DESCRIPTION OF THE FINAL PREFERRED SCENARIO

The analysis of the Draft Preferred Scenario shows that it was generally successful in including the most effective elements of the earlier scenarios. By creating a balanced transportation network with improvements to Highway 101 and other regional roads, and the creation of a rail transit system with complementary regional and feeder bus service. The Preferred Scenario also includes a recommended compact and mixed-use, transit-supportive land use policy which would implement TODs at several rail stations throughout the North Bay.

After the analysis of the Preferred Scenario was completed, the Consultant Team and the Joint Executive Committee (JEC) reviewed and finalized the land use and transportation elements of the plan. This section describes the final transportation elements and their associated capital and operating costs. A two part phasing of these improvements is also outlined. No further revisions were made to the recommended TOD land use policies, because a sensitivity analysis indicated that the proposed rail transit system would be viable with or without the implementation of the land use pattern. Still, the implementation of the land use policies will improve ridership of the transit system.

Description of the Transportation Network

This section outlines the individual components and costs associated with improvements on Highway 101, other state highways, arterial roadways, capital and operating costs for commute rail to begin operation on the Northwestern Pacific Railroad corridor, capital and operating costs for bus service, and costs for new pedestrian and bicycle paths. It also describes the two implementation phases from 1999 to 2007 and 2008 to 2015.

Highway 101 Improvements

The Preferred Scenario includes several improvements to Highway 101 between Windsor and Larkspur: new HOV lanes, climbing lanes, reconfigured and new interchanges, and new overcrossings. The installation of these would be divided into two primary construction phases. Improvements of the highest priority would be developed in Phase 1, while other improvements in Phase 2. Phase 1 improvements include those for areas that are currently the most adversely affected by inadequate highway facilities and those improvements that are already in the funding pipeline. The preliminary cost estimates for these improvements, presented in *Chapter* 2, have been revised and reviewed by Caltrans, the Sonoma County TAC, and Marin CMA, and shown in Tables 1A and 1B on the following two pages.

Phase 1 improvements in Sonoma County include the installation of HOV lanes and associated improvements between Windsor River Road in Windsor and State Highway 116 in Cotati, totaling 13 individual projects. In Petaluma, the Rainier Road and East

Washington Avenue interchanges would be installed. Phase 1 projects in Sonoma County would have an unfunded cost of $184.4 million. Phase 2 projects would include adding HOV lanes through Petaluma, between Old Redwood Highway and State Route 116 and a new interchange at Old Redwood Highway, with an unfunded cost of $143.3 million.

Table 1A
Highway 101

Highway 101 Segment or Location (assumes HOV or Auxiliary Lane)	Phase 1	Phase2	Total	Status	Capital Cost
Windsor to Petaluma					
Construct Arata Lane Interchange	X		X	funded	$9.3
Windsor River Rd. to Steele Lane					
Widen to 6 lanes - Windsor River Road to River Road	X		X		$30.8
Widen to 6 lanes - Rier Road to Steele Lane	X		X		$26.8
Construct New River Road Interchange	X		X		$6.2
Construct New Hopper Road Interchange					$3.3
Construct New Mendocino Road Interchange					$3.3
Construct New Steele Lane Interchange	X		X		$10.7
Steele Lane to Route 12 in Santa Rosa					
Widen to 6 lanes from Steele Lane to College Ave	X		X		$11.9
Widen to 6 lanes - College Avenue to S.R. 12	X		X		$35.6
Route 12 in to Wilfred Ave. in Rohnert Park					
Widen to 6 Lanes - S.R. 12 to Santa Rosa Ave/Wilfred Ave	X		X	funded	$23.1
Widen to 6 Lanes - Wilfred Ave. to South of Wilfred	X		X		$26.1
Santa Rosa Ave. Interchange					$3.7
Todd Road Interchange		X	X		$27.0
Bellevue Ave. Interchange	X		X		$11.3
Hearn Ave. Interchange	X		X		$17.5
Baker Ave. Interchange					$7.9
Wilfred Ave. to Route 116W in Cotati					
Widen to 6 Lanes - South of Wilfred to S.R. 116W	X		X		$19.4
Construct Rohnert Park Interchange	X		X	u.c.	$7.7
Northbound Climbing Lane (add new lane in median)	X		X		$2.8
Route 116W to Old Redwood Hwy. in Petaluma					
Widen to6 Lanes - S.R. 116 to W. Sierra Avenue					$21.4
Construct W e n Sierra Interchange					$10.2
Widen to 6 Lanes - W. Sierra Avenue to Railroad Avenue					$16.4
Widen to 6 Lanes - Railroad Avenue to Old Redwood Highway					$33.3
Construct Railroad Avenue Interchange					$8.4
Construct Old Redwood Highway Interchange		X	X		$19.7
Old Redwood Hwy. to I 16E in Petaluma					
Consvuct Corona Road Interchange					$3.9
Construct Rainier Road Interchange	X		X	part. fund	$23.9
Widen to 6 Lanes - Old Redwood Highway to S.R 116		X	X		$46.3
Construct E. Washington Avenue Interchange	X		X		$23.8
Subtotal - WIndsor to Petaluma:	$236.5	$143.3	$379.8		
Portion Funded:	$52.0	$0.0	$52.0		
Portion Not Funded:	$184.4	$143.3	$327.8		

