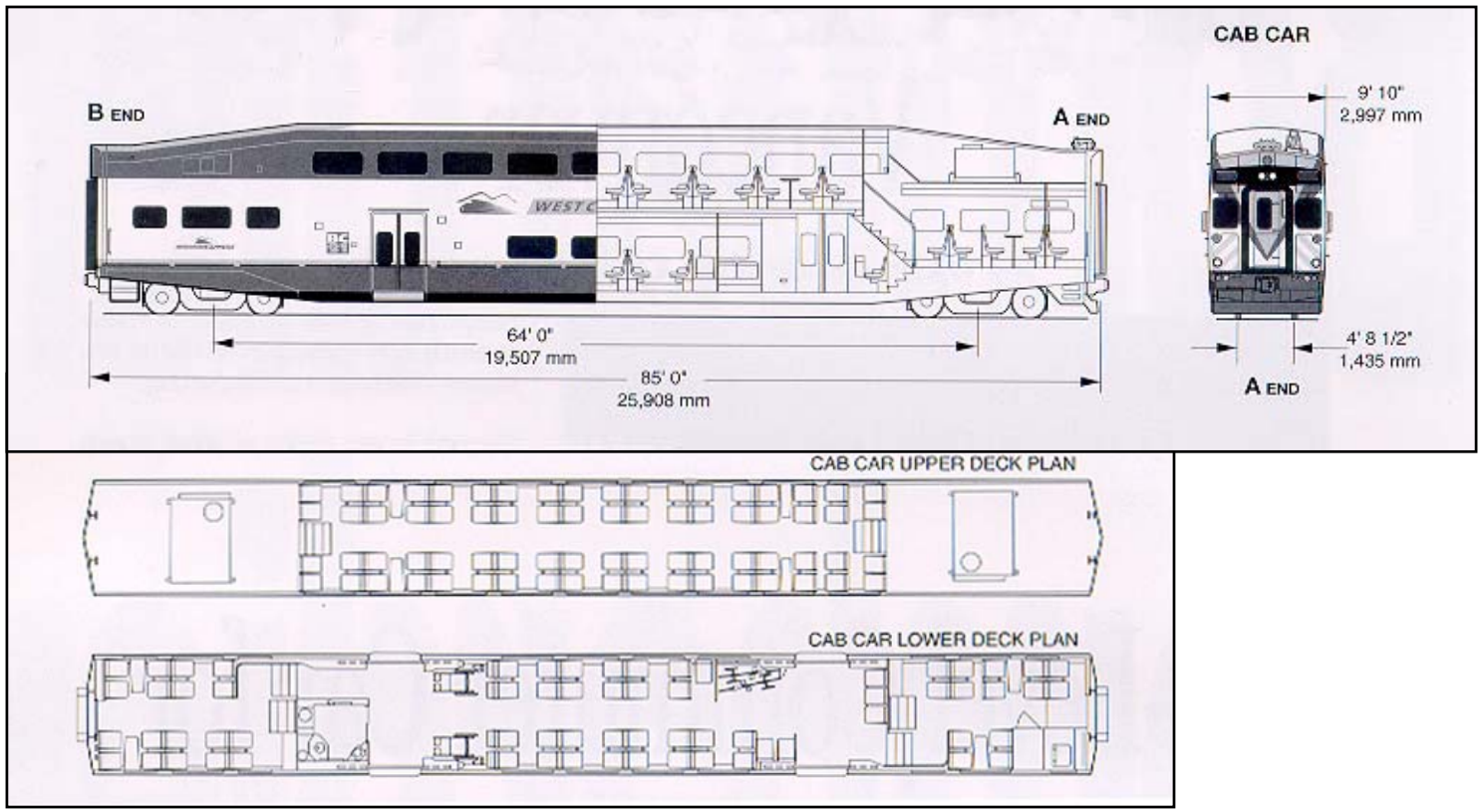
Locomotive-Hauled Trains

All such equipment complies with FRA regulations covering use on the general railroad system in mixed traffic with conventional freight and passenger trains. The general configuration consists of at least one locomotive plus one or more trailer cars plus a cab car. Feasible train lengths are two to ten cars since at least two cars are needed to ensure reliable train braking. The most probable minimum train crew is two persons (engineer and conductor).

Bi-Level Cars The seating capacity of bi-level coaches is about 140 per car or 280 - 1,400 per train. Probable configuration is a locomotive plus two cars and 280 seats, in length about 230 feet.

Bombardier cars first built on behalf of GO Transit in Toronto and drawn by 3,000 - 4,000 horsepower diesel locomotives (Figure 5-One) have been the choice of several new systems. They are also used in southern Florida, Dallas-Fort Worth and on five western commuter rail systems: San Diego-*Coaster*, Los Angeles-*Metrolink*, South Bay-*ACE*, Seattle-*Sounder* and Vancouver, BC-*West Coast Express*. They also are being acquired to be used on Caltrain's new *Baby Bullet* trains. Amtrak California's intercity *California Cars* and *Surfliners*, built by Alstom, are similar vehicles (Figure 5-Two). Both offer easy one- or two-step boarding from low platforms.

Figure 5-One
Bombardier Bi-Level Coach



Note: ADA Restroom, Wheelchairs, Bicycles on Lower Level
Source: Bombardier Transportation

Figure 5-Two
Bi-Level Trains

Alstom *Surfliner* Cars
GM F59PHI Diesel Locomotive

Bombardier *Bi-Level*
Coaches (L.A. *Metrolink*)

Source: Alstom Transport; Bombardier Transportation;
General Motors Corporation, Electro-Motive Division.

Cars manufactured by Kawasaki Rail Car, Inc. used on (Boston's *MBTA* and Washington, DC's Maryland Rail Commuter *"MARC"* and Virginia Railway Express *"VRE"*) commuter rail services all are designed to accommodate both multi-step boarding from low platforms and level boarding from high platforms; Long Island Rail Road cars offer only the latter. METRA and Caltrain two-level, "gallery" coaches, so-called because of their uniquely open internal structure and configuration, provide only step loading from low platforms, using on-board lifts to be accessible via wheelchairs.

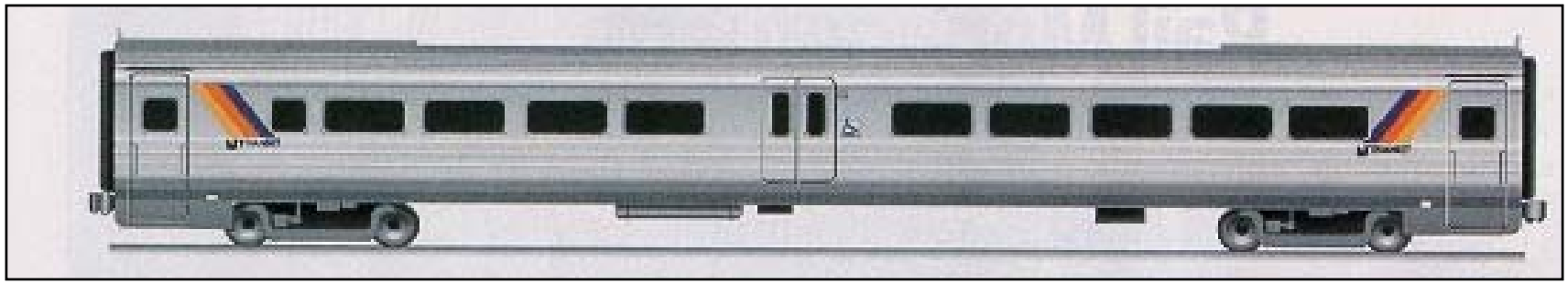
Single Level Cars Seating capacities of single level coaches are about 95 per car and 190 - 950 per train. Probable configuration is a locomotive plus two cars and 190 seats, about 230 feet long.

The Alstom *Comet V*, currently on order by New Jersey Transit, is the contemporary, state-of-the-art (Figure 5-Three-A) model while Bombardier still can produce the previous *Comet IV* model (Figure 5-Three-B). Considering all variants, *Comet*-type cars are in use on commuter rail systems in Boston, New York/Connecticut, New Jersey and Philadelphia and also in Amtrak intercity corridor service. Cars manufactured by Nippon Sharyo USA, Inc., to the specifications of *MARC* are similar – accommodating multi-step boarding from low platforms and level boarding from high platforms.

Diesel Locomotives

Typically, commuter trains are drawn by 3,000 - 4,000 horsepower diesel locomotives (Figure 5-Four). It may be useful to explore substituting MPI (MotivePower Industries) 1,500 - 2,000 horsepower road switchers (Figure 5-Four) and car-borne APUs (auxiliary power units), as the short consists likely to typify the Napa-Solano service do not need the power provided by larger locomotives and some modest cost savings and shorter delivery times might be realized. Other considerations should include the use of medium horsepower, four-axle locomotives, utilizing recycled locomotive components, including frame, trucks and the carbody. Several new-start commuter agencies have relied with much success upon these comparatively less expensive reconditioned locomotives during their initial years of operation.

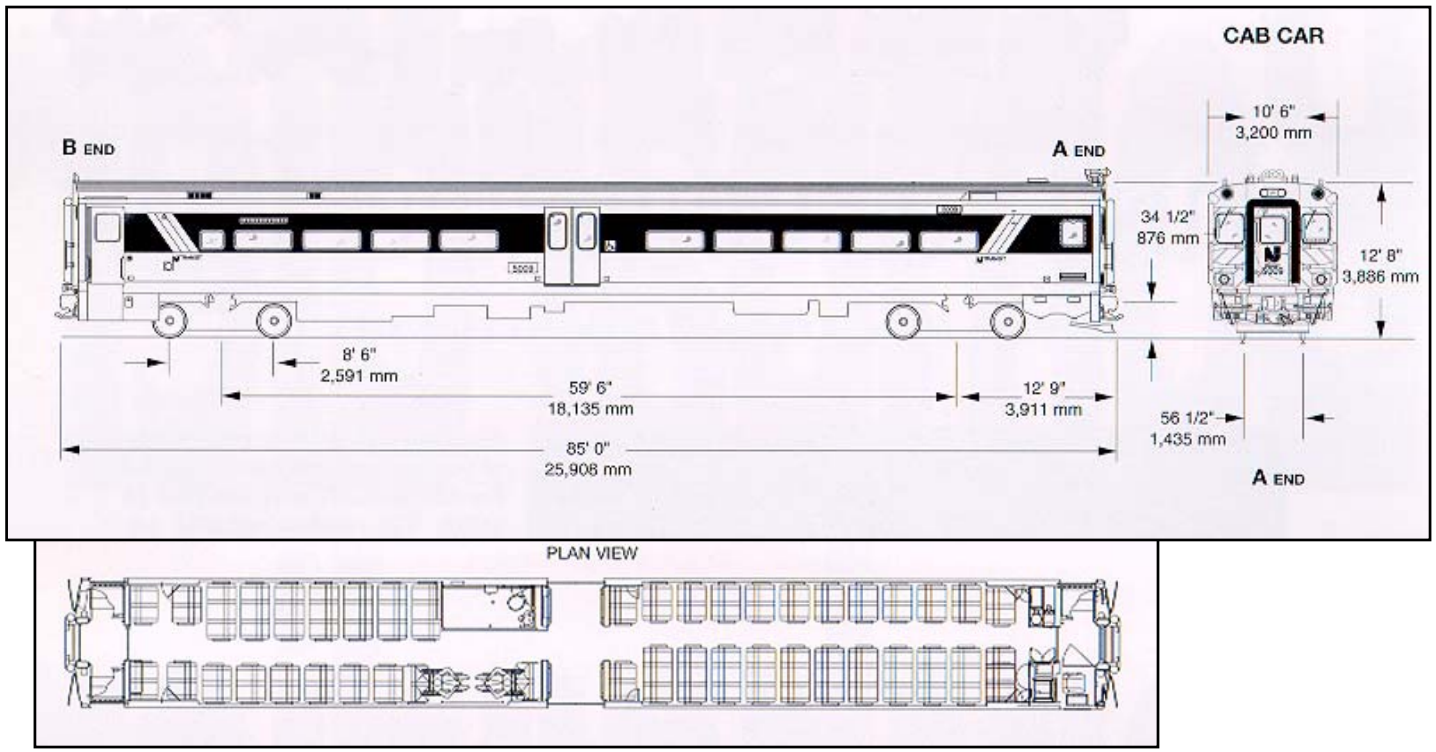
Figure 5-Three-A
Alstom *Comet V*
Single-Level Locomotive-Hauled Coach



<u>Design Evolution</u>:
1970-Pullman-Std. *Comet I* (left)
2001-Alstom *Comet V* (above)

Source: LTK; New Jersey Transit Corporation.

Figure 5-Three-B
Bombardier *Comet IV*
Single-Level Locomotive-Hauled Coach



Source: Bombardier Transportation.

Figure 5-Four
Diesel Locomotives

A. GM F59PHI PSgr. Loco. (left)

B. Motive Power Industries
GP15D, GP20D

Source: General Motors Corporation, Electro-Motive Division;
MotivePower Industries.

"Heavy" Diesel Multiple Units

Such equipment would conform to federal regulations concerning unrestricted use on the general railroad system but no such vehicle presently exists in revenue service, although at least three suppliers are in the development stage. Colorado Railcar Manufacturing (CRC) has manufactured a prototype single level DMU that has passed FRA tests and is deemed compliant. General configuration of one or more self-propelled cars in feasible train lengths would consist of one to six cars. The probable minimum train crew would be two persons (one engineer and conductor).

Again, both two and single level cars are "available." With respect to the former, seating capacity is about 184 per car and 368 - 1,104 per train. Probable configuration would be two cars, 170 feet long with 368 seats.

CRC has developed, but has not yet built, a bi-level DMU concept that, with wide doors and a depressed floor, would offer easy boarding from low platforms (Figure 5-Five).

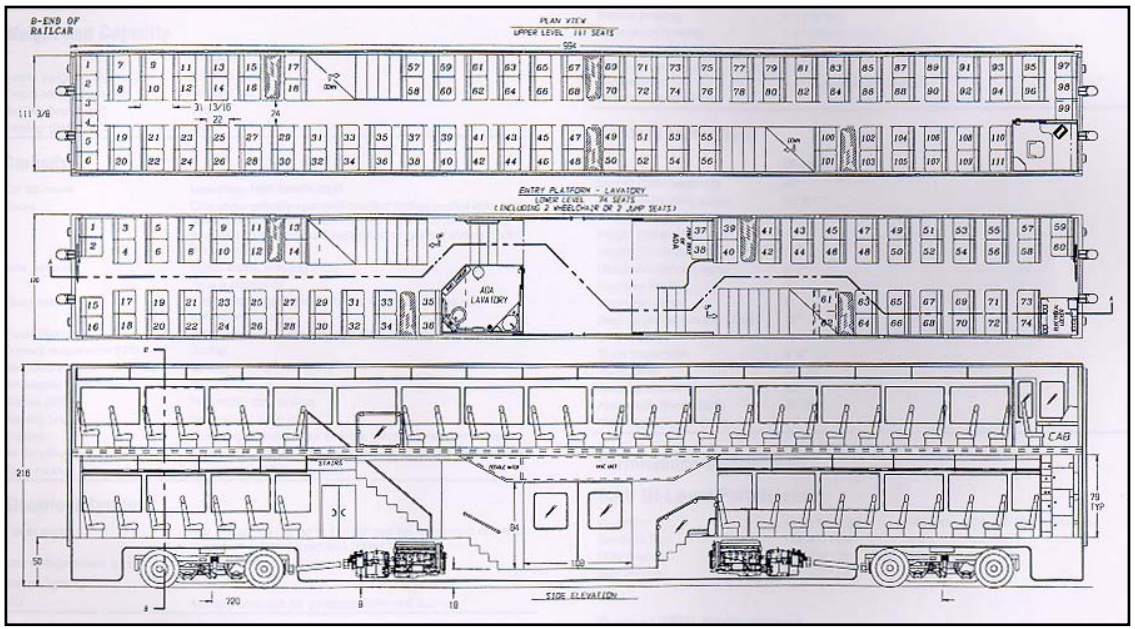
As to single level cars, seated capacity would approximate 90 per car or 180 - 540 per train in a probable configuration of two cars with 180 seats, about 170 feet long.

CRC has built a prototype single-level DMU that offers multi-step boarding from low platforms and level boarding from high platforms. The prototype of that car (Figure Five-Six-A) became available to test and demonstrate in mid-2002, with production to commence within a year of that time. Fitted with two, 600-horsepower diesel engines, the car is capable of pulling a trailer and CRC has designed the car with a low-floor mid-section to ease boarding people using mobility aids.

Bombardier also is reported to be working on the design of a single-level DMU. The expectation is that it will be based on the firm's *M-7* electric multiple unit (EMU) cars currently being produced on behalf of the Long Island Rail Road in New York (Figure 5-Six-B). It is anticipated that a prototype may be produced during the first half of 2003.

A third supplier, Siemens Transportation Systems, is reported to have a design concept of a "heavy" DMU but no timetable is available in connection with either a prototype or commercial production.

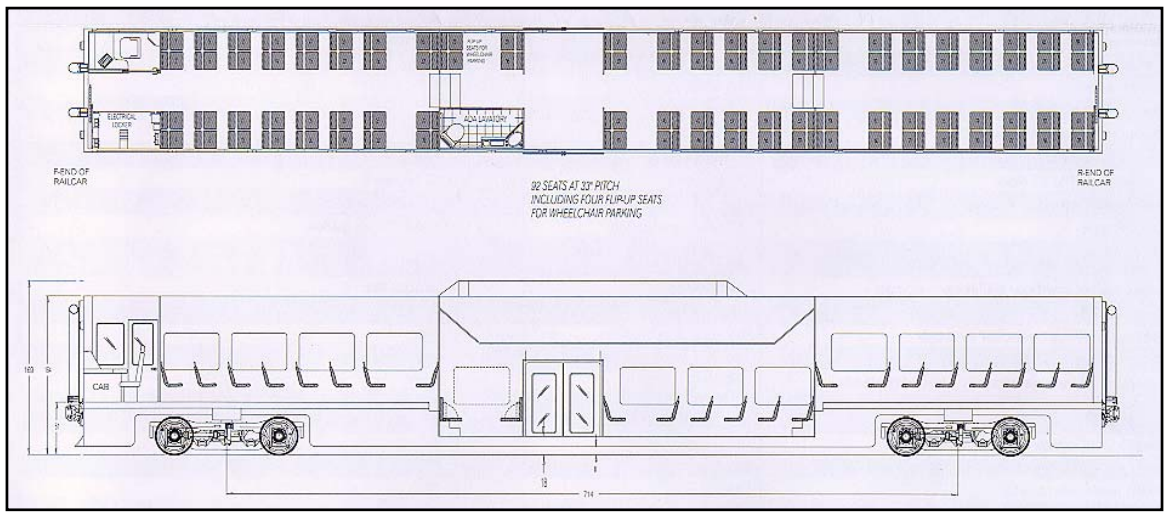
Figure 5-Five
Bi-Level Diesel Multiple Unit
(Proposed)



Source: Colorado Railcar Manufacturing.

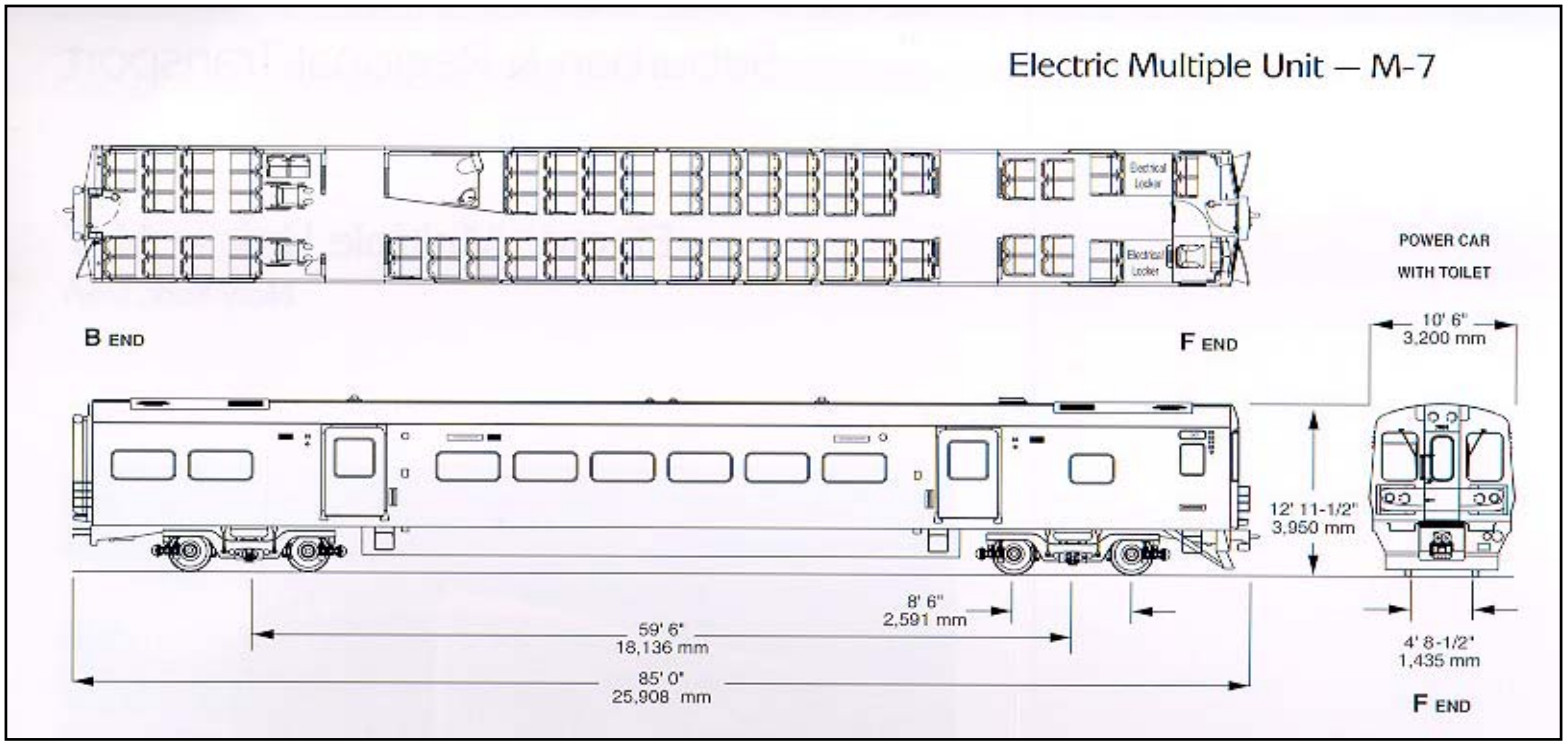
Figure 5-Six-A
Single-Level Diesel Multiple Unit
(Prototype 2002)

Note Design Alternatives:
-Prototype with aerodynamic nose; drawing w/flat cab end
-Prototype w/high floor, step loading; drawing w/low floor mid-section & entry



Source: Colorado Railcar Manufacturing.

Figure 5-Six-B
Bombardier M-7 EMU
Platform for DMU Development



Note: In addition to propulsion system, will need to adjust doors for low level step loading.
Source: Bombardier Transportation

"Light" Diesel Multiple Units

While numerous models are available from several builders, none complies with FRA Section 238 crashworthiness standards. A waiver based on either time and/or spatial separation from other railroad trains would be needed to operate such equipment in a shared use environment. The general configuration is one or more self-propelled cars, often as articulated units. Feasible train lengths are typically one to three cars or coupled articulated units.

Seating capacity approximates 175 per articulated unit or 175 - 525 per train in a probable configuration of one, double-articulated unit, with 175 seats, approximately 193 feet long and a probable minimum train crew of two persons (engineer and conductor).

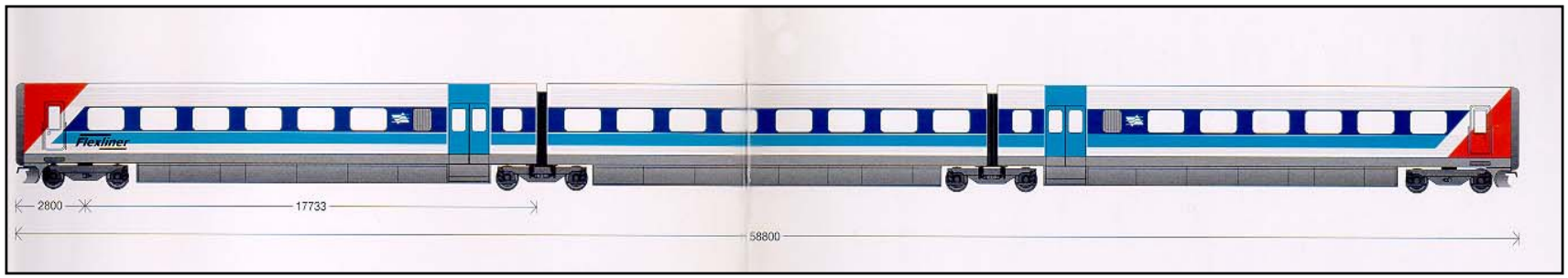
Several builders offer DMUs complying with International Railway Union (UIC) codes, with buff strength typically not quite half the 800,000 pounds required in the U.S. by FRA regulation. Such cars only can be operated on the general system of railroads in the U.S. after a waiver has been received from the FRA.

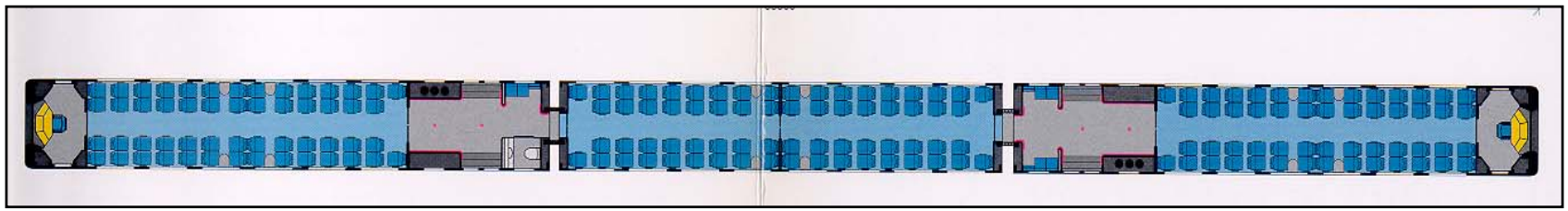
Available designs include both high floor, step-loading cars as well as low floor, nearly level boarding cars. For example, predecessor firms now merged into Bombardier built the high floor *Flexliner* (Figure 5-Seven-A) and partial low-floor *Regio-Shuttle* (Figure 5-Seven-B). Similarly, Siemens supplied several versions of high and low floor *VT 642* DMUs to German Railways (Figure 5-Seven-C) while customers of Alstom's *Coradia* DMU variants included railways in Belgium, Britain, France and Germany (Figure 5-Seven-D).

Seated capacity of such transit (light rail) designs approach 90 per car or 90 - 270 per train in a probable configuration of two articulated units, with 180 seats, 205 feet long. Probable minimum train crew would be one person ("a train operator").

Several builders offer DMUs whose design follows practices typical of rail transit (as opposed to main line railroad) principles. Such cars are lighter and less robust than those described above. Like cars built on behalf of European railways, those even lighter DMUs only can be operated in the U.S. after a waiver has been received from the FRA

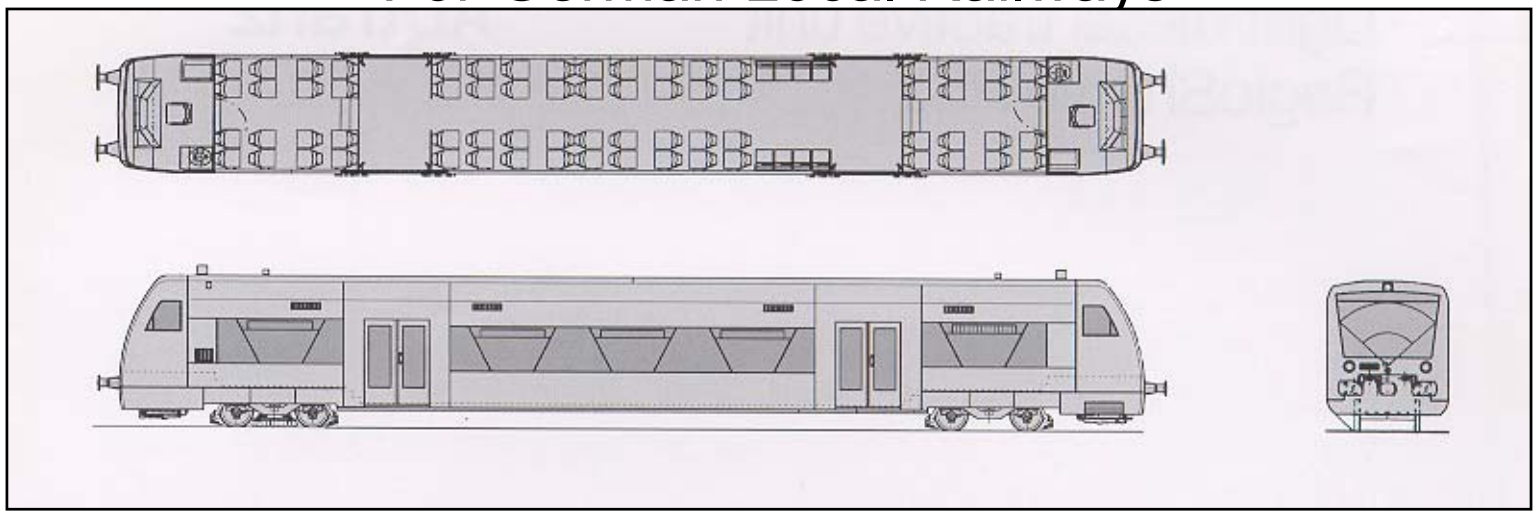
Figure 5-Seven-A
Bombardier *Flexliner* DMU





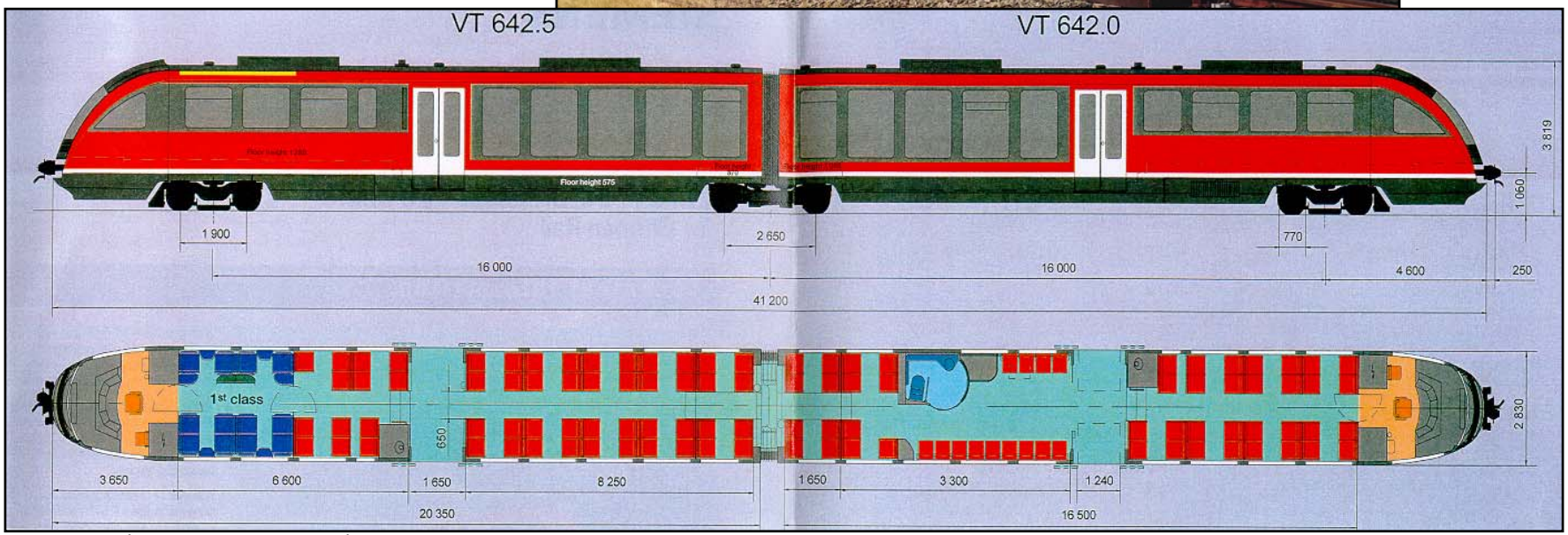
Source: Bombardier Transportation.

Figure 5-Seven-B
Bombardier *Regio-Shuttle* DMU
For German Local Railways



Source: Bombardier Transportation.

Figure 5-Seven-C
Siemens *VT 642* DMU
For German Rail



Source: Siemens Transportation Systems.

Figure 5-Seven-D
Alstom *Coradia* DMU
For German Rail

Source: Alstom Transport.

and the freight railroad line owner is willing to accommodate the request. All such cars have low floors at entries and through much of the passenger seating areas.

The progress of projects in Canada and New Jersey suggests that it will be possible to operate that class of equipment under transit rules and crewing practice, i.e., a single "train operator" instead of an "engineer" and a "conductor." That distinction, coupled with better fuel economy, may be an important factor in controlling operating costs, or maximizing service within a limited sum of available operating support and is the primary reason such equipment was included in this alternatives evaluation report.

Bombardier recently supplied three *Talent* DMUs (Figure 5-Eight-A) to operate on the 5.5-mile rail line connecting two legs of the extensive busway system in Ottawa, Canada. The same builder, in partnership with Stadler, a Swiss manufacturer, is producing 20 *GTW 2/6* DMUs (Figure 5-Eight-B) to operate on the 34-mile line being installed on a freight railroad between Camden and Trenton, New Jersey. Both of the projects selected vehicles based on designs already built in substantial numbers for service in Europe; both rely on time separation - daylight DMU service and night freight operation - to assure safety.

Summary of Rolling Stock Parameters

Each type of rolling stock has its own set of performance, cost and procurement parameters. The primary parameters describing performance are shown in Table 5-2. Maximum operating speed is not included because on the Napa-Solano lines that parameter is likely to be limited more by alignment and track conditions than equipment capability, which generally is in the range of 60 to 90 miles per hours or, on some equipment alternatives, even higher.

Table 5-2

Vehicle Performance Parameters

Parameter	Locomotive-Hauled		Heavy DMU		Light DMU	
	Bi-Level	Single-Level	Bi-Level	Single-Level	Railway	Transit
Acceleration (mph ps)[a]	0.7-1.0	0.7-1.0	0.8-1.2	1.0-1.5	1.5-2.0	2.0-2.5
Service Braking (mph ps)	1.8	2.0	1.5	1.5	2.3	2.3
Fuel Consumption (mpg)	0.25	0.25	+/-1.5?[b]	2.0	1.8	2.0

[a] High initial acceleration rates vary inversely with speed increases.
[b] Speculative, no such car currently being manufactured.
Source: LTK Engineering Services.

Figure 5-Eight-A
Bombardier *Talent* DMU
For German Rail and Others

Source: Bombardier Transportation.

Figure 5-Eight-B
Bombardier/Stadler *GTW 2/6* DMU
For New Jersey Transit (Camden-Trenton)

GTW 2/6 for
New Jersey

GTW 2/6 in
Switzerland

Source: Bombardier Transportation.

Noise and Air Quality Issues

All equipment discussed above is designed to meet current railway and/or transit vehicle standards, as appropriate. Diesel locomotives and the CRC "heavy" DMU are designed in accordance with FRA/APTA noise guidelines and U.S. Environmental Protection Administration (EPA) air quality standards. "Light" DMUs are designed to standards set by the International Union of Railways (UIC), which incorporate environmental requirements imposed through the European Union (EU). In general, it may be stated qualitatively that:

- "light" DMUs built to European standards are likely to be a little quieter (~75-85 dB) than US railroad designs and
- locomotives (~80-90 dB) being a little louder than the one existing "heavy" DMU.

As project planning and design reach the point that a vehicle order is imminent, more specific information can be secured from suppliers through vehicle procurement solicitation documents. The specification of a current DMU procurement, for example, is seeking an interior noise level not exceeding 75 dBA "with all auxiliary equipment operating simultaneously under normal operating conditions," and exterior noise "not exceeding 65 dBA for idling vehicle, and 80 dBA with vehicle accelerating," to be measured "at a distance of 50 feet from the centerline of track, 5 feet above the ground."

Alternate Fuels

North American railroads have uniformly used diesel-powered locomotives over the last half-century, since they emerged as the "clean" power alternative to steam engines. Today, diesel emissions and their effects on air quality are a concern and the desire to be an environmental "good neighbor" stimulates public sector rail passenger service sponsor interest in alternative power sources. Various technologies are available: battery power, fuel cells, natural gas and so-called clean diesel. Fuel cells and batteries remain in the experimental realm. More progress has been made with respect to clean diesel and natural gas, particularly in transit buses, as to which each fuel source has its champions and detractors. On railroads, however, there have been only a few natural gas experiments, including the NVWT. While technically feasible, production of non-diesel DMUs for operation in a railroad environment do not exist now and adoption of such technology would add an unknown sum to capital costs to cover its development and

testing. Therefore, it is recommended that system implementation should assume diesel-powered trains or DMUs.

Section 5.2: Capital and Maintenance Costs

Were a service offered requiring, say, four two-car trains plus a "spare" set, "heavy" DMUs configured in power car plus trailer car sets might cost in the range of five sets times $4.5 million, or a total on the order of $22.5 million. In contrast, five, two-car trains and diesel locomotives, at about $6.0 million per train, would cost a total of about $30.0 million. With longer trains, however, the apparent DMU capital cost advantage would diminish and, at some length of train, disappear.

Vehicle maintenance costs will form an important component of overall operating and maintenance costs. Unit vehicle maintenance costs, to some extent, are dependent on the size of the fleet, with larger fleets tending toward lower unit costs. Estimated unit vehicle maintenance costs of small fleets, as that likely to be employed on any of the proposed Napa-Solano corridors, are shown in Table 5-3. A tabulation of life cycle costs for rolling stock procurement and maintenance can be found in Table 5-4.

Table 5-3

Estimated Annual Unit Vehicle Maintenance Costs
($000s)

Vehicle Type	Locomotive-Hauled		Heavy DMU		Light DMU	
	Bi-Level	Single-Level	Bi-Level	Single-Level	Railway	Transit
Diesel Locomotive	$125	$125	--	--	--	--
Diesel Multiple Unit Car	--	--	$150	$140	$140	$140
Unpowered Cab Coach	$90	$85	--	--	--	--
Unpowered Trailer Coach	$50	$45	--	--	--	--

Source: LTK Engineering Services.

Table 5-4

Estimated Life Cycle Costs of Representative Passenger Rail Rolling Stock Alternatives

	Initial Capital Costs				Maintenance Costs		Life Cycle
Alternative/Item	Units	Unit Cost ($ Millions)		Total Cost	Unit Cost/Year	Total Cost 30 Years Maintenance [e] ($ Millions)	Total Cost
Bi-Level Trains:							
-Diesel Locomotive	5	$3.25	a	$16.25	$0.125	$18.75	
-Cab Trailer Coach	5	2.25	a	11.25	0.090	13.50	
-Trailer Coach	5	2.00	a	10.00	0.050	7.50	
Total				$37.50		$39.75	$77.25
Single-Level Trains:							
-Diesel Locomotive	5	3.25	a	$16.25	0.125	$18.75	
-Cab Trailer Coach	5	1.50	a	7.50	0.085	12.75	
-Trailer Coach	5	1.25	a	6.25	0.045	6.75	
Total				$30.00		$38.25	68.25
"Heavy" DMU, Bi-Level:							
-Powered DMU	5	4.50	b	$22.50	0.150	$22.50	
-Cab Trailer Coach	5	3.00	c	15.00	0.090	13.50	
Total				$37.50		$36.00	73.50
"Heavy" DMU, Single Level:							
-Powered DMU	5	3.00	c	$15.00	0.140	$21.00	
-Cab Trailer Coach	5	2.00	c	10.00	0.085	12.75	
Total				$25.00		$33.75	58.75
"Light" DMUs:							
-Powered DMU	10	$4.00	d	$40.00	$0.140	$42.00	82.00

Notes:

[a] Assumed, based on typical unit costs in recent procurements.
[b] Ratio of single-level powered and trailer DMU prices (see note [c]) times bi-level trailer DMU price.
[c] Unit cost per Colorado Railcar 2002 brochure.
[d] Assumed, based on representative recent US and off-shore procurements.
[e] Not discounted to present value.

Source: LTK Engineering Services.

Section 5.3: Acquisition Lead Times and Procurement Issues

Agencies need to start work on a rolling stock procurement process at least 48 months in advance of the time when equipment is needed in revenue service. More likely, the entire process will consume 60 months to:

- prepare technical specifications and commercial terms 12 months
- solicit and evaluate suppliers' proposals 12 months
- manufacture and deliver the first vehicle and 24 months
- deliver remaining vehicles, test and commission fleet 12 months.

Small procurements face additional challenges. To attract suppliers, the minimum new locomotives order size must be at least ten units, particularly if a new or modified design is required. Such orders will be accepted if they fit within a builder's existing production schedule and if all ten units are the same. Rebuilt locomotives require 18 - 24 months because they need to be upgraded to current FRA and, in some cases, APTA (American Public Transportation Association) standards, which require a critical look at the structure, particularly in the cab area.

As noted previously, CRC has completed and tested a prototype single-level DMU, and is currently displaying the car in a tour around the U.S. CRC is a specialist in building small numbers of cars and is likely to pursue an order of less than ten vehicles. Bombardier has developed a design concept but has not yet built a prototype although it may during 2003. However, it probably would not bid on an order of less than ten vehicles. Other suppliers (e.g., Siemens) have indicated some interest but only in larger orders of twenty or more DMUs. In contrast, because large numbers of "light" DMUs continue to be produced in Europe, the prospects are relatively brighter that a small number could be procured in connection with a new start, as was done in Ottawa. As noted above, however, operation of such cars is dependent upon host railroad cooperation and successful application to FRA seeking a waiver, based on time and/or spatial separation from other railroad trains.

Vehicle Issues and Recommendations

It is recommended that, at least for the time being, attention with regard to rolling stock should:

- focus on "heavy" DMUs as best matching the desired characteristics of: 1) full interoperability with freight trains (i.e., no time separation requirement); 2) low-to-medium passenger carrying capacity and 3) probable lower initial cost of fleet acquisition and

- leave open the possibility of locomotive-hauled trains, should suitable "heavy" DMUs not be available at competitive prices if and when a Napa-Solano service is implemented and/or should the demand forecast suggest a need for higher capacity trains and the alternative of "light" DMUs continue to be unsuitable, since it would require time separation.

CHAPTER 6

RAIL PASSENGER AND TRANSIT SHUTTLE OPERATING PLAN

Section 6.1: Rail Operating Scenarios

After completing the screening of alternatives, five different services using tracks of the CFNR and the NVRR remain under consideration and are addressed in this operating plan:

- Suisun/Fairfield - Vallejo Commuter Service;
- St. Helena - Vallejo Commuter Service;
- Suisun/Fairfield - Napa Commuter Service;
- Vallejo - Napa Valley (Rutherford) Visitor Service and
- Suisun/Fairfield - Napa Valley (Rutherford) Visitor Service.

During the prescreening process it was agreed to by NCTPA and STA to give consideration to peak - hour service to/from Calistoga until further ridership projections and parallel, improved bus service operating costs were developed. Those and other considerations weighed in the determination whether or not to continue study of a Calistoga service, are discussed below.

Based on the preliminary screening analysis in Task 1, the property ownership and reconstruction cost data in Task 2 and the ridership analysis in Task 8, reestablishing rail passenger service between St. Helena and Calistoga was not considered a cost-effective service option meriting further analysis, at least until commuter or visitor service is established between St. Helena, Vallejo and/or Suisun/Fairfield. There are four basic reasons underlying that conclusion.

First, peak morning weekday patronage from Calistoga in 2020 is projected to be between 31 to 48 riders, a very small total considering the costs involved. (See Table 8-11.)

Second, the capital cost of reconstructing the railroad is estimated to be between $45 and $110 million, excluding right-of-way acquisition, depending on which of two alignments were used and how many road crossings would be required to be grade separated. An informal review by a California Public Utilities Commission engineer indicated that a minimum of two and up to five public road crossings likely would require overpass structures. (See Tables 2-3 and 3-7.)

Right-of-way acquisition costs are estimated at $13.0 million to $14.4 million depending upon whether 1.7 miles of SR29 surplus right-of-way is used. (See Chapter 2, page 2-20 and 2-23.)

An additional capital cost of up to $4 million might be incurred to provide signalized crossing protection at half of the estimated private crossings used by adjacent property owners who own portions of the former right-of-way. Substantial legal expense also might be incurred were condemnation proceedings required.

Thus, total capital costs approaching $117 million to extend commuter and/or visitor rail services eight miles might be incurred.

Third, at a public meeting in St. Helena on September 7, 2002 attended by more than 40 interested citizens, substantial opposition to reconstruction of the railroad north of Calistoga was expressed by owners of adjacent residential and vineyard properties. Their comments indicated that such a project could engender lawsuits were it pursued. (See summary of public meeting comments in Chapter 1.)

Fourth, an analysis of the cost to improve Vine Route 10 bus service between Calistoga and Vallejo - Suisun/Fairfield, as mentioned on page 9-17, indicated that the incremental cost of improved bus service between Calistoga and St. Helena would be only about $267,000 annually. It appears, therefore, that improved bus service would

be the most cost-effective means of providing a public transit option north of St. Helena to connect with the rail passenger service at that point.

It is assumed that each of the five different services addressed in the operating plan would be provided by through trains and that no passengers would be required to transfer from one train to another to complete a journey on any single route. However, Napa Junction provides an opportunity for passengers to transfer between routes. For instance, a passenger originating at Suisun/Fairfield could board a train destined to Vallejo, disembark at Napa Junction and there board a train going to St. Helena.

Suisun/Fairfield - Vallejo Commuter Service

This service is envisioned as a weekday, peak - period, peak - direction operation, serving the westbound market and ferry connection in the morning and the reverse in the evening. Four peak - period, peak - direction trains were assumed.

Were no other passenger rail services initiated in the study area, Suisun/Fairfield - Vallejo service could be operated in either of two ways:

- four trains operating in the peak direction only, requiring four trainsets and no meeting points or
- four trains operating in the peak direction, two trains operating in the reverse direction to reposition equipment (with the option to carry passengers), using two trainsets and requiring one meeting point where trains in opposite directions would pass each other. Such an approach would reduce the number of trainsets to be acquired but entails construction of a passing siding accessed by means of a power - operated switch at each end. The approach also allows better crew utilization than the alternative, producing operating cost savings.

In this chapter, it was assumed that the second approach would be used and that equipment purchases and right-of-way improvements would be planned accordingly. Two trainsets, each consisting of two cab cars and one trailer car coupled between the cab cars of each set, would be required.

Suisun/Fairfield - Napa Commuter Service

This service is also seen as a peak-period, peak-direction-weekday operation, serving the westbound/northbound market in the morning and the reverse in the evening. Four peak - period, peak - direction trains were provided.

It would be desirable to coordinate Suisun/Fairfield departures with westbound Capitol Corridor train scheduled arrival times in the morning and eastbound Capitol trains in the evening. That would have a synergistic effect on ridership, by enabling morning trips from Sacramento to Napa, returning in the evening. Suisun/Fairfield - Napa schedules are at even hourly intervals and need to be at fixed intervals in order to meld with Vallejo - St. Helena trains on the Napa Junction - Napa line segment. At present, extensive coordination with Capitol Corridor trains would be difficult because those schedules are not at regular intervals. However, Capitol Corridor train frequencies are expected to increase and schedules will be revised before Suisun/Fairfield - Napa service would be implemented, so opportunities to coordinate service with at least some Capitol trains probably can be arranged.

As with Suisun/Fairfield - Vallejo service, a stand-alone Suisun/Fairfield - Napa service could be operated in either of two ways:

- four trains operating in the peak direction only, requiring four trainsets and no meeting points or
- four trains operating in the peak direction, two trains operating in the reverse direction to reposition equipment, using two trainsets and requiring one meeting point.

In this chapter, it was assumed that the latter alternative was chosen. Two trainsets, each consisting of two cab cars and one trailer car, would be required.

St. Helena - Vallejo Commuter Service

St. Helena - Vallejo service differs from the two preceding commuter services in that it is defined as bi-directional in order to serve travel markets in both directions. Four trains in each direction were assumed during each peak period, producing eight train movements in the morning and eight more in the evening. Service would require three trainsets, each consisting of two cab cars and one trailer and two meeting points. The

bi-directional nature of the market precludes the "one-way train alternative" considered in the preceding service scenarios.

Vallejo - Napa Valley (Rutherford) Visitor Service

The concept and details of visitor service are presented in Chapter 8. In a service planning context, Vallejo - Napa Valley visitor service consists of two trains in each direction daily, seven days per week. Service includes trains departing Vallejo at about 10:05 AM and 11:35 AM, stopping at Napa - 3rd Street, Yountville and Rutherford. After unloading at Rutherford, trains would continue without passengers to St. Helena to layover during the middle of the day. Trains would move empty ("deadhead") from St. Helena to Rutherford and depart there at about 3:30 PM and 5:30 PM to return to Vallejo. (If both St. Helena - Vallejo Commuter and Vallejo - Napa Valley visitor services were implemented, the return visitor trips would be coordinated with afternoon peak commuter service with the same train trip perhaps serving both markets.) The service would require two trainsets which could be the same used in St. Helena - Vallejo commuter service, or conceivably, the same as used by one of the other commuter services. On a stand-alone basis, two crews would be required and two trainsets, each consisting of two cab cars and one trailer car. Those assumptions were used in preparing the operating cost estimate in Chapter 9. Were St. Helena - Vallejo commuter service operated, crews running those trains also could be used to operate the visitor service.

Suisun/Fairfield - Napa Valley (Rutherford) Visitor Service

Suisun/Fairfield - Napa Valley visitor service was assumed to consist of two trains in each direction daily, seven days per week. Trains were assumed to depart Suisun/Fairfield at about 10:15 AM and 12:15 PM, stopping at Napa - 3rd Street, Yountville and Rutherford. Trains would deadhead from Rutherford to St. Helena and lay over there during the middle of the day. Assuming both Suisun/Fairfield - Napa Commuter and Suisun/Fairfield - Napa Valley visitor-services were implemented, the return visitor trips would be coordinated with afternoon peak commuter service, and the same train trip might serve both markets. Visitors could depart from Rutherford on a visitor train at about 4:00 PM and 7:00 PM to return to Suisun/Fairfield (or on any of the four afternoon commuter trains, if operated, and perhaps a visitor train later in the evening). Visitor service would require two trainsets which could be the same as used

in Suisun/Fairfield - Napa commuter service, or conceivably, the same used by one of the other commuter services. On a stand-alone basis, two crews would be required, and two trainsets, each consisting of two cab cars and one trailer car. Those assumptions were used in preparing the operating cost estimate in Chapter 9. If Suisun/Fairfield - Napa commuter service operated, those crews could be used to operate the visitor service at a savings compared to staffing the visitor trains separately.

System Operations

The small number of equipment sets required to implement service makes it inefficient to operate and maintain separate overnight layover and servicing facilities at the various terminals. Instead, those functions should and were assumed to be centralized at a single shop location that would service and provide overnight storage of trains serving all lines. (Chapter 3 contains a recommendation that Napa Junction be selected tentatively as the preferred location of a layover yard and shop facility.) Trainsets would be moved from the shop to the initial terminal prior to the start of service each morning and returned to the shop at the end of each service day. Whether passengers would be carried on any such movements is a decision that can be deferred for the moment. If it is important to reduce train movements to avoid freight conflicts, all trainsets originating at a single location could be combined into one train to shuttle between the shop and the terminal before and after revenue operations. Should service grow on some or all routes, it might become desirable to establish layover facilities at outlying terminals.

Each terminal station (Vallejo, St. Helena and Suisun/Fairfield) should be able to accommodate trainsets laying over between runs, whether for a few minutes or several hours between the morning and evening peak periods. For planning purposes, each terminal station should be equipped with a minimum of two passenger tracks, each long enough to hold two passenger trains without obstructing the main track or any freight tracks.

Although hourly headways would seem to produce a simple and deliberate operational pattern, that is not the case. Train operations will be complex and precise adherence to schedule will be required to keep the system working smoothly. Potential train meets will be caused (and affected) by several varying circumstances:

- trains operating in both directions between St. Helena and Vallejo to provide bi-directional service on that route;
- trains operating in the reverse direction on the Suisun/Fairfield - Napa and Suisun/Fairfield - Vallejo routes in order to return to their original terminal and make another peak direction trip and
- Suisun/Fairfield - Napa trains operating northward between Napa Junction and Napa - Trancas in opposition to St. Helena - Vallejo trains in the morning and the reverse in the evening.

Locations where such meets might occur would be determined by the train schedules adopted on each route as reviewed in the following section. Freight-passenger train conflict implications are addressed in Section 6.3. The complexity of the proposed service substantiates the need for the centralized traffic control signal system included in the capital cost estimates in Chapter 3 and also highlights the need for a dispatcher whose full attention can be focused on the passenger service area with few other responsibilities.

The Suisun/Fairfield - Vallejo and St. Helena - Vallejo services are expected to generate 580 passengers transferring to the San Francisco ferry during the morning peak period and an equal number returning in the evening. Those 580 passengers would arrive over a three hour-plus period and be dispersed among four ferry departures. Ferry headways are expected to be reduced to 30 minutes and then 15 minutes. Each ferry has a capacity of about 375 passengers, so it would not appear that passengers arriving by train would tax ferry capacity. If train-ferry transfers were to substantially exceed projections, coordination of ferry and train schedules during peak periods should be able to accommodate passenger demand.

Section 6.2: Rail Transit Schedules

Train running time estimates were based upon track speeds deemed attainable after completion of the rehabilitation specified in Chapter 3. Final running times could vary based upon final track improvement plans and the type of rail passenger equipment selected.

All train schedules are illustrative and subject to change as planning progresses. Current ferry connections were used as the basis to plan train schedules on services to and from Vallejo. Seven or eight minutes were allowed at Vallejo to minimize tightest

connection waiting time between train arrival/departure and ferry departure/arrival. It may be possible to reduce the interval once the exact configuration of the rail/ferry terminal is determined.

Visitor trains probably could make faster trips than commuter trains assuming visitor trains made fewer station stops. However, visitor train dwell times at station stops are likely to be longer than those of commuter trains serving regular customers. Accordingly, and to maximize passenger convenience, overall train running times were assumed to be the same on visitor and commuter services.

Illustrative Schedules

Illustrative schedules of the three commuter services and two visitor services are displayed on the following pages in Tables 6-1 through 6-4. The schedules depict one way that service could be arranged given current assumptions. As planning progresses, it is likely that the nature of the service(s) desired or enhanced knowledge of track improvements and rail equipment will cause modifications to these preliminary schedules. It is important that the service plan be reviewed carefully prior to making final decisions concerning location of sidings to facilitate passenger train meets.

