

Final Report

I-80 / I-680 / I-780 TRANSIT CORRIDOR STUDY

presented to



ENGINEERS
PLANNERS
ECONOMISTS

Wilbur Smith Associates

CHS Consulting
Nolte Consulting
Nancy Whelan Consulting

July 14, 2004

ACKNOWLEDGMENTS

SOLANO TRANSPORTATION AUTHORITY BOARD

Karin MacMillan, Chair	City of Fairfield
Mary Ann Courville, Vice Chair	City of Dixon
John F. Silva	Solano County Board of Supervisors
Steve Messina	City of Benicia
Marci Coglianese	City of Rio Vista
Jim Spering	City of Suisun City
Len Augustine	City of Vacaville
Anthony Intintoli	City of Vallejo

STA TRANSIT COMMITTEE

Mary Ann Courville, Committee Chair	City of Dixon
Anthony Intintoli	City of Vallejo
Karin MacMillan	City of Fairfield
Steve Messina	City of Benicia

TECHNICAL ADVISORY COMMITTEE

Dan Schiada	City of Benicia
Janet Koster	City of Dixon
Charlie Beck	City of Fairfield
Bob Meleg	City of Rio Vista
Paul Wiese	Solano County
Gary Cullen	City of Suisun City
Dale Pfeiffer	City of Vacaville
Mark Akaba	City of Vallejo

SOLANO LINKS TRANSIT CONSORTIUM

Rob Sousa	City of Benicia
Jeff Matheson	City of Dixon
Kevin Daughton	City of Fairfield
Trent Fry	City of Vacaville
John Harris and Pam Belchamber	City of Vallejo

PROJECT DEVELOPMENT TEAM

Daryl Halls	Solano Transportation Authority
Dan Christians	Solano Transportation Authority
Mike Duncan	Solano Transportation Authority
Jennifer Tongson	Solano Transportation Authority
Erik Alm	Caltrans
Roni Boukhalil	Caltrans
Nicolas Endrawos	Caltrans
Betsy Joseph	Caltrans
Mike Kerns	Caltrans
Wingate Lew	Caltrans
Cameron Oakes	Caltrans
Katie Yim	Caltrans
Dale Dennis	PDMG
Peter Martin	Wilbur Smith Associates
Alison Kirk	Wilbur Smith Associates
Hans Korve	Korve Engineering
Bill Burton	Korve Engineering

WORKING GROUP

Daryl Halls	Solano Transportation Authority
Dan Christians	Solano Transportation Authority
Mike Duncan	Solano Transportation Authority
Robert Guerrero	Solano Transportation Authority
Dale Dennis	PDMG
Gary Leach	City of Vallejo
Dale Pfeiffer	City of Vacaville
Gian Aggarwal	City of Vacaville
Morris Barr	City of Fairfield
Dan Schiada	City of Benicia
Ron Tribbett	City of Dixon
Paul Wiese	Solano County
Hans Korve	Korve Engineering
Bill Burton	Korve Engineering
Peter Martin	Wilbur Smith Associates
Alison Kirk	Wilbur Smith Associates

This study was funded by a Caltrans Planning and Congestion Relief Program (PCRP) grant, as part of the Traffic Congestion Relief Program.

Final Report was adopted by the Solano Transportation Authority Board of Directors on July 14, 2004.

TABLE OF CONTENTS

	<u>Page</u>
Executive Summary	
Background	I
Existing Intercity Bus Services	I
Existing Park and Ride and Transit Center Facilities	II
Existing Rail Services	II
Corridor Express Bus Service Plan	II
Highway Interface Improvements	IX
Park and Ride Improvements	X
Bus Equipment and Support Facility Plan	XI
Next Steps	XIV
 1.0 Introduction	
Background	1-1
Purpose and Scope for Corridor Transit Improvements	1-2
Express Bus Planning Issues	1-12
Report Organization	1-15
 2.0 Existing Intercity Bus Services	
Background	2-1
Vallejo Transit Bus Service	2-1
Fairfield-Suisun Transit	2-7
Benicia Transit (Route 1)	2-11
VINE Transit (Napa County)	2-14
YoloBus	2-14
Funding	2-14
Summary	2-16
 3.0 Existing Park & Ride and Transit Center Facilities	
Corridor Overview	3-1
Interstate 80 Corridor	3-3
Interstate 680 Corridor	3-14
Interstate 780 Corridor	3-16
Park & Ride Use Profiles	3-16
Summary of Access Challenges for Intercity Bus Services	3-17

4.0 Corridor Travel Demands

Background	4-1
Journey-to-Work Travel Market – Year 2000	4-1
Existing Express Bus Ridership	4-4
Major Activity Centers	4-9
Projected Growth in Travel	4-12
Traffic and Parking Conditions	4-16
Patronage Objectives	4-16
Park & Ride Demand Estimates	4-17

5.0 Corridor Express Bus Service Plan

Background	5-1
Intercity Express Bus Service Plan Principles	5-1
The Service Vision	5-4
Patronage	5-12
Costs	5-12
Summary	5-12

6.0 Highway Interface Element

Background	6-1
Planning Principles for Improved Access to Median HOV Lanes	6-1
Local Direct Access to Center Median HOV Facilities	6-3
On Line Bus Stops	6-5
Park and Ride Siting and Planning Principles	6-10
Summary	6-36

7.0 Implementation Strategy

Background	7-1
Funding Resources	7-1
Service Improvement Phasing	7-4
Partnered Funded Service	7-6
Bus Equipment and Support Facility Plan	7-6
Service and Passenger Support Facilities Plan	7-8
Estimated Costs and Funding Strategy	7-9
Supportive Policies	7-12
Next Steps	7-13

FIGURES

Figure ES-1 Service Vision Plan Overview.....	III
Figure ES-2 El Cerrito del Norte BART Bus Service.....	V
Figure ES-3 Vallejo Ferry Bus Service.....	VI
Figure ES-4 Pleasant Hill BART Bus Service.....	VIII
Figure 1-1 Key Regional Highway, Passenger Rail & Ferry Transportation Linkages for Solano County	1-3
Figure 1-2 Existing Weekday Traffic Congestion Queues	1-5
Figure 1-3 Transit Corridor Study Segments 1-7.....	1-7
Figure 1-4 Mid Term Projects in Order of Priority	1-8
Figure 1-5 Long Term Projects in Priority Order	1-9
Figure 1-6 Corridor HOV Lanes	1-11
Figure 1-7 2010 Weekday Traffic Congestion Queues with Mid Term Projects	1-13
Figure 1-8 2030 Weekday Traffic Congestion Queues with Mid Term Projects	1-14
Figure 2-1 Existing Intercity Transit Service.....	2-2
Figure 2-2 Vallejo Transit Passengers per Hour	2-7
Figure 2-3 FST Intercity Passengers per Hour.....	2-11
Figure 2-4 Benicia Transit Service	2-13
Figure 2-5 Solano County Average Passengers per Bus Hour	2-17
Figure 2-6 Solano County Transit Costs by Route	2-17
Figure 2-7 Solano County Average Weekday Passenger Boardings	2-18
Figure 2-8 Solano County Farebox Ratio by Route.....	2-18
Figure 2-9 Solano County Subsidy per Passenger	2-19
Figure 3-1 Major Existing Park & Ride and Transit Centers	3-2
Figure 3-2 Phase 2 of the Fairfield Transportation Center	3-9
Figure 3-3 Bella Vista Park & Ride Lot Proposed Site Plan	3-12
Figure 3-4 Leisure Town Road Park & Ride Lot Site Plan	3-13
Figure 3-5 Benicia Intermodal Transportation Station Conceptual Site Plan.....	3-15
Figure 4-1 Solano County Employers with 200+ Employees.....	4-11
Figure 4-2 Projected Year 2030 Employment Distribution for Solano County Residents	4-14

Figure 4-3	Projected Year 2030 Residential Distribution for Solano County Residents.....	4-14
Figure 4-4	Where Solano County Workers Reside, 2000 Census	4-15
Figure 4-5	Where Solano County Workers Reside, ABAG 2020 Projection	4-16
Figure 4-6	Transit Capture	4-17
Figure 5-1	CTP 2025 Vision Intercity Bus Service Plan	5-3
Figure 5-2	Service Vision Plan Overview	5-5
Figure 5-3	El Cerrito del Norte BART Bus Service	5-6
Figure 5-4	Vallejo Ferry Bus Service	5-9
Figure 5-5	Pleasant Hill BART Bus Service.....	5-11
Figure 6-1	Proposed Direct HOV Access	6-4
Figure 6-2	Curtola Direct HOV Ramp.....	6-7
Figure 6-3	Turner Road Park & Ride Lot Sites	6-9
Figure 6-4	Fairfield Transportation Center	6-11
Figure 6-5	Transportation Hubs	6-13
Figure 6-6	Proposed Curtola Park & Ride Parking Structure/Transportation Center.....	6-14
Figure 6-7	Hiddenbrooke Park & Ride Lot Site	6-16
Figure 6-8	Red Top Road Park & Ride Lot Site.....	6-18
Figure 6-9	Red Top Road Park & Ride Facility Concept	6-19
Figure 6-10	Red Top Road Park & Ride Lot Illustrative Site Development Concept.....	6-20
Figure 6-11	Potential Abernathy Road Park & Ride Lot Site Opportunity	6-21
Figure 6-12	North Texas Park & Ride Lot Site	6-23
Figure 6-13	North Texas Park & Ride Lot Illustrative Development Concept	6-24
Figure 6-14	Bella Vista Park & Ride Lot Site	6-25
Figure 6-15	West A Street Park & Ride Lot Site.....	6-26
Figure 6-16	North First Street Park & Ride Lot Site	6-27
Figure 6-17	Gold Hill Road Park & Ride Lot Site	6-28
Figure 6-18	Gold Hill Road Park & Ride Lot Illustrative Development Concept	6-31
Figure 6-19	Vista Point Park & Ride Lot Site	6-32
Figure 6-20	West Military and Southampton Park & Ride Lot Site.....	6-33
Figure 6-21	Columbus Parkway and Rose Drive Park & Ride Lot Site.....	6-34
Figure 6-22	Columbus Parkway Park & Ride Lot Illustrative Site Development Concept	6-35

TABLES

Table ES-1	Summary of Phasing Plan	IX
Table ES-2	Service and Passenger Support Facilities Plan	XI
Table ES-3	Projected Financial Features	XIII
Table 1-1	Projected Growth in Solano County, 2000-2025	1-2
Table 2-1	Route 80 Service/Performance Characteristics	2-3
Table 2-2	Route 85 Service/Performance Characteristics	2-4
Table 2-3	Route 90 Service/Performance Characteristics	2-4
Table 2-4	Route 91 Service/Performance Characteristics	2-5
Table 2-5	Vallejo Transit Matrix of Adult Fares	2-6
Table 2-6	Route 20 Service/Performance Characteristics	2-8
Table 2-7	Route 30 Service/Performance Characteristics	2-9
Table 2-8	Route 40 Service/Performance Characteristics	2-9
Table 2-9	FST Performance Measures	2-10
Table 2-10	FST Fare Matrix of Adult Fares	2-10
Table 2-11	Benicia Transit Route 1 Service/Performance Characteristics	2-14
Table 2-12	Solano County Intercity Bus Service FY 2003-04 Funding	2-15
Table 2-13	Solano County TDA Shares Average Annual Allocations, Based on FY04 Funding Levels	2-15
Table 2-14	Solano County Intercity Bus Route Service/Performance Characteristics	2-20
Table 4-1	1980-2000 Change in Population	4-2
Table 4-2	Change in Mode of Transportation for the Journey-To-Work, Solano County 1980-2000	4-3
Table 4-3	Solano County Residents County of Work	4-3
Table 4-4	Residents of Other Counties Commuting to Solano	4-4
Table 4-5	Summary of Corridor Bus Usage	4-5
Table 4-6	Origin/Destination Data for FST	4-7
Table 4-7	Benicia Transit Work, School & College Trip Distribution	4-8
Table 4-8	Top Five Solano County Employers with Centralized Employees	4-9
Table 4-9	Bus and Rideshare and Park and Ride Demand Forecast	4-19

Table 4-10	Park and Ride Origin Destination Forecast	4-20
Table 7-1	Solano County Intercity Bus Services Funding FY 2003-04	7-2
Table 7-2	Solano County TDA Shares Average Annual Allocations, Based on FY04 Funding Levels.....	7-3
Table 7-3	Solano County FY 2003-04 TDA Allocations	7-3
Table 7-4	Bus Fleet Estimates.....	7-6
Table 7-5	Service and Passenger Support Facilities Phasing Plan	7-8
Table 7-6	Projected Operations and Maintenance Costs and Revenues	7-11

Executive Summary

STA I-80/I-680/I-780 TRANSIT CORRIDOR STUDY

BACKGROUND

The intercity express bus services that are oriented to the I-80, I-680 and I-780 transportation corridors in Solano County comprise a critical element of the County's multimodal transportation services. This report provides analysis of existing services and demand, and implementation plans for the County's intercity express bus services and auxiliary facility improvements, such as direct access ramps to center median HOV lanes, park and ride and transit center demand and site planning. As identified in the Solano Comprehensive Transportation Plan (CTP) Intercity Transit Element, Solano County has a need to develop a short and long range multi-modal transportation plan for the I-80/I-680/I-780 Transit Corridor to accommodate projected growth. Without added investment in intercity transit services, as the County grows regional roadways will become increasingly congested and residents will have no alternatives but to travel by single occupancy vehicles. This will adversely impact the quality of life and economic vitality of Solano County.

Bus service quality and efficiency along with patronage are all impacted by congestion. Under current traffic conditions, there are hot spots of peak period congestion on Solano County's freeways. Without investment in the transportation infrastructure, this congestion will worsen and spread. In the AM peak period, congestion occurs in the following locations: I-80 westbound from east of SR-12 East to the SR-12 West exit and westbound from I-780 to the Carquinez Bridge; I-680 southbound to the Benicia Bridge; and I-780 eastbound leading up to the Benicia Bridge. In the PM peak period, congestion occurs in the following locations: I-680 northbound and I-80 eastbound before the I-80/680 merge; and I-80 eastbound from SR-12 East to North Texas. There are no current High Occupancy Vehicle (HOV) lanes in Solano County; these buses are simply delayed along with general traffic on these segments at peak commute times.

EXISTING INTERCITY BUS SERVICES

Eight public intercity bus routes are currently operated by Solano County transit agencies. One route (Route 30) extends to Davis and Sacramento, two routes (Routes 40 and Benicia Route 1) connect to the Pleasant Hill BART Station, two routes (Route 85 and Benicia Route 1) connect to the Vallejo Ferry Terminal and three routes (Routes 80, 90, and 91) connect to the El Cerrito del Norte BART Station. Three of the eight routes operate on Saturdays, but no intercity bus service is provided on Sundays. Together the eight regional bus routes serve 3,540 weekday passenger trips. Twenty-nine buses are required to provide the service. Annually, the regional intercity bus services required a subsidy of \$2.7 million in Fiscal Year 02-03.

EXISTING PARK AND RIDE AND TRANSIT CENTER FACILITIES

Solano County has a very high rate of ridesharing relative to other Bay Area counties. According to RIDES, the San Francisco Bay Area's Regional Rideshare Program, 24% of Solano County commuters rideshare for their journey-to-work trips, compared to 17% for the entire Bay Area Region. Consideration of rideshare and transit access needs together is important as both types of commuters share park and ride facilities.

At present there are a dozen significant park and ride parking facilities in Solano County. These facilities are in addition to park and ride facilities used to support the BayLink ferry and passenger rail services. Approximately 1,700 park and ride spaces are currently provided in the I-80/680/780 corridor. These are well used and often at capacity, with the exception of newer lots in eastern Vacaville and in Dixon.

Key problem areas include:

- Curtola Park and Ride lot has grossly inadequate amount of parking to accommodate demands by rideshare and bus riders. Circulation for westbound buses is very indirect.
- Fairfield Transportation Center (FTC) needs more capacity to accommodate current and future demands and express bus access to the transit center needs to be improved.

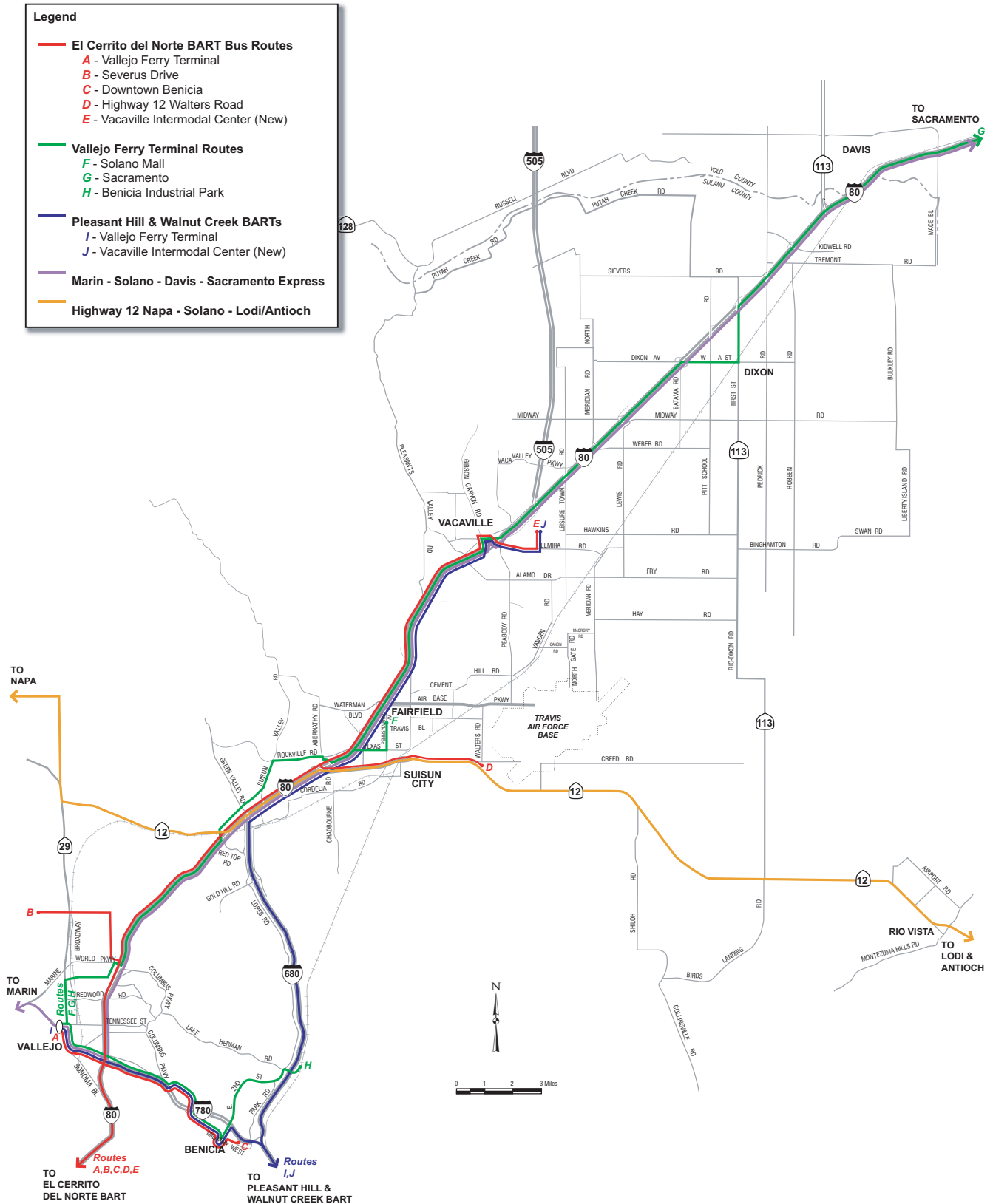
EXISTING RAIL SERVICES

As detailed in the Solano Comprehensive Transportation Plan Intercity Transit Element (the "Vision Plan"), current passenger rail services link Solano County to the Bay Area and Sacramento Region. While long distance daily Amtrak trains do not stop in Solano County, in 1991 the Capitol Corridor introduced three daily trains. As of December 2003, service was up to twelve daily round trips; service to and from Suisun City operates approximately every 1-1½ hours throughout the day. In Fiscal Year 02-03, there were approximately 98,000 annual boardings and alightings at the Suisun City Station.

Predominate travel to and from Suisun City on the Capitol Trains is between Sacramento and Suisun City, and between Suisun City and Emeryville (with a bus connection to San Francisco). Oakland and Martinez also have significant traffic levels for Suisun passengers. Capitol Corridor management's objective is to ultimately provide hourly service all day, with 16 daily round trips. Commuter rail service is also being actively pursued by the Solano Transportation Authority, and adjoining counties (i.e. Contra Costa, Yolo, Sacramento and Placer Counties).

CORRIDOR EXPRESS BUS SERVICE PLAN

The Vision Plan consists of a total of eleven bus routes focusing on three key regional transportation portals – El Cerrito del Norte BART in Contra Costa County, the Vallejo Ferry Terminal and the Pleasant Hill BART station in Contra Costa County. Operationally the strategic plan is to use the FTC as the schedule coordination point for intercity services. Figure ES-1 provides an overview of the service.



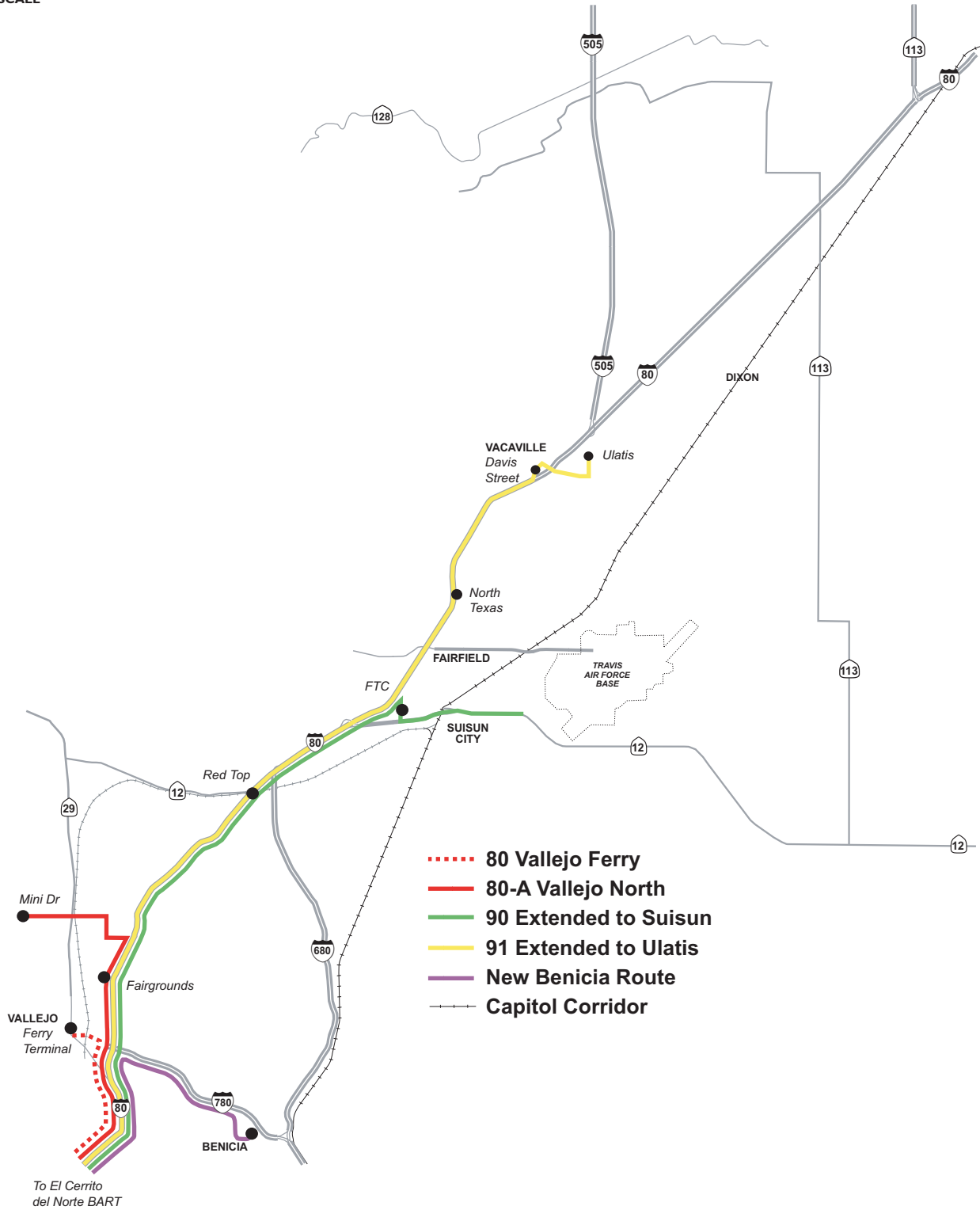
El Cerrito del Norte BART Station Routes (Figure ES-2)

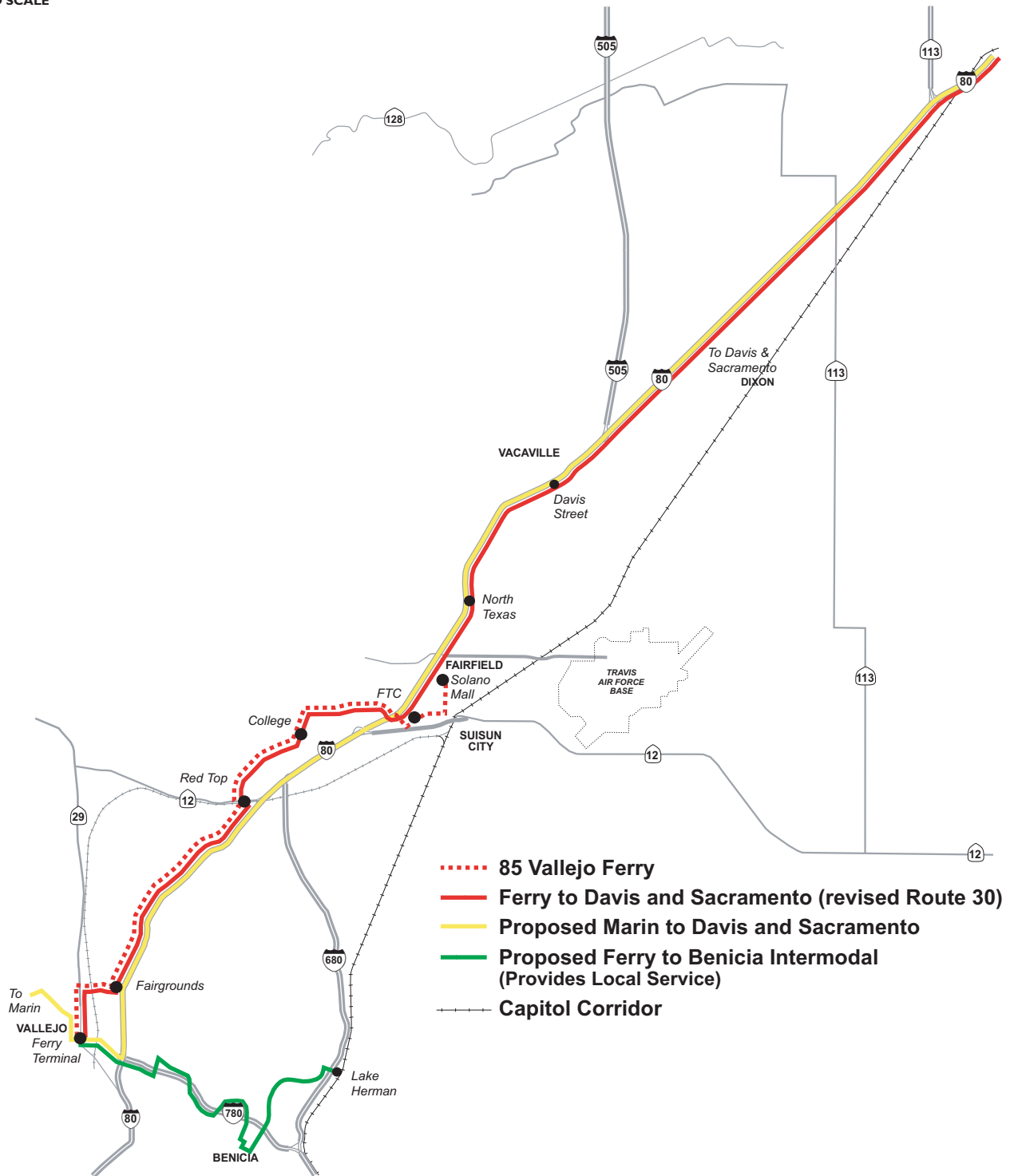
Five bus routes are envisioned and proposed. Route 80 is unchanged from the current successful bus routes, except in terms of more frequent service. An extension of some bus trips on this line to directly serve Benicia is proposed. Route 80A is similar to the current northern extension of Route 80 to Severus and Mini Drive. Route 90 is an extension of current Route 90 to better serve Suisun City residents. Route 91 is an extension of the current Route 91 to better serve eastern Vacaville. The new Benicia Route would connect downtown Benicia to the El Cerrito del Norte BART Station.

Vallejo Ferry Terminal Routes (Figure ES-3)

Four routes are proposed to feed the Vallejo Ferry Terminal and Downtown Vallejo. Route 85 is similar to the current Route 85, except for its routing near Solano Community College. Route 30 serving Sacramento would be extended to the Vallejo Ferry Terminal via Route 85's path. A new bus route is proposed to operate as the super express along I-80 between Sacramento and Vallejo. This third bus route would continue west connecting with Golden Gate Transit and the planned Sonoma Marin Rail transit system in the North Bay. The fourth proposed bus route would connect along the I-780 corridor to the Benicia Industrial Park near Lake Herman Road.







Pleasant Hill BART Station Routes (Figure ES-4)

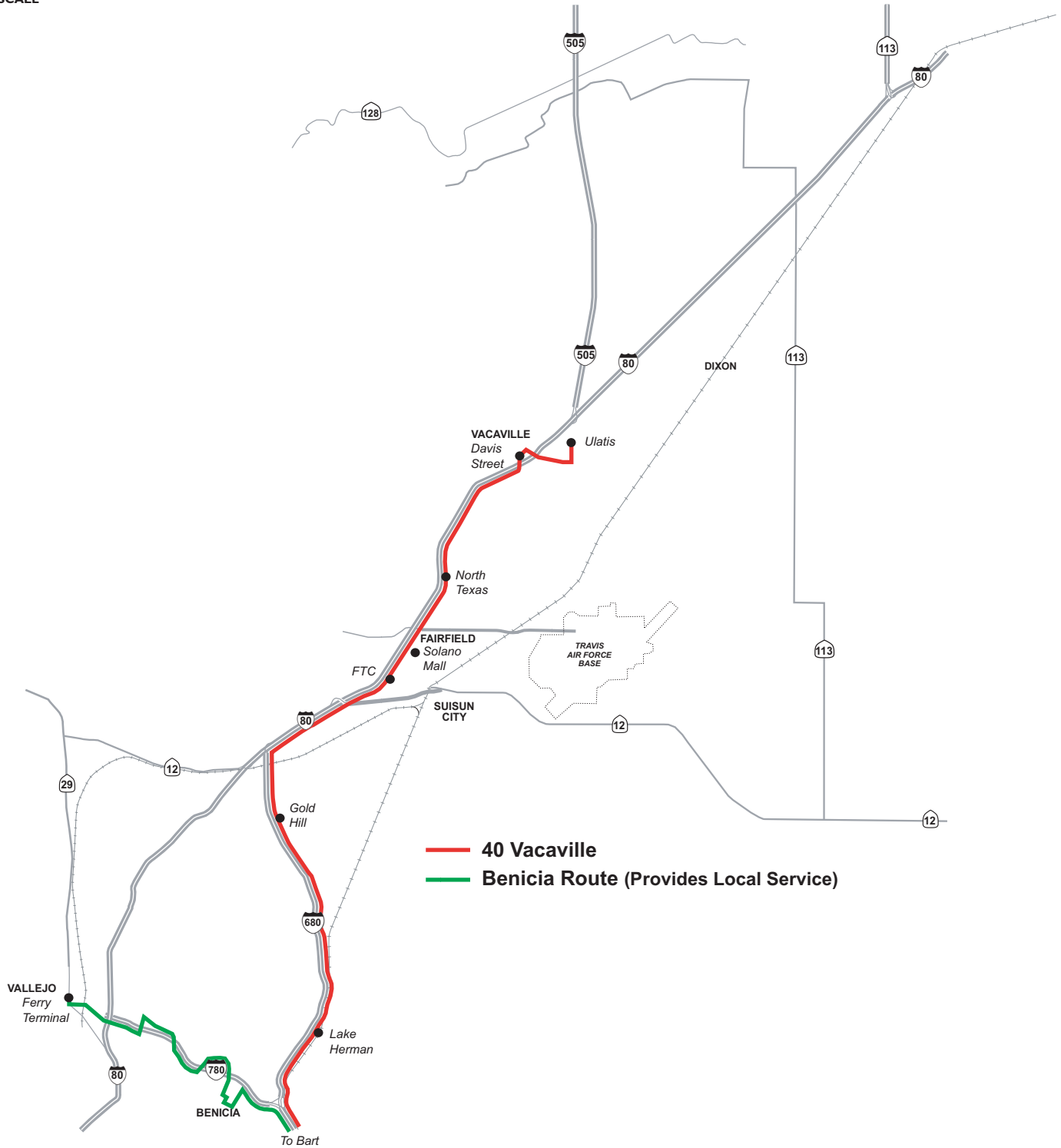
Two intercity bus routes are proposed to link with the Pleasant Hill BART Station. Route 40 is similar to the present Route 40 service, but includes an extension to better serve eastern Vacaville. The Benicia intercity route is similar to the current Benicia Route 1, except it adds some local service to allow better passenger access. Assessment of the best BART station (Concord, Pleasant Hill or Walnut Creek) to terminate Solano service concluded that the Pleasant Hill station is the best link. Extension of some bus trips to Walnut Creek BART also appears desirable as long as it does not lose the ability to get more than one peak direction run per bus during commute peaks. On Saturdays and Sundays (**new service**) a stop at Willow Pass Road should also be considered.