Table 1B

Highway 101

Highway 101 Segment or Location (assumes HOV or Auxiliary Lane)	Phase 1	Phase 2	Total	Status	Capital Cost
Petaluma to Novato					
HOV widening of Petaluma Bridge (not including seismic)					
HOV widening end of Petaluma Bridge to Marin County Line					$23.1
HOV widening from Atherton to Sonoma Co. Line					$57.9
					543.3
Improve S.R. 116 to Atherton to Freeway Status			—X		$85.8
Subtotal - Petaluma to Novato:			$0.0		
Portion Funded:			$0.0		
Portion Not Funded:			$0.0		
Novato to Corte Madera					
HOV widening from Route 37 to Atherton					
Widen *Atherton Ave.* to *Highway 37 - add NB/SB HOV Lanes*					
Construct Rowland Blvd. Interchange*	X	X	const'd	$0.0	*$35.2*
Revise Interchanges Between San Pedro Road to Route 37			partial	partial	$12.2
Freitas Interchange Improvements at Highway 101					$14.1
Construct Lucas Valley Road Interchange					$6.9
Widen Lucas Valley Rd. to N. San Pedro Rd. - SB Aux. Lane					$6.3
Construct Ignacio Interchange	X		X	priv. fund	$2.2
HOV widening from Lucky Drive to N. San Pedro					
Construct Southbound HOV Lane	X		X	funded	543.0
Construct Southbound HOV bne	X		X		$7.0
Construct Northbound HOV Lane & associated improvements[1]		X	X		$63.1
Construct Bellam Blvd WB Ramps 1-580 to Northbound Hwy. 101		X	X		$4.6
Widen Mission Valley to 1-580 - HOV and Aun Lanes	X		X		$5.9
South of Lucky Drive					
Nellen Drive Undercross Improvements at Highway 101	X		X	constr'd	$0.0
Industrial Way - Channelize and Signalize at Highway 101	X		X	u.c.	$0.0
Subtotal - Marin County	$58.1	$67.7	$125.8		
Portion Funded:	**$45.2**	$0.0	**$45.2**		
Portion Not Funded:	$129	$67.7	$80.6		
Subtotal - Sonoma County	$236.5	$143.3	$379.8		
Portion **Funded:**	**$52.0**	**$0.0**	$52.0		
Portion Not Funded:	**$184.4**	$143.3	$327.8		
Total	$294.6	$211.0	$505.6		
Portion Funded	$97.2	**$0.0**	$97.2		
Portion Not Funded:	$197.3	$21 1.0	**$408.4**		

* includes park-and-ride lot

** auxiliary lane costs included in HOV lane costs.

[1] Assumes reversible lane. if not feasible costs would increase by $56.5 million to $1196 for the Northbound HOV.

