Chapter 2 Towards a Multi-Modal Future

Just as there is no single cause of our congestion problem, there is no single solution that can address all of Marin County's mobility needs. *Moving Forward* is designed to improve mobility for all residents and employees in the County by creating a variety of travel options that each contribute to congestion relief.

The recommended solutions are specifically targeted to the character of Marin County and to the local areas they serve. Continually building new roads and expanding highways is no longer a desirable or feasible solution. Alternatively, reducing our demand for automobile travel by as little as 10%, by providing competitive alternatives for some trips, would significantly reduce congestion. Thus, the solutions contained in this document are focused on providing alternatives to single occupancy auto travel while maintaining and improving our existing infrastructure and improving the quality of life enjoyed by Marin County residents.

Reducing our demand for automobile travel by as little as 10% would significantly reduce congestion.

The Master Planning Process

For the past three years, Marin County residents, workers, businesses and public officials have embarked on a master planning process that looked at the sources of our congestion problems, and identified potential solutions. Several comprehensive studies have been completed, each designed to take best advantage of a particular mode — including public transit alternatives, bike and pedestrian improvements, and enhancements to local roads and highways. Chapter 3 combines these plans with other projects that build on the best elements of each mode, creating an overall transportation vision for Marin County.

In developing this document, a number of goals were identified:

Goals of *Moving Forward: A 25-Year Transportation Vision for Marin County*[1]

- Create a multi-modal transportation system, emphasizing alternatives to single-occupant driving.
- Reduce overall congestion, not just on Highway 101 but also on the roads that provide connections and alternatives to freeway travel.
- Maximize mobility for all residents of Marin County including seniors, youth and disadvantaged residents.
- Maintain the quality of life enjoyed in Marin County.
- Maintain flexibility to allow for different needs in different parts of the County and to respond to changing conditions, including changes in funding.

With these goals in mind, this transportation vision was developed to:

- Maintain and expand on our existing services and infrastructure.
- Include a variety of transportation choices.
- Directly address our current and emerging congestion problems.
- Support mobility for all residents of the County.
- Support environmental quality and regional land use plans.

The following sections summarize the findings of several comprehensive Master Plans that have been completed, as well as additional studies that have either been completed or are on-going. Plans, studies and programs are presented according to their geographic scope and transportation mode. Those that primarily serve travel within Marin County are presented under "Traveling within Marin – Our Local Multi-Modal Fu-

[1] These goals represent a summary of the goals approved by the Joint Committee of the Board of Supervisors, CMA and Transit District. The complete list of approved goals can be found in Appendix A.

ture." Those that primarily serve travel between Marin and other counties are presented under "Traveling to and from Marin – The Regional Picture." These two categories reflect the fact that our local transportation system must be designed to support and connect to regional projects, providing an enhanced network for all types of trips. Regional investments often require long lead times for planning and may attract their own dedicated funding sources, while local projects are more directly influenced by internal decisions and local priorities.

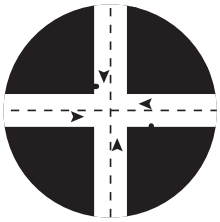
Specific benefits and services provided to each community in the County from both local and regional projects are presented in Chapter 3. Costs and funding opportunities for each element of the transportation vision are provided in Chapter 4.

Although this chapter categorizes potential projects as being either local or regional in nature, it is important to note that local and regional transportation networks are inextricably linked – the local transportation network provides access to and from the regional network, and decisions made on the local network may significantly affect a regional project's impact on Marin County. Ideally, local and regional projects function together to provide a seamless transportation system throughout Marin County and beyond.

TRAVELING WITHIN MARIN – OUR LOCAL MULTI-MODAL FUTURE

The following projects and programs focus on serving local travel needs within Marin County. These include travel between and within communities, as well as local access to regional transportation networks.

Local Streets and Roads – Primary Roadway Network



Nearly every trip begins or ends on a local road.

Nearly every trip begins or ends on a local road. Pedestrians, bicyclists, bus passengers and drivers of all types depend on a well-maintained and effective local roadway network that serves travel both within and between communities. To prepare a plan for improving local streets and roads in Marin County, Department of Public Works managers from each city and from the County worked together to compile a list of needed improvements. The list includes numerous paving and drainage projects, as well as intersection improvements, signal timing and other system strategies to improve overall traffic flow. Their plans were discussed with the public and refined in an all-day workshop dedicated to this topic.

Their plans focus on "hot spots" where congestion can be relieved by improving road maintenance or system management. These investments preserve our existing infrastructure and allow all modes to work better. Figure 2-1 shows the primary road network where improvements will be directed.

Interchange Program

Highway interchanges are critical junctures where local and regional roadway systems intersect. By reducing congestion and improving safety at key interchanges, future interchange improvement projects can increase mobility on both local and regional roadways. Marin's Congestion Management Agency in partnership with Caltrans and local stakeholders is studying improve-

nelson\nygaard
consulting associates

Figure 2-1 Primary Road Network

ments to several key highway interchanges where safety and congestion are a particular concern. Seven interchanges have been identified as high priorities for future projects. The high priority interchanges are:

- U.S. 101/Atherton Avenue
- U.S. 101/State Route 37
- U.S. 101/Lucas Valley Road
- I-580/U.S. 101
- U.S. 101/Sir Francis Drake Boulevard (Greenbrae Interchange)
- U.S. 101/Tamalpais Drive
- U.S. 101/Tiburon Boulevard
- U.S. 101/Sausalito (Alexander Avenue)

Many of these interchange projects are still being studied or designed. All are intended to improve safety and relieve congestion at key choke points along the highway. Interchange improvements offer significant benefits to local arterials that take cars to and from the highway, as back-ups on Highway 101 reflect back on local roads.

The goals of the local bus master plan are to enhance local mobility, create more livable communities and provide residents and employees a viable alternative to the auto for Marin County trips.

Marin Bus Transit Futures: Improving Local Transit Choices

Marin Bus Transit Futures is a comprehensive long-range effort to provide a vision and practical implementation strategies for improving the range of public transportation choices for local Marin County trips. The goals of the local bus master plan are to enhance local mobility, create more livable communities and provide County residents and workers with an alternative to the single-occupant vehicle.

The service element of *Marin Bus Transit Futures* took shape after extensive public outreach and data collection efforts. The Plan has the following features, which are illustrated on the map in Figure 2-2:

- **Local Express Bus** - Frequent (15-minute peak) service along the Highway 101 Corridor, linking major residential and activity

centers. (This is a separate service from the Marin-Sonoma Express Bus, discussed later in this chapter.)

- **Intercommunity Service** - An expanded system of intercommunity routes to provide an attractive local transit network for direct travel between Marin County communities.

- **Tailored Local Community Service Routes** - An array of local services tailored to meet the different needs of Marin communities from local fixed route shuttles, to community service routes tailored to seniors, to contract taxis in lower density areas. Implementation of this plan would allow for continuation and expansion of demonstration shuttles in Southern Marin County, West Marin and Novato, while adding new tailored services in other communities.

- **School Tripper Service and School Pool Program** - While Marin County Transit would not provide "yellow school bus service," it would offer supplemental "School Tripper" shuttles and buses that would serve a similar function by linking residential areas to local schools. Although not contained in the Plan, a free youth bus pass will be implemented on a trial basis in February 2003. The "School Pool" program would provide ridematching assistance to promote carpooling to schools. These programs would supplement the Safe Routes to Schools efforts to reduce congestion around schools, specifically targeting those areas where walking and biking is a less practical option.

In addition to providing congestion relief, the plan provides mobility for those that cannot or choose not to drive, including youth, seniors, and lower income residents.

- **Intermodal Connections** - New service would link major bus transfer points to ferry terminals and to proposed rail stations, ensuring a seamless intermodal connection at all major transfer locations.

- **Paratransit** - Especially designed to meet the needs of seniors and persons with disabilities, this would expand on the current services offered in response to the Americans With Disabilities Act. Expanded paratransit service will also be needed to serve Marin's growing senior population.