Phasing of Service Improvements

The phased implementation of the intercity express bus service plan will depend on many factors including: the evolving travel demands; competitiveness of other travel modes relative to express bus services; financial resources available to subsidize service; and the ability to achieve at least a 20 percent farebox recovery ratio target. The recommended phasing plan is constructed to: address current service weaknesses as a first priority, followed by exploitation of new HOV facility opportunities and market growth.

2005 Service Improvements – The strongest express bus markets are those that are oriented to the El Cerrito del Norte BART station and the most underserved market is judged to be the Sacramento commute market. To build upon the current market strength and to address the underserved Solano to Sacramento commute market the following service changes are proposed:

1. Establish a new service directly linking Benicia with the El Cerrito del Norte BART, making an intermediate stop at the Curtola Park and Ride lot. This service would operate in the peak direction only during peak commute hours. A 30 minute frequency is proposed. Benicia's Short Range Transit Plan Update, which will be completed during FY 2004/05, will further refine features of this service and implementation needs.
2. Modify the current Route 90/91 bus services to alternate Route 90 and Route 91 bus trips during peak commutes (each at 30 minute frequency providing a combined 15 minute frequencies from the FTC to El Cerrito del Norte BART) and operate the midday hourly service to Davis Street in Vacaville (Route 91). As most of the peak period bus trips will only be able to make one peak direction trip, seek interline opportunities for shared use of these buses on the Route 80 and Benicia to Pleasant Hill BART station bus routes.
3. Establish a new super express service ("Rapid Bus") from the Vallejo Ferry Terminal to Sacramento making intermediate stops at Curtola, FTC, Vacaville (Davis Street) and Dixon (Pitt School Road).
4. Terminate Route 30 at the Davis Train Station after serving UC Davis, rather than continuing to Sacramento (the above super express would cover the Sacramento market).



2010 Service Improvements – By 2010 the HOV lanes on I-80 in Contra Costa County from SR-4 in Contra Costa County to east of Magazine Street in Vallejo should be open and hopefully the Curtola and FTC Park and Ride capacity deficiencies will be solved. These improvements should provide the foundation for increased patronage demand for El Cerrito del Norte BART express bus services. The following bus service improvements are proposed:

1. Route 20 would be replaced by upgraded midday and commute period service along I-80 with stops in Davis, Dixon, Vacaville and Fairfield.
2. Hourly midday service would be established on Route 40 to complement its 30 minute frequency commute service.
3. Commute period frequency on Route 80 would be increased from the current ten minute headways to 7 minute headways in order to attract and accommodate increased ridership.

2015 and Later Service Improvements - Service improvement in subsequent years will continually improve service frequencies, working towards 15 peak commute service and 30 minute off peak service frequencies. The increased service will attract increased ridership. Sunday service would also be implemented on Route 80, the Benicia to Pleasant Hill BART route and on an extended Route 30 service connecting to the Vallejo Ferry Terminal.

Table ES-1 summarizes the phasing plan's implications on fleet requirements.

Table ES-1 SUMMARY OF PHASING PLAN		
Phase	Peak Hour Buses	Total Including Spares
Current (2003)	29	34
2005	36	41
2010	46	53
2015	53	61
2020	59	68
2025	68	78
2030	77	89
Future	100	115

HIGHWAY INTERFACE IMPROVEMENTS

Sections of I-80 and I-680 are currently congested and congestion on I-80 is forecast to continue into the future even with major highway improvements. The planned HOV lanes located in the median section of the freeway I-80 through Vallejo and I-80 from SR-12 West to Air Base Parkway will significantly improve travel speeds for buses during peak commute periods, but the buses will be challenged to safely enter and exit these lanes at several key locations. For reduced travel times, improved safety and improved schedule reliability, a few access improvements are proposed.

Direct Access HOV Ramps

Center median HOV facilities are recommended from Curtola Parkway to I-80 westbound and from a future Turner Road overcrossing to and from I-80 west in Vallejo. Direct HOV connector ramps are also recommended to and from I-80 east to and from I-680 south.

Fairfield Transportation Center Access

Recommended near term access improvements to the FTC include:

1. Modification of the traffic control for the eastbound I-80 off ramp and Auto Mall Drive to a three way STOP control in order to reduce delays for buses using this off ramp;
2. Adding a second westbound approach lane on Oliver Road at the West Texas Street intersection at I-80 in order to allow buses to make a left turn onto West Texas from the new through designated lane. Only buses would be allowed to make this dual left movement from the through traffic lane; and
3. Conversion of the eastbound off ramp “free” right turn movement to a signal in order to control right turns and to provide space to allow a direct entry driveway for buses from West Texas Street into the transit island.

PARK AND RIDE IMPROVEMENTS

Recommended improvements to these facilities include:

- Capacity expansion at the Curtola Parkway Park and Ride lot (Vallejo);
- Development of a new I-80 park and ride lot at Turner Road (Vallejo);
- Improvement of the I-80 Hiddenbrooke Parkway Park and Ride lot (Vallejo);
- Development of a new park and ride facility at Red Top Road at I-80 to replace the Green Valley Road Park and Ride lot (Fairfield);
- Expansion of the Fairfield Transportation Center facility at West Texas Street and I-80 (Fairfield);
- Development of a new I-80 park and ride lot at North Texas Street (Fairfield);
- Development of the I-80 Bella Vista Park and Ride lot (Vacaville);
- Development of I-80 park and ride lots at North First Street and at West A Street (Dixon);
- Development of a I-680 park and ride lot at Gold Hill Road (Fairfield);
- Development of I-780 park and ride facilities at Vista Point and the Benicia Intermodal Center (Benicia);
- Development of a new park and ride lot at West Military and Southampton (Benicia) serving the I-780 corridor;
- Development of an Intermodal Transportation Center in Vacaville (Vacaville) serving the I-80 corridor; and
- Development of a new park and ride lot at Columbus Parkway and Rose Drive (Benicia) serving the I-780 corridor.

BUS EQUIPMENT AND SUPPORT FACILITY PLAN

Expansion of intercity express bus services will require enlargement of the bus fleet used to provide the service. It will also require expanded capacity to maintain and park these buses overnight. The Vallejo Transit garage will need to be expanded and/or relocated. The Fairfield Suisun Transit garage should be relocated to a larger dedicated facility. Where best to develop one or more new support facilities is largely determined by:

- The optimal vicinity for a bus facility is one that minimizes total deadhead costs; and
- The optimal site is one that has good access to regional highways and that has compatible land uses surrounding it (industrial and even office park campuses – residential uses are incompatible).

Service and Passenger Support Facilities Plan

The priority, project dependency and resultant phasing plan for these investments are summarized in Table ES-2. Note that Near Term includes projects that are funded; mid term projects are programmed for the next 5 to 20 years; and long term projects are those programmed for 20 years or farther out.

Table ES-2 SERVICE AND PASSENGER SUPPORT FACILITIES PHASING PLAN				
Project Phase	Project Description	City	Priority	Dependence
Near Term	Bella Vista P&R	Vacaville	Funded	None
Near Term	FTC Surface Lot	Fairfield	Funded	None
Near Term	Red Top P&R Ph #1	Fairfield	Funded	Pre Segment #1
Mid Term	Curtola P&R	Vallejo	1	Const. Staging
Mid Term	FTC Access Improv. & Garage	Fairfield	2	Const. Staging
Mid Term	Red Top Rd Ph #2	Fairfield	3	None
Mid Term	Gold Hill P&R	Fairfield	4	None
Mid Term	Vista Point P&R	Benicia	5	Benicia Intermodal
Mid Term	Benicia Intermodal	Benicia	6	Rail Service
Mid Term	West Military P&R	Benicia	7	None
Mid Term	Hiddenbrooke P&R	Vallejo	8	None
Mid Term	North Texas P&R	Fairfield	9	Manuel Campos Ext
Mid Term	Columbus Parkway P&R	Benicia	10	Pre Curtola
Mid Term	North First Street P&R	Dixon	11	None
Long Term	Turner Road P&R	Vallejo	12	Fairgrounds Develop
Long Term	Turner Road Direct HOV Ramp	Vallejo	13	Turner Overcrossing
Long Term	Vacaville Intermodal Center	Vacaville	14	None
Long Term	Curtola Direct HOV Connector	Vallejo	15	None
Long Term	West A Street P&R	Dixon	16	None
Long Term	I-80 to I-680 Direct HOV Ramp	Fairfield	17	None
Long Term	Walters Road P&R	Suisun	18	Jepson Parkway

The Near Term list of projects includes those already in the pipeline. It includes the Bella Vista Park and Ride Lot and the Fairfield Transportation Center Park and Ride Lot as well as Phase 1 of the Red Top Road Park and Ride Lot. Full build out of the 400 plus Red Top Road lot is not immediately needed and can occur as demand grows in the future. This approach provides the maximum flexibility to adapt the site to serve future Napa-Solano commuter rail services as well integration of complementary retail joint use on the site.

The eleven Mid Term projects are high priority projects requiring some lead time and or are dependent on other projects for their completion. The Curtola parking garage, for example, will require an interim replacement lot identified to accommodate demands during construction. Construction of a garage at the FTC site will also require similar lead time to develop. The Columbus, the Southampton and Gold Hill Park and Ride Lots require right of way negotiations. It is important to tie these three sites down, while they are still available. Development of the Columbus/Rose Park and Ride site hopefully could help to minimize Curtola demands generated in Benicia during the Curtola's construction. Development of a construction staging plan for the Curtola garage needs to be given a high priority. The North Texas Road Park and Ride Lot, for example, is linked to the timing of the Manuel Campos Parkway extension project. If development occurs very soon at the North First Street Park and Ride location, the phasing of this project should be accelerated to integrate into the private development project. Both the Hiddenbrooke and Vista Point park and ride sites are lower priority, but also appear simple to develop.

Estimated Costs

Capital costs and annually recurring operating costs for the proposed plan will be significant. These costs are described in Table ES-3.

Fleet Costs - Cost estimates for the fleet were developed using a unit cost of \$400,000 per bus and a replacement cycle of 15 years. By 2030, approximately 150 buses would need to be purchased. The total cost of these buses is estimated to be \$60 million in 2003 dollars.

Maintenance Facility Expansion Costs - Allowing \$125,000 per net added buses in the fleet for expansion of maintenance facilities yields a total investment of \$10 million needed for this important support system. These costs could vary significantly due to land acquisition cost and to cost efficiencies associated with expanded facilities needed to support expansion of local bus services.

Transit Center and Park and Ride Access Improvement Costs – As reported in Chapter 6, cost to provide direct HOV access ramps at Curtola Parkway to I-80, to and from I-80 west at Turner Road, and I-680/I-80 HOV ramps are estimated at \$45 million, \$38 million, and \$25 million respectively. Access improvements at the Fairfield Transportation Center are estimated to cost \$1 million. Together the local access-improvement costs total \$84 million.

Transit Center and Park and Ride Improvement Costs – The Near Term projects have already been funded. Mid Term projects are estimated to cost \$33 million. Long Term projects are estimated to cost \$22 million. Together these improvements cost a total of \$55 million.

Bus Operating Cost and Subsidy Requirements – Annual operating and maintenance costs (O&M costs) are projected to increase from today's level of \$4.6 million to \$15.0 million by 2030 with the build out of the 100 bus service plan resulting in an annual cost of \$19.0 million (in 2003 dollars). See Table ES-3 below for specific information. Note that the farebox ratio decreases as service expands, because patronage increases, but not proportionately with service. However, the stated objective (in Chapter 5, Corridor Express Bus Service Plan) of a 20% farebox recovery ratio continues to be met through year 2030.

Table ES-3 PROJECTED FINANCIAL FEATURES				
Year	O&M Cost	Revenue	Total Subsidy	Farebox Ratio
2003	\$4,640,000	\$1,922,000	\$2,718,000	0.41
2005	\$5,515,000	\$2,337,000	\$3,278,000	0.41
2010	\$7,145,000	\$2,748,000	\$4,397,000	0.38
2015	\$9,920,000	\$3,515,000	\$6,405,000	0.35
2020	\$11,240,000	\$3,877,000	\$7,364,000	0.34
2025	\$12,555,000	\$4,194,000	\$8,361,000	0.33
2030	\$15,010,000	\$4,713,000	\$10,297,000	0.31
Future	\$19,025,000	\$5,466,000	\$13,560,000	0.29

Partnership funding with Golden Gate Transit, the VINE and San Joaquin County should be pursued for intercity bus services that connect with these jurisdictions.

In addition, on March 2, 2004, Bay Area voters will decide on Regional Measure (RM 2) that would provide a \$1 toll increase (from \$2 to \$3) on seven state owned bridges including the Carquinez and the Benicia/Martinez bridges beginning on July 1, 2004. The toll increase would raise approximately \$125 million annually to address congestion relief and enhance convenience and reliability of the Bay Areas public transit system by funding a specific list of regional transportation projects.

The STA Board, its Transit Consortium and Technical Advisory Committee, Bay Area Congestion Management Agencies and MTC's Bay Area Toll Authority (BATA) will work together to prioritize and award funding for the Solano County and other regional capital projects and transit services. The recommendations of the I-80/680/780 Transit Corridor Study should be used as the basis to prioritize and implement the Solano County projects.

Supportive Policies

A number of policy measures would complement the intercity express bus service and facilities improvements. These include land use policies, marketing strategies and additional highway coordination measures.

Land Use Policies – Intercity express bus services desirably should connect Solano County residents to their job sites (and other destinations) in other counties and also connect Solano County job sites to labor catchment areas outside the county. Focusing future office parks and industrial parks to locate along the intercity bus corridors and strengthening requirements for pedestrian systems would allow intercity buses to better serve job sites in the County.

Marketing Strategies – The plan to increase intercity express bus services in the corridor will increasingly result in Vallejo and FST buses providing complementary services. Regardless of institutional definitions over operating responsibilities, the consumer (rider) would benefit if the I-80/I-680/I-780 transit services were all labeled the same or in a similar manner.

Real-Time Passenger Information System – Implementation of real time passenger information system for the intercity express bus services would help minimize anxiety about bus schedules. Real time information systems advise riders of the actual time buses are scheduled to arrive at the stop based on satellite location technology.

Additional Highway Coordination Measures – Four additional highway coordination measures are recommended:

1. Install ITS changeable message signs at key commute decision points advising motorists if parking spaces are still available at park and ride lots;
2. Ensure that future interchange overpass construction reflects more than minimal pedestrian needs and also accommodates bicycles;
3. Consider bus traffic signal timing preferences at selected high volume intersections – FTC signals (Fairfield), Davis Street Transit Center signals (Vacaville) and Curtola and Lemon Street signal (Vallejo); and
4. Caltrans is understood not to favor continuous shoulder use, but might accept forced turn for buses using shoulders. Any newly constructed shoulders will be to full highway design standards, and short segments might lend themselves to queue jumps for buses. Queue jump shoulder use should be further explored with Caltrans.

NEXT STEPS

Ten actions are recommended as “next steps” towards implementation.

- Incorporate I-80/I-680/I-780 Transit Corridor Study’s Plan into the Update of the Solano Comprehensive Transportation Plan;
- Seek to develop funding and implementation plans for the first five year projects (with particular attention to right of way protection for park and ride facilities);
- Develop an annual and multi-year funding agreement MOU for intercity transit services among the transit operators;
- Fund and conduct a Transit Consolidation Study, which includes bus maintenance and storage yard issues;

- Seek operating funding through Regional Measure 2 and local transportation measure to implement elements of the Plan;
- Work with Caltrans and Contra Costa County to provide a continuous eastbound HOV facility on I-680 by eliminating the short gap approaching the Carquinez Bridge;
- Work with Caltrans to provide a southbound HOV approach to the Benicia Bridge, on I-680 and on the bridge;
- Coordinate with BART to upgrade the El Cerrito del Norte shelter for Vallejo Transit passengers, including provision of real time passenger information at the shelter;
- Fund and initiate a transit corridor study for SR-12 (in coordination with Caltrans District 10, District 4, Napa and San Joaquin Counties); and
- Coordinate bus service with planned HOV lanes on I-80 through Vallejo and I-80 through Fairfield and Vacaville.

Chapter 1

INTRODUCTION

BACKGROUND

The intercity express bus services that are oriented to the I-80, I-680 and I-780 transportation corridors in Solano County comprise a critical element of the County's multimodal transportation services. The recently completed Intercity Bus Element of the Solano County Comprehensive Transportation Plan outlines a multimodal vision of intercity express bus services, passenger rail service and facilities improvements, paratransit improvements, ferry improvements and support infrastructure improvements over the next 20 year period. Implementation of the Intercity Bus Element along the I-80, I-680 and I-780 corridors is the key focus of this current planning effort. Figure 1-1 shows the key regional highway, passenger rail and ferry transportation linkages for Solano County.

A parallel planning effort focuses on highway infrastructure improvements, and examines the addition of center median HOV lanes, auxiliary lanes, freeway interchange improvements and other measures to improve traffic flow, enhance safety and encourage rideshare travel. Safe and ready access to the center median HOV lanes, as well as convenient park and ride facilities will be very important to efficient express bus operations, as well as to the patronage success of express bus services.

In addition, as detailed in the Solano Comprehensive Transportation Plan Intercity Transit Element, current passenger rail services link Solano County to the Bay Area and Sacramento Region. While long distance daily Amtrak trains do not stop in Solano County, in 1991 the Capitol Corridor introduced three daily trains. As of December 2003, service was up to twelve daily round trips; service to and from Suisun City operates approximately every 1 – 1½ hours throughout the day. In Fiscal Year 02-03, there were about 98,000 annual boardings and alightings at the Suisun City Station.

Predominate travel to and from Suisun City on the Capitol Trains is between Sacramento and Suisun City, and between Suisun City and Emeryville (with a bus connection to San Francisco). Oakland and Martinez also have significant traffic levels for Suisun passengers. Capitol Corridor management's objective is to ultimately provide hourly service all day, with 16 daily round trips. Commuter rail service is being actively pursued.

Plans are in progress to develop three new rail stations in Solano County. The Fairfield/Vacaville station at Peabody Road has been identified as the first priority station for Capitol Corridor services. Stations in Dixon and Benicia are being planned to support commuter and perhaps intercity rail services.

This introductory chapter describes the purpose and scope of this current intercity transit implementation plan along with an overview of the parallel highway planning effort for the I-80, I-680 and I-780 freeways.

PURPOSE AND SCOPE FOR CORRIDOR TRANSIT IMPROVEMENTS

As identified in the Solano Comprehensive Transportation Plan (CTP) Intercity Transit Element, Solano County has a need to develop a short and long range multi-modal transportation plan for the I-80/I-680/I-780 Transit Corridor to accommodate projected growth. According to 2002 ABAG projections, the population in Solano County will grow 45% between 2000 and 2025. This suggests a corresponding increase in the number of intercity commuters and other travelers. See Table 1-1 below for more information regarding projected growth in the County.

Table 1-1 PROJECTED GROWTH IN SOLANO COUNTY, 2000-2025			
Solano County	2000	2025	Percent Change
Population	394,500	571,300	45%
Employed Residents	179,500	302,200	68%
Single-Family Units	99,600	148,100	49%
Multi-Family Units	30,800	43,300	41%
Population over 62	45,300	120,700	166%

Source: Association of Bay Area Governments (ABAG)



Intercity transit services enhance travel mobility to and from, and within Solano County, as well as providing increased transportation capacity. Without added investment in intercity transit services, regional roadways will become increasingly congested, thereby adversely impacting the quality of life and economic vitality of Solano County.

The purpose of this report is to guide the decision makers of Solano County jurisdictions in both the short and long term development of the transportation system along the I-80/I-680/I-780 corridors, including the following components:

- Intercity bus services and vehicles; and
- Support Systems (including intermodal centers and park and ride facilities).

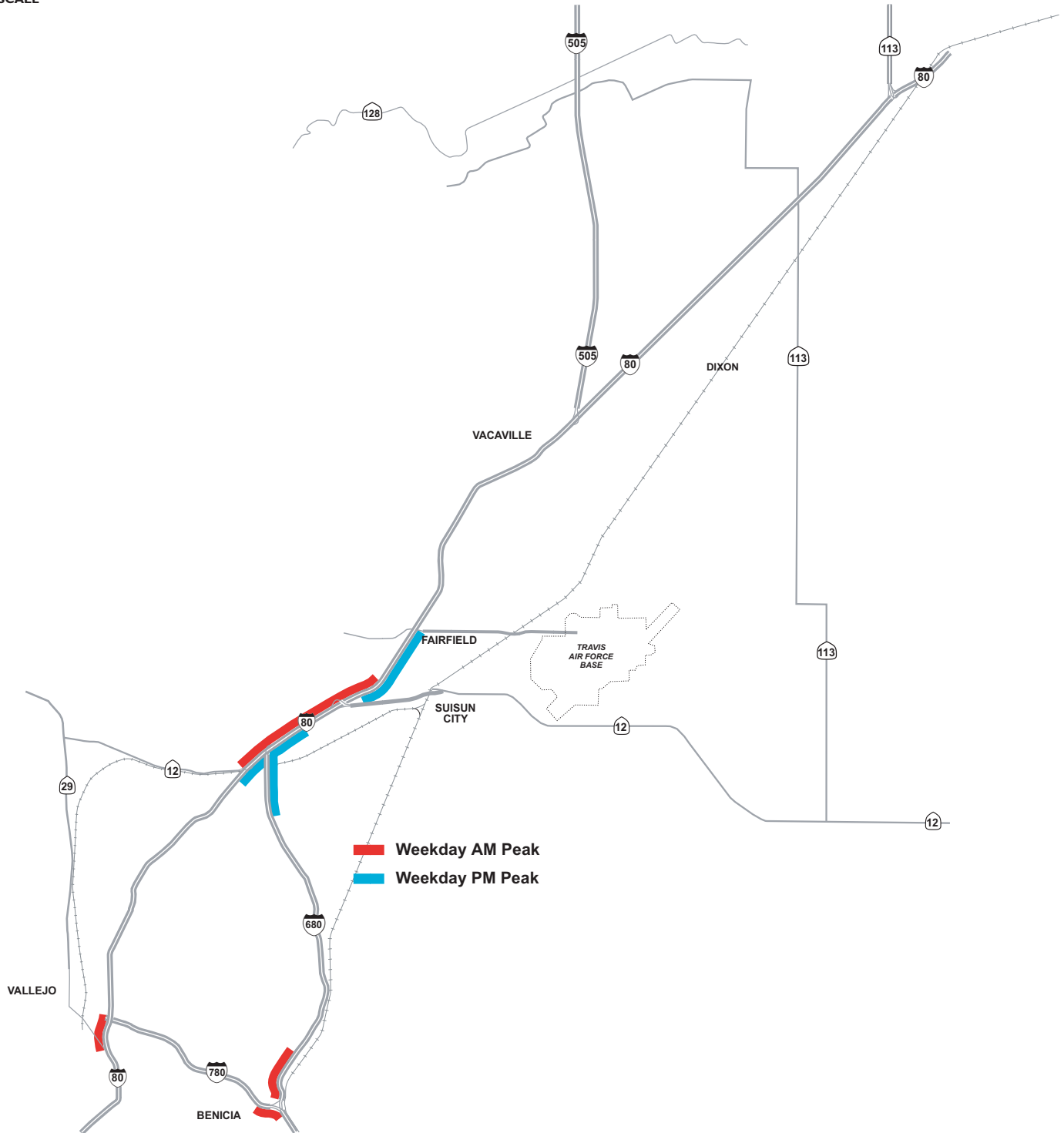
This report will offer specific information regarding the funding and configuration of these systems. This study will expand on a specific element of the STA's Comprehensive Transportation Plan (CTP) by developing:

- More detailed multi-modal implementation strategies and cost estimates for the corridor as recommended for each of the five-year phases proposed in the CTP;
- Specific improvements to park and ride lots, cost estimates and phasing plan;
- Short and long-range capital improvements to encourage transit usage and reduce transit travel time through the employment of features such as direct on- and off-ramps and preemptions for transit or a transit way with bus stops at key locations;
- Support facilities, operating funds and phasing needed to implement a comprehensive, express bus system;
- Transportation management and ITS measures to implement the transit proposals and schedules; and
- Funding criteria and an implementation program for approving, distributing and monitoring various express and local bus funds should a half-cent sales tax measure pass.

Moreover, these features will be integrated with the parallel I-80/I-680/I-780 Highway Element of the Corridor Study.

Corridor Improvement Setting

Under current conditions, there are hot spots of peak period congestion, as illustrated below in Figure 1-2. Congestion is defined as the area of the freeway that is estimated to experience stop and go traffic "back-ups" or queues during typical commute periods. The capacity deficiency causing the traffic back-up generally is the freeway segment at the downstream traffic end of the queued traffic (west/south end for AM peak traffic and east/north end for PM peak traffic).

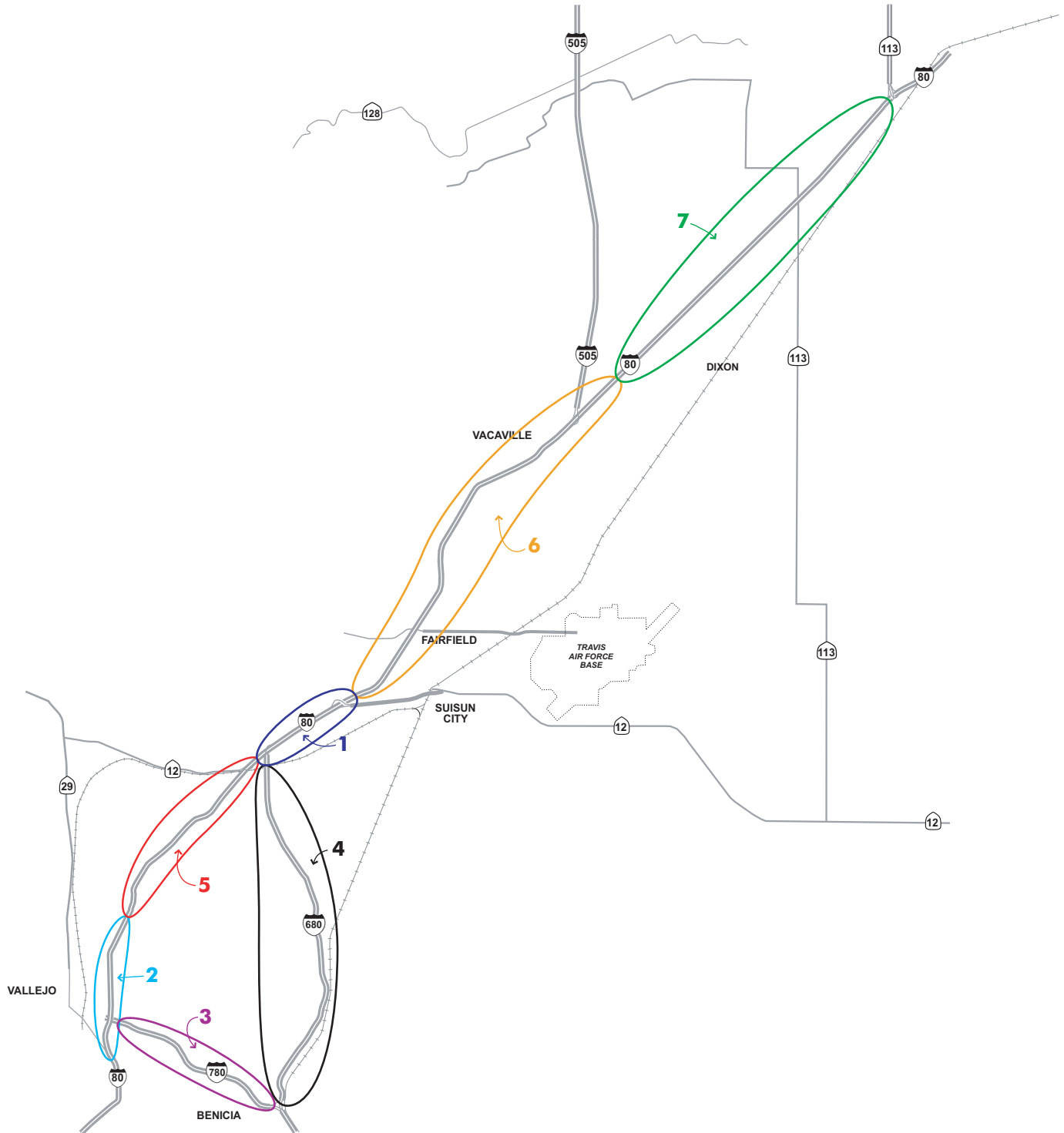


In the AM peak period, congestion regularly occurs in the following locations: I-80 westbound from north of the SR-12 East junction to the SR-12 west exit and westbound from the I-780 junction to the Carquinez Bridge; I-680 southbound to the Benicia Bridge; and I-780 eastbound leading up to the Benicia Bridge. In the PM peak period, congestion occurs in the following locations: I-680 and I-80 eastbound before the I-80/680 merge; and I-80 eastbound from SR-12 E to North Texas Street. On Fridays and other peak travel days, congestion queues and delays are more extensive than these typical weekday conditions.

Without investment in the transportation infrastructure, this congestion will worsen and spread. Therefore, the I-80/I-680/I-780 MIS/Corridor Highway Element effort has developed a plan for improvements to the corridor. Solano County's freeway network was divided into seven segments for analysis purposes, as shown in Figure 1-3. The numbering of these segments, generally west to east and south to north, is for identification purposes only. High Occupancy Vehicle (HOV) lanes and auxiliary lane improvements by segment for the Mid Term future (5 to 20 years) and for the Long Term future (20 years or longer) are briefly described in this section of the report in order to provide background regarding the operating setting for intercity bus services in the future. Figure 1-4 identifies improvements planned for the Mid Term and Figure 1-5 identifies Long Term Projects. The numbering for both Mid and Long Term projects generally reflect phasing priority.