Passenger Train Meets

The service plan and representative schedule necessitate passenger train meets at approximately the following locations:

- Red Top Road on the Suisun/Fairfield - Napa Junction Segment: Meeting trains at a passenger station where trains would be stopped anyway is desirable from the standpoint of passenger perception and also may be accomplished with less impact upon schedules;
- both north and south of the Napa - 3rd Street station on the St. Helena - Napa Junction Segment. Again, it may be possible to incorporate station stops into the train meet plan;
- St. Helena station area on the St. Helena - Napa Junction Segment. The representative schedules produce a one-minute interval between arrival of a northbound train and departure of the next southbound train. This is too close to ensure reliable operation. Advanced planning should resolve whether that interval would change in either direction. Should the interval remain too close, extension of the station tracks or construction of a siding would be necessary and
- no meets planned on the Vallejo - Napa Junction Segment.

Table 6 - 1

Illustrative Schedules
St. Helena – Vallejo Commuter Service

STOP	STATION	Miles from Vallejo	MORNING *Read Down* Southbound	Southbound	Southbound	Southbound	MORNING *Read Up* Northbound	Northbound	Northbound	Northbound
s	St. Helena	33.2	4:58 AM	5:58 AM	6:58 AM	7:58 AM	6:57 AM	7:57 AM	8:57 AM	9:57 AM
s	Rutherford	29.0	5:04 AM	6:04 AM	7:04 AM	8:04 AM	6:51 AM	7:51 AM	8:51 AM	9:51 AM
s	Yountville	23.6	5:12 AM	6:12 AM	7:12 AM	8:12 AM	6:43 AM	7:43 AM	8:43 AM	9:43 AM
s	Napa - Trancas	17.3	5:21 AM	6:21 AM	7:21 AM	8:21 AM	6:34 AM	7:34 AM	8:34 AM	9:34 AM
s	Napa - Downtown 3rd St	15.1	5:27 AM	6:27 AM	7:27 AM	8:27 AM	6:29 AM	7:29 AM	8:29 AM	9:29 AM
s	South Napa at Imola	13.9	5:30 AM	6:30 AM	7:30 AM	8:30 AM	6:25 AM	7:25 AM	8:25 AM	9:25 AM
	Napa Junction	6.4	5:39 AM	6:39 AM	7:39 AM	8:39 AM	6:16 AM	7:16 AM	8:16 AM	9:16 AM
s	American Canyon	5.1	5:42 AM	6:42 AM	7:42 AM	8:42 AM	6:14 AM	7:14 AM	8:14 AM	9:14 AM
s	Sereno Transit Center	2.8	5:47 AM	6:47 AM	7:47 AM	8:47 AM	6:09 AM	7:09 AM	8:09 AM	9:09 AM
s	Vallejo Ferry Terminal	0	5:53 AM	6:53 AM	7:53 AM	8:53 AM	6:02 AM	7:02 AM	8:02 AM	9:02 AM

STOP	STATION	Miles from Vallejo	EVENING *Read Down* Southbound	Southbound	Southbound	Southbound	EVENING *Read Up* Northbound	Northbound	Northbound	Northbound
s	St. Helena	33.2	3:27 PM	4:27 PM	5:27 PM	6:27 PM	5:28 PM	6:28 PM	7:28 PM	8:28 PM
s	Rutherford	29.0	3:33 PM	4:33 PM	5:33 PM	6:33 PM	5:22 PM	6:22 PM	7:22 PM	8:22 PM
s	Yountville	23.6	3:41 PM	4:41 PM	5:41 PM	6:41 PM	5:14 PM	6:14 PM	7:14 PM	8:14 PM
s	Napa - Trancas	17.3	3:42 PM	4:42 PM	5:42 PM	6:42 PM	5:13 PM	6:13 PM	7:13 PM	8:13 PM
s	Napa - Downtown 3rd St	15.1	3:48 PM	4:48 PM	5:48 PM	6:48 PM	5:06 PM	6:06 PM	7:06 PM	8:06 PM
s	South Napa at Imola	13.9	3:50 PM	4:50 PM	5:50 PM	6:50 PM	5:05 PM	6:05 PM	7:05 PM	8:05 PM
	Napa Jct.	6.4	3:56 PM	4:56 PM	5:56 PM	6:56 PM	5:00 PM	6:00 PM	7:00 PM	8:00 PM
s	American Canyon	5.1	3:56 PM	4:56 PM	5:56 PM	6:56 PM	4:58 PM	5:58 PM	6:58 PM	7:58 PM
s	Sereno Transit Center	2.8	3:59 PM	4:59 PM	5:59 PM	6:59 PM	4:56 PM	5:56 PM	6:56 PM	7:56 PM
s	Vallejo Ferry Terminal	0	4:01 PM	5:01 PM	6:01 PM	7:01 PM	4:53 PM	5:53 PM	6:53 PM	7:53 PM

Source: RLBA.

Table 6 - 2
Illustrative Schedules
Fairfield - Vallejo Commuter Service

STOP	STATION	Miles from Vallejo	MORNING *Read Down* Westbound	Westbound	Westbound	Westbound	MORNING *Read Up* Eastbound	Eastbound
s	Suisun – Fairfield	20.2	5:17 AM	6:17 AM	7:17 AM	8:17 AM	6:38 AM	7:38 AM
s	Red Top Road	12.7	5:27 AM	6:27 AM	7:27 AM	8:27 AM	6:28 AM	7:28 AM
	Napa Junction	6.4	5:35 AM	6:35 AM	7:35 AM	8:35 AM	6:20 AM	7:20 AM
s	American Canyon	5.1	5:38 AM	6:38 AM	7:38 AM	8:38 AM	6:18 AM	7:18 AM
s	Sereno Transit Center	2.8	5:42 AM	6:42 AM	7:42 AM	8:42 AM	6:13 AM	7:13 AM
s	Vallejo Ferry Terminal	0	5:49 AM	6:49 AM	7:49 AM	8:49 AM	6:06 AM	7:06 AM

STOP	STATION	Miles from Vallejo	EVENING *Read Down* Westbound	Westbound	EVENING *Read Up* Eastbound	Eastbound	Eastbound	Eastbound
s	Suisun - Fairfield	20.2	5:47 PM	6:47 PM	5:08 PM	6:08 PM	7:08 PM	8:08 PM
s	Red Top Road	12.7	5:57 PM	6:57 PM	4:58 PM	5:58 PM	6:58 PM	7:58 PM
	Napa Junction	6.4	6:05 PM	7:05 PM	4:50 PM	5:50 PM	6:50 PM	7:50 PM
s	American Canyon	5.1	6:08 PM	7:08 PM	4:48 PM	5:48 PM	6:48 PM	7:48 PM
s	Sereno Transit Center	2.8	6:12 PM	7:12 PM	4:43 PM	5:43 PM	6:43 PM	7:43 PM
s	Vallejo Ferry Terminal	0	6:19 PM	7:19 PM	4:36 PM	5:36 PM	6:36 PM	7:36 PM

Source: RLBA.

Table 6 - 3

Illustrative Schedules
Fairfield - Napa Commuter Service

STOP	STATION	Miles from Suisun	MORNING Read Down Westbound	Westbound	Westbound	Westbound	MORNING Read Up Eastbound	Eastbound
s	Suisun - Fairfield	0	5:53 AM	6:53 AM	7:53 AM	8:53 AM	7:14 AM	8:14 AM
s	Red Top Road	7.5	6:03 AM	7:03 AM	8:03 AM	9:03 AM	7:04 AM	8:04 AM
	Napa Junction	13.8	6:10 AM	7:10 AM	8:10 AM	9:10 AM	6:56 AM	7:56 AM
s	South Napa at Imola	20.3	6:19 AM	7:19 AM	8:19 AM	9:19 AM	6:47 AM	7:47 AM
s	Napa - Downtown 3rd St	21.5	6:23 AM	7:23 AM	8:23 AM	9:23 AM	6:44 AM	7:44 AM
s	Napa - Trancas	23.7	6:27 AM	7:27 AM	8:27 AM	9:27 AM	6:40 AM	7:40 AM

STOP	STATION	Miles From Suisun	EVENING Read Down Westbound	Westbound	EVENING Read Up Eastbound	Eastbound	Eastbound	Eastbound
s	Suisun - Fairfield	0	5:26 PM	6:26 PM	4:44 PM	5:44 PM	6:44 PM	7:44 PM
s	Red Top Road	7.5	5:36 PM	6:36 PM	4:34 PM	5:34 PM	6:34 PM	7:34 PM
	Napa Junction	13.8	5:43 PM	6:43 PM	4:26 PM	5:26 PM	6:26 PM	7:26 PM
s	South Napa at Imola	20.3	5:52 PM	6:52 PM	4:17 PM	5:17 PM	6:17 PM	7:17 PM
s	Napa - Downtown 3rd St	21.5	5:56 PM	6:56 PM	4:14 PM	5:14 PM	6:14 PM	7:14 PM
s	Napa - Trancas	23.7	6:00 PM	7:00 PM	4:10 PM	5:10 PM	6:10 PM	7:10 PM

Source: RLBA.

Table 6-4

Illustrative Schedules
Visitor Services

Vallejo - Rutherford

STOP	LOCATION	Miles From Vallejo	*Read Up*		*Read Down*	
s	Rutherford	29	10:54 AM	12:24 PM	3:30 PM	5:30 PM
s	Yountville	23.6	10:46 AM	12:16 PM	3:37 PM	5:37 PM
s	Napa - Downtown 3rd St	15.1	10:32 AM	12:02 PM	3:52 PM	5:52 PM
	Napa Jct.	6.4	10:19 AM	11:49 AM	4:05 PM	6:05 PM
s	Vallejo Ferry Terminal	0	10:05 AM	11:35 AM	4:19 PM	6:19 PM

Fairfield - Rutherford

STOP	LOCATION	Miles from Fairfield	*Read Down*		*Read Up*	
s	Suisun - Fairfield	0	10:15 AM	12:15 PM	4:51 PM	7:51 PM
	Napa Junction	13.8	10:32 AM	12:32 PM	4:33 PM	7:33 PM
s	Napa - Downtown 3rd St	21.5	10:45 AM	12:45 PM	4:21 PM	7:21 PM
s	Yountville	30	10:58 AM	12:58 PM	4:07 PM	7:07 PM
s	Rutherford	35.4	11:06 AM	1:06 PM	4:00 PM	7:00 PM

Source: RLBA.

As with the train schedules, the passenger meets described above should be considered illustrative.

Section 6.3: Freight Operations

Existing freight operations could be impacted significantly by the proposed passenger services. California Northern's freight operations and/or infrastructure will have to be altered to accommodate passenger service. Were all three commuter services implemented, all three line segments (Vallejo - Napa Junction, Napa Junction - St. Helena and Napa Junction - Suisun/Fairfield) would experience train densities as high as four per hour during peak periods. Such activity would preclude virtually any freight switching from the main line during those periods and would restrict the ability of freight trains to move over the lines.

Extending the hours or increasing the frequency of passenger service could be expected to bring about favorable impacts in terms of cost efficiencies and unfavorable impacts with respect to conflicts with freight operations. Operation of additional passenger trains by means of extending operating hours or increasing train frequency would not produce a proportionate increase in cost categories including general and administrative, station maintenance, track structure or equipment maintenance and train crews. As a result, the incremental cost of operating those additional trains would be less than projected in the "base" service. Some operating costs vary in close proportion to train - miles operated, such as fuel and track access/maintenance charges. Other costs eventually would increase in a stepwise manner as train operations increased, including train crews, supervision, equipment maintenance and general and administrative, but in general the incremental cost of additional train operations would continue to decline as more and more trains were added, albeit at a declining rate.

Extending service hours or increasing passenger train frequency could increase significantly potential freight-passenger train conflicts, although that impact could be offset by construction of appropriate rail line capacity enhancements. It already has been noted that freight operations would need to be restricted during peak period passenger operations given the present single track line configuration. Increasing passenger train frequency during peak hours virtually would eliminate freight activity on shared lines. Increasing passenger train frequency during off-peak hours (which are

limited to visitor services under the considered scenarios) would increase the conflict potential at a time when freight operations otherwise could share track with the limited projected visitor service. Extending passenger service hours would reduce the portion of the day during which unimpeded freight operations could be conducted.

Solutions to freight-passenger train interference problems include altering freight operations to work around scheduled passenger trains (temporal separation), adding trackage to enable concurrent freight and passenger activity and some combination of both. Freight traffic density and customer service requirements (the frequency, duration and timing of customer switching) often aid in selecting between operational and infrastructure solutions. Cost-effectiveness to both the freight railroad and passenger service sponsor also should be a consideration.

Agencies sponsoring new passenger service generally are expected to absorb the cost of solving freight-passenger interference problems. The host railroad may pay a share of some projects where there are clear benefits to the freight operation but the passenger service usually pays most or all. The choice of which solution to apply, the nature and extent of the remedies and cost-sharing arrangements are all part of the access agreement negotiated by the parties. Until that negotiation is completed, rail improvements and associated cost estimates must be considered as informed projections rather than an agreed-to plan.

Potential operational changes could include rescheduling current daytime operations to nighttime or rearranging work so that freight activities executed on the main line are carried out during periods of low or no passenger service and performing activities that do not conflict with passenger movements, such as switching at General Mills, during passenger service hours. To date, railroad representatives insist upon being able to perform freight operations at any time of the day but the consultant team believes that position should be negotiable given the large capital improvements and infrastructure maintenance payments that a passenger project would contribute. Certain potential operating changes may cause increased freight operating costs or may require additional effort or expense to meet customer service requirements. Some track sharing agreements take into account impacts upon additional freight operations as a reason to make capital improvements; an explicit or implicit trade is made whereby the

freight operator accepts some disruption of operations in exchange for an improved and/or enhanced physical plant.

Infrastructure solutions could include construction of additional trackage in the vicinity of important freight customers. For example, CFNR requested that the proposed passenger bypass track around Napa Pipe be extended to connect Napa Junction and Napa. A similar passenger bypass was requested that would extend between the Busch Siding and the UP connection at Suisun/Fairfield. If sufficient infrastructure were added, freight operations could continue much as at present. However, wholesale additions to infrastructure would increase project costs significantly. A solution that relies solely on infrastructure improvement is more appropriate on a busy freight line such as UP's between Sacramento and Oakland than on lines with relatively light freight activity such as those in the Study area.

The third and most commonly applied approach to resolving freight-passenger conflicts is a combination of operational changes and infrastructure additions. Using that approach, a passenger train bypass might be constructed around Napa Pipe along with a freight siding in the Suisun/Fairfield - Busch segment. Operations would be modified so that freight crews would be working clear of (off of) the passenger main tracks at those areas, General Mills or Mare Island during peak passenger train periods while moving over the line either between passenger trains or during periods of few or no passenger trains.

It is likely that additional capital expenditure over and above that identified in Chapter 3 would be necessary to accommodate passenger-freight track sharing. (The Chapter 3 estimates included a passenger bypass track at Napa Pipe.) The specific projects and hence the dollar amount will not be known until a track access agreement is negotiated. However, for planning purposes, a siding near Busch could replace the siding at Creston proposed in Chapter 3.

Applicability of Positive Train Control

Positive Train Control (PTC) employs "cutting edge," global-positioning, satellite-based train control technology as well as conventional track circuitry to achieve positive train location and enforce speed and track authority restrictions. The technology increases

safety, enhances line capacity and can facilitate incrementally higher operating speeds-up to 110 miles per hour. PTC may be able to replace or substitute for contemporary train control systems such as Centralized Traffic Control (CTC).

According to an FRA high-speed rail technology development official, PTC development costs have not been tallied due to the fact that the current PTC projects in Illinois and Michigan are demonstrations — special projects sponsored by FRA and the respective State Departments of Transportation. Illinois DOT has upgraded a 123-mile section of UP tracks between Mazonia and Ridgely, Illinois to support speeds of up to 110 miles per hour. At-grade, highway-rail crossings on the route received upgraded, four-quadrant gates to maximize protection; track circuits at grade crossings remain set at 79 miles per hour. Finally, each locomotive operating in PTC territory will be equipped with a computer and video screen displaying: 1) operating authority; 2) block authority and 3) a track diagram. The $40 million price of the current PTC deployment in Illinois also represents research and development costs incurred by Lockheed Martin, designer of the satellite-based PTC system. All told, it is difficult to estimate accurately the cost of a new system.

While PTC technology appears to be gaining momentum, it is not yet available “off the shelf” and it is too early to approximate the cost or determine the cost-effectiveness of a new installation. Accordingly, a conventional CTC signal system is recommended on the planned Napa/Solano services. PTC developments should continue to be monitored, as PTC may become a viable or preferred alternative before service is initiated.

Section 6.4: Transit Shuttle Requirements

This Section presents a conceptual plan of feeder transit services to the Napa/Solano passenger rail service. It considers both the role of existing transit services and the potential to augment them with dedicated shuttles.

The proposed service plan described here is based on the station locations previously recommended in Chapter 4 and the assumption that four types of stations would be provided:

- **Major Intermodal** stations will facilitate transfers to regional transit services or be co - located with a major bus transfer facility;
- **Basic Commuter/Visitor Stations** will be primarily commuter-oriented, serving the home - based end of commuter trips but also can be used for visitor rail service;
- **The Gateway Station** will serve as the primary visitor entry point into the Napa Valley via the proposed rail service and
- **Excursion Stations** would be used only for visitor - oriented trips and would be located at convenient tourist destinations such as individual wineries. They would include only very basic amenities.

Stations would be located at the following locations, also shown in Table 6-5:

Major Intermodal Stations
- Suisun City Amtrak Station
- Vallejo Ferry Terminal
- Downtown Napa

Potential Excursion Stations[1]
- De Moor
- Robert Mondavi
- Grgich Hills
- Rutherford Vineyards
- V. Sattui

Basic Commuter Stations
- Red Top Road
- Sereno Transit Center
- American Canyon
- Napa Valley College (at Imola)
- North Napa (Trancas and Hwy 29)
- Yountville
- St. Helena

Gateway Station
- Rutherford

Existing Conditions

Local transit service in the areas around the proposed rail stations is currently available through the following providers:

- **VINE**, provided by Napa County Transportation Planning Agency, serves the Highway 29 corridor between Calistoga, St. Helena, Napa and Vallejo as well as extensive service in downtown Napa (Map Six);
- **Napa Downtown Trolley**, serving downtown Napa, is a free service provided by Napa County Transportation Planning Agency and the City of Napa;

[1] *Winery stops identified in the Napa Valley Wine Train Final EIR (1993)*

Table 6-5
Local Transit Connections at Proposed Stations

Station	Provider	Route(s)	Planned Bicycle Path Access
St. Helena	VINE	10 – Highway 29	Yes
	St. Helena VINE	Local circulator	
Rutherford	VINE	10 – Highway 29	
Yountville	VINE	10 – Highway 29	Yes
	Yountville Shuttle	Local flexible - route circulator	
North Napa	VINE	2/2A – Redwood Road	Yes
Downtown Napa[a/]	VINE	10 – Highway 29 1/1A – Browns Valley/Foster Road 2/2A – Redwood Road/Napa College 3/3A – Old Sonoma Road/Silverado Plaza 4 – Orchard Avenue 5 – Vine Hill	Yes
	Napa Downtown Trolley	Local circulator serving COPIA, Napa Outlets and other destinations	
Napa Valley College	VINE	10 – Highway 29 2/2A – Soscal Avenue to Downtown	Yes – existing Class II route along Imola Avenue/SR 121
American Canyon	VINE	10 – Highway 29	Yes – Class III Bike Route planned for SR 29
	American Canyon Transit	Local circulator	
Sereno	VINE	10 – Highway 29	Yes – Class III routes along SR 29 and Broadway
	Vallejo Transit	1 – Rancho Vallejo/South Vallejo 2 – North Vallejo/Beverly Hills 4 – Tuolumne Street/Sutter Hospital 5/7 – Redwood Street/Springs Road	
Vallejo Ferry	VINE	10 – Highway 29	Yes
	Vallejo Transit	3 – Glen Cove/Georgia Street 4 – Tuolumne Street/Sutter Hospital 5/7 – Redwood Street/Springs Road	
Red Top Road	No services		Yes
Suisun City	Fairfield - Suisun Transit	5 – Solano Mall/Sunset	Yes

[a/] *Assumes City of Napa relocates its Pearl St bus transfer center to a new intermodal bus/rail station*

Note: VINE Route 10 may operate on a reduced route and/or headways once rail service commences
Source: Nelson\Nygaard Consulting Associates.

- **American Canyon Transit** operates a single loop route from Safeway at Highway 29 and American Canyon Road. The service is provided by Napa County Transportation Planning Agency and the City of American Canyon;
- **Yountville Shuttle** provides local service in Yountville;
- **Vallejo Transit** provides local service in the City of Vallejo and express service between Solano County, Vallejo and Contra Costa County and
- **Fairfield - Suisun Transit** provides local service in Fairfield and Suisun City and express service to Davis and the Pleasant Hill BART station.

A map of the VINE's transit service in the City of Napa is shown at Map Six.

Transit Access Plan

Transit access to rail stations can be divided into two distinct markets, that serving the home-based end and that serving the destination end, such as a work site or visitor attraction.

Service Between Homes and Stations

Experience with similar rail systems in the United States suggests that there is a strong reluctance among rail commuters to take transit to a station at the home-based end of the trip, for several important reasons:

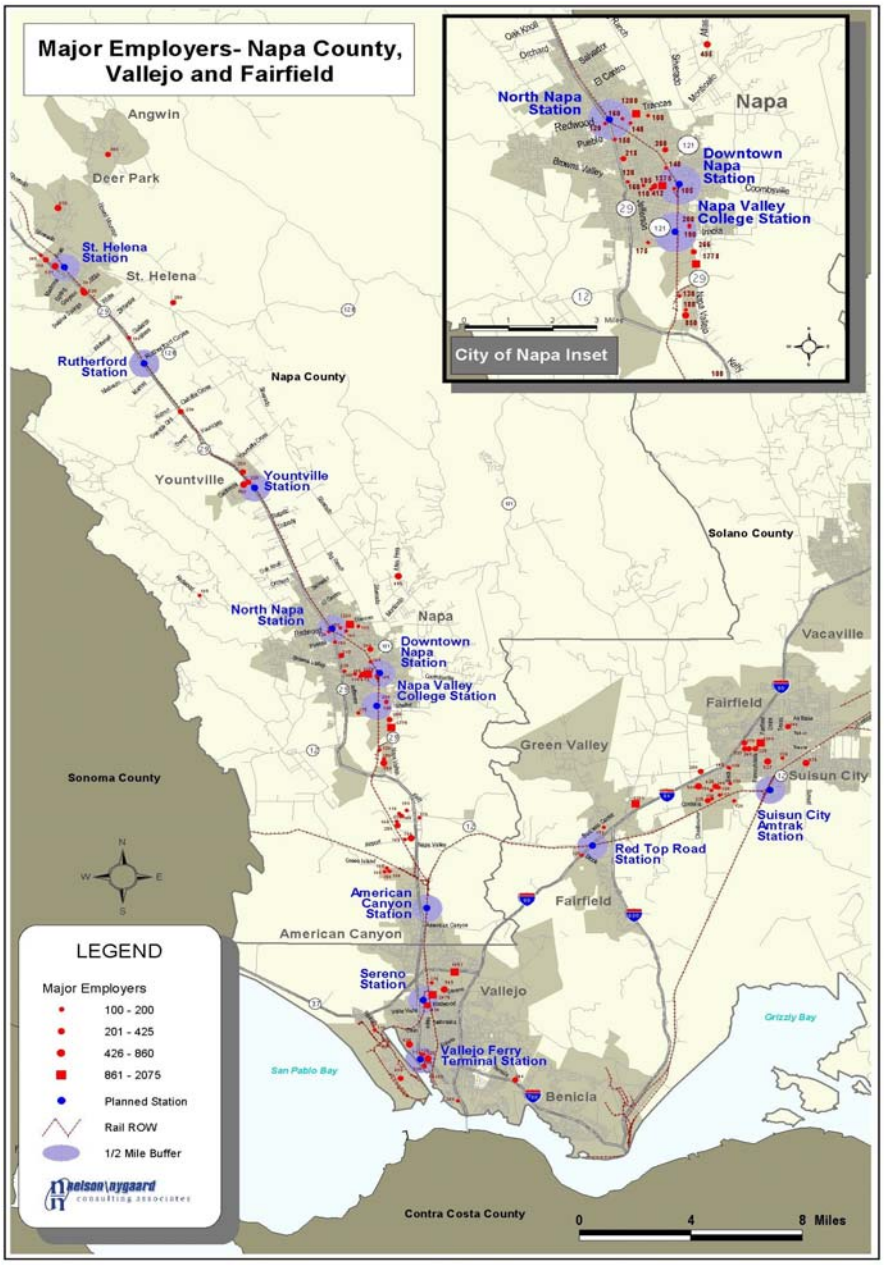
- as is typical of most other commuter rail systems, Napa/Solano passenger rail operations would serve lower - density residential catchment areas, which are difficult to serve by transit. While the rail commute may offer a time advantage over the line haul portion of a trip, that advantage may be offset when combined with bus stop access, wait and local travel times. Travel times by auto and rail almost always will be shorter than by bus and rail;
- commuter rail services tend to attract a high proportion of passengers who formerly made the trip by private automobile and are generally unfamiliar with transit. Such passengers may be willing to try rail but be reluctant to take the bus and most will have access to an automobile;
- In the absence of guaranteed connections, most easily instituted where bus and rail services are operated by one entity, delays to feeder transit service may result in passengers missing their trains. Even if on-time performance is good, the perceived risk is most important in determining mode choice decisions and
- parking will be provided at all Basic Commuter stations, making the automobile a convenient access option.

Map Six
VINE Service in City of Napa

Source: Napa County Transportation Planning Agency.

Map Seven

Major Employers – Napa County, Vallejo and Fairfield



Even BART stations enjoy only a relatively small share of transit access trips, despite limited parking availability and short rail headways (so that a passenger missing a train easily can wait for the next one). In addition, many BART stations are located in dense neighborhoods with frequent transit service. System-wide, transit accounts for just 21 percent of home-station trips on BART, with much lower transit mode shares at the lowest density stations. At Dublin/Pleasanton, for example, transit accounts for eight percent of home-station trips, while private motor vehicles capture 89 percent of the market, despite limited parking availability.[1]

The Vallejo BayLink ferry provides another Bay Area example of a line haul route serving lower residential - density catchment areas. According to a December 2000 on - board survey, 92 percent access the ferry via private motor vehicle, with 71 percent driving alone and parking, 12 percent carpooling and parking and nine percent dropped off. Just two percent transferred to the ferry from a bus.[2]

The above does not mean that no home-station transit service is required but rather that the role can be filled best by regular transit services operated by VINE, Fairfield - Suisun Transit, Vallejo Transit and other agencies, without adding significant new service. As shown in Map Five, many station areas are well served by the existing route network and careful scheduling can provide timed transfers. The most important addition to supplement home-station service is likely to be some express service between Calistoga and St. Helena, providing an Up Valley connection. Such service could be developed by reconfiguring the existing VINE Route 10 to supplement and complement commuter rail operations.

At the destination end of the trip, where commuters do not generally have a vehicle available, dedicated feeder service can be useful in increasing ridership. This chapter, therefore, concentrates on transit service requirements to link stations to passengers' work sites, visitor attractions and other final destinations.

[1] BART 1998 Station Profile Study.
[2] Nelson\Nygaard Consulting Associates (2002), *City of Vallejo Short - Range Transit Plan.*

Service between Work and Stations

Map Seven shows the locations of major employers in Napa County and Vallejo, Fairfield and Suisun in Solano County. The full list of employers is given in Appendices 6-A and B along with the sources of the information. There are several major clusters of employment sites, as follows:

- **Downtown Vallejo.** Most major employers are within a half-mile walking distance of the Vallejo Ferry Terminal station, or accessible via existing Vallejo Transit service;
- **Southern Napa business parks.** The Napa Airport Business Center and Napa Gateway Business Park are not served by transit. Major employers include Dey (850 employees) and Cultured Stone (700 employees). While VINE Route 10 runs along Highway 29, pedestrian connections to the route from within the business parks are poor;
- **Napa Valley College,** including Napa State Hospital (1,778 employees) and Napa Valley College (266 employees, plus students), if not within walking distance, are easily accessible via VINE Route 2/2A;
- **Downtown Napa,** including the County of Napa (1,375 employees) is a cluster well served by all VINE routes and the Napa Downtown Trolley, which will serve the new intermodal hub at the Downtown Napa station;
- **North Napa,** including Queen of the Valley Hospital (1,200 employees) is served by several VINE routes from Downtown Napa, with some employers within walking distance of North Napa Station;
- **Yountville** major employers, including the Veterans Home of California, are served by the Yountville Shuttle;
- **St. Helena**, major employers, including St. Helena Hospital (635 employees) are accessible via the local St. Helena VINE circulator;
- **Solano Business Park** is near the area currently served by Fairfield - Suisun Transit Route 7, pedestrian connections are poor. In addition, the route does not directly link to the Suisun Amtrak Station and
- **Fairfield** including Solano Mall and most other destinations in Fairfield are directly served from the Suisun City Amtrak Station by Fairfield - Suisun Transit Route 5.

The preceding analysis shows that the majority of employment sites along the rail corridor are well served by existing transit. Assuming that timed transfers are provided, particularly at Downtown Napa and either Sereno or Vallejo Ferry Terminal, regularly scheduled transit can provide a high level of feeder service. Some employers may

choose to add their own direct shuttles to increase station access for their employees. No dedicated public transit shuttles linking rail stations to employment sites are recommended.

With existing or slightly modified transit routes, several smaller employment clusters, Napa Airport Business Center, Napa Gateway Business Park and Solano Business Park, will not be well served by transit. However, publicly funded shuttles are not recommended at this time for the same reasons that these clusters were rejected as station locations:

- most clusters, particularly the Airport Business Center and Solano Business Park, are characterized by low-density light industrial and warehousing facilities that employ relatively few workers per square foot of space. There are also few or no pedestrian facilities and abundant, free parking. The combination of factors reduces the potential of feeder transit service to attract riders and
- the commuter ridership screening analysis identified the Napa County - Fairfield and Vallejo - Fairfield markets as relatively small. Few passengers living on the rail corridor will be traveling to Solano Business Park and that segment will cater primarily to westbound trips in the AM peak. Therefore, shuttle services to Solano Business Park are unlikely to attract significant ridership.

Those employment centers may warrant dedicated shuttle service in the future should ridership exceed projections or should employment densities increase significantly. Alternatively, individual employers or groups of employers may elect to provide private shuttle services to stations.

Many cities are planning new transit-oriented development around rail stations, such as Suisun Amtrak Station, American Canyon and Sereno. While such development should be an important source of new ridership, most is likely to take place within walking distance of a station, meaning feeder transit service will not be required. New development on Mare Island may best be served by ferry or bus as part of the regular Vallejo Transit service, connecting to rail at the Vallejo Ferry Terminal or Sereno Transit Center.

Visitor Service

The Rutherford station is planned as the Gateway Station, the "point of arrival" for visitors traveling by rail to the Napa Valley. Passengers may travel by ferry from San Francisco and transfer to rail in Vallejo, where they will then board a train to Rutherford. Passengers also will travel from the Fairfield/Suisun area, by either driving to the rail stations in that area or transferring from Capitol Corridor service.

If weekend service terminates in Rutherford, rather than continuing to St. Helena, connecting bus service also will be required for residents and visitors traveling to St. Helena and points north to Calistoga. That can be provided with the existing Napa VINE Transit Route 10, given appropriate scheduling to provide timed transfers at Rutherford. Express runs on a reconfigured Route 10 may add fast service to tourist destinations north of St. Helena.

From the Gateway Station, public and private services would take visitors to individual wineries and other destinations. Four shuttle bays, plus a pick - up and staging area for limousines and private shuttles, are planned at that station. While Rutherford will be the "point of arrival," passengers will not necessarily need to return there if shuttles also connect with Commuter/Basic Visitor or Excursion stations.

Different visitors will have different needs and expectations, meaning that a range of complementary transportation options will be necessary at the Gateway Station. They might include the following:

- **Public Shuttles** would serve all wineries on their route, and provide timed connections with rail trips. The concept is explored in more detail below;
- **Excursion Packages** would be attractive to the many visitors unfamiliar with the Napa Valley who may prefer the security of an organized excursion package to specific wineries. An all - inclusive package might include rail and ferry fares, a private tour bus, lunch, wine tasting at two or three wineries and the services of a tour guide;
- **Private Shuttles or Limousines** also might serve visitors willing to pay a premium price, those wishing to purchase larger quantities of wine, or members of wineries "Buyers Clubs" and other frequent purchasers. Wineries at the end of a shuttle route (or in the middle of a bi - directional loop) will be disadvantaged, since passengers who are unfamiliar with the area are likely to stop at one of the

first wineries on the route. Many wineries or groups of wineries are thus likely to offer direct private shuttle or limousine service and

- **Bicycle and Foot Trips** for those rail passengers not needing onward transit connections. Should facilities be available, some visitors may wish to rent bicycles and explore the valley themselves. Via footpaths also might be provided from the station to adjacent wineries.

The type and amount of private transportation service offered will depend on market demand and the interests of wineries and tour operators. Since planning needs are limited to the provision of adequate pick-up/drop-off and staging areas and bicycle rental facilities space at the Gateway Station, they are not discussed further in this chapter, which addresses potential service designs of publicly funded and operated shuttles.

Public Shuttle Services

There are several challenges to operating a successful shuttle service linking the Gateway Station with wineries and other visitor attractions. Key issues that will need to be resolved include:

- **FRONT DOOR SERVICE** since the "front doors" of all wineries are located off the main highway, in some cases a half mile or more away, serving the "front door" to each winery would provide the maximum ease of access and safety and avoid the need to provide sufficient right-of-way on the main highway for buses to pull out of traffic. However, such service would result in longer travel times and require permission from winery owners to operate on their property. Liability issues also would need to be resolved;
- **LEFT TURNS** are related to front-door service. Highway 29 and the Silverado Trail are extremely congested during peak season weekends. Serving the front door of a winery on the left side of the highway would require two left turns, one to turn off the highway and one to rejoin it. There are three options to address the issue:
  - *serving the front door of wineries in both directions* would maximize ease of access and safety, but would significantly increase transit running time and exacerbate roadway congestion;
  - *serving the front door of wineries on the right side of the highway only* would mean that some wineries would be served in the outbound direction only, with the remainder in the return direction only;
  - *providing on - street shuttle stops* would mean that "front door" service would be provided only to wineries on the right-hand side of the highway. However,

on-street stops would allow passengers to access other wineries. This option would require passengers to cross a busy highway and also is based on the assumption that sufficient right-of-way is available to provide a bus stop and space for vehicles to pull out of traffic and

- **PACKAGE HANDLING** may not be important to those visitors intending to make large purchases who are most likely to drive to the valley or take private shuttle or limousine service, but would be an issue for the majority of winery visitors, who purchase wine on-site over aging between two and six bottles of wine in a day. Overhead racks will provide sufficient capacity for smaller purchases. The Gateway Station might include a "free" four - or six - bottle carrier as a giveaway to shuttle riders. Alternatively, wineries might offer free carriers with a transit ticket. Larger packages might be stored in secure areas underneath or in the rear of shuttle vehicles. Claim checks could be issued by drivers and packages collected at stations. Alternatively, depending on demand, a separate van might transport packages to desired rail stations (an arrangement which also would serve cyclists), or they might be delivered to customers' homes or hotels.

Resolution of those issues will depend on how several others are solved, particularly the interest of individual wineries in allowing shuttles to operate on their property and space available to support on-street bus stops. For planning purposes, the following service design was assumed:

- **Front-Door Service** directly to the front door of participating wineries would be the standard operating procedure. No on-street stops would be provided. Depending on the funding plan, service might be limited to wineries that contributed to operating costs;
- **Bidirectional** service would be the standard operating procedure. All wineries would be served in both directions, even if it necessitated left turns. Visitors are likely to be more concerned about front-door service and frequent headways than longer in - vehicle travel times;
- **Demand-Responsive** shuttles only would deviate from the highway as requested by passengers wishing to be picked up or dropped off. Ideally, some degree of in - vehicle communication system would be involved as well as active participation by wineries. For example, passengers might push a button or use a direct telephone line to request a pickup, or that function might be performed by winery staff. Alternatively, passengers being dropped off might simply ask the driver to pick them up on the next trip and
- **Serving Multiple Stations** is particularly important for visitors traveling to wineries in the southern part of the valley, who might not wish to retrace their steps at the end of the day and for repeat visitors already familiar with the valley.

However, most passengers would be expected to arrive and leave from the Gateway Station, connecting to additional stations such as Yountville and North Napa which would provide additional passenger options.

Conceptual Route Plan

While wineries and other visitor attractions are located throughout the Napa Valley, they can be grouped into three distinct clusters:

- **Highway 29 north of Rutherford** includes Rutherford Grove, V Sattui and Sutter Home;
- **Highway 29 south of Rutherford** includes Cakebread and Robert Mondavi and
- **Silverado Trail** includes Silverado and Stag's Leap Wine Cellars.

Each of the clusters of about ten wineries warrants its own shuttle route, as shown in Table 6-6. Start - up and/or off - peak service might combine the Highway 29 South and Silverado Trail routes, with shuttles traveling south on Highway 29 and crossing to Silverado Trail on Yountville Cross Road. However, such a pattern would result in no service being provided to wineries such as Mumm Napa Valley and Caymus.

Given three different routes from which to choose, passengers may be confused initially as to which shuttle to take when they alight from trains at Rutherford. That confusion could be addressed with clear signage illustrating each route and brochures, maps and other visitor information on the train itself to help passengers make an informed choice before they arrive at the Gateway Station.

Wineries not served by the public shuttle as envisioned in this plan would include the following:

- wineries on Silverado Trail south of Stag's Leap;
- wineries north of St. Helena, such as Markham;
- wineries on Silverado Trail north of Rutherford Cross Road, such as Rutherford Hill;

Table 6-6

Conceptual Shuttle Plan

Shuttle Route	Wineries Served [list may not be complete]		Stations Served[1]	Roundtrip Mileage
29 - North Rutherford - Merryvale	Beaulieu "BV" Grgich Hills Quail Ridge Franciscan Rutherford Grove Whitehall Lane Milat	V Sattui Edgewood Heitz Sutter Home Louis Martini Merryvale	Gateway Station Rutherford Excursion Stations[2] Grgich Hills Rutherford Vineyards V Sattui	7.6
29 - South Rutherford - Yountville	Niebaum - Coppola Peju Province St. Supery Sequioia Grove Cakebread Larkmead	Robert Mondavi Napa Cellars Cosentino Domaine Chandon Plumpjack Napa Wine Co.	Gateway Station Rutherford Commuter/Basic Visitor Station Yountville Excursion Stations[2] Robert Mondavi De Moor	11.0
Silverado Trail Rutherford - North Napa	Frog's Leap Villa Mt. Eden/Conn Creek Mumm Napa Valley ZD Miner Family Robert Sinskey	Silverado Pine Ridge Steltzner Stag's Leap	Gateway Station Rutherford	20.4

[1] Gateway Station served on all trips with timed connections. Additional stations served on demand only.
[2] Identified in the Napa Valley Wine Train Final EIR

Source: Napa Valley Vintners Association; tourist guides.

- wineries not located on Highway 29, Silverado Trail or Rutherford Cross Road, such as Silver Oak and
- wineries south of Napa, such as Domain Carneros.

Those wineries could be served by excursion packages and/or private shuttles or limousines. Depending on ridership on the three shuttle routes proposed, it also may be appropriate to extend service to those areas in the future.

Wineries on the southern portion of Silverado Trail might be best served from a shuttle originating at a Napa station. A potential future route is shown in Map Eight. Due to reliability and travel time issues, it is not recommended that the Silverado Trail route south of Stag's Leap be extended.

Cost Estimate

Table 6-7 shows a cost estimate associated with each shuttle route, under the following assumptions:

- average operating speeds of 25-miles per hour, plus an additional 4-minute penalty for each winery served. Each trip is assumed to require deviations into 40 percent of the wineries en route;
- headways of 30 minutes on all routes. The shuttles will need to operate at higher frequencies than the rail service, as they will serve visitors traveling between wineries as well as to and from the rail station. Headways of 30 minutes will allow visitors the choice of staying a half hour or an hour at each winery, or longer if they wish to take a tour;
- average service span of eight hours per day (e.g. 10.30 AM to 6.30 PM). This may be longer during the summer and shorter during winter months;
- weekend and holiday - only service, equating to 110 days per year and
- cost per revenue hour of $60, based on Vallejo Transit's FY2002 operating cost of $59 per revenue hour and NCTPA's operating cost of $60.33 per revenue hour. It should be noted that costs of Caltrain and BART shuttles in San Mateo County are higher at $75 per revenue hour. All costs exclude vehicle capital costs. Small vehicles with lifts, storage and high - end amenities would cost around $75,000 each, a total of $525,000 for seven vehicles.

Map Eight

Napa Valley Wineries and Proposed Shuttle Routes

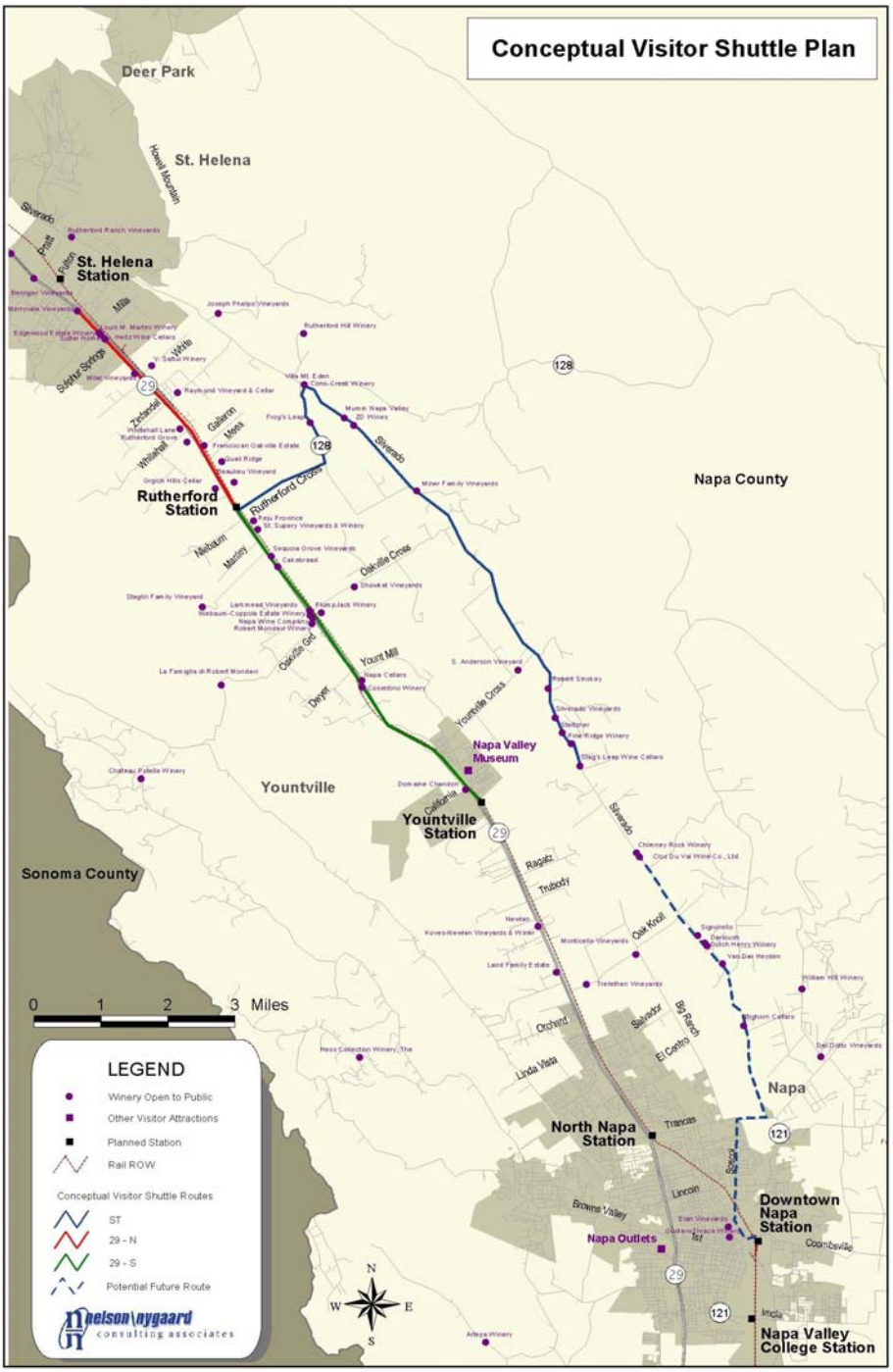


Table 6-7
Estimated Shuttle Operating Costs

Route	Roundtrip Mileage	Max. Wineries Served	Roundtrip Travel Time (Mins)	Headway	Peak Vehicle Requirement	Span (Rev. Hrs/Day)	Cost per Revenue Hour (2002 dollars)	Annual Cost
29 - North	7.6	13	39	30	2	8	$60	$105,600
29 - South	11.0	12	46	30	2	8	$60	$105,600
Silverado Trail	20.4	10	65	30	3	8	$60	$158,400
Total		**35**			**7**			**$369,600**

Source: Vallejo Transit; Napa County Transportation Planning Authority

CHAPTER 7

FREIGHT ENHANCEMENT OPPORTUNITIES

This working paper has four Sections:

1 - Current Freight Activity and Business Characteristics;
2 - Potential Additional Rail Freight Business Opportunities;
3 - Actions to Protect Existing Rail Freight Activity and
4 - Recommendations re Napa County Transportation Planning Agency and Solano Transportation Authority Freight Policies and Actions.

RLBA wishes to express its appreciation to the California Northern Railroad (a unit of Rail America, Inc.), Napa Valley Railroad (operator of the Napa Valley Wine Train) and Union Pacific Railroad for information contributed by their staffs.

Section 7.1: Current Freight Activity and Business Characteristics

Current Operations

Railroad freight operations between Suisun City, Vallejo and South Napa (Rocktram) are conducted by the CFNR pursuant to a lease from Union Pacific Railroad (UPRR), the property owner, which runs until 2013. The lease includes options for two consecutive five year extensions, subject to UPRR approval. Under the lease and typical of industry practice, UPRR is responsible for: 1) origin-to-destination pricing of freight services; 2) customer billing and 3) bill collection.

CFNR acts as agent on behalf of UPRR and is compensated on a per shipment basis from the total applicable freight charges. CFNR operates daily service Monday through Saturday during daylight hours, delivering loaded freight cars to, and receiving empty cars from, UPRR at Suisun City. Customers between Suisun City and Napa Junction and Vallejo (including Mare Island) are normally served once each day. However, Napa Pipe Company at South Napa is often switched three or four times daily.

Rail freight operations north of South Napa (Rocktram) are provided by the NVRR which operates the NVWT between Napa and St. Helena. Freight operations on NVRR are sporadic, occurring only on those rare occasions when a carload is received from CFNR at Rocktram destined to a customer located on NVRR. No active freight customers are located north of Napa and current activity averages only about three to five carloads per month.

Carloads hauled by CFNR totaled approximately 17,500 in 2001 and 9,500 in the first six months of 2002. Those totals include fewer than 40 carloads in both periods to or from customers served by NVRR and about 250 carloads delivered to or received from the Northwestern Pacific Railroad (NWP) at Schellville in 2001. There have been no freight operations on the NWP since the winter of 2001. CFNR currently is projecting a total of 19,000 carloads during the year 2002 and 15,000 carloads in 2003.

CFNR serves some 20 active freight customers. The three largest customers (Anheuser-Busch, General Mills and Napa Pipe Company) represent more than 70 percent of CFNR's total carloads.

Table 7-1 is a summary of the CFNR's freight business in 2001 and the first half of 2002 by geographic area.

Table 7-1

CFNR Freight Business

Area	Number of Customers	Carloads	
		2001	Jan.-June 2002
American Canyon/Vallejo (including Mare Island)	5	2,966	1,520
Suisun/Cordelia	4	5,206	2,688
Napa Junction/Lombard	8	1,900	1,029
Napa/Rocktram	4	7,137	4,267
NWPRR (via Schellville)	unknown	192	0
Miscellaneous	unknown	48	8
Totals		17,449	9,512

Table 7-2 lists the major products constituting CFNR's freight business.

Table 7-2

Composition of CFNR Freight Business

Product Group	2001	Jan.-June 2002
Metals/Metal Scrap	7,056	4,403
Food/Beverage/Grains	6,769	3,152
Forest/Paper Products	2,462	1,477
Miscellaneous	1,162	480
Totals	17,449	9,512

Section 7.2: Potential Additional Rail Freight Business Opportunities

A variety of conditions and factors discussed below, will determine the volume of rail freight business in the study area beyond 2003.

The business plans of current and potential freight customers are a very important determinant of future rail freight activity. Most (21) current customers and a large sample (25) of potential customers were interviewed by telephone with assurance that responses would be reported in summary form only and not by specific company. The results of those interviews are reflected in the rail freight business outlook summaries later in this Section. Any producing or distribution facility which has no rail siding or to which a new track cannot easily be built was not considered a prospective rail customer for purposes of this analysis.

Future population and economic growth will impact railroad freight volume strongly. Population and economic grown in the study area and, to a lesser extent, Northern California generally will affect the volume of inbound rail carloads. Regional and national economic growth will affect the volume of outbound rail carloads. Forecasts of long term population growth in the study area and surrounding counties are shown in Table 7-3 and indicate continued steady growth through 2040.

Table 7-3

Population Forecasts

Summary	2000	2010	2020	2030	2040
Napa	127,084	143,542	157,878	174,240	191,971
Solano	399,841	479,136	552,105	625,619	698,430
Study Area Total	526,925	622,678	709,983	799,859	890,401
Surrounding Counties Total	1,639,601	1,828,939	1,987,528	2,156,676	2,315,436
Compound Growth Rate (period)		**00-10**	**10-20**	**20-30**	**30-40**
Napa		1.3%	1.0%	1.0%	1.0%
Solano		2.0	1.5	1.3	1.2
Study Area Total		1.8	1.4	1.3	1.1
Surrounding Counties Total		1.2	0.9	0.9	0.7

Source: California State Department of Finance, RLBA. (Surrounding counties include Contra Costra, Marin and Sonoma.)

Manufacturing activity is a principal generator of outbound freight shipments e.g. Napa Pipe, Anheuser-Busch, General Mills, etc. Manufacturing (excluding high technology) employed approximately 22,000 people in the Vallejo-Fairfield-Napa Metropolitan Statistical Area in July, 2002.[1] Manufacturing (excluding high technology) in the Greater Bay Area employed 250,000 in 2000 and employment is projected to continue to rise by the Association of Bay Area Governments (ABAG) through the year 2025, as shown in Table 7-4.[2]

The policies and actions of UPRR, CFNR, NVRR and NWP regarding competing vigorously for and making the investments necessary to compete successfully for freight business will be another important determinant of future rail freight activity in the study area. Discussions were held with responsible managers of the first three companies in the research underlying this report. CFNR, a subsidiary of a publicly listed company (Rail America, Inc.), can be expected to compete vigorously to haul available freight

[1] Vallejo MSA Napa, Solano Counties Current Labor Force and Industry Employment, California Employment Development Department.

[2] Projections 2002. City, County and Census Tract Forecasts 2000-2025, ABAG. (ABAG members include the Counties of Alameda, Contra Costa, Marin, Napa, San Francisco, Santa Clara, Solano and Sonoma and many of the local municipalities and related agencies within those counties.)

Table 7-4

Manufacturing Employment In the Greater Bay Area (Excluding High Technology)

	2000	2005	2010	2015	2020	2025
Employment	250,280	260,110	277,570	292,870	305,790	319,330

Source: ABAG, RLBA.

business during the duration of its lease so long as its profit margin meets Rail America's and its stockholders' expectations.

NVRR is owned by a single individual. Its future depends on that individual's decisions and possibly the decisions of the owner's heirs regarding continuation or sale of the company. As indicated earlier, its current freight business is extremely light. For reasons discussed later, the outlook concerning increased NVRR freight business is also extremely limited.

NWP is a contact operator, which serves customers located on rights-of-way owned by two public authorities, the Northwestern Pacific Railroad Authority (NWPRA) and the North Coast Railroad Authority (NCRA), both created by the state of California. The previous private owners were unable to operate profitably when required to spend far more than comparable rail lines on right-of-way maintenance because of periodic severe winter storm damage. NWPRA owns the NWP right-of-way segment between Healdsburg and Lombard (just west of Napa Jct.). NCRA owns the portion of NWP right-of-way north of Healdsburg where the principal potential freight originates or terminates. NWP is the designated freight service operator over the entire line between Lombard, Ignacio and points north. By agreement with the CFNR, NWP has operated between Lombard and Schellville to connect with CFNR. NCRA recently submitted a "Strategic Update" report to the California Transportation Commission (CTC) in an effort to justify continued State and Federal financial support to restore operations over its entire line to Eureka, to support an operating net loss projected over five years and to provide needed long term capital improvements.

This report subsequently discusses the long term freight business forecasts prepared on behalf of NCRA in support of its "Strategic Update" plan[3]. Should the CTC fail to approve that plan, and State and Federal support is not forthcoming, provided, it is RLBA's judgment that operations on the NWP will not be restored, except perhaps at the north end of the Eel River Canyon, as a local tourist and freight railroad serving the Port of Humboldt Bay and surrounding areas with no rail connection to the UPRR-owned line east of Lombard. In that event traffic to and from NWP would not flow over CFNR.

UPRR's future policies and actions regarding its lines leased to CFNR east of Suisun City will be a crucial factor in determining whether a significant increase in rail freight is likely. By means of its control over the freight cars it supplies and the rates it charges customers served by CFNR to ship and or receive freight by rail, UPRR can either encourage or discourage existing and/or potential new business. UPRR is currently in the process of reassessing its policies regarding all of its branch and light density lines, both those it still operates and those it leases to other operators (as described elsewhere). Like all other major rail carriers, UPRR has been required by its stockholders and bankers to increase its net profits in relation to its fixed assets in order to be able to continue to attract risk capital and make investments in plant and equipment sufficient to remain competitive and have the capacity on its main lines to support profitable growth. Branch and light density lines which do not produce earnings adequate to contribute to required investment in connecting main lines on which the shipments to and from the branch and light density lines must be carried are candidates for sale or abandonment.

In reassessing its future policy toward the lines between Suisun City, Vallejo, Schellville and Lombard now leased to CFNR, UPRR must take into consideration the fact that its mainline through Suisun City between Oakland and Roseville, CA is currently at or near capacity. Continued growth of the Bay Area economy, projected increases in containers hauled by rail to and from the expanding Port of Oakland together with the Capital Corridor Authority's plans to increase Sacramento-Oakland-San Jose passenger frequencies and potential new commuter rail services being considered between Davis and Richmond/Oakland all will require substantial capacity investments. Although the passenger service authorities will be expected to fund all of the investment associated with their operations, so structured as to avoid placing any constraints on UPRR's freight operations, UPRR right-of-way width constraints through Suisun City trackage. Most of

[3] At pp. 7-16 et.seq.