- **Increasing the number of bus transit junctions from one in San Rafael to three at critical intermodal points** – For intercommunity and local services, three bus transit junctions would be developed for timed transfers with enhanced passenger amenities and information, including electronic message signs announcing when the next bus will be arriving. The current junction in San Rafael would be improved, with new junctions added in Novato and Southern Marin.

- **Improved access and stop amenities** – Improved freeway bus pads and pedestrian and bicycle access would enable convenient connections between regional and intercommunity bus transit services. Improvements are expected at virtually all pad bus stops in the Highway 101 Corridor.

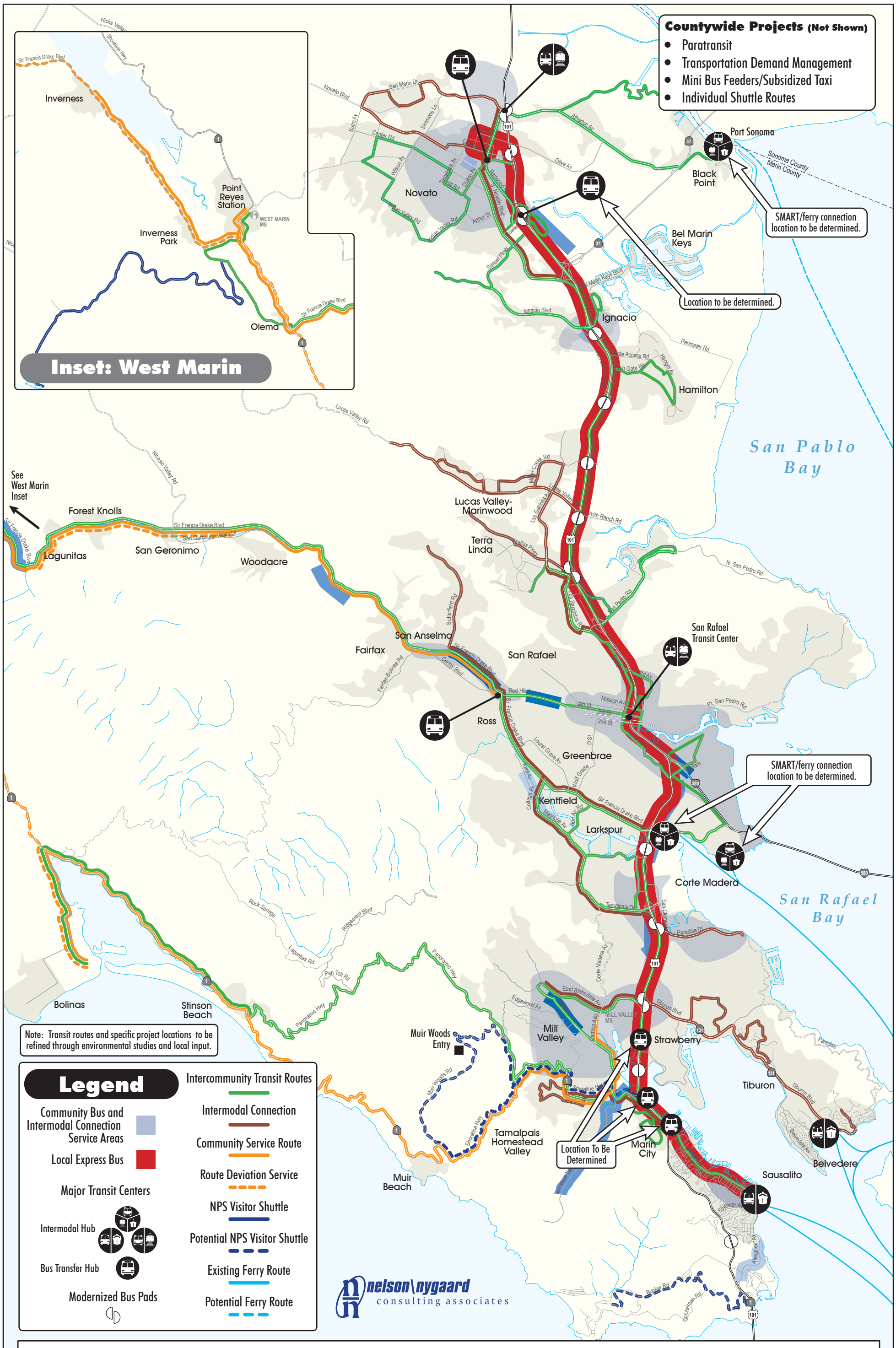


Figure 2-2: Marin Bus Transit Futures: Summary Service Map

- **New and expanded bus fleet** – A substantial increase in the number of buses needed would be met by a diverse bus fleet that includes alternative fuels and vehicle sizes that match the service need with the service fleet.
- **Use of alternative fuels** – Although Golden Gate Transit's current policy is to continue using clean diesel vehicles, there may be opportunities to purchase new clean fuel vehicles which run on no or extremely low emission fuels. Of the various alternative fuel technologies available, the most promising is hydrogen fuel cells.

When fully implemented, *Marin Bus Transit Futures* could more than double the existing local bus transit daily ridership of 13,200 to an estimated total of approximately 35,000 daily bus transit riders by 2020. The Plan provides real congestion relief by providing a viable bus transit option to local (internal to Marin County) commuters, which constitute over half of the work trips made by Marin County residents. In addition to providing congestion relief, the Plan improves mobility for those who cannot or choose not to drive.

The Future of Golden Gate Transit

The Marin Bus Transit Futures Plan builds on the existing local bus service provided by Golden Gate Transit, a division of the Golden Gate Bridge, Highway and Transportation District (GGBHTD). Although Golden Gate Transit is focused on providing commute service between Marin and San Francisco, it also provides local bus service in Marin through a funding agreement with the Marin County Transit District. Golden Gate Transit currently is facing a major financial crisis which has necessitated an increase in bridge tolls, as well as cutbacks in bus and ferry services and elimination of some local bus routes. Golden Gate Transit is targeting underutilized and inefficient services for reduction or elimination within the framework of the GGBHTD's transit service priorities, which are (in order of priority):

1. Transbay bus and ferry commute services that directly reduce peak-hour traffic on the Golden Gate Bridge.

2. Weekday and weekend transbay services that help reduce traffic throughout the day on the Golden Gate Bridge and in the Highway 101 corridor.
3. Intercounty bus service not directly related to the Golden Gate Bridge corridor and local bus services provided under funding agreement with Marin County.

An initial round of service cuts will take effect in March 2003, and additional cuts will be proposed for implementation in Fall 2003. More detailed information can be obtained from Golden Gate Transit's website at www.goldengatetransit.org.

Because local bus service within Marin County is the GGBHTD's lowest priority, the current financial crisis may impact our ability to implement the recommendations of the *Marin Bus Transit Futures Plan*. Rather than expanding local bus service, short-term objectives may need to focus on maintaining the quality of existing service in order to facilitate service expansions in the long term. The Marin County Transit District is working in active partnership with Golden Gate Transit to propose alternatives that meet Golden Gate's financial needs while maintaining mobility in Marin County.

TDM Strategies:

- **Vanpool and carpool matching**
- **Telecommuting centers**
- **Employer shuttles to regional transit services**
- **Employer transit passes**
- **Guaranteed Ride Home programs**
- **Subsidized vanpools**
- **On-site cafeterias and child-care facilities for employees**
- **Flexible work hours**
- **Public education to foster awareness of transportation alternatives**
- **Parking cash-out programs**

Transportation Demand Management (TDM)

Transportation Demand Management strategies, included in *Marin Bus Transit Futures*, manage the "demand" side of transportation needs by shifting trips outside of peak periods and encouraging the use of higher occupancy modes for work commute trips. Although TDM strategies are implemented at a local level (within Marin County), they affect people traveling within Marin, as well as people who travel to Marin from other areas. Because TDM strategies are focused on reducing commute trips, they require the development of public-private partnerships in which employers work closely with the County to develop and implement strategies to reduce the number of drive-alone trips. Examples of TDM strategies include vanpool and carpool matching, telecommuting centers, employer

shuttles to regional transit services, employer transit passes, Guaranteed Ride Home programs, subsidized vanpools, and parking cash-out programs. Other strategies such as on-site cafeterias and child-care facilities can reduce the number of mid-day trips made by workers. Employers with comprehensive TDM plans in place have been able to reduce drive-alone trips by as much as 15%. TDM strategies can also be used to reduce school commute trips, a significant source of traffic congestion in Marin County.