Source: Cost Estimates " Caltrans District 4 and Marin County Dept of Public Works

The most prominent Phase 1 improvement in Marin County is south bound gap closure through San Rafael. This would be accomplished through the installation of a southbound HOV lane, generally between the Civic Center and Sir Francis Drake Boulevard interchange. Phase 1 projects in Marin County would have an unfunded cost of $12.9 million. Phase 2 projects in Marin County would include northbound gap closure. As currently described by the Marin County Public Works Department, this would be accomplished with a reversible

center lane, at the cost of $63.1 million. Should this approach not be implemented, a standard HOV lane could be installed, with an added cost of $56.5 million.

The Preferred Scenario does not include the improvement of Highway 101 to freeway status between Petaluma and Novato. This was not included because the analysis of the various scenarios did not indicate significant level of service improvements for commuters during the peak period. It was also determined that improvements in this area would be prohibitively expensive; costing about $125 million. Therefore, because of relatively little benefit and high costs, it was determined that this project should not be included in the Preferred Scenario, and that funding instead be directed to higher priority projects. However, should state or federal funds become available to upgrade this area to freeway status (addressing several safety issues with the introduction of new interchanges, on/off ramps, frontage roads, modified shoulder conditions etc.), both counties may wish to consider its implementation.

In summary, the improvements described in the Preferred Scenario for Highway 101 in both counties include those which offer the most benefit while being the most cost effective. Improvements in Marin County would include gap closure, while in Sonorna County, HOV lanes and other improvements would be installed in key urban areas including Windsor, Santa Rosa, Rohnert Park, Cotati, and Petaluma. The unfunded cost of the Preferred Scenario has increased slightly (less than 2%) since the preliminary Draft Scenario was presented. This increase actually represents a balance of trade-offs. Several originally proposed elements of the Scenario were dropped or modified (freeway status between Novato and Petaluma, northbound HOV lane in San Rafael changed to reversible lane) lowering costs, while cost estimates were refined for some elements with increases of up to 25%.

Other State Highway Improvements

The Preferred Scenario includes two "Other State Highway" improvements which were not found in the Draft Preferred Scenario. Upon consultation with Marin County staff, it was determined that the I-580 Bellam Interchange be included, as it would improve circulation near the I-580/101 interchange. In Sonoma County several improvements such as left turn lanes and intersection modifications to Highway 116 between Cotati and Sebastopol were also added.

These changes increased the unfunded cost of "Other State Highways" almost six times, from $6.1 million to $35.74 million, as shown in Table 2. However, the "new" improvements would occur in Phase 2, allowing the installation of higher priority items first.

Table 2
Phasing of Preferred Scenario
Other State Highway Improvements

Highway Segment or Location	Phase 1	Phase 2	Total	Status	Capital Cost (in million dollars, 1996)
Sonoma County					
S.R. 12 - Widen & Add Center Turn Lane - Uano Rd./Sebastopol	X		X	funded	$18.13
SR 116 East - Widen from 2 to 4 lanes - Caulfield to S. City Limits	X		X	funded	$10.00
S.R. 116 West - Improvements btwn. Cotati & Sebastopol		X	X		$9.44
Marin County					
HWY 1 - Widen and Signal Improvements - Flamingo to HWY 101	X		X		$6.10
I-580 - Overcmssing - Andersen Drive to Kemer Boulevard	X		X	funded	$14.20
1-580 - Bellam Interchange - Relocate to New Overcrossing		X	X		$20.20
Highway 131 - Widen to 6 Lanes Divided - Hwy 101 to Redwood					$6.68
Subtotal - Sonoma County	$28.13	$9.44	$37.57		
Portion Funded	$28.13	$0.00	$28.13		
Portion Not Funded	$0.00	$9.44	$9.44		
Subtotal - Marin County	$20.30	$20.20	$40.50		
Portion Funded	$14.20	$0.00	$14.20		
Portion Not Funded	$6.10	$20.20	$26.30		
Total	$48.43	$29.64	$78.07		
Portion Funded	$42.33	$0.00	$42.33		
Portion Not Funded	$6.10	$29.64	$35.74		

Source: Congestion Managemenr Plans and Caltrans District 4

Arterial Road Improvements

The Preferred Scenario includes several local arterial street improvements, which when implemented would improve the efficiency of the circulation system that feeds Highway 101.