UPRR's current freight business on the line, including that which moves to or from CFNR, is relatively long-haul business on which UPRR's profit margins are generally greater than on shorter-haul freight business. Although UPRR's marketing group is currently generally cooperative with CFNR's marketing efforts on longer-haul freight, CFNR has found UPRR less cooperative in establishing competitive rates for shorter-haul traffic.

Federal and State policies regarding transportation infrastructure investments, truck gross weight and length limitations, and regulations governing rail freight pricing and relationships between major railroads and short line connecting railroads (such as CFNR) also can play a significant role in either encouraging or discouraging enhanced rail freight activity in the study area. Proposed Federal or State legislation making substantial sums available to major railroads and/or short-lines to improve infrastructure could increase enhancement opportunities. By contrast, relaxation of current truck gross weight and length restrictions could reduce rail freight enhancement opportunities significantly. New regulations restraining railroads' pricing freedom (as have been proposed) could reduce their profit margins on substantial volumes of long-haul business, lessening UPRR's willingness to seek more shorter-haul business with lower profit margins. Proposed regulations requiring major railroads to allow competing rail carriers to serve customers now served by only one carrier could have the same effect. Any changes in major railroads' policies that would result in restricting the supply of empty freight cars and providing other services to their short-line connecting carriers could reduce UPRR's willingness to cooperate with CFNR (and NWPRR) in competing for new business.

Finally, the economic and service characteristics of rail versus truck operations place significant limits on the ability of rail carriers to compete for freight business. Railroad operations are characterized by the need to invest heavily in fixed assets – the track and structures supporting those operations. Most of that freight railroad investment must be met by the private sector. By contrast, trucks operate over publicly provided highways and contribute toward those public investments by paying license fees, fuel taxes and tolls (where applicable) which are all operating costs varying with the amount of freight hauled but not covering the full costs of the road infrastructure. This means that trucks incur a significant part of their costs only when doing business whereas a significant part of railroad costs occur whether or not they carry freight. Railroad labor (except that used in connection with maintaining the fixed plant) and fuel costs per unit of freight hauled tend to be lower than comparable truck costs because each added truckload shipment (in

California and many other states) requires an additional driver and fuel to power each truck. Railroads, on the other hand, consolidate carloads into trains. One three person crew and one engine unit can move a number of carloads in a train before a second engine unit is required (which the same engineer can control). However, once a truck is loaded it can proceed directly to a receiving facility, providing overnight delivery within 500 miles where freeways constitute most of the distance. Beyond 500 miles, two drivers (one sleeping while the other drives) can deliver shipments up to 1,500 miles within two days and up to 2,500 miles within three days.

Railroads offer three types of services:

1) trainloads moving back and forth directly between origin and destination when there are sufficient carloads to support the cost of a crew and locomotive unit or units – generally fifteen carloads or more;

2) conventional carload service (in a variety of equipment types) which requires a local switch crew to move a freight car to a switching yard or point where it is assembled with other cars to form a train, often followed by being switched into one or more other trains at succeeding yards, depending on the distance to final destination, and then to another switching crew to place the car at the receiver's facility and

3) intermodal services which combine trailer or container loads trucked from an origin facility to a rail terminal at which they are loaded onto rail cars, moved (generally) in solid trainloads to a rail terminal in/near the destination area, and then trucked to the receiver's facility.

The economic and service characteristics of each of these rail freight services differ and, therefore, compare differently with truck economic and service characteristics.

Trainload (often called "unit train") service can be cost and time competitive with trucking over distances as short as 100 miles or less, depending on volume. However, for such short hauls, the absolute profit contribution that can be extracted and still compete with trucking, except on very heavy products for which truck gross weight limits require a larger number of truckloads per each rail carload, will tend to be low.

Conventional carload service is generally much slower than trucking and incurs relatively high labor costs, unless the shipping and receiving facilities process large daily carload volumes. This kind of rail freight service is most truck-competitive at distances in excess

of 1,000 miles and/or for products which, because of weight per cubic foot, require three or more truckloads per rail car. Products with very high weight or very low weights per cubic foot usually require more loaded trucks than rail cars. Bulk liquids and solids, dense metal products and low density paper products are examples of those commodities. Even over longer distances, however, the speed advantage of truckload service makes it difficult for conventional carload services to compete for higher value freight because the time savings and greater reliability of trucking results in decreased inventory and other logistical requirements, more than offsetting the cost savings offered by rail service.

Intermodal rail services are characterized by being more time-and-reliability-competitive with trucking than carload services. However, the cost and time requirements associated with trucking to and from rail terminals and assembling trainloads often offset these benefits at distances under 1,000 miles, particularly at less than 500 miles. The greater number of locomotive units and higher fuel costs per unit of freight required to maintain truck-competitive speeds and reliability as well as the extra equipment costs of trailers or containers plus rail cars reduces the competitiveness of intermodal services. Their high speed requirements also often mean that more track infrastructure is required to facilitate the passing of slower speed conventional and unit trains, particularly on single and double track routes.

To optimize the economic and service characteristics of high speed intermodal service, major railroads generally will not provide it to or from small volume terminals. This makes it extremely difficult to locate such terminals on branch lines or short lines such as CFNR operates. The nearest intermodal terminals are in Oakland on UPRR and Richmond on the Burlington Northern Santa Fe Railroad (BNSF).

Interviews with Active Rail Freight Users

Representatives of twenty-one active rail carload users and five other firms which use or arrange carload transload services on behalf of active users were interviewed in connection with this study. Transload services are services whereby a third-party agent arranges for transportation from origin-to-destination using a railcar for most of the trip with pick-up and/or delivery by truck and transfer to and/or from a railcar at facilities featuring rail sidings. Such services are promoted by railroads as a means of competing with long-haul truckload service when intermodal trailer or container service is not

available, is too costly or the shipper or receiver has no rail spur. It can be attractive to either bulk or packaged products which are so dense so that one rail car can be loaded with the equivalent of three or more truckloads. In the study area, the primary users of rail transload services are the wine producers and distributors in the Napa Valley who have no accessible railcar loading facilities, yet can achieve cost savings when they or their customers can tolerate the longer time-in-transit these services require. Transload service is also used to move some inbound feed grain and forest products which are delivered by truck to Sonoma County receivers formerly served by NWPRR. Because of its cost and service characteristics, the rail carload portion of such transload services generally must be to or from points north of Oregon or east of the Rocky Mountains.

Six of the active rail users interviewed (who represented a total of 7,000 carloads in 2001) expect little or no change in their rail activity over the next five to ten years, except growth in line with national or regional economic trends, whichever applies most to their specific lines of business and only if their facilities can expand. This means that the rail carload activity associated with most of the active users, including two of the three largest users identified earlier, can be expected to increase by no more than three percent annually through 2012.

The interviews revealed seven active users (representing over 1,500 carloads in 2001) who foresee their rail business volume growing to as much as 3,000 carloads over the next ten years. Two of these firms haul metal products, one handles building material, two handle wine transloads and two handle bulk products.

Six active rail users predicted some probable decreases in rail activity. These firms represented a total of more than 8,500 carloads in 2001. Two lumber distributors expect to relocate to larger facilities outside the study area although, in at least one case, another smaller lumber distributor is likely to occupy the facility. One grain transloader will lose its rail business if and when NWPRR is able to resume operations, even though CFNR would continue to participate in the freight haul. One firm is now owned by a foreign company which has supplanted all of the former domestic rail shipments with products from offshore.

One company now supplying fabricated steel to a major construction project expects some decline in rail activity when the project is completed after 2004. The sixth firm is

Napa Pipe Company which is booked to capacity through 2002, but historically goes through periods when the demand for its output used in pipeline projects drops significantly. In the worst case, rail freight moving to or from these six firms could decline to only 2000 carloads in some years after 2002.

At present, there are no wine producers with rail-served shipping facilities in the study area. Interviews with firms which use or arrange rail carload transload services from rail-served facilities in the study area disclosed that wine is the principal product shipped via that form of rail service. Almost 500 carloads were so shipped by study area wine producers in 2001, however, only 330 carloads were actually loaded at facilities served by CFNR. The balance was trucked to two facilities in Benicia served by UPRR and loaded there into rail cars due to the absence of sufficient capacity at the two transload facilities now served by CFNR. Proposed conversion of existing CFNR-served facilities and/or construction of new CFNR-served wine transloading facilities could substantially increase the transloading capacity served by CFNR (and replace one or both Benicia wine transloading facilities) in the next several years. One such large facility proposed to be constructed in South Napa would receive and bottle Beringer wine for direct rail car shipments and provide transloading into rail cars on behalf of other wine producers. Interview estimates provided indicate that these expanded facilities could increase outbound wine rail shipments from the study area (excluding Benicia) to 2,200 carloads, including transload and direct carloads, in the next three to five years. In contrast, only four or five area wine producers currently use rail transload services

Other Possible Rail Users

A total of 25 firms considered possible future rail users, culled from lists of major employers and Chamber of Commerce members furnished by the Napa County Economic Development Corporation, the Napa Chamber of Commerce and the Solano County Economic Development Corporation, were interviewed. Fifteen of these were wine producers or distribution facilities and ten more represented a variety of firms including producers of construction materials, pharmaceuticals, candy, semi-conductor material and municipal solid waste plus a publisher and a potential large new industrial facility. The large sampling of wine producers and distributors was chosen because wine production is such a large part of the economy in the study area and represents a large portion of truck traffic on area highways. Some larger wine producers (including Robert Mondavi, Diaggio Estates (Beaulieu and Sterling label wines) and J. Lohr) operate

distribution centers outside the study area where they consolidate and ship wine which is trucked from bottling facilities in the Napa Valley and elsewhere in Northern California. These producers expressed no likelihood of shipping from any rail-served facility in the study area.

Beringer has been attempting for some time to obtain permits to construct a large rail-served bottling and shipping facility in South Napa. The proposed facility would process bulk wine trucked from both Napa Valley and Central Valley facilities, a large portion of which would be shipped direct in rail carloads.

Beringer estimates that up to 10,000 fewer truckloads of wine annually would move over SR 29 north of Napa were the facility to be constructed. That reduction would occur because a portion of Beringer's Napa Valley wine production now bottled north of Napa would move in bulk tank truckloads to South Napa for bottling in lieu of moving to customers in bottles which generate more truckloads then tank trucks.

According to Beringer, while the proposed facility may increase the amount of bulk wine trucked from the Central Valley to Napa, all of this increased truck traffic south of Napa would be offset by the wine shipped out in rail carload service. One carload can be equivalent to up to three or more truckloads of bottled wine.

There are significant limits on the potential of rail carload wine business, whether loaded at a producer's spur or as a transfer facility, not only from the study area, but from all wine producers in the United States. A major controlling factor is that, in general, wine distributors in consumption areas, not producers, determine the transportation mode. Most distributors receive relatively small shipments from any one producer or producing area and do not have receiving facilities served by rail spurs or do not have sufficient capacity to handle carload volumes because they try to limit their inventory costs. Further, during hot summer and cold winter months, wine must be shipped in temperature-controlled or heavily insulated trailers, containers or rail cars. The longer the time in transit, the more likely a failure of temperature control equipment can occur and cause spoilage. Therefore, direct truckload and rail intermodal services are specified for all but a small percent of wine shipments.

Study area producers interviewed who do use rail carload or transload services indicated that no more than five or ten percent of total shipments can be moved in this manner. Wine shipments in boxcar transload service from Napa area producers doubled between 2000 and 2001 and may reach almost 900 carloads (almost 3,000 truckloads) this year. Several wine shippers interviewed reported that they use rail intermodal services for 50 percent or more of their total shipments, which can be a major fraction of their business at points east of the Rocky Mountains. Of course, this means movement by truck from the study area to Oakland or Richmond.

Continued growth in wine consumption and further increases in study area wine production automatically will increase the volume of direct rail carload and transload shipments from the area, but will increase truck traffic even more.[4]

Three firms that may be possible future users were interviewed. A construction materials supplier is discussing a potential inbound rail movement of 600-700 carloads annually with the railroads, although nothing is definite. The material would be redistributed to North Bay job sites by truck probably adding some new truck traffic. The project manager for Shell US Gas and Oil Corp. which, together with Bechtel Corporation, is studying a possible liquefied natural gas (LNG) marine terminal and LNG-fueled power plant on Mare Island stated that were such a facility ever found feasible and permitted to be constructed, significant quantities (volume unknown at this time) of construction materials would be required, some of which could be delivered by rail to the site. Following the construction period, which could require two to three years, the only possible source of continuing rail freight would be ammonia shipped in relatively small quantities to the power plant for use in the emission control process. The entire project is considered too speculative at this time to be relied on in freight carload projections.

A more likely source of future rail freight shipments which would relieve the study area of a large volume of truck activity is the South Napa Waste Management Authority. The Assistant Executive Director provided the information which follows. Approximately 26 truckloads daily, five days a week and six to ten truckloads on Saturdays currently are shipped from the transfer facility in South Napa (which has a rail spur) to a landfill in Pittsburg, CA. Several years ago this material was shipped in containers by rail to a landfill in Washington State. The total cost under the current contract of disposal at the

[4] Traffic World, September 9, 2002, "Intermodal Boxcars."

Pittsburg landfill (which has no adjacent rail spur) is significantly less than under the former contract using rail transportation to a much more distant landfill. The current contract will expire in 2007, however, and new disposal bids will be solicited before the expiration date. If disposal using rail transportation is cost-competitive, the trucking operation could be discontinued.

Interviews with other firms considered possible rail users indicated very few would consider future use of rail freight services from or to the area under any circumstances. Pharmaceutical producers either require one to two day delivery, even of larger quantities, or distribute products in small quantities from overseas producers. Their inbound raw materials are from local Bay Area sources in truckloads. The candy and semi-conductor firms interviewed either ship in small quantities or require delivery times too short for any form of rail service to provide consistently.

Discussions with UPRR, CFNR and NVRR

Discussions with each of the railroads indicated that all three are very interested in increasing the volume of rail freight business to and from the study area.

UPRR supplies freight cars for shipments from the area and has agreed with CFNR, contrary to usual railroad practice, to allow UPRR main line ("road") locomotives hauling heavy trainloads of steel to Napa Pipe Company and trainloads of pipe from Napa Pipe to remain coupled to their trains while being operated by CFNR personnel to and from Suisun. UPRR cooperates in establishing or adjusting freight rates to retain business and attract new business so long as those rates meet UPRR profit requirements. UPRR also has been active with the Hub Group in promoting the use of rail transload services of wine shipped from the area.

CFNR employs a manager dedicated to promoting freight business to and from its lines and it makes every possible effort to provide the services required by existing and potential new rail freight users. The rail users interviewed were satisfied with CFNR's services as evidenced by the fact that the volume of freight it moves has increased significantly since it leased the lines in 1994. Other than the possible increases already discussed in this paper and the opportunities which would open with resumption of service over NWPRR (which will be addressed later), CFNR considers the Bay Area

construction aggregates (sand and gravel) market to be its largest and most likely new source of business.

Local Bay Area aggregates sources are being depleted and environmental concerns severely limit the opening of new ones. Large deposits exist along the Yuba River, on the west side of the Sacramento Valley and in Mendicino and Humboldt Counties which could be transported in rail trainloads to distribution terminals in the Bay Area for delivery to job sites. CFNR is very actively promoting this concept to a distribution terminal site in the study area and has had discussions with UPRR regarding movements from the Yuba River area which would originate on the UPRR. CFNR is also considering a potential movement which could originate in the west Sacramento Valley on its line north of Davis, also leased from UPRR. CFNR could then use its trackage rights agreement with UPRR between Davis and Suisun City to handle the entire movement between origin and destination. CFNR sees a potential of between 3,000 and 10,000 carloads annually in connection with this service which could begin possibly in 2003.

Discussions with NVRR management yielded the information which follows. NVRR is very interested in adding to its small freight volume. NVRR sees a potential to haul 45,000 truckloads of dirt which must be removed during the Napa River Flood Control Project by rail in lieu of highway beginning in 2003. Discussions are being held with the Flood Control Project team and with CFNR and UPRR. NVRR would like to convince Napa Valley vineyard owners to use reclaimed waste water from the South Napa treatment plant delivered in rail tank cars because ground water is becoming very scarce and it would save the Sanitation District the cost of constructing a pipeline or trucking water for that purpose.

Mare Island Freight Service Issues

Rail freight service to and from Mare Island is performed by CFNR. Between Flosden Yard in Vallejo and Mare Island, the rail track (formerly owned by the U.S. Navy) is now owned by the City of Vallejo. The rail tracks on Mare Island were transferred by the City to Lennar Mare Island (the developer for the former Navy property). The track linking Flosden Yard and Mare Island is to be transferred to Lennar as soon as certain issues involved in the Mare Island Causeway property are resolved. Meanwhile, the California Public Utilities Commission (CPUC) recently has served the City and Lennar with a list of 125 defective conditions on the tracks between Flosden Yard and Mare Island

(ininclusive of those on the island) which must be corrected to permit continued rail operations. Neither the City nor Lennar has taken any action yet on the PUC's list. Rail shippers on Mare Island who were interviewed reported that it appears Lennar may try to modify their property leases to incorporate some form of charge covering "track maintenance".

Vallejo's Director of Economic Development stated that maintaining the track between Flosden Yard and Mare Island will become Lennar's responsibility when, as required by the City's contract with Lennar, that track can be transferred to Lennar. For several months, CFNR has been performing the minimum maintenance necessary on the tracks beyond Flosden Yard, at its expense, to be able to serve rail customers on the Island without derailing its trains.

One Mare Island rail user reported his company is already considering relocating outside of Vallejo because Lennar will require it to move to another location to retain rail service once the required clean up of that contaminated area is completed and because it cannot obtain any assurance as to when that move may be required. Meanwhile, the firm needs more space and cannot obtain it at its present site. It has found no other suitable sites elsewhere in Solano or Napa Counties.

Until these issues are resolved, there can be no assurance of maintaining or increasing rail freight activity on Mare Island.

NWP Freight Service Outlook

As indicated previously, when NWP was in operation it used tracks owned by the NWPRA between Lombard and Healdsburg and over tracks owned by the NCRA between Healdsburg and Eureka/Arcata. The great majority of the freight business historically handled by NWP was forest products moved from or to points north of Healdsburg.

NCRA is currently seeking funding from the CTC to restore rail service as far as Eureka/Arcata. As part of this effort, NCRA submitted a report, "Long Term Financial Feasibility of the Northwestern Pacific Railroad" to the CTC providing forecasts of future freight activity through 2007 assuming restoration of operations. These forecasts, summarized in Table 7-5, were characterized as "Low Demand," "Medium Demand" and

"High Demand," depending on the level of service NWP may be able to provide, its ability to recover former customers and develop potential new markets and UPRR's willingness to provide freight car supply and competitive freight rates to and from NWP.

Table 7-5

Total NWP Carloads

Demand Forecast	2003	2007
Low	1,339	4,896
Medium	1,829	6,994
High	2,320	13,610

Source: Consultant Team

From the information available in the report, it appears that a very high proportion of the forecast demand, perhaps 90 percent or more, would have to be hauled by CFNR between Suisun City and Schellville (or Lombard) via Napa Junction. A small proportion may be freight both originating and terminating on the NWP. Outbound forest products would be by far the largest component of such activity. Because much of this business now moves by truck to a reload center at Redding directly on the UPRR, bypassing the study area completely, truck traffic on study area highways may not be reduced significantly, although highway traffic between Eureka and Redding would be reduced.

Summary of Rail Freight Business Outlook

Considering all of the preceding information, total rail freight to, from and through the study area by 2007 and beyond may range from 15,000 to 30,000 carloads annually. The difference between the high and low estimates reflects uncertainty in forecasting future construction aggregates, municipal solid waste and Napa Pipe Company rail shipments as well as the clouded prospects of future NWPRR service. The possible rail movement of dirt from the Napa River Flood Control Project in 2003-2004 is not included in these estimates. Little or no future study area rail freight activity is expected to involve the NVRR.

Section 7.3: Actions to Protect Existing Rail Freight Activity

The primary threats to reaching enhanced future levels of rail freight activity are or will be: the existing poor condition of Vallejo City and Lennar–owned tracks between Flosden

Yard and Mare Island and the impact of potential rail passenger services on both the operations of Napa Pipe Company and continued reliable, cost effective operations by CFNR. To counter the threat to service on Mare Island, the City of Vallejo, Lennar and CFNR should be encouraged to do everything possible to correct defective track conditions cited by the CPUC at the earliest possible time without alienating rail users on Mare Island.

To assure that any future rail passenger services do not disrupt Napa Pipe Company or CFNR operations, capital improvements and funding plans to support any planned rail passenger services should include the facilities necessary to maintain and expand those operations, as discussed elsewhere in this report.

Section 7.4: Recommendations re Napa County Transportation Planning Agency and Solano Transportation Authority Freight Policies and Actions

Four specific policies and supporting actions are recommended to encourage enhanced rail freight activity in the study area.

Policy # I – Support any proposed Federal and State programs which can encourage rail line owners and or operators to invest in capital improvements to enhance rail freight capacity, services or operating efficiency.

> Action # 1. Encourage area legislative and congressional representatives to support legislation providing funding of rail investments both by public and private rail line owners and/or operators which can benefit rail freight as well as passenger operations, including grade separation projects.

Policy # II – Support preservation and expansion of rail-served businesses and facilities in the study area.

> Action # 1. Encourage approval of permitting applications submitted to public agencies associated with new or expanded rail-served industrial sites and facilities in the study area.
>
> Action # 2. Consider using local congestion management funding sources to provide incentives to develop, construct, or expand and use rail-served facilities.

Action # 3. Provide information to local agencies and citizen groups concerning the public benefits of rail-served facilities which can reduce local trucking activities.

Policy # III – Encourage public agencies in the study area responsible for freight-generating activities to consider using rail freight services in lieu of trucking whenever possible, considering the public benefits of reduced highway congestion and less harmful emissions as offsets to possible direct cost differences.

Action # 1. Encourage serious consideration of rail-haul disposal of solid waste by the South Napa Solid Waste Authority when the current truck-haul contract expires.

Action # 2. Encourage serious consideration of rail-haul in lieu of truck-haul by the Napa Flood Control District re its dirt removal project in 2003-2004.

Action # 3. Consider or encourage using local congestion management funding sources to provide incentives to public agencies – including Caltrans, the Napa Flood Control District and the South Napa Solid Waste Authority – to use rail-haul in lieu of truck-haul re local area projects.

Action # 4. Provide information to local elected officials, agency staffs and civic groups comparing the impact on highway congestion and emissions of using the rail mode versus truck to meet the needs of specific construction projects.

Policy # IV - Plan any future passenger rail projects in the study area to allow for maintaining and expanding rail freight services and continued efficient operations by Napa Pipe Company.

Action # 1. Include in the engineering design and funding of any rail passenger project sufficient capacity enhancement to allow maintenance and expansion of reliable, efficient rail freight services.

Action # 2. Include in the engineering design and funding of any future rail passenger project a right-of-way around the Napa Pipe Company plant.

CHAPTER 8

COMMUTER AND VISITOR RIDERSHIP AND REVENUES

INTRODUCTION AND SUMMARY OF KEY FINDINGS

Section 8.1: Recommend Passenger Rail Patronage Forecasting Method

Overview of Forecasting

General travel forecasting has two parts of calibrating and projecting into the future. Calibrating involves verifying travel behavior based on surveys and other data points, to develop a series of formulae that interact together to provide a representation or "model" of reality. Once base data is developed, the impact of growth on travel is examined, assuming that traveler behavior does not change explicitly from base conditions.

There are four key parameters involved in travel forecasting:

- **Trip generation** defines the aggregate number of trips involved. In forecasting, they usually are based on land use plans and proposed projects, yet also are based on overall economic conditions in different areas.
- **Trip distribution** defines trip patterns, usually based on a probability of traveling different distances for different reasons. A good example is that people will travel further to work than to a grocery store.
- **Mode choice** defines what modes or combination of modes people will take to make a trip, such as drive alone, carpool or transit. Many times, it is based on a combination of income/auto availability as well as the difficulty of using certain modes (defined in time and cost parameters). In areas without parking charges, transit trip mode shares are generally low.

- **Trip assignment** defines what paths people taking different modes will follow, including which street(s) or transit line(s) one takes.

Commuter rail ridership forecasting requires consideration of additional factors. The most important is that commuter rail ridership is not based on the probability of using transit in an abstract sense. It must reflect an understanding of time-of-day factors and an understanding that rail riders depend on both the reliability of train schedules and connectivity to other transit/shuttle access modes.

Commuter rail ridership varies considerably from one year to the next. Even after a service is established over several years, economic conditions and schedule changes can result in different ridership levels. Also because many suburban areas are auto-oriented, transit mode shares are low and, thus, variable. For example, a mode share increase from two to four percent would represent a 100 percent increase of transit riders but a negligible decrease in traffic volume.

A specific example is found in examining ridership from the Morgan Hill station of Caltrain which is highly variable from one year to the next, as indicated on a survey of riders conducted by Caltrain each February. Morning ridership trips from Morgan Hill were recorded in past surveys as follows:

- 1997 - 195
- 1998 - 318
- 1999 - 297
- 2000 - 387
- 2001 - 397.

Demand is influenced significantly by the availability of shuttles and parallel bus services, marketing and pricing strategies and traffic congestion. While rail is clearly more attractive on longer trips (because the number of stops is limited and thus the travel times are significantly reduced), all commuter rail systems need effective feeder and parallel bus services available to maximize connectivity. Because buses can stop at more locations (keeping in mind the shorter accelerating and braking distances of buses versus trains), they tend to be more convenient on short trips.

Another key item in rail forecasting is the transfer issue. It may be possible to increase rail transit line ridership, yet decrease the overall market of transit riders. The phenomenon might occur because requiring riders to transfer may assure that all possible riders will use the train, yet the additional time and effort involved in transferring keeps some from wanting to use the transit system altogether. The transfer becomes a penalty.

The existence of parallel bus routes is another issue in the Napa/Solano area. In Napa County, it was assumed in this study that parallel bus routes will be replaced by rail service. However in Solano County, since the Vallejo Transit bus routes (operated by the Transportation Division of the city of Vallejo) which parallel the rail line are currently experiencing strong farebox recovery and connect to many other major local and regional destinations, they are unlikely to be taken out of service. Several bus routes from the Fairfield, Vacaville and Suisun City areas provide direct service connections to BART in the East Bay, to the Capitol Corridor and to the Vallejo Ferry.

Initial Screening and Service Scenario Development

This sub-section documents the steps taken to refine service concepts early in the study. Before detailed forecasts were developed, a screening exercise was used to help define the most optimum service scenarios. In that way, team resources could be directed at the most viable routes.

As commuter travel offers several options, this chapter discusses how those were analyzed quantitatively. Information on visitor behavior was developed as part of the screening, to provide a more refined explanation of the service scenarios.

General Demographic Profile of the Commuter Market

The viability of commuter-oriented rail service depends on two items – the number of commuters (market size) and the percentage of those commuters who would use transit (mode share). A high mode share will not result in high ridership if the market is small whereas a small mode share may create many riders if the market is large.

The commuter market was evaluated initially in terms of number of working residents (a subset of the total population) and the total number of jobs in an area. In general, the overall population and employment patterns are highly concentrated in the Fairfield, Vallejo and Napa areas, with lower concentrations in the Up Valley area.

Long-distance commuter data from the 2000 Census also were examined specifically, those with at least 30 and 60 minute commutes. The results of those parameters are plotted in Maps Nine and Ten.

Mode Shares

According to the Census, commuter rail mode shares are highly variable depending on the ability of commuters to use rail as opposed to driving or other forms of transportation. The 2000 Census provided representative mode shares associated with several Bay Area communities enjoying rail services nearby. Those are shown in Table 8-1. That table shows that higher mode shares are found in BART-served communities and that communities along the Caltrain service line have at most a six percent aggregate rail mode share, with most at one to two percent.

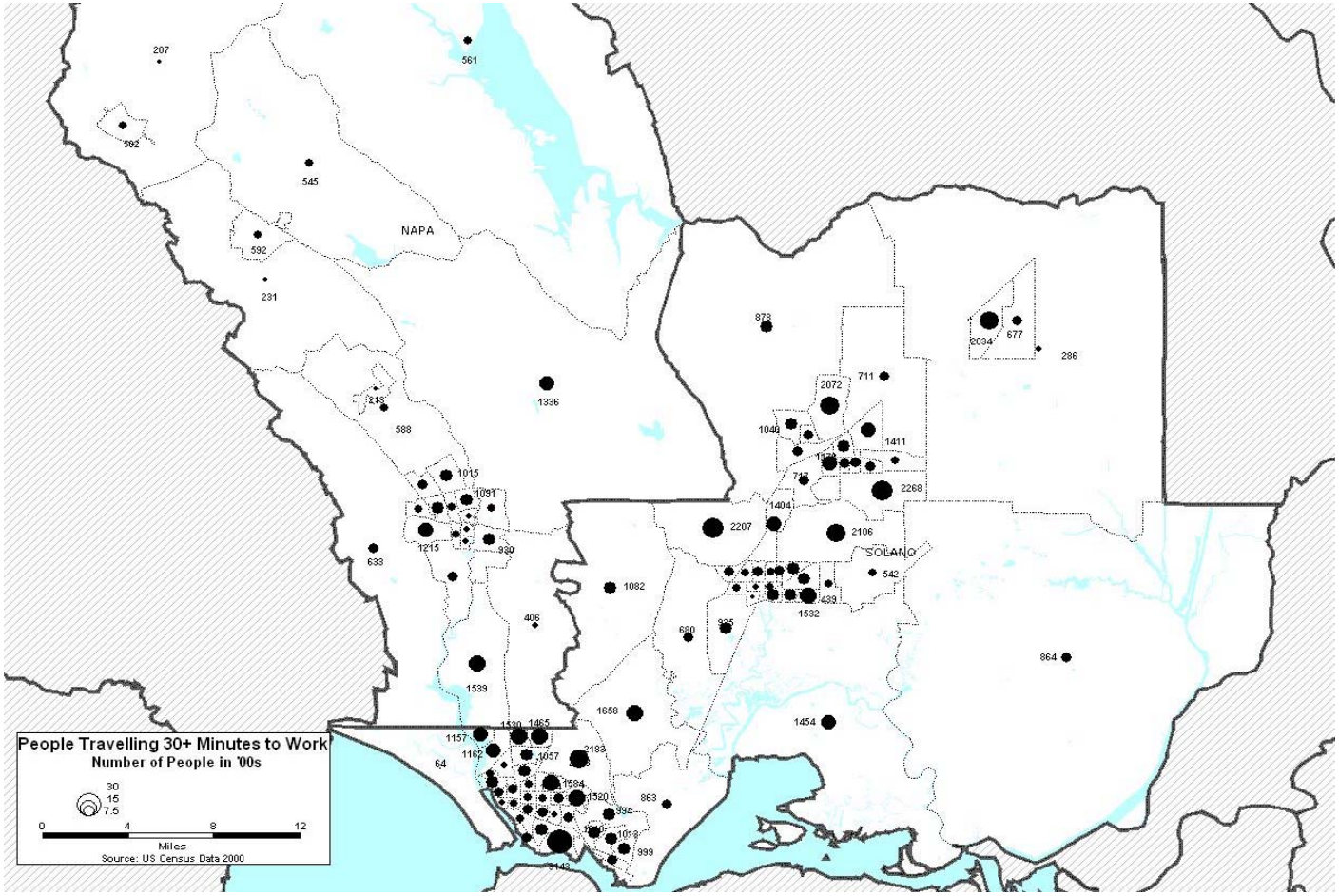
Commuter rail services are also sensitive to the time-of-day that commuters normally go to work. As many commuter services intend to operate at peak hours, the percentage of persons that travel to work during peak hours is a subset of the total commuter population.

Table 8-2 lists important summary census data about Napa and Solano County commuters. The time that people leave for work and commute travel times are shown. Within Napa County, nearly 62 percent of commuters leave for work between 6:00 AM and 9:00 AM, which compares to only 57 percent within Solano County. In general, commuters from Solano County leave for work earlier, with more than 30 percent leaving between 5:00 AM and 7:00 AM compared to only 25 percent from Napa County.

Napa County features a lower proportion of long or “marathon” commuters than does Solano County. Within Napa, more than 65 percent of commuters require less than 30 minutes to get to work, compared to only 53 percent in Solano County. Similarly, Solano County registered a higher proportion of commuters with more than a 45 minute work commute nearly (27 percent) than in Napa County (15 percent).

Map Nine

Commuters Traveling at Least 30 Minutes



Map Ten

Commuters Traveling at Least 60 Minutes

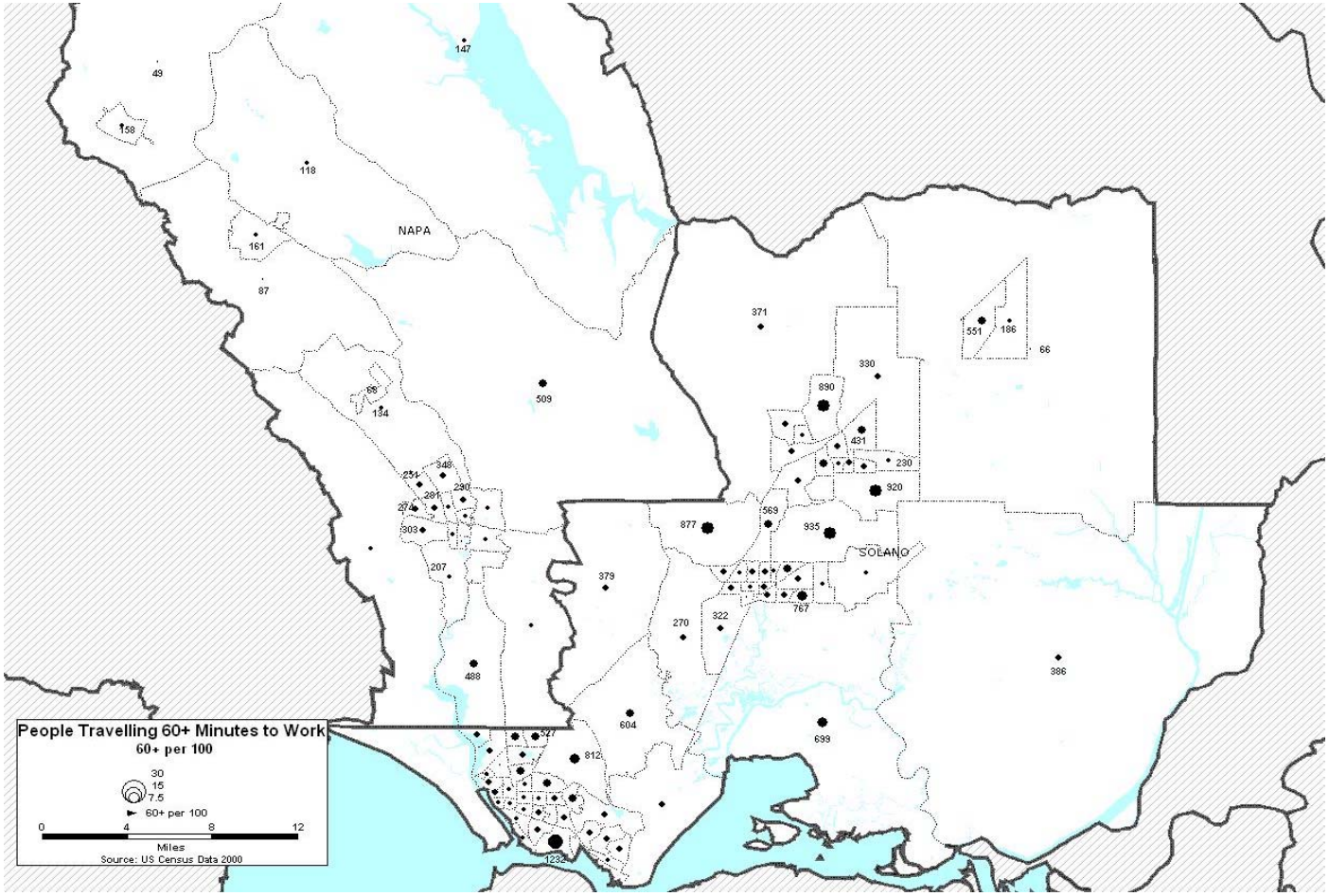


Table 8-1

Year 2000 California Rail Mode Shares

Census Place	Total Commuters	Rail Mode Share	Rail Service
El Cerrito	11,867	16.16%	BART
Orinda	7,801	14.97	BART
Walnut Creek	29,901	12.65	BART
Albany	8,568	11.78	BART
Berkeley	54,674	11.67	BART
Oakland	170,503	8.06	BART
San Leandro	36,928	7.28	BART
Hercules	9,838	6.24	BART
Burlingame	15,202	5.77	Caltrain
Bay Point CDP	8,514	5.21	BART
Alameda	37,327	4.76	BART
Danville	20,644	4.56	BART
Martinez	18,820	4.54	BART
Hayward	61,696	4.20	BART
Antioch	40,712	3.08	BART
San Carlos	14,887	2.92	Caltrain
Benicia	13,756	2.35	BART
Mountain View	40,321	1.87	Caltrain
Livermore	37,874	1.84	BART/ACE
La Verne	15,245	1.48	Metrolink
Encinitas	31,068	1.43	Coaster
Tracy	24,974	1.35	ACE
Santa Clarita	73,975	0.99	Metrolink
Fontana	46,234	0.97	Metrolink
East Palo Alto	11,014	0.77	Caltrain
Palmdale	42,219	0.76	Metrolink
Manteca	20,136	0.73	ACE
Ontario	60,919	0.64	Metrolink
Suisun City	11,905	0.63	Capitol/BART
Lancaster	42,351	0.57	Metrolink
San Clemente	24,620	0.38	Metrolink
Fairfield	42,519	0.34	Capitol/BART
Lathrop	4,201	0.24	ACE
American Canyon	4,164	0.22	BART
Thousand Oaks	58,284	0.19	Metrolink
Stockton	86,780	0.16	ACE
Vacaville	38,374	0.12	Capitol/BART
Camarillo	26,453	0.12	Metrolink
Santa Ana	124,289	0.06	Metrolink
Escondido	57,073	0.06	Coaster

Source: US Census Bureau, 2000 Census of Population and Housing.

Table 8-2

Selected Commutation Census Data - Napa and Solano Counties

	Napa County		Solano County	
TIME LEFT HOME FOR WORK	**Number**	**Percentage**	**Number**	**Percentage**
Did not work at home:	54,478	94.92	169,130	96.88
12:00 a.m. to 4:59 a.m.	1,847	3.22	9,723	5.57
5:00 a.m. to 5:59 a.m.	4,506	7.85	19,042	10.91
6:00 a.m. to 6:29 a.m.	4,978	8.67	16,784	9.61
6:30 a.m. to 6:59 a.m.	4,925	8.58	16,937	9.70
7:00 a.m. to 7:29 a.m.	6,805	11.86	23,659	13.55
7:30 a.m. to 7:59 a.m.	9,152	15.95	21,309	12.21
8:00 a.m. to 8:29 a.m.	6,989	12.18	14,902	8.54
8:30 a.m. to 8:59 a.m.	2,965	5.17	6,609	3.79
9:00 a.m. to 9:59 a.m.	4,031	7.02	8,470	4.85
10:00 a.m. to 11:59 a.m.	2,192	3.82	6,389	3.66
12:00 p.m. to 3:59 p.m.	3,129	5.45	13,024	7.46
4:00 p.m. to 11:59 p.m.	2,959	5.16	12,282	7.04
Worked at home	2,915	5.08	5,441	3.12
Total:	57,393	100.00%	174,571	100.00%
COMMUTE TRAVEL TIME				
Did not work at home:	54,478	94.92	169,130	96.88
Less than 5 minutes	2,720	4.74	4,195	2.40
5 to 9 minutes	8,498	14.81	18,149	10.40
10 to 14 minutes	10,439	18.19	24,237	13.88
15 to 19 minutes	8,159	14.22	22,045	12.63
20 to 24 minutes	5,275	9.19	18,104	10.37
25 to 29 minutes	2,346	4.09	7,044	4.04
30 to 39 minutes	6,960	12.13	22,192	12.71
40 to 44 minutes	1,654	2.88	6,772	3.88
45 to 59 minutes	3,368	5.87	18,405	10.54
60 to 89 minutes	3,052	5.32	18,115	10.38
90 or more minutes	2,007	3.50	9,872	5.66
Worked at home	2,915	5.08	5,441	3.12
Total:	57,393	100.00%	174,571	100.00%
Source: US Census, 2000.				

To estimate how riders would use the rail service, possible trips were separated between trips using only rail service as compared with those that would require transfers from or to other transit modes. It should be noted that even in markets where trip demand is satisfied exclusively by rail service, many commuters will need to obtain transportation to and from the various rail stations to use the service.

Table 8-3 provides preliminary mode share Year 2020 estimates regarding each trip type, based on typical mode share behavior, the length of trip and whether or not a transfer

would be required. Based on certain relevant factors, a peak period total and peak train ridership scenario was developed.

The bases on which early screening mode share assumptions were constructed follow:

- a base of 3.0 percent was used in many instances. That percentage is more optimistic than typical suburban-to-suburban commute mode shares in such areas. (It should be noted that communities with higher mode shares enjoy much more frequent rail service than proposed here, as well as directly operate to/from in areas with high parking charges such as Oakland and San Francisco);
- where an existing, direct parallel bus route would serve some of the city-to-city travel markets, only half of the potential riders were assumed to be on the train (1.5 percent);
- only 1.0 percent of the trips between Vallejo and Fairfield/Suisun were assumed to be captured by rail because the driving time is usually much faster and many trips would be going to destinations not adjacent to the rail corridor. Further, a number of study districts outside of Napa and Solano Counties are connected by direct bus service today and
- trips between study districts and the core of the Bay Area, typically assumed at a 6.7 percent transit mode share, were diminished where parallel services are available. If one additional transit service is already available, rail ridership was assumed to halve to 3.3 percent. If two existing services are available the rail ridership was assumed to drop to about 2.2 percent, or one-third of 6.7 percent.

Comparable Travel Times by Corridor

One interesting advantage of the rail system is that travel times appear to be competitive and even faster motor than vehicles (shown in Table 8-4) because corridor destinations parallel arterial roadways, rather than high-speed freeways. Travel time savings using rail would be most significant from points to and from Napa County, as the lack of a freeway in that corridor results in lower arterial roadway speeds. The net result is competitive travel times by train. In contrast, driving between Vallejo and Fairfield is usually much faster than by rail because of the available Interstate 80, as compared with the less direct rail corridor route.

Table 8-3

Travel Corridor Summary – 2020 Commuter Ridership

Corridor	Interchange	Market Type	AM Peak Period Trip Market Direct	Transfer	Total	Working Mode Share	Peak Period	Peak Train
Fairfield - Vallejo	Fairfield - Vallejo	Direct	8,031		8,031	1.0%	80	36
	Vacaville - Vallejo	Transfer		1,566	1,566	1.5	23	11
	Dixon - Vallejo	Transfer		351	351	1.5	5	2
	Fairfield - Alameda/SF/South Bay	Transfer		10,277	10,277	2.2	226	102
		TOTAL	**8,031**	**12,194**	**20,224**		**335**	**151**
Vallejo - Fairfield	Vallejo - Fairfield	Direct	2,200		2,200	1.0	22	10
	Vallejo - Vacaville	Transfer		205	205	1.5	3	1
	Vallejo - Dixon	Transfer		2	2	1.5	0	0
	Alameda/SF/South Bay - Fairfield	Transfer		525	525	2.2	12	5
		TOTAL	**2,200**	**732**	**2,932**		**37**	**16**
Fairfield - Napa County	Fairfield - Napa/Am Canyon	Direct	3,857		3,857	3.0	116	52
	Fairfield - Up Valley	Direct	665		665	3.0	20	9
	Napa/Am Canyon - Up Valley	Direct	3,371		3,371	1.5	51	23
	Vacaville - Napa/Am Canyon	Transfer		662	662	3.0	20	9
	Vacaville - Up Valley	Transfer		124	124	3.0	4	2
	Dixon - Napa/American Canyon	Transfer		166	166	3.0	5	2
	Dixon - Up Valley	Transfer		34	34	3.0	1	0
		TOTAL	**7,893**	**985**	**8,878**		**216**	**97**
Napa County Fairfield	Napa/Am Canyon - Fairfield	Direct	466		466	3.0	14	6
	Up Valley - Fairfield	Direct	142		142	3.0	4	2
	Up Valley - Napa/ American Canyon	Direct	4,265		4,265	1.5	64	29
	Napa/ American Canyon - Vacaville	Transfer		66	66	3.0	2	1
	Up Valley - Vacaville	Transfer		25	25	3.0	1	0
	Napa/ American Canyon - Dixon	Transfer		1	1	3.0	0	0
	Up Valley - Dixon	Transfer		1	1	3.0	0	0
		TOTAL	**4,873**	**92**	**4,966**		**85**	**38**
Vallejo - Napa County	Vallejo - Napa/ American Canyon	Direct	2,502		2,502	1.5	38	17
	Vallejo - Up Valley	Direct	511		511	1.5	8	3
	Napa/ American Canyon - Up Valley	Direct	3,371		3,371	1.5	51	23
	Alameda/SF/South Bay - Napa/ American Canyon	Transfer		611	611	3.3	20	9
	Alameda/SF/South Bay - Up Valley	Transfer		164	164	3.3	5	2
		TOTAL	**6,385**	**775**	**7,159**		**121**	**55**
Napa County Vallejo	Napa/ American Canyon - Vallejo	Direct	2,467		2,467	1.5	37	17
	Up Valley - Vallejo	Direct	232		232	1.5	3	2
	Up Valley - Napa/ American Canyon	Direct	4,265		4,265	1.5	64	29
	Napa/ American Canyon - Alameda/SF/South Bay	Transfer		1,866	1,866	6.7	125	56
	Up Valley - Alameda/SF/South Bay	Transfer		743	743	6.7	50	22
		TOTAL	**6,964**	**2,609**	**9,573**		**279**	**126**

Source: MTC BAYCAST MODEL HBW Trip Table (aggregate), Projections '98.

Table 8-4

Assumed 2020 Travel Corridor Commuter Times Used in Screening (Minutes)

Travel Corridor	Rail	Bus		Road
	Schedule	Schedule	Headways	
Suisun/Fairfield - Vallejo				
weekday AM hour peak hour service Westbound	31	52	30	19
weekday PM peak hour service Eastbound		50	60	
weekday off-peak service Westbound and Eastbound		52	60	
weekend/holiday service Westbound and Eastbound		52	60	
seasonal weekend/holiday service Westbound and Eastbound				
Napa - Vallejo				
weekday AM peak hour service Westbound	22	49	45	30
Weekday PM peak hour service Eastbound		52	60	
weekday off-peak service Westbound and Eastbound		52	70	
weekend/holiday service Westbound and Eastbound		52	140	
seasonal weekend / holiday service Westbound and Eastbound				
St. Helena - Napa (incremental only)				
Weekday AM peak hour service Southbound	26	44	45	30
weekday PM peak hour service Northbound		40	60	
weekday off-peak service Southbound and Northbound		52	70	
weekend/holiday service Southbound and Northbound		52	140	
seasonal weekend / holiday service Southbound and Northbound				
Calistoga - St. Helena (incremental only)				
weekday AM peak hour service Southbound	9	14	45	14
weekday PM peak hour service Northbound		13	60	
weekday off-peak service Southbound and Northbound		14	70	
weekend/holiday service Southbound and Northbound		14	140	
seasonal weekend / holiday service Southbound and Northbound				
Suisun/Fairfield - Napa				
weekday AM peak hour service Westbound	32			38
weekday PM peak hour service Eastbound				
weekday off-peak service Westbound and Eastbound				
weekend/holiday service Westbound and Eastbound				
seasonal weekend/holiday service Westbound and Eastbound				
Source: R.L. Banks & Associates, Inc., DKS Associates (2002).				

The results suggest that the following four markets most warrant further study, based on ridership potential and geographic coverage:

- Suisun/Fairfield - Vallejo;
- Suisun/Fairfield - Napa;
- Up Valley - Vallejo and
- Vallejo - Up Valley.

The Calistoga Case

Whether the rail service should extend to Calistoga was undertaken as an early exercise.

The assessment was based on the following assumptions:

- rail service would operate between Vallejo and Calistoga since a rail service would not attract many riders if it were operated over a shorter distance;
- Vine Bus Route 10 would continue to operate. The role of Route 10 primarily would be to provide a viable transit service addressing shorter-distance trips and provide direct access to intermediate locations not within walking distance of rail stations. Another alternative, eliminating Route 10 in favor of only having a rail system, would force multiple transfers by many passengers who today enjoy direct transit service between their origins and destinations;
- only one rail station was anticipated collectively to serve Calistoga, St. Helena and Yountville. While the addition of other rail stations would provide more locations at which riders could access it, more stations, would reduce the effective travel time on the rail to a point that would render the service unattractive. It is noted that rail systems require longer acceleration and deceleration times to stop at stations than do buses and require also longer dwell times at stations.

In general, it is important to recognize that a small change in mode share can result in wide percentage variations in ridership forecasts. Although this process entails a large variation between methods, the overall ridership estimate and mode share is in any case small. It is also important to recognize that the factors that go into choosing a rail trip are extensive – door-to-door travel time, fares, overall economic conditions, compatibility of train schedules with work schedules – so that the estimates here provided should be considered preliminary forecasts for discussion purposes only.

The screening was conducted in the context of different forecasting source data and methods, each having its own advantages and disadvantages, with the information

ultimately summarized. The discussion highlights the range of various ridership outcomes that would be expected applying different methods.

Ridership Assessment Using MTC BAYCAST

The Metropolitan Transportation Commission provides forecast data in various forms. In this assessment, Bay Area home-based work trip tables were used to examine trip distribution.

The typical Calistoga resident is projected to work locally in 2020. As is shown in Table 8-5, many of those who do not work locally are forecasted to work in other Up Valley locations or in Sonoma County. Neither of those destinations are places where rail use will be significant, as multiple transfers would be required to use rail service to/from those areas. Combining the local, other Up Valley and Sonoma County percentages, 83 percent of local households would not gain a travel advantage from use of rail service. (It is noted that the table used to retrieve the data does not include trip patterns to Lake County and other counties external to the Bay Area.)

Table 8-5

Trips from Households in Calistoga in 2020

Destinations	Daily Work Trips	Percentage
Calistoga Area	2,972	43%
Other Up Valley	1,189	18
Sonoma	1,623	23
Napa	585	8
Solano	90	1
San Francisco/South Bay/Alameda	295	4
Contra Costa	99	1
Marin	115	2
Total	6,968	100%

Source: DKS Associates and MTC BAYCAST Model, Projections 98.

Assuming the remaining areas are able to attract a sizeable mode share (10 percent) of the longer trips, the market of 1,184 daily work trips to those areas would result in a daily demand of 118 daily trips with about 40 transit riders possible in the peak AM period (using a 34.5 percent AM peak period to daily ratio). Assuming the train provided southbound AM and northbound PM service, the resulting daily station activity would be 80.

It should be noted that in this instance, short-distance riders (such as between Calistoga and St. Helena) are not reflected. It is expected that those people would choose to ride the Route 10 bus, as that transit service is convenient to many destinations in the corridor, rather than to only one station.

Ridership Assessment Using 2000 Census Data

Much of the useful census data is in tract format. Often used in demographic analyses, census tracts typically have from 1,000 to 10,000 people, depending on geography. Census tracts usually do not change from one census to another unless there is substantial potential growth or other significant justifications.

In the Calistoga area, there are two major census tracts. Census Tract 2020 is essentially the City of Calistoga while Census Tract 2019 is the surrounding area. 2000 Census data were obtained for both tracts as well as Napa County as a whole (to facilitate comparisons). According to the sample taken, recent census data indicated that there are no public transit commuters in the Calistoga area. The reported modes to work are shown in Table 8-6.

Table 8-6

Calistoga Residents Mode to Work in 2000

	Census Tract 2020 (Inside Calistoga)	Census Tract 2019 (Surrounding Calistoga)	Napa County
Total:	2,290	686	57,393
Car, truck, or van:	1,757	555	50,217
Drove alone	*1,499*	*448*	*41,698*
Carpooled	*258*	*107*	*8,519*
Public transportation	0	0	803
Bicycle/walked	372	34	2,857
Other means	41	2	601
Worked at home	120	95	2,915
Percent using transit	0.0%	0.0%	1.4%
Source: US Census, 2000.			

The typical Calistoga resident works within Napa County. In Table 8-7, it can be seen that less than 20 percent of residents work outside Napa County or less than the

32 percent of out-of-county commuters projected in the previously-presented BAYCAST 2020 data set.

Table 8-7

Calistoga Residents County of Work Location

	Census Tract 2020 (Inside Calistoga)	Census Tract 2019 (Surrounding Calistoga)	Napa County
Total working residents:	2,290	686	57,393
Worked in Napa County	*1,996*	*547*	*44,341*
Worked outside Napa County	*294*	*139*	*12,820*
Percent working in Napa County	87%	80%	78%
Source: US Census, 2000.			

In Table 8-8, which shows travel time to work data, most Calistoga residents have less than a 30 minute commute to work. This includes 78 percent of residents in the Calistoga census tract (2020) and 69 percent of residents in the surrounding area. Long distance trips are often the most likely to result in use of a commuter rail system. However, the census data show that only seven percent of Calistoga area residents commute more than one hour. That percentage equates to only 158 residents in the Calistoga census tract and 49 additional residents in the surrounding area.

Table 8-8

Travel Time to Work

	Census Tract 2020 (Inside Calistoga)	Census Tract 2019 (Surrounding Calistoga)	Napa County
Total working residents:	2,290	686	57,393
Number working within 14 minutes from home	1119	284	24,572
Number working 15 to 29 minutes from home	669	195	15,780
Number working 30 to 44 minutes from home	254	99	8,614
Number working 45 to 59 minutes from home	90	59	3,368
Number working over 60 minutes from home	158	49	5,059
Total Percentage	100%	100%	100%
Percent working within 14 minutes from home	*49%*	*41%*	*43%*
Percent working 15 to 29 minutes from home	*29*	*28*	*27*
Percent working 30 to 44 minutes from home	*11*	*14*	*15*
Percent working 45 to 59 minutes from home	*4*	*9*	*6*
Percent working over 60 minutes from home	*7*	*7*	*9*
Source: US Census, 2000.			

Finally, daily trip times to work reveal that the AM peak period commute is very concentrated in the Calistoga census tract and is generally at a later morning time than normally served via commuter rail systems. Table 8-9 shows the daily distribution of time leaving for work.