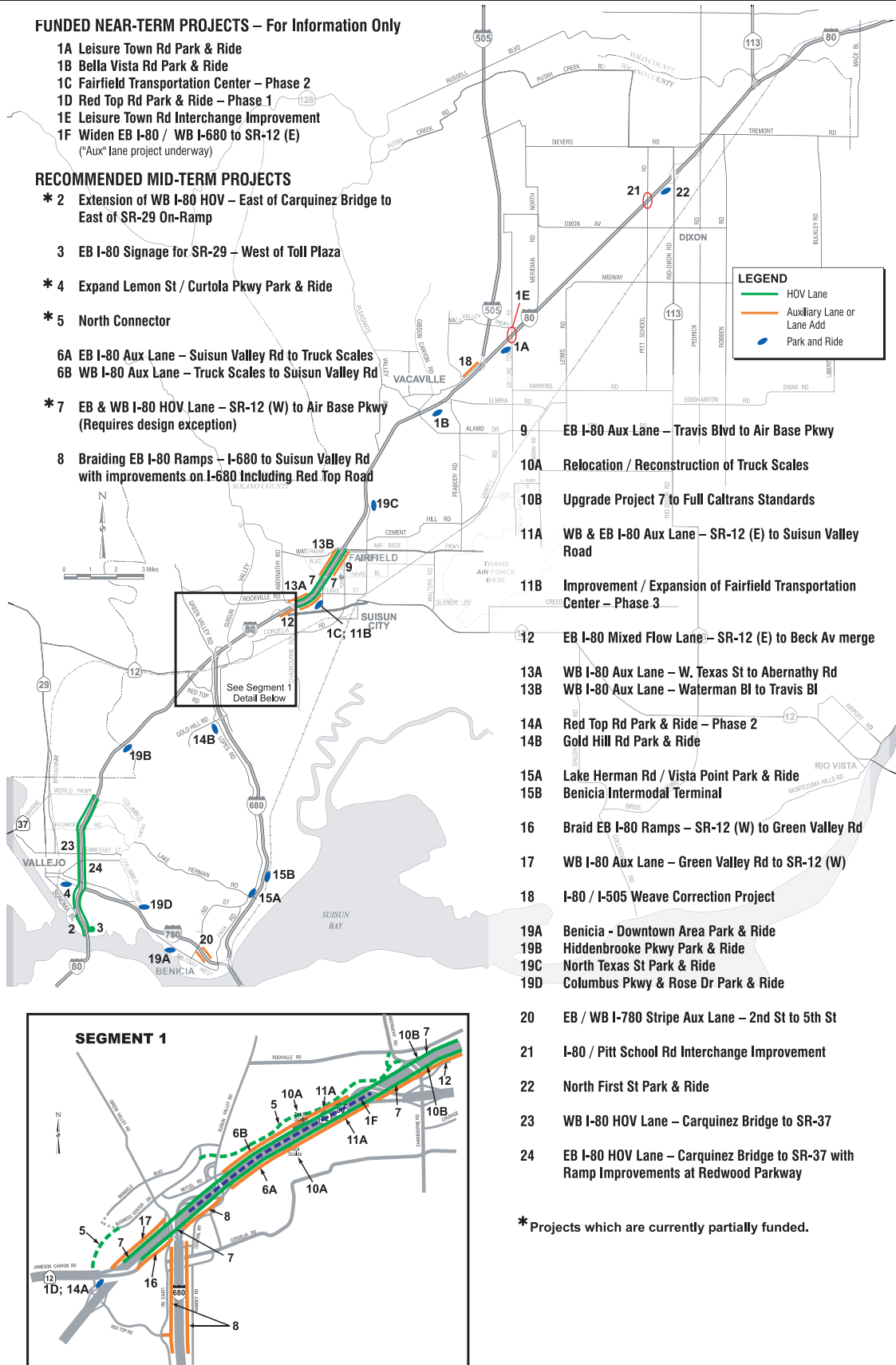
NORTH
NOT TO SCALE



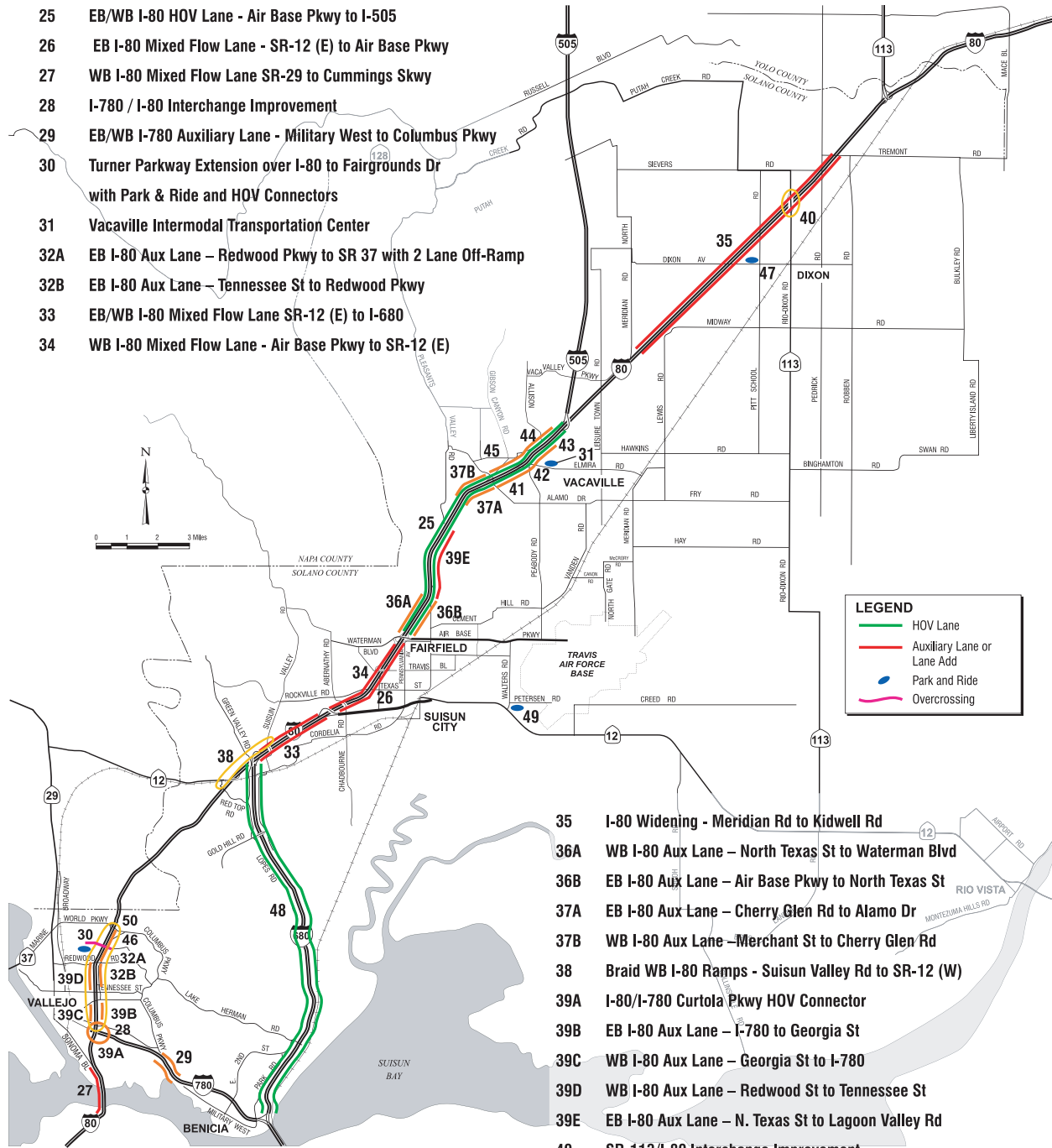
Wilbur Smith Associates

Figure 1-3
TRANSIT CORRIDOR STUDY SEGMENTS 1-7

388000\FR\CHAPTER 1\FIGURE 1-3 - 12/26/03



STA I-80/680/780 TRANSIT CORRIDOR STUDY



SOURCE: Kolve Engineering

- 35 I-80 Widening - Meridian Rd to Kidwell Rd
- 36A WB I-80 Aux Lane - North Texas St to Waterman Blvd
- 36B EB I-80 Aux Lane - Air Base Pkwy to North Texas St
- 37A EB I-80 Aux Lane - Cherry Glen Rd to Alamo Dr
- 37B WB I-80 Aux Lane - Merchant St to Cherry Glen Rd
- 38 Braid WB I-80 Ramps - Suisun Valley Rd to SR-12 (W)
- 39A I-80/I-780 Curtola Pkwy HOV Connector
- 39B EB I-80 Aux Lane - I-780 to Georgia St
- 39C WB I-80 Aux Lane - Georgia St to I-780
- 39D WB I-80 Aux Lane - Redwood St to Tennessee St
- 39E EB I-80 Aux Lane - N. Texas St to Lagoon Valley Rd
- 40 SR-113/I-80 Interchange Improvement
- 41 EB I-80 Aux Lane - Alamo Dr to Davis St
- 42 EB I-80 Aux Lane - Davis St to Peabody Rd
- 43 EB I-80 Aux Lane - Peabody Rd to Allison Dr
- 44 WB I-80 Aux Lane - Monte Vista Av to Mason St
- 45 WB I-80 Aux Lane - Mason St to Alamo Dr
- 46 I-80 Ramp Improvements Through Vallejo (SR-29 to Redwood)
- 47 West A Street Park & Ride
- 48 NB/SB I-680 HOV Lane - Benicia Bridge to I-80
- 49 Walters Road Park & Ride
- 50 I-80/SR-37/Columbus Parkway Interchange Improvements

Figure 1-5

SOURCE: I-80/I-680/I-780 Major Investment and Corridor Study, Kolve Engineering

LONG TERM PROJECTS IN PRIORITY ORDER

388000\FR\CHAPTER 1\FIGURE 1-5 - 9/29/04

Summary of Proposed HOV Lanes and Projected Freeway Congestion

The numbers of current HOV trips were counted at several locations during 2000. These counts show 998 HOVs southbound during the AM peak on I-80 north of the SR-29 junction and 1,680 HOVs northbound in the PM peak period at this same location. The counts reported 330 southbound HOVs on I-680 north of Lake Herman Road during the AM Peak period and 427 HOVs during the PM peak period at this location. Thus, the current levels of congestion, the free bridge tolls, and existing HOV lanes on I-80 in the East Bay have resulted in a substantial amount of ridesharing to date.

The parallel highway planning study addresses resolution of general traffic congestion and safety upgrades as a first priority in corridor investments. These improvements primarily take the form of minor widenings and addition of auxiliary traffic lanes to improve traffic flow. Intercity buses will of course benefit from improved general traffic flow as well.

The current highway improvement plan envisions immediate development of a westbound HOV lane on I-80 between the Maritime Academy on-ramp and the Carquinez Bridge. The new westbound Carquinez Bridge recently opened in November 2003 with an HOV lane scheduled to open when the HOV lane to SR-4 is opened, so the Maritime HOV Project would provide a connecting approach to the Bridge HOV lane.

In 2007, new HOV lanes are anticipated to be open between the Carquinez Bridge and Highway 4 in Contra Costa County. Completion of this HOV segment will provide almost a continuous HOV lane between Solano County and the Bay Bridge, with direct access ramps provided to the El Cerrito del Norte BART Station. The direct HOV lane ramps at El Cerrito del Norte BART greatly improve bus linkages between the station and I-80. The missing HOV gap along I-80 is the eastbound approach to the Carquinez Bridge Toll Plaza. This short missing link could be provided by diverting the relatively light eastbound on-ramp truck traffic at Pomona Street to the adjacent interchange at Cummings Skyway and re-striping the lane “add” to a lane “merge.”

In approximately ten years construction of HOV lanes between SR-12 West and Air Base Parkway is envisioned for I-80. The Long Range improvement plan (Figure 1-6) envisions adding HOV lanes as follows:

- I-80 both directions between the Carquinez Bridge and SR-37;
- I-80 direct connector to Turner Road;
- I-680 both directions between the Benicia Bridge and I-80 with direct connector to I-80;
- I-80 both directions between Air Base Parkway and I-505; and
- I-80 direct connector to Curtola Parkway.

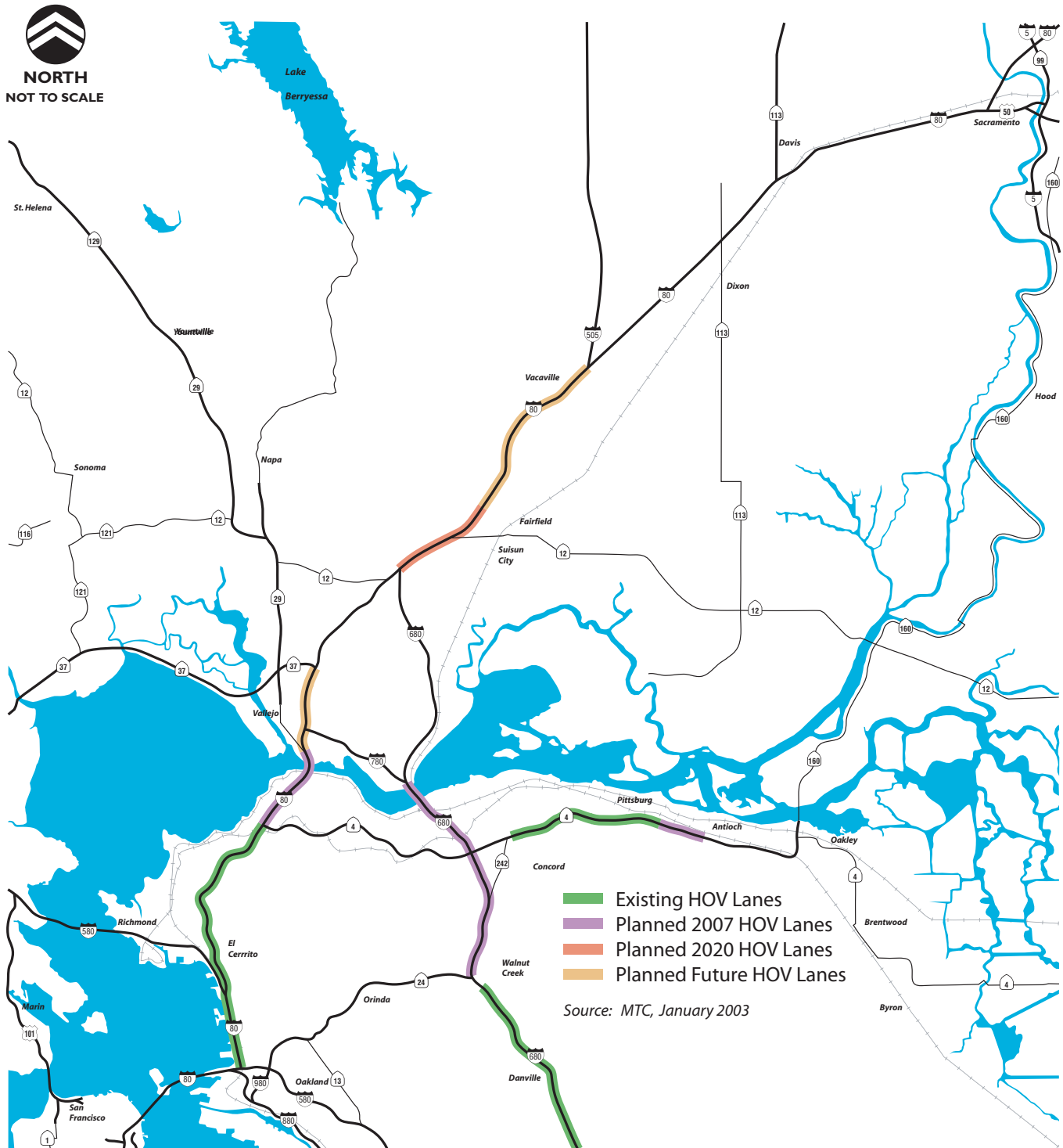


Figure 1-6
HOV LANES

Traffic analysis of the Mid Term highway improvement projects indicate that 2010 peak period traffic back-ups would continue to occur as follows:

- During the AM peak traffic hours on I-80 westbound between North Texas Street and the Junction of SR-12 East and between the Junction of SR-37 and the Carquinez Bridge; and
- During the PM peak traffic hour in the eastbound direction of I-80 between I-680 and the Junction of SR-12 East.

These congested freeway segments are important intercity bus service facilities. Figure 1-7 below illustrates these peak period back-ups in year 2010.

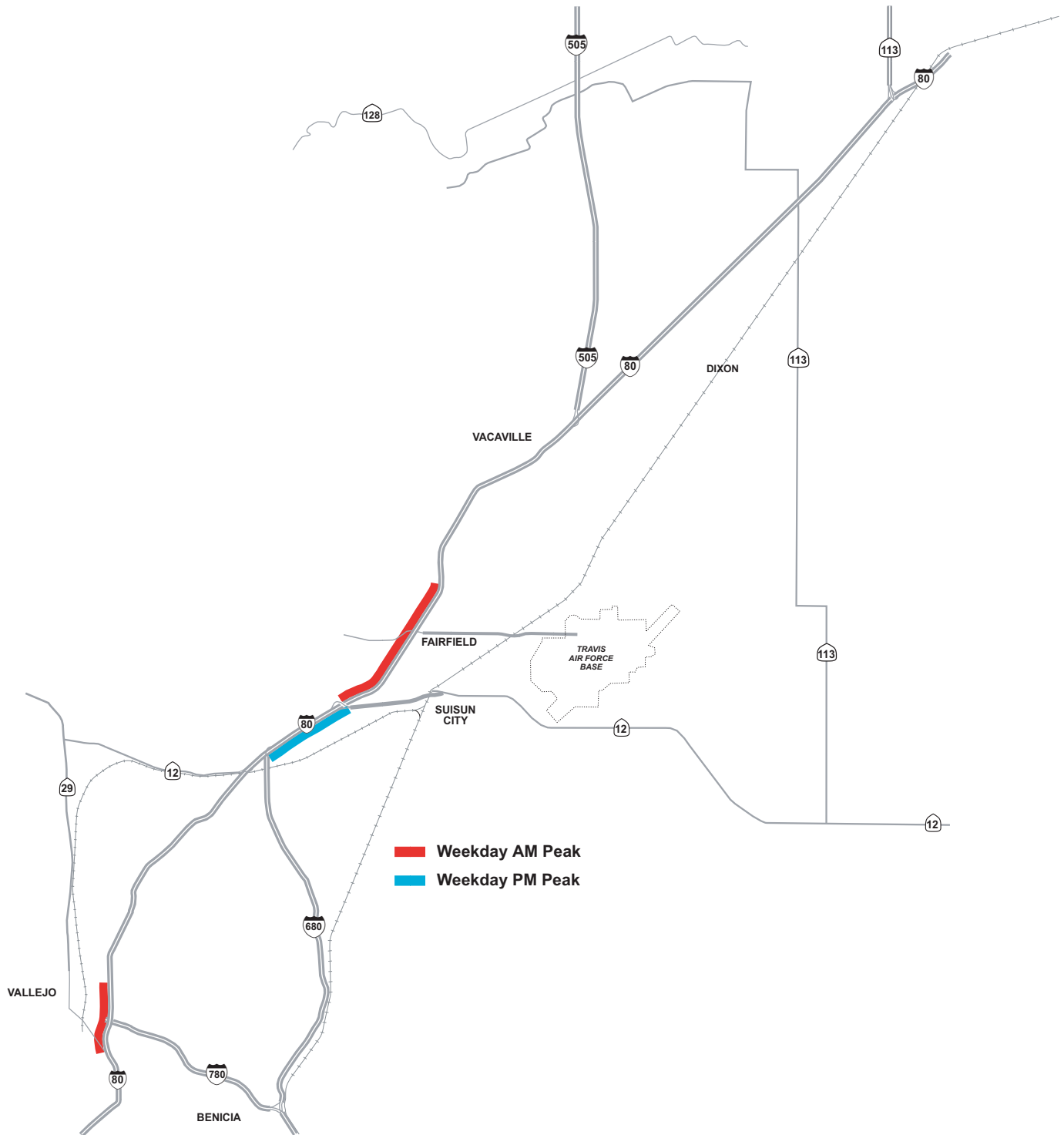
With completion of the Mid Term group of improvements, substantial congestion remains forecast for 2030 peak commute hours as shown in Figure 1-8. During the morning peak commute hour in the westbound direction of travel, traffic is forecast to incur delays of 15 minutes through Fairfield and another 11.5 minutes in Vallejo approaching the Carquinez Bridge. The westbound traffic is forecast to back-up north to the SR-37 interchange on an average weekday morning. In the PM Peak, delays are expected eastbound on 80 before the 780 interchange, westbound on I-780 for a segment, and on I-80 between I-680 and north of SR-12. Minor incidents would substantially lengthen the forecast average traffic back-up and dramatically add to the forecast delay time.

EXPRESS BUS PLANNING ISSUES

Solano County is 823 square miles, and 75% of current and planned development is within two miles of the three study freeways, provision of direct frequent bus connections between all major origins and destinations is not financially feasible. The current intercity bus services recognize this challenge and are very dependent on patrons independently arriving at major pickup points, rather than providing transit coverage to all developed areas of the county. Key planning issues, to be addressed later in this report, include:

Service Issues

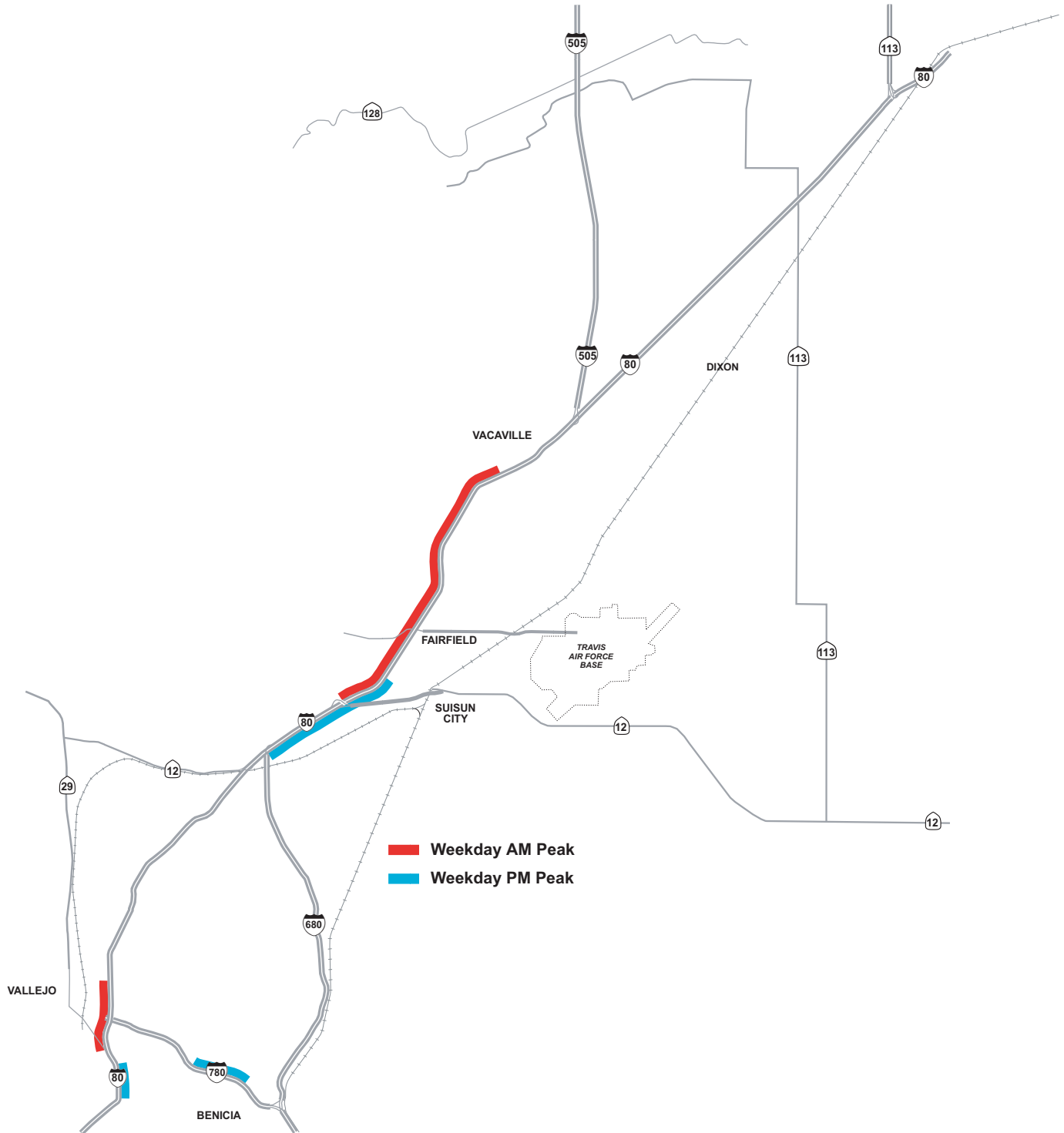
- How much bus service to provide?
- Emphasis on weekday peak commute service versus midday and weekend service?
- Whether to concentrate investment in frequent service along key corridors or invest in less frequent but broader coverage?
- Orientation of service to outward commute markets versus serving local employment centers?
- Relative importance of intercity bus connections to Davis/Sacramento, Pleasant Hill BART, El Cerrito del Norte BART, and Vallejo Ferry Terminal?
- Relationship to Capitol Corridor passenger rail service, Vallejo Ferry service and other potential future regional public transportation systems?
- How best to serve the Benicia Industrial Park?
- Design for frequent stops and increase access convenience versus non stop fast service?



SOURCE: I-80/I-680/I-780 Major Investment
and Corridor Study, Korve Engineering

Figure 1-7
**2010 WEEKDAY TRAFFIC CONGESTION
QUEUES WITH MID TERM PROJECTS 1-9**

388000\DFR\CHAPTER 1\FIGURE 1-7 - 10/4/04



SOURCE: I-80/I-680/I-780 Major Investment and Corridor Study, Kolve Engineering

Support Facility and Access Issues

- Best BART station location connection in Central Contra Costa County?
- Desired location, size and features of park and ride facilities?
- Co-existence of rideshare and bus park and ride users?
- Location of direct access ramps to HOV lanes?

Implementation Issues

- Phasing of service upgrades?
- Regional partnerships in funding inter-county services and facilities?
- Supportive policies?

REPORT ORGANIZATION

This report is organized into six chapters following this introductory chapter;

Chapter 2 – Existing Express Bus Services;

Chapter 3 – Existing Park and Ride and Transit Center Facilities;

Chapter 4 – Corridor Travel Demands;

Chapter 5 – Express Bus Service Plan;

Chapter 6 – Highway Interface Plan; and

Chapter 7 – Implementation Plan.

Chapter 2

EXISTING INTERCITY BUS SERVICES

BACKGROUND

A brief summary of key service features for each of the intercity transit operators is provided in this section by provider and route (intercity routes serve more than one city). Summary comparisons of service and performance are presented at the end of the section on existing service. Figure 2-1 shows the present publicly provided SolanoLinks intercity bus routes serving Solano County, along with the passenger rail corridor. In March 2003 Fairfield/Suisun Transit's Route 30 was extended to Davis and Sacramento. Also Vallejo Transit has recently assumed operation of the Benicia bus service to Pleasant Hill BART.

VALLEJO TRANSIT BUS SERVICE

Vallejo Transit operates four regional bus services. The four current regional bus lines operated by Vallejo Transit are:

- Route 80 Vallejo to El Cerrito del Norte BART
- Route 85 Fairfield and Suisun City to Vallejo via Solano College
- Route 90 Fairfield and Suisun City to El Cerrito del Norte BART
- Route 91 Vacaville to El Cerrito del Norte BART

Routes 80 and 85 provide Saturday as well as weekday service and also operate during the midday. Route 91 only operates during commute peak periods on weekdays. No regular Sunday service is provided on any of the four Vallejo Transit operated routes. The lengthy one way running times for Routes 85, 90 and 91 virtually preclude the ability to get more than one peak direction bus trip per bus to serve a peak commute market lasting less than 90 minutes (i.e. 6:30 AM to 8:00 AM departures). The relatively shorter Route 80's one way run times of less than 30 minutes, however, allows one bus to make several peak direction commute trips.

Route 80 is the original BARTLink service, and connects downtown Vallejo (near the Ferry Terminal) with the del Norte BART station. Some morning peak period trips originate in northern Vallejo. Service is provided Monday through Saturday. On weekdays, the first trip departs Vallejo at 4:15 a.m. and the last return trip leaves BART at 11:00 p.m. Service is provided every 8 to 15 minutes during the peak, and every 30 minutes in the midday. On Saturdays, service is provided every 30 minutes. Travel time from Vallejo to del Norte BART using the I-80 HOV lanes is about 25 minutes. Some buses are able to make two peak direction trips during the commute period.

Route 80 currently has the highest ridership of the eight Solano County intercity bus routes, carrying almost 1,500 passengers on an average weekday. Its ratio of fare revenues to operating costs (farebox ratio) is 61.5 and its subsidy per passenger is only \$1.29. On average 23 passengers board route 80 buses for each bus hour of service provided.

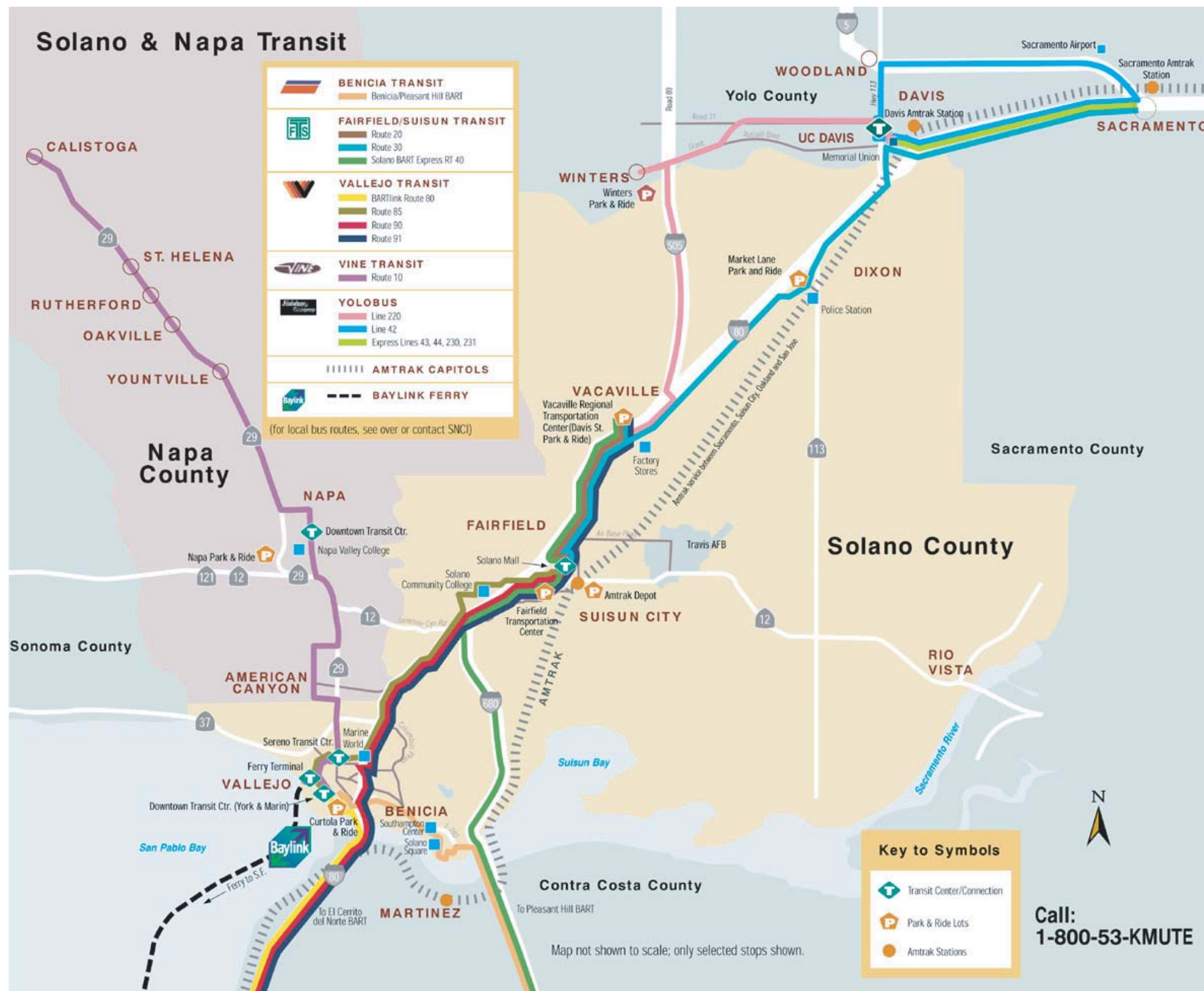


Table 2-1 summarizes the amount of service that is provided and several key measures of efficiency and performance for Route 80.

Table 2-1 ROUTE 80 SERVICE/PERFORMANCE CHARACTERISTICS					
Indicator	Amount	Indicator	Amount	Indicator	Amount
Annual Hours	19,301	Revenue	\$908,828	Subsidy/Pass	\$1.29
Annual Miles	693,516	Subsidy	\$575,761	Annual Passengers	444,821
Speed	NA	Cost/Hour	\$76.92	Weekday Passengers	1,454
Bus Trips	140	Farebox Ratio	0.61	Passengers/Hour	23.0
Buses	8	Subsidy/Bus	\$71,970	Passengers/Bus Trip	10.4
Cost	\$1,484,589	Subsidy/Hour	\$29.83	Passengers/Bus	182



Route 80 bus at Curtola Stop

Route 85 links Vallejo and Fairfield, via the Solano Community College. Service is provided Monday through Saturday. On weekdays, the first trip departs at 6:33 a.m. from Fairfield and 5:35 a.m. from Vallejo. Morning peak period commute service operates on 30-minute frequencies and service continues at hourly frequencies until 9:30 p.m. from Vallejo and 10:30 p.m. from Fairfield. On Saturday mornings, service starts one hour later. All trips connect with the Vallejo Ferry Terminal and with Route 80. Travel time from Vallejo to Fairfield is about 55 minutes.