The cost of implementing the Preferred Scenario in Sonoma County increased slightly over the Draft Preferred Scenario, as shown in Table 3A. This increase came about because cost estimates were unavailable during the earlier phases of this Study, and as such were not included in earlier estimate. All funded projects are included in Phase 1, as are several additional key improvements (unfunded cost of $17 Million). Almost $7 million dollars in additional improvements are included in Phase 2. As shown in Table 3B, the unfunded cost in Marin County did not change. Because most of these projects are already funded they were included in Phase 1.

Table 3A
Phasing of Preferred Scenario
Arterial Roadway Improvements
(in thousands of 1996 Dollars)

Project	Phase 1	Phase 2	Total	Status	Capital Cost
Sonoma County					
Brooks Road - Widen from 2 to 3/4 Lanes - Creek to Arata	X		X	funded	$759
Old Redwood Highway - Widen 2 to 3/4 Lanes - Hembree Ln. to Lakewood Dr	X		X	funded	$1,339
Old Redwood Highway - Widen for turn lanes - St Janes to Lavelle Rd.	X		X	funded	$669
Sebastopol Road - Widen to 5 Lanes - Stony Point to Burbank	X		X	funded	$2,060
Rainier Avenue - Extension and New Interchange. McDowell to Petaluma	X		X	funded	$26.300
Old Redwood Hwy. -Widen 4 Lanes - Stony Pt.Rd. to McDowell; inc Bridge	X		X	funded	$12.360
Stony Point Road - Improve Capacity - Santa Rosa to Peraluma	X		X	u.c	
Marlow Road - Widen to 4 lanes - Guerneville Rd. to Piner Rd.	X		X	funded	$6.798
Cuerneville Road -Widen to 4 lanes - Fulton Rd. to Marlow Rd.	X		X	u.c.	$4,223
Fountaingrove Pkwy - Extension and Widening to Brush Creek	X		X	u.c.	
Hearn Avenue - Add Center Turn Lane - Dutton Ave. to Stony Point Road	X		X	funded	$4,326
E Washington Street - Widen to 6 lanes - HWY 101 to McDowell		X	X		$5.150
Rohnert Park Expr - Capacity Improvement - Redwood to State Farm	X		X	u.c.	
Farmers Lane Corridor Improvements		X	X		$3.090
Farmers Lane Extension		X	X		$887
Fulton Road - Widen to 4 lanes - Piner Creek to Guerneville Road		X	X		$2,163
Piner Road -Widen - Goldfield to Marlow Rd.					$3.605
Stony Point Road - Add capacity for turn lane - Ludwig/Northpoint	X		X		$1,500
Todd Road -Widening - Highway 101 to Stony Point	X		X		$1,500
Lakeville Highway - Widen to 4 Lanes - Petaluma to D Street		X	X		$3,000
Adobe Road Widening - Add left turn Capacity - at Petaluma Hill Road		X	X		$2,625
Subtotal - Sonoma County:	$67.549	**$6,977**	$74,526		
Portion Funded:	$50,388	$0	**$54,611**		
Portion Not Funded	$17,161	**$6,977**	**$19,915**		

Rail Transit System

As indicated by the transportation analysis, the Preferred Scenario's rail system is the most efficient of those studied for this Project. The selection of the stations with the highest ridership levels was successful in increasing ridership for the Preferred Scenario. Following the base analysis of the Draft Preferred Scenario capital and operating cost estimates for the rail system were refined to reflect the projected ridership levels and appropriate phasing for the improvements.

The Preferred Scenario recommends that Diesel (Natural Gas) Light Rail Vehicles (DLRV) be used to provide rail service in the North Bay. The main criteria for the rail technology are:

- minimizing capital and operating expense;
- minimizing noise and other environmental impacts;
- ability of the technology to provide the desired level of service;
- maximizing safe operations along the NWPRR (e.g. - short stopping distance); and,
- providing a high level of efficiency in operations.