Table 8-9

Calistoga Departure Times for Work

	Census Tract 2020 (Inside Calistoga)	Census Tract 2019 (Surrounding Calistoga)	Napa County
Total working residents	2,290	68	57,393
Did not work at home:	2,170	59	54,478
12:00 a.m. to 4:59 a.m.	*79*	*24*	*1,847*
5:00 a.m. to 5:29 a.m.	*50*	*38*	*1,878*
5:30 a.m. to 5:59 a.m.	*76*	*18*	*2,628*
6:00 a.m. to 6:29 a.m.	*197*	*17*	*4,978*
6:30 a.m. to 6:59 a.m.	*207*	*16*	*4,925*
7:00 a.m. to 7:29 a.m.	*194*	*71*	*6,805*
7:30 a.m. to 7:59 a.m.	*369*	*77*	*9,152*
8:00 a.m. to 8:29 a.m.	*366*	*130*	*6,989*
8:30 a.m. to 8:59 a.m.	*117*	*54*	*2,965*
9:00 a.m. to 9:59 a.m.	*196*	*79*	*4,031*
10:00 a.m. to 10:59 a.m.	*55*	*22*	*1,572*
11:00 a.m. to 11:59 a.m.	*27*	*0*	*620*
12:00 p.m. to 3:59 p.m.	*149*	*16*	*3,129*
4:00 p.m. to 11:59 p.m.	*88*	*29*	*2,959*
Worked at home	120	95	2,915
AM Peak Market Summary			
Market size: 6 to 8 AM	967	181	25,860
Percent of Daily Market	45%	31%	47%
Market size: 8 to 9 AM	483	184	9,954
Percent of Daily Market	22%	31%	18%
Source: US Census, 2000.			

Using the census data, the following conclusions can be reached:

- only 356 persons are estimated to commute long distances (over 45 minutes). Experience by Caltrain and other operators suggests that that a 20 percent mode share is possible for commutes over one hour. Expanding that market share to all trips over 45 minutes and recognizing that about 60 percent of those would commute in the AM peak period, 42 resident rail commuter boardings during the AM period (84 daily entraining and detraining passengers) could be expected if rail service served all destinations where those commuters worked in 2000 and

- if the earlier conclusion that most of the longer-distance Calistoga commuters are going to Sonoma or Marin Counties (58 percent of those commuting out of the Up Valley area) is then applied, the resulting demand would fall to 18 AM peak period resident rail commuter boardings (36 daily entrain and detrain passengers) in 2000. Even that estimate is generous in that it reflects the assumption that all Calistoga residents working in Solano, Contra Costa, Alameda, San Francisco, San Mateo and Santa Clara Counties would enjoy convenient transit access.

It should be noted that the analytical projection relates to commuters only, rather than all possible train riders. Riders such as students and others making non-commute trips are not included in the estimate. Generally, long-distance peak hour transit ridership is about 70 to 80 percent of all trips, so the impact of adding additional trip purposes would be small. For example, if the commuter forecasts are raised by twenty percent to reflect the potential of non-commuter trip, the 36 daily trips grow to 44, assuming that some additional ridership making non-commute trips will use the train at commute hours.

The 2000 Census represents a single point in time. Population and employment growth by 2020 would of course result in additional ridership.

According to the Association of Bay Area Governments (ABAG), Calistoga (which is defined as the "Calistoga Sphere of Influence") is anticipated to grow from 2,300 employed residents to 3,900 employed residents by 2020, a growth of 70 percent. Job growth in Calistoga itself is anticipated to be less significant at 16 percent, with 2,980 jobs in 2000 and 3,460 in 2020. Applying a growth of 70 percent to 18 daily boardings (36 daily trips) would result in a forecast of 31 daily boardings (62 daily trips).

Ridership Assessment Using VINE Route 10 Data

Data on VINE Route 10 riders between Calistoga and St. Helena provided to the Consultant Team showed daily ridership during two weeks in October 2002, on different days over a 3.5-hour time period in the AM and PM periods. (While Saturday data also was provided, it is not relevant to the projection of weekday ridership potential.)

The results are shown in Table 8-10. Using those data, an average of 27.5 trips were made during the 3.5 peak hours between Calistoga and St. Helena. The data does not provide bus on and off points, so actual trip patterns cannot be assessed.

Table 8-10

VINE Route 10 Ridership

Day	Date	From Calistoga to St. Helena		From St. Helena to Calistoga	
		AM	PM	AM	PM
Monday	7-Oct	32	14	21	25
Tuesday	8-Oct	30	16	23	27
Wednesday	9-Oct	27	20	20	21
Thursday	10-Oct	28	17	25	30
Friday	11-Oct	17	20	23	31
Monday	14-Oct	30	17	22	24
Tuesday	15-Oct	30	21	22	23
Wednesday	16-Oct	20	24	19	21
Thursday	17-Oct	19	19	18	23
Friday	18-Oct	27	18	21	22
Median Weekday		27.5	18.5	21.5	23.5

Source: Napa County Transportation Planning Agency.

Many current bus users will continue to use Route 10 and make direct trips to Up Valley locations (assumed to be 77 percent of all trips according to BAYCAST). Of course, improved rail travel speeds and convenience over longer trips would attract more riders than Route 10 does today. With the two counter-balancing factors potentially acting to keep ridership constant, 100 percent of current bus riders were assumed to switch to rail in this assessment. The result is an AM average of 28 boarding passengers, or 56 entrain and detrain passengers each day.

The previously presented 70 percent growth rate (calculated from ABAG's *Projections 2000*) from 2000 to 2020 applied to the forecast 28.5 riders per day would result in 48 AM riders (96 daily riders) in 2020.

Comparison Using Morgan Hill Caltrain Activity

The Caltrain service offered in southern Santa Clara County is similar to the proposed commute service. It should be noted that the service operates in a corridor with significantly more travel delay than experienced in Napa County.

A number of rail stations are located on the Caltrain line. That most comparable in population to Calistoga is Morgan Hill, which station attracted 387 boarding passengers (or 774 total daily entraining and detraining passengers) in February 2000, out of estimated 20,700 employed residents located there. Applying the same ratio of boardings to residents to the 2,300 employed residents of Calistoga, yields 43 AM boardings, or 86 total daily entraining and detraining passengers. Applying the 70 percent growth in employed residents would result in a 2020 forecast of 73 boarding passengers, or 146 daily entraining and detraining passengers.

It is important to note that the concentration of employers near Caltrain stations is much higher than in the subject study corridor and longer-distance commuters are more prevalent in Morgan Hill. Thus, the forecast here is an optimistic reference point, rather than a direct ridership estimate.

Comparison Using Tracy ACE Train Activity

The Altamont Commuter Express (ACE) rail service operates between Stockton and San Jose. It is another peak-hour, peak-direction commuter service available to facilitate comparison, although it operates in a longer, more congested corridor.

Tracy is a popular station on ACE. In 2000, it was estimated that there were 220 boardings at Tracy and a census estimate of 15,500 working residents. Applying the same boardings to residents ratio to the 2,300 employed residents of Calistoga, resulted in 33 AM boardings, or 66 total daily boarding and detraining passengers. Applying the 70 percent growth in employed residents by 2020 to the current period estimate would result in 56 daily boardings, or 112 total.

It is important to note that longer-distance commuters are more prevalent in Tracy. Thus, this forecast serves merely as a reference point, not a ridership estimate.

Summary of Calistoga Ridership Assessments

A summary of the data indicates that fewer than 80 passengers would use the Calistoga station. Each of the various methods and their predicted results in 2020 are shown in Table 8-11.

Table 8-11

Daily Calistoga Boarding Forecasts – Alternative Ridership Assessments

Method	2020 Assessment	
	AM Peak Period Boardings	Daily Station Activity
MTC BAYCAST – Based	40	80
2000 Census – Based	31	62
Vine Route 10 – Based	48	96
Morgan Hill Caltrain Comparison*	73	146
Tracy ACE Train Comparison*	56	112

**Caltrain and ACE Train comparisons are provided for reference only.*
Source: DKS Associates.

The data clearly show that the number of AM boardings at a Calistoga station would be less than 40 a day, based on local travel patterns combined with 20-year population growth projections. Even if these patterns changed to become more representative of other areas with existing commuter rail service, the overall station boardings probably would not exceed 75 in the AM peak period, or 150 boarding and detrain passengers on a weekday.

Visitor Market Demand and Forecast

Annual Visitors

According to the Napa Travel and Convention Center, approximately 4.9 million visitors come into the Napa Valley every year. Approximately half of these travel to the area on a weekday and the other half over the weekend while approximately 1.7 million stay overnight. Visitors to the Napa Valley fall into three categories: those that stay overnight and two categories of those that visit the area as a "day tripper." People who stay overnight usually remain in Napa County an average of 2.8 days. Day trippers include residents of the Bay Area and Sacramento and those people that stay in hotels or with friends or relatives in Northern California.

Visitor Market Scenario Development

Visitor market analysis is less predictable than commuter market analysis. As each visitor experience is unique, the ability to structure the most attractive service requires investigation of local visitor characteristics.

Development of the visitor market scenario began by identifying regional tourist attractions within walking distance of particular stations. Those were not locations of interest to local residents but are, instead, those which yield a significant, long-distance attractiveness. Based on a quick survey of the area and feedback from study participants, a preliminary list of the most likely regional attractions, organized by station area, are:

- Downtown Napa – Copia (The American Center for Wine, Food and the Arts), retail shops;
- Calistoga - spas, wineries, geysers;
- St. Helena - wineries;
- Yountville - wineries;
- Oakville/Rutherford - wineries;
- Suisun/Fairfield - Jelly Belly factory and
- Vallejo - Six Flags Marine World.

In investigating visitor levels, it was determined that any visitor oriented services would need to service at least a portion of the "wine country" in Napa County. In the other direction, the service also would need to extend beyond Downtown Napa to provide a ride of sufficient length to be attractive to visitors. Assuming that commute services can operate the full corridor length, the most likely termini would be Fairfield-Suisun and/or the Vallejo Ferry Terminal. Without a longer distance, the attractiveness of using the train would be of negligible benefit to visitors and would not reduce congestion. The termini are referred to as "entry stations" for purposes of analyzing the visitor market.

Seasonality

In another screening assessment, it was determined that there are different daily, visitor markets, depending on the day of the week and the time of the year. Within Napa and Solano counties, it is believed that visitor demand is divided into four categories:

- *high visitor season* - when visitation is busy and traffic is congested, such as on summer weekends;
- *strong visitor season* - when visitor activity is strong but not reaching an overcrowded condition such as fall and spring weekends and summer weekdays;
- *medium visitor season* - when visitor activity is moderate such as spring and fall weekdays and winter weekends and
- *low visitor season* - when visitors are not a significantly noticeable factor and sites are not crowded such as occur on most winter weekdays and many winter weekends.

Table 8-12 lists each month to reflect weekdays, weekends and associated visitor demand.

Table 8-12

Tourism Demand by Month

Demand	Weekdays	Weekends and Public Holidays
High	*0 days*	May, June, July, August and September *45 days*
Strong (Medium to High)	June, July and August *66 days*	April and October *18 days*
Medium	March, April, May, September and October *107 days*	March and November *20 days*
Low	January, February, November and December *81 days*	January, February and December *28 days*
Source: DKS Associates (2002).		

It can be seen from the table that 130 days throughout the year were assumed to generate either a high or strong tourism demand. Weekend visitor demand is generally higher than on weekdays.

Visitor Types

In connection with each screening, separate screening assessments were carried out of three visitor types:

- day visits by Northern California residents;
- day trips by Northern California visitors and
- overnight visitors.

Day Visits by Northern California Residents

These visitors are residents of Northern California. They often will have high levels of auto accessibility and their demand for tourism will be manifested primarily on weekends. They begin their trip from their home in the region and intend on returning home during that day.

Day Trips by Northern California Visitors

Day tourism by visitors most likely will consist of persons staying in hotels in the region (primarily focused on San Francisco) intending to return to their hotel at day's end. Such visitors are often not as time-constrained as visitors from Northern California and are more likely to travel to the area on a weekday.

Overnight Visitors

These visitors stay overnight within either Napa or Solano County. It should be noted that there may be some redundancy; depending on the survey, such visitors also may be considered day trip visitors who are Northern California residents, as nearby residents may stay overnight. It is expected that similar to Northern Californian resident visitors, demand by overnight visitors would be higher over weekends. These overnight guests in the market area may include local conference attendees.

Each of the three above-described markets would feature different time-of-day needs and amenity choices. The needs of each of the markets are important to consider.

Visitor Train Experience

The experience of visiting the Napa Valley usually involves calls at a number of destinations in the valley, as opposed to one. A normal example is that a visitor may see at least two or three wineries during the day, as well as stop to consume a meal or refreshment. As many visitor destinations are not within walking distance of proposed stations, some shuttle services would be required.

One option initially considered was to operate shuttles from each station, using the rail mode as part of the shuttle system. However, that option was recognized as significantly reducing available visitation time. It would require each user to transfer twice – going from shuttle bus to rail, and then from rail to another shuttle bus – to travel between stations. It also would require a significantly higher level of service on the train in order to provide an opportunity for rail users to visit local attractions at their leisure. Finally, each shuttle bus would need to meet with trains on a just-in-time basis which would require additional layover time as the vehicles waited for trains.

To reduce system requirements, it was recommended that the visitor experience include a "package" approach, focused on visitors riding the train in one direction, with the other

direction being on a shuttle bus that would tour local attractions. The package approach would result in attracting three types of riders:

1. those who first would take a tour shuttle that would visit local sites, returning on a train. For example, a shuttle bus might leave from an entry station at 10:00 AM and provide a tour (with a possible lunch) that would conclude about 2:30 PM. A 3:00 PM train would return visitors to a station by 4:00 PM;
2. those who first would ride a train, returning on a tour shuttle that would visit local sites. The train might leave the entry station at 12:00 noon, reaching the end point at 1:00 PM. From there, a shuttle bus tour would continue the trip, returning to the entry station about 5:30 PM to 6:00 PM and
3. those who would make a round trip on the train without visiting local sites, riding the train as the preferred mode in both directions. In that instance, winery shuttles would meet each train and return before the train left. Time constraints might limit visitors to only one or two winery tours to meet the round trip schedule.

Canvas of Other Visitor Rail Operations in the U.S.

Each visitor destination is unique, as attractions differ by event duration and seasonality, the demographics of visitors and the length of time that visitors spend during their visit.

To provide a comparison, the RLBA team researched the visitor-ridership experience of various rail systems. A half dozen commuter rail services with weekend service were investigated, together with approximately two dozen exclusive tourist/excursion services. The services are believed to be representative of the subject market area, because they exhibit in common the following three characteristics:

- they mostly operate diesel-powered trains;
- the rail experience is combined with other experiences and activities and
- there is an element of seasonality in the services.

They were sorted into locations where commuter rail services are complemented by expanded visitor operations and those limited to a visitor-only tourist service. It should be noted that the NVWT was not covered in the canvas. Because it produces a substantially different visitor experience and charges a fare much greater than the norm.

Commuter Rail Targeted Visitor Service – Public Systems

The following systems invite the most logical comparisons with that which might operate in the Napa Valley.

The Long Island Rail Road (LIRR) offers a "One-Day Getaway" package, which includes round-trip rail and bus transportation, attraction admissions, lunch where indicated, tax and gratuity. Children enjoy reduced rates and special discounts are available to groups of 30 or more. Trips attract an average of 80 passengers. Table 8-13 includes a selection of available "Getaways."

Advance reservations are required and can be made in the following manner:

- by phone, fourteen days in advance to allow processing and mailing of the reservation;
- by touch screen ticket machines at which sales end by midnight on Thursday of the preceding week re cruises and deluxe coach bus tours, by midnight of the previous Thursday re regular weekend tours and by midnight Monday of the week of the tour re regular weekday tours and
- at ticket offices, at which tickets are on sale seven days prior to each trip and up to 30 minutes prior to departure (one hour at Mineola). Tickets may be purchased in person (cash or personal check only) at a LIRR ticket office.

The Downeaster operates along the northeast coast from Portland, Maine to Boston, Massachusetts. *The Downeaster* is an inter-city commuter rail service providing weekend schedules. On Saturdays and Sundays, there are two southbound morning trains, an afternoon train and an evening train. Northbound, there is a morning train, an afternoon train, an evening train and a late night train. The service features a distance-based fare schedule ranging from $13.00 to $35.00 re round-trip fares and $4.00 to $21.00 on one-way fares. Weekend fares are identical to weekday fares. *Downeaster* tickets may be reserved and purchased in the following manner:

- booking on-line at www.amtrak.com;
- calling Amtrak at 1-800-USA-RAIL;
- visiting Downeaster ticket offices at Portland and Boston's North Station;
- through a local travel agent and
- using Amtrak Quik-Trak ticket vending machines.

Table 8-13

Long Island Rail Road "One Day Getaway" Service Days

Day(s) of the Week	Getaway	New York City[1] Departure Time	Round-Trip Adult Fare	Dates	Distance from New York City	One-Way, Peak Adult Fare From New York City	One-Way, Off-Peak Adult Fare From New York City
Saturday	Montauk Festival	7:47 AM	$36.00	October 12	117 miles	$15.25	10.25
Saturday	Montauk Lighthouse	7:47 AM	$42.00	June 29, July 20, August 17 and September 7	117 miles	$15.25	$10.25
Saturday	Strawberry Festival	7:47 AM	$39.00	June 15	84.3 miles	$15.25	$10.25
Saturday	Vineyard Harvest	7:47 AM	$43.00	September 21	96.2 miles	$15.25	$10.25
Saturday/ Sunday	Wine Country	7:47 AM	$43.00	June 1, July 21, August 11 and September 29	84.3 miles	$15.25	$10.25
Sunday	Hampton Classic	7:47 AM	$54.00	August 25	83.0 miles	$15.25	$10.25
Saturday	Around Long Island	8:14 AM	$45.00	June 22, July 6, August 3 and 24 and September 14	96.2 miles	$15.25	$10.25
Saturday/ Sunday	Fall Foliage Cruise	9:05 AM	$59.00	September 15, October 5 and 26	11.2 miles	$5.50	$3.75
Saturday	Autumnfest	9:14 AM	$17.00	October 18	32.1 miles	$7.00	$4.75
Saturday	Calverton Cemetery	9:14 AM	$22.00	May 25; November 9	75.2 miles	$15.25	$10.25
Saturday	Stony Brook Village	9:14 AM	$31.00	June 30, July 14, August 4 and 18 and September 8	55 miles	$15.25	$10.25
Weekday	Skyline Cruise	9:16 AM	$56.00	July 12 and 25, August 2, 16 and 28	20.0 miles	$6.25	$4.25
Saturday	Hamptons Hopping	9:47 AM	$59.00	July 13 and 27, August 10 and September 28	83.1 miles	$15.25	$10.25
Weekday	Gatsby Estates	9:48 AM	$35.00	July 10 and 24, August 8 and 23	36.6 miles	$8.50	$5.75
Weekday	Oyster Bay Village	9:48 AM	$36.00	July 17 and 31, August 14	34.8 miles	$7.00	$4.75
Weekday	Lighthouse Cruise	10:01 AM	$57.00	July 11 and 26 and August 1, 15 and 30	11.2 miles	$5.50	$3.75

Notes: [1]New York City point of departure is Penn Station.
[2]Fares include shuttles, tickets and other fees.

Source: http//www.mta.nyc.ny.us/lirr/getaways/index.htm.

Packages such as "Boston's Best Package" which includes a daily welcome briefing, "Boston City Pass" including admission to several area museums and attractions and, the "Freeport Flings! The Shopaholic's Antidote!" which includes two nights-accommodations round trip train fare, round trip transfers (station/hotel/station) and continental breakfast are available.

The combined revenue on all the routes, on both Sundays and Saturdays produce greater revenue than each of the weekday services. Table 8-14 illustrates the greatest revenues on average by train and departure day. As shown in the table, Saturdays, on average, produce the greatest revenue and both the northbound and southbound morning and mid-morning trains as well as the northbound evening trains. Sundays, on average, produce the greatest revenue on the northbound afternoon train and the southbound evening train, while Mondays, on average, produce the greatest revenue on the southbound afternoon train.

Table 8-14

The Greatest *Downeaster* Revenue By Trains and Departure Days

Route Number	Direction of Travel	*Days of Travel*	Time of Depart from Portland	Time of Depart from Boston	Departure Day with Greatest Revenue[1]
678/680	Southbound	M-F/S-S	6:05 AM/6:30 AM		Saturday
681	Northbound	Daily		9:45 AM	Saturday
682	Southbound	Daily	8:45 AM		Saturday
683	Northbound	Daily		Noon	Sunday
684	Southbound	Daily	2:00 PM		Monday
685/689	Northbound	M-F/S-S		6:15 PM/7:45 PM	Saturday
686/688	Southbound	M-F/S-S	4:00 PM/7:00 PM		Sunday
687	Northbound	Daily		11:00 PM	Saturday

Note: [1]Day of Greatest Revenue is based on the average revenue per route from December 2001 through September 2002.

Source: Northern New England Passenger Rail Authority, November 2002.

The Beach Train in California connects stations in San Bernardino and Riverside Counties with beaches in Orange and San Diego Counties through Riverside County Transportation Commission's charter of trains from Metrolink in the summer. One train provides service to the beach; it departs Rialto, California at 7:35 AM and arrives at Oceanside at 10:00 AM and leaves Oceanside at 4:15 PM arriving back in Rialto at 6:35 PM. Table 8-15 illustrates the months in which service is provided.

Table 8-15

***The Beach Train* Service Months**

	January	February	March	April	May	June	July	August	September	October	November	December
Full Service[1]												
Notes: [1]Full Service: One train operating on Saturdays.												
Source: http"//www.stakethebeachtrain.com.												

Tickets must be purchased in advance either at a city office, by mail or on-line. A round trip adult fare is $15.00, a child's (ages 2-15) round trip fare is $10.00 while round trip fares charged a group of four or more adults are $13.00 each. Season passes are also available.

Exclusive Visitor/Excursion Service – Private Systems

The Ski Train operates one train a day connecting Denver, Colorado and Winter Park Ski Resort on weekends during the summer (June through August) and winter (November through March or April). Table 8-16 illustrates the months in which Ski Train service operates. During the winter, the train departs Denver at 7:15 AM, arrives at Winter Park at 9:30 AM, departs Winter Park after a full day of skiing at 4:15 PM and arrives back in Denver at approximately 6:30 PM. During the summer, the train departs Denver at 8:15 AM, arrives at Winter Park at 10:45 AM, departs Winter Park after a full day at the park at 3:15 PM and arrives back in Denver at approximately 6:00 PM. The route is 56 miles one way.

Table 8-16

Ski Train Service Months

	January	February	March	April	May	June	July	August	September	October	November	December
Saturday												
Minimal Service[1]												
Full Service[2]												
Notes: 1Minimual Service: Service Saturdays and Sundays.												
2Full Service: Service Friday through Sunday.												
Source: http://www.skitrain.com.												

A round trip coach adult fare is $45.00, children ages three to twelve years are charged $25.00 and children under two are free. Group fares are available to groups larger than people at $40.00 per person. A lounge seat is $70.00. Advance reservations are recommended and tickets are available on the website. Discount lift tickets also are available through the website and aboard the train.

The Belfast and Moosehead Lake Railroad Company located in Maine, operates June through October, primarily on Saturdays and Sundays and occasionally on Thursdays and Fridays. The company operates out of two stations, the Belfast Station, which offers excursions along the coast and the Unity Station, which offers excursions from Unity to Burnham Junction through the Maine countryside. Weekday trips from the Belfast Station to Waldo depart at 1:00 PM while Saturday/Sunday trips depart at 11:00 AM and are approximately 1 hour and 45 minutes. Weekend trips from Unity Station to Burnham Junction depart at 2:45 PM and are approximately two hours. There are no weekday trips from Unity Station. Table 8-17 illustrates the months of service that the Belfast and Moosehead Lake Railroad Company operates.

Table 8-17

***Belfast and Moosehead Lake Railroad Company* Service Months**

	January	February	March	April	May	June	July	August	September	October	November	December
Minimal Service[1]												
Full Service[1]												

Notes: [1]Minimual Service: Service 1 to 3 days a week.
[2]Full Service: Service 5 days a week.

Source: http://www.belfastrailroad.com.

All excursions are round trips, with no stops, powered by a vintage GE 70-ton diesel locomotive. The adult fare is $15.00; children (ages three through fifteen years) are charged $10.00 while children two and under are free. Family rates available at $45.00 include two adults and two children. Overnight packages including the Belfast Comfort Inn are available.

The Blue Ridge Scenic Railway is located in the Chattahoochee National Forest, Georgia. It operates one or two trains a day, on most Fridays through Mondays year-

round except for October, when it operates all month. There are three Blue Ridge Scenic Railroad operating schedules with trains departing at the following times:

- 10:00 AM and 2:30 PM;
- 11:00 AM and
- 2:30 PM.

Table 8-18 illustrates the months in which the Blue Ridge Scenic Railway operates.

Table 8-18

Blue Ridge Scenic Railway Service Months

	January	February	March	April	May	June	July	August	September	October	November	December
Minimal Service[1]												
Full Service[2]												

Notes: [1]Minimual Service: Service 2 to 4 days a week.
[2]Full Service: Service 7 days a week.

Source: http://www.brscenic.com.

The train route consists of a 26-mile round trip through Murphy Junction along the Toccoa River and is approximately three hours. The excursion begins at the depot in Blue Ridge, Georgia and includes a stop in McCaysville, which permits passengers to detrain the train. All trains are powered by a diesel locomotive.

The adult fare February through June is $19.95, senior citizens and children ages two through twelve are charged $15.95 and $9.95, respectively, while children under two are free. July through December, the fare is $24.95 adults, $20.95 with senior citizens and children ages two through twelve charged $20.95 and $12.45, respectively, while children under two ride free of charge. Advance reservations are recommended and tickets are available on their website.

The Polar Bear Express located in Ontario, Canada will operate one train a day between Cochrane and Moosonee Tuesday through Sunday, June 20 to August 31, 2003. Table 8-19 illustrates the months in which the *Polar Bear Express* operates. The train departs from Cochrane at 8:30 AM and arrives in Moosonee at 12:50 PM. At the end of the day, it departs Moosonee at 6:00 PM and arrives back in Cochrane at 10:05 PM. The route is 116 miles one way.

Table 8-19

***Polar Bear Express* Service Months**

	January	February	March	April	May	June	July	August	September	October	November	December
Full Service												
Notes: [1]Operates daily, except Mondays.												
Source: http://www.polarbearexpress.ca.												

Day trip fares expressed in Canadian dollars, are as follows: adults $58.00; students $50.00; seniors (60+) $53.00; children ages two through eleven years $29.00 and children two years and under are free. A Family Plan including mother/father and a maximum of four dependent children 21 years of age and under is $45.00. Overnight packages in Moosonee also are available. Advance reservations are recommended and tickets are available on their website.

***The Skunk Train*,** located in Fort Bragg, California operates one train a day 21.3 miles from Fort Bragg to Northspur, October through February, departing from the Fort Bragg Depot at 10:00 AM and then returning. During summer months, full day trips are available to Willits, a 40-mile trip one way. Table 8-20 illustrates the months in which the *Skunk Train* operates. The 1925 M-100 motorcar runs the line year-round, as does the 1935 M-300 motorcar. During the busier summer months, three 1950's, diesel-powered engines and Old Number 45, a 1924 Baldwin steam engine, join them.

Table 8-20

Skunk Train Service Months

	January	February	March	April	May	June	July	August	September	October	November	December
Half Day Service[1]												
Full Full[2]												
Notes: [1]Daily Service from Fort Bragg to Northspur. [2]Daily Service from Fort Bragg to Willits.												
Source: *http://www.skunktrain.com.*												

Round-trip fares are as follows: adults are $45.00 and children are $29.00. Half-day trips or one-way fares are as follows: adults are $39.00 and children are $18.00 on the steam train, adults are $31.00 and children are $18.00 on the diesel car and adults are

$29.00 and children are $16.00 in the motor car. Adult/child combination fares are available. Advance reservations are recommended.

The Garlic Train provides service from San Francisco, California to the Gilroy Garlic Festival located in Gilroy, California. The Festival is held on the last weekend of July. The train departs San Francisco 8:50 AM and returns to San Francisco at 6:50 PM. Other stops include Burlingame, Redwood City, Palo Alto and San Jose. The Garlic Train is sponsored by the Golden Gate Railroad Museum, which rents the trains from Caltrain. Round-trip tickets in 2001 cost $43.00 including entrance to the Festival and a Festival program. There were 1,800 passengers on the Garlic Train in 2001 compared with 125,000 people who attended the Festival. The train did not operate in 2002 due to Caltrain construction constraints.

Sonoma Tourism Survey Findings

In reviewing various documents regarding Napa County tourism, some visitor profile information is available but details are often sufficient enough to give a good indication of trip purpose and seasonality. In adjacent Sonoma County, different seasonality patterns across the county have been developed. They are available from a study by the Menlo Consulting Group on behalf of the Sonoma County Tourism Program/Economic Development Board. The surveys augment available information from Napa County sources.

Some summary findings from the Sonoma study are:

- about half of Sonoma County visitors come from California;
- they are most likely between the ages of 55 and 64;
- about 40 percent of the visitors live as a couple with no children at home ("empty-nesters"). Family vacationers are rare;
- over two-thirds (68 percent) are repeat visitors.
- while 41 percent of Sonoma County residents are "day-trippers," the number rises to 58 percent in the Sonoma Valley;
- two-thirds of survey respondents had internet access in 1999, which probably has grown to at least three-fourths by 2002;
- tour groups represent only 3.4 percent of all travelers;
- seasonality data compares different months, rather than differentiating between weekend and weekday. Some seasonality findings include the tact that seasonality is stronger in the County as a whole and in the Russian River region specifically, as opposed to the Sonoma Valley and in the Sonoma Valley, the weakest months are

December, January and February, with only about four to five percent of all annual tourists visiting in those months;

- the peak summer months of July and August produce only twelve percent of annual travelers in the Sonoma Valley each month, compared with over fifteen percent in Sonoma County as a whole;
- the Sonoma Valley tourist season is also strong from April through October, with at least eight to ten percent of annual visitors arriving each month (except in the higher months of July and August);
- the major reasons people visit Sonoma County are to visit a winery (44 percent) and to enjoy the scenery (33 percent);
- about 80 percent of Sonoma County visitors consider going to Napa County, which is a survey statistic that demonstrates the appropriateness of forecasting Napa County visitors using the same information and
- about 65 percent of the trips are get-away weekend trips.

Section 8.2: Review Potential Commute and/or Visitor Passenger Rail Trips by Line

Commuter Market Demand and Forecasts

This sub-section details the development of the potential number of commuter rail riders that might use the proposed rail services in Napa and Solano Counties based on assumptions with respect to service and fares and analyzes ridership potential using a range of different established forecasting techniques.

Assumptions

The number of users in commuter markets depends on both the inherent market character as well as the likelihood that a commuter will choose to use rail. As rail services can attract or discourage riders based on a number of factors, forecasting requires that a set of assumptions be introduced to define the characteristics of the service so that forecasts can be generated.

Service

Assumed train speeds and proposed schedules reflects those illustrated in Chapter 6.

Rail stations described in chapter 4 would serve commuters on:

the North Line segment at:

South Napa;
Downtown Napa ;
North Napa;
Yountville;
Rutherford and
St. Helena

the South Line segment at:

American Canyon;
Serreno Transit Center and
Vallejo Ferry Terminal

and on the East Line segment at:

Red Top Road/Cordelia and
Suisun City/Fairfield.

Fares

One common element in all existing Bay Area train services and the Napa and Vallejo bus transit operations is that fares are grouped into a system of charges graduated to vary with the service rendered, known as zones. For that reason, recommended rail stations were organized into four zones:

- Fare Zone/Group 1 (Vallejo and American Canyon);
  - Vallejo Ferry Terminal (Central Vallejo);
  - Sereno Transit Center (North Vallejo);
  - American Canyon;
- Fare Zone/Group 2 (Napa);
  - South Napa (at Imola College);
  - Downtown Napa;
  - North Napa;
- Fare Zone/Group 3 (Up Valley);
  - Yountville;
  - Rutherford;
  - St. Helena and
- Fare Zone/Group 4 (Fairfield);
  - Red Top Road and
  - Suisun City.

Using that grouping, two different rail system composite fare structures were developed based on:

- existing local bus services and existing CalTrain fares and
- solely commuter rail services (Metrolink and ACE).

All existing services that were examined feature a range of fares. To facilitate analysis, the fare levels arrayed are adult full fare (except where otherwise indicated).

Local Fare Composite

Caltrain and the two local bus transit systems – Vallejo Transit and VINE, charge similar fares over similar distances. The fares can be used to develop a composite rail system fare.

The distances between Caltrain zones are about eight to ten miles. As Table 8-21 shows, full-fare, adult, one-way fare levels vary between $1.50 and $7.25, depending on the number of fare zones, i.e., trip length.

Table 8-21

Caltrain Fare Table

	Number of Fare Zones in Journey								
Type	1	2	3	4	5	6	7	8	9
One Way	$1.50	$2.25	$3.00	$3.75	$4.50	$5.25	$6.00	$6.50	$7.25
Senior / Disabled Child (S/D/C)	$0.75	$1.00	$1.50	$1.75	$2.25	$2.50	$3.00	$3.25	$3.50
10 Ride Ticket	$12.50	$18.75	$25.00	$31.25	$37.50	$43.75	$50.00	$56.25	$62.50
S/D/C Monthly	$29.50	$44.00	$58.75	$73.50	$88.25	$103.00	$117.75	$132.25	$147.00
Monthly	$39.00	$58.50	$78.00	$97.50	$117.00	$136.50	$156.00	$175.50	$195.00
Ticket by Mail	$38.25	$57.25	$76.50	$95.50	$114.75	$133.75	$153.00	$172.00	$191.25

Source: http://www.transitinfo.org/Caltrain/fares.html.

The one-way adult full fare to ride Vallejo Transit is currently $1.25 on local trips and $3.00 on trips to Fairfield or BART. Detailed fares are presented in Tables 8-22 and 8-23.

Table 8-22

Vallejo Transit Fare Table (Local Services)

Category	Cash Fare	Monthly Pass	10-Ride Ticket
Regular (19-64)	$ 1.25	$ 32.00	$ 10.00
Youth (6-18)	$ 1.00	$ 22.00	$ 8.00
Senior (65 and over)	$ 0.60	$ 16.00	$ 5.00
Disabled	$ 0.60	$ 16.00	$ 5.00
Source: http://www.transitinfo.org/VT/fares.html.			

Table 8-23

Vallejo Transit Adult Fare Table (Commuter Services)

Category	2 Zone Vallejo - BART or Fairfield	3 Zone Fairfield – BART, Vacaville – Vallejo	Vacaville – Vallejo with Baylink Monthly Pass	Fairfield - Vallejo with Baylink Monthly Pass	4 Zone Vacaville - BART
Regular (19-64)	$ 3.00	$ 4.00	$ 2.50	$ 1.75	$ 4.50
Youth (6-18)	$ 3.00	$ 4.00	$ 2.50	$ 1.75	$ 4.50
Senior (65 and over)	$ 1.50	$ 2.00	$ 1.25	$ 0.90	$ 2.25
Disabled	$ 1.50	$ 2.00	$ 1.25	$ 0.90	$ 2.25
Source: http://www.transitinfo.org/VT/fares.html.					

The Napa VINE one-way, adult, full fare varies between $1.50 and $2.50 depending on distance. VINE service fare tables are itemized in Tables 8-24 and 8-25.

Table 8-24

VINE Adult Fare Table (Local Services)

Category	Fare
Adults (Ages 19-64)	$ 1.00
Students (Ages 6-18)	$ 0.75
Seniors (Ages 65-89 with valid I.D.)	$ 0.50
Seniors (Ages 90+ with a 90+ Pass)	FREE
Disabled of any age	$ 0.50
Children 5 and under (two per paying adult)	FREE
Additional children	$ 0.75
Source: http://www.transitinfo.org/VINE/fares.html.	

Table 8-25

VINE Adult Fare Table (Commuter Services)

	Calistoga	St. Helena	Oakville/ Rutherford	Yountville	Napa	American Canyon	Vallejo
Calistoga	$ 1.00	$ 1.00	$ 1.50	$ 2.00	$ 2.00	$ 2.50	$ 2.50
St. Helena	$ 1.00	$ 1.00	$ 1.50	$ 2.00	$ 2.00	$ 2.50	$ 2.50
Oakville/Rutherford	$ 1.50	$ 1.50	$ 1.00	$ 1.50	$ 1.50	$ 2.00	$ 2.00
Yountville	$ 2.00	$ 2.00	$ 1.50	$ 1.00	$ 1.00	$ 1.50	$ 1.50
Napa	$ 2.00	$ 2.00	$ 1.50	$ 1.00	$ 1.00	$ 1.50	$ 1.50
American Canyon	$ 2.50	$ 2.50	$ 2.00	$ 1.50	$ 1.50	$ 1.00	$ 1.00
Vallejo	$ 2.50	$ 2.50	$ 2.00	$ 1.50	$ 1.50	$ 1.00	$ 1.00

Source: http://www.transitinfo.org/VINE/fares.html.

Based on the fare schemes listed above, a composite rail system fare was developed as shown in Table 8-26. In accordance with that matrix, travel within one zone would cost approximately $1.50, travel between two zones (such as between Central Vallejo and either Napa or Fairfield would cost $2.50 and a three zone trip fare would be $3.50. Existing local fares are comparable to those with the exception of between Napa and Vallejo Ferry Terminal. Vallejo Transit charges a local fare of $1.25 and $3.00 between Vallejo and Fairfield (while Vacaville and Vallejo is $4.00). VINE (Napa County) charges $1.00 on local trips, between Napa and Calistoga $2.00 and $1.50 between Napa and Vallejo.

Table 8-26

Local One-Way, Full Adult Fare Composite Table

	St. Helena/ Rutherford/ Yountville	Napa	American Canyon/ Vallejo	Fairfield
St. Helena/ Rutherford/Yountville	$ 1.50	$ 2.50	$ 3.50	$ 3.50
Napa	$ 2.50	$ 1.50	$ 2.50	$ 2.50
American Canyon/Vallejo	$ 3.50	$ 2.50	$ 1.50	$ 2.50
Fairfield	$ 3.50	$ 2.50	$ 2.50	$ 1.50

Source: DKS Associates.
Fares used to compute farebox recovery and sensitivity.

Commuter Rail Fare Composite

A second composite fare system was identified by examining the fares charged on extant commuter rail systems. On those properties, intra-zonal fares are higher than on local bus systems, yet the additional distance charges between fare zones are not as significant.

Following the *ACE* fare structure shown in Table 8-27, the following fares would be charged on the commuter rail system within Napa and Solano: $3.00 for travel within one zone, $4.00 for travel between two zones and $7.00 for a three-zone trip. Each zone would span about ten to fifteen miles.

Table 8-27

***ACE* Fare Table (Adult)**

Zones	1	2	3	4	5	6
One-way	$ 3.00	$	$ 7.00	$ 8.00	$ 10.00	$ 11.00
Round-trip	$ 4.00	$	$ 11.00	$ 14.00	$ 18.00	$ 21.00
20 Trip	$ 35.00	$ 62	$ 88.00	$ 114.00	$ 141.00	$ 167.00
Monthly	$ 65.00	$ 113.(	$ 162.00	$ 210.00	$ 259.00	$ 307.00

Source: http://www.acerail.com.

In Southern California, one-way, full-fare travel within one *Metrolink* zone costs $4.25, travel between two zones is $5.25, travel between three zones is $6.25 and travel between four zones is $7.25. *Metrolink* publishes fares associated with travel up to seven zones at a cost of $10.75. Each zone is about 15 miles. Table 8-28 lists the adult fares on Metrolink.

Applying the fare scheme depicted in Table 8-28 to a prospective Napa-Solano rail system, a composite fare would be $3.00 to travel within an area fare zone, $4.00 to travel between two fare zones and $5.00 to travel between three area zones, as shown in Table 8-29.

Table 8-28

***Metrolink* Adult Fares**

No. of Zones	One Way	One Way, Off-Peak	Round Trip	Round Trip, Off Peak	10-Trip	Monthly
1	$4.25	$3.25	$6.75	$5.25	$28.25	$90.75
2	$5.25	$4.00	$9.00	$6.75	$40.00	$127.00
3	$6.25	$4.75	$11.50	$8.75	$51.25	$163.50
4	$7.25	$5.50	$13.75	$10.25	$62.50	$200.00
5	$8.50	$6.25	$15.75	$11.75	$73.75	$236.25
6	$9.50	$7.00	$18.50	$14.00	$85.00	$272.75
7	$10.75	$8.50	$20.50	$15.00	$96.50	$309.00

Source: http://www.metrolinktrains.com/news_update/past_news_releases/06_19_02_fare_increase.asp

Table 8-29

Commuter Rail, One-Way, Full Adult Fare Composite

	St. Helena/Rutherford/ Yountville	Napa	American Canyon/ Vallejo	Fairfield
St. Helena/ Rutherford/ Yountville	$ 3.00	$ 4.00	$ 5.00	$ 5.00
Napa	$ 4.00	$ 3.00	$ 4.00	$ 4.00
American Canyon/Vallejo	$ 5.00	$ 4.00	$ 3.00	$ 4.00
Fairfield	$ 5.00	$ 4.00	$ 4.00	$ 3.00

Source: DKS Associates.

Finally, it should be noted that Capitol Corridor station spacing is much further apart than on the proposed system in this potential project, so it is not useful for comparative purposes. The lowest Capitol Corridor fares are $3.00 between the two closest stations, Berkeley and Emeryville.

Forecasted Growth

According to the Association of Bay Area Governments (ABAG), population in the Bay Area will exceed 8.2 million people by 2025. Of the nine Bay Area counties, Solano and Napa Counties will experience the highest percentage growth during the forecast period, each adding more than 30 percent to its current population.

The 2000 census reports that the population of Solano County is close to 400,000. By the year 2010, the population of Solano County is expected to reach approximately

481,700 and by the year 2020, 547,400. It is predicted that there will be approximately 280,000 employed residents in 2020 (234,300 in 2010)[1].

Within Napa County, the existing population is 124,200 (Census 2000). With slower growth rates than projected in Solano County, there will be approximately 141,900 people in the area in 2010 and 156,900 in 2020. It is predicted that there will be 72,900 employed residents in 2010, increasing to 85,400 by 2020, of which nearly half will be in the service sector.

Table 8-30 lists projected changes in Napa and Solano County population and employment.

Table 8-30

Summary of Demographic Forecasts

	Napa County	Solano County
Population		
2000	127,600	401,300
2010	141,900	481,700
Percent Change 2010 – 2000	11%	20%
2020	156,900	547,400
Percent Change 2020 – 2000	23%	36%
Employed Residents		
2000	61,600	185,600
2010	72,900	234,300
Percent Change 2010 – 2000	18%	26%
2020	85,400	280,000
Percent Change 2020 – 2000	39%	51%
Number of Jobs		
2000	59,710	129,510
2010	77,310	148,870
Percent Change 2010 – 2000	30%	15%
2020	89,820	171,960
Percent Change 2020 – 2000	50%	33%

Source: Association of Bay Area Governments.

Along with overall growth projections, some trip types will grow faster than others. MTC provides an estimate of those. Table 8-31 summarizes MTC home-to-work trip

[1] *Projections 2000: Forecasts for the San Francisco Bay Area to the year 2020.* ABAG – Association of Bay Area Governments, December 1999.

projections in 2010 while Table 8-32 lists home-to-work trips in 2020. All data in those tables were amalgamated into regions based on MTC Superdistricts. Zones outside of the Napa, Solano, San Francisco and Oakland districts are included in the "Other" category. The tables also list the proportion of originating trips occurring in each zone. The work trip destination in each study district is shown and well as the proportion of the work trips I the growth from 1998.

Table 8-31

2010 Home-Based Work Trip Projections

Study District	Vallejo	Fairfield/Vacaville	Napa	Up Valley	San Francisco / Oakland	Other	Total
2010 Home-Based Work Trips							
Vallejo	35,330	6,275	8,831	1,539	19,972	46,644	118,590
Fairfield/Vacaville	29,413	114,759	11,215	1,293	13,503	45,405	215,587
Napa	7,906	2,375	39,300	6,733	3,707	14,911	74,932
Up Valley	1,113	685	10,716	14,022	728	4,126	31,391
San Francisco/Oakland	2,099	1,108	1,064	293	691,586	281,204	977,355
Other	14,935	9,773	11,270	2,836	615,204	4,005,491	4,659,509
2010 Proportion Home-Based Trips							
Vallejo	29.8%	5.3%	7.4%	1.3%	16.8%	39.3%	100.0%
Fairfield/Vacaville	13.6	53.2	5.2	0.6	6.3	21.1	100.0
Napa	10.6	3.2	52.4	9.0	4.9	19.9	100.0
Up Valley	3.5	2.2	34.1	44.7	2.3	13.1	100.0
San Francisco/Oakland	0.2	0.1	0.1	0.0	70.8	28.8	100.0
Other	0.3	0.2	0.2	0.1	13.2	86.0	100.0
Percent Change from 1998							
Vallejo	1.4	62.9	92.1	35.0	37.1	58.2	
Fairfield/Vacaville	59.0	32.0	106.1	38.6	111.4	-53.1	
Napa	31.8	60.8	20.4	-6.8	136.9	-86.1	
Up Valley	32.0	58.6	42.5	5.9	39.5	-92.9	
San Francisco/Oakland	109.5	168.0	224.2	110.7	37.6	84.2	
Other	52.8	82.8	104.8	37.7	74.6	13.3	

Source: MTC.

Table 8-32

2020 Home-Based Work Trip Projections

Study District	Vallejo	Fairfield/Vacaville	Napa	Up Valley	San Francisco/Oakland	Other	Total
2020 Home-Based Work Trips							
Vallejo	39,717	7,706	10,759	1,583	20,990	51,464	132,220
Fairfield/Vacaville	36,721	144,540	15,171	1,472	15,557	56,895	270,356
Napa	9,799	3,104	46,154	7,321	4,108	17,835	88,322
Up Valley	1,363	873	12,425	15,560	818	5,310	36,350
San Francisco/Oakland	2,452	1,372	1,318	292	724,368	308,232	1,038,035
Other	17,042	12,229	13,058	2,851	670,661	4,503,564	5,219,406
2020 Proportion Home-Based Trips							
Vallejo	30.0%	5.8%	8.1%	1.2%	15.9%	38.9%	100.0%
Fairfield/Vacaville	13.6	53.5	5.6	0.5	5.8	21.0	100.0
Napa	11.1	3.5	52.3	8.3	4.7	20.2	100.0
Up Valley	3.7	2.4	34.2	42.8	2.3	14.6	100.0
San Francisco/Oakland	0.2	0.1	0.1	0.0	69.8	29.7	100.0
Other	0.3	0.2	0.3	0.1	12.8	86.3	100.0
Percent Change from 1998							
Vallejo	14.0%	100.1%	134.1%	38.9%	44.1%	74.6%	
Fairfield/Vacaville	98.6	66.3	178.8	57.8	143.6	-41.3	
Napa	63.4	110.1	41.4	1.4	162.6	-83.4	
Up Valley	61.5	102.1	65.2	17.5	56.8	-90.9	
San Francisco/Oakland	144.8	232.1	301.5	110.0	44.1	101.9	
Other	74.4	128.8	137.3	38.5	90.4	27.4	

Source: MTC.

The trip tables show that in both 2010 and 2020, more than 60 percent of journey-to-work trips occur within the two counties (including trips made between the two counties), as compared to 1998 trip tables in which just over 42 percent of work trips were made locally. Also, in percentage terms, the number of Napa and Fairfield residents working in San Francisco or Oakland will double by 2010 and experience further increases in 2020.

Commuter Travel Demand Methodologies

In order to evaluate the probability that commuters would use the proposed rail transit system, data from the MTC Regional Transportation Plan (RTP) was used. MTC trip table data were used because the tables cover the entire Bay Area and are already forecasted to both 2010 (assumed start of operations) and 2020 (future forecast year).

Longer-distance trip data was collected at commute hours, focusing on home-based work and home-based school trips. Daily trip table estimates were collected and divided in half to estimate AM conditions.

The data was aggregated by MTC Traffic Analysis Zones (TAZ) into station catchment areas, which then were allocated to the appropriate station.

In addition, other study districts were created beyond the normal catchment basin distance of three miles. The districts are those locations where some may choose to drive to a rail terminal, although such areas are too far to run shuttle services to trains effectively. Districts in San Francisco, North Alameda and West Contra Costa benefit from existing, frequent transit distribution systems that are also potential train user destinations. The outer districts analyzed were defined as:

- Vacaville and Dixon/East County in Solano County;
- Lake Berryessa and Napa Hills in Napa County;
- Sonoma Valley in Sonoma County;
- West County in Contra Costa County;
- North County in Alameda County and the
- Financial District in San Francisco.

The next step was to exclude those trips that would not use the rail system. To estimate commute behavior, regional home-based, work trips were examined since such trip types are the target market of peak hour rail service. Some trips were excluded because:

- they were not in the corridor. An example would be trips between Fairfield and Central/East Contra Costa County, between Vallejo and West Contra Costa County or between Napa and the Sonoma Valley;
- they are better served by an existing, direct transit service. Some trips would be possible by rail through making two or three transfers, however much more

frequent and direct transit service is currently available. For example, it may be possible to use rail to travel between Fairfield and West Contra Costa County by boarding rail and then transferring to a bus in Vallejo. However, direct bus and rail service to West Contra Costa County is already offered by Vallejo Transit and Capitol Corridor rail service. Thus, such trips were excluded or

- the trip was a logical "drive-to-transit" trip but is unlikely to be served at the trip destination. For example, residents of Sonoma are assumed to be able to drive to the rail system but persons working in Sonoma would be too far away to benefit from effective shuttle bus service.

Trips then were aggregated into train routes proposed in the initial service plan. The routes were defined according to the parallel roadway corridors they would serve – Route 12, Route 29 and Route 80.

Once trips were determined, different methods were applied to determine commuter service ridership forecasts.

The methods included distance-based mode shares, comparisons to existing commuter rail ridership mode shares and time-sensitive.

Distance-Based Mode Shares

This method, based on research by Schiermeyer Consulting Services on the Sonoma-Marin rail or SMART project, is based entirely on the propensity to use rail as derived from the length of the rail trip as documented in boarding information from Metrolink (Los Angeles) and *ACE* (Stockton-Oakland-San Jose) trains that operate today. The method is useful as a guide to examine how commuters requiring longer trips are more likely to find commuter rail services attractive.

Assumptions implicit in the method include:

- job locations within two to two and one-half miles of the destination station, allowing for a fifteen-minute ride on a shuttle meeting all the trains;
- increasing congestion in all study corridors;
- sufficient and secure parking at all origin stations;
- a minimum of three trains during each peak period;
- commute riders only (home-based work trips);
- fares comparable to industry standards and
- short-distance trips are not carried on rail, as the intent is to serve longer trips.

Metrolink and ACE trains use a fare structure similar to the intercity fare composite developed in the above assumptions. As a result, there are not any short distance rail trips projected.

Since the method is based on the length of the rail trip, rail line trip distances generally were used. There were two exceptions made:

- shorter roadway distances were used instead of rail line distances between the east and south lines because the Suisun/Fairfield - Vallejo service is not a direct alignment between the end points and
- the ferry travel distance of 24 miles is treated as part of the overall rail trip because the long non-stop nature of ferry service is characteristic of a commuter rail service.

The general mode shares applied are indicated in Table 8-33. As shown in the table, there is a higher mode share of rail usage as commute distances lengthen, which reflects a logical relationship to driving time, as people with very long commutes are more likely to find value in available commuter rail service.

Table 8-33

Ridership Commuter Rail Distance/Mode Share Relationship

Distance: Origin to Destination	Mode Share Percentage
0 to 10 miles	0.0%
10 to 15 miles	2.5
15 to 20 miles	5.0
20 to 30 miles	10.0
30 to 35 miles	15.0
35 to 40 miles	20.0
Over 40 miles	25.0

Source: Schiermeyer Consulting Services.

There are limitations to the method. It is based on research of California commuter rail systems. Those systems often operate in corridors where driving time is often two to three times as long in peak hours as it is in free-flow conditions. It also should be noted that it is a distance-based rather than a impedance-based (using time and travel costs)

methodology so it does not take into account the effects of congestion, slower or faster train speeds and perceived financial attractiveness of driving versus rail. Finally, it is unclear whether the percentages apply to trips during the peak time or if they apply to all daily trips. Generally, about 62 percent of people commute to work during a three-hour AM commute in Napa County and that percentage is lower if a shorter commute time range is studied.

Generally, the method produces higher ridership estimates than would a more detailed method. An optimistic forecast often results because service depends on an extensive local shuttle system at the destination end to be effective in generating the ridership.

Comparison to Bay Area Commuter Rail Stations

This method is based on the relative success of the Caltrain commuter services offered in Southern Santa Clara County.

To provide a representative forecasting method, one sample location, Morgan Hill, was chosen because it represents a community where train users, are generally local residents, as it is not an end-of-line terminal. In addition, it has both shorter-distance and possible longer-distance rail trips, such as Morgan Hill - San Jose and Morgan Hill - San Francisco).

To contrast with the distance-based methodology and to show fare sensitivity, local trips are added into the system at the mode shares of transit found within the communities in which they operate. As most communities enjoy local bus service at 30 or 60 minute day-long frequencies, the introduction of rail would not affect areawide local (intra-city) trip mode shares significantly.

Travel Time-Sensitive Forecasts

The first two methods are based on ridership of existing rail systems. What remains is to compare what would happen with ridership in the specific study area, given both current transit mode shares and current trip patterns.

The proposed rail system would provide transit users a major benefit that they do not enjoy currently; longer trip transit travel times will be reduced substantially. The ability to take such time savings into account is an important assumption to examine more closely.

In the final ridership estimating technique, formulas used within Metropolitan Transportation Commission (MTC) travel models were used to adjust mode share percentages based on improvements in transit travel time.

Using pivot-point travel time improvement formulas, trip tables and currently estimated mode shares in the study districts were obtained from MTC. The mode shares represent all modes of travel between portions of the study area, including parallel bus service and park-and-ride trips. A station-to-station mode share was developed and the estimated percentages of travel remaining on the bus or using park-and-ride (but not rail) were deducted from the total. Park-and-ride trips were assumed in connection with Vallejo Ferry/San Francisco locations while parallel bus service only was assumed within the City of Napa, the City of Vallejo and between Vallejo and Fairfield. In other words, rail riders consist of some of those who use the bus today as well as new riders attracted to the rail system as a result of faster travel times.

Growth to 2010 and 2020 was determined by examining the overall projected increase in trips between study districts, according to the MTC 2020 Regional Transportation Plan forecast.

Visitor Ridership Assumptions

Service

Based on the above-described research, as well as other information about Napa County, the following service scenario parameters are recommended:

- **provide service that reaches Napa Valley Wineries**. The most important reason visitors are coming to Sonoma County is to visit wineries and this is likely to be even more so in Napa County. Further, visitors come to experience the scenery as the second most important reason and a trip that reaches the wineries would be more enhanced from that perspective as well;
- **provide a regularly-scheduled service during weekends throughout the year.** While the number of visitors in a peak month is more than double that is in off-peak month, continuous weekend service is suggested as many visitors are older, working-age couples seeking a weekend get-away and the seasonal variability is probably not as pronounced on weekends as it is on weekdays. The service should consist of two round trips during the day. If seasonal popularity warrants, additional trains could be added;
- **provide a regularly-scheduled service during mid-day throughout the year**. Again, seasonal variability exists but the Sonoma Valley experience shows it to be

more limited. In this study, two, mid-day trips are assumed, with the same schedules as weekend service. If low ridership were experienced, the number of trains could be reduced to one a day;

- **provide seat reservations.** While many transit vehicles have the ability to handle standing passengers, the age and the affluent nature of the visitors suggests that the guarantee of a seat will be important. Given that most visitors have internet access, a seat reservation system easily could be developed;
- **provide base fares comparable to commute fares**, but provide a reservation package that would include the train trip, connecting regional transit and shuttles to/from various attractions and
- **the total cost should be no more than comparable day tours** offered by private touring companies which offer tours of the Napa Valley using shuttle vehicles and limousines.