Approximately 482 passengers board Route 85 buses on a typical weekday. The Route's farebox recovery ratio is 38% and the subsidy per passenger served is only \$2.84. On average 12.8 passengers board Route 85 buses for every bus hour of service that is provided. Table 2-2 summarizes key features for Route 85 service and usage.

Table 2-2
ROUTE 85 SERVICE/PERFORMANCE CHARACTERISTICS

Indicator	Amount	Indicator	Amount	Indicator	Amount
Annual Hours	11,526	Revenue	\$261,548	Subsidy/Pass	\$2.84
Annual Miles	256,788	Subsidy	\$418,918	Annual Passengers	147,554
Speed	NA	Cost/Hour	\$59.04	Weekday Passengers	482
Bus Trips	36	Farebox Ratio	0.38	Passengers/Hour	12.80
Buses	3	Subsidy/Bus	\$139,639	Passengers/Bus Trip	13.39
Cost	\$680,466	Subsidy/Hour	\$36.35	Passengers/Bus	161

Route 90 links Fairfield and Suisun City with the El Cerrito del Norte BART Station. Service is provided weekdays only at 60-minute service frequencies with additional service in the peak periods (15 to 20 minute frequencies). The first trip departs at 5:00 a.m., with the last trip returning at 7:30 p.m. from BART. Travel time from Fairfield to BART is about 40 minutes. Fairfield-Suisun Transit covers all subsidy needs for Route 90.

Approximately 543 passengers board Route 90 buses on a typical weekday. Its farebox recovery ratio is very good at 45%. (for comparison, the following Bay area transit agencies have an overall farebox recovery rate of 20 to 25 percent: AC Transit, Yolo Transit, Sonoma Transit and Napa Vine). The subsidy per passenger on Route 90 is \$3.09 and nearly 15 passenger board Route 90 buses for every hour of service that is provided. Table 2-3 summarizes key features of Route 90 service and usage.

Table 2-3
ROUTE 90 SERVICE/PERFORMANCE CHARACTERISTICS

Indicator	Amount	Indicator	Amount	Indicator	Amount
Annual Hours	9,300	Revenue	\$342,189	Subsidy/Pass	\$3.09
Annual Miles	335,412	Subsidy	\$423,053	Annual Passengers	136,895
Speed	NA	Cost/Hour	\$82.28	Weekday Passengers	543
Bus Trips	38	Farebox Ratio	0.45	Passengers/Hour	14.7
Buses	5	Subsidy/Bus	\$84,611	Passengers/Bus Trip	14.3
Cost	\$765,242	Subsidy/Hour	\$45.49	Passengers/Bus	108.6

Route 91 provides four morning trips from Vacaville, and four evening trips from BART to Vacaville. There is no midday or weekend service. The first trip departs at 5:00 a.m., with the last trip returning at about 8:15 p.m. from BART. Travel time from Vacaville to BART is about 55 minutes.

Route 91 service to Vacaville serves about 206 passengers daily. The Route covers more than 50% of its operating cost from farebox revenues and averages \$2.42 subsidy for each passenger. On average nearly 19 passengers board Route 91 buses for each hour of service that is provided. Table 2-4 summarizes key features for Route 91.

Table 2-4
ROUTE 91 SERVICE/PERFORMANCE CHARACTERISTICS

Indicator	Amount	Indicator	Amount	Indicator	Amount
Annual Hours	2,746	Revenue	\$126,633	Subsidy/Pass	\$2.42
Annual Miles	102,816	Subsidy	\$125,714	Annual Passengers	51,989
Speed	NA	Cost/Hour	\$91.90	Weekday Passengers	206
Bus Trips	11	Farebox Ratio	0.50	Passengers/Hour	18.93
Buses	2	Subsidy/Bus	\$62,857	Passengers/Bus Trip	18.73
Cost	\$252,347	Subsidy/Hour	\$45.78	Passengers/Bus	103

Equipment and Support Facilities

Vallejo Transit operates from an extensive and modern maintenance facility located in north Vallejo. This city owned five-acre facility currently can accommodate 75 buses. The city currently has 66 vehicles including buses for intercity service, buses for local service and paratransit service vehicles. Peak commute intercity bus service requires deployment of 18 buses.

A total of 18 vehicles are assigned to intercity services (eight on Route 80, three on Route 85, and seven on Routes 90/91). Buses for express routes¹ 85, 90 and 91 enter and leave service each day from Fairfield and Vacaville terminals. The distance between the Vallejo Transit bus storage yard and Route 85 and 90 service portal is about 16 miles. The distance between Route 91's service portal and the Vallejo Transit storage yard is about 24 miles. At average speeds of 55 mph it requires 18 minutes each day to put a bus into service for Routes 85 and 90, and 25 minutes each day to put a bus into service for Route 91. These are unproductive hours during which no passengers are served. At an average of \$74 per bus hour, each route 85 and 90 bus costs approximately \$44 per day and each Route 91 bus about \$62 daily to introduce and remove from service. For buses operated only in the peak commute periods in the peak direction, Vallejo Transit also needs to deadhead them to/from the del Norte BART station every day. Having buses stored and maintained nearer to the BART stations help to reduce these midday deadhead costs. Because bus drivers need to be returned to their home bus yard, minimal savings are typically gained by parking the commute buses at a "foreign" bus yard.

Passenger facilities are generally good, with on-going planning for additional improvements. At the El Cerrito del Norte BART Station, however, passenger queues often extend beyond the shelters at the Vallejo Transit pickup points. The Curtola Park and Ride facility's 450 auto spaces are often full by 7 am. The City of Vallejo is in the process of developing a major improvement to the ferry terminal. This \$52 million "Vallejo Station" project would provide 1,200 parking spaces and enhanced bus transfer facilities.

Policies - As a multi-modal operator, Vallejo has several key objectives as outlined in the system's Short Range Transit Plan (SRTP). These five objectives are:

1. Control the operating budget;
2. Increase system productivity;

¹ Express buses are those that do not always make every stop.

3. Implement effective marketing;
4. Focus expansion on high demand and high farebox return; and
5. Undertake efforts to obtain new funding sources.

A series of actions are anticipated in the SRTP to achieve compliance with the five objectives. These action items include:

- Competitive procurement of transit services;
- Targeted patronage objectives (for example, 809,000 annual Baylink passengers);
- Maintenance and facility upgrades; and
- Purchase of new vehicles and vessels.

Fares and transfers vary according to distance. The following is a fare matrix of adult fares:

Table 2-5 VALLEJO TRANSIT MATRIX OF ADULT FARES			
Between ▽ and ▹	Vacaville Cash/10 ride	Fairfield Cash/10 ride	BART Cash/10 ride
Vallejo	\$3.50/\$30	\$3.50/\$30	\$3.50/\$30
Vacaville	\$1.35/\$12	\$1.35/\$12	\$5.00/\$40
Fairfield	\$1.35/\$12	\$1.35/\$12	\$4.50/\$36

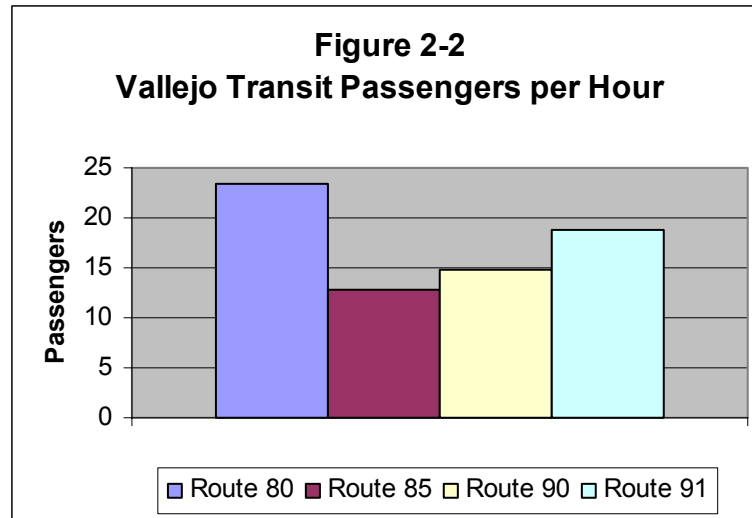
Transfers to and from the connecting local bus system are valid at their face value for credit on the intercity buses. Monthly passes are available and cost \$85 for the Fairfield to BART service and \$91 for the Vacaville to BART trip. The monthly pass for the Route 80 costs \$77, as does the pass valid for Vallejo to Fairfield trips.

Service is fully linked at various locations in Solano County. A major new intermodal transportation facility, the Fairfield Transportation Center opened in 2001 and is served by Vallejo Transit Route 85, 90 and 91 buses. Vallejo Transit also serves the Vallejo Ferry terminal and the El Cerrito del Norte BART station. Other key transportation nodes include the Vacaville Regional Transportation Center at Davis Street, Solano Mall, and the Suisun City Amtrak Station.

Operating Costs – Based on cost allocation reports for FY 2002-03, Vallejo’s projected annual regional fixed route operations are approximately \$3.2 million, at an average cost of \$74 per revenue hour. Passenger revenues were \$1.6 million, resulting in about a 51 percent farebox recovery.

The total operating cost net of fares for the four Vallejo regional bus services are about \$1.5 million.

Figure 2-2 below compares the passengers per hour performance of all four routes. Passengers served per hour is a performance measure.



Capital Improvement Costs – Vallejo has an aggressive capital improvement program, and has requested and received funds for additional buses, ferries and ferry facilities, and various miscellaneous items. The total committed capital funding for the next several years is about \$25 million.

FAIRFIELD-SUISUN TRANSIT (FST)

FST operates three intercity routes: Route 20 links Fairfield and Vacaville, Route 30 links Fairfield, Vacaville, Dixon, UC Davis and Sacramento, and Route 40 links Vacaville, Fairfield and the Pleasant Hill BART station. Service frequencies on all three lines are sparse. Service is fully linked at various locations in northern Solano County. A major new facility, the Fairfield Transportation Center, opened in 2001. Other key transfer nodes include the Vacaville Regional Transportation Center, Solano Mall, and the Suisun City Amtrak



Station. FST intercity routes serve the Pleasant Hill BART station, allowing easy connections to BART for trips to Oakland and San Francisco. The public timetable includes the connecting times (which are generally less than 10 minutes) and the overall trip times from Fairfield and Vacaville to San Francisco (about 90 minutes).

Route 30 Bus at Solano Mall

Route 20 operates weekdays and Saturday, whereas Routes 30 and 40 only operate on weekdays. No Sunday service is provided on these three intercity bus routes. The one way running times for Routes 30 and 40 are too long to be able to schedule more than one peak direction trip per bus for the heart of the commute times.

Route 20 is an Interstate 80 freeway connector between Fairfield's Solano Mall and the Vacaville Regional Transportation Center (Davis Street Transit Center), with intermediate stops at Wal-Mart, the Vacaville Factory Stores, and the Vacaville Nut Tree. Route 20 provides the primary midday intercity bus service between Fairfield and Vacaville. The buses depart from the Solano Mall and travel directly on I-80 to the Vacaville Factory Stores, where it loops back west on local streets serving the Wal-Mart, Vacaville Transit Center and Davis Street Transit Center, where it is routed back onto I-80 to the Solano Mall. Buses continue past the Mall to serve the Fairfield County offices and return back to the Mall for another eastbound trip to Vacaville Factory Stores. As such, Route 20 is configured as a "figure eight" operation. Service operates hourly from about 7:30 a.m. to 6:30 p.m. and the total round trip running time is 53 minutes (one bus is assigned to the service).

Route 20 carries approximately 196 passengers on an average weekday. Average subsidy per passenger is \$3.52 and fares cover 16.7% of operating costs. Each one direction trip serves about eight passengers as shown in Table 2-6.

Table 2-6 ROUTE 20 SERVICE/PERFORMANCE CHARACTERISTICS					
Indicator	Amount	Indicator	Amount	Indicator	Amount
Annual Hours	3,134	Revenue	\$35,532	Subsidy/Pass	\$3.52
Annual Miles	80,669	Subsidy	\$177,648	Annual Passengers	50,443
Speed	25.7	Cost/Hour	\$68.02	Weekday Passengers	196
Bus Trips	25	Farebox Ratio	0.17	Passengers/Hour	16.10
Buses	1	Subsidy/Bus	\$177,648	Passengers/Bus Trip	7.84
Cost	\$213,180	Subsidy/Hour	\$56.68	Passengers/Bus	196

Route 30 is primarily a Sacramento connector. Prior to March 2003, this route terminated at UC Davis. One a.m. and one p.m. trip continue to connect Fairfield, Vacaville, and Dixon with UC Davis, with a new extension to downtown Sacramento. Sacramento service includes one direct express trip to Fairfield in the morning, with the reverse trip back to Sacramento in the afternoon. One a.m. and one p.m. trip connect Fairfield, Vacaville, and Dixon to Sacramento (with no stops in Davis), with one reverse run from Sacramento in the p.m. The first trip departs at 6:48 a.m., and the last trip returns at 6:12 p.m. Each bus trip scheduled throughout the day tends to be different in terms of locations served. The trip duration for the approximately 40-mile route varies with the direction and time of day. Two buses are assigned to this service.

Based on an extrapolation of July 2003 data, Route 30 carries approximately 82 passengers on an average weekday. Fares cover 16.2% of operating costs and subsidies per passenger average \$8.03 (previous year data placed the farebox at about 12% and the subsidy per passenger at \$14.67). On average, about eight passengers board a typical one way bus trip on Route 30. Table 2-7 summarizes key features of this new route.

Table 2-7
ROUTE 30 SERVICE/PERFORMANCE CHARACTERISTICS

Indicator	Amount	Indicator	Amount	Indicator	Amount
Annual Hours	3,456	Revenue	\$33,624	Subsidy/Pass	\$8.03
Annual Miles	126,464	Subsidy	\$173,880	Annual Passengers	21,648
Speed	36.6	Cost/Hour	\$60	Weekday Passengers	82
Bus Trips	10	Farebox Ratio	0.16	Passengers/Hour	6.26
Buses	2	Subsidy/Bus	\$86,940	Passengers/Bus Trip	8.20
Cost	\$207,504	Subsidy/Hour	\$50	Passengers/Bus	41

Route 40 provides a quick link between Vacaville and Fairfield to the Pleasant Hill BART Station. In the southbound direction, four morning trips and five evening trips are offered, while northbound four morning trips and five afternoon trips serve Solano County commuters. Travel time from the Pleasant Hill BART station to Fairfield is about 45 minutes, while to Vacaville is about one hour. The first trip departs at 5:05 a.m., and the last trip returns at 8:31 p.m. (allowing a 6:30 p.m. departure from San Francisco attractions). The distance from Pleasant Hill BART to Fairfield is about 30 miles.

Route 40 serves an average of 122 passenger trip on an average weekday as shown in Table 2-8. Fares cover 23% of operating cost for the service and subsidies per passenger trip are about \$7.09.

Table 2-8
ROUTE 40 SERVICE/PERFORMANCE CHARACTERISTICS

Indicator	Amount	Indicator	Amount	Indicator	Amount
Annual Hours	4,800	Revenue	\$66,141	Subsidy/Pass	\$7.09
Annual Miles	160,134	Subsidy	\$221,859	Annual Passengers	31,294
Speed	33	Cost/Hour	\$60.00	Weekday Passengers	122
Bus Trips	18	Farebox Ratio	0.23	Passengers/Hour	6.52
Buses	3	Subsidy/Bus	\$73,953	Passengers/Bus Trip	6.78
Cost	\$288,000	Subsidy/Hour	\$46.22	Passengers/Bus	41

Equipment and Support Facilities

The City of Fairfield owns 34 diesel powered Gillig Phantom transit vehicles, and seven new MCI coaches. The new MCI coaches are deployed for the long distance intercity bus services. The vehicles are stored at the city's corporation yard, with city staff servicing and maintaining the vehicles.

As of midsummer 2003 (when the new MCI coaches were put into service), Routes 20, 30 and 40 has required a fleet of 7 buses. Service on Route 20 continues to be provided by one diesel bus. Consideration is being given to interlining Routes 30 and 40 and extending service to the Walnut Creek BART station. Route 30 service is provided with two MCI coaches, and four MCI coaches are used for Route 40.

Passenger facilities are Spartan; however, the city is aggressively emphasizing park and ride facilities including the Fairfield Transportation Center, which combines a 400-space park and ride garage with a large bus transfer area.

Policies. The Short-Range Transit Plan includes a detailed set of Goals and Objectives. Like most transit systems, FST strives to enhance mobility in an effective and efficient manner. System indicators of these goals for the intercity services are the following (all for FY 2004/05):

Table 2-9 FST PERFORMANCE MEASURES	
Measure	Target
Passengers per vehicle hour	15.00
Passengers per vehicle mile	0.5
Operating cost per passenger (net)	\$3.00
Operating cost per hour	\$58.50
Operating cost per Mile	\$ 1.75
Farebox Recovery Ratio	15 percent

Fares and transfers vary according to distance. The following is a fare matrix of adult fares:

Table 2-10 FST FARE MATRIX OF ADULT FARES				
Between▼ and ➤	Davis Cash/10 ride	Vacaville Cash/10 ride	Fairfield Cash/10 ride	Pleasant Hill BART Cash/10 ride
Davis	--	--	\$2.75/\$22	--
Vacaville	\$2.25/\$18	--	\$1.75/\$14	\$4.50/\$36
Fairfield	--	--	--	\$4.00/\$32
Sacramento	1.75/14	2.75/22	3.75/36	-

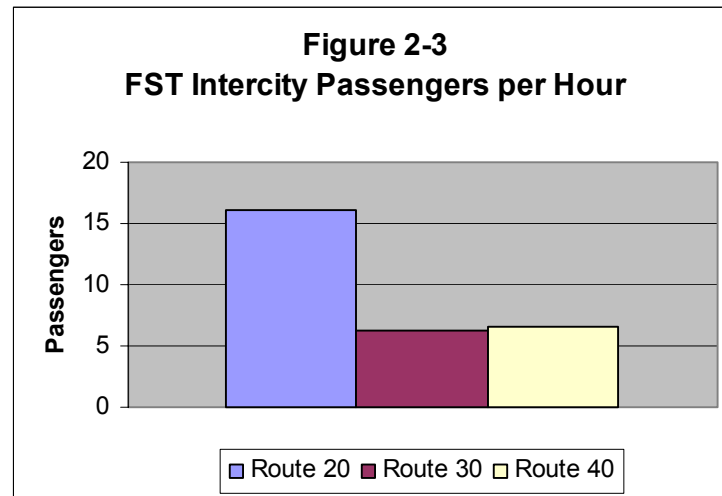
Transfers to and from the connecting local bus system are valid at their face value for credit on the intercity buses. Monthly passes are available and cost \$75 for the Fairfield to BART service and \$79 for the Vacaville to BART trip. The monthly pass for the Fairfield to Davis route costs \$69, and the monthly pass between Vacaville and Davis is priced at \$56. Finally, the Fairfield to Sacramento monthly pass is \$79; and the Vacaville to Sacramento pass is \$69.

Operating Cost Projections

The FST Short Range Transit Plan estimates operating cost projections for the entire system over a nine-year span. In the current fiscal year, FST expects to spend \$3.4 million on local and intercity fixed route operations at an average cost of about \$60 per hour. The three intercity bus routes are estimated to cost about \$709,000 annually. Intercity service passenger revenue is estimated to be \$135,300, resulting in a 19.1 percent farebox recovery. The Cities of Fairfield, Suisun City, Vacaville and Dixon, the STA, BAAQMD, and the Yolo/Solano Air District contributed \$426,000 in FY 2002-03 towards the cost of operating of FST Routes 20, 30 and 40.

Combined totals for the three FST intercity routes are 400 average weekday riders, 9.1 passengers served per bus hour, \$5.55 subsidy cost per passenger and a 19.1 percent farebox recovery.

Figure 2-3 compares the passengers per hour for all three routes.



Capital Improvement Costs

FST has an aggressive capital improvement program, and has requested and received funds for several park and ride facilities, additional buses, and various miscellaneous items. The total committed major and minor capital funding for the next three years is almost \$33 million. Much of that funding is directed to the intercity bus program.

BENICIA TRANSIT (ROUTE 1)

The Benicia Transit intercity bus route is shown in Figure 2-4 (Benicia Route 1 is referred to as “Regular Service” in Figure 2-4). Note that the Benicia Flyer has been discontinued. The route provides connections to the Pleasant Hill BART Station, the Vallejo Ferry Terminal and Downtown Vallejo’s York & Marin Transit Center. The peak one direction running time for the Benicia route is about 70 minutes to Pleasant Hill BART. As such only one peak direction trip is possible per bus, with perhaps one or two buses also being able to serve the shoulder of the peak commute market.

Service

Route 1 operates from Vallejo Transit’s York and Marin Transit Center to the Pleasant Hill BART Station via the Curtola Park and Ride lot, Military West & Fourteenth, Solano Square, H and East Third Streets L and East Fifth Streets, and Sun Valley Mall. This trip takes about 20 minutes between Vallejo and H Street, 18 minutes from H Street to Sun Valley Mall and another 16 minutes to reach the Pleasant Hill BART Station. Service operates from 5 a.m. to 7 p.m.

Patronage Characteristics

Benicia Transit reportedly carries about 456 daily riders.

Equipment and Support Facilities

The City owns its fleet of transit vehicles, which are stored and maintained at contractor facilities. Vehicles are fueled at the City Corporation yard. The peak direction travel is towards Pleasant Hill BART in the morning and away in the evening. This suggests that the most efficient location to introduce and remove buses from service would be in Vallejo.

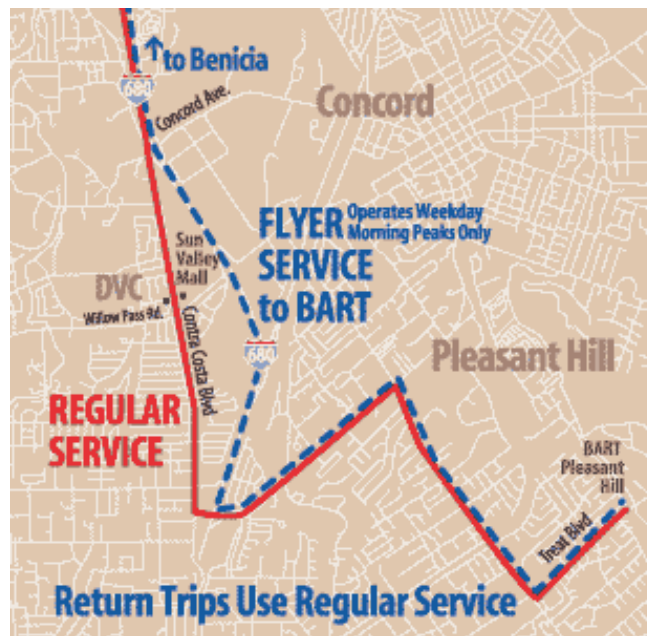
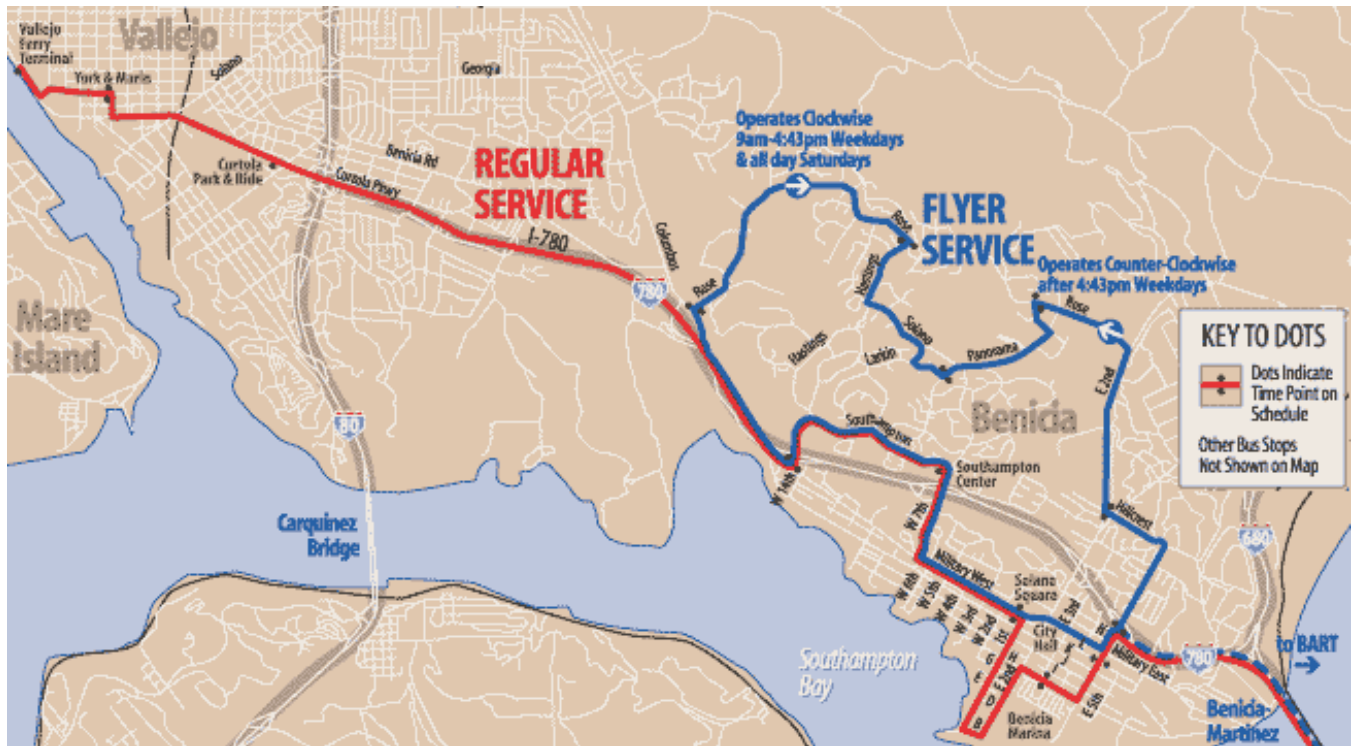
Policies

Fares differ depending on the service used, characteristic of the rider (senior, disabled, youth) and bulk prepaid fares (passes and tickets).

Adult fares for travel on service between Benicia and the Vallejo BayLink ferry terminal or Vallejo Transit Center located at York and Marin Streets (Zone 1) are \$1.00 for a single ride and \$37 for a monthly pass.

Adult fares for travel from Benicia to Contra Costa County (Zone 2) are \$2.00 for a single ride and \$56 for a month pass. Adult fares from Vallejo to Contra Costa County (Zone 3) are \$2.50 for a single ride and \$69 for a monthly pass.

Transfer connections are provided to I-80 corridor bus service at the Curtola Park and Ride lot and to Vallejo Transit and Napa Transit at the York and Marin Transit Center. Direct service to the BayLink ferry terminal is provided. Transfer connections to I-680 bus services are not provided, due to physical and operational constraints at the I-680/780 interchange and the somewhat similar destinations of these services. Transfers are also provided to BART at the Pleasant Hill BART Station.



Operating Cost Characteristics

Benicia's cost to operate the fixed route service for Fiscal Year 02/03 is estimated to be \$749,000 with 13,238 vehicle service hours per year. This translates to \$56.58 per bus hour. Benicia Transit serves approximately 127,000 annual passenger boardings, or about 456 weekday riders. See Table 2-11 for more information.

Table 2-11 ROUTE 1 SERVICE/PERFORMANCE CHARACTERISTICS					
Indicator	Amount	Indicator	Amount	Indicator	Amount
Annual Hours	13,238	Revenue	\$147,408	Subsidy/Pass	\$4.72
Annual Miles	276,991	Subsidy	\$601,622	Annual Passengers	127,557
Speed	21	Cost/Hour	\$56.58	Weekday Passengers	456
Bus Trips	39	Farebox Ratio	0.20	Passengers/Hour	9.6
Buses	5	Subsidy/Bus	\$120,324	Passengers/Bus Trip	11.7
Cost	\$749,030	Subsidy/Hour	\$45.45	Passengers/Bus	91

VINE TRANSIT (NAPA COUNTY)

VINE Transit operates Route 10 between Calistoga, St. Helena, Oakville Yountville and Napa to Vallejo. About 15 roundtrips are made daily to and from Vallejo. Stops within Vallejo include the Sereno Transit Center, Kaiser Hospital, Ferry Terminal and York-Marin Transit Center. Most of the southbound trips serve the ferry terminal prior to arriving at the York and Marin Transit Center, and all the northbound trips stop at the ferry terminal after leaving the York and Marin Terminal.

YOLOBUS

YoloBus operates Route 220 from Davis via Winters to Vacaville. It makes three roundtrips daily to Vacaville (with stops at Safeway and Wal-Mart). Adult fare is \$1.25.

FUNDING

Table 2-12 describes an estimate of the contribution to the funding of current express bus services by agency for each route. The Benicia service is fully funded by the City of Benicia. Table 2-13 describes the estimated utilization of Transportation Development Act (TDA) funds to transit versus streets and roads. Approximately one million dollars annually of TDA funds are spent on streets and roads rather than transit. Most of the non transit TDA expenditures are by Vacaville and by the County.

Table 2-12
SOLANO COUNTY INTERCITY BUS SERVICE FY 2003-04 FUNDING

Route	Annual Operating Cost	Fare Revenue	Subsidies								
			Vallejo	Benicia	Fairfield	Suisun	Vacaville	Dixon	Solano County	Air Quality Management District	Other
1 ⁽¹⁾⁽²⁾	749,030	147,409		597,221							4,400
Subtotal	0	0		0							\$ -
20 ⁽¹⁾	213,180	35,532			87,048		90,600				
30	212,065	29,250			30,097		30,097	30,097	17,198	62,065	13,261
40 ^{(1),(3)}	288,000	66,142			85,929		85,929			50,000	
Subtotal	\$713,245	\$130,924	\$0	\$0	\$203,074	\$0	\$206,626	\$30,097	\$17,198	\$112,065	\$13,261
80 ⁽⁴⁾	1,486,951	912,862	574,089								
85 ⁽⁵⁾	685,569	288,811	371,758						25,000		
90 ⁽⁶⁾	773,737	345,951	27,786		400,000						
91	257,312	128,142	1,894				127,276				
Subtotal	\$3,203,569	\$1,675,766	\$975,527	\$0	\$400,000	\$0	\$127,276	\$0	\$25,000	\$0	\$0
Total	\$3,916,814	\$1,806,690	\$975,527	\$0	\$603,074	\$0	\$333,902	\$30,097	\$42,198	\$112,065	\$13,261

Notes:

(1) FY 02-03 amounts

(2) Costs and funding for Benicia loop routes which were terminated in April 2003 are included

(3) \$85,929 funding for Route 40 shared between Fairfield and Suisun

(4) Vallejo funding for Route 80 provided by Section 5307 funds

(5) Vallejo funding for Route 85 provided by Section 5307 funds

(6) \$400,000 funding for Route 90 shared between Fairfield and Suisun

Sources: See Table 7-1 for listing

Table 2-13
SOLANO COUNTY TDA SHARES
AVERAGE ANNUAL ALLOCATIONS, BASED ON FY04 FUNDING LEVELS

Agency	FY04 Annual TDA Allocation ⁽¹⁾	Estimated Transit Share ⁽²⁾	5 Year Historical Average to Transit ⁽³⁾	Estimated Streets & Roads Share ⁽²⁾	5 Year Historical Average to Streets & Roads ⁽³⁾
Benicia	\$844,000	\$844,000	100%	\$0	0%
Dixon	\$505,000	\$394,000	78%	\$111,000	22%
Fairfield	\$3,134,000	\$3,134,000	100%	\$0	0%
Rio Vista	\$167,000	\$68,000	41%	\$99,000	59%
Suisun City	\$833,000	\$466,000	56%	\$367,000	44%
Vacaville	\$2,886,000	\$2,511,000	87%	\$375,000	13%
Vallejo	\$3,709,000	\$3,709,000	100%	\$0	0%
Solano County	\$613,000	\$110,000	18%	\$503,000	82%
Total	\$12,691,000	\$11,236,000	89%	\$1,455,000	11%

Notes:

1. Based on FY04 TDA formula allocation (not including carryover from previous years); may not equal amount claimed.

2. Average historical share applied to the FY04 annual TDA allocation.

3. Based on 5 year (FY 2000-2004) average share of TDA allocations for transit and streets and roads.

SUMMARY

Eight public intercity bus routes are operated by Solano County agencies. One route (Route 30) extends to Davis and Sacramento, two routes (Routes 40 and Benicia) connect to the Pleasant Hill BART Station, two routes (Route 85 and Benicia) connect to the Vallejo Ferry Terminal and three routes (Routes 80, 90, and 91) connect to the El Cerrito del Norte BART Station. Public intercity bus connections to Napa from Vallejo are provided by VINE Transit and YoloBus provides connections to Winters and Davis from Vacaville. Three of the eight routes operate on Saturdays, but no intercity bus service is provided on Sundays. Capitol corridor passenger rail service and BayLink ferry service, however, do operate seven days a week.