Marin Bus Transit Futures developed a preliminary TDM concept which recommends creating the Marin Office of Mobility Management, which would work closely with Marin employers to maximize the use of alternative modes for work trips in Marin County. This concept will be further developed with additional study, allowing Marin County to be a national leader in TDM activities and the use of public-private partnerships to create innovative transportation solutions.

Transportation Systems Management

Transportation Systems Management (TSM) can optimize the utilization of transportation investments and is thus an important part of transportation planning. TSM strategies have been incorporated into the Transportation Master Plans and will continue to play a role in future planning efforts. TSM strategies include a range of programs and activities aimed at relieving bottlenecks and interruptions, coordinating the operations of different types of transportation systems, and improving access to information. For roadway systems, these may include signalization improvements at intersections, the addition of carpool lanes, metering lights at freeway on-ramps, real-time traffic information, rapid clearing of traffic incidents, improvements to sidewalks and pedestrian safety facilities, and the addition or maintenance of bicycle lanes. TSM strategies more specific to transit systems include universal

fare cards that can be used on multiple systems, technologies that provide real-time information on bus or train locations, and web sites or information kiosks that provide transit trip planning assistance.

As new technologies are developed, the range of TSM strategies will continue to expand. Intelligent Transportation Systems research, which uses information systems technologies to alleviate congestion, is producing new ways to better utilize our existing infrastructure. As we plan our transportation investments for the next 25 years, we need to consider ways to take advantage of new technologies that will enable our investments to serve us far into the future.

Marin County Unincorporated Area Bicycle and Pedestrian Master Plan

Every short trip that can be made by bicycle or walking avoids another "cold start," improving the health of the traveler and everyone in the community.

The *Marin County Unincorporated Area Bicycle and Pedestrian Master Plan* provides a blueprint for making bicycling and walking an integral part of daily life in Marin County. The 20-Year Plan calls for the completion of a countywide network of primary and secondary bikeways. It also calls for the completion of pedestrian improvements, both independently and in conjunction with bicycle improvements. The long-term system is intended to connect all of the major destinations in the County, as well as provide continuous connections between communities. Along with specific physical projects, the Plan provides bicycle and pedestrian facility design standards and guidelines and provides recommendations for education, marketing, and other programs that will ultimately be implemented by public or private groups.

While many local projects are included in the Plan, its focus is on connecting the cities and communities in the County, making biking and walking a viable alternative to the auto for shorter trips. Some of the most critical regional bike and pedestrian links, shown on Figure 2-3, include the continuous Class I North-

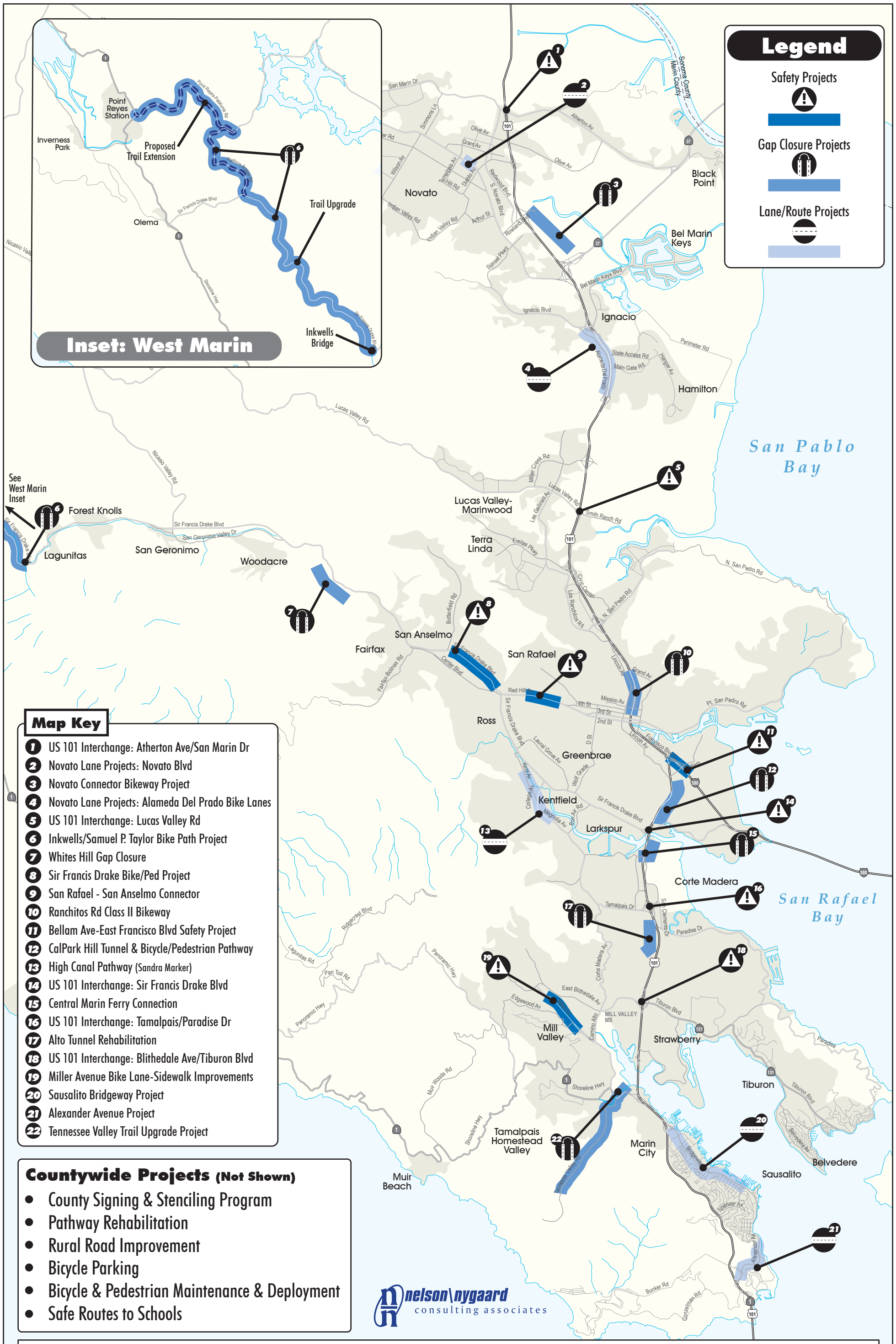


Figure 2-3: Marin County Bicycle & Pedestrian Plan: Key Project Locations

South Bikeway, providing an unbroken path from the Sonoma/Marin County line through Marin County to San Rafael, as well as a new connection from Central Marin County to the Larkspur Ferry terminal, and the opening of abandoned rail tunnels to bicycle use. Projects in West Marin will help to complete the East-West Bikeway across the County.

The Plan promotes inter-modal connections by providing direct and convenient bicycle and pedestrian-ways to major transit stops. If fully implemented, the Plan would include significant investment in bicycle facilities at transit nodes, including both bus transfer points and rail and ferry terminals.

The *Bicycle and Pedestrian Master Plan* is supplemented by individual local bicycle and pedestrian plans, prepared by each city in the County. It is also supplemented by an expanded Safe Routes to Schools Program that was not incorporated into the original Plan. The Safe Routes to Schools Program is especially critical because it directly addresses one of the most significant congestion problems in Marin County. This program has been proven to reduce auto use at schools already enrolled in Safe Routes to Schools. Auto trip reductions of 15% were recorded at schools receiving Safe Routes training in 2000-2001.[2]

Safe Routes to Schools is an on-going program that provides training to a different group of students and their parents each year. This document plans for an expansion of the educational component of the Safe Routes Program, while also expanding the availability of engineering and construction funds for improvements to bicycle and pedestrian safety around schools, further reducing auto congestion in these areas.