Table 3B
Phasing of Preferred Scenario
Arterial Roadway Improvements
(in thousands of 1996 dollars)

Project	Phase 1	Phase 2	Total	Status	Capital cost
Marin County					
Atherton Ave - LT pockea for Olive Ave. to Highway 37	X		X	funded	$1.434
South Novato Blvd. - widen to 4 lanes Diablo Blvd to Rowland Blvd	X		X	funded	$6.043
E. Blithedale Ave/Camino Al - Arterial Improvement	X		X	const.	$102
E. Blithedale Ave/Tower Dr. - Signalization	X		X	const.	$107
Bridgeway/Sausalito - Vertical curve alignment	X		X	funded	$113
Stanford/Corte Madera - Realign Street	X		X	funded	$510
Nellan Avenue - New 2 L - Paradise Dr. to Bridge Ave. w/Bike Lane	X		X	const.	$1,320
Downtown Novato - Signal Interconnects	X		X	funded	$262
Mill Valley - Signal Retiming	X		X	const.	$43
Center Road - Reconstruct with Bike Lane - Sir Francis Drake to Bridge Ave.	X		X	funded	$162
Sir Francis Drake/Butterfield - Intersection Improvements	X		X	funded	$621
San Rafael - Downtown Signal Interconnects	X		X	funded	$550
Sir Francis Drake - Signal Modifications-Red Hill Ave. to Olema Road					$2.770
Bel Marin Keys Blvd - Right Turn Lanes to NB Highway 101	X		X		$1,000
E. Sir Francis Drake - Signal Improvements - Andersen Dr.	X		X		$550
Subtotal - Marin County:	$11,245	$0	$11,245		
Portion Funded:	$9,695	$0	$9.695		
Portion Not Funded	$1,550	$0	$1.550		
Total:	$78.794	$6,977	$85,771		
Portion Funded:	$60.083	$0	$64,305		
Portion Not Funded	$18.711	$6,977	$21,465		

* Not complete cost estimate since some project costs are pending further project definition at this time.
u.c. - under construction

Further detailed development of a rail operations plan should reverify if DLRV is the best technology for satisfying the needs and requirements of high-quality rail service for the North Bay.

Rail Patronage With and Without Recommended TODs

Concerns were raised during the analysis phase of the Study regarding the viability of the rail system if the recommended TODs were not implemented. The build-out of the alternative land use pattern will rely on the interests of private developers and land use policy changes by the individual jurisdictions in the North Bay. To address this concern the Consultant Team performed calculations to estimate the ridership levels for the rail system without a land use change.

Daily Rail Ridership with No Land Use Change

Ridership with Land Use Change	=	25,420
Less Ridership Generated by Land Use Change	=	-4.070
Less Additional Benefit of Increased Headway	=	-1,340
Estimated Preferred Scenario Ridership without Land Use Change	=	**20,010**

The calculations above show that a ridership of just over 20,000 riders can be expected by 2015 with no land use policy changes. The analysis of the Preferred Scenario with land use implementation indicated a daily ridership of 25,420 by the year 2015. Analysis of the five land use and transportation scenarios had indicated that implementation of the TODs would increase ridership by 5,440; the difference between Scenarios A and C. The Preferred Scenario had a land use pattern that was less intensive than that of Scenario C's (75% of the density shift); therefore the Preferred Scenario's ridership resulting from the land use change is estimated to be 4,070 (75% of 5,440).

In addition, more frequent headways in the Preferred Scenario would imply an even higher ridership generated by the TODs than in Scenario C. The earlier scenarios had a 30 minute frequency of service while the Preferred Scenario has a 15 minute frequency. We have assumed a 33% increase in ridership as a result of the more frequent headways. Therefore the total ridership that is dependent upon the land use shift is 5,410 (4,070 x 1.33). This results in a projected daily ridership of 20,010 for the Preferred Scenario without the land use change.[1]

The following discussion of capital and operating costs for the Preferred Scenario's rail system illustrates the cost impacts of this "worst case" daily ridership.