For illustrative purposes, visitor experiences might operate as follows, however precise train schedules would have to be coordinated with other services, as illustrated in chapter 6.

Fares

All fare packages were assumed to be round trips. Advance reservations would be necessary to book the packages which would include travel by ferry or the Capitol Corridor as described in Table 8-34. Round trip package tickets including passenger parking at stations would be available at the stations up until twenty minutes before departure. Train tickets would be reserved and purchased in the following manner:

- booking on-line;
- calling a toll-free number;
- visiting and staffed ticket offices or
- contacting a local travel agent.

All packages were assumed to include a $20.00 gift card that could be spent on the ferry, the train or in any winery. The gift card would function as a debit card that could be spent all in one transaction or until the value was exhausted as well as a pass to board various transit services. The pass also would double as the proof of payment method by riders on the train.

Table 8-34

Assumed Adult Round Trip Fares

Origin	Package	Full Adult Round Trip Fare	Description
San Francisco	Ferry from San Francisco, rail, winery shuttle and $20.00 gift card	$38.00	Ferry day pass - $15.00 winery shuttle - $3.00 Gift card - $20.00
San Jose	Capitol Corridor train, rail, Winery Shuttle and $20.00 gift card	$52.00	Capitol Corridor - $29.00 winery shuttle - $3.00 Gift card - $20.00
Sacramento	Capitol Corridor Train, Rail, winery shuttle and $20.00 gift card	$43.00	Capitol Corridor - $20.00 winery shuttle - $3.00 Gift card - $20.00
Vallejo Station	Rail, winery shuttle and $20.00 gift card	$23.00	winery shuttle - $3.00 Gift card - $20.00
Fairfield Station	Rail, winery shuttle and $20.00 gift card	$23.00	Winery Shuttle - $3.00 Gift card - $20.00

Source: DKS Associates.

Packages also would include access to shuttles escorting visitors to/from numerous wineries in the Napa Valley. The shuttles would operate and display a pre-selected route along with several routes available each day with the routes changing periodically.

One-way tickets also would be available with standard one-way fares. Those fares would be the same as the one-way commuter fares (see Table 8-34).

Section 8.3: Passenger Estimates by Weekday and Weekend by Line

Distance-Based Methodology

Distances between proposed stations rounded to the nearest tenth of mile are listed in Table 8-35.

The results of applying the distance-based methodology to 2010 projected total trips are shown in Table 8-36. The entire system of commuter services is estimated to attract about 2,300 AM boardings per day (4,600 daily boardings) in 2010. Specific ridership by corridor, derived from the application of the analysis is defined by market/corridor in Table 8-42.

Table 8-35

Distance Between Stations (Miles)

		Estimate		North Line						South Line			
	Station	Red Top Road/ Cordelia	Suisun/Fairfield	South Napa	Downtown Napa	North Napa	Yountville	Rutherford	St. Helena	American Canyon	Sereno/North Vallejo	Central Vallejo	Ferry (San Francisco)
E1	Red Top Road/ Cordelia												
E2	Suisun/Fairfield	7.5											
N1	South Napa	16.4	23.9										
N2	Downtown Napa	17.6	27.4	1.2									
N3	North Napa	19.8	27.3	3.4	2.2								
N4	Yountville	26.1	33.6	9.7	8.5	6.3							
N5	Rutherford	31.5	39.0	15.1	13.9	11.7	5.4						
N6	St. Helena	35.7	43.2	19.3	18.1	15.9	9.6	4.2					
S1	American Canyon	7.6	15.1	8.8	10.0	12.2	18.5	23.9	28.1				
S2	Sereno/North Vallejo	8.1	14.5	11.1	12.3	14.5	20.8	26.2	30.4	2.3			
S3	Central Vallejo	10.9	17.3	13.9	15.1	17.3	23.6	29.0	33.2	5.1	2.8		
S4	Ferry (San Francisco)	34.9	41.3	37.9	39.1	41.3	47.6	53.0	57.2	26.8	26.8	24.0	

Source: DKS Associates.

Table 8-36

Projected Total Trips by Station
2010 AM Peak Period
Distance-Based Method

		Estimate		North Line						South Line				
	Station	Red Top Road/ Cordelia	Suisun/Fairfield	South Napa	Downtown Napa	North Napa	Yountville	Rutherford	St. Helena	American Canyon	Sereno/North Vallejo	Central Vallejo	Ferry (San Francisco)	Total
E1	Red Top Road / Cordelia		0	19	2	4	2	1	3	0	0	19	8	58
E2	Suisun/Fairfield	0		319	63	96	48	24	69	185	55	220	146	1,225
N1	South Napa	2	37		0	0	0	6	10	0	5	22	17	99
N2	Downtown Napa	1	14	0		0	0	1	4	0	2	22	10	54
N3	North Napa	2	33	0	0		0	6	19	0	5	52	31	148
N4	Yountville	1	24	0	0	0		0	0	10	6	25	6	72
N5	Rutherford	0	4	8	1	2	0		0	0	1	4	3	23
N6	St. Helena	2	21	53	6	11	0	0		0	3	26	11	133
S1	American Canyon	0	14	0	4	6	4	3	5		0	0	8	44
S2	Sereno/North Vallejo	0	16	30	4	5	12	4	11	0		0	87	169
S3	Central Vallejo	6	38	18	6	10	11	4	14	0	0		0	107
S4	Ferry (San Francisco)	2	61	11	6	12	3	1	5	9	5	0		115
	Total From	16	262	458	92	146	80	50	140	204	82	390	327	2,247

Notes: Shaded cells represent the northbound direction.

Source: DKS Associates..

The initial results of the distance-based methodology applied to the year 2020 are shown in Table 8-37. In general, slight growth occurs. In some cases, the number of boardings decreased as slight shifts occur in regional travel patterns.

As Table 8-37 shows, the entire system of commuter services is estimated to have about 2,500 AM boardings assumed per day (5,000 daily boardings) in 2020. This is only slightly higher than in 2010 (assumed project opening).

Table 8-37

Projected Total Trips by Station
2020 AM Peak Period
Distance Based Method

		Estimate		North Line						South Line				
	Station	Red Top Road/ Cordelia	Suisun/Fairfield Fairfield	South Napa	Downtown Napa	North Napa	Yountville	Rutherford	St. Helena	American Canyon	Sereno/North Vallejo	Central Vallejo	Ferry (San Francisco)	Total To
E1	Red Top Road / Cordelia		0	8	4	6	3	1	4	0	0	24	10	60
E2	Suisun/Fairfield Fairfield	0		166	82	127	52	24	76	200	65	253	164	1,209
N1	South Napa	3	45		0	0	0	4	10	0	5	25	19	111
N2	Downtown Napa	1	19	0		0	0	1	4	18	2	25	12	82
N3	North Napa	3	44	0	0		0	4	18	36	6	61	35	207
N4	Yountville	3	29	0	0	0		0	0	34	6	30	7	109
N5	Rutherford	0	5	4	1	3	0		0	7	1	5	3	29
N6	St. Helena	3	29	14	6	18	0	0		23	4	32	13	142
S1	American Canyon	0	19	0	7	9	5	2	5		0	0	10	57
S2	Sereno / North Vallejo	0	21	10	5	7	12	3	11	0		0	91	160
S3	Central Vallejo	7	52	9	8	12	12	3	14	0	0		0	117
S4	Ferry (San Francisco)	4	66	12	6	13	3	1	4	12	5	0		126
	Total From	24	329	223	119	195	87	43	146	330	94	455	364	2,409

Notes: Shaded cells represent the northbound direction.

Source: DKS Associates..

Comparison Using Morgan Hill

Caltrain operates a one way rail service during commuter hours from Morgan Hill northward to San Jose and San Francisco. Morgan Hill is approximately 20 miles from San Jose, however the time required to drive in the corridor is longer than expected due to existing congestion problems in the area; most vehicle commutes require more than 60 minutes.

Existing AM boardings were used to calculate the existing rail mode share from Morgan Hill. Using three different 1998 MTC Baycast trip-purpose survey results, it was found

that there is an existing rail mode share of 15.41 percent from the Morgan Hill station to other stations to the north in the corridor. That mode share is comparatively high due to the following reasons:

- existing road congestion in the area;
- distance from other centers (it is approximately twenty miles to San Jose which is the closest large employment center) and
- the lack of alternative transit services.

That mode share was then applied to the Napa/Solano area to forecast ridership. However, the 15.41 percent mode share was not appropriate to apply to shorter trips.

Instead, the following local mode shares were applied to trips within a fare zone, based on 2000 census data:

- within Vallejo and American Canyon – 1.5 percent;
- within the Napa/Up Valley area – 1.8 percent and
- within Suisun/Fairfield – 2.0 percent.

Also, in the Fairfield - Central Vallejo corridor, inter-city bus service operates at higher frequencies. Because there is competing bus service, the mode share was divided by two to reflect the choices in transit that could be made.

As Table 8-38 shows, the entire system of rail commuter services is estimated to generate about 2,160 AM boardings per day (4,320 daily boardings) in 2010 based on the mode shares experienced at Morgan Hill, as adjusted.

Table 8-39 arrays the ridership estimates derived from the Morgan Hill mode share of 2020.

As Table 8-40 shows, the entire system of commuter services was estimated to attract about 2,230 AM boardings per day (4,460 daily boardings) in 2020. Many conclusions from this methodology are similar to those drawn from the distance-based methodology previously discussed and to the conclusion drawn with respect to 2010.

Table 8-38

Projected Total Trips by Station
2010 AM Peak Period
Morgan Hill Method

		Estimate		North Line						South Line				
	Station	Red Top Road/ Cordelia	Suisun/Fairfield Fairfield	South Napa	Downtown Napa	North Napa	Yountville	Rutherford	St. Helena	American Canyon	Sereno/North Vallejo	Central Vallejo	Ferry (San Francisco)	Total To
E1	Red Top Road/ Cordelia		0	8	1	1	4	1	2	1	0	15	4	37
E2	Suisun/Fairfield Fairfield	0		492	98	148	49	18	43	74	44	88	45	1,098
N1	South Napa	1	57		11	20	5	2	4	8	3	16	13	140
N2	Downtown Napa	0	22	27		8	3	1	1	0	1	8	8	79
N3	North Napa	1	51	70	15		12	5	7	0	3	19	19	201
N4	Yountville	2	24	0	0	0		0	0	4	9	39	4	82
N5	Rutherford	0	3	3	1	1	2		4	0	1	7	2	23
N6	St. Helena	1	13	19	2	4	15	0		0	3	27	7	92
S1	American Canyon	0	6	19	3	4	1	5	1		3	13	7	60
S2	Sereno/North Vallejo	5	13	22	3	4	19	6	1	0		68	67	208
S3	Central Vallejo	5	15	13	2	4	17	7	2	3	11		0	78
S4	Ferry (San Francisco)	1	19	8	4	8	2	1	3	7	8	0		61
	Total From	17	223	680	140	202	128	45	68	96	87	298	175	2,160

Notes: Shaded cells represent the northbound direction.

Source: DKS Associates.

Table 8-39

Projected Total Trips by Station
2020 AM Peak Period
Morgan Hill Method

		Estimate		North Line						South Line				
	Station	Red Top Road/ Cordelia	Suisun/Fairfield Fairfield	South Napa	Downtown Napa	North Napa	Yountville	Rutherford	St. Helena	American Canyon	Sereno/North Vallejo	Central Vallejo	Ferry (San Francisco)	Total To
E1	Red Top Road/ Cordelia		0	3	2	2	4	1	3	8	0	19	5	47
E2	Suisun/Fairfield Fairfield	0		255	127	195	53	18	47	80	52	101	51	979
N1	South Napa	1	69		13	27	5	2	4	27	4	18	14	185
N2	Downtown Napa	0	30	16		11	3	1	1	13	2	9	9	95
N3	North Napa	1	68	40	17		13	3	7	26	4	22	22	223
N4	Yountville	4	30	0	0	0		0	0	12	10	47	4	107
N5	Rutherford	0	4	1	1	2	1		4	10	1	8	2	34
N6	St. Helena	2	18	5	2	7	5	0		36	4	32	8	120
S1	American Canyon	0	8	12	5	6	2	4	1		3	15	8	63
S2	Sereno/North Vallejo	4	17	7	3	5	19	4	1	15		73	70	220
S3	Central Vallejo	6	21	6	3	4	18	5	2	11	13		0	89
S4	Ferry (San Francisco)	2	20	9	5	8	2	1	2	10	8	0		67
	Total From	21	284	356	177	269	126	39	72	248	100	345	192	2,229

Notes: Shaded cells represent the northbound direction.

Source: DKS Associates.

Table 8-40

Projected Total Trips by Station
2010 AM Peak Period
Travel Time-Sensitive Method

		Estimate		North Line						South Line				
	Station	Red Top Road/ Cordelia	Suisun/Fairfield Fairfield	South Napa	Downtown Napa	North Napa	Yountville	Rutherford	St. Helena	American Canyon	Sereno/North Vallejo	Central Vallejo	Ferry (San Francisco)	Total To
E1	Red Top Road/Cordelia		2	0	0	0	0	0	0	0	4	49	60	116
E2	Suisun/Fairfield Fairfield	0		11	209	428	16	57	17	186	10	414	250	1,598
N1	South Napa	0	21		27	23	2	0	2	4	2	20	215	316
N2	Downtown Napa	0	1	76		34	4	0	3	8	13	40	100	279
N3	North Napa	0	1	46	34		20	1	9	13	38	159	321	642
N4	Yountville	0	10	3	2	5		0	2	4	1	5	6	38
N5	Rutherford	0	1	0	0	1	0		4	0	1	2	2	11
N6	St. Helena	0	27	0	2	5	1	3		1	2	0	9	50
S1	American Canyon	0	2	33	16	19	3	0	2		5	41	77	198
S2	Sereno/North Vallejo	0	16	2	12	26	4	0	2	3		30	196	292
S3	Central Vallejo	0	79	3	7	15	2	0	2	2	19		0	127
S4	Ferry (San Francisco)	0	0	0	0	0	0	0	0	0	0	0		0
	Total From	0	160	174	309	554	52	63	43	220	96	760	1,235	3,667

Notes: Shaded cells represent the northbound direction.
Source: DKS Associates.

Travel Time-Sensitive Forecasts

Applying the travel time-sensitive forecasts yielded similar strong corridor ridership estimates, with additional riders anticipated in the routes between St. Helena and Vallejo and from Suisun/Fairfield and Vallejo. In particular, the currently unserved market at Napa and American Canyon would attract several hundred riders during the AM commute period. The forecasts also show a high volume of rail riders traveling to Central Vallejo and San Francisco. The market from Suisun/Fairfield was tempered by the assumed continued operation of express bus services. The actual ridership could be substantially less unless bus routes are restructured to meet the trains.

By 2020, continued growth should increase the riders in a similar pattern, as shown in Table 8-41. Again, the high dominance between the Fairfield area on the one hand Napa and Vallejo on the other result in the strongest ridership markets.

Table 8-41
Projected Total Trips by Station
2020 AM Peak Period
Travel Time-Sensitive Method

		Estimate		North Line						South Line				
	Station	Red Top Road / Cordelia	Suisun/Fairfield Fairfield	South Napa	Downtown Napa	North Napa	Yountville	Rutherford	St. Helena	American Canyon	Sereno/North Vallejo	Central Vallejo	Ferry (San Francisco)	Total To
E1	Red Top Road/ Cordelia		2	0	0	0	0	0	0	0	5	55	67	129
E2	Suisun/Fairfield Fairfield	0		9	177	362	13	48	14	210	12	466	281	1,592
N1	South Napa	0	27		25	21	2	0	2	5	3	26	279	390
N2	Downtown Napa	0	2	99		31	4	0	3	11	17	52	130	349
N3	North Napa	0	2	60	44		18	1	9	16	49	207	417	823
N4	Yountville	0	13	4	2	6		0	2	5	2	6	8	48
N5	Rutherford	0	1	1	1	2	0		3	0	1	3	2	14
N6	St. Helena	0	35	1	2	6	2	4		1	2	0	12	65
S1	American Canyon	0	3	30	14	17	2	0	2		7	52	97	224
S2	Sereno/North Vallejo	0	19	2	11	24	3	0	2	3		38	247	349
S3	Central Vallejo	0	96	2	6	13	2	0	1	2	24		0	146
S4	Ferry (San Francisco)	0	0	0	0	0	0	0	0	0	0	0		0
	Total From	0	200	208	282	482	46	53	38	253	122	905	1540	4,129

Notes: Shaded cells represent the northbound direction.
Source: DKS Associates.

Conclusions by Corridor

There are some specific conclusions associated with each market/corridor as shown in Table 8-42. They are discussed below:

Table 8–42

Summary of Results by Corridor

			2010			2020		
Corridor	**Origin**	**Destination**	**AM Peak Period Riders**	**Daily Riders**	**Annual Riders**	**AM Peak Period Riders**	**Daily Riders**	**Annual Riders**
Distance-Based Methodology								
Route 12	Fairfield	Napa	651	1,302	331,000	551	1,102	280,000
	Napa	*Fairfield*	*142*	*284*	*72,000*	*184*	*368*	*93,000*
Route 29	St. Helena	Vallejo	389	778	198,000	506	1,012	257,000
	Vallejo	St. Helena	245	490	124,000	224	448	114,000
Route 80	Fairfield	Vallejo	680	1,360	345,000	766	1,532	389,000
	Vallejo	*Fairfield*	*144*	*288*	*73,000*	*176*	*352*	*89,000*
Total System			2,251	4,502	1,143,000	2,407	4,814	1,222,000
Morgan Hill Comparison								
Route 12	Fairfield	Napa	865	1,730	439,000	711	1,422	361,000
	Napa	*Fairfield*	*176*	*352*	*89,000*	*228*	*456*	*116,000*
Route 29	St. Helena	Vallejo	437	874	222,000	526	1,052	267,000
	Vallejo	St. Helena	255	510	130,000	258	516	131,000
Route 80	Fairfield	Vallejo	349	698	177,000	400	800	203,000
	Vallejo	*Fairfield*	*78*	*156*	*40,000*	*106*	*212*	*54,000*
Total System			2,160	4,320	1,097,000	2,229	4,458	1,132,000
Travel Time Sensitive								
Route 12	Fairfield	Napa	738	1,476	375,000	625	1,250	317,000
	Napa	*Fairfield*	*61*	*122*	*31,000*	*79*	*158*	*40,000*
Route 29	St. Helena	Vallejo	1,319	2,638	670,000	1,709	3,418	872,000
	Vallejo	St. Helena	290	580	147,000	267	534	135,000
Route 80	Fairfield	Vallejo	1,148	2,296	583,000	1,317	2,634	657,000
	Vallejo	*Fairfield*	*108*	*216*	*55,000*	*133*	*266*	*67,000*
Total System			3,664	7,328	1,861,000	4,130	8,260	2,088,000
Composite Demand								
Route 12	Fairfield	Napa	751	1,502	378,500	629	1,258	c
	Napa	*Fairfield*	*126*	*252*	*63,300*	*164*	*328*	*82,500*
Route 29	St. Helena	Vallejo	716	1,432	360,700	913	1,826	460,200
	Vallejo	St. Helena	276	552	139,300	249	498	125,200
Route 80	Fairfield	Vallejo	726	1,452	365,900	828	1,656	417,200
	Vallejo	*Fairfield*	*140*	*280*	*70,700*	*139*	*278*	*70,000*
Total System			2,736	5,472	1,378,400	2,921	5,842	1,472700
Source: Tables 8-36 through 8-41.								

Suisun/Fairfield and Vallejo Market (I-80 Corridor)

The market features strong overall demand but is also the one best served by bus transit service. In addition, a number of transit options to reach San Francisco from the Suisun/Fairfield area are currently offered so train service would supplement/compete with existing services. Unlike the distance-based methodology, the mode shares along the line do not change whether passengers finish their trip at Central Vallejo or in San Francisco. One new market that would be served by the rail operation would be American Canyon. As that community grows, the rail system would link it to all other parts of the study area. The result is that ridership forecasts vary widely. While this is a large market, the network of local bus and parallel bus services will influence rail system ridership patterns directly.

Suisun/Fairfield and Napa Market (Route 12 Corridor Northbound)

The market shows the highest demand within the three corridors regardless of the forecast method employed. The market manifests strong potential as the trip demand between these locations is strong and there is currently no direct bus service between the locations.

Up Valley and Vallejo Market (Route 29 Corridor Northbound)

The market is clearly less advantageous to serve than those previously discussed because Vallejo was assumed to be an attractive bedroom community for San Francisco and East Bay workers, in contrast to other communities in the study area.

Up Valley and Vallejo Market (Route 29 Corridor Southbound)

The market appears to have less capability of generating ridership than the previous two. In particular, the northern portion of the corridor would not create substantial commuter demand. In contrast, the travel time-sensitive method demonstrated that there is the potential to greatly improve mode shares from the City of Napa given the introduction of rail service.

Other Markets Removed in Screening

Detailed analysis showed that the demand for commuting into Suisun/Fairfield from either Vallejo or Napa was very low.

Development of Tourist Market Demand

The tourist market demand is based on riders coming from various markets:

- one element of tourist markets are those people staying overnight in Napa County. Averaging the estimated 1.7 million annual visitors, it can be assumed that 4,700 people are visiting overnight on average every evening within Napa County. (Note that seasonality factors are not applied to the analysis.) It is assumed that those people on average would ride a train only once during their stay in the area regardless of the service. As those people stay an average of 2.8 nights in the area and likely only ride the train once, there is an effective average market of 1,700 people daily among overnight visitors. Optimistically, five percent of those people likely would ride the new visitor service or approximately 90 round trip passengers per average day. They could be expected to use the rail service between Fairfield and Vallejo in proportion to other visitors and

- the estimated 3.2 million annual "day trippers" to the Napa Valley equate to approximately 8,800 daily. Of those, the percentage of people who are likely to ride a visitor service is lower than that of the overnighters. It was assumed that three percent of visitors to the area likely would ride a visitor rail service (noting the Gilroy Garlic Festival visitor rail mode share is two percent). That mode share equates to approximately 260 roundtrips daily by day trip visitors using rail service.

Combining the approximately 90 rail passenger round trips per average day by those tourists who stay overnight in the Napa Valley with the approximately 260 round trip passengers per average day who are "day trippers" yields approximately 350 rail passenger round trips per day, approximately 700 trips per day or 252,000 per year, as shown in Table 8-43.

To allocate visitors between services to Vallejo and to Fairfield, travel markets were assigned to one of those destinations. With respect to the 31 percent of those coming from Northern California, markets were assigned to total population. For the remaining 69 percent coming from other areas, were allocated in accordance with overall visitor totals by county as provided by the State of California, Division of Tourism.

The allocation of visitors coming from other areas is as follows:

- Marin, San Francisco, San Mateo and Alameda Counties and 25 percent of Solano County would enjoy easy access to ferry services that would link to the Vallejo Transit terminal while
- Contra Costa and Santa Clara Counties, the Sacramento Region and 75 percent of Solano County would enjoy easy access to the Capitol Corridor that would then link to the Suisun/Fairfield station.

Table 8-43

Visitor System Annual Forecast Ridership by Line and Season

Tourist Demand by Season	From Suisun/ Fairfield		From Vallejo		Total	
	Daily One-Way Trips by Season	Seasonal One-Way Trips	Daily One-Way Trips by Season	Seasonal One-Way Trips	Daily One-Way Trips by Season	Seasonal One-Way Trips
Low	140	15,260	160	17,440	300	32,700
Medium	260	33,020	340	43,180	600	76,200
Medium to High (Strong)	400	33,600	500	42,000	900	75,600
High	680	30,600	820	36,900	1,500	67,500
Total		112,480		139,520		252,000
Note: Annual totals are different from the annual total previously stated due to rounding.						
Source: DKS Associates.						

The result of applying the above-described percentages suggests that 45 percent of visitors to the Napa area using rail would be from the Vallejo Ferry Terminal and 55 percent from the Suisun/Fairfield station. Using those proportions, the potential daily ridership on each of the two lines is shown in Table 8-43.

When overnight guests and day trippers were added together, approximately 350 people were assumed to use the train on an average day. Assuming that the rail system would operate 365 days per year, approximately 127,750 visitors could be expected to use the service annually.

However, ridership on the train likely would vary based on the season of the year. The seasonality of tourism services in the area has previously been calculated which resulted in four categories: low demand, medium demand, medium to high demand and high demand. Table 8-44 lists the months assigned to each of those categories. The number of days in each of the categories was assigned an arbitrary weighting factor based on information supplied by the Napa Visitor and Convention Bureau. The factors assigned to each of the four seasons were:

- low season - 1
- medium season - 2
- medium to high season - 3 and
- high season - 5.

Table 8-44

Visitor System Annual Forecast Ridership

Tourist Demand by Season	Weekdays		Weekends		Total	
	No. of days	Potential Seasonal Trips	No. of days	Potential Seasonal Trips	No. of days	Potential Seasonal Trips
Vallejo Train						
Low	81	12,960	28	4,480	109	17,440
Medium	107	36,380	20	6,800	127	43,180
Medium to High (Strong)	66	33,000	18	9,000	84	42,000
High	0	-	45	36,900	45	36,900
Total	254	82,340	111	57,180	365	139,520
Fairfield Train						
Low	81	11,340	28	3,920	109	15,260
Medium	107	27,820	20	5,200	127	33,020
Medium to High (Strong)	66	26,400	18	7,200	84	33,600
High	0	-	45	30,600	45	30,600
Total	254	65,560	111	46,920	365	112,480
Total – Both Trains						
Low	81	24,300	28	8,400	109	32,700
Medium	107	64,200	20	12,000	127	76,200
Medium to High (Strong)	66	59,400	18	16,200	84	75,600
High	0	-	45	67,500	45	67,500
Total	254	147,900	111	104,100	365	252,000
Note: Annual totals are different from the annual total previously stated due to rounding.						
Source: DKS Associates.						

The number of days in each of the seasons was multiplied by the weighted factor. The annual number of visitor trips was then divided by the resulting number, which resulted in approximately 150 trips every day during the low season, 300 visitors during the medium demand season, 450 per day during the strong demand season and 750 trips on summer weekends after the numbers are rounded to the nearest ten. Table 8-44 lists the number of days in each season and the potential ridership in each season.

Section 8.4: Fare and Service Elasticities

The ridership and fare revenue estimates discussed above are based on a set of service and fare structure assumptions. An important implied issue is whether changes in operations or fare structure will change ridership significantly. This Section presents sensitivity tests with respect to those issues.

Fare Elasticities

Rail passenger system ridership forecasting methods typically incorporate fares as a variable. The variable is used to approximate the impact of imposing fare increases on transit system demand. In theory, increases in transit fares should result in decreases in overall riders.

The long standing Simpson-Curtin "rule of thumb" in the transit industry is that for every three percent increase in fares, ridership will fall by one percent, equating to a fare elasticity of -0.33 (three percent divided by minus-one percent). An elasticity of -0.2 would suggest that fare increases impact ridership less, while an elasticity of -0.4 would suggest that fare increases impact ridership more.

A summary of previously published research on worldwide fare and service elasticities is periodically complied by the Victoria Transportation Policy Institute in Canada. In the Institute's 2002 paper on the topic, published by Todd Litman, the impact of US transit fare changes are estimated as an aggregate of -0.23 during peak hours and -0.42 during non-peak hours, found in a separate study by Larry Pham and Jim Linsalata on behalf of the American Public Transportation Association (1991). More detailed fare research demonstrated the importance of other variables such as the percentage of auto-dependent riders and length of trip. The research also noted that short-term impacts are less than long-term impacts but long-term impacts are influenced by a number of exogenous variables so that the elasticities have less validity. The paper generally concludes that peak elasticities can vary from -0.15 to -0.3 and non-peak from -0.3 to -0.6. Table 8-45 summarizes the results of the Victoria Transportation Policy Institute research.

Table 8-45

Victoria Transportation Policy Institute Research Summary

Study	Category	Fare Elasticity
Pham and Linsalata, 1991	Peak Average	- 0.23
	Off-Peak Average	- 0.42
VTPI Summary, 2002	Overall Short-Term	-0.20 to -0.5
	Peak Short-Term	-0.15 to -0.3
	Off-Peak Short Term	-0.30 to -0.6
	Overall Long-Term	-0.60 to -0.9
	Peak Long-Term	-0.40 to -0.6
Source: APTA; Victoria Transportation Policy Institute.		

However, real-world Bay Area example contradicts the findings of the above research associating the relationship of fare increases to ridership decreases. BART implemented fare increases in the early 1990's. The increases imposed were about ten to fifteen percent per year (depending on the trip). During those periods, ridership changed variably from one year to the next, as shown in Table 8-46. Between 1994 and 1995, BART lost riders, suggesting a fare elasticity of -0.13. However, during the next year, BART gained riders even though another fare increase of the same approximate magnitude was introduced. Part of the gain in the later period was attributable to both improvements in the local economy in San Francisco, as well as the opening of two new BART stations. However, obviously, other factors play a more significant role in ridership than do minor fare changes.

Table 8-46

BART Ridership/Fare Relationship

Year	Annual Riders (million entries)	Percent Change from Previous Year	Fare Increase	Fare Elasticity
1994	73.18	-1.03%		
1995	72.05	-1.54%	12%	-0.13
1996[a)]	72.45	0.56%	12%	0.05
[a)]BART extended to Colma and Bay Point.				
Source: BART; DKS.				

A final issue concerning the impact of fare increases on ridership is the presence or absence of competing transit services in the study area. For example, if bus services are offered in some portions of a rail corridor and such services are or become substantially less expensive than rail alternatives, more riders will ride a bus. Especially, on trips involving multiple transfers (such as from Fairfield/Suisun City to San Francisco), fares increases easily could affect mode choice. In this study, it was assumed that fare structures would not vary significantly over time so that each mode would attract and hold a reasonable proportion of the trips.

Applying a peak fare elasticity of -0.23 to trips in the corridor by commuter services, changes to ridership were estimated given a ten percent fare increase as summarized in Table 8-47. As that table shows, a general decrease in riders of two to three percent would be expected, assuming a general fare increase impacting the entire trip, not just the rail portion of the trip.

Table 8-47

Estimated Impact of Ten Percent Fare Increase on Ridership

			2010			2020		
Corridor	**Origin**	**Destination**	**Annual Riders**	**Impact on Number of Riders**	**Annual Riders After Increase**	**Annual Riders**	**Impact on Number of Riders**	**Annual Riders After Increase**
Route 12	Fairfield	Napa	378,500	-9,000	369,500	316,600	-7,000	309,600
	Napa	*Fairfield*	*63,300*	*-1,000*	*62,300*	*82,500*	*-2,000*	*80,500*
Route 29	Calistoga	Vallejo	360,700	-8,000	352,700	460,200	-11,000	449,200
	Vallejo	Calistoga	139,300	-3,000	136,300	125,200	-3,000	122,200
Route 80	Fairfield	Vallejo	365,900	-8,000	357,900	417,200	-10,000	407,200
	Vallejo	*Fairfield*	*70,700*	*-2,000*	*68,700*	*70,000*	*-2,000*	*68,000*
Total System			1,378,400	-32,000	1,346,400	1,471,700	-34,000	1,437,700

Source: DKS Associates.

No research into visitor rail system fare elasticities was discovered. As the train fares themselves would be only a portion of the overall visitor trip expense, the impact of increasing visitors could vary from 0 to the industry average of -0.42 in connection with off-peak trips.

Service Elasticities

While fare elasticities are often a function of market conditions, pivot point travel projection methods can be used to develop service elasticities. It should be recognized that the major beneficiary of more frequent service is short-distance trips, as this is where the greatest percentage reduction in journey time will be achieved.

To test the impacts of 15 minute weekday service, the RLBA team performed a sensitivity test using the travel time sensitive method of projections developed with respect to commuter behavior. The sensitivity provided a general percentage increase in ridership by line that was applied to the anticipated number of annual commuter riders.

As shown in Table 8-48, the results of the analysis show that ridership would grow by an estimated 163 percent over the initial forecasts. Although that seems sizeable, the effective cost of running many more train sets on a double-track configuration would be substantially greater than the 163 percent of the base project cost, so that the cost per rider would rise.

Table 8–48

Estimated Impact of 15-minute Weekday Service

			2010			2020		
Corridor	**Origin**	**Destination**	**Annual Riders**	**Impact to Number of Riders**	**Annual Riders after Increase**	**Annual Riders**	**Impact to Number of Riders**	**Annual Riders after Increase**
Route 12	Fairfield	Napa	378,500	538,000	916,500	316,600	450,000	766,600
	Napa	*Fairfield*	*63,300*	*82,000*	*145,300*	*82,500*	*107,000*	*189,500*
Route 29	Calistoga	Vallejo	360,700	533,000	893,700	460,200	681,000	1,141,200
	Vallejo	Calistoga	139,300	175,000	314,300	125,200	158,000	283,200
Route 80	Fairfield	Vallejo	365,900	744,000	1,109,900	417,200	848,000	1,265,200
	Vallejo	*Fairfield*	*70,700*	*120,000*	*190,700*	*70,000*	*119,000*	*189,000*
Total System			1,378,400	2,192,000	3,570,400	1,471,700	2,363,000	3,834,700
Growth in ridership					163%			162%

Source: DKS Associates.

Section 8.5: Recommended Fare Collection Method and Estimated Capital Costs

Transit systems collect fares in a number of ways. The advantages and disadvantages of each are discussed below:

In some instances, riders pay when they board, as the Napa and Solano County local bus transit systems do today. This is not recommended on the prospective rail system as it would create excessively long dwell times at each station. On some urban rail systems such as BART, riders pay before they board and wait for a train in a paid fare area. That system also is not recommended, as it requires ticket agents to be on duty at each station. High labor costs of that fare collection system would increase dramatically the needed subsidies required to operate the system.

Most commuter rail systems collect fares using a "proof of payment" system. On such systems, riders must purchase tickets before they board. It was assumed that a randomly working would staff member board and exist trains, spot-checking tickets and issuing warnings or fines to passengers riding without tickets. Such a system facilitates short dwell times without creating excessively high operating costs necessitated by having ticket agents at each stop or on each train. A final benefit is that the ticket agent would act as "eyes" on the train, increasing a rail riders, perceived and actual safety level.

Capital costs to install a fare collection system such as that in use on the *Caltrain* and *ACE* systems would be approximately $250,000. Fare machines would cost about $15,000 each and require an installation cost per machine approaching ten percent, or $1,500. One machine installed at all twelve recommended stations and an additional three purchased as spares would cost $247,500. Hardware would comprise $225,000 of the cost and installation of all machines would cost $22,500 as illustrated in Table 8-49 below.

Table 8-49

Fare Machine Capital Costs

12 Fare Machines @ $15,000 ea.		$180,000
3 Spare Machines @ $15,000 ea.		45,000
	Subtotal	225,000
Installation of 15 Machines @ 10 percent of individual cost		22,000
	Total	$247,000

Source: DKS Associates.

Section 8.6: Passenger User Revenue Forecast

The anticipated number of riders between stations is a direct input into calculating the estimated train service fare revenue. The revenue is important, as it directly influences the ability of the train service to recover its own operational costs, and thus affects overall service viability.

In order to determine fare revenue, two types of inputs are important. The first is the station-to-station travel patterns with respect to both commuter and visitor services. The second is the estimated average fare between any two points. In that calculation, the averaged method of commuter and visitor travel demand uses the fare structure based on Caltrain and current local transit operations.

The distinction between “full fare” and “average fare” is important when calculating fare revenue. Almost all rail services offer passes or multi-ride tickets. Further, a certain number of passengers also would purchase discounted tickets available to seniors or children.

A canvas of rail systems around the county suggested that average fares are typically 15 to 25 percent less than full fare. Specifically, Caltrain staff estimate that the average fare is 18 percent less than the full fare. For the purposes of this study, average fares are estimated to be 15 percent less than full fares.

The resulting fare revenue estimates are provided in Table 8-50. Annual 2010 and 2020 revenue estimates are provided. The estimates are in Year 2000 dollars; fare increases likely would be instituted sometime during the 10 year period so that actual fares and fare revenue would be higher.

Visitor revenue is more challenging to forecast as visitor fares are anticipated to be collected as a part of a larger package. For direct comparisons, the fares generated are calculated at the same fare structure as the commuter fares. In addition, the same 15 percent adjustment between full fares and average fares was also applied.

Table 8–50

Summary of Commuter Revenue Forecast by Corridor
(Year 2000 Dollars)

			2010		2020	
Corridor	**Origin**	**Destination**	**Annual Riders**	**Annual Revenue**	**Annual Riders**	**Annual Revenue**
Route 12	Fairfield	Napa	378,500	$830,000	316,600	$699,000
	Napa	*Fairfield*	*63,300*	*$154,000*	*82,500*	*$201,000*
Route 29	St. Helena	Vallejo	360,700	$715,000	460,200	$941,000
	Vallejo	St. Helena	139,300	$294,000	125,200	$260,000
Route 80	Fairfield	Vallejo	365,900	$1,003,000	417,200	$1,140,000
	Vallejo	*Fairfield*	*70,700*	*$144,000*	*70,000*	*$141,000*
Total System			2,736	$3,140,000	2,921	$3,382,000

Source: DKS Associates.

The results of the visitor revenue forecast is shown in Table 8-51.

Table 8–51

Summary of Visitor Revenue Forecast by Corridor and Season – 2010 and 2020

Season	**From Suisun/ Fairfield**		**From Vallejo**		**Total**	
	Seasonal One-Way Trips	**Seasonal Revenue**	**Seasonal One-Way Trips**	**Seasonal Revenue**	**Seasonal One-Way Trips**	**Seasonal Revenue**
Low	15,260	$48,000	17,440	$55,000	32,700	$103,000
Medium	33,020	$104,000	43,180	$136,000	76,200	$240,000
Medium to High (Strong)	33,600	$106,000	42,000	$132,000	75,600	$238,000
High	30,600	$96,000	36,900	$116,000	67,500	$213,000
Total	112,480	$354,000	139,520	$439,000	252,000	$794,000

Source: DKS Associates.

Other revenue sources:

The sponsors of the prospective rail service may supplement its revenues by an estimated 4 percent through advertising placement in the trains and/or on station platforms. A further revenue increment is possible by letting of concessions to vend candy, gum, snacks, printed matter, etc. at stations, or for that matter, on the trains themselves.

CHAPTER 9

CAPITAL AND OPERATING COSTS, FEASIBILITY, COST EFFECTIVENESS AND FUNDING

Section 9.1: Rail Operating Budget

Annual operating costs were developed in connection with the three proposed commuter services and two proposed visitor services. Each prospective service was treated as a stand-alone alternative, i.e., as if it and only it were implemented. That approach allows comparison of alternatives and an understanding of what the first, or a single, service would cost to operate. Implementation of more than one service would provide opportunities to share resources among multiple services, reducing the cost of each individual service below the levels indicated. Specific cost sharing opportunities include:

- reduction in the number of spare rail vehicles;
- use of commuter service trainsets by visitor service(s);
- potential crew utilization improvements among commuter and visitor services;
- shared general and administrative expense and
- shared station expenses.

Services were presumed to operate as outlined in Chapter 8 and summarized below in Table 9-1. Operating inputs were developed separately in connection with each potential route and type of service. St. Helena - Vallejo services were assumed to feature four trips in each direction during each peak period. Suisun/Fairfield - Vallejo and Suisun/Fairfield - Napa services were assumed to offer four trips outbound from Suisun/Fairfield and two return trips in the morning peak. The evening peak period features four return trips and two outbound trips on each route. The return trips are necessary to reposition trainsets to make additional peak directions trips but they allow a modest service to be offered in the reverse direction. The two visitor services each were assumed to offer two trips inbound to the Napa Valley gateway station at Rutherford and two outbound trips later in the day.

Table 9-1

Service Characteristics

	Commuter Services			Visitor Services	
Characteristic	**Suisun/ Fairfield – Vallejo**	**St. Helena - Vallejo**	**Suisun/ Fairfield - Napa**	**Vallejo - Napa Valley (Rutherford)**	**Fairfield - Napa Valley (Rutherford)**
Days Operated	Mon.-Fri.	Mon.-Fri.	Mon.-Fri.	Daily	Daily
AM Peak Period Trips	6	8	6	0	0
PM Peak Period Trips	6	8	6	0	0
Other Revenue Trips	0	0	0	4	4
Total Daily Trips	12	16	12	4	4
DMU Cab/Trailer Cars per Train	3	3	3	3	3

Source: RLBA.

Table 9-2 arrays estimated annual operating costs associated with each proposed passenger service. As to the three proposed commuter services, annual operating costs range from a low of $4.8 million on the Suisun/Fairfield - Vallejo route to a high of $7 million associated with operation of the St. Helena - Vallejo route. Higher operating costs on the St. Helena - Vallejo route reflect the greater distance and additional trains of that route as compared to the other commuter routes. As the distance of any route increases, so do cost components such as fuel consumption and track access fees. Costs increase in a similar manner as additional trains are operated. The operation of a visitor service between Vallejo and Napa Valley or Suisun/Fairfield and Napa Valley produces similar results with the shorter route between Vallejo and Napa Valley reflecting annual operating costs of $4 million versus the longer route between Fairfield and Napa Valley which results in operating costs of $4.2 million.

Estimated annual operating costs of each service were developed by applying the operating characteristics of each to unit costs that would be incurred in providing passenger service. Train operations expenses include the cost of train and engine crews, fuel, supervision of train operations and dispatching. Equipment maintenance expense reflects the number of DMUs required to provide the envisioned service and cost of maintenance estimated in Chapter 5.

Table 9-2

Estimated Annual Operating Costs
(Thousands of 2002 Dollars)

	Commuter Services			Visitor Services	
Operating costs:	Suisun/ Fairfield - Vallejo	St. Helena - Vallejo	Suisun/ Fairfield - Napa	Vallejo - Napa Valley (Rutherford)	Fairfield - Napa Valley (Rutherford)
Train operations, including dispatching	$1,324	$1,995	$1,361	$ 851	$ 942
Equipment maintenance	1,120	1,680	1,120	1,120	1,120
Maintenance of way	280	462	287	235	244
Station maintenance and operations	180	302	190	122	122
General and administrative	1,594	2,094	1,656	1,480	1,600
Contingency	262	398	267	209	218
Total operating costs	$4,760	$6,931	$4,881	$4,017	$4,246

Source: RLBA.

Maintenance of way expenses include the cost of track inspection, actual maintenance of the track structure, overhead and incentive payments to railroads to maintain the track at agreed-upon operating speeds. Maintenance of way expenses assume that each route is upgraded to permit train operations at a maximum of 60 miles per hour and that the owning railroad continues to maintain the route so that passenger service can be operated at the envisioned speeds.

Station maintenance and operations includes the cost to maintain and operate stations and provide the parking described in Chapter 4. No station staffing cost is incorporated in this estimate since it was assumed that the stations would be unstaffed.

General and administrative expenses reflect a four person staff to provide administrative oversight and service management. The estimate includes the cost of salaries and benefits, office rent, telephone, office supplies, audits, printing of tickets, marketing and liability insurance.

Contingency expense was set equal to ten percent of operating costs excluding maintenance of way and general and administrative expenses. Contingency expense was included to provide a cushion against the cost of unforeseen expenses that may

occur such as those associated with service disruptions, price increases or costs that would be incurred, but excluded from the original estimate.

A revenue estimate was developed based upon projected ridership and fare structure as described in Chapter 6. That estimate was applied to the operating cost estimate with respect to each segment, producing the annual operating subsidy requirements shown below in Table 9-3. The revenue listed in Table 9-3 includes proceeds from passengers on the two return trip trains from Vallejo to Suisun/Fairfield and Napa to Suisun/Fairfield.

Table 9-3

Annual Subsidy Requirement
(Thousands of 2002 Dollars)

	Suisun/ Fairfield - Vallejo	St. Helena - Vallejo	Suisun/ Fairfield - Napa	Vallejo -Napa Valley (Rutherford)	Fairfield - Napa Valley (Rutherford)
	Commuter Services			Visitor Services	
Total Operating Costs	$4,760	$6,931	$4,881	$4,017	$4,246
Revenue	1,147	1,009	983	439	354
Annual Subsidy Requirement	$3,613	$5,922	$3,898	$3,578	$3,892

Source: RLBA, DKS.

SECTION 9.2: Rail Passenger Start-Up Capital Costs

Capital costs associated with most major cost components have been presented in prior chapters. A few cost elements could not be estimated until the service plan was completed and thus are presented here for the first time. The major cost components previously examined include:

- infrastructure improvements (track and signals) in chapter 3;
- equipment maintenance shop (shop requirements were addressed in chapter 3, but the cost estimate is presented for the first time below in Table 9-4);
- stations (including ticket vending machines) in chapter 4 and
- equipment (rolling stock) in Chapter 5.

Table 9-4

Equipment Shop Cost Estimate

Facility Element	2002 Cost ($000)
Site Access and Preparation	$5,227
Right-of-way	250
Access Roads and Parking	200
Subtotal	$5,677
Shop Building:	
Shop Area, Service and Inspection	$4,800
Administration and Welfare Area	1,080
Car Wash	825
Car Wash Support	300
Overhaul Area	1,260
Outdoor Pad	900
Shop Equipment	1,250
Car Wash Machinery	750
Fueling and Sanding	1,200
Subtotal	$12,365
Trackage:	
Site Access and Preparation	
Track	$129
Mainline Turnouts	110
Yard Lead and Storage Tracks:	
Track	330
Turnouts	225
Shop, Car Wash and Tail Tracks	
Track	347
Turnouts	90
Track Grading and Sub-ballast	317
Subtotal	1,548
Total Estimated Cost	$19,590

Source: LTK.

Elements addressed here for the first time include:

- passenger meeting sidings and
- passenger station tracks.

The function and location of passenger meeting tracks was discussed in Chapter 8. A cost of $4.8 million per meeting siding is estimated. Passenger station tracks consist of a second track at each terminal station equipped with a power switch and appropriate signals. Tracks would be designed to permit the arrival or departure of one train while another is standing at a station. They also permit daytime storage of trainsets. A cost of $1.4 million each is estimated.

The total cost of implementing all five service options is presented in the following Table 9-5.

Table 9-5

Capital Costs – All Routes

Item	Amount (2002 $ millions)	Source
Infrastructure Improvements	$93.1	Table 3-7 page 16
Passenger Meeting Tracks	9.6	Chapter 8, RLBA estimates.
Equipment Maintenance Shop	19.6	LTK
Passenger Station Tracks	4.2	Chapter 8 RLBA estimates.
Stations	14.3	Chapter 4
Equipment Costs	76.0	Chapter 8, RLBA estimates, LTK. Assumes Commuter Equipment is used for visitor services.
Total	$216.8	

Revised capital costs related to an extended passenger bypass in Napa and one in Suisun were determined. Extending the bypass 4.5 miles would increase capital costs on the Napa Junction - Napa Segment from $22,931,000 to $27,234,000. Constructing the bypass in Suisun would increase capital costs in the Napa Junction - Suisun segment from $19,699,000 to $27,488,000. Total system capital costs would rise from $93 million to approximately $104 million. These revised costs address concerns raised by UPRR and CFNR and could become the subject of future negotiations were service to be

implemented. At this time they are considered possible requirements but not included in the total capital cost estimates below in Table 9-6.

In keeping with the operating cost presentation in Sub-section 9.1, Table 9-6 presents the capital cost associated with each service option on a stand-alone basis, i.e., as if only that option were implemented.

In the case of service to Vallejo it is assumed the City of Vallejo would contribute the needed right-of-way from the Navy-owned track to the ferry terminal.

Table 9-6

Capital Costs By Stand-Alone Service Option

Item	Suisun/ Fairfield - Vallejo Commuter Service	St. Helena - Vallejo Commuter Service	Suisun/ Fairfield - Napa Commuter Service	Vallejo - Napa Valley (Rutherford) Visitor Service	Suisun/ Fairfield - Napa Valley (Rutherford) Visitor Service
	(2002 $ millions)				
Infrastructure Improvements	$43.4	$ 69.2	$39.4	$ 69.2	$ 65.2
Passenger Meeting Tracks	4.8	4.8	9.6	-	-
Equipment Maintenance Shop	19.6	19.6	19.6	19.6	19.6
Passenger Station Tracks	2.8	2.8	2.8	2.8	2.8
Stations	6.8	10.2	6.4	4.0	4.0
Equipment Costs	22.0	32.0	22.0	22.0	22.0
Total	$99.4	$138.6	$99.8	$117.6	$113.6

Source: Chapter 4 and work papers, RLBA estimates.

The two proposed visitor services deserve specific comment. Were commuter service implemented on routes over which either of them would operate, incremental capital costs associated with the overlay of visitor services would be negligible. Almost all the needed track, stations, equipment and shop facilities already would be available and of appropriate design and utility.

Section 9.3: Feasibility And Cost Effectiveness

The decision about whether a proposed service is feasible or cost effective ultimately rests with the potential sponsors who can best judge local needs and priorities. The study to date has discovered nothing that would make the proposed services infeasible from a technical standpoint. Comparison of some projected operating measures with those of existing or developing rail systems may provides a perspective on which to draw conclusions about cost effectiveness.

The National Transit Database (NTD) publishes two measures of cost effectiveness:

- Operating Expense per Passenger Mile and
- Operating Expense per Unlinked Passenger Trip.

The Federal Transit Administration (FTA) collects and disseminates data on the state of mass transportation via the NTD program. Over 600 of the nation's transportation providers submit data to the NTD annually. Assorted operational, financial, demographic and other related data are valuable resources in providing a benchmark with regard to existing and emerging transit providers.

Table 9-7, Existing Service Comparisons, was compiled from information supplied by the NTD and RLBA calculations. The significance of the data is that it represents *the actual performance of existing passenger rail services*.

In addition to examining currently operating services, it is instructive to compare the proposed services against other proposed services that have been evaluated under FTA's New Starts Criteria and approved for partial Federal funding. In addition to the relevance of going through the FTA process, the projections represent current expectations in terms of capital costs and ridership as opposed to looking at capital costs incurred ten or more years ago when rail systems that are still considered "new starts" were in planning and development. Table 9-8, New Starts Comparisons, was compiled from FTA's *Annual Report on New Starts Proposed Allocations for Fiscal Year 2003* and RLBA calculations. Annual ridership was determined by means of multiplying average estimated weekday ridership numbers from the *New Starts* report by 255 service days. Operating expenses and capital costs were available from the report with expense per passenger calculated by RLBA.

Table 9-7

Comparison of Existing Commuter Services
(2002 Dollars)

Commuter Rail Provider	Passenger Revenues	Total Operating Expenses	Farebox Recovery (Percent)	Annual Unlinked Trips	Operating Expenses per Passenger Mile	Operating Expenses per Unlinked Passenger Trip
Capitol Corridor	$12,200,000	$32,842,038	37%	1,079,779	*$0.45	*$30.42
Metrolink	35,802,747	75,286,962	48	7,397,965	0.27	10.18
ACE	4,492,564	8,323,405	54	918,761	0.21	9.06
VRE	10,358,348	21,339,791	49	2,428,533	0.29	8.79
Tri-County	5,915,148	21,482,783	28	2,543,514	0.28	8.45
NICTD	14,036,236	29,688,910	47	3,771,593	0.28	7.87
METRA	189,380,861	407,415,706	46	72,121,795	0.29	6.16

*Amounts calculated by RLBA reflect full cost of train service.
The Capitol Corridor Joint Powers Authority (CCJPA) equivalent to Operating Expense per Passenger Mile is expressed as Train Only State Cost per Passenger Mile, which incorporates only the state portion (subsidy) of the total operating cost. Appendix C (Capitol Corridor Performance Standards FY 2001-02 to FY 2004-05 of the Capitol Corridor Service February 2003 Business Plan Update expresses the Train Only State Cost per Passenger as $.25. Using CCJPA's Train Only State Operating Cost, RLBA calculates the Operating Expense per Unlinked Passenger Trip as $17.09.

Source: 2001 National Transit Database and RLBA Calculations.

Table 9-8

New Starts Comparisons
(all figures estimated in 2002 dollars)

Service	Annual Ridership	Operating Expenses $	Capital Costs $	Operating Expenses Per Passenger $	Capital Costs Per Passenger $
Sonoma-Marin Area Transit-Cloverdale-San Rafel, CA	1,213,800	9,000,000	200,000,000	7.41	164.77
Oceanside-Escondido Rail Corridor - North San Diego County, CA*	3,850,500	na	$332,300,000	-	$86.30
Phase I Regional Rail Project – Raleigh, NC*	8,083,500	$48,100,000	754,800,000	5.95	93.38
I-35 Commuter Rail – Johnson County, KS/Kansas City, MO	663,000	4,200,000	30,900,000	6.33	46.61
East Corridor Commuter Rail - Nashville, TN	357,000	3,000,000	32,200,000	8.40	90.20
Northstar Corridor Commuter Rail, Minneapolis - Rice, MN	2,754,000	15,600,000	270,600,000	5.66	98.26
Everett - Seattle Commuter Rail, WA	1,351,500	na	104,000,000	-	76.95
Wilsonville - Beaverton Commuter Rail, OR	1,185,750	3,900,000	82,800,000	3.29	69.83
* DMU Recommended Equipment					
Sources: Annual Report on New Starts Proposed Allocations of Funds for Fiscal Year 2003, Federal Transit Administration; RLBA calculations.					

Table 9-9 presents projected cost effectiveness measures associated with construction and operation of the five potential services, each on a stand-alone basis.

Napa/Solano Service Performance

All of the cost effectiveness measures are based to some degree on expected ridership. The moderate ridership projected here in connection with Napa/Solano rail passenger services causes the cost effectiveness measures to compare poorly against those of existing and projected New Start services. Capital cost per rider estimates of the three Napa/Solano commuter services are twice or more those projected in connection with recently approved New Start projects. Were visitor services to be implemented on a stand-alone basis, their capital cost per rider measures would be even farther removed from those of approved New Start systems.

The two operating cost measures (operating cost per unlinked passenger trip and operating cost per passenger-mile) also involve ridership in their denominators, directly in the use of unlinked passenger trips and indirectly in the use of passenger-miles. However, the modest scale of the expected commuter services, with no mid-day schedules and favorable equipment utilization, produces operating costs low enough to keep the measures somewhat in line with those of existing services. Operating cost per passenger trip of the Suisun/Fairfield - Vallejo and Suisun/Fairfield - Napa commuter services are only slightly higher than the same figures reported by several existing services. The proposed commuter services are not long as some existing commuter rail corridors and thus expected average trip lengths are not long and total passenger miles are not high. Not surprisingly, therefore, operating costs per passenger mile of the proposed services are well above those of existing services. The St. Helena - Vallejo service option fares the worst of the three in both measures because the increased train-miles resulting from bi-directional service and greater corridor length yield a ridership only slightly larger than that expected on the other commuter corridors. The two visitor services measure poorly if operated on a stand-alone basis due to their modest ridership expectations compared to those of the commuter service options.