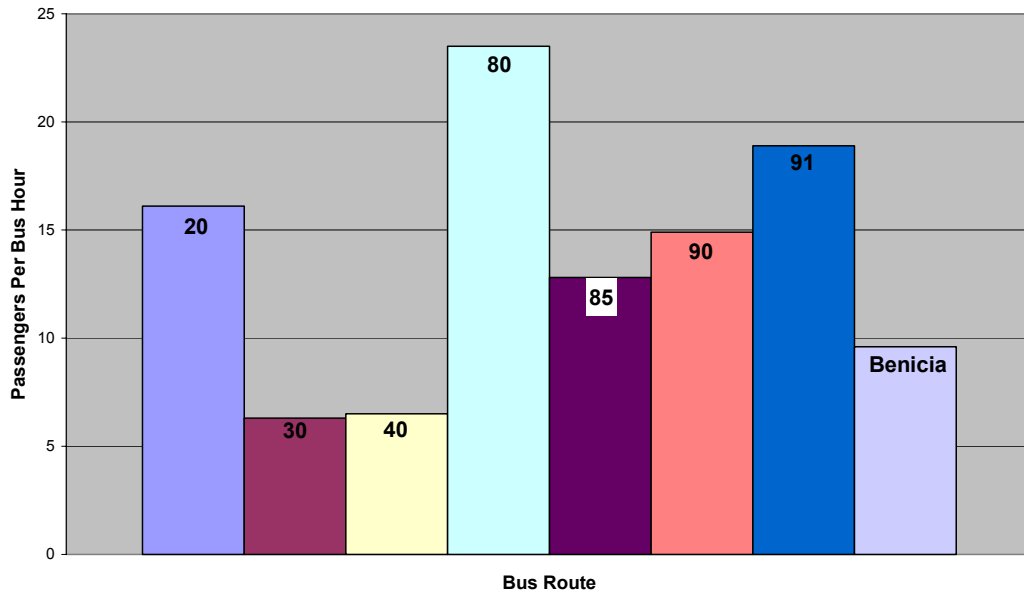
While Figure 2-1 suggests that frequent service exist along the I-80 Corridor, it is very sparse east of Vacaville (only Route 30). The segment between Vacaville and Fairfield is served by four routes (FTS Routes 20, 30 and 40; and Vallejo Transit Route 91). The segment between Vallejo and El Cerrito del Norte BART Station is served by 70 bus trips in each direction on an average weekday.

The five charts that follow compare all the intercity routes in the county in terms of:

- The average passengers per bus hour, (Figure 2-5);
- The costs of all Solano County routes (Figure 2-6);
- The average weekday passenger boardings (Figure 2-7);
- The farebox revenue ratio by route (Figure 2-8); and
- The average subsidy per passenger (Figure 2-9).

Not reflected in these charts is the absence of any Sunday service and the schedule adherence difficulties due to traffic congestion at the I-80/680 interchange, within Contra Costa County on both I-80 and I-680 and on I-80 through Vallejo. Schedule reliability problems tend to have particularly significant adverse influences on patronage for infrequent bus routes. For more details regarding the data in these figures, see Table 2-14 at the end of this chapter.

Figure 2-5
Solano County Average Passengers Per Bus Hour



Data: FY02-03 for Vallejo & Fairfield; 2003 YTD for Benicia

Figure 2-6

Solano County Transit Costs by Route

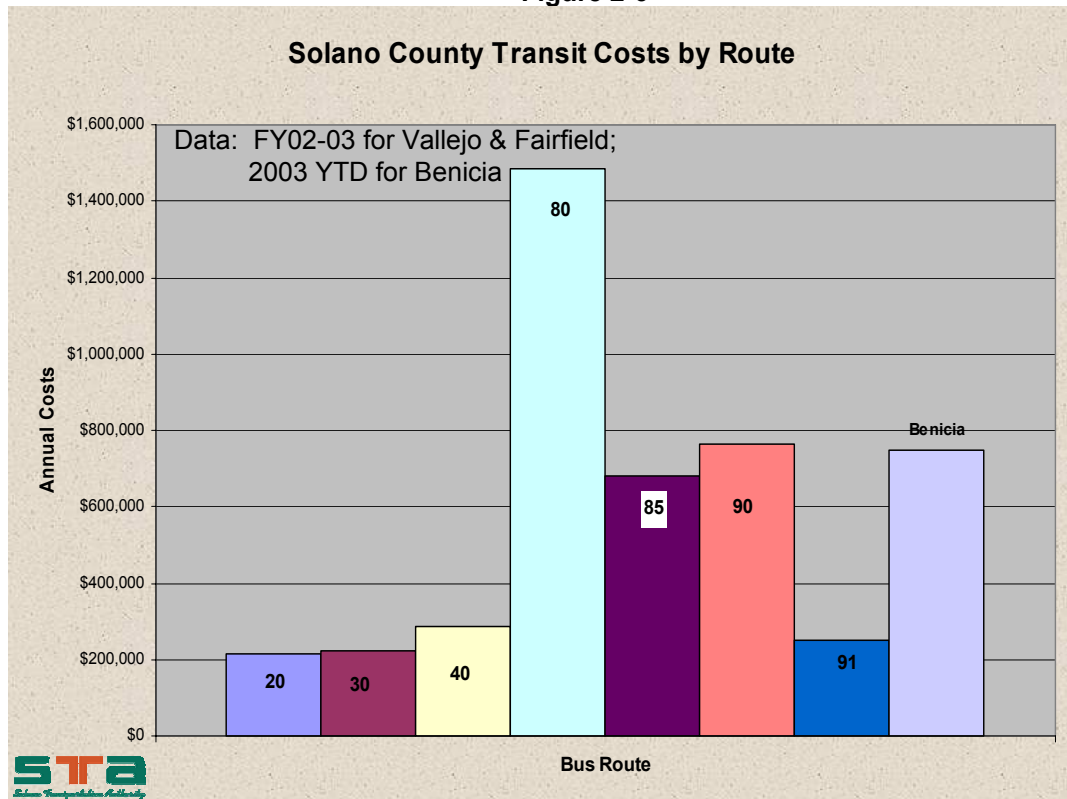


Figure 2-7

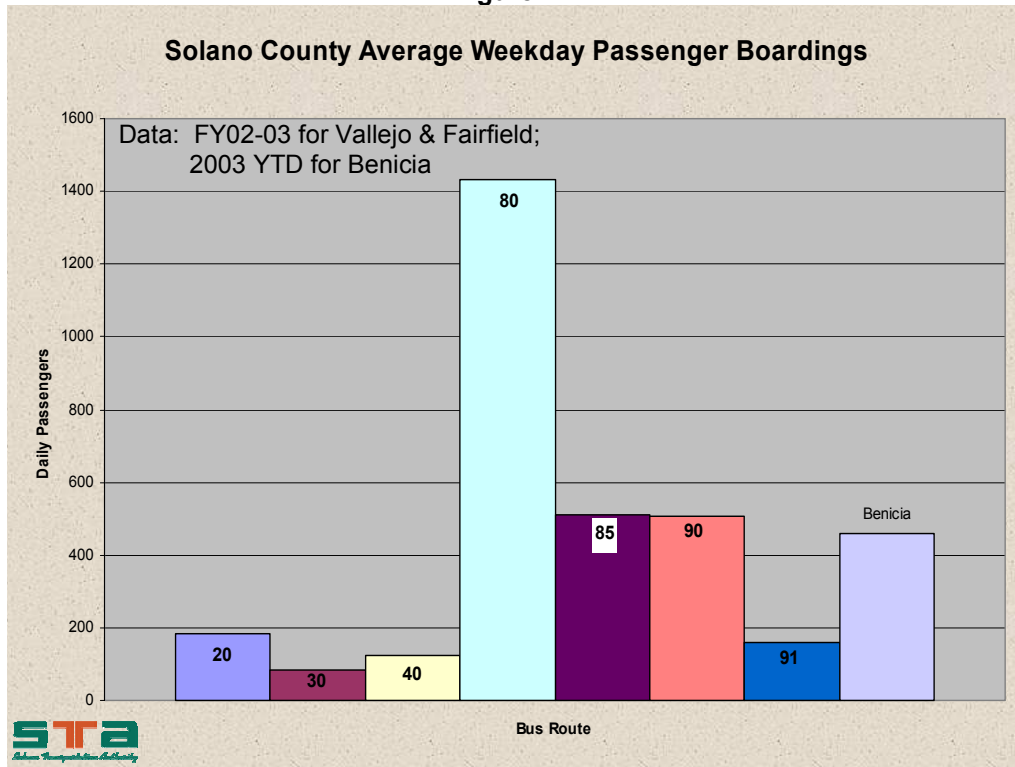
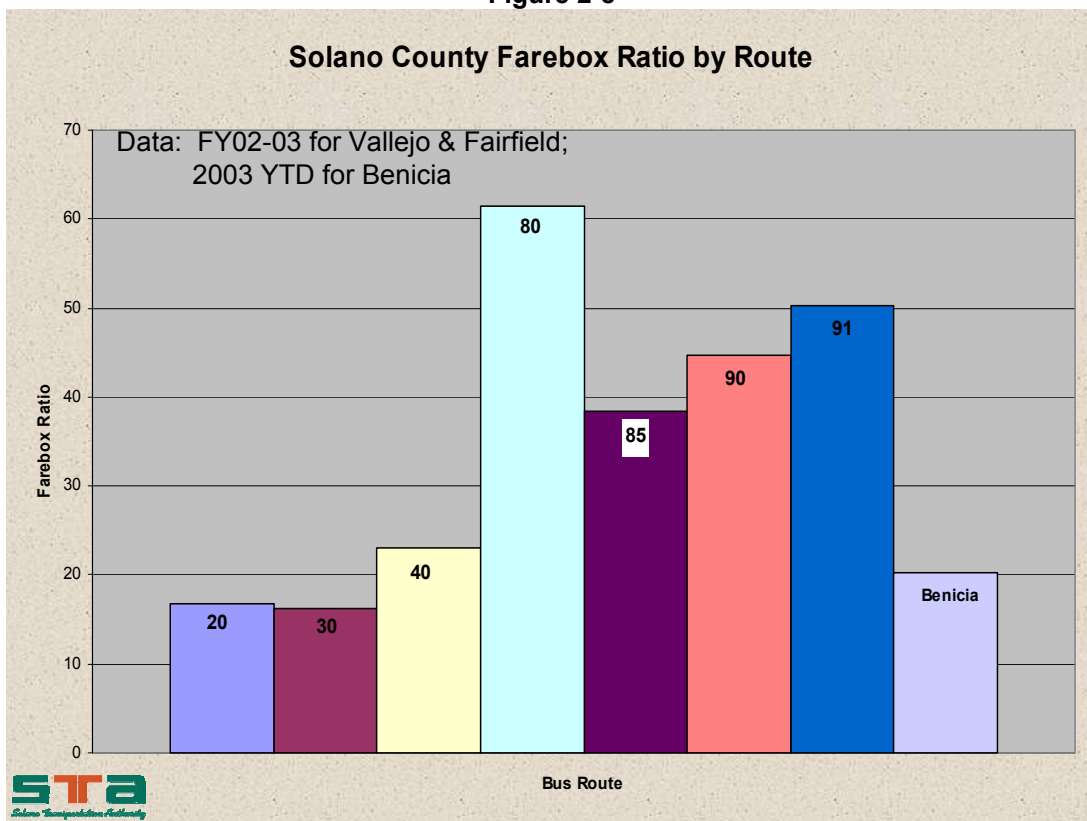
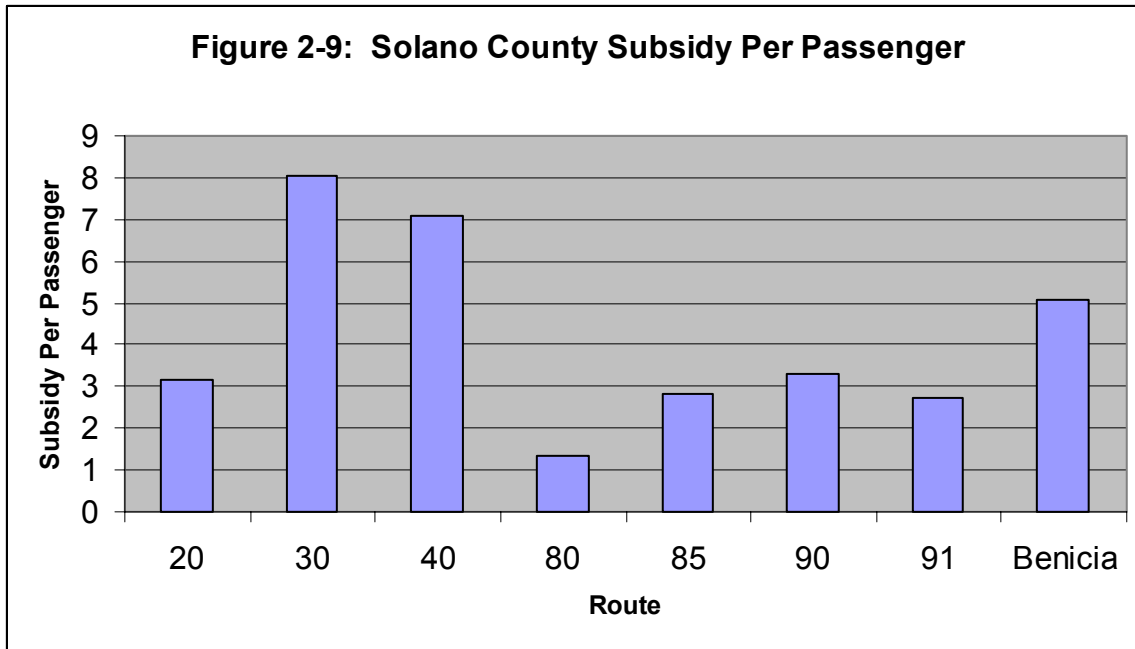


Figure 2-8





Analysis of current bus operations data suggests that the subsidy cost per peak bus required for service is approximately \$125,000 for routes that operates commute service, midday service and Saturday service and \$80,000 per peak bus required for routes that operate commute period only service (and therefore have fewer hours of service per bus). Hourly subsidy cost for service suggests \$40-50 per bus hour of service. Passenger boardings per bus hour of service provided averages 12.78, and ranges between 6.3 to 23.0 by individual intercity bus route.

Table 2-14
SOLANO COUNTY INTERCITY BUS ROUTE SERVICE/PERFORMANCE CHARACTERISTICS

Indicator	Benicia	20	30	40	80	85	90	91	Solano Total	FST Total	Vallejo Total
Annual Hours	13,238	3,134	3,456	4,800	19,301	11,526	9,300	2,746	67,501	11,390	42,873
Annual Miles	276,991	80,669	126,464	160,134	693,516	256,788	335,412	102,816	2,032,790	367,267	1,388,532
Speed	20.9	25.7	36.6	33.4							
Bus Trips	39	25	10	18	140	36	38	11	317	53	225
Buses	5	1	2	3	8	3	5	2	29	6	18
Cost	\$749,030	\$213,180	\$207,504	\$288,000	\$1,484,589	\$680,466	\$765,242	\$252,347	\$4,640,358	\$708,684	\$3,182,644
Revenue	\$147,408	\$35,532	\$33,624	\$66,141	\$908,828	\$261,548	\$342,189	\$126,633	\$1,921,903	\$135,297	\$1,639,198
Subsidy	\$601,622	\$177,648	\$173,880	\$221,859	\$575,761	\$418,918	\$423,053	\$125,714	\$2,718,455	\$573,387	\$1,543,446
Cost/Hour	\$56.58	\$68.02	\$60.04	\$60.00	\$76.92	\$59.04	\$82.28	\$91.90	\$6.75	\$62.22	\$74.23
Ratio	0.20	0.17	0.16	0.23	0.61	0.38	0.45	0.50	0.41	0.19	0.52
Subsidy/Bus	\$120,324	\$177,648	\$86,940	\$73,953	\$71,970	\$139,639	\$84,611	\$62,857	\$93,740	\$95,565	\$85,747
Subsidy/Hour	\$45.45	\$56.68	\$50.31	\$46.22	\$29.83	\$36.35	\$45.49	\$45.78	\$40.27	\$50.34	\$36.00
Subsidy/Pass	\$4.72	\$3.52	\$8.03	\$7.09	\$1.29	\$2.84	\$3.09	\$2.42	\$2.69	\$5.55	\$1.98
Annual Passengers	127,557	50,443	21,648	31,294	444,821	147,554	136,895	51,989	1,012,201	103,385	781,259
Weekday Passengers	456	196	82	122	1,454	482	543	206	3,541	400	2,685
Passengers/ Hour	9.6	16.1	6.3	6.5	23.0	12.8	14.7	18.9	15.0	9.1	18.2
Passengers/ Bus Trip	11.7	7.8	8.2	6.8	10.4	13.4	14.3	18.7	11.2	7.5	11.9
Passengers/ Bus	91.2	196.0	41.0	40.7	181.8	160.7	108.6	103.0	122.1	66.7	149.2

Chapter 3

EXISTING PARK AND RIDE AND TRANSIT CENTER FACILITIES

CORRIDOR OVERVIEW

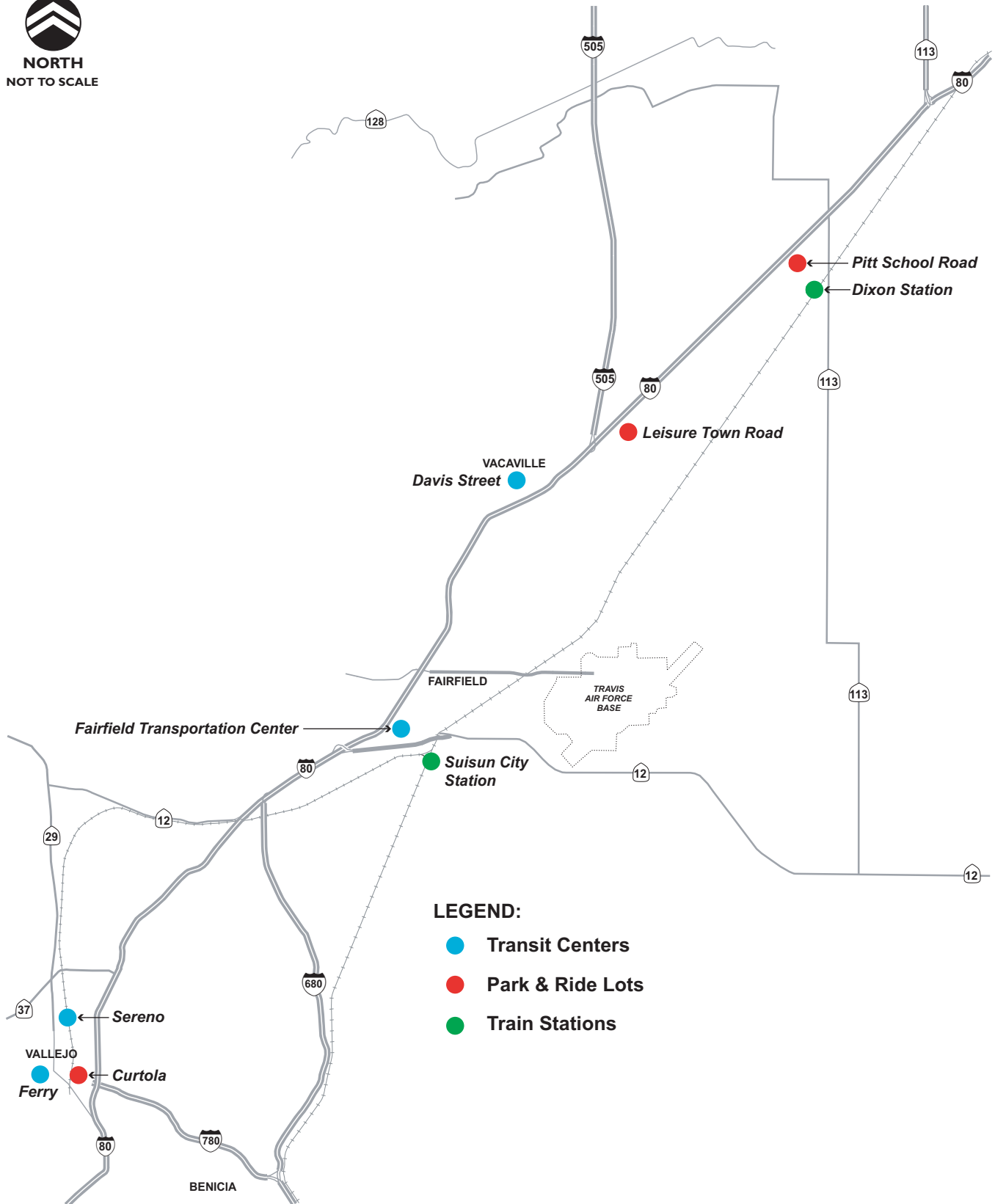
Solano County has a very high rate of ridesharing relative to other Bay Area counties. Its transit usage, however, lags behind other major counties in the Bay Area. According to RIDES, the San Francisco Bay Area's Regional Rideshare organization, 24% of Solano County commuters rideshare and two percent use transit for their journey-to-work trips. Similar figures for the entire Bay Area Region are 17% rideshare and 10% transit. Napa and Sonoma Counties have similar transit rates as Solano County. Consideration of rideshare and transit access needs together is important as both types of commuters share park and ride facilities.

At present there are a dozen significant park and ride parking facilities in Solano County. These facilities are in addition to park and ride facilities used to support the BayLink ferry or passenger rail services. Approximately 1,500 park and ride spaces are currently provided in the I-80/680/780 corridor. These are well used with the exception of newer lots in eastern Vacaville and in Dixon. See Figure 3-1 for a map of existing park and ride and transit center facilities.

Along I-80 park and ride facilities include:

- Magazine Street;
- Curtola Parkway;
- York and Marin Streets;
- Hiddenbrooke/American Canyon Road;
- Red Top Road;
- Green Valley Road;
- Fairfield Transportation Center;
- Davis Street;
- Leisure Town Road; and
- Pitt School Road.

No formal park and ride facilities are established along I-680, although a few rideshare commuters appear to use the Vista Point parking lot located at Lake Herman Road. Similarly, there are no large park and ride lots located along I-780, although there is a very small lot located at East Second Street. Suisun bus commuters and rideshare commuters also use the SR-12 lot at Main Street that serves Capitol Corridor passengers.



Immediate plans exist to expand the Vacaville Davis Street Park and Ride facilities with construction of a new lot on the south side of the interchange (Bella Vista Park and Ride). This lot is designed to provide an additional 201 spaces to the current Davis Street supply. The addition of 234 spaces are also immediately in process for the Fairfield Transportation Center. Together these two projects will add 435 spaces to the current total of about 1,600 spaces (a 30% increase).

INTERSTATE 80 CORRIDOR

With respect to the I-80 corridor, major transit hubs are located at Curtola Parkway, West Texas Street-Fairfield Transportation Center (FTC) and Davis Street. The spacings of these transit center facilities are approximately 15 miles between Curtola Parkway and FTC and about 9 miles between the FTC and Davis Street. No major transit centers are presently located along I-680 or I-780.

Magazine Street Park and Ride Lot

A small park and ride lot is located on the west side of I-80 at the Magazine Street interchange. It has capacity to park 19 vehicles and is generally full. No intercity bus routes serve this small facility.

Curtola Parkway Transit Center - Park and Ride Lot

The Curtola Parkway Transit Center is located just west of the Lemon Street intersection. Most of the parking facilities (410 spaces) are also located on the west side on the intersection but about 90 spaces are also provided in a small lot on the east side of the intersection. The two lots together provide a total of 500 spaces. Both lots are full by 6:30 AM and motorists begin to park on the adjacent streets. Observations suggest that up to 100 cars park on the adjacent street, bringing the total parking usage to 600 vehicles.

Vallejo Transit serves the transit center with its Route 80 buses, which operate six days a week and provides frequent service during commute times (six buses an hour in the peak direction). The Benicia bus route also serves the Curtola stop providing opportunities for Benicia passengers to transfer to El Cerrito del Norte BART bound buses. Vallejo passengers can also connect to destinations in Benicia and to the Pleasant Hill BART station at Curtola using the Benicia bus service. With the exception of Route 1, no local Vallejo Transit buses stop at Curtola. Greyhound Bus Lines has a staffed stop at the Curtola facility.



Security tower at Curtola Park and Ride in Vallejo



Route 80 bus at Curtola stop in Vallejo

The current design of the Curtola transit stop is very efficient for westbound buses destined to Benicia and El Cerrito del Norte BART. Buses simply use the bus pullout located along the eastbound curb of Curtola Parkway. The design is not very efficient for buses outbound towards Vallejo. Buses must turn left onto Lemon Street from Curtola, turn right into the park and ride lot driveway, circulate 500 feet into the lot to pickup passengers and return to Lemon Street to reach Curtola Parkway. This adds delay for passengers bound for central Vallejo, costs to bus operators, and traffic to park and ride driveways. Passengers particularly dislike circuitous bus routings that reverses direction and re-passes points along their commute route.

Aside from the parking capacity shortfalls, other features of the parking element of the Curtola Transportation Center are:

- It is divided into two elements with some parking on the east side of Lemon Street and most of the parking located on the west side;
- Driveway access to both parking lots are limited to their single driveway onto Lemon Street, which is quite close to the Curtola signalized intersection (often traffic stacks back hindering exit maneuvers from the lots);
- The driveway for the west side lot must be shared with large Greyhound, Vallejo Transit and Benicia Transit buses as well as with PG&E yard traffic;
- Concentrating all driveway access onto Lemon Street also concentrates all access traffic (cars and buses) at the Curtola and Lemon signalized intersection;
- Long narrow configuration of the lot complicates provision of security;
- The internal circulation of the west side lot lacks continuity, due to the need to accommodate westbound transit buses and all Greyhound buses and due to the physical dimensions of the lot – this complicates efficient search patterns for parkers; and
- Pedestrian access to the transit stop is less than desired.

For those parkers unfortunate not to arrive in time to find a space in the parking lots, they must park on the streets and often try to avoid parking enforcement efforts. Parking on the street is not only a challenge to avoid enforcement, but it lengthens walking distances (sidewalks are not provided continuously) and exposes them to weather and security issues. Parking on the adjacent street tends to upset local property owners.

In summary, this facility is located at an ideal location, has less than desired access and circulation efficiency and urgently needs added capacity.



Parking enforcement at Curtola Park and Ride in Vallejo



Full lot at Curtola Park and Ride in Vallejo

Downtown Vallejo (York and Marin)

York and Marin is the central transfer point for Vallejo Transit buses. Benicia Transit and the VINE (Napa) buses also stop at this key passenger transfer point. Buses board passengers from all curbsides at this intersection. Vallejo Transit's Route 80, and 85 intercity buses serve this lot. Adjacent to the transit center, about 100 park and ride spaces serve long distance commuters. This facility suffers from parking capacity shortfalls and is located in a high crime area. This site is being expanded to support additional ferry patronage.

Hiddenbrooke (American Canyon) Park and Ride Lot

On the south side or eastbound side of I-80 at the Hiddenbrooke Parkway interchange, motorists park on a graveled area. This is not a formally designated parking area, but 15 to 20 cars regularly park at this location. No bus service is provided.

Red Top Road Park and Ride Lot

Graveled areas have been provided on both the south and north side of I-80 and are used by park and ride patrons. On a typical day about 15 cars can be found in each of these two lots. No intercity bus service stops at these lots.

Green Valley Road Park and Ride Lot

A small park and ride lot is embedded into the Green Valley road interchange westbound ramps. The lot has capacity for 61 vehicles. Observations indicate that 35 cars use the lot on a typical weekday. During the height of the dotcom economy this lot was regularly filled. No transit service is provided to the lot. Future plans to improve the I-80/680 interchange will eliminate this lot. The Green Valley Road Park and Ride lot serves I-680 commuters as well as commuters east and westbound on I-80.

West Texas Street (Fairfield Transportation Center)

The Fairfield Transportation Center (FTC) is located adjacent to the eastbound off-ramp to I-80 at West Texas Street. It consists of a 400 space parking garage and an eight bay bus transit center. A special rideshare pickup and drop-off point is integrated into the facility (Rideshare users are separated from the transit users). The parking garage is fully used and motorists regularly spillover and park in the Home Depot parking lot on the opposite side of Cadenasso Road from the Transit Center. About 50 parked cars spillover into the Home Depot lot on a typical day. FTC is a popular vanpool and casual carpool assembly point. Interior circulation in the garage is excellent as is its pedestrian access. The City of Fairfield is in the process of adding another 234 spaces in a new parking lot located on the west side of the Transit Center.



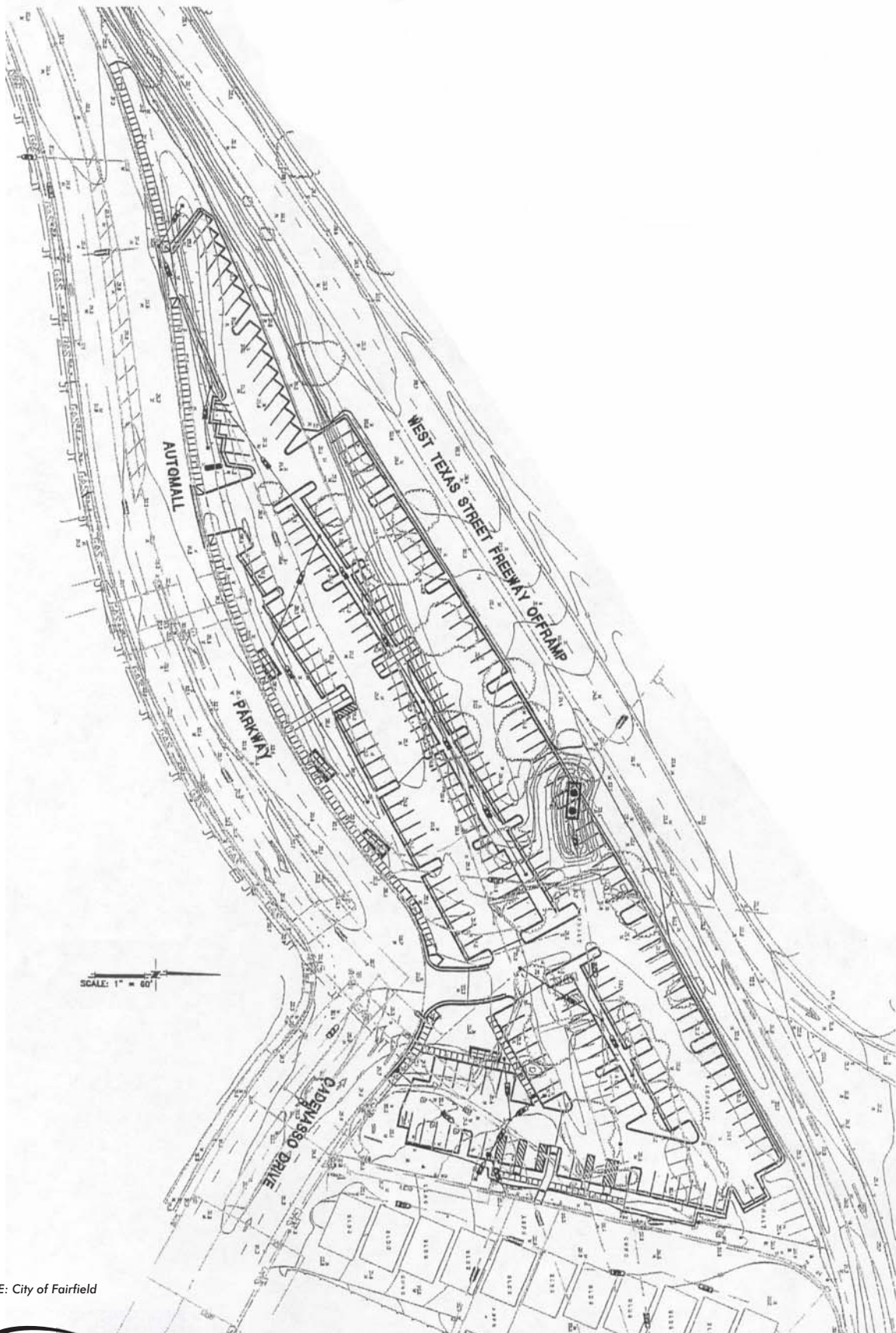
Route 40 bus at Fairfield Transportation Center (FTC) in Fairfield

FTC is served by Vallejo Transit routes 90 and 91 as well as Fairfield Suisun Transit intercity routes 30 and 40 and FST local routes 3A, 3B and 7.