Capital Costs

The three major capital cost categories for the Preferred Scenario's rail system are:

Vehicle Costs:	$61.1 to $49.5 million;
Track and System Upgrade Costs:	$83.3 million; and
Station Area Costs:	$32.5 million.

The track and system upgrade costs are to a great degree dependent on the phasing of the rail improvements. For this reason, the first phase rail system would operate from Healdsburg to Downtown San Rafael; the extension to Larkspur would not occur until the first part of phase two (approximately the year 2008). This is recommended because this section of the rail line is the most costly per mile; about 15% of the total track and system upgrade costs are incurred in this section of the rail line. The Larkspur station is also projected to generate relatively few riders for its cost. But the ultimate connection to the ferry system is an important regional transportation linkage.

The cost estimate for the Ignacio to San Rafael section includes $24.8 million for elevating the station and track in Downtown San Rafael. This reflects the City's General Plan policies.

[1] This number can be related to the total increase in households within the TODs. The Preferred Scenario would allow an additional 8,450 new households to live in close proximity to the rail system throughout the North Bay. If there is an average of 1.3 workers per household, there would be nearly 22,000 new commute hips per day generated within the TODs. The reduction in rail riders of 5,410 is equivalent to 25% of these commute trips. This is an aggressive estimate, because the analysis indicates a mole-split of about 15-20% to transit from within the TOD's, and the majority (over 75%) of the rail trips are during the commute.

A planning-level review of rail service impacts on local streets was performed by the Consulting Team, and concluded that it may not be necessary to elevate the rail in Downtown San Rafael. A detailed analysis of traffic flows, rail and bus service, and signalization must be performed, taking into account future growth in the area, to verify the feasibility of at-grade rail operations. This analysis should be part of the rail service planning study to be undertaken following this Study.

Table 4
Phasing of Preferred Scenario
NWP Passenger Railroad Service Implementation
(in dollars, 1996)

Cost Category	Healdsburg - Santa Rosa	Santa Rosa - Rohnert Park	Rohnert Park-Petaluma	Petaluma - Ignacio	Ignacio - San Rafael	San Rafael - Larkspur	Total
Purchase Right-of-way	-	-	-	-	-	-	(a)
Track Upgrade	$3,853,400	$1,926,700	$2,225,200	$3,446,300	$790,100	$1,175,900	$13,417,600
Signals & Controls	$53,300	$26,700	$30,800	$47,700	$230,600		$389,100
Bridges					$26,018,100		$26,018,100
Tunnels						$4,010,200	$4,010,200
Station Platforms/Shelters*	$144,000	$144,000	$144,000	$48,000	$96,000	$96,000	$672,000
Ticket Vending Machines	$297,000	$297,000	$297,000	$99,000	$198,000	$198,000	$1,386,000
Maintenance Facility	$4,907,800						$4,907,800
Passing Sidings	$1,240,000	$1,240,000	$620,000	$1,240,000	$620,000	$620,000	$5,580,000
Communications	$280,000						$280,000
Signal Control System	$7,100,000	$3,550,000	$4,100,000	$6,350,000	$4,400,000	$1,100,000	$26,600,000
Larkspur Ferry Terminal						$0	$0
SUBTOTAL	$17,875,500	$7,184,400	$7,417,000	$11,231,000	$32,352,800	$7,200,100	$83,260,800
Rail Vehicles (DLRV)*							
With Land Use (37 DLRVs)							$61,050,000
With Out Land Use (30 DLRVs)							$49,500,000
Total w/ Land Use							$144.3 10.800
Sonoma County							$63.001,900
Marin County							$81,308,900
Total wlo Land Use							$132,760,920
Sonoma County							$57,226,900
Marin County							$75,533,900
Number of Stations	3	3	3	1	2	2	14

Notes:

Assumes chat limited service will be provided to Larkspur Landing at 30 minute headways with no elevated rail In Downtown San Rafael.