Table 9-9

Projected Cost Effectiveness Measures, 2010
(Stand Alone Basis in 2002 Dollars)

Measure	Capital Costs[a/]	Annual Unlinked Trips	Capital Costs per Unlinked Passenger Trip[a/]	Operating Expenses[b/]	Projected Revenues	Required Annual Subsidy[b/]	Passenger Miles	Operating Expenses per Unlinked Passenger Trip[b/]	Operating Expenses per Passenger – Mile[b/]
Suisun/Fairfield – Vallejo Commuter Service	$99,427,000	454,046	$ 218.98	$4,760,000	$1,147,000	$3,613,000	$7,423,953	$10.48	$0.64
St. Helena – Vallejo Commuter Service	138,600,000	519,808	266.64	6,931,000	1,000,900	5,922,000	4,881,000	13.33	0.96
Suisun/Fairfield – Napa Commuter Service	99,783,000	459,810	217.01	4,881,000	983,000	3,898,000	11,052,994	10.62	0.44
Vallejo – Napa (Rutherford) Visitor Service	117,600,000	139,520	842.89	4,017,000	439,000	3,578,000	4,632,064	28.79	0.87
Suisun/Fairfield Napa Valley (Rutherford) Visitor Service	113,571,000	112,480	1,009.70	4,246,000	354,000	3,892,000	4,454,208	37.75	0.95

Source: RLBA.

Notes:

[a/] Excludes acquisition cost of land for stations and rights-of-way.
[b/] Excludes track access costs.

Operating costs listed include those from passengers on the two return trip trains from Vallejo to Fairfield/Suisun and Napa to Fairfield/Suisun.

Bus Operating Costs

Direct comparison of bus and rail operating costs is very difficult, since it begins with an assumption that a bus transit system could be designed to attract the same number of riders as a parallel rail system. This is not necessarily the case, as has been proven through numerous rail corridor projects, where rail ridership exceeded that on bus service it replaced in the same corridor.

Bus service depends on the speed of roadway operations under mixed flow conditions unless dedicated lanes can be provided. In the territory being considered, there are no HOV lanes available and only limited opportunity to provide transit preferential facilities that would provide the speed and reliability required to attract private motor vehicle drivers to bus transit. In addition, rail service is alluring to visitors in a manner that cannot be duplicated easily by bus, especially by a traditional public transit bus.

Despite such disadvantages, buses do offer some advantages over rail service. Stops or “stations” can be more flexibly located and buses can deviate from main roads where necessary to better serve large employers or other primary destinations. Buses can be designed to operate in Bus Rapid Transit mode, with fewer stops, emulating rail service, but do not need the substantial station areas typically required by rail. In addition, because buses are lower capacity vehicles, they can be operated at higher frequencies to serve the same number of riders, which may be attractive to passengers.

While this study does not include a specific bus service design as an alternative to rail, the following text, to facilitate comparison, focuses on operating costs that would be incurred by a bus system that could attract the same number of riders as projected in connection with a parallel rail system.

Peak Period Rail Ridership Estimates

Chapter 6 presented a range of potential ridership by corridor using three alternative methods. Peak period ridership in each corridor is summarized below; ridership was expected to be the same in the morning and evening peak periods. The 2010 ridership estimates shown in Table 9-10 reflect an average of the ridership estimates obtained from each of the methods used. While all day ridership also was estimated, the peak

period market in each corridor will dictate bus system size and service frequency. Service would be provided throughout the day as needed.

Table 9-10

Estimated Rail Ridership Summary by Corridor

Corridor	Origin	Destination	Peak Period Ridership
Suisun/Fairfield - Napa (Route 12)	Fairfield	Napa	751
	Napa	Fairfield	126
St. Helena - Vallejo (Route 29)	St. Helena	Vallejo	716
	Vallejo	St. Helena	276
Suisun/Fairfield - Vallejo (Route 80)	Fairfield	Vallejo	726
	Vallejo	Fairfield	140

Source: RLBA.

Bus Transit Travel Times

Most of the corridors in question already have some type of bus service. For example, VINE Route 10 currently serves the Up Valley-Vallejo market. The service is slow due to numerous stops along the route. To make a reasonable comparison, projected future bus transit travel speeds were assumed to increase to reflect a smaller number of stops at station type locations in a bus rapid transit mode.

During the midday period, more stops may be offered, to serve visitors and others who are traveling to intermediate locations that would not be well served by longer distance station spacing. In addition, running times were hypothesized over the segment between Calistoga and St. Helena, since a bus option likely would continue on to Calistoga.

Table 9-11 shows estimated bus transit travel times in each corridor. Where existing bus service is offered, current scheduled times are shown in addition to proposed “express” travel times.

Table 9-11

Existing and Projected Bus Transit Travel Times

Travel Corridor	Current Bus Travel Time (one way)	Projected Bus Travel Time (one way)	Roadway Travel Time
Suisun/Fairfield - Vallejo	52	30	19
Napa - Vallejo	49	40	30
St. Helena - Napa (incremental only)	44	40	30
Calistoga - St. Helena (incremental only)	14	15	14
Suisun/Fairfield - Napa	-	30	38

Source: RLBA.

Required Bus Transit Trips

The number of bus transit trips required to serve peak period ridership must be determined. Assuming 40-foot buses with 42 seated passengers and a requirement that all passengers have a seat, Table 9-12 shows the number of trips that would be required in each corridor. Schedule frequency is determined by dividing the number of one-way trips required over an assumed 3-hour peak period. Actual frequencies would be adjusted based on a more complete operating plan.

Because bus vehicle capacity is far more limited than train capacity, substantially more service is needed to carry the same volume of passengers. The number of buses required could be reduced if articulated buses were used, or if bus ridership were lower than projected rail ridership.

Bus Transit Costs

Using the information included in Table 9-13, peak period service bus transit costs were calculated using $61 per hour based on current VINE operating costs. Costs of both peak only service and all day service are provided, assuming off-peak hourly service six hours per day in addition to six hours of peak service assumed to be offered each week day. On weekends, a twelve hour span of hourly frequencies was assumed.

Table 9-12

Required Bus Transit Trip

Corridor	Origin	Destination	Peak Period Ridership	One Way Bus Trips Required (per peak)	Frequency Required
Suisun/Fairfield - Napa (Route 12)	Fairfield	Napa	751	18	10 minutes
	Napa	Fairfield	126	3	60 minutes
St. Helena - Vallejo (Route 29)	St. Helena	Vallejo	716	17	11 minutes
	Vallejo	St. Helena	276	7	26 minutes
Suisun/Fairfield - Vallejo (Route 80)	Fairfield	Vallejo	726	17	11 minutes
	Vallejo	Fairfield	140	3	60 minutes

Source: RLBA.

Table 9-13

Bus Transit Costs (in 2002 dollars)

Corridor	Origin	Terminal	Estimated Annual Revenue Hours	Estimated Bus Transit Cost
Suisun/Fairfield - Napa (Route 12)	Fairfield	Napa	8,000	$487,880
St. Helena – Vallejo (Route 29)	St. Helena	Vallejo	23,330	1,423,010
	Calistoga	Vallejo	27,700	1,689,820
Suisun/Fairfield - Vallejo (Route 80)	Fairfield	Vallejo	7,750	472,630

Note: Assumes 250 week days 104 weekend days (hourly service) and 10 days with no service.

Source: RLBA.

Assuming bus service operating frequently enough during the peak period to capture the estimated rail ridership and assuming hourly service during off-peak and weekend periods in all corridors bus service operating costs experienced on all three corridors (exclusive of feeder and connecting shuttles) would total approximately $2.4 million annually if service terminated in St Helena or $2.7 million annually if service terminated in Calistoga along the Highway 29 corridor.

Section 9.4: Funding Opportunities

Introduction

This text explores the potential funding of capital and operating costs associated with a potential new rail service in Napa and Solano counties. Funding sources from federal through local levels have been investigated. In addition, public-private partnership opportunities to provide enhanced visitors shuttle services as well as to improve amenities at stations and station areas, through joint development, are discussed.

In the uncertain economic environment which exists as this is written, it is difficult to be optimistic about funding opportunities in connection with any significant transportation investment. This is particularly true of a proposed new rail service, which will require both initial capital investment and an on-going, operating subsidy. Generally, support of such projects includes a combination of federal, state and local funding. Funding from the State of California is particularly challenging in the short-term due to the currently estimated $34 billion state budget deficit. The existing shortfall not only makes new state funding programs of transportation projects unlikely but also potentially threatens existing sources. At the federal level, the transportation spending bill, currently known as Transportation Equity Act for the 21st Century (TEA-21) will be reauthorized in 2003 and little is known about what will be included in the package. Given rising deficits and a difficult economic climate, there is some speculation that overall funding within TEA-21 may not keep pace with inflation.

Even within the context of a poor economic climate, it is important to realize that opportunities do exist and that more robust economic times will make some projects possible that may seem difficult to fund in the short term.

The sub-sections that follow describe some of the opportunities that may be available to fund a potential rail service in the Napa/Solano area. As with all similar projects a combination of funding from multiple sources will be required to make the service a reality. Table 9-14 presents a summary of potential funding sources. The funds are grouped in the following five categories:

1. federal sources;
2. state sources;
3. county/local revenue sources;
4. additional sources Including private sector initiatives and
5. possible future sources.

Federal Sources and Transportation Bill Reauthorization

The reauthorization of the TEA-21 in 2003 has the potential to change significantly both the amount of funding available for transportation projects and the specific projects eligible to fund under a variety of federal programs. The last two authorizations have focused on local control and flexibility regarding project selection, permitting gas taxes to be used to fund both transit as well as road projects. It is uncertain whether those trends will continue. The summary of federal programs included below represents current conditions in those programs. While major changes to programs are not necessarily expected, they are possible.

Also uncertain is the level of funding. Because inflation erodes the buying power of gas-tax revenues, indexing it to inflation has been proposed. Also, an increase in the federal gas tax has been discussed. A key to developing a sound financial plan underlying any proposed rail service in the area will be monitoring developments at the federal level and being prepared to react as new and revised programs are announced.

Project Earmarks / Federal Demonstration Projects

While recent federal transportation policy has focused on the devolution of spending decisions to state, regional and local entities, congressional earmarking of funds to specific projects still occurs. It is easiest to obtain an earmark during the transportation bill reauthorization process, which is underway in the current legislative session. To

Table 9-14

Summary of Funding Opportunities

FUNDING SOURCE	FUNDING PURPOSE	USE OF FUNDS	APPLICATION/ APPROVAL PROCESS	LEAD TIME	COMMENTS	LIKELIHOOD OF SUCCESS
FEDERAL SOURCES						
Federal Transit Administration (FTA) Section 5309 Funds (Congressional Earmark)	Capital projects in three categories: new fixed guideway systems, extensions to existing fixed guideway systems, and bus and bus-related facilities.	Capital projects only.	Congressional earmark followed by Federal application process.	1-2 years	Obtaining a Congressional earmark is in part dependent upon the "clout" of the local delegation and the funding amount can vary tremendously. Without a project in the RTP, MTC will not likely support a congressional earmark.	Highly competitive.
Federal Transit Administration (FTA) Section 5307 Formula Funds	To support capital investments for public transit operators.	Capital projects only.	MTC decides on project merit and funding decisions. Federal application process.	3-5 years	The FTA Section 5307 program is committed for projects of Bay Area transit operators. Transit operator must apply for funds.	Highly competitive and extremely unlikely.
Congestion Mitigation and Air Quality Improvement Program (CMAQ)	To fund transit capital projects that contribute to the attainment or maintenance of federal air quality standards.	Capital projects only.	Grant application process through MTC.	1-2 years	A portion of CMAQ funds may be used to offset operating expenses over the first three operating years of new or expanded transit service.	Competitive, and requires demonstration of vehicle trip reduction and air quality improvement.

Table 9-14

Summary of Funding Opportunities (continued)

FUNDING SOURCE	FUNDING PURPOSE	USE OF FUNDS	APPLICATION/ APPROVAL PROCESS	LEAD TIME	COMMENTS	KLIELIHOOD OF SUCCESS
Transportation and Community System Preservation Pilot Program (TCSP)	Available to transit projects that coordinate transportation and land use.	Capital projects only.	Federal application process.	1-2 years	This TEA-21 program favors projects with public/private sector partnerships.	Highly competitive.
Transportation for Livable Communities (LCI)	Available to projects that strengthen the link between transportation investments and community needs.	Planning studies and capital projects only.	Application process through MTC.	1 year	Alternative mode projects that utilize a collaborative public planning process and have significant local community benefits are favorably viewed.	Highly competitive.
Transportation Enhancement Activities (TEA)	Small-scale non-routine projects (e.g., ped/bike/ transit).	Capital projects only.	Application process.	1-2 years	This TEA-21 program is designed for alternative transportation projects without other funding sources.	Highly competitive.
STATE SOURCES						
Transportation Congestion Relief Plan (Prop 42)	New Plan as of July 2000 dedicating funds to several projects statewide.	Capital projects only.	Application process through California Transportation Commission.	1 year	This is a new Plan signed into law on July 6, 2000. Applicants need to aggressively pursue to ensure funding availability.	Highly competitive and unlikely in near-term given current economic conditions.

Table 9-14

Summary of Funding Opportunities (continued)

FUNDING SOURCE	FUNDING PURPOSE	USE OF FUNDS	APPLICATION/ APPROVAL PROCESS	LEAD TIME	COMMENTS	LIKELIHOOD OF SUCCESS
Regional Improvement Program (RIP)	Transit capital improvement projects.	Capital projects only.	Application process through MTC.	3-5 years	Funds are fully committed in the near term.	Competitive, but viable funding option in the long-term.
Interregional Improvement Program (IIP)	Discretionary funding of intercity rail or interregional road projects of regional or statewide significance.	Intercity rail, inter-regional road or rail expansion projects.	Discretionary funding decisions made by the California Transportation Commission.	1-2 years	The IIP and RIP are the Statewide Transportation Improvement Program's two broad funding programs.	Highly competitive, but may be a viable funding source.
Transportation Development Act (TDA)	Statewide "transit first" funds.	Capital projects and operations.	Funds are allocated to local jurisdictions through MTC. Allocations are based on sales tax revenues.	1 year	Funds must be spent on transit projects to the extent that they are needed to fill all unmet transit needs and often used to a significant degree on non-transit purposes.	Non-competitive funding source.

Table 9-14

Summary of Funding Opportunities
(continued)

FUNDING SOURCE	FUNDING PURPOSE	USE OF FUNDS	APPLICATION/ APPROVAL PROCESS	LEAD TIME	COMMENTS	LIKELIHOOD OF SUCCESS
COUNTY/LOCAL SOURCES						
Local Option Sales Tax	Used for a wide range of transportation projects.	Capital projects and operations.	Projects and operations to be funded are included in an expenditure plan approved by voters.	1-2 years	Nearly every urbanized county in the state has passed a one-half cent sales tax to fund local transportation. Two-thirds of voters in the county must approve such tax measures.	Low, given current economic climate but as climate improves given history in Bay area, it could have a good chance.
Redevelopment Area Funds	Funds are used to finance a wide range of improvements within a designated redevelopment area.	Capital projects, housing assistance and other economic development programs.	The funding program developed and approved by the redevelopment agency.	1-2 years	The current Redevelopment Project Area in the City of Napa is about to sunset. Because state law requires that a redevelopment agency not assume any new debt within five years of the sunset date, the City of Napa Redevelopment Agency will not be able to fund any new projects after December 31, 2003.	May be good for capital investments such as transit stations or vehicle purchases but. requires establishment of a redevelopment agency and area.

Table 9-14

Summary of Funding Opportunities
(continued)

FUNDING SOURCE	FUNDING PURPOSE	USE OF FUNDS	APPLICATION/ APPROVAL PROCESS	LEAD TIME	COMMENTS	LIKELIHOOD OF SUCCESS
COUNTY/LOCAL SOURCES						
Hotel Occupancy/ Transient Tax	General fund revenues and tourism-related improvements.	Wide range of uses.	Expenditure of funds require approval from city council or county board of supervisors.	1-2 years		Depends on the tax rate, number of taxable entities and willingness to expend funds on transit.
Development Impact Fees and Mitigations	Compensate for impacts of new development on local transportation infrastructure.	Roadways or transit, depending on impact.	Implemented by local ordinance and must show a clear nexus between impact and fee assessed.	1-2 years	Fees are typically assessed on the square footage of development. Requires precise analysis of impacts in order to determine the appropriate fee level.	Only useful in areas that will experience significant levels of new development.
Benefit Assessment Districts	Used by local governments to pay the costs of providing capital improvements or services to a particular community.	For transit, typically used on capital projects.	The city, county or special district must create a detailed report outlining the proposed area, project costs, annual cost to each property and the benefit formula. Must be approved by a majority of property owners.	1-2 years	Transit districts have assessed commercial properties to pay part or all costs of capital improvements that enhance the value of and benefit the property.	May be difficult to enact Since benefits to assessed properties must be clearly demonstrated and a majority of property owners must support the assessment.

Table 9-14

Summary of Funding Opportunities
(continued)

FUNDING SOURCE	FUNDING PURPOSE	USE OF FUNDS	APPLICATION/ APPROVAL PROCESS	LEAD TIME	COMMENTS	LIKELIHOOD OF SUCCESS
ADDITIONAL SOURCES						
Fares	To recoup operating costs.	Operating costs.	N/A	N/A	Rail projects typically recoup between 20 percent and 40 percent of operating costs from fares.	Farebox recovery ratio is dependent on ridership and operating costs.
Transportation Infrastructure Finance Innovation Act (TIFIA)	Provides credit assistance to surface transportation projects of national or regional significance.	Capital projects.	Caltrans administers this federal loan program.	1-2 years	The program provides three forms of credit assistance: secured direct loans, loan guarantees and lines of credit.	Competitive selection process projects must be in the STIP and backed by a dedicated revenue source.
Public-Private Partnerships	Provides a number of innovative strategies by which to deliver and operate transportation projects.	Capital and operating costs.	N/A	N/A	In transportation, public partners bring access to tax-exempt financing and other government-funded sources while the private partner(s) provides a unique set of skills, greater sensitivity to market demands and efficiency.	Depends on availability and interest of potential private sector partners.

Table 9-14

Summary of Funding Opportunities
(continued)

FUNDING SOURCE	FUNDING PURPOSE	USE OF FUNDS	APPLICATION/ APPROVAL PROCESS	LEAD TIME	COMMENTS	LIKELIHOOD OF SUCCESS
FUTURE POSSIBLE SOURCES						
Increased Bridge Tolls	The state legislature will consider a $1 toll increase on the seven state-owned bridges in the Bay Area. A preliminary expenditure plan has already been developed and submitted to the legislature.	Capital and operating costs for a wide range of projects.	The toll increase and expenditure plan must be approved by the state legislature.	Project proposals will be considered by the state legislature in 2003.	A bridge toll expenditure plan has already been developed. Although Tier 1 projects have already been agreed upon, additional projects may be considered during the legislative process. The list of potential projects has already been forwarded to the state legislature.	There is strong competition for future bridge toll funds and it may be difficult to obtain funds from this possible source.
Regional Gas Tax	The Metropolitan Transportation Commission (MTC) has the authority to place a regional gas tax (of up to ten cents per gallon) on the ballot in the nine-county Bay Area. Such a measure would require approval by two thirds of the voters.	Funds would most likely be used on maintenance of local streets and roads.	To obtain revenue from this source, projects will need to be included in a revenue expenditure plan.	Long – a gas tax proposal and expenditure plan has not yet been developed.	MTC estimates that a regionwide gas tax would raise as much as $7 billion dollars by the year 2020 (if approved within the next several years). Polls indicate that voters would support a two or three cent tax if it were directed toward local road maintenance.	If a regional gas tax were approved, it is unclear as to how much tax revenue would be available to fund projects other than road maintenance.

Table 9-14

Summary of Funding Opportunities
(concluded)

FUNDING SOURCE	FUNDING PURPOSE	USE OF FUNDS	APPLICATION/ APPROVAL PROCESS	LEAD TIME	COMMENTS	LIKELIHOOD OF SUCCESS
Regional Payroll Tax	Employers would be charged a payroll tax to fund transportation improvements. In Eugene and Portland Oregon, payroll taxes have been used successfully to fund transit improvements.	Funds could be used entirely on transit, or on a combination of transit and other maintenance and operations needs of other modes.	To obtain revenue from this source, projects will need to be included in a revenue expenditure plan.	Long – a payroll tax proposal and expenditure plan has not yet been developed.	MTC's preliminary estimates indicate that as much as $1.2 billion dollars could be generated regionwide. Based on year 2000 payroll figures, Napa and Solano Counties would receive approximately 0.87% and 1.51% of funds, respectively.	This could be an excellent future funding source of the Napa/Solano Rail project, provided that there is political support for its implementation.

Source: Nelson\Nygaard Consulting Associates.

obtain an earmark, sponsors must raise the profile of their project and local congressional representation must be cooperatively effective, enthusiastic and allied in advocating the project during legislative negotiations.

A key to the federal earmarking process is local support of a project. Members of Congress have limited access to earmarked funds and since members are interested in funding home district projects that are broadly popular, it is important that a proposed project enjoy both high visibility and a high degree of local support.

Earmarking often can jump-start a project, by providing initial funds to undertake environmental analysis or another specific aspect of the project development process. Earmarks are not available with regard to operating funds.

The Napa/Solano Rail project has the potential to receive an initial earmark of funds but only if there are no other higher priority projects competing for the funds locally and regionally.

Federal Transit Act Section 5309 – New Starts Discretionary Program

This is the primary federal funding source of new rail transit services. Projects are determined via a highly competitive process. While funds are allocated at the Federal level, a critical component of the process is regional support. Generally, the Metropolitan Transportation Commission (MTC) will program a project in its Regional Transportation Plan (RTP) and identify projects with substantial regional support for New Starts funding.

Another critical component of New Starts funds is the ability to leverage funding of both project capital investment and ongoing operating support. It is unlikely that MTC would recommend a project for New Starts funds without a dedicated source of operating subsidy. In the Bay Area, New Starts funds often have been applied to BART extensions and/or light rail projects in the Santa Clara Valley, where operating funds were not in question because of dedicated transportation taxes.

Also of note is the importance of coordinated land use planning in the New Starts evaluation criteria. Nationally, there is a trend towards funding projects that are less

capital intensive, including Bus Rapid Transit, which can now compete for funds once dedicated to rail projects.

Given the fact that the Napa/Solano rail corridors are not included in the current Regional Transportation Plan and given the high priority regional investments that probably will be pursued by MTC under reauthorization, it would be difficult for the Napa/Solano rail project to obtain such funds.

Federal Transit Act Section 5307 - Formula Funds

In the Bay Area, FTA Section 5307 formula funds are no longer used to support transit operations. This federal program is devoted to funding the region's capital improvement program. Public transit operators can claim the funds to purchase buses, trains, ferries, vans and support equipment. FTA section 5307 funds require a 20 percent match. MTC oversees programming the funds of larger urbanized areas. In areas with populations below 200,000, Caltrans decides which projects get funded.

About $156 million per year in FTA Section 5307 is available to the Bay Area. Given the large capital program of Bay Area transit operators, the program is subscribed fully over the next several years. The funds primarily are used to replace existing capital equipment and infrastructure. Many Bay Area transit agencies seek FTA Section 5307 funds to finance projects that enhance and expand their services, although the program is unable to fund those types of projects, given the backlog of replacement projects. Therefore, FTA Section 5307 funds are a very unlikely source of funding a new Napa/Solano rail service.

Federal Transit Act Section 5309 - Fixed Guideway

Bay Area transit operators receive about $78 million per year from this source to purchase rail cars and equipment. Of note is that a fixed-guideway operation must be operating seven years before it can begin receiving allocations. While the Napa/Solano project ultimately could receive these funds, they are not relevant to initial project deployment.

Congestion Mitigation and Air Quality Improvement Program (CMAQ)

Certain flexible funds made available through the Federal Highway Administration can be used on transit capital projects. They are the Surface Transportation Program (STP) and

the Congestion Mitigation and Air Quality Program (CMAQ). Typically, STP funds are used on street and road projects but are available for transit. The federal CMAQ program provides funds to projects that contribute to the attainment or maintenance of federal air quality standards. MTC currently controls how approximately $57 million per year is spent in the Bay Area on a wide variety of eligible projects intended to improve air quality. CMAQ grants typically fund capital expenditures, not operations. A portion of CMAQ funds may be used to support the operating expenses of new or expanded transit service but only during the first three years of operation. To obtain CMAQ funding, subsidy requirements of Napa/Solano Rail project sponsors would have to make a strong case that their project would reduce highway vehicle trips and thus improve air quality.

Transportation and Community and System Preservation Pilot (TCSP) Program

This innovative TEA-21 program addresses the link between land use, community quality of life and transportation. It is not clear whether the program will be continued when TEA-21 is reauthorized, although it is worth mentioning because the funds can be a valuable element of a comprehensive funding program. The program favors projects that partner with private sector interests to make transportation and land-use connections. Transit agencies and cities are eligible recipients of these grant funds. Priority is given to projects that demonstrate a commitment of non-federal resources. Projects that make use of in-kind contributions, including funding from local and private sources, receive priority. Partnerships are encouraged, including a broad range of traditional and non-traditional partners such as the general public, environmental community, businesses and other groups. Examples of TCSP-funded projects in the Bay Area include a Peninsula Commute Service (CalTrain) station site plan and a future BART station area plan.

Livable Communities Initiative (LCI)

FTA has developed the Livable Communities Initiative (LCI) to strengthen the linkage between transportation services and the communities they serve. The program targets projects that utilize a collaborative public planning process, are transit or bicycle/pedestrian-oriented, produce significant local community benefits and have been driven largely from a “bottom up” initiative. It promotes customer-friendly, community-oriented and well-designed facilities and services. The characteristics of community-sensitive transit facilities and services include readily available customer information and services, a safe and secure environment; sufficient pedestrian and bicycle access, and

architecture that reflects the values of the community. As with the TCSP program there is no guarantee that the funding program will be continued under TEA-21 however. If it is continued, LCI funds can supplement funding of a small element of the Napa/Solano rail project, especially if developed in collaboration with the affected cities and counties and involves a public outreach component.

Transportation Enhancement Activities (TEA)

TEA is a grant program under TEA-21. It is designed to fund environmental and alternative transportation projects that would not necessarily have access to other available funding sources. A wide variety of public agencies including cities, counties and transit operators are eligible for TEA funds. The funds are mainly used to support capital projects and cannot be used to subsidize transit operations. TEA funds are eligible to support bicycle, pedestrian, transit, landscaping, public art or historic projects linked to transportation. As with other innovative programs under TEA-21, the funds are highly competitive and potentially could constitute a small component of a Napa/Solano rail project funding plan. TEA funds at the state level are largely committed to acquiring open space. Regional TEA funds are applied for through local congestion management agencies (CMAs). Evaluation criteria emphasize the same qualities as the LCI program. As with other federal funding programs, all successful project sponsors are required to follow a federal process to secure federal funds.

State Sources

State Earmarks from Bond Measures

Commuter rail projects in California have faired well in the past when California voters have passed state general obligation bonds to fund transportation projects. In 1990, two propositions (108 and 116), authorized the issuance of nearly $3 billion in bonds. *Metrolink* in Los Angeles, *SMART* in Sonoma and Marin, *ACE* (*Altamont Commuter Express*) and the *Caltrain* extension to Monterey are examples of new commuter rail projects which received earmarks under such propositions. This successful track record highlights the importance of raising a project's profile at the state level. However, in the current bleak state fiscal environment, it is unlikely that a state transportation general obligation bond issue will be passed.

Long Term Funding Opportunity: Proposition 42

Approved by voters in March 2002, Proposition 42 designates to transportation purposes funds collected from gasoline sales under the statewide retail sales tax. The retail sales tax on gasoline is different and independent of the state and federal cents per gallon excise taxes on gasoline. Until 2000, revenue generated from the sales tax on gasoline was considered part of the State General Fund, along with the sales tax collected on other goods. Beginning in 2000, Governor Gray Davis began a program known as the Traffic Congestion Relief Program (TCRP) that allocated funds to transportation projects selected by the Governor. The TCRP program commits all statewide gasoline sales tax proceeds through 2008. Proposition 42 allocates the retail sales tax on gasoline to transportation projects, in perpetuity, beyond the 2008 TCRP deadline. Funds will be allocated to transportation projects through a variety of existing allocation mechanisms: 20 percent of the funds will go to public transportation, 40 percent will flow through the State Transportation Improvement Program (STIP) and the remaining 40 percent will be dedicated to local streets and roads. Therefore more funding of capital and operations will be available to transit agencies. However, a provision of Proposition 42 allows the state legislature and governor to once again direct funds to the General Fund if a serious fiscal crisis is in effect. There is already discussion in Sacramento about doing so.

Regional Improvement Program (RIP) Funds

There are a wide variety of capital improvement projects eligible to receive RIP funding including rail extensions, rail grade separations and upgraded transit stations and vehicles. Approximately $110 million is available to the Bay Area and MTC decides which projects receive funding. As with all state funds, they are fully committed in the near term and therefore not likely to be available to support a new rail service in Napa/Solano County within the next three to five years. Perhaps in the longer term, it could be a viable source, particularly if RIP funds were used to match federal funds.

Interregional Improvement Program (IIP) Funds

These purely discretionary statewide funds can be used on intercity rail projects that are of regional or statewide significance with funding decisions made by the California Transportation Commission. They are highly sought after, although they may be a viable source of Napa/Solano rail project funding.

Transportation Development Act (TDA)

In 1972, SB 325 created a mechanism to return a portion of sales tax collected in each county to support transportation purposes. The funds are distributed by the Metropolitan Transportation Commission (MTC) to Napa and Solano Counties and all of their incorporated cities. TDA funds are intended to be "transit first" funding, meaning that funds are expected to be spent on transit projects to the extent that such projects are needed to fill all "transit needs that are reasonable to meet." There is no universally accepted definition of "reasonable to meet" and individual jurisdictions make their own determination. TDA funds can be used to support capital expenditures, operations or a combination thereof. Napa County is expected to receive $4.5 million in TDA apportionments in fiscal year 2002-03.[1] Solano County apportionments will be $11.4 million per year. In the past, the funds, which are divided between the county, MTC and local communities, have been used to a significant degree by non-transit, non-alternative transportation purposes. As of 2000, however, all TDA funds in Napa County are dedicated to transit uses.

In the fiscal year that ended June 30, 1999,[2] in Solano County, 51 percent of TDA funds were used on streets, roads and contracted transportation serving special needs groups. The percentages, applied to anticipated apportionments, equate to $7.3 million. Therefore, if politically acceptable and compelling to the counties, allocating TDA funds currently focused on streets could be a strategy to fund a rail operation. A further benefit of the funds is that they can be used to support either operating expenses or capital requirements.

County/Local Sources

No major new transit project has been launched without a "local match." Local transportation sources have grown in importance as the buying power of the primary state and federal sources, per gallon gas taxes, has eroded.

Local Option Sales Taxes

Sales taxes (typically one-half cent) have by far been the most popular way of raising local funds to support transportation projects. Nearly every urbanized county in California

[1] Source: MTC 2002-03 FY Fund Estimate. Available at: www.mtc.ca.gov/publications/fund_app_manual/fund_app_manual.htm.
[2] Most recent state audited figures available. Source: *Transportation Planning Agencies Annual Report – FY 98-99*, Controller of the State of California. Available at: www.sco.ca.gov/ard/local/locrep/rtpa/rtpa9899.shtml.

has taken advantage of this option. Sixteen of fifty-eight counties, representing 53 percent of California's population have at least one local option sales tax in place. Solano County recently failed at passing a tax that would have raised an estimated $800 million to $1 billion over twenty years. The proposed tax received 60 percent of the vote; however, a two-thirds approval rate is required of all localities under California law. (Note that the "first generation" of local sales taxes needed only a simple majority.) Napa County has a half-cent sales tax that was approved by a two-thirds margin with the proceeds going to a large flood control project. The prospect of adding an additional sales tax levy for passenger rail is not good.

Reducing the threshold to either 50 percent or 55 percent has been discussed seriously by the state legislature but has not yet been approved. Because the state may add to the sales tax rate to deal with its budget crisis, the prospect of a local sales tax in the short term is negative.

The creation of a long term source to subsidize the operation of a rail service in the region is a critical component by which to leverage capital funds to actually build the facility. Without significant new local funds, it is unlikely that the Napa/Solano rail service project can compete for capital funds against projects that are in a better position to support continued operation.

Other Local Sources

In the post-Proposition 13 environment, localities have found it difficult to raise funds for transit projects locally other than the use of special sales taxes. Generally, transit is considered something that is financed by fares and outside sources. However, local sources should not be dismissed outright and have been used to accomplish varied public purposes like adding station amenities to rail projects in other parts of the state. Examples of appropriate local sources follow:

- **Redevelopment Area (RDA) Funds**
  RDA funds, which are used to improve designated "blighted" areas as well as provide housing and economic development assistance, are more likely to fund transit capital expenditures such as a new rail stations or new vehicles, rather than transit operations. In Napa County, only the City of Napa has a designated Redevelopment Agency. However, the city's current Redevelopment Project Area is about to sunset. Because state law requires that a redevelopment agency not assume any new debt within five years of the project area sunset date, the City of

Napa Redevelopment Agency will not be able to fund any new projects after December 31, 2003. In Solano County, the cities of Fairfield, Vallejo, Rio Vista, Suisun City and Vacaville have redevelopment agencies.

Hotel Occupancy/Transient Tax
Many cities in the Bay Area impose a hotel/motel tax of five to fifteen percent, with the typical charge falling in the eight to twelve percent range. Revenues derived from hotel taxes are typically used on general fund purposes and tourist-related improvements but could be interpreted to include a variety of infrastructure improvements, including a new rail service. This analysis does not include an estimate of how much revenue could be generated through a hotel tax. It would depend upon the hotel tax rate and the number of visitor accommodations at the city or county level. All Napa County jurisdictions already collect either a hotel occupancy or transient tax ranging from eight to twelve percent. All revenues are directed to the jurisdictions' general funds. All Solano County jurisdictions, with the exception of Suisun City, impose either transient or hotel occupancy taxes ranging from seven to eleven percent.

- **Development Impact Fees and Mitigations**
  A traffic or transportation impact fee is a charge imposed on new development to compensate for its impacts on local transportation infrastructure. A fee is typically assessed on square footage of planned development. Impact fees can be implemented by local ordinance with specific criteria for establishing an impact fee. Impact fees can be imposed in downtown urban areas or outlying growth areas. Like all developer fees, transportation fees must show a nexus between the development and specified improvement or service provided. The revenues generated from an impact fee can vary tremendously depending upon the fee structure and level of development growth. The County of Napa currently has a development impact fee, part of which is directed toward specific transportation improvements, for development in the airport industrial area. The City of Napa also uses development impact fees to fund specific transportation improvements in certain areas.

- **Benefit Assessment Districts**
  Benefit assessments are used by local governments and special districts to pay for specific improvements or services to a particular community. Charges are assessed only on those properties that directly benefit from the services or improvements being financed. The amount of an assessment is based on a detailed benefit formula, not on the property value. Benefit assessments have been used by transit districts to finance capital improvements that benefit commercial properties within the district. Establishment of a benefit assessment district requires approval by a majority of property owners within the specified area. In Napa County, benefit assessment districts have not been used to fund transit improvements. They have been used for curb and sidewalk maintenance and drainage.

Fares

If implemented, the Napa/Solano rail project would charge a fare to its users, thus recouping some of its operating costs. Estimated annual farebox income associated with each service option was incorporated in the Section 9.1, Rail Operating Budget.

Innovative Financing of Capital Projects

The federal Transportation Infrastructure Finance and Innovation Act (TIFIA) provides opportunities to finance surface transportation projects of national or regional significance. The program is essentially a mechanism by which project sponsors use debt-financing schemes to accelerate multi-year revenue streams. California has established a transportation finance bank administered by Caltrans. Loan sizes vary between $300,000 and $1 million and projects must be in the STIP and backed by a dedicated revenue source (in addition to other requirements). Committing future funds for debt repayment offsets the benefit of accelerating multi-year revenues.

Public-Private Partnerships

Using public-private partnerships (PPPs) to deliver and operate transportation, including rail projects, has grown in popularity. As a broad concept, PPPs are a blending of assets from both sectors in a way advantageous to all parties. They are essentially a blend between outsourcing/contracting and privatization. Arrangements typically involve a government agency contracting with a private partner to renovate, construct, operate, maintain and/or manage a facility or system, in whole or in part, that provides a public service. The agency typically retains ownership of the public facility or system but the private party generally invests its own capital to design and develop the properties. Typically, each partner shares in income resulting from the partnership. Although a contractual arrangement, this differs from typical service contracting in that the private-sector partner usually makes a substantial cash, at-risk, equity investment in the project while the public sector gains access to new revenue or service delivery capacity without having to pay the private-sector partner. In transportation, the public partner typically brings to the table access to tax-exempt financing and other government funding sources

while the private partner is expected to provide efficiency, a unique set of skills and a higher sensitivity to market demands.[3]

Some key elements to successful public-private partnerships include:

- carefully developed plans that clearly describe the roles and responsibilities of both the public and private partners;
- a real partnership, with shared burdens on and shared rewards to both the public and private participants;
- real incentives for the private sector or it will not participate and
- "unbundled" risks, appropriately segregated among the private and public sector partners.

Public-private partnerships to deliver projects come in a variety of structures including:

- Build/Operate/Transfer (BOT) or Build/Transfer/Operate (BTO);
- Build-Own-Operate (BOO);
- Buy-Build-Operate (BBO);
- Contract Services;
- Design-Build (DB);
- Design-Build-Maintain (DBM);
- Design-Build-Operate (DBO);
- Developer Finance;
- Enhanced Use Leasing (EUL);
- Lease/Develop/Operate (LDO) or Build/Develop/Operate (BDO);
- Lease/Purchase;
- Sale/Leaseback;
- Tax-exempt Lease and
- Turnkey.

In relation to rail transit development, public-private partnerships are a relatively new concept. Typically, financial contributions from the private sector are not significant because of high investment risk and the reliance on cash flows from future, uncertain economic development. However, innovative financing and organizational structures are being used to address those challenges. Structurally, this typically entails the formation of a special purpose, non-profit corporation that can contract with public and private entities to build and operate a project and may receive federal and state credit

[3] This section adapts heavily from "Innovative Financing Solutions for Rail Transit Projects Using a Public Private Partnership," Chris Kane, Ben Redd, et. al., presented at the APTA Rail/Commuter Rail Conference, 2002, as well as the website of The National Council for Public-Private Partnerships, available at ncppp.org.

assistance. Use of a PPP in a rail project can lead to alternative sources of funds. These include:

- **Private sector participation in pre-construction costs** in which the private partner may be willing to share the cost of activities that occur before the close of financing which then may be reimbursed at financial close through the payment of a success fee;
- **Station area development rights** in which private developers help finance the capital cost of a station, only if the total projected real estate development near the station justifies the cost. The Private Partner can suggest incentives such as density bonuses in the station area in order to maximize both development and the private contribution;
- **Area-wide assessments** where beneficiaries of new service are assessed on that benefit. The assessment can come in a variety of forms including assessment districts, tax-increment financing (currently only available through redevelopment areas in California) and special improvement districts where properties are charged the "special benefit" conferred on the property by a rail improvement;
- **Direct contributions** in which private beneficiaries of the system such as shopping centers may find a direct contribution more appropriate than an assessment and
- **Non-traditional revenue opportunities** in which the private partner would be well equipped to develop non-traditional revenue opportunities such as naming rights, advertising, concessions, parking and express parcel service.

The Hudson-Bergen Light Rail Transit project in New Jersey used a Design-Build-Operate-Maintain-Finance model. The benefits included:

- reducing overall project costs due to the coordination of preliminary engineering with final engineering and
- the provision of an early, firm, fixed price to the public partner, shifting the risk of cost overruns to the private partner.

Two current rail projects in development are applying the PPP approach – Dulles Rapid Transit in Virginia and Union County Rail in New Jersey. The PPP approach is expected to yield reduced capital cost and compressed project schedules. Both projects have enjoyed early involvement of a private sector developer that has applied innovative financing techniques successfully.

Station area or transit-oriented development is something inherently reliant on public-private partnerships because of the dominant private sector role in real estate development and primarily public sector role in provision of mass transportation.

An example of a successful public-private partnership related to station area development is Union Station in Washington, D.C. After falling into disrepair, a portion of Union Station was sealed in 1981 because it was unsafe. Redevelopment was completed in the late 1980s with private financing. The U.S. DOT owns the station that is managed by a private development firm that acts as leaseholder of Union Station's retail shops and restaurants. Retail rents cover the operation of the facility and debt payments. The refurbished Union Station is a tourist attraction in and of itself.

A unique program that is not a PPP in the project delivery sense but is worthwhile to note is the Santa Barbara Car Free Program (www.santabarbaracarfree.org) also known as the Take a Vacation from Your Car Project. It is a cooperative project led by the Santa Barbara County Air Pollution Control District. The project grew out of a group of agencies, organizations and businesses that had been meeting since 1998 to discuss common goals. The goal of the project is to promote car free tourism. Interesting elements of the project include:

- as part of vacation packages, travelers arriving without a car or traveling in the area without a car, can obtain a free companion fare to Santa Barbara on either the Amtrak Pacific Surfliner (service between San Diego and San Luis Obispo) or Amtrak Coast Starlight (Los Angeles to Seattle);
- the vacation package includes twenty percent discounts on hotels and discounts on trolley bus excursions to the nearby wine country;
- the project partnered with Santa Barbara's Metropolitan Transit District to fund a shuttle and
- the project website and other features are geared to making a visitor comfortable with the non-automotive modes. Information provided includes special car-free maps, taxi, transit and shuttle information, airport connection information and promotion of excursions and services including hotel pick-ups.

While not a formal public-private partnership in the funding sense, the Take a Vacation from Your Car Project is a good example of how to encourage visitor trips to take place via high capacity, low-impact modes.

This latter example may be more indicative of what is possible in the case of potential Napa/Solano rail service. Below are examples of the types of collaborations that may be worth exploring:

- developers might enter into agreements with public entities fund amenities at stations such as bicycle and pedestrian facilities, etc. This and other types of developer participation are predicated on the acceptance of station area development;
- developers could be responsible for certain station improvements beyond the basic stations required to provide service;
- wineries could contribute to shuttle services between a rail station and a winery;
- use of cross-promotional advertising among wineries, hotels in the area and in San Francisco and public agencies;
- a private bus/trolley package to regional attractions tied to the train could be created. A private operator could sell the "package" including train tickets, bus transfers, day at the attraction (such as a spa) and return for one price and would partner with the train to make sure that the proper number of seats were available, etc. and
- excursion rail service might be introduced where a private operator would operate a special service over the tracks and pay for the trackage rights.

Note that transit-oriented development generally has been more complex and difficult for the private sector to accomplish than has conventional development. Therefore, such developments often receive assistance from the public sector rather than generate contributions for new transit service stations and station amenities. While the design of station area development should include appropriate amenities and orientation to transit, it may be overly optimistic to expect station area development to fund significantly stations and their amenities. A more likely scenario is the participation of a local redevelopment agency, which can use an anticipated tax increment to be generated by development and rising property values around a station to fund station improvements and amenities.

Future Possible Sources

Several additional funding sources for the nine-county San Francisco Bay Area region have been proposed by the Metropolitan Transportation Commission (MTC) and will be considered further in the future. These include a $1 toll increase on the state-owned bridges in the region, a regional gas tax and a regional payroll tax. Of these potential funding sources, the most likely to be realized in the near-term is the $1 bridge toll

increase. A preliminary expenditure plan of additional toll funds already has been developed and forwarded to state legislators for their consideration. Additional projects may be considered during the legislative process, however.

CHAPTER 10

ENVIRONMENTAL ISSUES

Description of Corridors

This chapter summarizes the environmental constraints identified in the Napa/Solano rail corridor segments that have been previously evaluated. The purpose is to summarize the key environmental issues that have been identified during the initial corridor reconnaissance, as arrayed in Table 10-1, and make an initial assessment of potential environmental impacts and constraints. Focused background research also was conducted to improve the understanding of general environmental limitations.

The initial environmental assessment was limited to the areas immediately adjacent to the existing rail right-of-way with the following exceptions. The study area was expanded to include the area around identified potential station sites, potential siding locations and potential maintenance facility locations. The study area also was broadened at the location of the potential Napa Pipe bypass and the connection between the southern end of existing track and the Vallejo ferry terminal to identify potential environmental impacts if rerouting of the main rail line were to occur at this location.

Rail Segments

The proposed rail corridors were analyzed in four segments, the four are described below and shown on Map Eleven.

Suisun City - Napa Junction – This segment extends between the Amtrak Station at Suisun City and Napa Junction.

Table 10-1

Environmental Issues Summary Matrix

Environmental Issues	Rail Corridors Evaluated			
	Suisun City - Napa Junction	**Vallejo – Napa Junction**	**Napa Junction – Napa**	**Napa – St. Helena**
Aesthetics	Station and maintenance facilities would need to be designed to fit into the context of their surroundings.	Station and maintenance facilities would need to be designed to fit into the context of their surroundings.	Station and maintenance facilities would need to be designed to fit into the context of their surroundings.	Stations would need to be designed to fit into the context of their surroundings.
Agriculture Resources	Agricultural resources exist between Cordelia and the Suisun City industrial park and also in the Jameson Canyon. These resources need to be taken into account in locating the maintenance facility and sidings.	Agricultural resources are not a critical land use in this segment.	Agricultural resources are not a critical land use in this segment. Limited agricultural uses exist in the segment of the corridor just south of Highway 29/12.	The vineyards in this rail section are a critical resource that could be potentially impacted in the expansion of a station in Yountville or the location of a siding in Oakville due to the narrowness of the existing rail corridor.
Air Quality	No significant air quality impacts would be anticipated with the introduction of passenger rail service. Localized emissions could be a potential problem in the vicinity of stations or the maintenance facility.	No significant air quality impacts would be anticipated with the introduction of passenger rail service. Localized emissions could be a potential problem in the vicinity of stations or the maintenance facility.	No significant air quality impacts would be anticipated with the introduction of passenger rail service. Localized emissions could be a potential problem in the vicinity of stations or the maintenance facility.	No significant air quality impacts would be anticipated with the introduction of passenger rail service. Localized emissions could be a potential problem in the vicinity of stations.

Table 10-1

Environmental Issues Summary Matrix

Environmental Issues	Rail Corridors Evaluated			
	Suisun City - Napa Junction	**Vallejo – Napa Junction**	**Napa Junction – Napa**	**Napa – St. Helena**
Biological Resources	A large salt marsh habitat borders the rail corridor in the vicinity of Cordelia and Suisun City. The Jameson Canyon supports riparian scrub, oak woodlands and native grasslands. A habitat restoration area exists adjacent to the creek at the Red Top Road station site. Though both the Creston siding area and the Napa Junction site have been disturbed by rail operations, there is potential for wetlands and special-status species in the vicinity of each of those sites. Suitable habitat for special-status species occurs along segments of the corridor.	Much of this rail segment has been highly disturbed by urban development and industrial use. A determination of jurisdictional wetlands would be required at the Sereno Transit Station adjacent to the line. American Creek provides suitable habitat for the California red-legged frog.	The rail segment contains important salt and brackish marsh habitat along the Napa River and adjacent floodplains. Streams in the area support riparian scrub and woodland. Much of the area included in the Napa River Flood Control Project, which includes relocation of the line and redefinition of the flood basin. Several known occurrences of special-status species have been documented along the Napa River.	Sensitive natural communities along this corridor include riparian scrub and scattered oaks in savanna and woodland habitat, which borders the railroad. The station sites and the siding location have all been highly disturbed by past development. Native oaks and evidence of a drainage system with wetland vegetation occurs within 200 feet of Dwyer Road. While the potential for special-status species is limited in this corridor, raptor nesting habitat could occur in the oaks and other trees and special status species could occur in creeks in the corridor.
Cultural Resources	The railroad in this segment is listed as a historic resource. The Village of Cordelia is listed as a Historic District with seven structures in close proximity to the line listed as contributing elements. The Freitas Family Farm at Red Top Road is a historic resource that appears ineligible for the California Register of Historic Resources due to a lack of integrity of setting and materials.	A historic resource exists at the corner of Mare Island Way and Kentucky Street in Vallejo.	The rail road in this segment is listed as an historic resource. An historic period archaeological site, composed of river pilings, is located adjacent to the Napa River at the end of Suscol Ferry Road.	Ten prehistoric sites were identified in this segment of the rail corridor. An historic farm house is located just north of Rutherford. The St. Helena Historic Commercial District consists of 34 contributing buildings and one contributing object in the town of St. Helena, two of which are in close proximity to the rail corridor.

Table 10-1

Environmental Issues Summary Matrix

Environmental Issues	Rail Corridors Evaluated			
	Suisun City - Napa Junction	**Vallejo – Napa Junction**	**Napa Junction – Napa**	**Napa – St. Helena**
Energy/Mineral Resources	No conflicts with energy plans or loss of mineral resources were identified.			
Geology	A segment of the Green Valley Fault is mapped along the eastern portion of the Red Top Road station site and a segment of the West Napa Fault is mapped adjacent to the Napa Junction site. Portions of the segment around Suisun City may be subject to extremely high ground shaking amplification.	The West Napa Fault is mapped adjacent to the American Canyon potential station site. The Vallejo Ferry Terminal station site is located in an area with the potential for extremely high ground shaking amplification.	The West Napa Fault is located within one mile southwest of the Napa Pipe site. The station sites in Napa are subject to high to very high ground shaking amplification.	No fault lines were identified within the immediate vicinity of the station or siding locations.
Hazards and Hazardous Materials	Past industrial and railroad uses and evidence of current potential hazards suggest that additional hazards assessment may be required at Suisun City station (if expanded), at the Suisun maintenance site, Red Top Road and Creston siding location.	Industrial uses at the American Canyon station site may warrant a Phase I site assessment.	Due to past industrial uses in or near the sites, Phase I site assessments are recommended along the route of the Napa Pipe bypass, at Downtown Napa station sites, and the North Napa site if these locations are further pursued.	A Phase I site assessment is recommended at the St. Helena station site if development is further pursued due to the proximity of gasoline stations and other industrial and commercial uses.
Hydrology and Water Quality	The Suisun City station and the Cordelia rail junction are located adjacent to marshlands. Intermittent streams at the Red Top Road station and the Creston siding location could present hydrological constraints at these sites. Wetlands were observed south of the Napa Junction wye, which could constrain the location of a maintenance facility at the site.	The Sereno Transit Center is located in close proximity to the boundary of the 100-year flood plain which could present hydrological constraints at the site.	The Napa Pipe site, the Napa Valley College station site, the NVRR maintenance yard, and the potential downtown Napa stations are all presently located within the 100 and 500-year Napa River flood plain . The Flood Control project currently being implemented along the river will alleviate much of the current flooding problems and redefine the flood plain area.	Two intermittent creeks in the vicinity of the Oakville siding location would present a hydrological constraint at this site.

Table 10-1

Environmental Issues Summary Matrix

Environmental Issues	Rail Corridors Evaluated			
	Suisun City - Napa Junction	**Vallejo – Napa Junction**	**Napa Junction – Napa**	**Napa – St. Helena**
Land Use and Planning	No specific land use incompatibilities were identified in this rail segment.	The extension of the rail line to the Vallejo Ferry Terminal could result in the reduction of existing open space depending on the ultimate alignment. The open space is currently designated for waterfront uses, including shopping, and services and planned commercial development commercial. If a station is located at South Napa Junction Road, there would be increased noise and traffic experienced on the adjacent residential properties.	The proposed operation of passenger rail through the Napa Pipe operation south of Kaiser Road is incompatible with the existing industrial use. A rail bypass of the site is proposed. If a station is located at Third Street in downtown Napa, there would be increased noise and traffic experienced on the adjacent residential properties.	This segment of rail is predominated by adjacent land uses of vineyards and wineries most of which are in agricultural preservation zones. This could introduce conflicts where station expansion or redevelopment or a siding is proposed in Yountville, Oakville, and Rutherford.
Noise	Residential development borders the track in parts of Suisun City and Cordelia. The track also passes a high school in Suisun City.	Along the Vallejo waterfront, the track would run adjacent to open space area that is heavily used for recreation. In many parts of Vallejo and American Canyon, the line runs adjacent to residential land uses. It also runs adjacent to Farragut School in Vallejo.	The rail runs in close proximity to some residential development within the City of Napa that could be impacted by the increased train noise.	Rail runs past pockets of residential in Napa and in St. Helena and also past sensitive receptors such as the hotels in Napa.
Population and Housing	Population and housing issues were not addressed in detail in this phase of the study. When ridership projections become more refined, additional assessment of these impacts should be undertaken.			