The *Bicycle and Pedestrian Master Plan's* goal is to increase the bicycle and walk mode share for utilitar-

[2] Based on 2001 Safe Routes to Schools annual survey.

ian trips from today's estimated 7% to 20% by the year 2020. While most of those trips would occur outside of the peak commute period, increasing bicycle and pedestrian trips offers numerous benefits including:

- Improved safety for cyclists and pedestrians.
- Increased opportunities for exercise, promoting health and well-being.
- A significant reduction in local traffic, particularly around schools.
- Substantially increased bike-to-transit and walk-to-transit trips, helping to increase the viability of transit, bicycling and walking as legitimate transportation options.
- Reduction of "cold start" short auto trips, thereby improving our air quality.

Increasing Marin's commitment to walking and cycling goes beyond improving the multi-modal transportation network to reflect the environmental values of County residents. The Plan offers Marin a viable strategy to mitigate the environmental impacts caused by motor vehicles, including air quality, energy consumption, noise, and use of land for roadways and parking lots.

Marin County Welfare-to-Work Transportation Plan

In the first half of 2002, the Metropolitan Transportation Commission (MTC) developed the *Marin County Welfare-to-Work Transportation Plan* to meet the needs of CalWORKs clients in Marin County. The Plan was completed at the end of June 2002 and the first steps have been taken towards securing funding to implement the Plan's short-term recommendations. The primary transportation challenges faced by CalWORKs clients are relying on local Golden Gate Transit (GGT) bus service to travel to work, job interviews, and training programs, and conducting linked trips to transport their children to day care and school. Given the land use patterns in the County, and the heavy auto-reliance of

most residents, many CalWORKs clients have partial access to a car, but often experience problems with insurance and registration costs, and drive cars that are poorly maintained.

To address these transportation gaps, the Plan recommends a number of short- and long-term strategies. These include, in the short-term: creating an Adult Dial-A-Ride service and a Childcare shuttle, and establishing a Mobility Manager position at Health and Human Services to coordinate these services. In the long term, the recommended strategies include making permanent and possibly enhancing the pilot transfer policy on GGT buses; expanding the hours of GGT Route 1 weekday service and GGT Routes 20/35 service frequency; creating a monthly pass on GGT; developing multi-lingual transit information materials; and developing a Car Loan Program and a Vehicle Clearinghouse for the sale of refurbished cars. Welfare to Work needs will be reviewed in the context of Golden Gate Transit's service reductions, which may threaten existing services in the short term.

Traveling to and from Marin – The Regional Picture

The regional transportation network connects Marin County to San Francisco, the East Bay, Sonoma and Solano counties and points beyond. Regional travel, which contributes to congestion experienced within Marin County but is also adversely impacted by congestion from local trips, can be improved by increasing the number of transportation options available for longer distance trips. Furthermore, strategic investments aimed at improving the function and capacity of existing regional roadways, particularly for bus transit and other high occupancy vehicles, may also be an effective means of managing congestion.

Highway System Improvements

Marin's Congestion Management Agency regularly prepares a Congestion Management Program that prioritizes highway projects. The most recent CMP was adopted in 2001. For the past decade, much of the attention and funding in the Plan has been focused on the "gap closure" project — completing the HOV lane system through San Rafael. This project is now being constructed, allowing the County to develop new priorities.

The highest priority projects for highway improvements are intended to provide "spot relief" for major bottlenecks in the highway system. While it is widely recognized that we cannot build our way out of congestion, we can make strategic investments that will help the highway system move people more efficiently. Critical bottlenecks occur in the Marin-Sonoma Narrows area and at specific interchanges throughout the County. In addition, accidents and incidents are often concentrated in these "choke points" where the system slows down dramatically due to spot congestion.

While we cannot build our way out of congestion, we can make spot improvements that will help the existing highway system move people more efficiently.

The benefits of highway improvements can be measured in reduced delay. The following projects combine to eliminate an estimated 1,000 vehicle hours of delay every day.[3] This will result in improved travel speeds and reduced commute time, as well as a more reliable highway system.

Marin-Sonoma Narrows

Caltrans is currently studying alternatives for improving the Marin-Sonoma Narrows area by completing the HOV lane system on U.S. Highway 101 throughout the County. This project will have the special benefit of

[3] Vehicle hours of delay are calculated by the Congestion Management Agency and measure the total delay experienced by all vehicles on a particular roadway segment during the peak hour of a typical weekday.

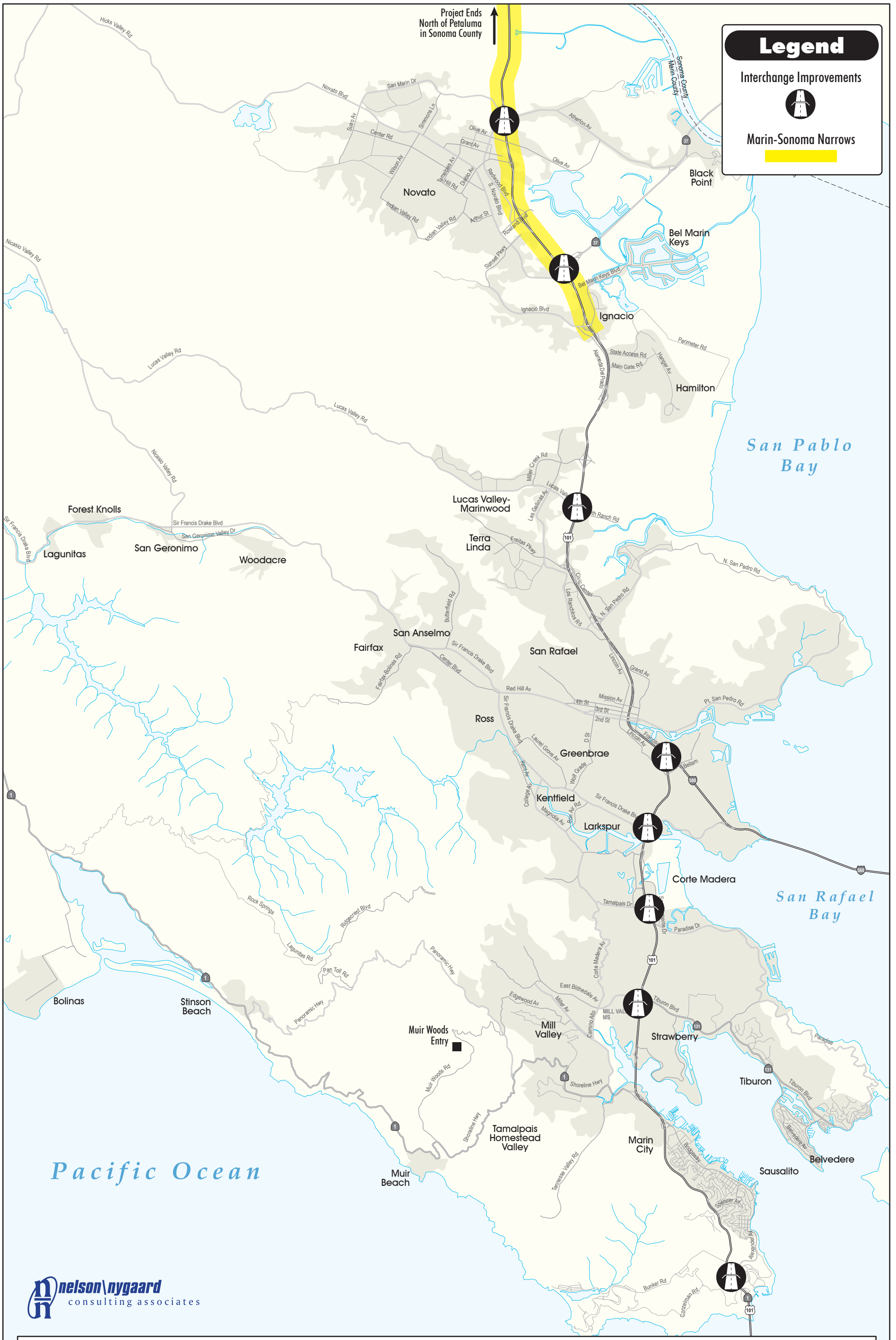


Figure 2-4: Highway System Improvements

making transit service in this area more competitive by improving travel times, while at the same time encouraging carpool and vanpool services. The location of the project study area is shown in Figure 2-4.