* Assumes same number of vehicles as Scenario "D;" Cost for alternative technology (DMU) Rail Vehicles is $47.55 Million

(a) The California Transportation Commission has already funded purchase of the railroad right-of-way out of State Transportation funding.

Source: MK Centennial, Fehr & Peen Associates, and Calthorpe Associates

The vehicle costs are directly dependent upon the projected ridership. Each DLRV vehicle has a seated capacity of 74 and a comfortable standing capacity of 174 patrons. The vehicle can be combined into a maximum four car train with a single driver. The rail systems are designed to handle a peak hour load, and assume a 10 to 15% additional number of vehicles to cover "out of service" trains. Each train is estimated to cost $1.65 million dollars. The

Preferred Scenario with land use policy would require 37 vehicles while the Scenario without the implementation of the proposed land use changes would need 30 DLRVs.

Table 5
Phasing of Preferred Scenario
Rail Station Area Capital Improvements

Station Name & Location	Phase I	Phase 2A	Phase 2B	Build-Out	Rating**	Cost En (in 1996 dollars)
Healdsbug - Downtown	P			P	I	$500,000
Windsor - Downtown at Windsor River Rd.	P			P	2	$1,500,000
Sonoma Airport Station - At Airport Blvd.			$	$	I	$500,000
Santa Rosa - Jennings		P		P	2	$1,500,000
Santa Rosa - at Railroad Square	P			P	3	$3,000,000
Santa Rosa - at Bellevue Avenue			P	P	2	$1.500.000
Rohnert Park - Golf Course Drive			$	$	2	$1,500,000
Rohnert Park - at Rohnert Park Expressway	P			P	2	$1,500,000
Cotati - at East Coati Avenue	P			P	2	$1,500,000
Petaluma - Rainier Avenue		P		P	2	$1,500,000
Petaluma - Downtown at Washington Sweet	P			P	3	$3,000,000
Petaluma - Lakeville Highway			$	$	3	$3,000,000
Novato - Fireman's Fund			$	$	I	$500,000
Novato - Downtown at Grant Avenue	P			P	3	$3,000,000
Novato - Hamilton		P		P	2	$1,500,000
Novato - at Ignacio Blvd./Marin Keys Blvd.			$	$	2	$1,500,000
San Rafael - at Civic Center Drive	P			P	2	$1,500,000
San Rafael -Downtown at Transit Center	P			P	3	$3,000,000
Larkspur - at Larkspur Ferry Terminal		P		P	4	$8,000,000
Subtotal Sonoma County:	$11,000,000	$3,000,000	$1,500,000	$15,500,000		
Subtotal Marin County:	$7,500,000	$9,500,000	$ -	$17,000,000		
Total Preliminary Cost Estimate:	$18,500,000	$12,500,000	$1,500,000	$32,500,000		

* - Based on Inventor). Needs Rating (below) - Parking Spaces and Right—f-Way Costs Not Included (to be added upon completion of demand forecasts)

** - Rating (Cost Based on Preliminary Station Area Assessments):

P - Primary Station: con included in estimate and will be modeled.

$ - Secondary Station: cost not Included in estimate and will not be modeled.

I - no new roadway capacity assumed; site access improvements, signals and signage for accesslegress; pedestrian treatments; transit access;

2 minor roadway capacity enhancements: site access improvements: signals and signage for accesslegress; pedestrian treatments; transit access;

3 - some roadway capacity enhancements, reconstruction or area circulation changes; signals and signage; special pedestrian treatments; transit access;

4 - major construction of elevated station and parking structure

Source: Fehr & Peers Associates and Calthorpe Associates

A total of 14 primary stations would be funded under the Preferred Scenario. An additional 5 secondary stations could be built using some mix of private and local jurisdictional funding. Nine of the primary stations would be operational in the first phase of project implementation with a projected opening date of 2005. Four additional primary stations, including the Larkspur Station would be brought on line in 2008, and the final station, at Bellevue Avenue in Santa Rosa, is projected to open in 2011. The proposed phasing of stations would be refined overtime as more detailed operations planning is undertaken.