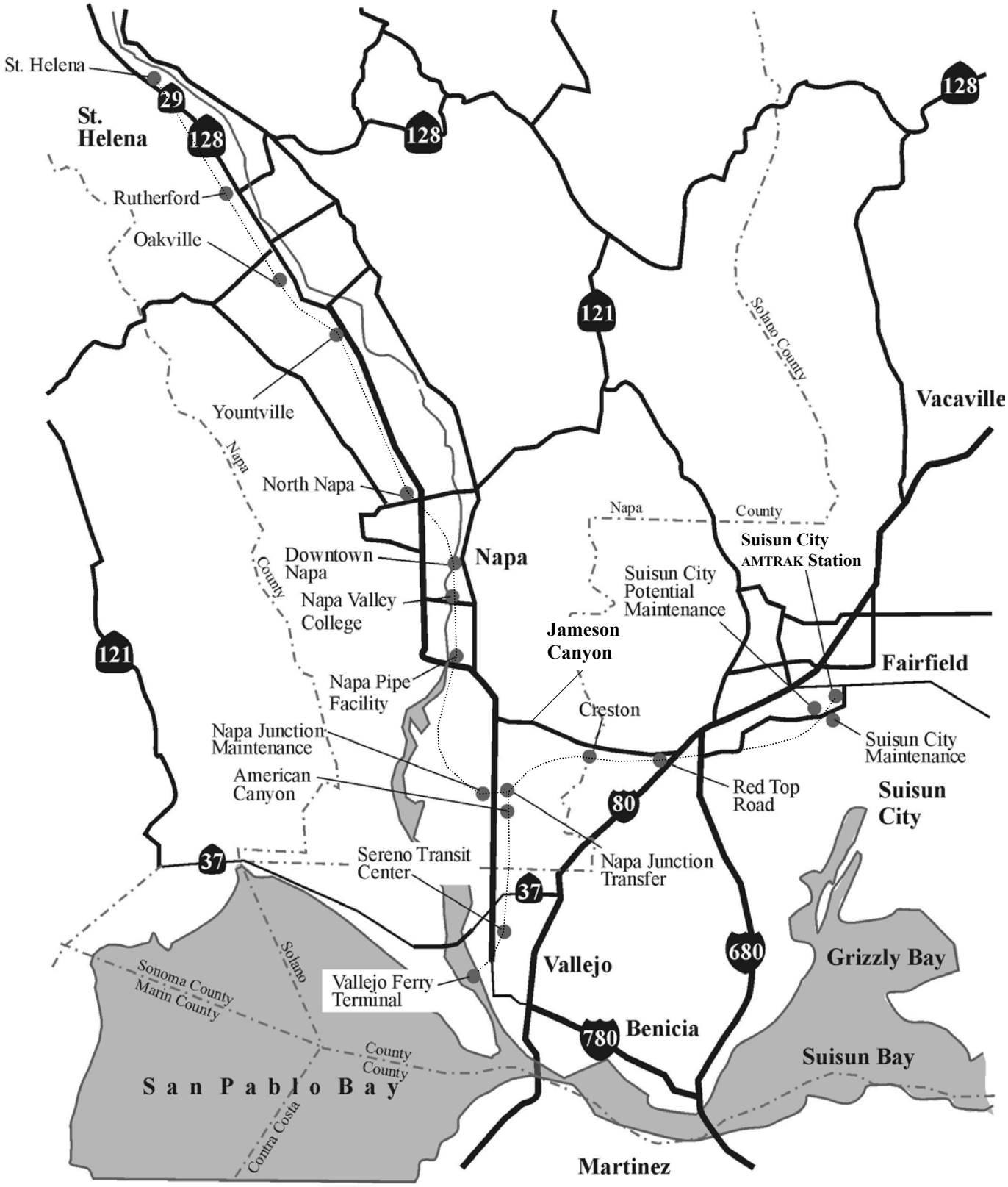
Table 10-1

Environmental Issues Summary Matrix

Environmental Issues	Rail Corridors Evaluated			
	Suisun City - Napa Junction	**Vallejo – Napa Junction**	**Napa Junction – Napa**	**Napa – St. Helena**
Public Services/Utilities	Minor impact on public services would result from rail passenger service introduction.	Minor impact on public services would result from rail passenger service introduction. Emergency access to the fire station at Redwood Road would need to be maintained.	Minor impact on public services would result from rail passenger service introduction. Emergency access to the fire stations at Airport Boulevard and Trower Avenue in Napa would need to be maintained.	Minor impact on public services would result from rail passenger service introduction. Emergency access to the Rutherford Fire Station at the proposed station site would need to be maintained.
Recreation	The rail runs adjacent to the Peytonia Slough Ecological Reserve near Suisun City. In Jameson Canyon, the rail runs near the Chardonnay Golf Course.	In downtown Vallejo, the proposed new rail segment would run adjacent to Marina Vista Memorial Park and the open space adjacent to the harbor.	South of Imola Avenue, the railroad borders the JFK Memorial Park on the east and the Napa Municipal Golf Course on the west.	South of California Drive, the line runs next to Solano Avenue, which borders the Vintners Gold Course.
Transportation/Circulation	Access constraints at the Red Top Road station may require the introduction of new traffic control devices on Jameson Canyon Road/Highway 12.	Additional pedestrian crossings and traffic control devices maybe required at the Vallejo Ferry Terminal. Access improvements and signalization at Highway 29 and South Napa Junction Road may be required to accommodate the proposed American Canyon station.	Access to the Napa Valley College site would be restricted to Gasser Road with the reconstruction of the Napa River Bridge at Imola Avenue. The downtown Napa site may require additional traffic study to determine if traffic improvements are needed.	The potential for conflicts between vehicles and trains at numerous public and private at-grade crossings would increase as the frequency of train service increases in the segment. Signalization of station access may be required at the Rutherford station site. The addition of traffic at Fulton Road in St. Helena could contribute to the already congested traffic conditions in St. Helena.

Source: EnviroTrans Solutions.

Map Eleven: Project Study Area



Rail Corridor

Napa/Solano Passenger Freight Rail Study
Napa and Solano Counties, California

0 9 Miles

ETS / BASELINE

- **Vallejo - Napa Junction** – This segment extends between the Vallejo Ferry Terminal on Mare Island Way and Napa Junction, following the western tracks in Vallejo and departing from existing track at Mare Island Way to extend to the existing Vallejo Ferry Terminal.
- **Napa Junction - Napa** – This segment extends between Napa Junction north and Trancas Road.
- **Napa - St. Helena** – This segment extends between Trancas Road in Napa and the end of the existing rail line north of Pratt Avenue (and just south of the Charles Krug Winery) in St. Helena.

The St. Helena - Calistoga segment was analyzed during the initial screening of this study in which a limited environmental issue field reconnaissance was conducted, with general findings recited at the end of this chapter. That analysis was not carried through to the more detailed environmental assessment conducted subsequent to the initial screening.

Potential Station Sites

There are three potential station sites located in each of the four rail segments, as detailed in Chapter 4.

Potential Siding Locations

Two potential siding locations have been identified. Their general location is:

Creston Siding – This potential siding is located between Napa Junction and Suisun at Creston. An old rail siding is located at this site. It is located approximately midway between the I-80 underpass and Napa Junction (rail mileposts 57.5 to 58.5).

Oakville Siding – This potential siding location is between Napa and St. Helena, just south of Oakville. The approximate location is between the Oakville Grade and Dwyer Road.

Maintenance Yards

Three potential maintenance yard sites were identified along the rail corridor in the study:

Napa Junction – The existing maintenance facility at the Napa wye is a potential vehicle maintenance site. In addition, a parcel just west of the wye and Highway 29 could serve as a commuter train storage yard.

Napa Valley Railroad Maintenance Yard – The Napa Valley Railroad (NVRR) is expanding its maintenance operations at the existing yard. The yard is located just south of the Soscol Avenue track crossing. The site potentially could accommodate a further expansion to accommodate Napa/Solano rail.

Suisun/Fairfield – Several potential sites exist along the rail line east of Napa Junction. The most logical site identified is located between the I-80 underpass and Suisun City on industrial lands. Cordelia Junction also was noted as a potential maintenance facility location.

Napa Pipe Facility Bypass

The existing rail line runs through the Napa Pipe operation located just south of Kaiser Road and north of Highway 29/12. To address the existing industrial activity on the site and the continued need for freight access, an alternative rail alignment was identified to bypass the Napa Pipe site. The potential environmental impacts of such a realignment are included in the study.

Environmental Findings

Preliminary environmental findings are presented in this section of the Final Report by rail segment. Table 10-1 summarizes the environmental constraints by rail segment. A copy of the California Environmental Quality Act (CEQA) checklist based on the initial environmental assessment is included in Appendix 10-A to this Final Report.

Aesthetics

The introduction of grade-separated crossings along the corridor could result in aesthetic impacts, depending upon the location, length and width of each structure. Further study would be required if such locations are identified, with stress on the considerable financial impacts. The proposed station and maintenance facilities would need to be designed and appropriately landscaped to be compatible with the character of their surroundings.

Agricultural Resources

Regulatory Framework

Development within agriculturally zoned areas is controlled by local jurisdictions along the corridor. Many local ordinances include large minimum lot sizes of agriculturally zoned land to ensure that it is preserved for productive agricultural use.

Suisun City - Napa Junction

This rail segment has productive agricultural land between Cordelia and Suisun City. It currently supports row crops, such as flax. If a maintenance facility located in the area, it should be sited away from the property designated for agricultural uses. In the Napa County portion of Jameson Canyon, vineyards border a portion of the highway and the rail line. No disruption to those agricultural lands is anticipated as the proposed siding location at Creston is not located near those vineyards.

Vallejo - Napa Junction

This rail segment is predominantly urban development. The introduction of passenger rail service and potential station development would not be expected to disturb agricultural lands.

Napa Junction - Napa

The area immediately to the south of Highway 29/12, where the track and the Napa River cross under the highway, is designated for agricultural uses. The introduction of new passenger rail service would not require construction outside the existing right-of-way in the segment.

Napa - St. Helena

Most unincorporated lands in Napa County on this rail segment are designated for agricultural uses. County development regulations in those areas are very restrictive. The expansion of the station in Yountville and the creation of a siding in Oakville could result in potential impacts on agricultural lands. The extent to which impacts occur would depend on the design of the new facilities and the amount of additional property required to accommodate the new functions.

At Yountville, the station is located in a narrow corridor between Highway 29 and adjacent vineyards. The expansion of parking and circulation functions in that narrow corridor potentially could impact agricultural resources if linear solutions or alternative parking sites are not found.

In Oakville, the rail line also exists in a narrow corridor between the highway and adjacent vineyards. A very detailed siding specification would need to be developed to determine if the siding can be created in the existing corridor and remain clear of the vineyard areas.

Further Study Recommended in Later Study Phase

More analysis is recommended of the potential impacts on agricultural resources where the rail alignment abuts such properties. Concerns about the impacts of dust and vibration were raised as part of the NVWT Environmental Impact Study. Design of new passenger service facilities should attempt to avoid any intrusion into agricultural lands if possible.

Air Quality

Regulatory Framework

The Bay Area Air Quality Management District (BAAQMD) regulates vehicular and stationary source emissions in the San Francisco Bay Area Air Basin. Its responsibilities include maintenance facilities or station sites where emissions are generated. BAAQMD is responsible for monitoring ambient air quality standards re the following pollutants: ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, particulate matter (PM_{10} and $PM_{2.5}$), sulfates, lead, hydrogen sulfide, vinyl chloride and visibility reducing particles. The Bay Area is currently designated a non-attainment area for ozone and particulate matter (PM_{10} and $PM_{2.5}$).

Air monitoring stations located throughout the district record average concentrations of pollutants regulated under state and federal standards. There are four monitoring stations in Napa and Solano Counties at: Napa, Vallejo, Fairfield and Benicia. Data compiled at these stations in 2001 indicates that California ozone concentration standards were exceeded on one day in Napa and three days in Fairfield and California

particulate matter concentration standards (PM_{10}) were exceeded two days in Napa and three days in Vallejo.[1]

Under the provisions of the Federal Clean Air Act, states are preempted from setting locomotive emission standards. In April 1998, the Environmental Protection Agency adopted emission standards governing the operation of railroad locomotives and locomotive engines.[2] The standards set limits for the release of oxides of nitrogen (NO_X), hydrocarbons (HC), carbon monoxide (CO), particulate matter (PM), and smoke issued from newly manufactured and re-manufactured diesel-powered locomotives and locomotive engines. Manufacturers of new locomotives and locomotive engines must obtain a certificate of conformity with EPA's emission standards and requirements and must subject locomotives and engines to assembly line and in-use testing. New passenger locomotive standards took effect on January 1, 2002 and will take effect on January 1, 2007 with respect to rebuilt locomotive engines. The standards would apply to conventional diesel locomotives, if any were to be included in the Napa/Solano rail system.

Self-propelled rail cars that operate with smaller engines, such as are recommended for use on the Napa/Solano rail system, are regulated under non-road engine emissions standards.[3] Any Federal Railroad Administration (FRA) compliant Diesel Multiple Unit (DMU) vehicles operating in the United States would be governed by the non-road engine standards, rather than those pertaining to locomotives.

Construction and operation of the maintenance and station facilities could result in localized increases in nitrogen oxide (NO_X) emissions, which contribute to high ozone levels. That could result in breaching state or federal air quality standards. While diesel emissions would be expected to increase due to locomotive operations, auto emissions (CO) would be projected to decline during rail operation due to an overall reduction in auto travel and a mode shift to the proposed transit service.

The Napa and Solano rail corridors are located in the San Francisco Bay Area Air Basin, which encompasses San Francisco, San Mateo, Santa Clara, Alameda, Contra

[1] PM_{10} is only sampled every sixth day, therefore the actual days over standard can be estimated to be six times the observed occurrences noted above. In June 2002, the California Air Resources Board established new annual standards for $PM_{2.5}$ and PM_{10}. Standards $PM_{2.5}$ monitoring data was not released in 2001.
[2] The standards are codified in 40 CFR Section 92.
[3] The standards are codified in 40 CFR Section 89.

Costa, southwestern Solano, Napa, southern Sonoma and Marin counties, and is characterized by complex terrain consisting of coastal mountain ranges, inland valleys and bays. The climate of the area is primarily influenced by seasonal pressure systems located offshore in the Pacific Ocean. The proximity of the Basin to large bodies of water directly influences wind, inversion and temperature patterns in the region. The topography and the climatic conditions give the Bay Area Air Basin great potential to trap and accumulate air pollutants.

The potential project-related air quality issues in the Napa and Solano rail corridors include emissions associated with the operation of trains, which are dependent on the technology selected and those associated with station and/or maintenance facility activities.

Further Study Recommended in a Later Phase

Further analysis of emissions may be necessary as frequency of train schedules is refined in the corridor and the location of warm-up operations and layover facilities are determined. Standard mitigation measures required by the BAAQMD would minimize the impacts associated with dust and particulate matter during construction. Localized analysis may be required at station sites where congestion is projected to occur.

Biological Resources

Regulatory Framework

Local, state and federal regulations have been enacted to protect and manage sensitive biological and wetland resources. On the federal level, the U.S. Fish and Wildlife Service (USFWS) is responsible for protection of terrestrial and freshwater organisms through implementation of the federal Endangered Species Act, the Migratory Bird Treaty Act and the National Marine Fisheries Service (NMFS) is responsible for protection of anadromous fish and marine wildlife.[4] The U.S. Army Corps of Engineers (Corps) has primary responsibility for protecting wetlands under Section 404 of the Clean Water Act. At the state level, the California Department of Fish and Game (CDFG) is responsible for administration of the California Endangered Species Act and

[4]The federal Endangered Species Act (ESA) of 1973 provides that all federal departments and agencies shall utilize their authority to concern endangered and threatened plant and animal species. The California Endangered Species Act (CESA) of 1984 parallels the policies of the ESA and pertains to California species.

for protection of streams and water bodies through the Streambed Alteration Agreement process under Section 1601-1606 of the California Fish and Game Code. Certification from the California Regional Water Quality Control Board is also required when a proposed activity may result in discharge into navigable waters, pursuant to Section 401 of the Clean Water Act and EPA Section 404(b)(1) Guidelines.

Appendix 10-B contains a more detailed explanation of the regulatory framework and findings.

Special-Status Species Special-status species are plants and animals legally protected under the state and/or federal Endangered Species Acts or other regulations, as well as other species that are considered rare enough by the scientific community and trustee agencies to warrant special consideration, particularly with regard to protection of isolated populations, nesting or denning locations, communal roosts and other essential habitat.[5] Species with legal protection under the Federal and state Endangered Species Acts often represent major constraints to development, particularly when they are wide ranging or highly sensitive to habitat disturbance and where proposed development would result in a "take" of these species.

Sensitive Natural Communities In addition to species-oriented management, protecting habitat on an ecosystem level is increasingly recognized as vital to the protection of natural diversity in the state. This is considered the most effective means of providing long-term protection of ecologically viable habitat, and can include whole watersheds, ecosystems and sensitive natural communities. Providing functional habitat connectivity between natural areas is essential to sustaining healthy wildlife populations and allowing for the continued dispersal of native plant and animal species.

The California Natural Diversity Data Base (CNDDB) is also responsible for maintaining up-to-date records of sensitive natural communities, those considered rare or

[5]Special status species include designated (rare, threatened, or endangered) and candidate species listed by the CDFG; designated (threatened or endangered) and candidate species listed by the USFWS; species considered to be rare or endangered under the conditions of Section 15380 of the California Environmental Quality Act Guidelines, such as those identified on lists 1A, 1B and 2 in the 2001 *Inventory of Rare and Endangered Plants of California* by the California Native Plant Society (CNPS); and possibly other species which are considered sensitive or of special concern due to limited distribution or lack of adequate information to permit listing or rejection for state or federal status, such as those included on list 3 in the CNPS *Inventory* or identified as animal California Species Concern (CSC) species by the CDFG. Species designated as CSC have no legal protective status under the California Endangered Species Act but are of concern to the CDFG because of severe decline in breeding populations and other factors.

threatened in the state. Until recently, the classification of natural communities used by the CNDDB was generally a habitat-based approach defined by dominant or characteristic plant species as described by Holland in the *Preliminary descriptions of the terrestrial natural communities of California*. The classification of natural communities now used by the CNDDB is based on the system described in the *Manual of California Vegetation.*[6] It is a floristically-based system which uses two units of classification, called the alliance and the association in the *National Vegetation Classification.*[7]

Wetlands Although definitions vary to some degree, wetlands are generally considered to be areas that are periodically or permanently inundated by surface or ground water and support vegetation adapted to life in saturated soil. Wetlands are recognized as important features on a regional and national level due to their high inherent value to fish and wildlife, use as storage areas for storm and flood waters and water recharge, filtration and purification functions. Technical standards for delineating wetlands have been developed by the Army Corps of Engineers and the USFWS, which generally define wetlands through consideration of three criteria: hydrology, soils and vegetation.

In recognition of the importance of wetlands, in 1977, the USFWS began a systematic effort to classify and map remaining wetlands in the country, now known as the National Wetlands Inventory Program (NWI). Using USGS topographic maps as a base, the wetlands mapping effort provides a generalized inventory of wetlands according to the *Classification of Wetlands and Deepwater Habitats of the United States* used by the USFWS.[8] Mapping under the NWI has been prepared through interpretation of aerial photographs, with only limited ground confirmation, which means that a more thorough ground and historical analysis may result in a revision to wetland boundaries in a specific location.

[6] *Manual of California Vegetation*, Sawyer and Keeler-Wolf, 1995.
[7] *National Vegetation Classification*, Grossman et al, 1998.
[8] *Classification of Wetlands and Deepwater Habitats of the United States*, Cowardin, L., V. Carter, F. Golet and E. LaRoe, U.S. Department of the Interior, Fish and Wildlife Service, 1979).

Natural Communities

Natural communities along the rail corridor options consist of a mosaic of non-native grasslands, salt marsh, brackish water marsh, freshwater marsh, riparian scrub and woodland, oak woodland and northern coastal scrub. Agricultural fields, urban and suburban development and rural residential use also border segments of the rail corridors. Segments supporting sensitive natural communities represent a moderate to high constraint, with some of these locations also supporting known occurrences or suitable habitat for special-status plant and animal species. Potential areas supporting sensitive natural communities observed during the field reconnaissance are summarized below by corridor.

Suisun City - Napa Junction

This rail segment passes through a number of locations which support sensitive natural communities, with the most sensitive being the large area of salt marsh habitat along both sides of the right-of-way in the vicinity of the Cordelia Junction wye. Other sensitive natural communities observed along the corridor include segments which border riparian scrub and woodland and possibly stands of native grassland through Jameson Canyon. The oak woodlands which border segments of the corridor in Jameson Canyon are most likely not considered a sensitive natural community by the CNDDB but are of importance given the high wildlife habitat value of woodlands and possible nesting use by raptors.

Suisun City Amtrak Station The existing station is surrounded by existing development and the Highway 12 overpass. No sensitive natural communities, special-status species or wetlands would be affected through use of the existing station facilities. Sensitive wetland habitat occurs on the south side of Highway 12 and west of the rail right-of-way, approximately 100 yards southwest of the station.

Suisun Maintenance Facility Sites The existing rail corridor between Cordelia Junction and Suisun passes through highly sensitive wetlands known to support several special-status species. At the rail branch over Cordelia Road, most wetlands have been eliminated on the east side of the track by placement of fill and past development, including the Stagner Lumber Co. A small area of potential wetland occurs along the southeast side of the north track which leads to the Suisun Station, approximately 75 yards northeast of the rail branch over Cordelia Road. The potential for occurrence of

sensitive resources is dependent on the proposed maintenance yard location. If sited within areas where fill and disturbance have been extensive, it is unlikely that sensitive resources would be affected. If sited in the outlying areas or one of the existing drainages, there is a high potential for occurrence of special-status species or wetland resources.

Red Top Road Station The site supports a cover of non-native grassland bordered on the north by the dense, riparian woodland along the Jameson Creek corridor. A habitat restoration area composed of native tree and shrub plantings extends southward along the south side of the established riparian woodland along Jameson Creek. The creek corridor and habitat restoration areas should be considered sensitive resources that may support special-status species and should be avoided. Although the grasslands appear to be dominated by non-native species, they seem to be relatively undisturbed by extensive grading and there is a remote potential for one or more grassland-dependent special-status plant species to occur on the site. Further detailed surveys would be necessary during the spring months to confirm presence or absence. Other than the wetlands and riparian woodlands associated with the Jameson Creek corridor, no other wetlands or sensitive natural communities appear to occur on the site.

Creston Siding The immediate area of the existing railroad tracks has been disturbed by past and on-going rail operations. There is a potential for occurrence of special-status species and wetlands in the surrounding grasslands and riparian corridors. If sited within the existing rail line where disturbance has been extensive, it is unlikely that sensitive resources would be affected. If sited in the outlying areas, there is a remote potential for occurrence of special-status species, wetland resources or sensitive natural communities.

Napa Junction The immediate area of the existing railroad tracks has been disturbed by past and on-going rail operations. A drainage supporting marsh vegetation occurs along North Slough to the south of the tracks. The potential occurrence of sensitive resources is dependent on the proposed maintenance yard location. If sited within the existing rail corridor where disturbance has been extensive, it is unlikely that sensitive resources would be affected. If sited to the south within the drainage, then there is a high potential occurrence of wetlands and possibly special-status species.

Napa Junction Transfer Station The immediate vicinity of the transfer station has been disturbed extensively by past rail operations. Surrounding areas are dominated by non-native grassland with a tributary to North Slough flowing west across the station yard and northward to the main creek channel. The potential occurrence of sensitive resources is dependent on the proposed station location. If sited within the existing transfer yard where disturbance has been extensive, it is unlikely that sensitive resources would be affected. If sited in the outlying areas of the yard or on the tributary drainage, there is a remote potential for occurrence of special-status species or wetland resources.

Vallejo - Napa Junction

Napa - Vallejo The corridor segment between Napa Junction to Vallejo contains only limited stands of riparian scrub at stream crossings.

Vallejo Ferry Terminal The site has been disturbed highly and currently is improved with a parking lot and large lawn. No special-status species, sensitive natural communities or wetlands would be affected at the location.

Sereno Transit Center The site has been disturbed highly by past and on-going urban development. No special-status species or sensitive natural communities would be affected at the location. Man-made drainage ditches occur along segments of the railroad right-of-way south of Sereno and confirmation on whether these are considered jurisdictional wetlands would be necessary as part of further environmental review of this location.

American Canyon Station The site consists of a highly disturbed parcel currently in industrial use. No special-status species, sensitive natural communities or wetlands would be affected at the location.

Napa Junction - Napa

The segment of the rail corridor between Napa and Napa Junction in American Canyon contains important salt and brackish marsh habitat along the Napa River and adjacent floodplain. Several streams which cross the corridor support riparian scrub and woodland. Marsh habitat associated with the Napa River and floodplain of the valley

floor north of the Highway 12 overpass have been identified as part of the Napa River Flood Control Project, which includes relocation of the rail corridor.

Napa Pipe Facility Bypass The site has been disturbed highly by past development. No special-status species, sensitive natural communities or wetlands would be affected at the location. Sensitive marshlands and riparian habitat occur on both sides of the track at the southern end of the proposed reroute alignment and should be avoided as plans are refined. These marshlands contain jurisdictional wetlands, are considered sensitive natural community types and may support special-status species.

Napa Valley College Station The proposed location north of Imola and east of the current railroad right-of-way supports a cover of non-native grassland and wetland detention basins. The location is currently undergoing environmental review as part of the Gasser Specific Plan for the City of Napa, which would serve to determine the presence or absence of wetlands and special-status species. Jurisdictional wetlands occur as man-made drainages on either side of the railroad tracks and a system of detention basins east of the right-of-way.

Napa Valley Railroad Maintenance Yard The immediate vicinity of the transfer station has been disturbed extensively by past rail operations. The surrounding areas are dominated by non-native grassland with a tributary to North Slough flowing west across the station yard and northward to the main creek channel. The potential occurrence of sensitive resources is dependent on the proposed maintenance yard location. If sited within the existing transfer yard where disturbance has been extensive, it is unlikely that sensitive resources would be affected. If sited in the outlying areas of the yard or on the tributary drainage, there is a remote potential for occurrence of special-status species or wetland resources. The conditions on the site may be altered by construction associated with the Flood Control Project.

Downtown Napa Station The site has been disturbed highly by past and on-going urban development. No special-status species, sensitive natural communities or wetlands would be affected at this location.

North Napa Station The site has been highly disturbed by past and on-going urban development. No special-status species, sensitive natural communities or wetlands would be affected at the location.

Napa - St. Helena
Sensitive natural communities along the corridor segment are limited to riparian scrub and scattered oaks in savanna and woodland habitat which border segments of the railroad. Most of the oaks presumably can be avoided assuming the existing right-of-way is used and no expansion is necessary.

Yountville Station The site has been disturbed highly by past development. No special-status species, sensitive natural communities or wetlands would be affected at the location.

Oakville Siding The immediate area of the existing railroad tracks has been disturbed by past and on-going rail operations. Native oaks and evidence of a drainage system with wetland vegetation occurs within approximately 200 yards of Dwyer Road. The segment to the north toward Oakville Grade does not appear to contain potential jurisdictional wetlands, with only scattered native and ornamental trees along the margin of the corridor. There is a remote potential for aquatic special-status species in the drainage but it is unlikely that any terrestrial species of concern occur along the remainder of the proposed siding area.

Rutherford Station The site has been highly disturbed by past development. No special-status species, sensitive natural communities or wetlands would be affected at the location.

St. Helena Station The site has been highly disturbed by past development. No special-status species, sensitive natural communities or wetlands would be affected at the location. A number of mature valley oaks occur at either end of the proposed station location and should be protected.

Special Status Species
A records search conducted by the CNDDB, together with other relevant information, suggest that occurrences of several plant and animal species with special-status have

been recorded from or are suspected to occur in the Napa Valley of Napa County and southern Solano County. Tables 10-2 and -3 provide a preliminary list of special-status plant and animal species considered to have the highest likelihood of occurrence along the rail corridors. Further refinement of available information and conduct of detailed surveys would be necessary to determine conclusively the extent of essential habitat for special-status species along the rail corridors. Suitable habitat for special-status species observed during the field reconnaissance is summarized below by corridor:

Suisun City - Napa Junction

Suitable habitat for a number of special-status species occurs along segments of the corridor. The salt marsh habitat along both sides of the right-of-way in the vicinity of Cordelia provides suitable habitat for salt marsh harvest mouse, Suisun shrew, salt marsh yellowthroat, California black rail, Suisun marsh aster and soft bird's-beak, among other species. California red-legged frogs occur in the riparian habitat associated with the creeks which cross the corridor, as could foothill yellow-legged frog, northwestern pond turtle, steelhead and a number of raptors. The uplands could provide aestivation habitat for California tiger salamander, nesting and foraging habitat for a number of raptors and could support several special-status plant species.

Vallejo - Napa Junction

With the exception of California red-legged frogs which are known to occur in American Canyon Creek, suitable habitat for other special-status species in the segment between Napa Junction and Vallejo is limited.

Napa Junction - Napa

Several known occurrences of special-status species occurs along the Napa River, together with suitable habitat for several other species. The salt and brackish water marsh habitat along the Napa River provide suitable habitat for salt marsh harvest mouse, salt marsh yellowthroat, California black rail, steelhead, Chinook salmon, Delta smelt, Delta tule pea, and Mason's lilaeopsis, among other species. California red-legged frogs could occur in the riparian habitat associated with the creeks which cross along the corridor, as could northwestern pond turtle, steelhead and a number of raptors. The uplands could provide aestivation habitat for California tiger salamander, nesting and foraging habitat for a number of raptors and could support several special-status plant species.

Table 10-2

Partial List Of Special Status Plant Species
Known Or Suspected To Occur In Vicinity Of Rail Segments

Taxa Name	Status (Fed/State/CNPS)	Habitat Characteristics	Distribution (Presumed Extirpated)	Flowering Period
Aster *lentus* Suisun marsh aster	-/-/1B	brackish water marshes and swamps	Contra Costa, Napa, Sacramento, Solano	May-October
Astragalus tener var. tener *Alkali milk-vetch*	-/-/1B	valley grassland, vernal pools and playas	Merced, Solano, Yolo (Alameda, Contra Costa, Monterey, Napa, Santa Barbara, Santa Clara, San Francisco, San Joaquin, Stanislaus)	March-June
Atriplex joaquiniana *San Joaquin saltbrush*	-/-/1B	Alkaline grassland and scrub	Alameda, Contra Costa, Colusa, Glenn, Merced, Napa, Sacramento, Santa Barbara, Yolo (Santa Clara, San Joaquin, Solano, Tulare)	April-September
Cordylanthus mollis ssp. Mollis Soft bird's-beak	FE/SR/1B	Coastal salt marsh	Contra Costa, Marin, Napa, Solano	July-November
Downingia pusilla Dwarf downingia	-/-/2	Vernal pools and grassland	Mariposa, Merced, Napa, Placer, Sacramento, Solano, Sonoma, Stanislaus, Tehama, South America	March-May
Erigeron angustatus Narrow-leaved daisy	-/-/1B	serpentine chaparral	Lake, Napa, Sonoma	May-September
Fritillaria pluriflora Adobe fritillaria	-/-/1B	chaparral, woodland, grassland on adobe soil	Butte, Colusa, Glenn, Lake, Napa, Plumas, Solano, Tehama, Yolo Mendocino, Monterey, San Benito	February-April
Fritillaria liliacea Fragrant fritillary	-/-/1B	coastal scrub and grassland often on serpentine	Alameda, Contra Costa, Monterey, Napa, San Benito, Santa Clara, San Francisco, San Mateo, Solano, Sonoma	February-April
Lasthenia conjugens Contra Costa goldfield	FE/-/1B	low flats and borders of vernal pools	Napa, Solano, (Alameda, Contra Costa, Mendocino, Santa Barbara, Santa Clara)	April-May
Lathyrus jepsonii ssp. jepsonii Delta tule pea	-/-/1B	brackish water marshes and swamps	Alameda, Contra Costa, Fresno, Napa, San Benito, Santa Clara, San Joaquin, Solano	May-June
Legenere limosa Legenere	-/-/1B	vernal pools	Lake, Napa, Placer, Sacramento, San Mateo, Solano, Tehama (Sonoma, Stanislaus)	May-June
Lilaeopsis masonii Mason's lilaeopsis	-/SR/1B	brackish water marshes and swamps	Contra Costa, Napa, Sacramento, San Joaquin, Solano	June-August
Plagiobothrys strictus Calistoga popcorn-flower	FE/SE/1B	meadows, seeps, grassland	Napa - two occurrences in Calistoga	March-June
Poa napensis Napa blue grass	FE/SE/1B	meadows, seeps, grassland	Napa - two occurrences in Calistoga	May-August
Polygonum marinense Marin knotweed	-/-/1B	coastal salt marsh	Marin, Napa, Sonoma	June-August
Trifolium amoenum Showy Indian clover	FE/-/1B	valley grassland	Sonoma (Alameda, Mendocino, Marin, Napa, Santa Clara, Solano)	April-June

Key:

Federal Status:
FE = Listed as "endangered" under the Federal Endangered Species Act.

State Status:
SE = Listed as "endangered" under CESA. Taxa in serious danger of becoming extinct throughout all or significant portion of range due to varying factors.
SR = Listed as "rare" under CESA. Although not presently threatened with extinction, may become endangered if present environmental factors worsen.

CNPS Status:
1A = Plants of highest priority; plants presumed extinct in California.
1B = Plants of highest priority; plants rare and endangered in California and elsewhere.
2 = Plants rare, threatened, or endangered in California; more common elsewhere.

Source: Environmental Collaborative using the CNDDB and CNPS inventory.

Table 10-3

Partial List Of Special- Status Animal Species Known Or Suspected To Occur In Vicinity Of Rail Segments

Species	Status (Federal/State)	Preferred Habitat Type
Invertebrates:		
Callippe silverspot butterfly	FE/-	Open grasslands with golden violet host species
California freshwater shrimp	FE/SE	Permanent streams with pools
Amphibians/Reptiles/Fish:		
California tiger salamander	C/CSC, CP	Vernal pools, ponds, streams and adjacent grassland
California red-legged frog	FT/CSC, CP	ponds, streams, adjacent riparian and upland
Delta smelt	FT/ST	brackish zone of delta; adjacent freshwater zones for spawning
Foothill yellow-legged frog	FSC/CSC, CP	permanent streams with cobbles
Sacramento splittail	PT/CSC	loughs and other slow-moving waters of delta
Northwestern pond turtle	FSC/CSC, CP	pond, rivers, and streams
Steelhead	FT/-	open water of bay and delta, tributary rivers and streams
Winter- run chinook salmon	FE/SE	open water of bay and delta, tributary rivers and streams
Birds:		
White-tailed kite	-/CP	grassland
Burrowing owl	FSC/CSC	grassland
California black rail	FSC/ST, CP	salt marsh
California clapper rail	FE/SE	salt marsh
Cooper's hawk	-/CSC	riparian and grassland
Double-crested cormorant	-/CSC	bays, rivers and lakes (communal roosts protected)
Golden eagle	-/CSC,CP	open grassland and savanna
Northern harrier	-/CSC	grassland
Northern spotted owl	FT/-	dense woodland and forest
Peregrine falcon	Delisted/SE,CP	open water and grassland
Prairie falcon	-/CSC	grassland
Salt marsh yellowthroat	FSC/-	salt and brackish water marsh
Sharp-shinned hawk	-/CSC	riparian and grassland
Suisun song sparrow	FSC/CSC	salt and brackish water marsh
Tricolored blackbird	FSC/CSC	freshwater marsh and fields
Mammals:		
American badger	-/-	grassland
Salt marsh harvest mouse	FE/SE	salt marsh and adjacent grassland salt marsh
Suisun shrew	FSC/CSC	

Federal Status:
FE = listed as "endangered" under the FESA
FT = listed as "threatened" under the FESA
C = a candidate species under review for federal listing, includes species for which the USFWS currently has sufficient biological information to support listing endangered or threatened.
FSC = federal special concern species.
PT = proposed threatened
State Status:
SE = listed as "endangered" under the CESA
ST = listed as "threatened" under the CESA
CP = California fully protected or protected species; individual may not be possessed or taken at any time
CSC = California special concern species by the CDFG; taxa have no formal legal protection but nest sites and communal roosts are generally recognized as significant biotic features

Source: Environmental Collaborative using CNDDB.

Napa - St. Helena

The potential for special-status species is limited along this corridor due to its primarily developed nature. Species of concern include raptor nesting habitat in oaks and other trees and possible occurrence of California red-legged frog, foothill yellow-legged frog, steelhead and Chinook salmon in the creeks which cross the corridor. The potential occurrence of any special-status plant populations is considered low but should be confirmed through further habitat assessment and detailed surveys where undisturbed habitat remains along segments of the corridor.

Wetlands

Although no wetland assessment has been prepared in connection with the rail segments, indicators were observed along the rail corridors and have been mapped as part of the NWI. Detailed wetland delineations would be necessary to determine accurately the extent of jurisdictional wetlands and unvegetated other waters. Potential wetlands observed during the field reconnaissance are summarized below by corridor.

Suisun City - Napa Junction

The rail segment contains a number of sensitive wetland areas, particularly the segment bordered by salt marsh habitat of Suisun Marsh on both sides of the right-of-way in the vicinity of Cordelia. Several stream crossings occur between the Napa Junction and Suisun City. Several areas also supported indicators of seasonal wetlands along the edge of the right-of-way.

Vallejo - Napa Junction

The corridor segment between Napa Junction and Vallejo has only limited potential wetlands, consisting of a few creek crossings and scattered seasonal wetlands along the edge of the right-of-way.

Napa Junction - Napa

The most extensive wetlands associated with the rail segments occur along the Napa - Vallejo corridor, consisting of salt and brackish water marsh along the Napa River, seasonal wetlands on the valley floor north and south of the Highway 12 river crossing and a number of streams which cross the tracks. Wetlands associated with the Napa River and floodplain of the valley floor north of the Highway 12 overpass have been

identified as part of the Napa River Flood Control Project, which includes relocation of the rail corridor.

Napa - St. Helena

Potential wetlands along the corridor are limited to stream crossings and drainages which border segments of the railroad. Some areas may support seasonal wetlands but they would be limited in extent.

Planning Considerations

Sensitive biological and wetland resources occur along each of the rail segments evaluated as part of the prescreening assessment. The regulatory framework discussed above would protect wetland resources, special-status species with legal protective status and sensitive natural communities with a high inventory priority to the CDFG. Further definition of improvements and possible need for expansion of the existing railroad right-of-way along corridor segments would be necessary to understand whether sensitive resources could be affected by passenger service options. Where proposed improvements may require expansion or relocation of existing railroad segments, detailed surveys would be necessary to determine accurately the extent of any sensitive resources. This could include surveys for special-status plant and animal species, and mapping of sensitive natural communities and jurisdictional wetlands. Some of the surveys are time sensitive due to the migratory and nesting behavior of animals or vegetation dormancy periods.

Where wetlands or essential habitat for listed species may be affected, permit authorization would be required from jurisdictional agencies. A detailed mitigation plan would be necessary to define anticipated impacts and provide measures to avoid and minimize potential impacts, and provide compensatory mitigation where complete avoidance is infeasible.

Further Study Recommended in a Later Phase

Where sensitive resources may be present, further detailed field investigation is warranted and mitigation is required if sensitive resources are present and avoidance is not feasible.

Cultural Resources

Regulatory Framework

The California Environmental Quality Act (CEQA) requires that cultural resources be considered during the environmental review process. This is accomplished by creating an inventory of resources within a study area and assessing whether proposed development could affect cultural resources adversely.

This cultural resources study was designed to partially satisfy environmental issues specified in the California Environmental Quality Act and its Guidelines (Title 14 CCR §15064.5) by: 1) identifying all cultural resources within the project area; 2) offering a preliminary significance evaluation of the identified cultural resources; 3) assessing resource vulnerability to adverse impacts that could arise from project activities and 4) offering suggestions designed to protect resource integrity, as warranted.

Resource Definitions

Cultural resources are classified by the State of California Office of Historic Preservation (OHP) as sites, buildings, structures, objects and districts. They are described by OHP as follows:

- **Site** A site is the location of a significant event, a prehistoric or historic occupation or activity, or a building or structure, whether standing, ruined, or vanished, where the location itself possesses historic, cultural, or archaeological value regardless of the value of any existing structure.
- **Building** A building, such as a house, barn, church, hotel, or similar construction, is created principally to shelter any form of human activity. “Building” may also be used to refer to a historically and functionally related unit, such as a courthouse and jail, or a house and a barn.
- **Structure** The term “structure” is used to distinguish from buildings those functional constructions made usually for purposes other than creating human shelter.
- **Object** The term “object” is used to distinguish from buildings and structures those constructions that are primarily artistic in nature or are relatively small in scale and simply constructed. Although it may be, by nature or design, moveable, an object is associated with a specific setting or environment.
- **District** A district possesses a significant concentration, linkage, or continuity of sites, buildings, structures, or objects united historically or aesthetically by plan or physical development [CA-OHP 1995:2-3].

A records search was conducted at the Northwest Information Center (NWIC) of the California Historical Resources Information System, which is located at Sonoma State University. The NWIC, an affiliate of OHP, is the official state repository of archaeological and historical records and reports for a 16-county area, including Napa and Solano counties. Additional research was conducted using the files and literature at the Anthropological Studies Center (ASC) at Sonoma State University.

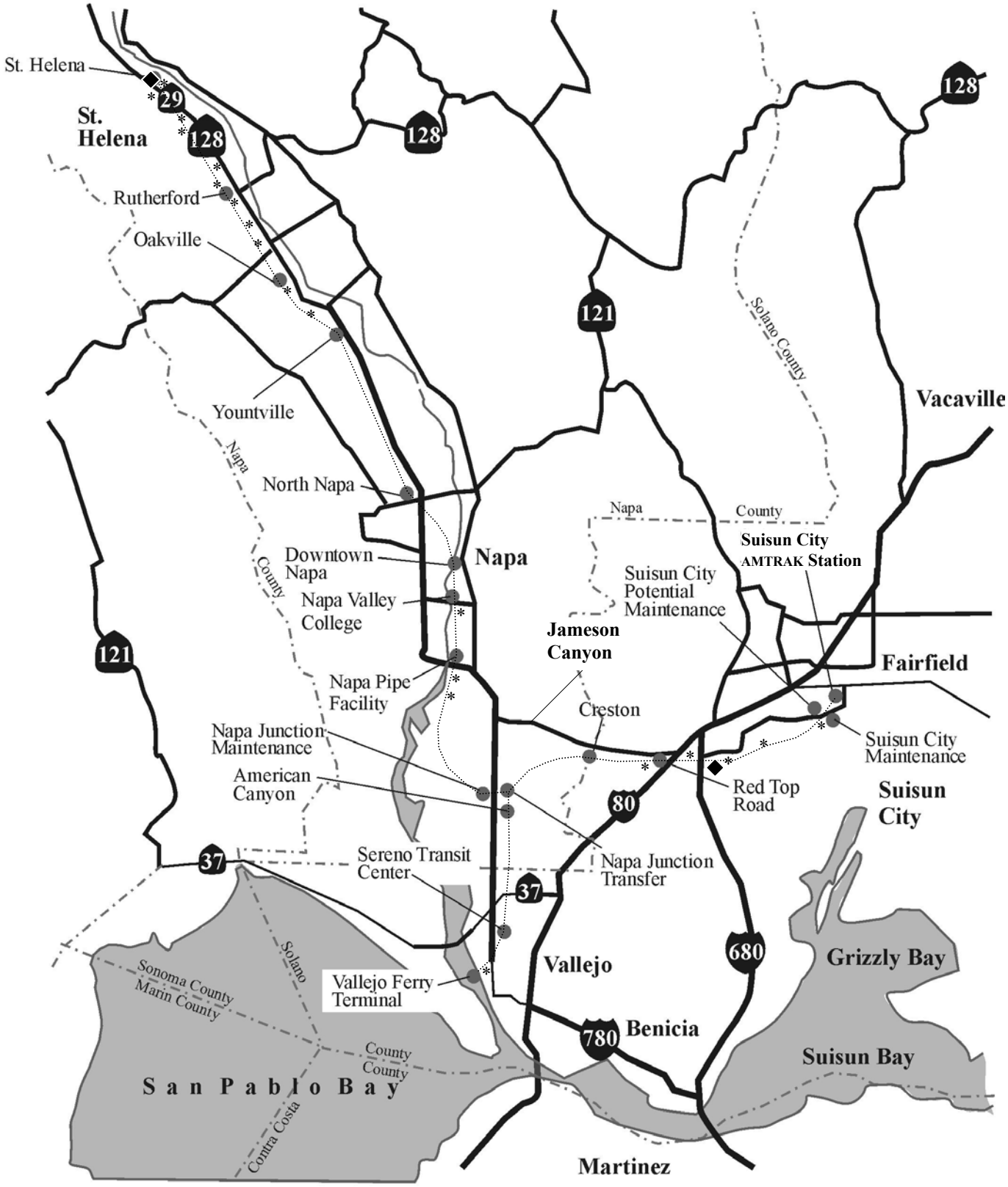
Included in the review was the *Historic Properties Directory Listing* (HPD), published by the OHP in 2002. The HPD includes listings of properties on the *National Register of Historic Places* and the *California Register of Historical Resources*, and the most recent listings (through January 8, 2002) of the *California Historical Landmarks and California Points of Historical Interest.*

A total of 31 cultural resources were recorded within 100 feet of the proposed rail segments. The resource locations are noted on Map Twelve (more detailed 7.5-minute topographic maps are included in Appendix 10-C). They include eleven Native American archaeological sites, two historic-period archaeological sites, three historic-period railroad resources, two historic districts, and thirteen historic-period structures. The thirteen historic-period structures and two historic districts are listed in the HPD. Only the location of the two historic districts and not each individual structure are indicated. In addition, the record search identified 67 previous cultural resource studies within or adjacent to the project areas.

Suisun City - Napa Junction

The entire railroad corridor, identified as the Southern Pacific Railroad (current ownership is divided between Union Pacific Railroad and Napa Valley Railroad), consisting of a continuous stretch of standard-gauge railroad between Cordelia and Davis to the northeast, is identified as a historical resource. Midway between Suisun City and Napa Junction, the Village of Cordelia is also identified as a Historic District. This district was recorded by Clement (1989) and contains 39 buildings, 33 of which are regarded as contributing elements to the significance of the Historic District. The following resources, located in the town of Cordelia and recorded by Mikesell in 1988, are located within 100 feet of the railroad right-of-way. Their contribution to the Village of Cordelia Historic District is noted.

Map Twelve: Cultural Resources



Rail Corridor

Cultural Resource Site *

Historic District ◆

0 9 Miles

Napa/Solano Passenger Freight Rail Study
Napa and Solano Counties, California

ETS / BASELINE

- ***Thompson's Corner*** is located at Cordelia Road at its junction with Ritchie Road. The building consists of a large, two-story, wood-frame building. Built around 1902, the structure is a key contributing element of the Historic District.
- The ***Glashoff House*** is located at 2117 Cordelia Road. The building is a one-story, wood-frame residence. The structure is a contributing element to the Historic District.
- The ***August Bellmer House*** is located at 2118 Cordelia Road. The building consists of a small, wood-frame cottage. The structure is a contributing element to the Historic District.
- The ***Forse House*** is located at 2105 Cordelia Road. The building consists of a one-and-one-half story, wood-frame residence. The structure is a contributing element of the Historic District.
- The ***Mangus House*** consists of a one-and-one-half story, wood-frame residence. Built some time between 1876 and 1896, it is one of the older homes in the town of Cordelia. The structure is a contributing element of the Historic District.
- A resource is located at 2145 Bridgeport Avenue and consists of a one-story residence built around 1960. According to Mikesell, the house was built well past the period of significance and therefore is a noncontributing element of the Historic District.
- The ***Milne House*** is located at 2151 Bridgeport Avenue. The building consists of a one-story, wood-frame residence. Though the structure has undergone changes in location, setting and materials, it is still considered in keeping with the character of the Historic District. The structure is a contributing element of the Historic District.
- A resource, located on Bridgeport Avenue at the railroad tracks, consists of a parcel with two small residences. The property appears to have been built beyond the period of significance; therefore it is considered a noncontributing element to the Village of Cordelia Historic District.
- ***Peter Seibe's Quarry*** is located in the town of Cordelia. The resource consists of an abandoned, open quarry measuring about 30 feet in height and approximately 300 feet in width. The resource is a contributing element of the Historic District.
- The ***Cordelia Firehouse*** is located on Cordelia Road, at its junction with Ritchie Road. The building consists of a large concrete building. Built around 1980, it does not meet the age requirements for inclusion in federal, state, or local historic-property inventories. The structure is a noncontributing element of the Historic District.

Another historic resource was identified at the Red Top Road proposed station site. The resource, also know as the Freitas Family Farm, is located at 117 Red Top Road, just outside of the town of Cordelia. The property recorded by Scott (1988) appears ineligible for inclusion on the California Register of Historical Resources due to a lack of integrity of setting and materials.

Vallejo - Napa Junction

A historic-period site was identified at the northeast corner of the junction of Mare Island Way and Kentucky Street in the City of Vallejo. The site was recorded by Speer and Offerman (1985) and consists of the remains of the Vallejo Electric Light and Power Company. The site includes one standing structure, an adjacent patio and concrete foundations.

Napa Junction - Napa

In this portion of the rail corridor, segments of the railroad, referred to as the NVWT and the Southern Pacific Railroad, consisting of a standard-gauge railway with various associated features, have been identified as historic resources. The NVWT, recorded in 2001 by Bischoff, referred to the original railroad constructed in two phases between 1864 and 1868. Tracks and ties, along with other associated railroad features such as bridges, trestles, yards and buildings, have been modified over time as part of general maintenance. A second reference to the Southern Pacific Railroad referred to a portion of a larger, linear resource first recorded by Nelson in 1999. The resource consists of a standard-gauge railroad that runs between Napa Junction in the south and Calistoga in the north. No records were found indicating that the entire length of the rail corridor between Napa Junction and St. Helena had been identified as an historic resource,

An historic-period archaeological site is located adjacent to the Napa River, at the end of Suscol Ferry Road. The site was recorded by Baker and Shoup (1980). The site is composed of 36 pilings protruding from the river. It was identified as the probable remains of Thompson's (Suscol) Wharf, built in the late 1850s.

Napa - St. Helena

Several prehistoric sites were identified in the rail segment between Napa and St. Helena. These sites are summarized below.

- A prehistoric habitation site was identified on the east side of Highway 29, just south of Oakville Cross Road. The site was first recorded by Stephens (1923). Subsequent recordings of this site in 1976, 1979 and 1985 have expanded the site boundary to its present size. The site consists of a moderate to dense lithic scatter, shell and other habitation debris. Several burials were encountered when a portion of the site was excavated by U.C. Berkeley in 1937.

- The site is a prehistoric lithic scatter of debitage and artifacts located on either side of Highway 29, approximately 0.9 miles south of Oakville. First recorded by Elsasser in 1953, subsequent visits to the site by Atchley and McCormack (1991) and Damon et al. (1993) have expanded its boundary to its present location.
- The site is a prehistoric shell midden deposit and lithic scatter, known as the Mondavi site, located primarily on the west side of Highway 29, 2,500 feet north of Oakville Cross Road and 1.5 miles south of Rutherford. The site was first recorded by Bingham, Montizambert, and Mayfield (1983). The site consists of a moderate scatter of obsidian debitage, projectile points, and large bifaces. Lithic artifacts were observed when this site was revisited by Atchley and McCormack in 1991.
- The site is a prehistoric lithic scatter located on the east side of Highway 29 across from the intersection of Highway 29 and Manely Lane, between Rutherford and Oakville. The site was first recorded by Oman, Noble and Schuster (1985). Bieling, Gerike and Towey (1986) revisited the site and expanded the site boundary to its present location. The site consists of a sparse lithic scatter with discontinuous sparse concentrations. The site has been impacted by agricultural activity.
- The site is a prehistoric lithic scatter located on the east side of Highway 29 at its junction with Galleron Road. The site was first recorded by Oman, Noble and Shuster (1985). The site consists of a low density obsidian and chert debitage scatter with several obsidian tool fragments.
- The site is a prehistoric lithic scatter located adjacent to Highway 29 on the west side, about 750 feet south of Grgich Winery and 1,300 feet north of Beaulieu Winery north of Rutherford. The site was recorded by Oman, Schuster, and Noble (1985) and consists of a light debitage and artifact scatter. They noted a thin flake scatter north and south of the site along the railroad tracks for approximately 650 feet.
- The site is a multi-component archaeological site that contains both prehistoric and historic-period artifacts. It is located on the east side of Highway 29, 90 meters north of its intersection with Mee Road. First recorded by Oman, Noble and Shuster (1985), the site consists of obsidian debitage and biface fragments as well as historic-period ceramics, bottle glass, crockery and a brown glaze ceramic door knob.
- The site is a prehistoric lithic scatter located on the east side of Highway 29, one-eighth mile south of its intersection with Whitehall Lane, north of Rutherford. This site was recorded by Atchley and McCormack (1991) and consists of a sparse obsidian and chert lithic scatter. Complete site boundaries were not determined.
- The site is a prehistoric lithic scatter located east of Highway 29 at milepost 26.6, north of Rutherford. The site was recorded by Oman, Schuster and Noble (1985) and consists of a moderately dense obsidian lithic scatter in a flat vineyard. A full and complete investigation of the site's size and content could not be made.
- The final site is a prehistoric midden and lithic scatter located on the west side of Highway 29 just south of its intersection with Zinfandel Avenue, north of Rutherford. The site was first recorded by Oman, Schuster and Noble (1985) and revisited by

Atchley and McCormack (1991c), who expanded the site boundary to its present location. The site consists of midden soil with an obsidian flake scatter.

A historic farm house just north of Rutherford is known as the Howard K. and Joan George Farm House. It is a single-story residence located at 1796 South St. Helena Highway. The resource was recorded by Harris (1999) and is estimated to have been built in 1880. In addition to the single-family residential building, the property also contains four historic-period ancillary buildings and the sites of three historic-period ancillary buildings.

The St. Helena Historic Commercial District consists of 34 contributing buildings and one contributing object in the town of St. Helena. It covers approximately 8.3 acres and is bounded on the east by the project area along Railroad Avenue. The district was recorded by Donald Napoli in 1997. The following two historic-period structures were identified within 100 feet of the railroad corridor:

- ***St. Helena Southern Pacific Railroad Depot*** is located at 1560 Railroad Avenue in the City of St. Helena. The building was recorded by Yerger (1996) and is currently listed on the *National Register of Historic Places*. It is one of the contributing buildings within the St. Helena Historic Commercial District.
- ***Johnson's Depot Saloon*** is located at 1478 Railroad Avenue in the city of St. Helena. It was recorded by Moffitt in 1978 and is believed to have been built circa 1868. It is one of the contributing buildings within the St. Helena Historic Commercial District.

Further Study Recommended in a Later Phase

To summarize, 31 cultural resources were identified within 100 feet of the proposed Napa/Solano Passenger/Freight Rail Study area: 17 along routes in Napa County and 14 along routes in Solano County. While some of the resources have been described as destroyed or altered, intact areas of the resources may still exist and all site locations should be considered sensitive to intact buried deposits.

In addition to the above recorded resources, the possibility exists that unrecorded cultural resources exist within 100 feet of the project area. The project area has not been surveyed completely and unrecorded archaeological sites may be within the project area still.

Not all of the structures recorded within the study area have been evaluated formally. For example, there was no listing in the HPD of the historic Rutherford Depot building suggesting that the structure has never been evaluated for eligibility to the *National Register of Historic Places* (NRHP) or the *California Register of Historical Resources* (CRHR). It seems likely, however, given the age of the building, that this structure and related resources, such as ancillary buildings, structures, or other features, might be eligible for these registers. Other buildings and structures within 100 feet of the project area likewise also might meet the criteria for eligibility to the NRHP and CRHR, but have yet to be recorded or evaluated. It is therefore recommended that, as part of the planning process, and prior to any ground-disturbing activities, a formal cultural resources field survey be conducted of the proposed project area.

Energy/Mineral Resources

The introduction of new passenger rail service on an existing track that already provides limited passenger services would not conflict with energy conservation plans or result in the loss of mineral resources. An expected increase in diesel fuel consumption would be offset by an expected decrease in gasoline consumption as travelers chose a transit option rather than private vehicular travel. No significant impacts associated with energy consumption would be expected from the implementation of the project.

Geology

A preliminary analysis of the potential geologic hazards focused on the proposed sites where construction potentially might occur outside the existing rail right-of-way: at proposed stations sites, potential maintenance facility sites, proposed siding locations and the potential Napa Pipe bypass location. The general location of fault lines also was identified.