More specifically, the Marin-Sonoma Narrows project will provide 17 miles of HOV lanes on Highway 101 from Ignacio to the Old Redwood Highway interchange in Petaluma.

The construction of a new interchange in Novato (in the area between Atherton Avenue and the landfill) and HOV on- and off-ramps are also included in the proposed project and will be studied further. Now that preliminary project studies have been completed, the next step will be to undertake a more thorough environmental review. This will include an extensive analysis of environmental impacts, as well as project alternatives. A number of alternatives will be considered, including those that will limit the construction "footprint" by keeping the project within the existing highway right-of-way to the extent possible. More detailed information and project updates can be obtained from the Caltrans website at www.dot.ca.gov/dist4/msn.

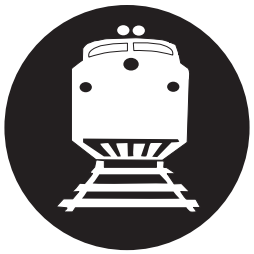
State Route 37

In 1998, the Metropolitan Transportation Commission (MTC), in cooperation with other transportation and resource agencies, completed the North Bay Corridor Study, which examined future transportation needs, enhancement of wetlands and habitats, and opportunities for recreational trails in the Route 37, 12, 116, and 121 corridors. The study recommended that safety improvements be made along most of the roadway. Accordingly, MTC's Regional Transportation Plan (RTP) includes a Track 1 project to create a traveler information system along Route 37 that will provide information on travel conditions, enabling travelers to

choose alternative routes when roadway congestion is severe.[4] The system will also provide future incident management capability. Safety improvements may also be made to the U.S. 101/ Route 37 interchange.

The RTP also includes a Track 2 project (which does not have any identified funding source) to widen Route 37 to four lanes with environmental mitigation. This is a long-term project aimed at facilitating east-west travel in the North Bay.

SMART Commuter Rail for Sonoma and Marin Counties



Projected to initially carry over 5,100 riders a day, SMART will meet the needs of many commuters to employment destinations in both Marin and Sonoma Counties, as well as commuters to San Francisco.

The Sonoma-Marin Area Rail Transit (SMART) project seeks to directly address the demand for intercounty trips between Sonoma and Marin. Most commuters coming into Marin County from the north are traveling to jobs within Marin. These trips can best be served by regional transit and other solutions that move people from single-occupant cars to higher occupancy modes.

The SMART commuter rail system would operate from Cloverdale in Sonoma County to San Rafael, with an extension to a ferry terminal. Potential ferry connections could be made in either southern Marin at the Larkspur Landing ferry terminal or San Quentin (a potential ferry terminal location), or in northern Marin at Port Sonoma (also a potential ferry terminal location). Trains would operate along the publicly owned Northwestern Pacific (NWP) rail corridor that lies next to Highway 101, which would also be used to accommodate the North-South Bikeway. Figure 2-5 shows the current plans for SMART in Marin County. Marin County stations would be sited in Novato (two locations) and San Rafael (two stations) close to the Civic Center area and downtown. Each of these sta-

[4] See Chapter 4 for a description of the RTP process.

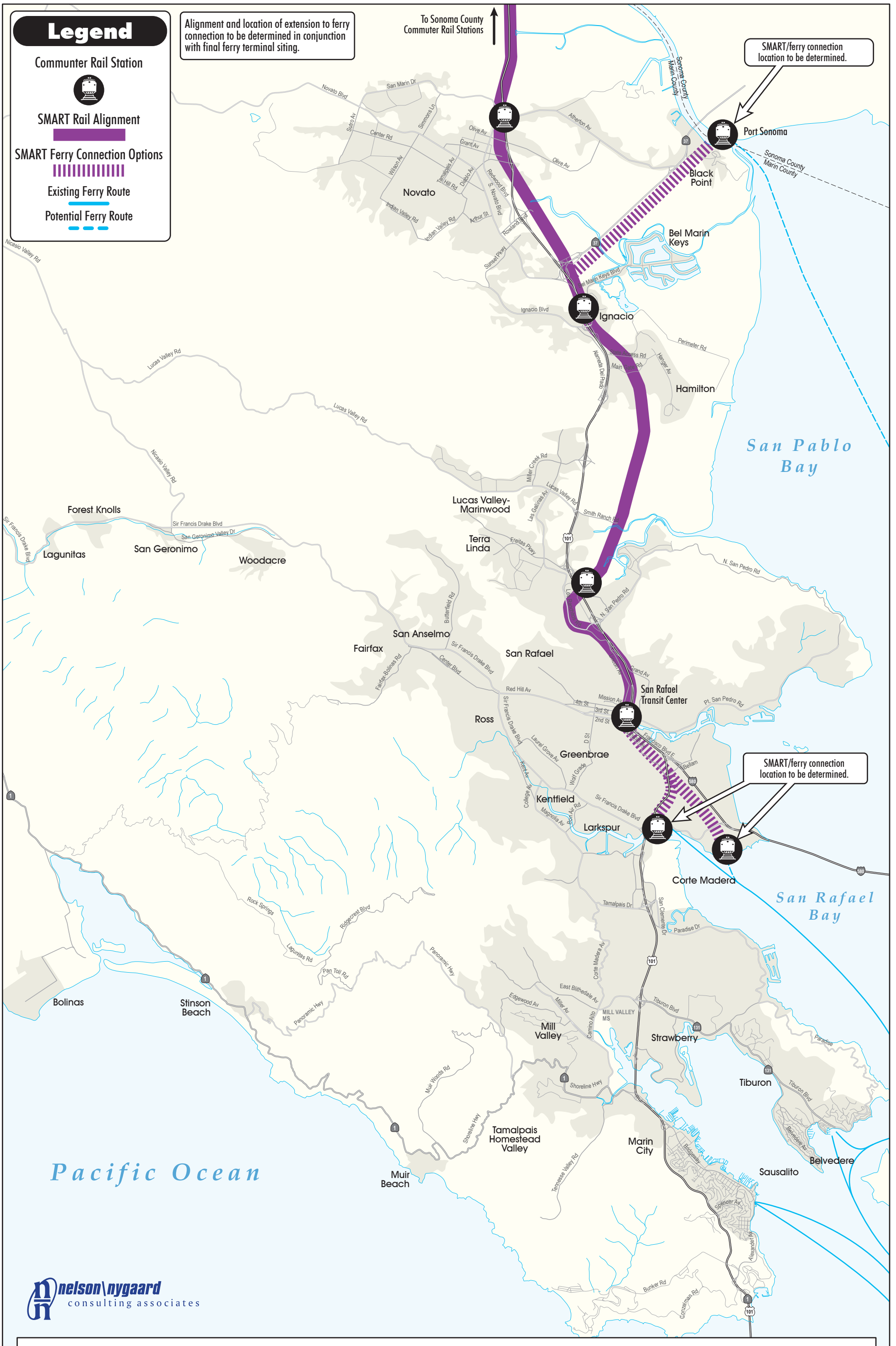


Figure 2-5: SMART Rail in Marin County

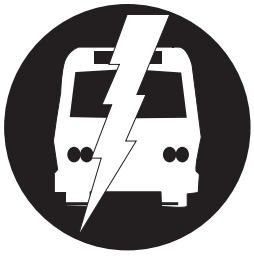
tions would provide multi-modal transfer opportunities with extensive bus and shuttle services, bicycle facilities and pedestrian access. The connection to a ferry terminal will allow riders to make a seamless trip into San Francisco.