Access to the Transit Center for intercity buses from I-80 is more circuitous than is desired. Eastbound buses exit I-80 at Auto Mall Drive travel 0.5 miles to the west of the Transit Center, loop through the Transit Center and re-enter I-80 via the Beck Street on-ramp. This path is relatively direct. westbound buses on I-80, however, exit at the Oliver Road off-ramp, which is located 0.4 miles east of West Texas Street, turn left onto West Texas Street, turn right onto Cadenasso Road, loop through the Transit Center and re-enter I-80 via auto Mall Drive and the Abernathy Road on-ramp. The left turn movement from Oliver onto West Texas often does not clear in one signal cycle and buses are therefore delayed at this intersection. The need for westbound buses to pass the Transit Center on West Texas and double back to it via Cadenasso Road also adds running time (and runs buses through two more traffic signals). See Figure 3-2 for a schematic of Phase II of the FTC.



Fairfield Transportation Center (FTC) and parking garage in Fairfield



SOURCE: City of Fairfield

Vacaville Davis Street Transit Center (Vacaville Regional Transportation Center)

The Davis Street Transit Center and park and ride lot is located adjacent to the westbound I-80 off/on ramps at Davis Street. The site provides 250 parking spaces and two passenger islands for buses to load. During the dotcom economic peak this park and ride lot was regularly full to capacity. Recent observations indicate that it is 76% full, with 190 cars parked in the lot. It is a popular vanpool assembly point.

The site is served by FST Routes 20, 30 and 40 as well as Vallejo Transit's Route 91 and local Vacaville City Coach bus Route EX. Westbound buses access the site very directly via the Davis Street on/off ramps located adjacent to it. Eastbound buses, however, have much more circuitous access. Eastbound buses exit I-80 at old fashion Bella Vista hook ramp, turn left onto Bella Vista Road, turn left again onto Davis Street at its signalized intersection, pass through the new Hume Way signal, loop through the transit center, turn right onto Davis Street, pass through the Hume Way signal and turn right onto Bella Vista Road to the on-ramp. The Davis/Bella Vista intersection is often congested and causes delays to buses.



Vacaville Davis Street Transit Center

The City of Vacaville is in the process of constructing a new 201 space park and ride lot on Bella Vista Road near the Davis Street Transit Center. This new lot would expand parking capacity to serve future needs. Buses would continue to serve the Davis Street lot and passengers would need to walk from the new Bella Vista lot in order to access bus services. Opportunities to enhance the pedestrian connection between the two facilities along Davis Street should be sought. See Figure 3-3 for a schematic of the Bella Vista site.



Pedestrian link between Davis Street and Bella Vista park and ride lots in Vacaville.

Cliffside Drive Park and Ride Lot

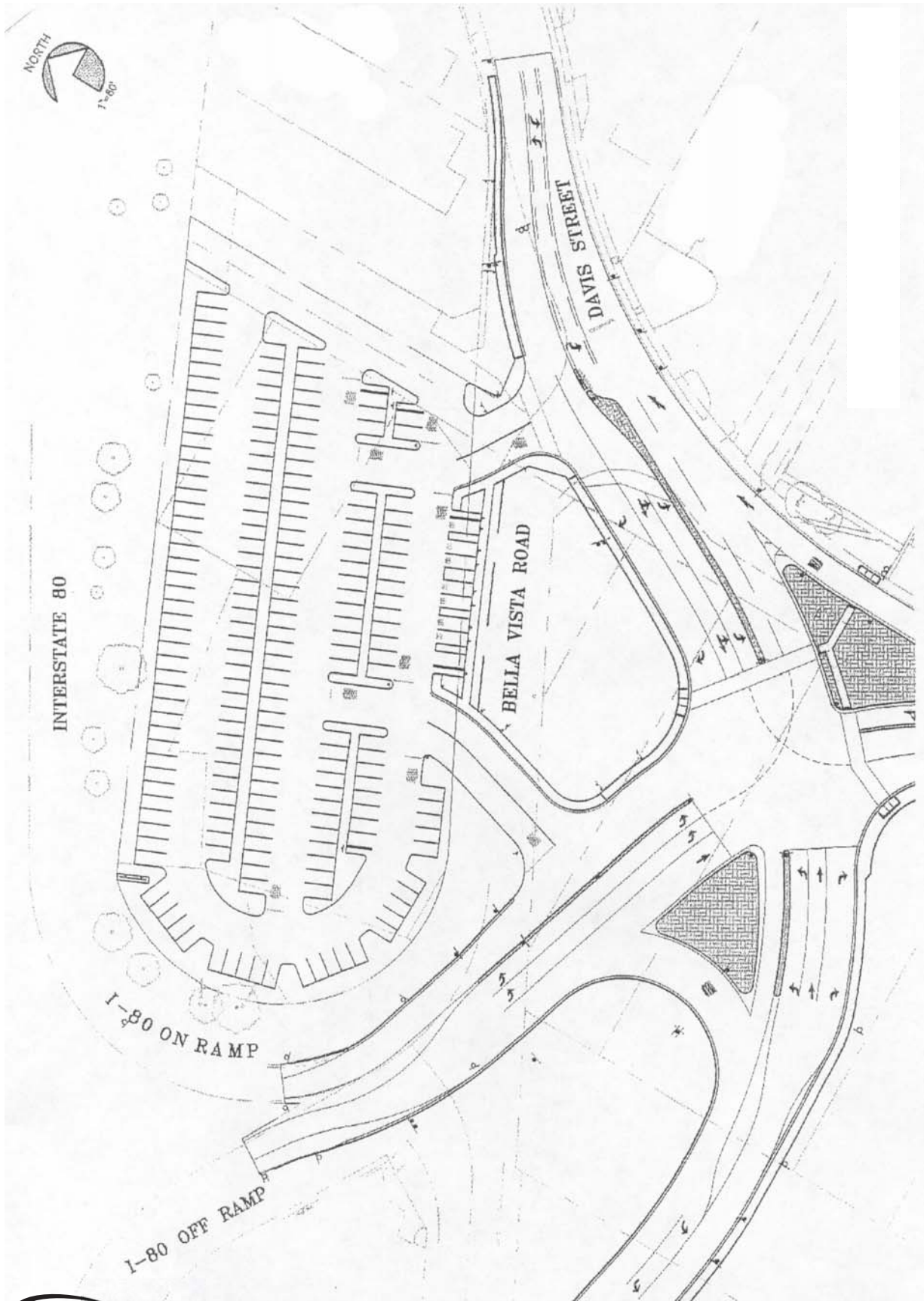
This park and ride lot is located near the eastbound I-80 Cliffside Drive on/off ramps in Vacaville. It is directly linked to the Vacaville Greyhound Terminal, but is somewhat obscured by landscaping and not as convenient for park and ride and Greyhound passengers as other parking. It is not served by any intercity bus lines and it is scarcely used. Observations indicate that less than five vehicles are parked in this 129 space lot on a typical weekday. Access to it by car and by bus is not very good. Caltrans has indicated plans to decommission it due to lack of use.

Leisure Town Road Park and Ride Lot

The City of Vacaville opened this new 46 space park and ride lot in the Fall of 2003. It is located at the southwest quadrant of the Leisure Town Road interchange adjacent to a Jack in the Box restaurant. Early experience is that about five vehicles use the lot on a typical weekday, with another five vehicles parking on the more accessible adjacent street. The latter parking will be lost when the interchange improvements are completed. No intercity bus services serve this site. See Figure 3-4 for a schematic of this site.

Pitt School Road (Market Lane) Park and Ride Lot

This 100 space park and ride lot is located south of I-80 along Pitt School Road with its access immediately provided from Market Lane. On a typical weekday about 7 cars are parked in this lot. FST's Route 30 serves the lot several times a day. The site is well located, but not as visible as desired. Future development of the parcel to its west should provide a better sense of security for the lots users.



ENGINEERS
PLANNERS
ECONOMISTS

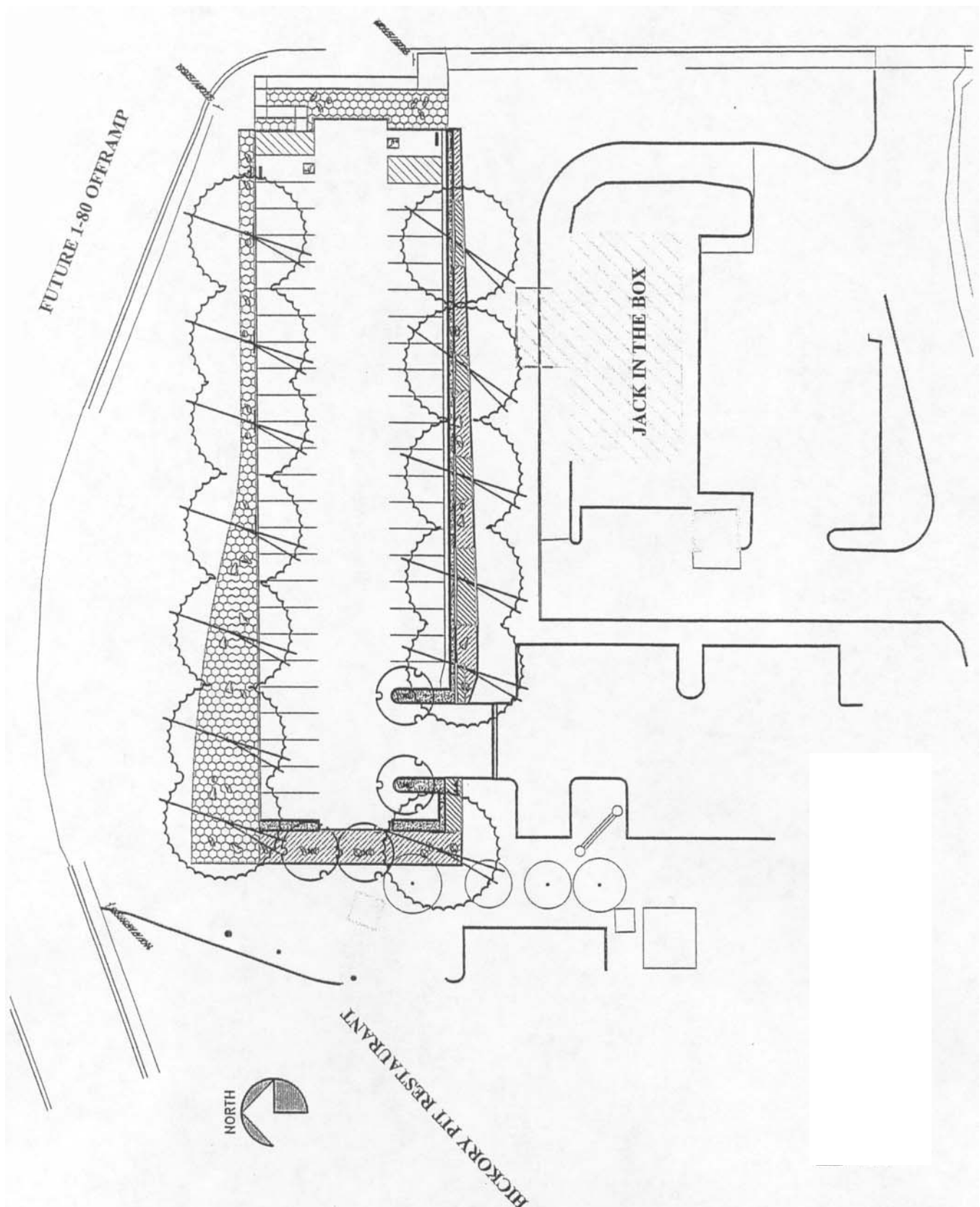
Wilbur Smith Associates

SOURCE: City of Vacaville

BELLA VISTA PARK & RIDE LOT PROPOSED SITE PLAN

Figure 3-3

388000\DFR\CHAPTER 3\FIGURE 3-3 - 11/17/03



INTERSTATE 680 CORRIDOR

At present there are no park and ride lots or transit centers located along I-680. Some commuters, however, appear to use the Vista Point parking facilities near Lake Herman Road for parking. On a typical weekday less than ten cars appear to be park and ride oriented, with other users appearing to be Vista Point and rest area oriented users. The current parking lot provides about 45 spaces. No major residential areas are located near the interchange to draw park and ride use. Security appears to be an issue at this remote site. No intercity buses stop at or near the site.

About five cars have been observed to park near the Gold Hill Road interchange in a graveled lot. No intercity bus service is provided to this lot.



Gold Hill Road Park and Ride activity in Fairfield

The City of Benicia is in the early process of developing an intermodal transportation center to serve Capitol Corridor and commuter rail services at a site proposed north of the Lake Herman Road interchange on the east side of I-680 along Goodyear Road. The location of the site would primarily serve travelers destined towards Sacramento. See Figure 3-5 for a schematic of the intermodal transportation center.

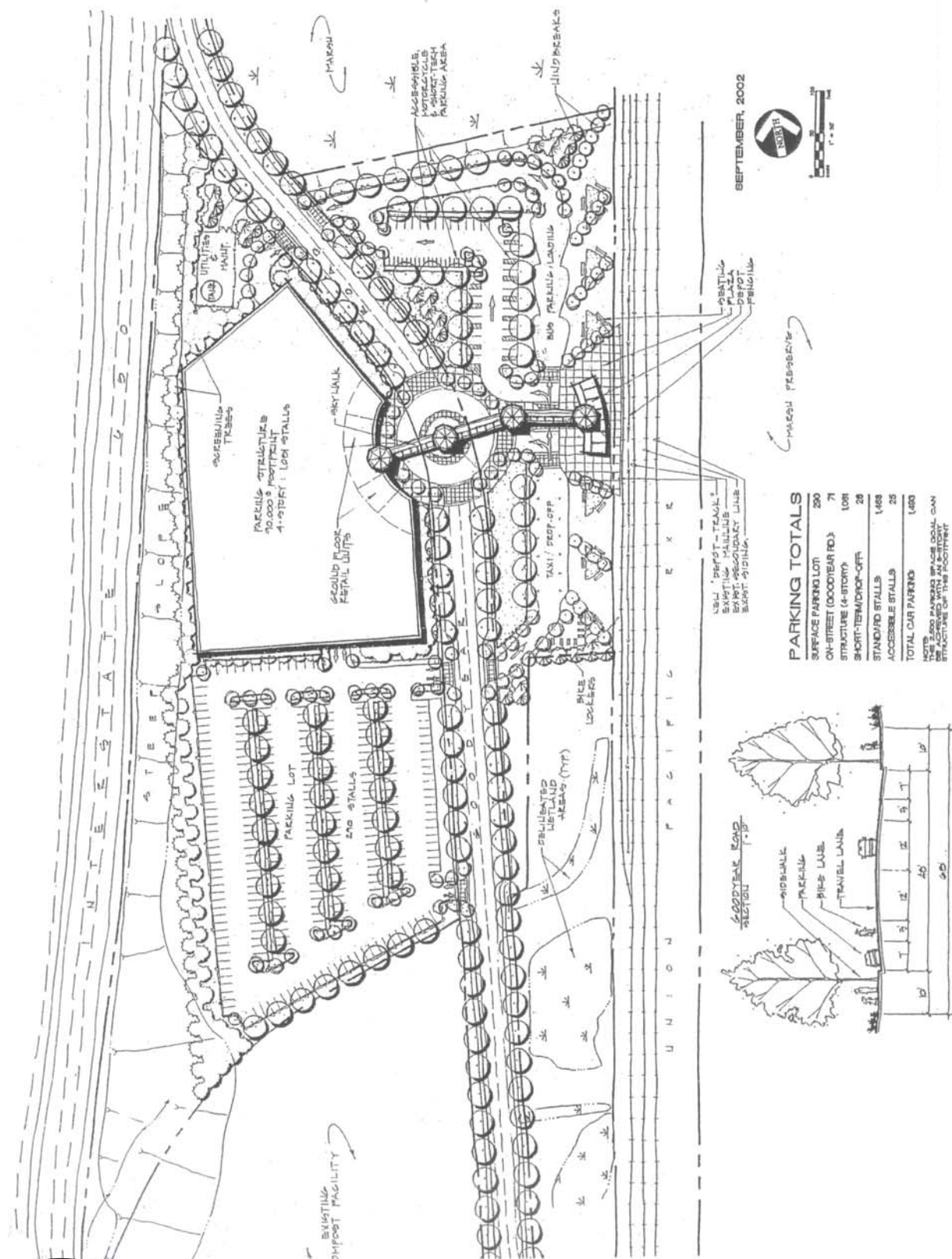


Figure 3-5

BENICIA INTERMODAL TRANSPORTATION STATION CONCEPTUAL SITE PLAN

388000\DFR\CHAPTER 3\FIGURE 3-5 - 11/17/03

INTERSTATE 780 CORRIDOR

The only formal park and ride lot located along I-780 is the 15 space facility located in Benicia at East Second Street. The lot is not very visible and has relatively poor access. Approximately seven cars are found parked at this lot on a typical weekday. There is no bus service at this park and ride site.

About nine park and ride cars have been observed parked near the Columbus Parkway and Rose Drive intersection.

PARK AND RIDE USE PROFILES

Park and ride usage has declined in Solano County and elsewhere in the Bay Area since the dotcom era, but remains very active. Two sources of information provide some insight into current usage. These data resources are the November 2000 survey of park and ride users at Curtola, York and Marin, and Davis Street sites, and the post-opening survey of Fairfield Transportation Center users.

Mode of Travel

The mode of travel (transit or rideshare) varied significantly depending on location of the lot and the amount of transit services provided to that lot.

- At Curtola Parkway, 34 percent of the patrons used transit, 42 percent indicated they were casual carpoolers, 8 percent were regular carpoolers and 16 percent were vanpoolers.
- At York and Marin, 95 percent reported being bus patrons and 5 percent reported being vanpoolers.
- At Davis Street, 16 percent of the patrons reported being bus riders, 3 percent casual carpoolers, 14 percent regular carpoolers and 67 percent vanpoolers.
- At the Fairfield Transportation Center, 49 percent reported being bus riders, 20 percent being carpoolers and 31 percent being vanpoolers.

Origin Destination Patterns

Most park and ride patrons resided close to the park and ride lot and a disproportionately high percentage were bound for San Francisco and the East Bay employment centers of Oakland and Berkeley. These communities tend to have concentrated employment centers that are served by good pedestrian systems and local transit service, and also are difficult/expensive to park cars at.

- Curtola Parkway – 76 percent of patrons lived in Vallejo, 6 percent in Benicia, and 4 percent lived in Fairfield. Seventy-seven percent were bound for work in San Francisco, 12 percent in Oakland and 5 percent in Berkeley.
- York and Marin – 77 percent of patrons were residents of Vallejo, 7 percent from Benicia and 7 percent from American Canyon. Patrons were bound for work as follows: 30 percent San Francisco, 43 Oakland and 20 percent Berkeley.

- Davis Street – 79 percent of patrons were residents of Vacaville, with Sacramento and Winters accounting for 6 percent of the park and ride users. Patrons were bound for work to the following employment locations: 25 percent San Francisco, 19 percent Sacramento, 13 percent San Francisco International Airport (SFO), and 9 percent Walnut Creek.
- Fairfield Transportation Center – Residential distribution of patrons were reported as follows: Fairfield 52 percent, Suisun City 28 percent, and Vacaville 14 percent. Patrons were destined to the following employment locations: 60 percent San Francisco, 13 percent Oakland, 7 percent Richmond, 5 percent Walnut Creek and 4 percent Berkeley.

Attitudes and Preferences

National research on park and ride use consistently shows that patrons look for sites that are near their home (no more than 3 to 5 miles), located directly along their commute path, are well served by transit and that are safe. The November 2000 survey of Solano County park and ride patrons confirmed this locally with 54 percent indicating proximity to home as prime reason for choosing the park and ride site, 19 percent indicating the quality of bus service, 18 percent reporting proximity to freeway and 9 percent indicating safety was the prime reason.

- Patrons of the Curtola lot commented that they are concerned about safety and most importantly more parking spaces. Transit patrons also were unhappy with casual carpoolers using the lot.
- Patrons of York and Marin's lot were most concerned with vandalism and safety.
- Patrons of the Davis Street lot were also concerned with vandalism and safety.
- Fairfield Transportation Center patrons sought: more parking (11%), more shelters (8%), more Vacaville bus service (6%), more early morning buses (8%), and more evening buses (7%).

SUMMARY OF ACCESS CHALLENGES FOR INTERCITY BUS SERVICES

Convenient access is critical to the success of express bus services. Major improvements have recently been made to park and ride facilities in Solano County as well as to transit centers. Key problem areas include:

- Curtola Park and Ride lot has grossly inadequate amount of parking to accommodate demands by rideshare and bus riders. Spillover conditions will only worsen once the HOV connection on I-80 has been completed and bridge tolls increase to \$3. Circulation for westbound buses is very indirect.
- Plans to address traffic congestion on Segment 1 will displace the Green Valley Park and Ride lot. A replacement facility needs to be provided. (The new facility at Red Top Road will fulfill this need).
- Fairfield Transportation Center needs more capacity to accommodate current and future demands and express bus access to the transit center needs to be improved.
- Davis Street Park and Ride lot in Vacaville needs increased capacity as envisioned by the proposal to construct a companion lot on the south side of I-80 on Bella Vista.

- Benicia Intermodal Center planned for the Lake Herman Road area needs convenient access to/from I-680 for express buses and new express coverage will be needed to serve the planned expansion of the Benicia Industrial Park.
- Residential development near Gold Hill Road needs access to express bus services.
- Park and ride facilities are needed to serve the eastern portion of Fairfield and western portion of Vacaville. Currently, there are no facilities for those 8 miles along I-80.

Chapter 4

CORRIDOR TRAVEL DEMANDS

BACKGROUND

The strongest travel markets for intercity express bus services typically are journey-to-work trips and to a lesser extent journey to college/university trips. These trip purposes tend to be longest in length and thus benefit most from faster speeds of express bus services. These trip purposes also tend to be repetitive (every day), which is also conducive to transit and rideshare modes of travel. The presence of tolls, congestion and HOV facilities in the corridor tend to encourage transit and rideshare usage. Lastly, the nature of employment centers is important to successful transit patronage. Employment centers that are concentrated, rather than dispersed or sprawled, facilitate direct bus service. Employment centers and other key destinations with good pedestrian systems, good local bus services and scarce/expensive parking also exhibit the highest transit and rideshare usage. The San Francisco, Oakland/Berkeley East Bay Area, Davis and Sacramento employment markets all exhibit these desired features. The I-680 Corridor has the toll and the congestion and will have an HOV system, however, its employment centers are not very concentrated, and its transit service and pedestrian system are not quite as convenient. Furthermore, most of its employment centers have ample parking and it is generally free to users.

The existing Solano County regional travel market features are summarized in Chapter 4, followed by a description of future travel market conditions. Estimates of current and future park and ride demands conclude Chapter 4. The Chapter is organized as follows:

- 2000 Census Journey-to-Work information;
- Existing Express Bus Ridership information;
- Identification of Major Activity Centers;
- Projected Growth;
- Road Traffic Conditions;
- Patronage Objectives; and
- Park and Ride Demand Estimates.

JOURNEY-TO-WORK TRAVEL MARKET – YEAR 2000

Understanding of the current Solano County travel market is informed by year 2000 Census data. Census 2000 Journey-to-Work (JTW) data, however, is only available at the County level. Not only does Census data tell a story about current travel behavior, but also, comparing 2000 data to older data offers a glimpse at how Solano County has changed over the decades. For example, the table below documents growth in Solano County compared to the nine county Bay Area as a whole.



Suisun City Train Station

**Table 4-1
1980-2000 CHANGE IN POPULATION**

County of Residence	Total Population			Percentage Change in Population		
	1980	1990	2000	1980-1990	1990-2000	1980-2000
Solano	235,203	340,421	394,542	45%	16%	68%
Total Bay Area	2,896,474	3,658,563	3,954,920	26%	8%	37%

Sources: U.S. Bureau of the Census, Decennial Censuses – 1960-1990 and ABAG

In summary, Solano County grew faster than the Bay Area as a whole between 1980 and 2000.

Additional historical Census data illustrates the following changes in Solano County. The Census documents growth in:

- Total population and numbers of employed persons;
- The average time it takes residents to travel to work (22 minutes in 1980 and 32 minutes in 2000);
- The number of vehicles available to residents; and that
- More employed residents report driving alone to work in 2000 than in previous Census reports.

Based on additional Census data, these trends are consistent with other Bay Area counties and the rest of the nation. Other sources, such as the 1995 and 2001-02 National Personal Transportation Study (NPTS) also confirm this trend.

The exception to the consistent trends throughout the region (and much of the nation) is the increase in transit use for the JTW. In Solano, Santa Clara and Contra Costa Counties between

1980 and 2000, both the percentage and absolute number of employed residents reporting transit at their primary means to work has increased. The remaining six Bay Area counties show decline or very little change in the number of transit JTW trips. For specifics on Solano County's JTW mode split, see Table 4-2 below.

Table 4-2 CHANGE IN MODE OF TRANSPORTATION FOR THE JTW, SOLANO COUNTY 1980-2000								
County of Residence		Drive Alone	Carpool	Transit	Walk	Other	Work at Home	Total Workers
Solano	1980	65,650	23,232	1,879	4,298	3,599	1,353	100,011
	% of Tot	65.6%	23.2%	1.9%	4.3%	3.6%	1.4%	100.0%
	1990	114,233	29,320	3,604	3,916	3,460	4,180	158,713
	% of Tot	72.0%	18.5%	2.3%	2.5%	2.2%	2.6%	100.0%
	2000	127,896	30,973	4,662	2,784	2,815	5,441	174,571
	% of Tot	73.3%	17.7%	2.7%	1.6%	1.6%	3.1%	100.0%

Note that the percentage of employed residents taking transit to work has almost doubled in twenty years (but still is a very small percentage of the overall market). At the same time, there has been an increase in the number of residents that drive alone to work and work at home. There has been a decline in the percentage of workers who report carpooling (from 23% in 1980 to 17.7% in 2000), however the absolute number of carpoolers has increased (from 23,232 in 1980 to 30,973 in 2000). Finally, walking or using some other means for the JTW has declined in percentage and absolute numbers between 1980 and 2000.

Moving on to where Solano County residents work, we can compare data from 1990 and 2000 for an overview. See Table 4-3 below.

Table 4-3 SOLANO COUNTY RESIDENTS COUNTY OF WORK			
County of Work⁽¹⁾	1990	2000	Percent Change⁽²⁾
Solano	97,477	99,231	2%
Contra Costa	20,919	22,018	5%
Alameda	10,326	12,588	22%
San Francisco	9,829	10,386	6%
Napa	5,492	8,256	50%
Sacramento	3,316	4,526	37%
Yolo	2,676	3,571	33%
San Mateo	2,577	2,880	12%
Marin	1,913	4,418	131%
Sonoma	1,105	2,334	111%
Total Solano Co. Workers	155,630	170,208	9%

1. Top ten counties only.

2. Percentages are rounded.

Sources: 1990 and 2000 U.S. Census and the San Jose Mercury News.

There has been a modest numerical and percentage increase in the number of residents who work within Solano County and those who commute to Contra Costa, San Francisco, and San Mateo. There has been a large percentage increase, but still small numerical increase, in workers who commute to Alameda, Napa, Sacramento, Marin, Yolo and Sonoma.

Table 4-4 below documents the numbers of workers residing in other counties that work in Solano County.

Table 4-4				
RESIDENTS OF OTHER COUNTIES COMMUTING TO SOLANO				
County of Residence⁽¹⁾	1990 Workers	2000 Workers	Numerical Change	Percent Change
Contra Costa	6,060	6,506	446	7%
Napa	5,805	3,756	-2,049	-35%
Marin	845	610	-235	-28%
Sacramento	2,807	3,233	426	15%
Yolo	2,258	3,065	807	36%
Sonoma	1,310	1,299	-11	-1%
Santa Clara	121	581	460	380%
Alameda	1,309	1,883	574	44%
San Francisco	377	418	41	11%
San Mateo	183	303	120	66%
Total	21,075	21,654	579	3%

1. Top ten counties only.

Comparing the 2000 and 1990 Census data in Table 4-4 above, fewer Napa, Marin and Sonoma residents are commuting to Solano County in year 2000. More Contra Costa, Sacramento, Yolo, Santa Clara, Alameda, San Francisco and San Mateo residents are commuting to Solano County in year 2000 than year 1990.

By adding together the number of Solano residents who work in the county (99,231) from Table 4-3 and the number of other workers who commute in (21,654) from Table 4-4, this puts total County employment at 120,885 in year 2000.

EXISTING EXPRESS BUS RIDERSHIP

Overall, the SolanoLinks bus services, the Capitol Corridor passenger rail service, and the Baylink ferry service are estimated to serve approximately 6,600 daily passenger trips on an average weekday. Capitol Corridor service carries about 300 daily riders to/from Solano's only rail station, located at Suisun City. The Baylink ferry service carries about 2,800 daily riders. Vallejo Transit serves about 2,680 trips to/from the County on Routes 80, 85, 90 and 91. Fairfield-Suisun Transit carries about 400 trips to/from the County on Routes 30 and 40 and Benicia Transit is estimated to carry 460 daily riders to/from Solano County on an average weekday. As such, the Capitol Corridor serves approximately 5 percent of intercity transit trips

to points outside Solano County, and the Baylink ferry serves about 42 percent with the remaining 53 percent served by intercity bus services.

Table 4-5 below summarizes the daily bus usage by route.

Table 4-5 SUMMARY OF CORRIDOR BUS USAGE			
Operator	Route	Passengers per Weekday*	Percent of Total⁽¹⁾
Vallejo	80	1,454	41%
	85	482	14%
	90	543	15%
	91	206	6%
FST	20	196	5%
	30	82	2%
	40	122	4%
Benicia	1	456	13%
Total Intercity Bus Transit		3,541	100%

* Based on available information year-to-date

1. Percentages may not equal 100% due to rounding.

In summary, on a typical weekday, Vallejo Transit's intercity routes carry approximately 2,685 passengers. Route 80 from Vallejo to El Cerrito del Norte BART carries the most with 1,454 passengers; Route 85 carries 482 passengers; Route 90 carries 543 passengers; and Route 91 carries 206 passengers.

Fairfield-Suisun intercity transit routes carry approximately 400 daily passengers on a typical weekday. All of the 196 daily trips served by Route 20 are internal to the county and some of the 82 passengers carried by Route 30 are also internal county trips. Most of Route 40's 122 daily passengers are to/from the Pleasant Hill BART Station. Thus, perhaps about 160 daily trips served by Fairfield-Suisun Transit are trips to points outside the county. Finally, Benicia Transit reportedly carries about 456 daily riders.

Vallejo Transit Passenger Profiles

Information from Vallejo Transit is limited. According to a spring 2003 conversation with the Operations Manager, data is not available by boardings and alightings (only trip totals are available – see Table 4-5). The following information is available by route:

- Route 80 - most patrons board at York/Marin and the Curtola Park and Ride;
- Route 85 - most patrons board at York/Marin and the Sereno Transit Center; ridership goes up when Solano Community College is in session;
- Route 90 - most patrons board at the Fairfield Transportation Center; and
- Route 91 - most boardings are at the Fairfield Transportation Center; between 2 and 6 patrons board in Vacaville.

For all routes, most ride through to the end of the line in the morning; and most board at BART during the PM peak.

Fairfield-Suisun Transit Passenger Profiles

Fairfield-Suisun Transit conducted an on-board passenger survey in the January 2003. Note that Route 30 now serves Sacramento. The following is a summary of the findings by route (totals may not equal 100% due to rounding):

Route 20 - 94 passengers completed the survey.

- 68% live in Vacaville;
- 22% live in Fairfield;
- 4% live in Suisun City;
- 2% live in Vallejo; and
- 3% live in other cities.

Route 30 - 49 passengers completed the survey.

- 33% live in Vacaville;
- 18% live in Fairfield;
- 31% live in Dixon;
- 8% live in Davis;
- 4% live in Suisun City and 4% in Davis;
- 2% live in Sacramento; and
- 4% live in other cities.

Route 40 - 79 passengers completed the survey.