Regulatory Framework

The California Division of Mines and Geology fault activity map (CDMG, 1994) was reviewed to assess whether any of the proposed sites are located within one mile of a mapped Holocene fault (showing activity within the past 11,000 years).[9] In addition, selected Alquist-Priolo Earthquake Fault Zone maps were reviewed to assess whether a

[9] CDMG, 1994, *Fault Activity Map of California and Adjacent Areas with Locations and Ages of recent Volcanic Eruptions, Geologic Data Map No. 6,* Department of Conservation Division of Mines and Geology, compiled by Charles W. Jennings, 1: 750,000 scale.

site near a mapped fault is located within an established regulatory zone.[10] The Alquist-Priolo Earthquake Fault Zone maps identify areas of active faulting where there is a relatively high potential for surface rupture based on active faulting that has occurred within the past 11,000 years. Areas within identified Alquist-Priolo Earthquake Fault Zones are subject to special building restrictions. Structures intended for human occupancy cannot be built across or within 50 feet of an active fault and a special geo-technical study is required before such structures can be built within one-quarter mile of an active fault.

Only those Holocene faults located within one mile of a proposed site are identified. A hazard assessment indicating that there does not appear to be a geologic hazard affecting a site refers only to the lack of evidence on the 1994 CDMG fault activity map of a Holocene fault within one mile of the site, or that the site is not located within an Alquist-Priolo Earthquake Fault Zone.

Active faults may be located outside an identified Alquist-Priolo Earthquake Fault Zone and some faults may not reveal evidence of being active. To better assess the earthquake hazards associated with a site, earthquake hazard maps prepared by the Association of Bay Area Governments also were reviewed, to the extent available. Those maps indicate the degree of ground shaking that may occur from a seismic event based on surface soil types and earthquake faulting potential along any of the regionally active faults.

The findings of the geologic assessment are summarized below. Appendix 10-D contains a more detailed discussion.

[10] *Alquist-Priolo Earthquake Fault Zones, California Geologic Survey Web Page,* http://www.consrv.ca.gov/DGS/rghm/ap/index.htm, 2/24/2003.
Alquist-Priolo Earthquake Fault Zone Maps - Cordelia Quadrangle, Revised July 1993 and *Cuttings Wharf Quadrangle,* July 1983

Suisun City - Napa Junction

There are no faults mapped within one mile of the Suisun Amtrak station site or the potential Suisun maintenance facility sites although the area has been identified as an area with very high to extremely high ground shaking amplification. No faults were identified near the Creston siding location. There do not appear to be geologic hazards associated with the site.

At the proposed Red Top Road station site, a segment of the Green Valley Fault, a Holocene fault, is mapped along the eastern portion of the subject property and the entire site lies within an Alquist-Priolo Earthquake Fault Zone. Fault creep slippage has been observed and recorded on another segment of the Green Valley Fault located approximately one-half mile east of the site. There are potential geologic hazards affecting the site.

A Holocene segment of the West Napa Fault is mapped adjacent to the Napa Junction site. The boundary of the Alquist-Priolo Earthquake Fault Zone is located approximately one-half mile southwest of the site, along the northeast side of Oat Hill. That is an area of moderate ground shaking amplification. There are geologic hazards affecting the site due to ground shaking intensity.

Vallejo - Napa Junction

The City of Vallejo is not included in the Alquist-Priolo Earthquake Fault Zoning Act. The Earthquake Hazard Map indicates the Vallejo Ferry Terminal is located within an area of extremely high shaking amplification and the Sereno Transit Center is an area of moderate shaking amplification. There appear to be geologic constraints due to potential ground shaking at these sites.

A Holocene segment of the West Napa Fault is mapped adjacent to the American Canyon site. The boundary of the Alquist-Priolo Earthquake Fault Zone is located approximately one-eighth mile northwest and southwest of the site. The site is located in an area of moderate shaking amplification, presenting potential geologic hazards.

Napa Junction - Napa

A Halocene segment of the West Napa fault is mapped within one mile southwest of the Napa Pipe site. The site is not included in an Alquist-Priolo Earthquake Fault Zone but

there may be geologic hazards due to ground shaking associated with the nearby fault at the site.

The City of Napa is not included in the Alquist-Priolo Earthquake Fault Zoning Act. The station sites in Napa are subject to moderate to very high shaking amplification and therefore may face potential geologic constraints.

Napa - St. Helena

None of the cities in the track segment (Yountville, Oakville, Rutherford, or St. Helena) are located within the Alquist-Priolo Earthquake Fault Zoning Act. No fault lines have been identified in the immediate vicinity of the station or siding sites but there may be potential geological constraints associated with ground shaking affecting these sites.

Further Study Recommended in a Later Phase

A further corridor wide assessment and a more detailed assessment of the station and maintenance facility sites may be required once the exact location has been determined, particularly on those sites that have identified fault lines in close proximity or moderate to extremely high ground shaking amplification. Any structures introduced on these sites would need to meet the Uniform Building Code requirements re construction in areas with the potential for ground shaking activity.

Hazards and Hazardous Materials

Regulatory Framework

Several local, state, and federal requirements pertain to hazardous material and hazardous waste transport, use, storage and disposal and training of workers handling these materials. When hazardous materials are identified on a site, remediation efforts are required to clean it up. To determine the presence of hazardous materials, a Phase I site assessment is undertaken in an early environmental phase. A Phase I site assessment consists of a review of historic land uses and previous environmental investigations, a site reconnaissance, a review of available federal, state and local regulatory databases and files for the site(s) within one mile and interviews with persons knowledgeable about the site(s). The Phase I assessment would be followed by a more detailed Phase II assessment which includes soil samples and boring, if warranted by the findings of the Phase I assessment.

This preliminary hazards assessment focused on potential station and maintenance facility sites and siding locations. A comprehensive Phase I assessment was not conducted. The assessment was limited to a field reconnaissance to visually inspect each site re obvious signs of hazardous material use, storage, or disposal either on or immediately adjacent to a proposed site. A description of each site and an initial assessment of each site's potential to contain hazardous material issues, are summarized below. For a more detailed discussion, refer to Appendix 10-D.

A regulatory agency database records search was not performed and formal interviews with property owners were not conducted. The hazard assessment, presented below, is based on the assumption that the type of development proposed by the Napa/Solano Passenger/Freight Rail Study will involve only relatively minor disturbances of the subsurface soil such as excavating shallow footings for building foundations.

Suisun City - Napa Junction

Suisun City Amtrak Station

The Suisun City Amtrak Station site is an existing Amtrak Capitol Corridor rail station facility. The site is located on Main Street by Highway 12 and consists of a train depot building, parking areas, a pedestrian plaza and landscaping. Adjacent land uses include Highway 12 and various commercial, industrial and residential buildings. North of the site is an industrial area which includes an iron welding shop and a PG&E electrical substation. East of the site is a residential development. A road sign near the site indicates the area is subject to local flooding.

No obvious issues involving hazardous materials were observed on or immediately adjacent to the site; however, because the site is located adjacent to transportation, manufacturing and commercial businesses, a Phase I site assessment is recommended if construction activities are planned at this site that would disturb the subsurface.

Suisun City Maintenance Facility Sites

Two different sites are proposed for consideration in connection with the Suisun City Maintenance facility. The western site is a flat undeveloped parcel located in an industrial park along Cordelia Road between Chadbourne Road and Beck Avenue. No

evidence of prior land uses except agriculture was observed. Adjacent land uses within the industrial park include commercial warehouses and offices associated with distribution and manufacturing. South of the site, a Calpine energy-generation facility is under construction.

The eastern potential site is a flat vacant parcel located within a rail yard junction along Cordelia Road west of Suisun City. The site contains abandoned railroad cars, buildings, scrap lumber and scrap metal. Adjacent land uses include the Stagner Lumber Company and a residence.

Although no obvious issues involving hazardous materials were observed on or immediately adjacent to the western site, a Phase I site assessment is recommended to identify the potential effects of land uses associated with surrounding businesses in the industrial park and agriculture (pesticides). The commercial lumber supply and scrap metal activities observed near the eastern site are associated with the use or disposal of hazardous waste. A Phase I site assessment is recommended to identify past and present land use activities in the immediate area, if this site is selected for development.

Red Top Road Station

The Red Top Road site is proposed as a commuter/visitor station. The site is located near the intersection of Red Top Road and Jameson Canyon Road and consists of a flat to gently sloping triangular-shaped undeveloped parcel. Prior land use appears to have been ranching. An underground pipe is located on the property. Surrounding the railroad tracks, immediately north of the site, is a thickly wooded area containing a creek. The wooded area is enclosed by a barbed wire fence. Signs posted on the fencing indicate it is a habitat restoration area and that vehicle access is prohibited. Adjacent land uses include the Sunnyside Farms dairy farm and trucking distribution center.

No obvious issues involving hazardous materials were observed on or adjacent to the site. A Phase I site assessment is recommended to identify the purpose and alignment of the underground pipeline.

Creston Siding

The Creston site is proposed as a siding location. An exact site location has not been determined but the site is located near the Napa/Solano County line. This area consists of a narrow section of land adjacent to Highway 12 that slopes gently toward the west. Structures within the area that were inspected include a large above ground surge tank, an underground vault, an underground gas pipeline and overhead electrical lines. Adjacent land uses are ranching and vineyards.

No obvious issues involving hazardous materials were observed on or adjacent to the site. The unknown nature of the surge tank and underground vault would warrant a Phase I site assessment were the site selected for development.

Napa Junction Transfer Station

The Napa Junction Transfer site is proposed as a transfer facility. The site is located near the railroad junction east of Highway 29 and Hess Road, though an exact location has not been determined. The topography is flat to gently sloping. East of Napa Junction is a vineyard and residence. North of the junction are agricultural and residential land uses. Highway 29 borders the junction area to the west.

No obvious issues involving hazardous materials were observed on or immediately adjacent to the site.

Napa Junction Maintenance Facility

A Napa Junction site has been proposed as a location at which to perform railcar maintenance. The site is located adjacent to and west of Highway 29 at the end of Lombard Road. The area currently appears to be used for repairing and maintaining railroad cars.

No obvious issues involving hazardous materials were observed on or immediately adjacent to the site; however, current land use activities may involve the use of hazardous materials. A Phase I site assessment, including records search of regulatory databases, is recommended were the site selected for development.

Vallejo - Napa Junction

Vallejo Ferry Terminal

The Vallejo Ferry Terminal site is proposed as a major intermodal transportation facility. The site is currently a large, flat, undeveloped parcel located north of the ferry terminal complex. The Mare Island Strait borders the property to the west. Adjacent to the site to the east and north is the Vallejo Civic Center, Solano Community College, residential housing and a marina. Two gasoline service stations (Arco and Union 76) are located about one mile from the site.

No obvious issues involving hazardous materials were observed on or adjacent to the site. Based on the potential presence of underground storage tanks in the immediate area (gas stations and marina), it is possible that leaking underground storage tanks have impacted the subsurface soil and/or groundwater in the area. A Phase I site assessment, including a records search of regulatory databases is recommended were the site selected for development.

Sereno Transit Center

The Sereno Transit Center site is proposed as a commuter station but may be upgraded to a major intermodal station in the future. The site is located on Sereno Drive near Tall Trees Drive. It is currently vacant but contains materials, equipment and soil piles associated with the development of an adjoining apartment complex. Commercial activities adjacent to the site include a muffler and auto repair shop, a retail carpet store, a restaurant and a retail center.

No obvious issues involving hazardous materials were observed on or immediately adjacent to the site. Development of the adjoining apartment complex may have included a Phase I site assessment. Were the site selected for development, an inquiry should be made to determine whether such a report exists and whether it could be made available for review. If not, a Phase I site assessment, including a records search of regulatory databases is recommended.

American Canyon Station

The American Canyon site is proposed as a commuter/visitor station. The site is located on flat vacant land along Poco Way east of Highway 29 that may have been

used for agriculture. Land uses adjacent to the site include a crushed rock loading operation, a scrap metal/metal recycling yard, a tile and masonry business, a tavern and a residence.

No obvious issues involving hazardous materials were observed on or immediately adjacent to the site, however, current commercial activities and agricultural uses adjacent to the site may involve the use of hazardous materials. A Phase I site assessment, including a records search of regulatory databases is recommended were the site selected for development.

Napa Junction – Napa

Napa Pipe Facility Bypass

The Napa Pipe facility site is located adjacent to the Napa River near Highway 29 on property owned by the Napa Pipe Company. Although the site could not be inspected, current land uses include a steel manufacturing facility.

At a minimum, a Phase I site assessment, including a records search of regulatory databases and review of associated environmental files, is recommended were track realignment pursued around the Napa Pipe Facility.

Napa Valley College Station

The Napa Valley College site is a proposed commuter/visitor station. An exact site location has not been determined but it is proposed along Imola Avenue near the Napa River. A vacant area north and east of the Napa Sanitation District facility originally was proposed as the site location, however, the rail line through the area has been removed and a wetland area has been created. The re-routed railroad line is currently located along a flat vacant parcel of land on the west side of the Napa Sanitation District facility. The area south of Imola Avenue is vacant and undeveloped.

No obvious issues involving hazardous materials were observed on or immediately adjacent to the site.

Napa Maintenance Yard

The NVRR Maintenance Yard site is located just west of the Downtown Napa site between 3rd Street and 5th Street and between Soscol Avenue and the Napa River. Currently, Montgomery Watson Harza, an environmental consulting company, is conducting a subsurface investigation and remediation project at the site as a result of a former land use of the property that resulted in soil and groundwater contamination.

Soil and groundwater contamination is reportedly present in the subsurface. A file review of associated Phase I and Phase II environmental reports is recommended were this site selected for development.

Downtown Napa Station

The Downtown Napa site is proposed for an intermodal bus and rail station. The site is located between 3rd Street and 6th Street, east of Soscol Avenue in downtown Napa. Current land uses within the site include a sheet metal shop, a used automobile sales lot, an auto-detailing shop, and an auto repair shop. Land uses on adjacent properties include residential housing, the Napa Fairgrounds, various commercial businesses and a large parcel of land currently being investigated and remediated for soil and groundwater contamination. (See discussion of the Napa Maintenance Yard.)

Commercial land uses operating within the site and adjacent areas are involved with the use, storage and disposal of hazardous materials. A Phase I site assessment, including a records search of regulatory databases, is recommended were this site selected for development.

North Napa Station

The North Napa site is a proposed commuter/visitor station. The site consists of a triangular section of land located between Highway 29, Redwood Road and Trancas Road. Currently, Caltrans has two trailer offices on the site and is using the property for storing light posts, piping, concrete debris and excavated soil. Land uses adjacent to the site include two retail gasoline service stations and a refueling station for the City of Napa's waste management (garbage collection) trucks. A Union 76 station is located south of the site across Redwood Road and an Exxon station and the waste management refueling station are located west of the site across Trancas Road. To the southwest is a large vacant property enclosed by a cyclone fence that may have been a

former gasoline service station. It is unknown whether the North Napa site was also a former gasoline service station.

Based on the presence of underground storage tanks in the immediate area, it is possible that leaking underground storage tanks have impacted the subsurface soil and/or groundwater in the area. A Phase I site assessment, including a records search of regulatory databases is recommended were this site selected for development.

Napa - St. Helena

Yountville Station

The Yountville site is a proposed commuter/visitor station. The site is located adjacent to Highway 29 near California Drive. The property is currently being used as a NVWT station and consists of a narrow parcel with a small paved parking area, a small covered seating area and an historic railroad car. Adjacent land uses include the Domaine Chandon vineyards, the Vintners Golf Course and a State Veteran's home.

No obvious issues involving hazardous materials were observed on or immediately adjacent to the site. The potential pesticide presence associated with the agricultural uses would need to be assessed were this site selected for further development.

Oakville Station

The Oakville site is proposed to be the location of a siding. The location has not been determined but would be within a narrow easement, approximately one mile in length, along Highway 29 between Oakville Grade Road and Dwyer Road. Near Dwyer Road, the easement widens and two buildings are located next to railroad tracks. North of these buildings, a creek enters a culvert and flows beneath Highway 29. Adjacent land uses along the section include vineyards and a few residences.

No obvious issues involving hazardous materials were observed on or immediately adjacent to the site.

Rutherford Station

The Rutherford site is proposed to be a gateway station. The site is located on Highway 29 near the intersection with Highway 128 and consists of a level property with an

historic train depot building and a private residence. Land uses on adjacent properties include vineyards and a winery, a restaurant and tasting room, a fire station and a residence.

No obvious issues involving hazardous materials were observed on or immediately adjacent to the site

St. Helena Station

The St. Helena site is proposed to be a commuter station. The site is located at the intersection of Fulton Lane and Railroad Avenue in the town of St. Helena and consists of a rectangular flat vacant property. Land uses on adjacent properties include a vineyard, a cabinet and glass shop, an auto body and auto repair shop and a paint store. On Fulton Lane, near the cabinet shop, is a self-service, used motor oil recycling station. Two retail gasoline service stations, an Exxon and a Union 76, are located within two miles of the site.

No obvious issues involving hazardous materials were observed on or immediately adjacent to the site; however, adjacent businesses and land uses are associated with the use of some hazardous materials and a Phase I site assessment, including a records search of regulatory databases, is recommended were the site to be selected for development.

Further Study Recommended in a Later Phase

A Phase I assessment has been recommended re several potential station or maintenance facility sites in a future phase of the study where the potential for hazardous materials was observed.

Hydrology

Regulatory Framework

The rail alignment under consideration encompasses crossings of the Napa River and numerous crossings of creeks and unnamed creek tributary crossings. Some of the crossings have bridges or culverts that may need to be reinforced during project implementation. If structural work is required in or near waterway crossings, the US Army Corps of Engineers and the California Department of Fish and Game likely would

require project sponsors to quantify and describe unavoidable project impacts on wetland and riparian areas and obtain and comply with state and federal wetland permits including a Clean Water Act Section 404 permit from the Corps, Section 410 Water Quality Certification or waiver from the Regional Water Quality Resources Control Board and state Section 1600 Streambed Alternation Agreement from the Department of Fish and Game. Any work within a floodplain area also would be subject to permitting through the US Army Corps of Engineers and subject to local ordinances governing development within floodplain areas.

A field reconnaissance of the alignment and an information search were conducted to identify potential hydrologic impacts in the corridor. U.S. Geological Survey (USGS) topographic maps were reviewed to identify nearby streams, rivers, wetlands, or other bodies of water in close proximity to a proposed site. In addition, the ESRI/FEMA Project Hazard Awareness web site was reviewed for information about flood zones. For the purpose of this report, the assessments of the hydrologic hazard associated with a site are limited to those preliminary sources of information.

The results of the map reviews and an initial assessment of the hydrologic conditions associated with each site, are described below. [11] For a more detailed discussion see Appendix 10-D.

Suisun City - Napa Junction

Suisun City Amtrak Station

No streams, creeks, or rivers were observed on or immediately adjacent to the site. The USGS topographic map indicates the area is marshland but is not located in a 100 or 500-year flood plain. It appears to be due to the artificial raising of land within the city limits. The site does not appear to have hydrologic constraints to development.

[11] *USGS, U.S. Geological Survey Topographic Maps* for the following 7.5 minute quadrangles: Calistoga, St. Helena, Rutherford, Yountville, Napa, Cuttings Wharf, Mare Island, Benicia, Cordelia and Fairfield South.

Suisun City Maintenance Facility

No streams, creeks, or rivers were observed on or immediately adjacent to either of the proposed maintenance facility sites. No bodies of water are shown adjacent to the site on the USGS topographic map for the area. The proposed maintenance site near Main Street at the Cordelia Junction, however, is mapped as a marshland. Neither of the sites is located within a 100 or 500-year flood plain, which appears to be the result of raising the land around the railroad track. The site does not appear to have hydrologic constraints to development.

Red Top Road Station

A creek, which supports a dense section of trees and bushes, is located between the site and the railroad tracks. The USGS topographic map indicates it to be an intermittent creek. There are potential hydrologic constraints affecting the site resulting from the location of the intermittent stream.

Creston Siding

No streams, creeks, or rivers were observed on or immediately adjacent to the site. An intermittent creek is shown adjacent to the site on the USGS topographic map of the area. There may be hydrologic constraints affecting the site due to the intermittent stream.

Napa Junction Transfer Station and Maintenance Facility

An apparent wetland was observed within the circle formed by the railroad tracks at Napa Junction and also to the southwest of the tracks. No bodies of water are shown adjacent to the site on the USGS topographic map of the area. The site is not located within a 100 or 500-year flood plain. Future siting of facilities at the site should avoid the wetland area to minimize hydrologic impacts.

<u>Vallejo - Napa Junction</u>

Vallejo Ferry Terminal

The Mare Island Strait forms the western border of the site. No other bodies of water were observed or shown adjacent to the site on the USGS topographic map of the area. The site is not located within a 100 or 500-year flood plain; it does not appear to have hydrologic constraints to development.

Sereno Transit Center

No streams, creeks, or rivers were observed on or immediately adjacent to the site. No bodies of water are shown adjacent to the site on the USGS topographic map of the area. The site is not located within a 100 or 500-year flood plain but is located within close proximity of the 100 - year flood plain zone. There may be hydrologic constraints affecting the site due to the proximity to the 100-year flood plain zone. Further study may be required.

American Canyon Station

No streams, creeks, or rivers were observed on or immediately adjacent to the site. No bodies of water are shown adjacent to the site on the USGS topographic map of the area. The site is not located within a 100 or 500-year flood plain. The site does not appear to have hydrologic constraints to development.

<u>Napa Junction – Napa</u>

Napa Pipe Facility Bypass

The Napa River is located to the west of the site area. The USGS topographic map indicates a marsh is present at the southern end of the Napa Pipe facility. The site is located within a 100-year flood zone. There are hydrologic constraints at this site due to the presence of the flood zone.

Napa Valley College Station

The Napa River is located to the west of the site area. An apparent wetland is located to the east of the site area and north of Imola Avenue. The site is located within a 100-year flood zone. There are hydrologic constraints at the site associated with potential flooding.

Downtown Napa Station

The Napa River borders the site on the west. At the time of the site reconnaissance, there were approximately 25 feet of freeboard between the surface of the river and the site. Large boulders form a rip-rap border along most of the river channel bordering the site. The site is located within a 100-year flood zone. There are hydrologic constraints affecting the site associated with flooding of the Napa River.

North Napa Station

No streams, creeks, or rivers were observed on or immediately adjacent to the site. No bodies of water are shown adjacent to the site on the USGS topographic map of the area. The site is not located within a 100 year of 500-year flood zone. The site does not appear to have hydrologic constraints to development.

Napa - St. Helena

Yountville Station

No streams, creeks, or rivers were observed on or immediately adjacent to the site. No bodies of water are shown adjacent to the site on the USGS topographic map of the area. This site is not located in a 100 or 500-year flood plain. The site does not appear to have hydrologic constraints to development.

Oakville Station

A creek was observed flowing through a culvert beneath Highway 29 just north of Dwyer Road during the field reconnaissance. The USGS topographic map of the area indicates this is an intermittent creek and indicates another intermittent creek crosses beneath Highway 29 approximately one-half mile to the north. Hydrologic hazards may be an issue if the site is located near one of the two intermittent creeks located in the area.

Rutherford Station

No streams, creeks, or rivers were observed on or immediately adjacent to the site. No bodies of water are shown adjacent to the site on the USGS topographic map of the area. The site is not located in a 100 or 500-year flood plain. The site does not appear to have hydrologic constraints to development.

St. Helena Station

No streams, creeks, or rivers were observed on or immediately adjacent to the site. No bodies of water are shown adjacent to the site on the USGS topographic map of the area. There do not appear to be any hydrologic constraints affecting the site; however, flood plain maps were not reviewed as an ESRI/FEMA Hazard Awareness flood map is not currently available for St. Helena.

Further Study Recommended in a Later Phase

The Napa River/Napa Creek Flood Reduction Project is currently being implemented in Napa between Highway 29 in the south and Trancas Road in the north. The purpose of the project is to provide an economically feasible and environmentally sensitive method to protect the city and county of Napa from the periodic flooding that now occurs due to inadequate capacity of the existing drainage system. The flood protection project is intended to provide protection from the computed 100-year storm event in most of the City of Napa and to develop new recreational facilities along the river. The project, which includes the relocation of the NVWT track just south of Imola Avenue to the east from its present location, would address most of the present flooding problems that were identified in the Napa Junction to Napa segment of the railroad. A more detailed analysis of the flood plain would need to be conducted in the next phase of the study to determine the potential for flooding of potential station and or maintenance facility sites.

Land Use and Planning

Regulatory Framework

Land use is regulated by local jurisdictions. Development within the incorporated areas of Suisun City, Vallejo, American Canyon, Napa, Yountville and St. Helena are governed by city or town ordinances. The remaining areas fall under the jurisdiction of Napa County or Solano County ordinances.

Suisun City - Napa Junction

Land use on the rail segment between Suisun City and Napa Junction shifts from suburban to open land area traveling from east to west. The land use immediately around the Suisun City station is composed of commercial and residential uses (see Surface Photo 10-Nine). Suisun City zoning is consistent with these land uses. The General Plan designation is Downtown Waterfront Use. Moving southwest away from the station and the Cordelia wye, the land uses transition to large parcel industrial uses intermixed with some agricultural uses, such as flax crops adjacent to the railroad right-of-way. The area is designated for General Industrial and Intensive Agricultural Use. Potential sites of a Suisun City maintenance facility have been identified in the area (see Surface Photo 10-Ten).

Photo 10-One
Suisun City Station

Photo 10-Two
Suisun City Station Looking North

Photo 10-Three
Cordelia Junction Maintenance Site

Photo 10-Four
Red Top Road Station Site

In Cordelia there is residential development north of the tracks and west of Suisun Valley Road. Where the tracks cross under I-680 and I-80, there is a mix of highway commercial and industrial uses. Just west of I-80, the track crosses Red Top Road, the proposed location of a passenger rail station (see Surface Photo 10-Four).

West of I-80, the railroad enters Jameson Canyon where it traverses through open country along the base of a hill and to the south of Jameson Canyon Road. There are a limited number of residences near the railroad along the track segment. When the tracks reach Napa County, they are bordered by vineyards. The tracks run adjacent to a steep drainage ravine through which Fagan Creek and other unnamed streams flow. The proposed location of the Creston siding is in the vicinity (see Surface Photo 10-Five and Surface Photo 10-Six). West of Kirkland Ranch Road, the track swings to the south to Napa Junction, located just south of Watson Lane.

Napa Junction, a proposed site of a transfer platform and/or a maintenance facility, is bordered by small rural residential farms to the north off of Watson Lane and industrial uses to the south off of the Napa Junction Road (Surface Photo 10-Seven). The site is partially located within the boundaries of American Canyon and partially in unincorporated Napa County. The unincorporated area is zoned agricultural watershed.

Vallejo - Napa Junction

The Vallejo Ferry Terminal, located adjacent to Mare Island Way, is a proposed terminus of the rail system (Surface Photo 10-Eight). It is located about three-quarters of a mile to the south of the existing track which enters Mare Island along the Mare Island Causeway. The track would need to be extended south along Mare Island Way, a four-lane roadway with a planted median that is bordered on the water side by parkway and marina and on the landside by residential development, the Marina Vista Memorial Park and surface parking serving the Ferry Terminal and the Vallejo Civic Center. The Ferry Terminal and the area to its north, where a rail station is proposed, are currently designated waterfront uses with a mix of CW (Waterfront Shopping and Service) and PDC (Planned Development Commercial) zoning.

Photo 10-Five
Creston Siding – Solano County

Photo 10-Six
Creston Siding – Napa County

Photo 10-Seven
Napa Junction

Photo 10-Eight
Vallejo Ferry Terminal Station Site

As Mare Island Way swings north and inland away from the water, it borders a high density residential area. At Tennessee Street, the existing line runs in a ravine past neighborhoods with low, medium and high density residential and commercial uses. It also passes to the southeast of the Farragut Elementary School. Just north of Nebraska Street, the line crosses over Sonoma Boulevard and enters a mixed commercial and industrial area.

At Sereno Boulevard, the second potential station site in Vallejo, the area is predominantly commercial or industrial land uses. A new mixed-use development, the Sereno Village Apartments, is currently under construction on a large previously vacant parcel to the east of the tracks and to the north of Sereno Boulevard. The city is also planning to relocate the Sereno Transit Center to the site (Surface Photo 10-Nine). The area within one-quarter mile of the transit center is designated as a redevelopment area.

Continuing north, the commercial uses transition to residential on the east side of the tracks. Just south of Tuolumne Street, there is a small rail switching operation adjacent to a single family residential neighborhood (Surface Photo 10-Ten). North of Mine Drive, the railroad runs through a small open corridor with Highway 29 to the west and residential development to the east of Broadway. At American Canyon Road, the residential development gives way to more open land with commercial and industrial uses fronting Highway 29.

A potential station location has been identified at the end of South Napa Junction Road, the American Canyon Station (Surface Photo 10-Eleven). This is the site of a former basalt mine operation zoned for a Town Center with mixed uses. South Napa Junction Road, a narrow, two-lane road, is bordered on the south by small residences and on the north by a lumber yard. There is a high volume of truck traffic on the road. Napa Junction is located about one mile to the north of the site.

Napa Junction - Napa

As the rail turns north towards the City of Napa, it runs through a predominantly industrial area to the east of the Napa County Airport. Most of the area is designated for industrial land uses that are compatible with operation near the airport. As the line

approaches Highway 29/12, it also approaches the Napa River and runs through an agricultural watershed area. The river and the railroad cross under the highway at the same location. The railroad continues to the north running east of the river, through an industrial zone, which includes the Napa Pipe operation (Surface Photo 10-Twelve).

Just north of Kaiser Road, the railroad enters the Napa city limits. From the city limits north to Imola Avenue, the area is designated for public serving uses, including the John F. Kennedy Municipal Park, the Napa Municipal Golf Course and the Napa Valley College. Most of the area presently lies within the Napa River Flood Plain and is currently the subject of a flood control project, which will contain flooding in the future and open up the land to alternative uses. The project also will realign the railroad through the section.

From Imola Avenue to north of Third Street, the properties surrounding the rail corridor are designated for mixed commercial and industrial uses. A potential station site of the Napa Valley College Station is located north of Imola Avenue and east of the railroad tracks (see Surface Photo 10–Thirteen). The site is located on the privately owned Gasser property that is the subject of a large master plan application. As part of the flood control project, the Napa Sanitation District operation is being relocated and the tracks realigned, creating a large developable parcel between Gasser Road and the tracks.

The existing maintenance facility of the NVWT is located just south of the rail crossing of Soscol Avenue. The site has been identified as a possible joint maintenance facility site shared by the wine train and a new commuter rail service (see Surface Photo 10-Fourteen). Across Soscol Avenue between Sixth and Third Streets, two sites have been identified as potential locations of a Downtown Napa rail station (Surface Photo 10-Fifteen and Surface Photo 10-Sixteen). The potential station sites are currently occupied by auto-oriented commercial and industrial uses with adjacent surface parking lots and are located within approximately one block of the Napa County Fairgrounds. The site to the south of Third Street borders a residential block. The maintenance facility site and the potential station sites are designated for mixed-use with zoning designations of Visitor and Heavy Commercial.

Photo 10-Nine
Sereno Transit Center Site

Photo 10-Ten
Tracks South of Tuolumne Street

Photo 10-Eleven
American Canyon Station Site

Photo 10-Twelve
Napa Pipe

Photo 10-Thirteen
Napa College Station Site

Photo 10-Fourteen
Napa Valley Maintenance Site

Photo 10-Fifteen
Downtown Napa Third Street
Station Site

Photo 10-Sixteen
Downtown Napa Sixth Street
Station Site Looking North

The rail line continues north, crossing over Soscol Avenue again and runs along the northeast border of the downtown commercial district. It passes through districts of single family residential, single family infill, local commercial, community commercial and light industrial development. The railroad crosses Highway 29, just south of Trancas Avenue. A North Napa station is proposed north of Trancas Avenue, between the tracks and Solano Avenue across from the Marriott Hotel (see Surface Photo 10-Seventeen and Surface Photo 10-Eighteen). Properties-in the area are designated Tourist Commercial and Community Commercial. A grade separated interchange of Trancas Road and Highway 29 is currently under construction by Caltrans. The site was identified as a station site in the *Napa Valley Wine Train Environmental Impact Report (EIR)*. A park-and-ride facility is also planned in the area.

Napa - St. Helena

From Trancas Road to the Napa city limits, the railroad right-of-way parallels Highway 29 running along residential and commercial districts and past the Justin-Siena High School. North of Napa, the railroad continues to parallel Highway 29 all the way to St. Helena. It passes along agricultural lands covered with vineyards and interspersed with rural residences and wineries. Development is concentrated in Yountville, Rutherford and St. Helena and to a lesser extent, Oakville.

At Yountville, there is an existing NVWT station just to the north of California Drive (Surface Photo 10-Nineteen). The station has a small covered waiting area and a seven-space parking lot. The site is located in a large Public Facilities designated area west of Highway 29 that encompasses the station, the Vintners Golf Course and a waste water treatment plant. The State Veteran's Home, the Napa Valley Museum, the Lincoln Theatre and a Recreation Center are all located at the end of California Drive above the station. A potential siding location was identified in Oakville between Dwyer Road and the Oakville Grade (see Surface Photo 10-Twenty). The track runs between Highway 29 and vineyards at that location.

Between Rutherford and St. Helena, the railroad continues to run west of and parallel to Highway 29. At Whitehall Road, just south of St. Helena, the rail crosses over to the east side of the highway and veers northeast toward the Silverado Trail at Pope Street

Photo 10-Seventeen
North Napa Station Site

Photo 10-Eighteen
North Napa Station Site
Looking North

Photo 10-Nineteen
Yountville Station

Photo 10-Twenty
Oakville Siding

in St. Helena. A station site was identified at Rutherford Cross Road in Rutherford at the location of an existing historic depot site (Surface Photo 10-Twenty-One). The site is currently owned by NVRR. While all of Rutherford is designated as an agricultural resource in the Napa County General Plan, the station site is zoned as Agricultural Preserve and the developed district across from the station is zoned limited commercial and single family residential. The station site also houses the Rutherford Fire Station and a private residence.

As the rail line passes through St. Helena, it is bordered predominantly by land designated commercial and office. The potential St. Helena station site designated at Fulton Lane and Railroad Avenue is zoned as Urban Reserve/Central Business District (Surface Photo 10-Twenty-Two). It is also owned by the NVRR.

Further Study Recommended in a Later Phase

As the boundaries of station sites and the maintenance facility are refined, a more detailed investigation of compatibility with local zoning ordinances and general plan designations would be required.

Noise

Regulatory Framework

Noise associated with the operation of trains and locomotives is regulated by federal standards and local ordinances. Maximum noise standards associated with idling and operation of rail cars and locomotives are published by the Environmental Protection Agency to govern the manufacture and rebuilding of rolling stock.[12] Any new rail cars or locomotives put into service in the Napa/Solano corridor would need to comply with those standards. In addition, the Federal Railroad Administration (FRA) requirement for sounding warning devices at grade crossings would be applicable. Horns are required to sound at a minimum of 96 dB (when measured at 100 feet) to ensure safety at grade crossings.

The Federal Transit Administration (FTA) publishes standards by which the noise impacts of rail service operating on fixed guideways or at fixed facilities is determined based on the existing ambient noise level in the project area and the expected increase

[12] The EPA standards are published in 40 CFR (Code of Federal Regulations) Section 201.

Photo 10-Twenty-One
Rutherford Station Site

Photo 10-Twenty-Two
St. Helena Station Site

in noise associated with the initiation of new transit service. The criteria recognize that neighborhoods with high levels of existing noise may be less sensitive to the introduction of new noise sources; however, upper limits have been established on the amount of total noise exposure acceptable. The following land uses are considered to be sensitive receptors: buildings or parks where quiet is an essential element of their purpose, residences, hospitals, hotels, schools, libraries and churches.

There are two primary sources of noise associated with the introduction of commuter or other new passenger service. The noise associated with the moving of trains along the corridor or idling at stations and maintenance facilities and the train horns that are used as warning devices at grade crossings. The degree to which the introduction of new passenger train service will impact adjacent uses is dependent upon the type of uses adjacent to the track, the distance of the sensitive noise receptors from the track, the frequency of train service and existing ambient or background noise levels. Where the track runs adjacent to Highway 29, where the NVWT already provides service and where freight service already operates on the rail, the impacts of new train-related noise may be less perceptible than at other locations.

Potential sensitive noise receptors adjacent to the track are described below by corridor.

Suisun City - Napa Junction

Most of the track runs through open areas that are undeveloped, used for agricultural purposes, or large parcels with industrial operations or business park development. The exceptions to this are in Suisun City and Cordelia. As the track enters Suisun City from the south, it passes by a high school and a residential area that border the track. In Cordelia, there is residential development to the north of the track but it is separated from the tracks by Cordelia Road.

Vallejo - Napa Junction

In southern Vallejo, the proposed track alignment along Mare Island Way would run adjacent to areas along the waterfront currently used for open space and waterfront promenade. Memorial Park is located to the east of Mare Island Way but it is separated by existing parking lots. The potential noise impact on these areas would need to be further evaluated when a more detailed alignment has been selected and more information is obtained about future land uses planned in the area by the City of Vallejo.

Moving inland through southern Vallejo, the track runs in a ravine through residential districts and past a school that potentially would be impacted by the introduction of increased noise. In the northern part of Vallejo and in American Canyon, the track once again borders residential areas that potentially would be impacted by the introduction of train-related noise.

Napa Junction - Napa

Between Napa Junction and Kaiser Road, the rail alignment traverses open land and industrial development around the Napa Airport. North of Napa Road, the rail runs by the John F. Kennedy Memorial Park, the Napa Municipal Golf Course and the Napa Valley College. The main buildings associated with the college are not in close proximity to the line. In Napa, the line traverses in close proximity to existing land uses, most of which are commercial, not considered sensitive receptors but the rail does pass closely by some residential development that potentially could be impacted by train noise.

Napa - St. Helena

From Trancas Road north, the tracks run adjacent to Highway 29 all the way to Pope Street in St. Helena. While there are some sensitive noise receptors such as the Napa Valley Marriott Hotel, the Chateau Hotel and pockets of residential development in this stretch, any train-related noise would be eclipsed to a degree by the existing background noise associated with traffic on the highway. In St. Helena, the train diverges from the Highway 29 corridor running along the northeast edge of the central business district and other commercial development. Between Pope and Hunt Streets and between Fulton Lane and Pratt Avenue, the track runs adjacent to residential development.

Further Study Recommended in a Later Phase

As the station and maintenance facility locations and the new rail alignment providing access between Mare Island and the Vallejo Ferry Terminal are refined, further analysis would be required of the potential impact on sensitive noise receptors. Prior to initiation of service, more detailed noise assessment that includes measurement of ambient noise levels may be required at locations along the corridor where sensitive noise receptors exist.

Population and Housing

Regulatory Issues

Population and housing growth are governed by local ordinances, which identify appropriate locations for future development. Selection of new station sites and ultimate development around the station sites would be at the direction of local jurisdictions.

The implementation of rail service along the Napa/Solano rail corridors would be focused on capturing a share of the current and projected travel demand on transit with the goal of alleviating congestion. While some station sites are proposed to be located in developed areas, other station sites are located in rural areas that are presently undeveloped or situated near agricultural lands. In most cases, the local jurisdiction General Plan and zoning designations are consistent with proposed development on the sites. At those locations, for example Rutherford, where the designations are not compatible with the proposed development of the parcels as a station site, there may well be changes to the anticipated population and housing as a result of new rail service.

Further Study Recommended in a Later Phase

More detailed estimates of travel demand and how the new rail service would affect travel markets and land use patterns would be required in future studies.

Public Services/Utilities

The introduction of new passenger rail service would not be expected to impact the provision of public services in a significant way. Access to and from the four fire stations situated immediately adjacent to the rail corridor at Redwood Avenue in Vallejo, Airport Boulevard in Napa, Trower Road in Napa and the proposed Rutherford station site, would need to be considered to ensure that there would be no significant increase in emergency response times. Increased police surveillance may be required in the vicinity of the station sites to ensure security of transit patrons. The increase in passenger rail service would not be expected to result in the need for substantial new utilities or service systems at station locations.

Upon completion of the rail corridor improvements, there would be increased maintenance costs associated with the rail bed, station improvements and maintenance facilities.

Recreation

There are recreation and protected areas adjacent to the corridor. These uses are not expected to be substantially impacted by the introduction of new passenger rail service as they are generally located away from proposed station sites, potential maintenance facilities, and siding locations. A general inventory of those resources by rail segment is summarized below.

Suisun City - Napa Junction

The railroad track is located at the western border of the Peytonia Slough Ecological Reserve between the Suisun City Amtrak station and the Cordelia Junction wye. The siting of a maintenance facility in the area of the wye would create potentially significant impacts on the protected area and should be avoided if possible. The railroad lies a couple of hundred feet from the southeast border of the Chardonnay Golf Course in Jameson Canyon.

Vallejo - Napa Junction

Along Mare Island Way in downtown Vallejo, the railroad track would run parallel to Marina Vista Memorial Park. As the specific alignment of a new rail line along Mare Island Way has not yet been determined, further study of potential impacts would be required once the alignment is refined.

Napa Junction - Napa

South of Imola Avenue, the railroad borders the John F. Kennedy Memorial Park on the east and the Napa Municipal Golf Course on the west. This area is being substantially altered through the Napa River Flood Control Project. When the track is realigned, no substantial track work would be anticipated in the segment to initiate passenger rail service.

Napa - St. Helena

South of the proposed California Drive rail station, the track runs adjacent to the Vintners Golf Course. The rail and the course are separated by Solano Avenue.

Further Study Recommended in a Later Phase

Further study is recommended to determine the potential impacts on existing parks and open space along Mare Island Way in refining the alignment of the proposed line.

Transportation/Circulation

Regulatory Framework

Basic station circulation and access improvements would need to be coordinated with the local jurisdictions to ensure that the proposed access is consistent with local plans and policies.

Transportation impacts associated with the institution of passenger rail service are focused on potential conflicts between trains and motor vehicles and/or bicycles at grade crossings along the line and station locations that could experience localized transportation congestion. A preliminary summary of transportation conditions that could lead to transportation impacts are summarized below.

Suisun City - Napa Junction

The Suisun City Amtrak station already has a 94-space parking lot (with a proposed expansion of 160 spaces) used by Capitol Corridor rail service patrons. The local circulation system is well developed with access to and from Highway 12. With the introduction of additional passenger service to this proposed terminal station, a more focused traffic analysis is recommended in the station area to determine if additional traffic improvements would be required.

The proposed Red Top Road station is located on the short stretch of Red Top Road between Jameson Canyon Road (Highway 12) and I-80. The segment of Red Top is a two-lane road with stop signs controlling access at Jameson Canyon and at the ramps to and from I-80. Were the station developed, additional traffic controls, e.g. a signal, may be warranted at Jameson Canyon Road. Jameson Canyon Road often experiences bumper-to-bumper traffic during peak commute periods and uncontrolled cross traffic at the location would compound congestion unless adequate measures were taken to control the flow.

Access to Napa Junction is somewhat limited from Highway 29. Were the proposed station at the location developed primarily as a cross-platform-connection linking service between the Napa and Fairfield/Suisun corridors, substantial access improvements may not be required.

Vallejo - Napa Junction

Both the proposed Vallejo Ferry Terminal and Sereno Transit Center would be located adjacent to a four-lane roadway with easy access to the proposed station sites. After more detailed ridership projections are completed, more detailed traffic analysis may be required to determine the appropriate size of station parking facilities and whether additional traffic controls would be warranted at the stations.

At the Vallejo Ferry Terminal station site, additional crosswalks and protected pedestrian crossings may be needed along Mare Island Way to provide adequate opportunities for transit patrons to cross back and forth between the parking area, the Civic Center and the rail station. Presently, pedestrian crossing is focused only at the ferry terminal.

The proposed site of the American Canyon station is at the end of South Napa Junction Road, a narrow two-lane rural road, connecting to Highway 29. South Napa Junction Road is stop sign controlled and entering the main flow of traffic on the highway, particularly turning left, can be difficult. The proposed development of a town center and a multi-modal transit station at the site would require transportation circulation and access improvements. Access improvements required in connection with a passenger rail station would need to be coordinated with improvements proposed in conjunction with development plans.

Napa Junction - Napa

Upon completion of the Napa River Flood Control Project and the reconstruction of the Imola Avenue bridge over the river, access directly to and from Imola Avenue will be prohibited in the vicinity of the proposed station site. Access to the site would be provided from Gasser Drive, a broad two-lane road with parking lanes and sidewalks.

The proposed City of Napa downtown station locations, at either Third Street or Sixth Street, are accessible from Soscol Avenue, one of the main north/south thoroughfares

in Napa. Once a site has been selected and the design of the facility refined, further traffic analysis may be required. The Third Street intersection with Soscol Avenue is signalized currently.

Access to the proposed North Napa station site at Trancas Road will be improved upon completion of the Trancas interchange project. Direct access to the site would be from Solano Avenue, a broad north-south frontage road serving the major land uses adjacent to Highway 29.

Napa - St. Helena

Operation of passenger rail service on this rail segment potentially will increase conflicts between the rail line and local vehicular access at the many grade crossings (both public and private) that occur along the stretch. Much of the corridor is bordered by private vineyards, many of which have wineries and tasting rooms and/or restaurants associated with them. During high tourist season and on weekends, there is increased tourist traffic at those rail crossings. The frequency of rail service and the level of traffic on the road would determine the level of protection required at each crossing.

The California Drive/Highway 29 interchange provides adequate access to and from the Yountville station. Currently the station, which is operated by the NVWT, provides only seven parking spaces. To the extent the station is developed to accommodate additional passenger rail service, the parking facilities may need to be expanded to accommodate new demand. Given the narrow corridor that the rail line occupies between the highway and adjacent vineyards and public facilities, it may be difficult to expand substantially the parking and circulation functions immediately adjacent to the station.

Access to the proposed Rutherford station would be directly from Highway 29. Presently, there are no access controls to and from the site. Were the station site developed, it likely would require installation of a traffic signal to control access to and from the site.

In St. Helena, access from the proposed station site is via Fulton Lane, a two-lane street, connecting to Highway 29. The intersection of Highway 29 and Fulton Lane is signalized and a southbound left-turn lane is provided from Highway 29, although the

left turn is not protected by the signal. Were the station site developed, the signal phasing and timing may need to be reevaluated.

Further Study Recommended in a Later Phase

Once station facilities and plans are more fully developed, access issues would need to be reevaluated to determine what traffic and circulation improvements would be required.

Summary of Key Environmental Findings from Phase I Screening of the Former Railroad Right-of-Way between St. Helena and Calistoga

The rail segment between Calistoga and St. Helena is the only section where the railroad right-of-way has been abandoned and given over to other uses. The condition presents a unique challenge with respect to reacquisition of right-of-way, relocation of existing uses and new construction of railroad tracks through an area that is prime agricultural land, with extensive vineyards and winery operations and some rural residential development.

Alternative 1 – Rail Alignment Alternative

Land Use – Since the abandonment of the railroad right-of-way in the early 1970's, several new land uses have been established along the corridor. While the uses could be relocated, some of them are sensitive land uses, e.g. a school, residential uses and vineyards that could be controversial and/or expensive to relocate. Some of the specific land use conflicts noted include: a nursery school/pre-school (reportedly with a ten-year lease); a ballpark located in the right-of-way in South Calistoga; buildings at the Calistoga sewage treatment plant located in the right-of-way; vineyards north of Dunaweal Lane in the right-of-way; Sterling Vineyards outbuildings, vineyards, parking lot and settling ponds; driveways of private residences located on the right-of-way and residences (estimated to be fewer than ten) in very close proximity to the right-of-way.

Wetlands/Biological Resources – In some instances along the corridor, railroad tracks would need to be reconstructed through wetland areas. In the area immediately south of Calistoga, the rail right-of-way is confined between a wetlands area and a ballpark; one or both of the uses would be impacted by the reintroduction of rail service. There

are also intermittent wetlands located along the right-of-way that would need to be further evaluated were new construction planned.

Cultural Resources – It was noted that Wapo Indian artifacts were uncovered during the construction of the Calistoga Sewage Treatment plant adjacent to the rail right-of-way. While major excavation would not be envisioned in connection with the rail track construction, they could delay construction of the project in the area.

Hydrology – There are several stream crossings and a major crossing of the Napa River, south of Sterling Vineyards that would require special permitting in the event of rail line reconstruction.

Transportation – One of the issues along the corridor will be the numerous private crossings of the rail right-of-way by rural roads. Many of the roads are privately owned and provide access to residences, vineyards and wineries. The number of crossings and potential conflicts between rail service and local access at these crossings would need to be evaluated further.

Alternative 2 – Highway Alignment

The environmental impacts associated with the alignment primarily would be associated with disruption to traffic during relocation of the highway and potential removal of vegetation. The impacts generally would be the same as those associated with Alternative 1 but with the alternative alignment along Highway 29, the disruption to Sterling Vineyards would be avoided.

CHAPTER 11

ACHIEVEMENT OF THE PRIMARY STUDY OBJECTIVES AND RECOMMENDED NEXT STEPS

The consultant team believes that the study effort has met or exceeded all four of the "primary objectives" advanced by the sponsoring agencies both through the conduct of the study and documentation of analysis, results, findings and recommendations as set forth in this Draft Final Report. Below are each of the primary objectives *(in italics)* and a concise statement of the results, findings and recommendations that demonstrate the consultant Team's consideration and satisfaction of each objective.

1. *To determine the cost effectiveness of passenger rail service for commute and/or visitor related travel on existing rail (and abandoned R.O.W.) from Vallejo to Calistoga, from Vallejo to Suisun City through Jamieson Canyon, and from Suisun City to Calistoga.*

Passenger rail in Napa and Solano Counties is technically feasible. The various study chapters illustrate that given certain right-of-way improvements, passenger trains can carry riders, in various scenarios, between stations along all three corridors. CFNR, NVRR and UPRR have indicated their willingness to consider hosting such services providing that sufficient infrastructure improvements are made to prevent any significant conflicts with freight and Wine Train operations and the limited volume of freight traffic on the rail corridor does not preclude addition of rail passenger service. Given the commitment of sufficient resources, the project can be implemented.

However, there is no rule of thumb with regard to whether or not a contemplated passenger rail system is economically feasible. It is up to the citizens, elected leaders and the business communities in Napa and Solano Counties to decide as a matter of public policy whether the financial support necessary to support an attractive and reliable passenger rail system is justified given the passenger volume, revenue and cost estimates and potential environmental considerations developed to date. Using conventional cost-effectiveness performance measures such as operating expense per passenger trip, operating expense per vehicle mile, operating expense per passenger

mile, subsidy per passenger trip and farebox recovery ratio, it appears that Napa/Solano passenger rail services are not as cost-effective as services in operation today.

It should be noted, however that potential reductions in capital costs that might be achieved in future detailed design or potential private public partnerships that could be developed could have the potential of increasing the cost effectiveness of the system.

Regardless of what the citizens, elected leaders and business communities decide about the feasibility of passenger rail systems today, STA and NCTPA, separately or collectively, should undertake such limited studies as are necessary to be in a position to preserve all railroad lines in the study area in the event of rail line abandonment because passenger rail system feasibility is likely to improve in the future. Inasmuch as railroad abandonment actions may be executed within as short a period as 60 days, it is recommended that STA and NCTPA investigate abandonment risks and opportunities in advance so that they can be prepared to act rapidly.

Provided there is sufficient interest in examining further the feasibility of rail passenger service(s) within and between the counties, the consultant team recommends that a more in-depth study of potential patronage be undertaken. While this study encompassed three independent methods by which commuter rail ridership can be estimated, this project encompassed many disciplines of which patronage estimation was merely one dimension that, like all others, competed for constrained budget resources. A more comprehensive patronage forecast, in itself, could be a large study. Therefore, a larger and more focused look at potential ridership is recommended as it might result in significantly higher (or lower) estimates.

2. *To determine the economic feasibility of enhancing rail freight activity to reduce truck traffic on SR/29 and SR/12.*

Several opportunities to increase rail freight were identified in the study. It is possible, though optimistic, that total rail freight could double over time. However, it is also clear that very little existing truck traffic on SR/29 and SR/12 is likely to shift to rail. The introduction of passenger rail services along the study corridors could increase the attractiveness of railroad freight movements through the improvement of infrastructure and the sharing of fixed costs between freight and passenger rail systems.

3. *To conceptually examine the potential for long range passenger rail connections to Sonoma from Napa and Solano Counties.*

Potential passenger rail services between Solano and Napa Counties on the east and Sonoma County on the west would require use of rail segments under different ownership:

- the UP-owned line between Napa Junction and Lombard in Napa County (over which freight operating rights are leased to the California Northern) and
- the Northwestern Pacific Railroad Authority (NWPRA) owned line between Lombard (via Ignacio Junction in Marin County) and Santa Rosa and points beyond over which the North Coast Rail Authority (NCRA) has freight and passenger excursion train operating rights.

Planning for commuter rail passenger service between Cloverdale and Larkspur (in Marin County) has been underway for several years by the Sonoma Marin Area Rail Transit Commission (SMART I). Planning comprehended service initiation as early as 2007.

California Assembly Bill 2224 passed the legislature and signed by the Governor on behalf of Marin and Sonoma Counties, the Golden Gate Bridge District and the NWPRA consolidates ownership, management, operating and funding authority for the rail lines from Larkspur and Lombard to Healdsburg in one new entity, the Sonoma-Marin Rail Transit District (SMART II) which must continue the existing grant of freight and passenger excursion train operating rights to the NCRA (owner of the line north Healdsburg) over the entire line from Lombard and Larkspur to Healdsburg. The legislation authorizes the proposed new authority to include other public agencies should that be desirable which could allow Napa and Solano Counties to be added. The legislation became effective on January 1, 2003.

SMART II is continuing the rail system planing environmental and preliminary engineering work which was begun by its predecessor agency (SMART I) with $7.7 million in Traffic Congestion Relief Planning (TRCP) funding previously allocated to it. TRCP funding for final design and construction ($29.7 million) is now in jeopardy. Total Capital Costs are estimated at $220-280 million with an operating shortfall of $6 million annually.

Proposition 116 earmarked $37 million toward construction, however, no other capital funding has yet been secured and no funding for the operating shortfall is available. A sales tax is being considered to fund that shortfall. As a result of current funding problems service initiation is likely to be delayed.

When and if the proposed passenger service is in operation it would be feasible for connecting service to be established between Napa/Solano Counties and Sonoma County. The NCRA continues to be interested in promoting rail excursion train service to points north of Sonoma County when and if it can upgrade and/or restore its trackage north of Healdsburg and obtain Federal Railroad Administration (FRA) approval for passenger train operations. In the long run it could then be possible to provide passenger service from the Capital Corridor at Suisun/Fairfield to Sonoma County and points north.

4. *To prepare a cost comparison of rail versus existing bus service from Vallejo to Calistoga and future bus service from Napa to Fairfield/Suisun.*

Direct comparison of bus and rail operating costs is very difficult since it presumes that a bus transit system could be designed to attract the same number of riders as a parallel rail system. This is not necessarily the case, as has been proven through numerous rail corridor projects, where rail ridership exceeded previously existing bus service in the same corridor. Rail services would be faster, more comfortable and more attractive to passengers than would “comparable” bus services even if the ten minute bus headways necessary to handle the volume of passengers projected to ride even one train every hour in peak periods could be purchased and operated. However, “comparable” bus operations would cost only ten to twenty percent as much as rail.