An estimated 1,900 auto trips could be removed from Highway 101 during the morning commute, providing congestion relief along the entire U.S. 101 corridor.

A key advantage to the SMART system plan is that it provides an expandable, high capacity transit solution on a separate right of way that is already in public ownership. The project has begun its environmental review process, during which environmental impacts and project alternatives will be considered in detail, and the three alternatives for a ferry service extension will be studied to determine which option is best. Service could be provided within four years following environmental approval, assuming funding is in place.

With service every 30 minutes during the most congested times of day, it is estimated that SMART will initially carry 5,100 daily riders. This may remove an estimated 1,900 auto trips from Highway 101 during the morning commute from 6AM to 9AM.

Marin/Sonoma Express Bus Study



Given the increase in commute travel completely within the North Bay, creative solutions are needed to serve this travel market.

Even with rail implementation, there will be some inter-county markets that are better served by express buses. Currently, Golden Gate Transit serves over 30,000 daily riders on its basic and express bus service between Marin and Sonoma counties. Given the major changes in travel patterns, including a much higher proportion of commute trips staying within the North Bay, a Master Plan was developed for an enhanced express bus service within Sonoma and Marin Counties.

The recommended system would restructure existing express bus service and add new routes to more than double current service levels. After completion of the HOV lane system, including the completion of HOV lanes through the Marin-Sonoma Narrows, buses would take advantage of faster travel times on Highway 101,

and would be restructured to create more than a dozen point-to-point express bus routes serving major employment centers in Marin County. Figure 2-6 shows the proposed express bus system for the North Bay.

The changes proposed in the *Express Bus Study* could increase express bus ridership by 1,850 daily riders, even with SMART Rail in place, eliminating over 600 cars from Highway 101 in the peak direction during the peak period. Implementing the Study recommendations would also leverage a large investment in HOV lanes, and would provide additional transit options to those currently commuting by car.

In addition to the *Marin/Sonoma Express Bus Study*, Golden Gate Transit has also conducted several studies for improving commute-oriented bus service and providing service to currently underserved bus transit markets. Three new commute bus routes to San Francisco serving Bel Marin Keys, Hamilton and East Corte Madera would cover existing service gaps and serve latent demand for commuter bus services. As part of the Metropolitan Transportation Commission's Regional Express Bus Program, Golden Gate Transit proposed expanding service on Route 75 which provides commute service between Sonoma and Marin. Any expansion in Golden Gate service in the near-term will be subject to review as that agency evaluates its financial condition.

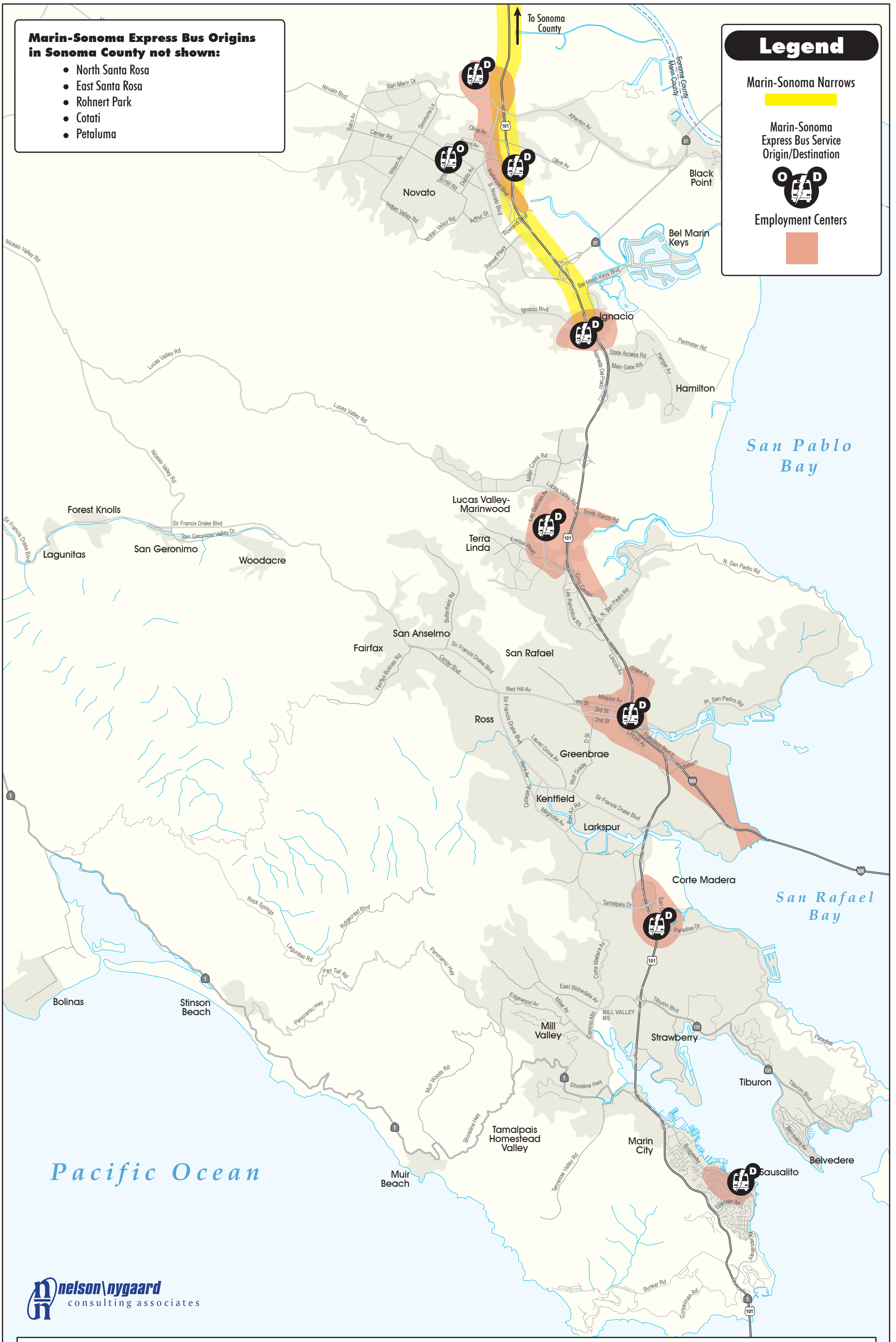


Figure 2-6: Marin-Sonoma Proposed Express Bus Service

The Bay Area Water Transit Authority - New and Expanded Ferry Service for the North Bay

The Bay Area Water Transit Authority (WTA) was created through Governor Gray Davis' Transportation Congestion Relief Program. The WTA recently released its Implementation and Operations Plan, which presents a strategy for expanding Bay Area water transit to serve an increasing demand for regional travel. The Plan's primary objective is to design a water-transit system that takes people out of cars, rather than simply drawing riders away from other transit modes. To do this, the Plan proposes expanding existing ferry routes, creating seven new ferry routes, and further studying four additional routes. It will also provide regional coordination for all ferry services. The Plan, as well as additional information and future updates, can be obtained from the WTA website at www.watertransit.org.

In the North Bay, the Plan calls for increasing service from existing ferry terminals at Sausalito, Tiburon and Larkspur. The WTA is continuing to study a new ferry terminal site in Port Sonoma (near State Route 37) that would serve San Francisco bound commuters from Marin, Sonoma and Napa counties. Further studies of the potential Port Sonoma site will include more detailed ridership projections, conceptual site design, a site-specific EIR, and a cost-effectiveness analysis. A future route could also originate at San Quentin, which is being considered for reuse by Marin County should the state decide to close the prison.[5] The WTA will continue to work with the county and GGBHTD on studying this site.

Once the plan for expanded ferry service is implemented, ridership on Golden Gate Corridor ferries

[5] The Marin County Board of Supervisors convened a planning committee to examine various reuse options for the San Quentin prison site. The committee's recommendations will be included in the Countywide Plan update, and should be completed in Spring 2003.

is projected to grow by approximately 80% to over 14,400 daily riders in 2025. Regionwide, the Plan estimates that water-transit patronage will grow about 12% annually and will draw most of its riders from automobiles.