Later phases could be adjusted to reflect actual ridership levels and rail operations. The proposed phasing for station development could also be effected by the implementation of the land use scenario. For example, the stations identified for the initial part of phase two are all within major development areas. If the development of these sites is delayed, it may be appropriate to delay the construction of the rail stations.

It may also be possible to accelerate the timeline for implementation of the rail system. The potential for implementation of rail service to relieve congestion caused by construction of improvements to Highway 101 should be given serious consideration; similar efforts have occurred in both California and Florida. Planning for nearer term implementation should be done carefully and in coordination with regional, state, and federal agencies to make certain that guidelines are being followed to guarantee that the future potential for regional, state, and federal funding is not inhibited.

Operating Costs

The operating costs for the rail system are effected by ridership levels, the number of stations and the length of the system. An operating cost estimate has been prepared for both versions of the Preferred Scenario. The operating costs without the land use change would be 12% lower than the costs with the land use change.

Table 6
Annual Operating Costs
NWP Passenger Railroad Service Implementation
(in dollars, 1996)

Category	Seven Day Service w/ Land Use	Seven Day Service wlo Land Use
Labor - Train Operations	$6,072,917	$5,416,385
Fuel	$3,628,033	$2.941,648
Mdntenance of Equipment	$711,458	$576,858
Maintenance of Way	$1,375,000	$1.375.000
Sales, Promotions, and Fare Collections	5666,667	$666,667
General and Administrative	$1,460,327	$1,302.454
Insurance	$1,043,100	5845,757
Sonoma (65% of total)	$9,722,376	$8,531,100
Marin (35% of Total)	$5,235,126	$4,593,669
Total	$14,957,502	$13124,769

Source: MK Centennial, Fehr & Peers Associates, and Calthorpe Associates

Bus Transit System

The proposed bus system improvements are essential to the effectiveness of the Preferred Transportation and Land Use Scenario. Bus investments would focus on a feeder system to enhance access to the rail stations, and continued investment in regional bus service to San Francisco. The feeder bus system would not only provide access to rail, it would also

enhance local bus service, improving regional and local transit opportunities. Input from the North Bay's existing transit providers was integral to the definition of the proposed bus system.

In Marin County the capital and operating investments would be 10% higher for bus than for rail. This reflects the fact that bus transit will continue to be the most attractive transit alternative from the North Bay to San Francisco, and the Marin commute will continue to focus on Sam Francisco in the future

Bus system cost estimates have been prepared to reflect the two ridership projections for the rail system. The costs for the Preferred Scenario without land use policy implementation are listed in (parenthesis) after the sosts for the Preferred Scenario with land use implementation.

Capital Costs

Bus capital costs would be implemented in three phases, with the majority of the funds being spent on new vehicles. The initial investment of $19 million ($15 million) would take place in **2001.** This would be followed by equivalent investments between 2008 and **2012,** The total capital cost estimate for additional bus service is $38 million ($30 million).

Operating Costs

Bus operating costs are dependent upon the number of buses that are in operation, and the frequency and length of their routes. Operating costs were estimated for the final year of operations and were factored down for preceding years based on ridership projections and to reflect the phasing of capital investments. The average yearly operating cost for the Preferred Scenario's bus system is $11.34 million ($8.93million) over **15** years of operations.

Non-Motorized Improvements

The Preferred Scenario includes a full spectrum of transportation improvements from major highway and transit investments to the funding of a large increment of both counties' pedestrian and bicycle plans. Projected improvements include:

- **a multi-use path along the NWPRR to interconnect pedestrian and bicycle paths throughout the North Bay;**
- **the Fulton Road/Santa Rosa Creek bike crossing in Sonoma County;**
- a **Class II bike lane from Penngrove to Corona Road in Petaluma;**
- **a variety of bikeway and pedestrian improvements along Sir Francis Drake Boulevard in Marin County; and,**
- **Olive Avenue bikeway and pedestrian improvements in Novato;**
- **Over $43** million **in other pedestrian and bicycle investments throughout the North Bay.**