- 44% live in Vacaville;
- 27% live in Fairfield;
- 13% live in Suisun City;
- 3% in each of the following cities or communities: Sacramento, Cordelia, Dixon, Concord;
- 1% in Vallejo and Davis each; and
- 3% in other cities.

Origin and destination data from this survey for all three inter-city routes is documented in Table 4-6 below.

Table 4-6
ORIGIN/DESTINATION DATA FOR FST

Route 20				
Origin/Destination	Origin No.	Percent	Destination No.	Percent
Solano College Area	4	4%	14	15%
Fairfield - general	25	26%	25	26%
Solano Mall Area	3	3%	15	16%
Suisun	1	1%	3	3%
Vallejo	2	2%	1	1%
Vacaville	61	64%	35	36%
Other	-	-	3	3%
Total	96	100%	96	100%
Route 30				
Origin/Destination	Origin No.	Percent	Destination No.	Percent
Fairfield - general	6	12%	7	14%
Solano Mall Area	2	4%	3	6%
Suisun	2	4%	-	-
Vacaville	17	35%	5	10%
Dixon	12	24%	11	22%
Sacramento	1	2%	1	2%
Davis	7	14%	22	45%
Other	2	4%	-	-
Total	49	100%	49	100%
Route 40				
Origin/Destination	Origin No.	Percent	Destination No.	Percent
Fairfield - general	15	19%	12	15%
Solano Mall Area	3	4%	1	1%
Suisun	4	5%	2	3%
Vacaville	24	31%	11	14%
Dixon	1	1%	1	1%
Pleasant Hill BART	3	4%	7	9%
Pleasant Hill Area	6	8%	5	6%
Walnut Creek	5	6%	12	15%
Sacramento/Davis	1	1%	1	1%
San Francisco	8	10%	8	10%
Oakland/Berkeley	2	3%	5	6%
Other	6	8%	13	17%
Total	78	100%	78	100%

Source: Fairfield/Suisun Transit On-Board Survey Draft Report January, 2003 (Northwest Research Group, Inc., et al).

In summary, the majority of the Route 20 riders boarded in Vacaville. Destinations are more diverse, with the greatest number of patrons alighting in Vacaville or Fairfield area. Route 30

has the most boardings in Vacaville and Dixon, and the most alightings in Davis or Dixon. Note that this route now serves Sacramento. Finally, most Route 40 patrons boarded in Vacaville. Destinations were more varied and included Fairfield (15%), Vacaville (14%), Walnut Creek (15%) and San Francisco (10%).



Solano Mall in Fairfield

Benicia Transit Passenger Profiles

Benicia Transit conducted an on-board passenger survey over a three day weekday period in February, 2000. Three hundred sixty-seven (367) surveys were completed – a very high rate of response, considering that Benicia Transit has about 450 boardings per day. Sixty percent of its riders lived in Benicia, 28 percent in Vallejo and 12 percent in other cities. Forty nine percent of the trips were work trips and 29 percent were school trips. Table 4-7 below documents the distribution of the work, school and college trips (78% of all trips).

Table 4-7 BENICIA TRANSIT WORK, SCHOOL & COLLEGE TRIP DISTRIBUTION		
Destination	No. of Trips	Percent of Trips
Benicia	76	31%
Concord/Pleasant Hill	62	25%
San Francisco	37	15%
Walnut Creek	23	9%
Berkeley/Oakland/Alameda	22	9%
Vallejo	8	3%
Danville/San Ramon	8	3%
Solano College	3	1%
Other	8	3%
Total	247	100%

Source: City of Benicia Short Range Transit Plan Update, June 2000.

Note: Percentages do not equal 100% due to rounding.

For detailed information about bus costs, service descriptions, frequency, farebox recovery rates, passengers per hour charts, and other related information see the Existing Bus Services section of Chapter 2.



Benicia Transit Route 1

MAJOR ACTIVITY CENTERS

While the greatest opportunity for intercity express bus patronage is the outbound commutes to San Francisco, Alameda County, Contra Costa County, and Sacramento job centers, express bus services should also attempt to provide access to major job sites in Solano County. The locations of major activity/employment centers in Solano County are shown in Figure 4-1. Based on information from Solano Napa Commuter Information, a program of the Solano Transportation Authority, this map geographically references current Solano employers with workforces large enough to support transit service. (Note that employers with large workforces dispersed throughout the County are not included on the map).

The Solano County Employers Map identifies the counties top five centralized employers as follows:

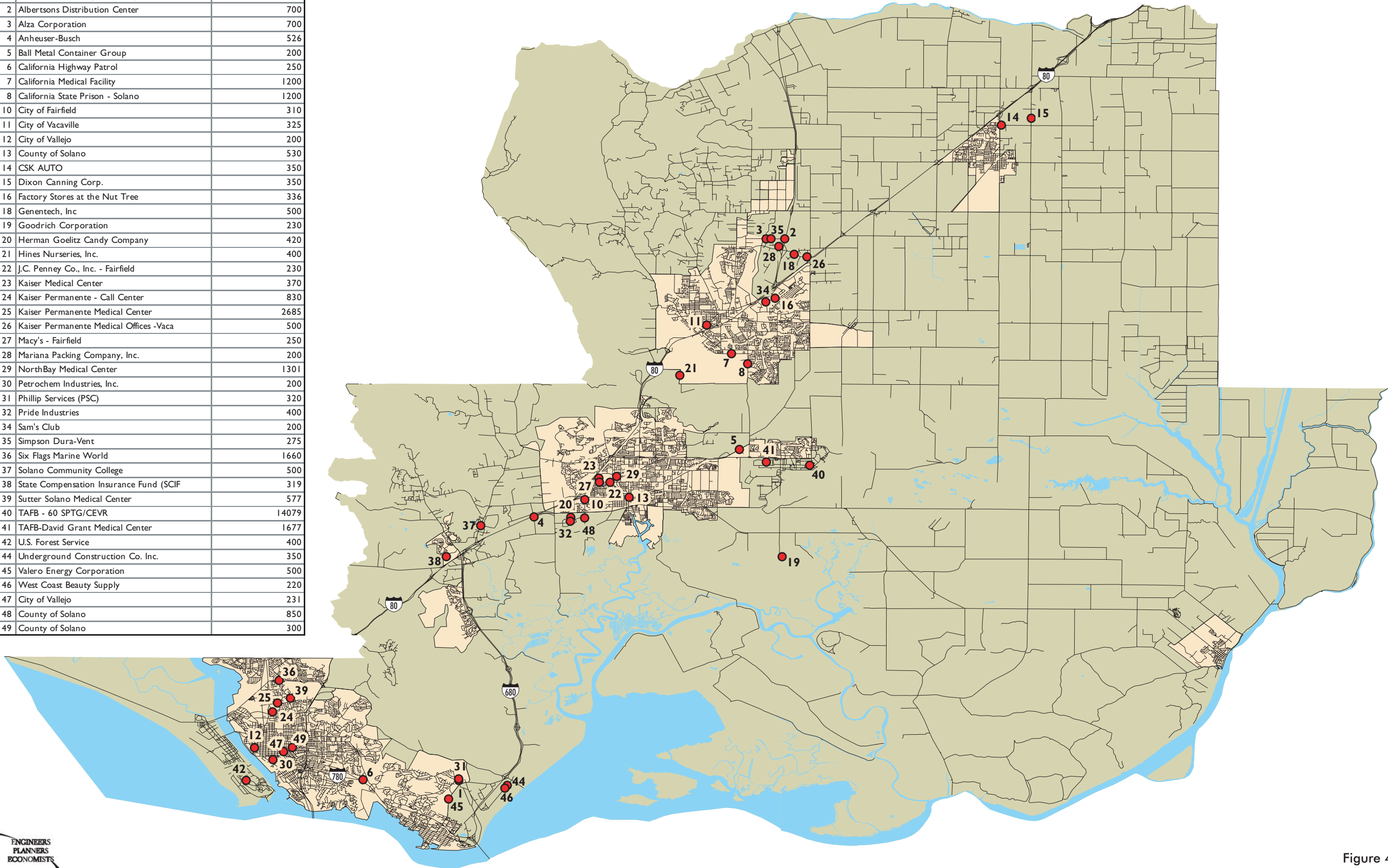
Table 4-8		
TOP FIVE SOLANO COUNTY EMPLOYERS WITH CENTRALIZED EMPLOYEES		
Map Reference Number	Company	Employees
40	Travis Air Force Base (TAFB)	14,079
25	Kaiser Permanente Medical Center (Vallejo)	2,685
41	TAFB David Grant Medical Center	1,677
36	Six Flags Marine World	1,660*
29	North Bay Medical Center	1,301

* Includes seasonal workers (March to October).



North Bay Medical Center in Fairfield

MAP REFERENCE	COMPANY	# OF EMPLOYEES
1	Alamillo Reinforcing Steel Corp.	220
2	Albertsons Distribution Center	700
3	Alza Corporation	700
4	Anheuser-Busch	526
5	Ball Metal Container Group	200
6	California Highway Patrol	250
7	California Medical Facility	1200
8	California State Prison - Solano	1200
10	City of Fairfield	310
11	City of Vacaville	325
12	City of Vallejo	200
13	County of Solano	530
14	CSK AUTO	350
15	Dixon Canning Corp.	350
16	Factory Stores at the Nut Tree	336
18	Genentech, Inc	500
19	Goodrich Corporation	230
20	Herman Goelitz Candy Company	420
21	Hines Nurseries, Inc.	400
22	J.C. Penney Co., Inc. - Fairfield	230
23	Kaiser Medical Center	370
24	Kaiser Permanente - Call Center	830
25	Kaiser Permanente Medical Center	2685
26	Kaiser Permanente Medical Offices -Vaca	500
27	Macy's - Fairfield	250
28	Mariana Packing Company, Inc.	200
29	NorthBay Medical Center	1301
30	Petrochem Industries, Inc.	200
31	Phillip Services (PSC)	320
32	Pride Industries	400
34	Sam's Club	200
35	Simpson Dura-Vent	275
36	Six Flags Marine World	1660
37	Solano Community College	500
38	State Compensation Insurance Fund (SCIF	319
39	Sutter Solano Medical Center	577
40	TAFB - 60 SPTG/CEVR	14079
41	TAFB-David Grant Medical Center	1677
42	U.S. Forest Service	400
44	Underground Construction Co. Inc.	350
45	Valero Energy Corporation	500
46	West Coast Beauty Supply	220
47	City of Vallejo	231
48	County of Solano	850
49	County of Solano	300



Note that only Marine World, on this list is within walking distance of a freeway interchange, and therefore a freeway bus stop. Kaiser Medical Center in Vallejo and the North Bay Medical Center are both located adjacent to the Solano Mall and therefore are easily served by regional bus services. Of the broader group of major activity centers that are identified on Figure 4-1, only the downtowns, major retail centers and major medical centers (excluding the new Kaiser facility in Vacaville) are directly served by intercity express bus services. The new and rapidly expanding office park complexes in Solano County are almost without exception not directly served by intercity express bus services. Thus, additional connections are needed, such as local bus services and perhaps pedestrian and bike facilities (such as lanes and lockers) to connect workers to their worksites.



Jelly Belly Complex in Fairfield

According to Solano County figures, 95% of Solano's population resides in incorporated cities, and 62% of the county's 823 square miles are open space or farmland. Thus, as illustrated by the Solano County Employers Map, many activity centers are clustered within the city limits of Vallejo and Fairfield, with another cluster to the north of Vacaville (residential areas are also clustered near these centers).

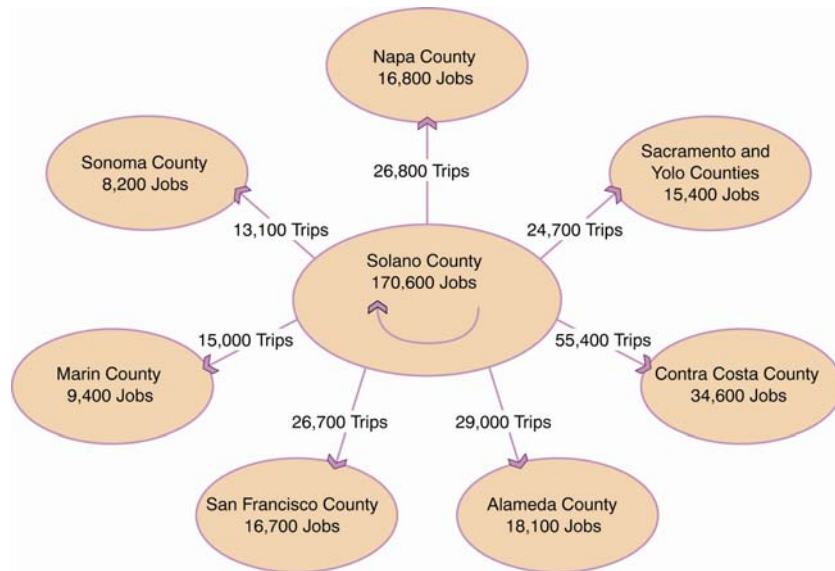
PROJECTED GROWTH IN TRAVEL

Current population and employment projections prepared by ABAG for Solano County, forecast that commute travel to and from the County will continue to increase. The proportion of Solano County residents that are employed within the county, however, is projected to remain at about 57 percent. The increase in commute trips to/from other counties will be linked to population growth in the county, rather than changing distribution of employment.

Based on current ABAG forecasts for 2030 (ABAG Projections 2003), MTC published the “Commute Forecasts for the San Francisco Bay Area 1990-2030”. Figure 4-2 below documents the Year 2030 distribution of jobs for Solano County residents. Figure 4-3 illustrates where outside workers commuting into Solano County will reside. Note that these figures represent year 2030, based on ABAG’s Projections 2003. The Figures below will give us some indication of possible commute patterns. Figures 4-2 and 4-3 also provide estimates of the number of daily commute trips associated with these commuters. These estimates assume that only 80 percent of workers commute to their jobsite on a given day and that each commuter makes two trips (to work and from work).



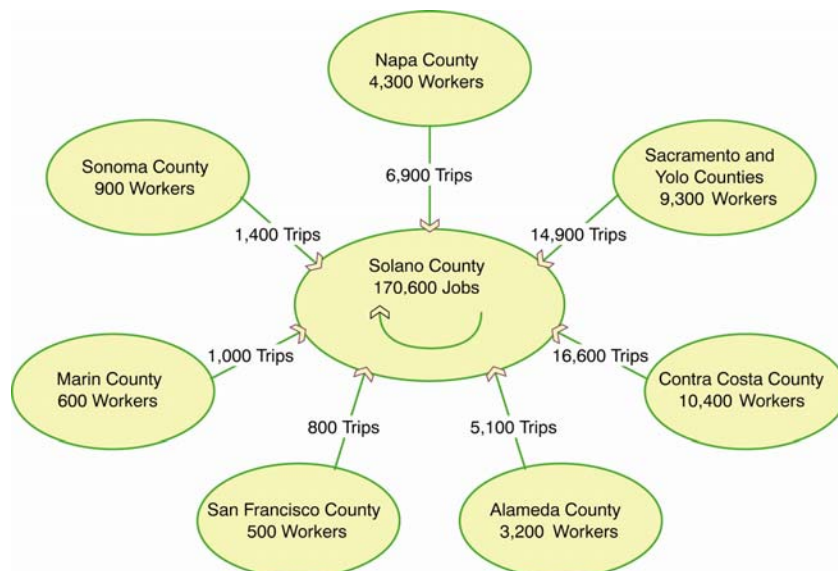
Figure 4-2
PROJECTED YEAR 2030 EMPLOYMENT DISTRIBUTION FOR SOLANO COUNTY RESIDENTS



Source: "Commute Forecasts for the SF Bay Area 1990-2030: Data Summary," MTC.

The largest commute destination, outside of Solano County, is projected to be Contra Costa County (34,600 jobs). The southward oriented commute market to Alameda and San Francisco Counties totals about 34,900 jobs. The westward oriented SR-37 corridor commute to Marin and Sonoma Counties totals about 17,600 jobs, which is roughly matched by the Napa County commute market of 16,800 jobs and the Yolo/Sacramento commute market of 15,400 jobs. For estimates of the workers residing in other counties, see Figure 4-3 below.

Figure 4-3
PROJECTED YEAR 2030 RESIDENTIAL DISTRIBUTION FOR SOLANO COUNTY WORKERS

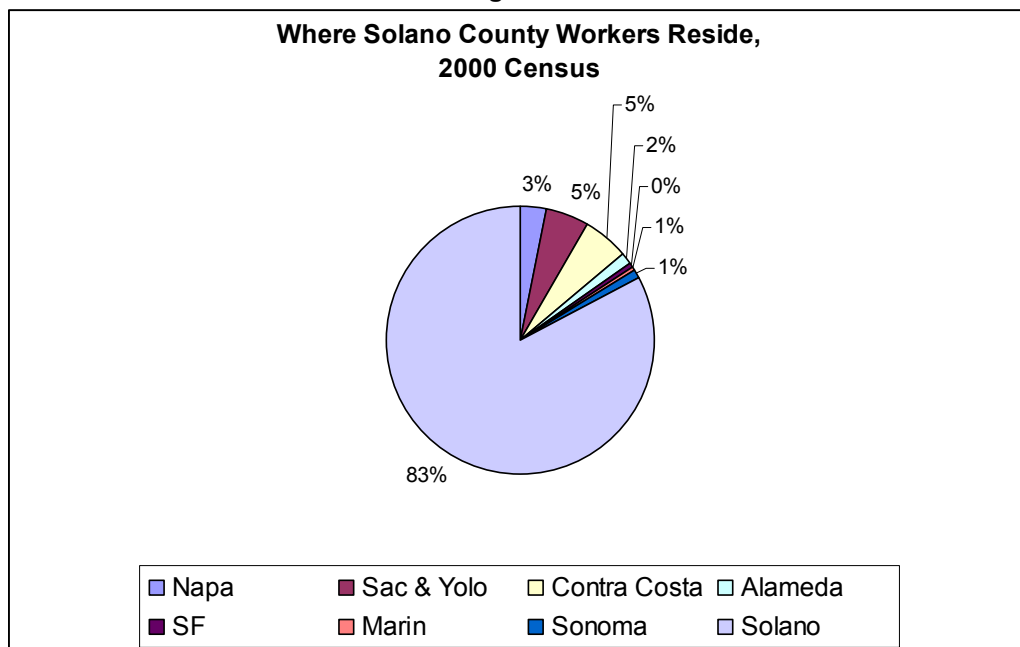


Source: "Commute Forecasts for the SF Bay Area 1990-2030: Data Summary," MTC

According to Figure 4-3, most Solano County workers are projected to be county residents. ABAG's 2030 estimate is for 203,300 jobs located within Solano County. About 84% of Solano County's jobs (170,600 jobs) would be filled by Solano county residents according to ABAG. The largest number of workers outside the county commute in from Contra Costa County followed by the combination total for Yolo/Sacramento County.

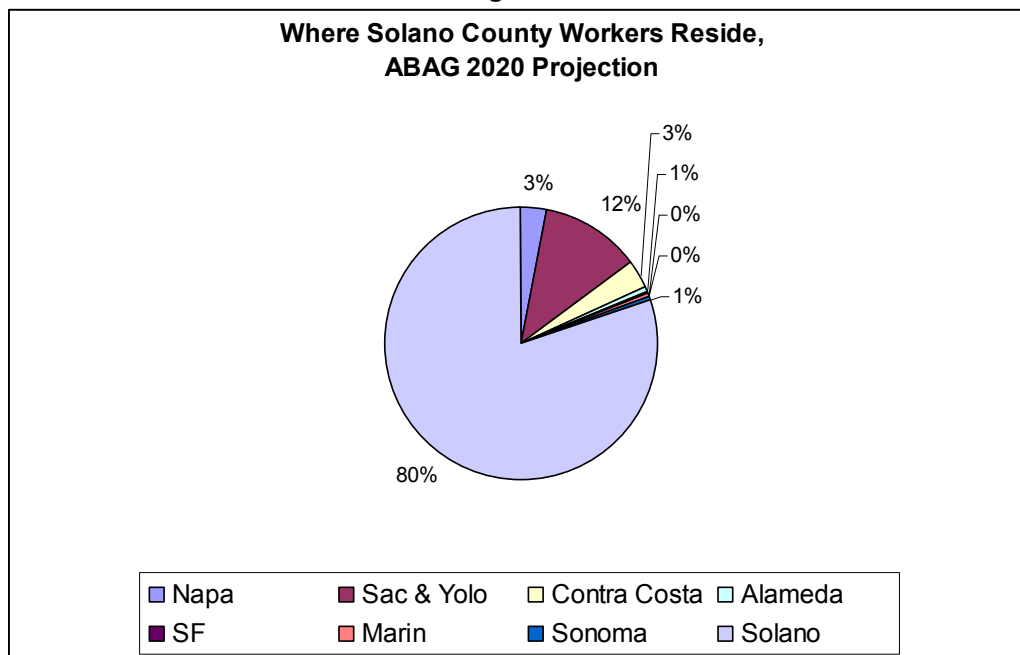
Figures 4-4 and 4-5 below compare the 2000 Census data to the 2020 ABAG projections. According to the projection, the majority of Solano County workers will continue to be Solano County residents; in 2000 83% of the workforce lived in the County and in 2030 ABAG projects that 84 % of workers will live in the County.

Figure 4-4



Source: 2000 U.S. Census

Figure 4-5



Sources for Figure 4-5: ABAG 2000 Projections for 2020 and "Commute Forecasts for the San Francisco Bay Area 1990-2020," MTC, October 2000.

TRAFFIC AND PARKING CONDITIONS

Intercity express buses will be competing against the automobile for commuters and other regional travelers. Chapter 1 provides an overview of current, 2010 and 2030 traffic conditions. Congestion is projected to continue even with implementation of highway improvement projects, particularly to/from Contra Costa County via the new bridges. Scarcity and cost of parking will also be most pronounced in San Francisco, Oakland, Berkeley and Sacramento. These locations will therefore offer the greatest patronage promise for intercity bus services.

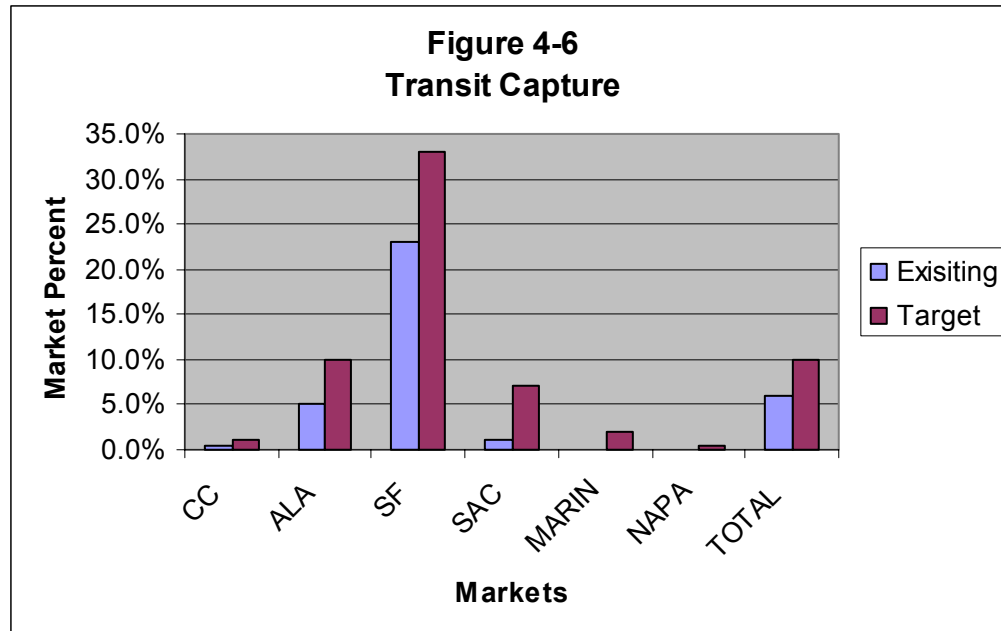
PATRONAGE OBJECTIVES

Figure 4-6 below illustrates the current transit capture and targeted future capture rates. The future percentages are based on the following principles:

- Transit capture to markets with higher parking, bridge tolls, congestion, and concentrated trip destinations are more likely to attract more transit trips; and
- Conversely, markets with less traffic congestion, lower or no parking fees, fewer bridge tolls, and dispersed development patterns will attract fewer transit trips.

Thus, as reflected in Figure 4-6, more San Francisco bound trips are likely to be on transit, and fewer Contra Costa County trips will be on transit. Alameda, with its well-developed transit system and areas with more dense development patterns falls in the middle.

The intent of this section is to identify the order of magnitude objectives for transit capture. Future transit patronage numbers will be impacted by future development patterns and congestion rates in not only Solano County, but also the destination Counties. Improvements to transit serving intercity trips are expected to increase usage.



Source: Wilbur Smith Associates December, 2003

PARK AND RIDE DEMAND ESTIMATES

The demand for park and ride facilities will depend on: the number of long distance commuters residing within convenient access of the individual park and ride sites; and the relative attractiveness of express bus and rideshare commuting versus driving in general traffic. Initial estimates of park and ride demand were developed using the Solano County Traffic Model, 2000 Journey-to-Work Census Data, the MTC Travel Model and ground counts of usage at several current facilities in the corridor. One of the major weaknesses of the resources used to estimate demand is the understatement of Solano commute demand to jobs in Yolo and Sacramento Counties.¹

The catchment area or market-shed area for each park and ride site was defined in terms of the Solano County Model's Traffic Analysis Zones (TAZ). In general, the catchment areas extend about three miles upstream from the park and ride lot and one mile downstream (relative to the direction of commute travel). The definition of these park and ride catchment areas is based on national experience that indicate the distance most patrons are willing to drive to a lot and also the fact that few motorists like to travel out of direction to reach a park and ride lot. These TAZs from the Solano Model were translated into MTC's larger regional TAZ system. The MTC model provided estimates of 2000 and 2025 commute trips from Solano park and ride catchment areas to four primary commute destinations:

¹ This will be addressed in the Solano County model update.

1. Downtown San Francisco;
2. I-80 Corridor in Contra Costa County and northern Alameda County;
3. I-680 Corridor in Contra Costa County south to Bishop Ranch; and
4. I-80 East Corridor to Yolo and Sacramento Counties.

The reason for using the MTC model as well as the Solano Traffic Model was that the Solano Model provided forecasts only for the one hour AM peak traffic period on Solano County roadways. Park and ride site access demands extend to more than just a one hour period and the longer commute distance park and ride peak demand period typically occurs earlier in the morning than the local traffic peak. The MTC model's three hour peak period forecasts therefore better reflects regional park and ride demand than the one hour Solano Model. Because the Solano Model has a more detailed TAZ structure and land use inputs, the Solano Model's TAZ system was used to disaggregate MTC's forecast in order to provide greater detail. MTC work trip forecasts were prorated back to the Solano Model's TAZs based on the number of dwelling units in each Solano TAZ.

Capture rates were then developed for each park and ride catchment shed to each of the four commute destinations. The capture rates were calibrated based on several ground counts of park and ride usage, compared to the total 2000 market of commute trips.

The proportion of patrons traveling to jobs in Yolo and Sacramento Counties was adjusted from the travel model forecasts using the 2000 park and ride survey data and also using the 2000 Journey-to-Work data from the Census.

Table 4-9 describes estimated current and future demand for spaces at each facility. Table 4-10 describes estimated current and future origin destination patterns of park and ride demand for the I-80/I-680/I-780 Corridor.



Budweiser plant in Fairfield

Table 4-9
BUS AND RIDESHARE PARK AND RIDE DEMAND FORECAST

		Current		Estimated Demand	
City	Site	Spaces	Usage	2000	2025
DIXON	I-80 & North First Street	0	0	5	40
	I-80 & Pitt School Road	100	7	8	64
	I-80 & West A Street	0	0	1	10
	TOTAL	100	7	14	114
VACAVILLE	I-80 & Leisure Town Road	46	10	25	78
	I-80 & Davis/Bella Vista	250	190	200	444
	I-80 & Cliffside	129	5	0	0
	TOTAL	425	205	225	522
FAIRFIELD	I-80 & North Texas Street	0	0	166	406
	I-80 & West Texas Street (FTC)	400	450	561	916
	I-80 & Green Valley Road	61	35	46	0
	I-80 & Red Top Road	50	30	30	209
	I-680 & Gold Hill Road	0	5	22	202
	TOTAL	511	520	825	1,733
VALLEJO	I-80 & Hiddenbrooke Parkway	20	15	19	35
	I-80 & Turner Road	0	0	203	371
	I-80 & Curtola Parkway	500	600	757	1,158
	I-80 & Magazine Street	19	19	20	80
	TOTAL	539	634	999	1,644
BENICIA	I-680 & Vista Point/Intermodal	0	10	12	16
	I-780 & West Military/Southampton	0	0	83	120
	I-780 & Columbus Parkway	0	9	20	35
	East 2 nd Street	19	18		(1)
	TOTAL	0	19	115	171
GRAND TOTAL		1,594	1,403	2,178	4,184

1. Demand estimate included in West Military/Southampton estimate.

Table 4-10					
PARK AND RIDE ORIGIN DESTINATION FORECAST					
CITY/YEAR	to SF	to East Bay	to I-680	to Sac	TOTAL
Dixon					
2000	1	1	1	11	14
2025	4	10	7	93	114
Vacaville					
2000	126	25	47	27	225
2025	194	73	124	131	522
Fairfield					
2000	495	212	70	48	825
2025	1,047	327	198	161	1,733
Vallejo					
2000	757	202	36	4	999
2025	1,024	528	84	8	1,644
Benicia					
2000	32	26	45	12	115
2025	21	57	80	13	171
TOTAL					
2000	1,411	466	199	102	2,178
2025	2,290	995	493	406	4,184

Dixon Sites

Three express bus/rideshare I-80 corridor park and ride sites were assessed in the Dixon segment of the corridor. As shown in Table 4-9, the 2000 demand levels are estimated to be relatively low but would increase as express bus connections to Davis and Sacramento are improved in years ahead. Table 4-9 seems to suggest that the current Pitt School Road Park and Ride site should continue to be the center of express bus connections for Dixon. Neither the North First Street, or West A Street sites appear to have high levels of demand and therefore small to medium size lots should suffice at each location. An argument could be made to defer the West A Street site to the Long Term and encouragement of this demand to use the Pitt School Road site. The North First Street and West A Street sites could be developed in conjunction with private sector development around these interchanges, rather than as stand alone projects. These facilities could also be integrated into future upgrade improvements to the I-80 interchanges in Dixon.



Downtown Dixon

Vacaville Sites

Two sites along I-80 were assessed in the Vacaville segment of the corridor. The recently completed Leisure Town Road and the planned Bella Vista Park and Ride projects are projected to be stretched to their maximum capacities by 2025. No demands are projected for the Cliffside Road Park and Ride site due to its lack of visibility, security concerns and lack of regional bus service. The new Vacaville Intermodal Transportation Center is projected to serve a demand for 400 to 500 vehicles.

Fairfield Sites

Five park and ride sites were assessed in the Fairfield segment of the study area as shown in Table 4-9. All five sites are anticipated to attract substantial demand, except for Green Valley Road, which is slated for closure as part of the interchange upgrade project. As it might be difficult to accommodate the projected park and ride demand for the Fairfield Transportation Center at this site, further development of the site, or a nearby companion facility might be necessary. The I-80 Abernathy Road interchange appears to be an attractive location to accommodate the overflow park and ride demand.

Vallejo Sites

Four sites were assessed along the Vallejo segment of I-80 as shown in Table 4-9. The 2000 estimate for Curtola reflects bleeding of park and ride demands to Turner and to a I-780 facility, if one could be developed. Without the bleeding off of demand farther north at Turner Road and to the east at I-780, the demand for parking at Curtola would be much higher.

Benicia Sites

Three site vicinities were assessed along I-680 and I-780 in Benicia as shown in Table 4-9. The Fairfield area Gold Hill Park and Ride site along I-680 was found to siphon most of the southbound park and ride demand away from the Benicia Intermodal site. The Gold Hill site is closer to residential catchment areas and therefore would be more effective at capturing

southbound park and ride demand. The bulk of the commute demand from Benicia's environs to I-680 Contra Costa County job sites is significantly out of direction of travel (more than two miles) from the Benicia Intermodal site and therefore unlikely to use this site. The estimate for intercity rail passenger park and ride for this site is 83 roundtrips in 2000 and 213 roundtrips in 2025. Adjusting for vehicle occupancies would translate into about 80 spaces for 2000 and 200 spaces for 2025. These rail passenger park and ride demands are significantly higher than the express bus passenger and rideshare parking demands, which are shown in Table 4-10.