Once funding is in place, new ferry vessels can be deployed within three years that are ten times cleaner (with regard to air quality) than existing ferries. Furthermore, the WTA is studying zero-emissions ferries that use hydrogen fuel cell technology.

Reducing Congestion in the Richmond-San Rafael Bridge Corridor

The Richmond-San Rafael Bridge is the primary connection between Marin and Sonoma counties and the East Bay. Nearly all westbound traffic on the bridge is destined for either Marin (76%) or Sonoma (24%), and approximately 8% of Marin residents travel to the East Bay for work. Because nearly all westbound traffic on the Richmond-San Rafael Bridge eventually ends up on Highway 101, congestion on Highway 101 is a significant contributor to congestion on the bridge. A number of the projects included in this transportation vision are specifically designed to help manage congestion in the Highway 101 Corridor, and, in turn, will help manage congestion across the Richmond-San Rafael Bridge. Additionally, Golden Gate Transit has studied expanding service on Route 40 which travels between the San Rafael Transit Center and the East Bay via the Richmond-San Rafael Bridge.

National Park Access Studies

A number of projects are being developed to improve access to Marin's recreational areas and reduce related congestion. The studies include participation of Federal, State and local agencies and are being coordinated by both Marin County and the National Park Service.

- **Marin Headlands and Fort Baker Transportation Management Study –** This is a comprehensive study of alternative transportation options for the Marin Headlands and Fort Baker. Included within the Study are proposals for internal shuttles, park-and-ride shuttles, and transit improvements as well as infrastructure maintenance and maintenance of historic roads. The study is currently in its environmental assessment phase, evaluating a variety of alternatives ranging from minimal improvements to major enhancements in alternative access opportunities.

- **GGNRA Ferry Access Study –** This study is considering the provision of a ferry terminal and service at Horseshoe Bay in Fort Baker. The Water Transit Authority will continue to work with the Park Service in studying park-related ferry service.

- **Transportation Demand Management Program –** The National Park Service is developing a Transportation Demand Management Program that will reduce commute traffic generated by tenants and employees located within park facilities.

- **Marin Parklands Visitor Access Program –** A Parklands Task Force, comprised of the National Parks Service, Golden Gate National Recreation Area, the County of Marin, the Golden Gate Bridge and Highway Transportation District, Caltrans, and the Metropolitan Transportation Commission, has been meeting for over three years to develop transportation solutions for access to Muir Woods National Monument and other parkland destinations in Southern and Western Marin. Studies have shown that scheduled admission and shuttle service to Muir Woods and improved modal choice to all parklands destinations could minimize traffic impacts on parklands, congestion on local roads, environmental degradation of the parklands and affected gateway communities, as well as the seasonally recurring back-ups on State Route 1 and Highway 101. Because of its potential benefits, the Board of Supervisors has identified this Program as a top transportation planning priority in Marin County.

  Currently, there are several parklands transportation planning efforts underway to address traffic problems in Southern Marin. The two main planning efforts are the:

  - **Southern Marin Parklands Comprehensive Transportation Management Plan (CTMP) –** This is a large-scale planning effort intended to quantify current and future demand for park visitation and to identify broader strategies for reducing the number of vehicles accessing the parklands along Shoreline Highway. The main strategy being studied is a satellite parking intercept facility, reservation, and shuttle bus system in the vicinity of the Manzanita Park-and-Ride Lot. The recent County acquisition of the former Felton property provides an important component of any potential expansion

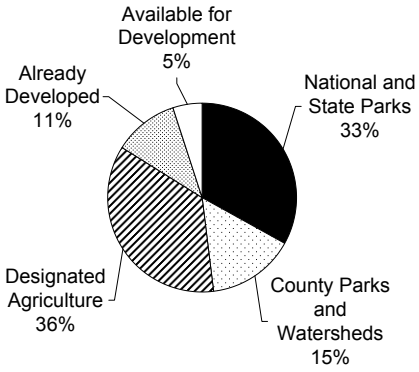
plans for commuter parking and recreational visitor parking at the Manzanita Park-and-Ride Lot.

- **Tamalpais Transportation Improvement Project (TTI) –** This involves two related construction projects designed to improve congestion, safety and circulation in, around and through the Tamalpais Valley, and provide alternative transportation access to the parklands. The two TTI projects are the Tennessee Valley Trail upgrade project to improve trail access for all users from the Mill Valley-Sausalito Bike Path to the GGNRA trailhead at the end of Tennessee Valley Road; and the Coyote Creek Bridge replacement project on Shoreline Highway to improve alternative access under the bridge and across the creek, as well as vehicle access across the bridge.

BEYOND TRANSPORTATION SOLUTIONS – LAND USE STRATEGIES

Not all solutions to our congestion problems involve the transportation system itself. The way we live has a greater effect on our transportation system than any single project we could consider. As people move farther from their jobs, for example, vehicle miles traveled increases. In many communities it is not possible to shop, work or go to school on foot or bike. Land use has a major impact on the amount and way we travel.

Marin County has more "protected land" than any other county in the Bay Area.



While it is true that new development results in more trips, the impact of those additional trips on our environment and quality of life depends on the type and location of new development. The impact of these trips on the transportation system is especially significant when development occurs in "greenfields" - areas where there is currently no development. Marin County has more "protected land" than any other county in the Bay Area, with 33% of the County protected as State and National Parks, another 15% preserved as County parks and watersheds, and 36% of the County's land area designated for agricultural resources. Eleven percent of the County's land area is already developed. This leaves only 5% of the total County land area available for new development, most of which is

highly constrained by environmental factors.

Preserving and protecting our open space is not just a transportation issue - it is a major contributor to the quality of life enjoyed in Marin County.

While it is important to carefully consider the impacts of new development, not all types of development contribute equally to congestion. "Smart growth" concepts are being considered throughout the Bay Area. Smart growth concentrates development in areas that can be more easily served by alternative modes, encouraging transit, bicycle and pedestrian travel. To further reduce auto impacts, smart growth developments include multiple uses, allowing people to walk to shopping, errands and other trips, and to take transit for longer trips. With growth pressures throughout California, severe restrictions on growth in Marin County will increase pressure to develop in adjacent counties, sending more traffic from outside the County onto our roads. However, if development is done carefully under smart growth concepts, growth will not increase traffic congestion but will instead improve the viability of transit and other alternative transportation modes.

Evaluating the Modal Master Plan Projects

The projects included in the Master Plans are not intended to be mutually exclusive. In fact, given enough resources, they all contribute to an optimal transportation system. However, not all projects can be developed at the same time due to a lack of sufficient funding.

Figure 2-7 shows how the local and regional plans and projects described previously address the goals of *Moving Forward* stated at the beginning of this chapter. The funding needs for each element are included in the table and will be discussed in more detail in Chapter 4. The following matrix is not intended to

develop a priority ranking, but rather to show how all of the potential projects address an important part of our congestion picture.

Figure 2-7 Project Benefits Matrix

Mode	Market/Project	Estimated Total ($M)* Funding Need Over 25 Years	Maximize Alternative to Driving Alone	Reduce Highway 101 Congestion	Reduce Local Congestion	Maximize Mobility for Seniors, Youth and Disadvantaged Residents	Maintain Environmental Quality of Life	Maintain Flexibility	Overall Benefit
Local Projects									
Hwy	Highway Interchanges	$236.0	**LOW** Some help to transit operations, but primarily for traffic.	**HIGH** May save approximately 1,050 daily person hours of delay.	**HIGH** Reduces spillover congestion on local streets.	**LOW** Primary benefit is to drivers.	**MED** Reduces stopped and delayed traffic, but may have other impacts to be studied.	**LOW** Fixed capital investment.	**MED**
Loc. Bus	Transit Junctions/Pads/ Stops, Technology and Admin. (incl. TSM)	$31.0	**HIGH** Capital investment required to generate an estimated 16,000 new transit riders.	**HIGH** Capital investment may allow elimination of over 1,000 daily trips on Hwy 101 with enhanced service.	**HIGH** Capital investment may increase overall transit ridership.	**HIGH** Local transit is primary option for dependant riders.	**HIGH** Increases transit use with minimal impacts.	**HIGH** Can be altered over time.	**HIGH**
Loc. Bus	Intercommunity Transit	$129.0	**HIGH** Could serve 13,500 daily riders.	**MED** May reduce Hwy 101 traffic by approximately 2,250 daily trips, approx. 560 peak.	**HIGH** May reduce local traffic by over 6,000 daily trips; approx 1,500 peak trips Countywide.	**HIGH** Local transit is primary option for dependant riders.	**HIGH** Increases transit use with minimal impacts.	**HIGH** Can be altered over time.	**HIGH**
Loc. Bus	Local Express Bus (Hwy 101)	$21.0	**HIGH** Could serve 3,700 daily riders.	**MED** May reduce Hwy 101 traffic by approximately 900 daily trips, 250 in peak.	**LOW** Primary focus is highway trips, some local improvement for access.	**HIGH** Local transit is primary option for dependant riders.	**HIGH** Increases transit use with minimal impacts.	**HIGH** Can be altered over time.	**HIGH**
Streets	Local Streets and Roads (incl. TSM)	$414.0	**LOW** Good roads help alt. modes, but primary benefit to autos.	**LOW** Projects have local focus.	**HIGH** Local road projects key to reducing local congestion.	**LOW** Primary benefit is to drivers.	**MED** Improving efficiency of local roads improves quality of life.	**MED** Local roads are the backbone of all modes.	**MED**
Loc. Bus	Community Service Routes	$12.0	**HIGH** May attract over 3,000 daily riders.	**LOW** Primary benefit is to local trips.	**MED** Reduces local congestion by providing local transit options.	**HIGH** Local transit is primary option for dependant riders.	**HIGH** Increases transit use with minimal impacts.	**HIGH** Can be altered over time.	**HIGH**
Loc. Bus	School Tripper Bus Service	$17.0	**HIGH** May attract 3,000 daily riders.	**MED** Directly addresses 21% of peak travel that is school trips. May remove about 500 peak hour trips from highway.	**HIGH** Significant reduction in congestion around key school sites.	**HIGH** Focus is on youth riders.	**HIGH** Increases transit use with minimal impacts.	**HIGH** Can be altered over time.	**HIGH**
Bike/ Ped	Safe Routes to Schools	$25.0	**HIGH** Reduces auto trips by 15% at schools with program in place.	**MED** Directly addresses 21% of peak travel that is school trips.	**HIGH** Significant reduction in congestion around key school sites.	**HIGH** Focus is on youth.	**HIGH** Increases transit use with minimal impacts.	**HIGH** Program focuses on available and reasonable alternatives.	**HIGH**
Loc. Bus	Paratransit	$70.0	**MED** Carries 600 daily trips; most paratransit riders don't drive but could get rides.	**LOW** Most paratransit riders do not drive on highway.	**LOW** Most paratransit trips are off-peak and don't have significant congestion impact.	**HIGH** Primary mobility for most dependant group. Particularly important for Marin's growing senior population.	**MED** Moderate increase in transit use with minimal impacts.	**HIGH** ADA Mandated Program could expand to meet other needs.	**MED**
Bike/ Ped	Countywide & Local Bicycle/ Pedestrian Improvements	$70.9	**MED** Bike/Pedestrian trips could total 20% of all trips in County, but these are primarily off-peak.	**LOW** Most bike commutes are short and local. However, bike commutes could increase to between 2% and 10% of total.	**MED** Most bike/pedestrian trips are off-peak, but could have a significant local impact.	**HIGH** Healthful alternative for those who can bike or walk.	**HIGH** Minimal impacts for improved safety. Promotes healthful activity.	**HIGH** Biking and walking can be done anywhere safe options exist.	**MED**

*Current dollar estimates for unfunded needs are from existing plans.

Figure 2-7 Project Benefits Matrix (continued)

Mode	Market/Project	Estimated Total ($M)* Funding Need Over 25 Years	Maximize Alternative to Driving Alone	Reduce Highway 101 Congestion	Reduce Local Congestion	Maximize Mobility for Seniors, Youth and Disadvantaged Residents	Maintain Environmental Quality of Life	Maintain Flexibility	Overall Benefit
Land Use	Land Use	TBD	**MED** Transit oriented development proven to increase ridership. Low density development may reduce trips, but difficult to serve by transit.	**MED** Potential to increase transit ridership through concentrated development. Reducing overall development may reduce future trips, but would be more difficult to serve by transit.	**MED** Potential to increase transit ridership through concentrated development. Reducing overall development may reduce future trips, but would be more difficult to serve.	**LOW** Some potential improvements through concentrated and mixed-use developments which encourage mobility.	**HIGH** Smart growth principles enhance quality of life.	**LOW** Limits development options.	**MED**
Loc. Bus	TDM	$10.0	**HIGH** TDM provides low cost incentives for alternative modes. Up to 15% reduction in peak commutes to major employers expected.	**MED** 15% reduction in peak commutes to major employers could be achieved.	**MED** May result in higher alternative mode use which can relieve local congestion.	**LOW** TDM focuses on commute trips.	**HIGH** Does not require investment in new fixed facilities with potential negative impacts.	**HIGH** TDM is extremely flexible, stressing use of all reasonable alternatives.	**HIGH**
Regional Projects									
Hwy	Narrows	$300.0	**HIGH** Improves all high capacity modes.	**HIGH** Relieves key bottleneck; may save an estimated 492 daily person hours in delay.	**MED** Relieves congestion on freeway access routes in Novato.	**LOW** Provides no new alt., but allows transit to be more efficient	**LOW** Environmental impact on-going. Keeps traffic moving which has positive effect on air quality. May have other impacts	**MED** Allows for future bus improvements through Narrows.	**MED**
Rail	Commuter Rail	$115.2	**HIGH** Provides new alternative; projected 5,100 daily riders initially.	**HIGH** May take 1,900 trips off Hwy 101 in morning peak	**MED** Changes travel patterns around stations, reduces overall driving trips.	**MED** Provides new transit option, but primary focus is commuters.	**MED** Environmental impact assessment on-going. Reduces auto travel, but may have other impacts.	**HIGH** Future phases already planned, service levels can vary.	**HIGH**
Xbus	Marin-Sonoma Express Bus	$78.8	**HIGH** Projected 1,850 new daily express bus riders.	**MED** May take 610 trips off Hwy 101 in morning peak	**MED** Changes travel patterns around stops; reduces overall driving trips	**MED** Provides new transit option, but primary focus is commuters.	**MED** No environmental impact assessment. Reduces auto travel; but may have other impacts.	**HIGH** Routes and service levels can change over time.	**MED**
Ferry	Ferry	$67.9[1]	**HIGH** Projected 14,400 daily Golden Gate Corridor ferry riders.	**HIGH** Proven mode, but potential still being studied.	**MED** Changes travel patterns around terminals; reduces overall driving trips.	**MED** Provides new transit option, but primary focus is commuters.	**MED** Environmental impact assessment on-going. Reduces auto travel, but may have other impacts.	**MED** Tied to landside infrastructure, but routes and services can vary.	**MED**
Loc Bus	Intermodal Connections	$10.0	**HIGH** Projected to carry 1,400 daily riders, reducing auto connections to regional transit.	**MED** May eliminate about 600 daily auto trips from Hwy 101 in morning peak.	**HIGH** Reduces auto access needs at local stations	**MED** Provides new transit option, but primary focus is commuters.	**HIGH** Improves environment around station area. Reduces cold starts by eliminating auto connections.	**HIGH** Routes and service levels can change over time.	**HIGH**

*Current dollar estimates for unfunded needs are from existing plans.
[1]Estimated total funding need for Golden Gate Corridor ferry service for 2005-2014.