The high demand estimates for park and ride sites located along the I-780 corridor possibly could not be fully met due to the absence of large well located sites for park and ride lots. Development of a park and ride lot at the I-780 Rose Drive interchange (northwest quadrant) and perhaps partnering with the Calvary Church for a park and ride lot at Southampton and West Military appear to be the most promising opportunities.

Chapter 5

CORRIDOR EXPRESS BUS SERVICE PLAN

BACKGROUND

STA's recently completed Comprehensive Transportation Plan (CTP) provides a solid framework for the I-80/I-680/I-780 Transit Corridors Plan. The CTP presented a financially unconstrained Vision Plan for express bus services, along with tiered investment levels intended to guide implementation of the Vision Service Plan. The tiers represented are:

- Full usage of TDA funds in the county for transit;
- One million dollars of added annual transit funding in addition to full TDA use;
- Two million dollars of added annual transit funding in addition to full TDA use; and
- Unconstrained funding that included full TDA use, use of Bridge Toll monies and use of monies from a new local sales tax.

Figure 5-1 illustrates the Vision intercity bus element of the CTP. In addition to increasing service frequencies on current routes and extending/refining current bus routes, the Vision Plan proposed new service on Highway 12. The Highway 12 bus service is treated as a given in the I-80/I-680/I-780 Transit Corridors Plan, as Highway 12 is not located in the study corridor.

The CTP also adopted five transit objectives, which were key inputs to the I-80/I-680/I-780 Transit Corridor Study.

1. Provide service with convenient access to developed areas;
2. Maximize transit usage and minimize congestion;
3. Maximize ridership and system cost effectiveness;
4. Provide seamless multimodal system; and
5. Support environmental justice goals.

INTERCITY EXPRESS BUS SERVICE PLAN PRINCIPLES

In crafting the Intercity Express Bus Service Plan to meet the defined CTP objectives and number of proven planning principles were employed.

- Link residential areas to job centers;
- Serve major Solano activity centers;
- Balance access versus speed;
- Link with regional transportation hubs;
- Serve all downtowns in the corridor;

- Minimize passenger transfer needs;
- Achievement of a minimum 20 percent farebox recovery ratio; and
- Simple for passengers to understand.



Route 40 bus at Fairfield Transportation Center in Fairfield



Route 40 bus at Pleasant Hill BART Station in Pleasant Hill

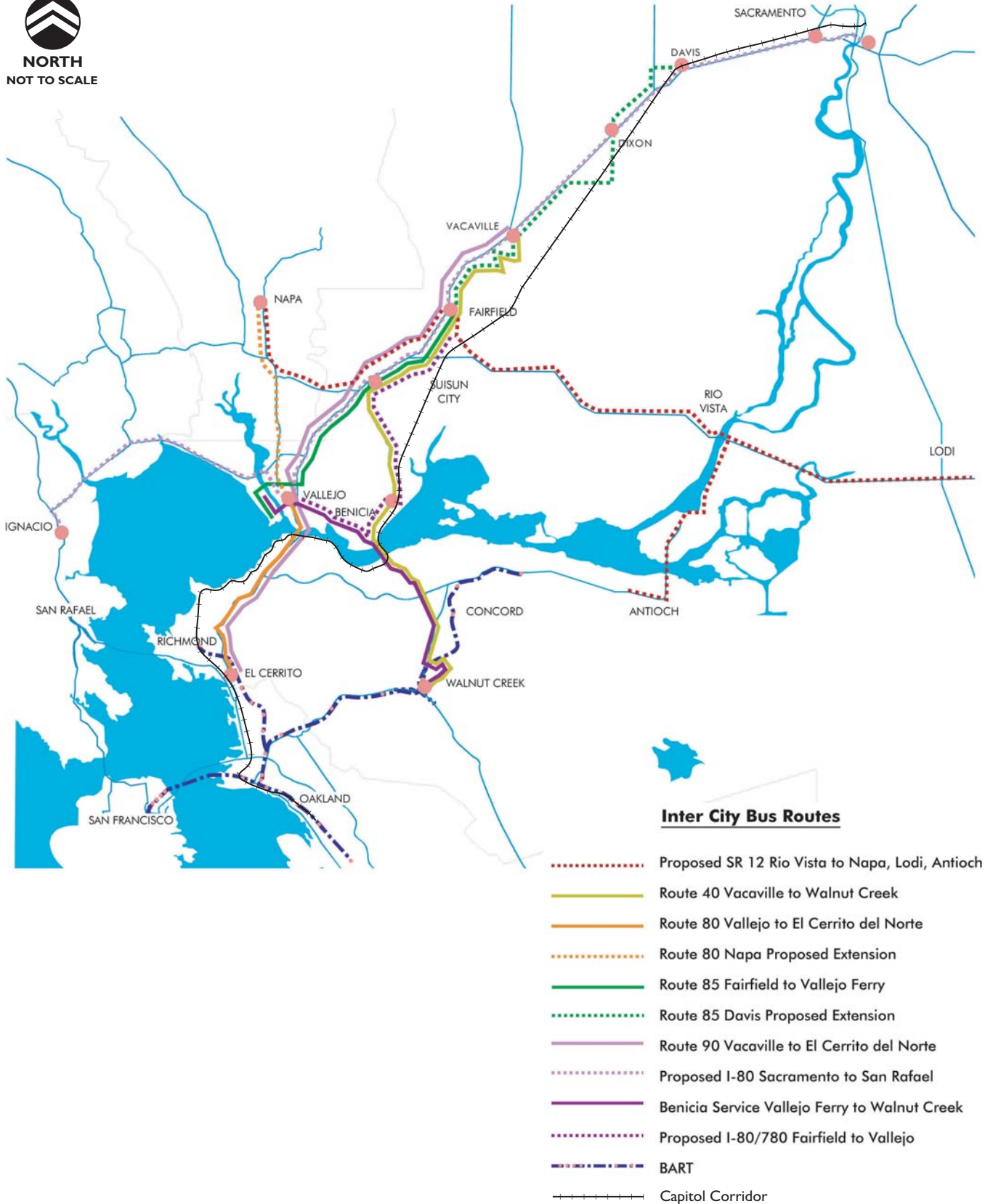


Figure 5-1

**COMPREHENSIVE TRANSPORTATION PLAN
2025 VISION INTERCITY BUS SERVICE PLAN**

388000\FR\CHAPTER 5\FIGURE 5-1 - 6/14/04

THE SERVICE VISION

Figure 5-2 describes the I-80/I-680/I-780 intercity bus service refinements to the CTP and is an overview of the Vision Service Plan. Figures 5-3, 5-4, 5-5 describe the Vision Service Plan in terms of services oriented to El Cerrito del Norte BART, to the Vallejo Ferry Terminal and to the Pleasant Hill BART station. The latter illustrations are intended to graphically simplify the interwoven system of routes. Operationally the strategic plan is to use the FTC as the schedule coordination point for intercity services. The Vision Service Plan follows principles described in Section 5-1.

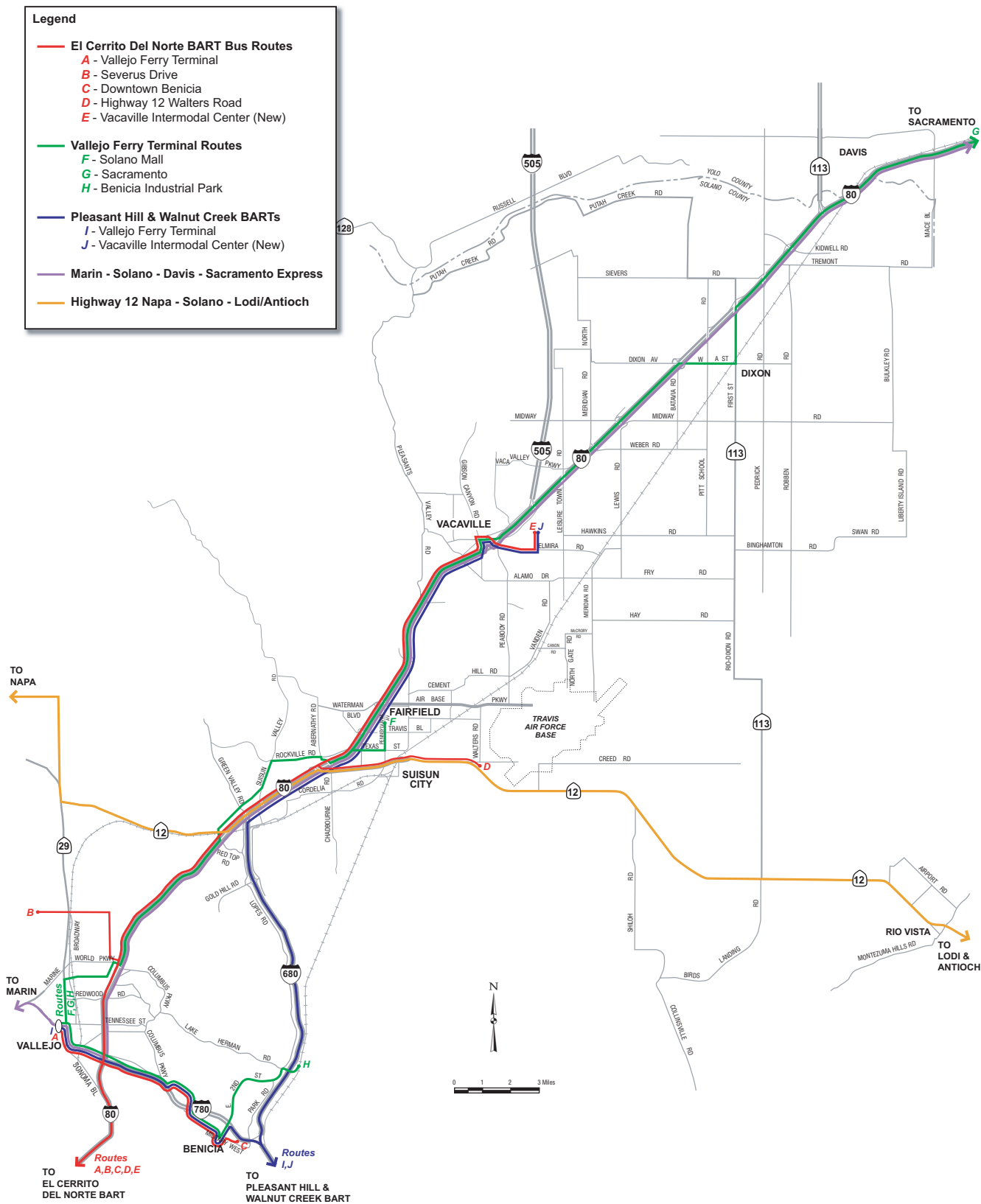
El Cerrito del Norte BART Station Routes (Figure 5-3)

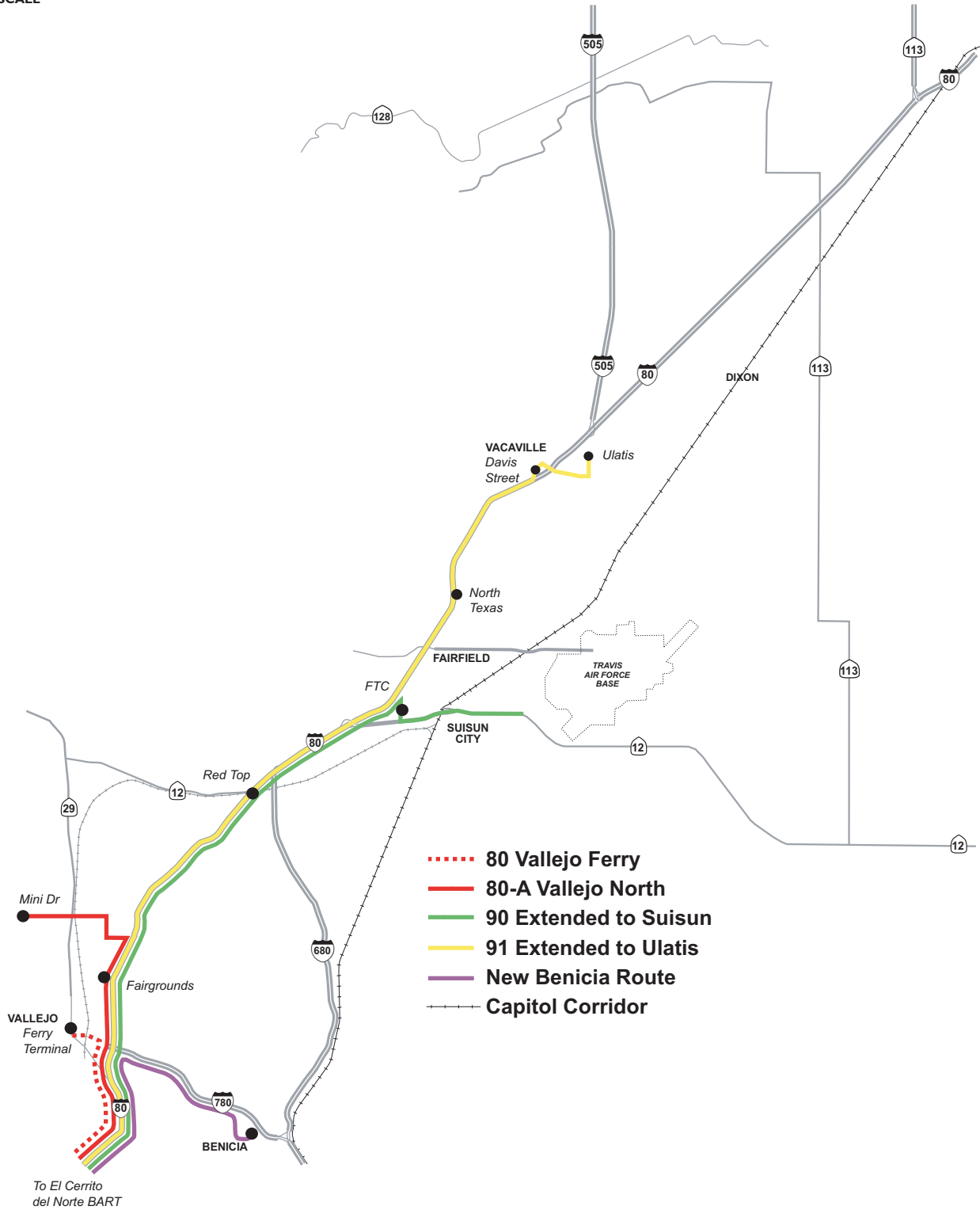
Five bus routes are envisioned and proposed. Route 80 is unchanged from the current successful concept, except in terms of more frequent service. A new branch is also proposed from the current line. The branch would connect to Benicia from the Curtola Park and Ride lot, rather than running to the Ferry Terminal. Route 80A is similar to the current northern extension of Route 80 to Servius and Mini Drive, except that it would bypass the Curtola Park and Ride lot and connect directly with El Cerrito del Norte BART. Route 90 is an extension of current Route 90 to better serve Suisun City residents. Route 91 is an extension of the current Route 91 to better serve eastern Vacaville, and the new Benicia Route will connect downtown Benicia with El Cerrito del Norte BART.

Route 80 – Route 80’s one way running time from York and Marin is now about 25 minutes during peak commute hours. The planned completion of the HOV lane in Contra Costa County to the Carquinez Bridge should reduce the running time to nearly 20 minutes and also result in more reliable running times. The HOV lanes on I-80 serve both directions and therefore covers both peak commute periods, so even the off peak direction buses should make good time. Allowing time to board passengers, the short length of Route 80’s trip permits more than a single peak direction trip per bus during each of the peak commute periods. Some Route 80 trips would continue service north to the Sereno Transit Center as they do today.

Some new Route 80 service would “branch” to Benicia in order to provide direct service between Benicia and the El Cerrito del Norte BART station. These buses would make the Curtola Park and Ride stop along their way until such time as the Route 80 service frequencies are improved to less than 8 minutes during the peak hours. During off peak hours the Benicia variation of the Route 80 service would always make the Curtola Parkway stop.

Route 80A – Only a few Route 80 trips now go north to Mini Drive and Severus. Passengers boarding in northern Vallejo take 25 minutes to get to the York and Marin Transit Center on their way to El Cerrito del Norte BART. The Vision Plan proposes to provide a more direct service bypassing York and Marin and going directly to del Norte BART from the Fairgrounds.







Route 80 bus at Curtola stop in Vallejo

Route 90 – Route 90 presently terminates at the Solano Mall after stopping at the Fairfield Transportation Center. Some trips continue past the Solano Mall to the Suisun City Amtrak Station. The one hour one way running time for Route 90 basically limits most of its buses to a single peak direction trip during the park commute period. The proposal is to extend Route 90 buses eastward past Amtrak on SR-12 to a new Walters Road Park and Ride lot. In addition to providing more convenient access to Route 90 buses, the proposal also would increase access to the Capitol Corridor train service. West of the FTC, a stop is envisioned at the Fairgrounds.

Route 91 – Route 91 currently terminates at Vacaville’s Davis Street Park and Ride lot. Its long one way running time basically limits uses to one peak direction trip during each commute period. The proposal is to extend the eastern terminus of Route 91 to a new Vacaville Intermodal Transportation Center located near the intersection of Allison and Ulatis in eastern Vacaville. West of Davis Street, stops are envisioned at FTC and the Fairgrounds.

New Benicia

El Cerrito del Norte Bus Service – Direct express bus service is proposed between Benicia and the El Cerrito del Norte BART station. This service will provide lower fare service (\$1.70 roundtrip) and quicker service for many Benicia commuters and would complement current service to the Pleasant Hill BART station. The service would originate in Downtown Benicia and travel via East Fifth, H Street, East Second, B Street, First Street, West Military, West Seventh, Southampton Road, I-780, Columbus Parkway, Benicia Road, Glen Cove Road, I-780, Curtola Park and Ride Lot and I-80 to the del Norte BART Station. This routing would afford the opportunity to “interline” buses with the Benicia to Pleasant Hill BART Station service. The on-going Benicia Short Range Transit Plan will confirm the benefits of this direct service to El Cerrito del Norte BART versus upgrading current service to the Pleasant Hill BART station.

Vallejo Ferry Terminal Routes (Figure 5-4)

Four routes are proposed to feed the Vallejo Ferry Terminal and Downtown Vallejo. Route 85 is similar to the current Route 85, except for its routing near Solano Community College. Route 30 serving Sacramento would be extended to the Vallejo Ferry Terminal via Route 85's path. A new bus route is proposed to operate as the "Rapid Bus" super express along I-80 between Sacramento and Vallejo. Ultimately this Rapid Bus route would continue west connecting with Golden Gate Transit and the planned Sonoma Marin Rail transit system in the North Bay. The fourth proposed bus route would connect along the I-780 corridor to the Benicia Industrial Park near Lake Herman Road.

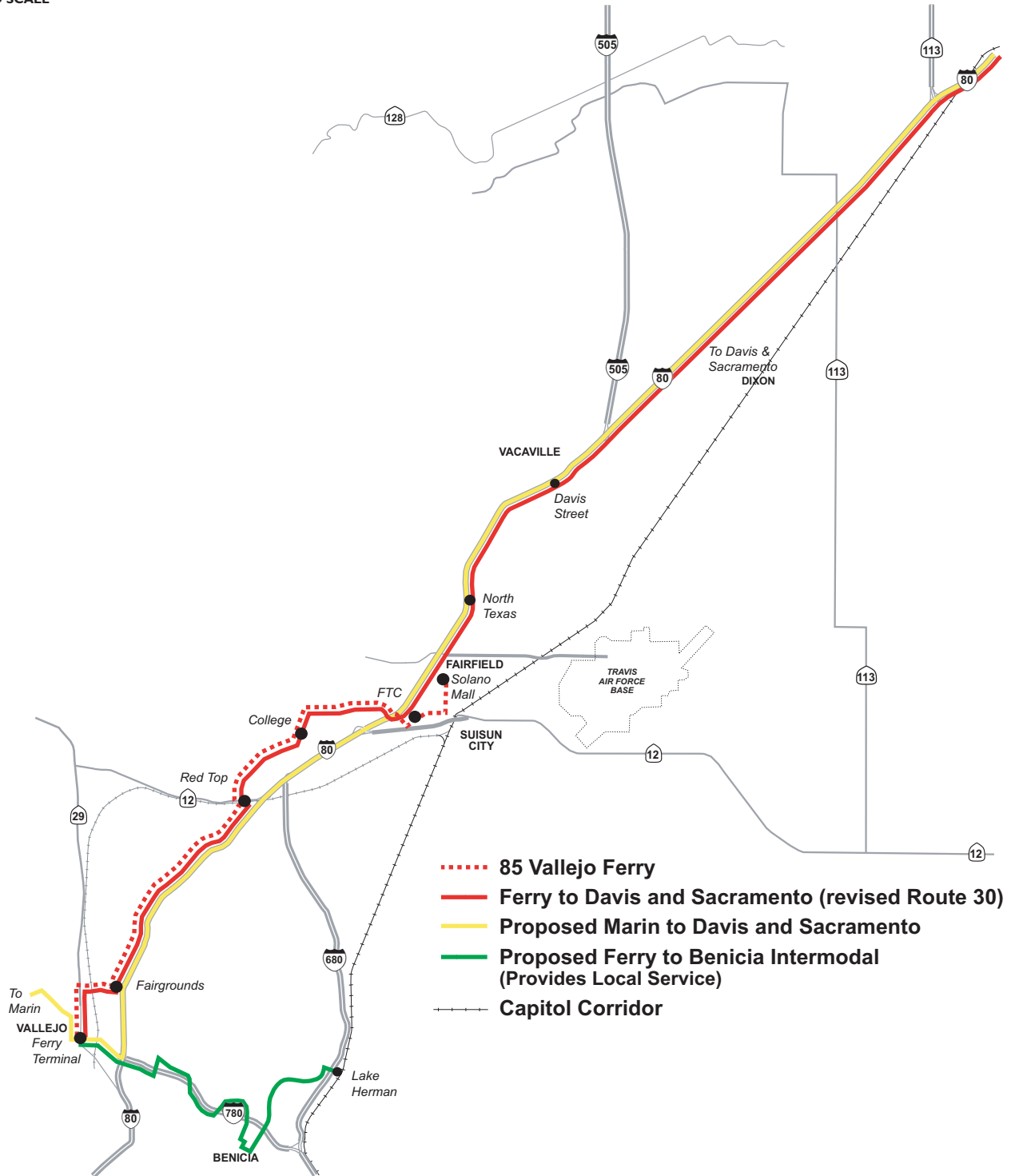
The best intercity bus service to connect to Sacramento is the Vallejo oriented service, rather than the El Cerrito del Norte or Pleasant Hill oriented service. The El Cerrito del Norte connection to Sacramento is already provided by the Capitol Corridor rail service that connects with the Richmond BART line at the Richmond Station. This connection will be further strengthened by implementation of commuter rail service in the corridor. The Pleasant Hill BART Sacramento connection is weaker, with only a Capitol Corridor stop at Martinez, but the new intermodal transportation center at Benicia should strengthen the connection to the I-680 corridor. Vallejo currently does not have a good Capitol Corridor connection to Sacramento and thus is most in need. Connection of Sacramento to the Ferry Terminal would complement ferry services. The bus link to Marin County could also be expected to appeal to North Bay to Sacramento travelers.

Route 85 – Route 85 would follow the same routing from the Vallejo Ferry Terminal to Red Top Road as the current Route 85. At Red Top Road it would exit I-80, serve the new Red Top Road Park and Ride lot and continue to the Solano Mall via the new Business Center Drive extension, Suisun Valley Road (stopping at the college), Rockville Road, Abernathy Road, Auto Mall Drive (stopping at the FTC), West Texas Street and Pennsylvania Street.

Route 30 Ferry to Davis and Sacramento – This route would be identical to route 85 and would alternate schedule with it west of Air Base Parkway. The route would continue east to Sacramento via: I-80 to Davis Street Park and Ride lot, Pitt School Road (Market Lane Park and Ride lot), West A Street, North/First Street (Dixon Station), and UC Davis. The new extended Route 30 would operate Saturdays and Sundays (**new service**). During event travel times at the new proposed Dixon Downs, stops would be added to serve this major attraction.

Marin to Davis and Sacramento - The Rapid Bus would make very few stops between Sacramento and Vallejo. It is envisioned to stop at UC Davis, Pitt School Road, Davis Street, FTC, and Curtola Parkway Park and Ride lot. The service west would continue past Mare Island to Sonoma Marin Area Rail Station in Novato.

Ferry to Benicia Intermodal – This route would increase the service frequency between Benicia and the Ferry Terminal. With the development of the second phase of the Benicia Industrial Park, the route would be extended to Lake Herman Road and to the Benicia Intermodal Center planned for Goodyear Road. The latter extension needs to have a good pedestrian system in place along Second Street to support pedestrian access to bus stops.



Pleasant Hill BART Station Routes (Figure 5-5)

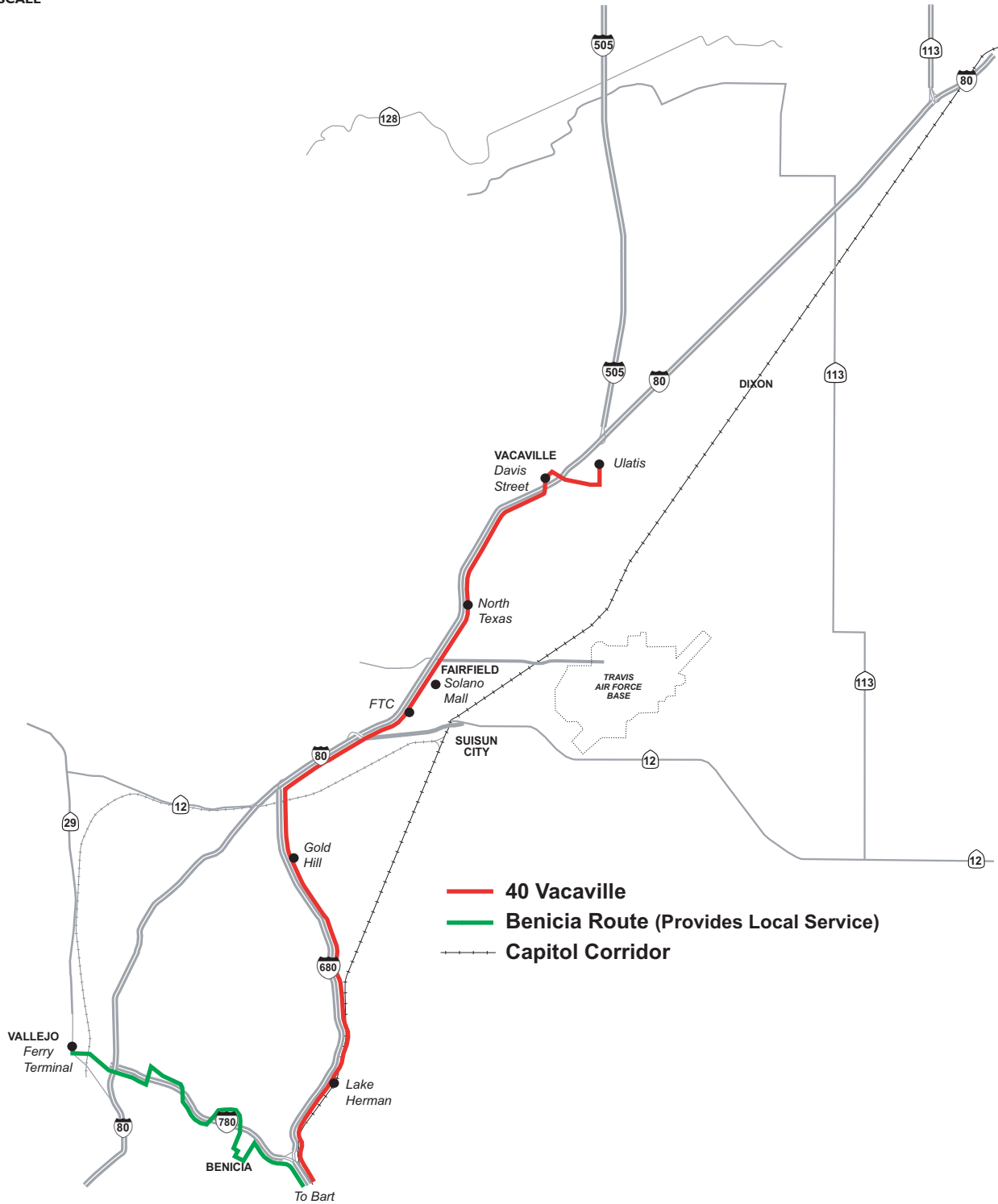
Two intercity bus routes are proposed to link with the Pleasant Hill BART Station. Route 40 is similar to the present Route 40 service, but includes an extension to better serve eastern Vacaville. The Benicia intercity route is similar to the current Benicia bus route, except it adds some local service to allow better passenger access. Assessment of the best BART station (Concord, Pleasant Hill or Walnut Creek) to terminate Solano service concluded that the Pleasant Hill station appears to be the best link in terms of door-to-door travel time for BART connections, passenger fare cost (Concord is the most expensive), and the likelihood of getting a seat on the train. As such, Solano County buses should continue to connect to BART at Pleasant Hill. Extension of some bus trips to Walnut Creek BART also appears desirable as long as it does not lose the ability to get more than one peak direction run per bus during commute peaks. On Saturdays and Sundays (**new service**) a stop at Willow Pass Road should also be considered.

Route 40 – Route 40 would follow its current routing between BART and Davis Street. At Davis Street it would continue east on Elmira Road, Allison Road to a new Vacaville Intermodal Transportation Center located near Ulatis Drive and the Nut Tree Parkway. Route 40 would make stops at the Davis Street Park and Ride, FTC and Gold Hill Road on its way to BART. The benefits of extending some service to Leisure Town Road in order to directly serve the Kaiser Medical Center might be considered. Some of the commute period Route 40 buses would be extended to connect with the Walnut Creek BART station, after first stopping to serve the Pleasant Hill BART station. Selected trips would make a stop at Willow Pass Road to provide direct connections to employment centers and the Sun Valley Mall located in Concord.



Route 40 bus at Fairfield Transportation Center in Fairfield

Benicia BART – This route would be similar to the current Benicia to BART service, except that it would travel on Benicia Road between Glen Cove and Rose Drive. Few opportunities exist to develop a park and ride lot along the current freeway route, and this local street diversion would provide such opportunities at little cost in running time.



PATRONAGE

The eight intercity bus routes that currently serve Solano County combined average a total of 3,540 daily passenger trips served. The proposed transit plan for the corridor is projected to carry 5,080 daily passenger trips.

COSTS

The complete implementation of the corridor transit service plan is estimated to cost \$19.0 million, which compares to the current costs of \$4.6 million. The subsidy requirement would increase from today's \$2.7 million to \$13.6 million with the full implementation of the plan. Farebox ratios would decline from today's 41% to 29% in the future.

SUMMARY

In Chapter 1 a number of issues were raised regarding service configuration, emphasis and investment.

- **How much bus service to provide?** This is very much a policy issue. The overall investment in highway improvements in the corridor is expected to exceed one billion dollars over the next 30 years. Even at a 50 year life this averages simplistically to \$20 million annually. Transportation is expensive to provide. Aside from the cost issue there are potential land use, economic and environmental benefits to increased transit and rideshare usage. These all must be balanced with investment cost. On a system basis use of 10 boardings per bus hour of service might be a good balance of cost versus effective benefit.
- **Emphasis on weekday peak commute service versus midday and weekend service?** The major market for intercity/regional express bus services are the commute period services. Midday and evening service tend to be less productive, but often necessary in order to cover paired to and from work trips. Travel demands are not effectively served unless both parts of the roundtrip are served. Weekend service tends to be lightly used, but important to many people. More and more people have non standard work weeks, particularly for environmental justice (STA Objective) market segments. A good strategy would be to tailor commute services to match capacity demands and to tailor off peak and weekend services to meet minimal policy levels of passenger convenience (e.g. 60 minute headways in early years improved to 30 minute minimum headways in later years of the plan.
- **Whether to concentrate investment in frequent service along key corridors or invest in less frequent but broader coverage?** Rail transit service tends to be much more effective at attracting "choice riders" than buses. Choice riders are those who can choose to travel by other means (i.e., they have vehicles available for the trip). Key features of rail service: fast, frequent service, reliable schedules and comfortable rides are now being approached by modern bus systems. We recommend the rail-like quality of service for the I-80/I-680/I-780 corridor as a means of attracting choice riders and minimizing demands on freeway capacity. Concentrate the service and provide a quality service and choice riders will find it increasingly attractive. To attract choice riders, it makes sense to

concentrate investment in frequent service along key corridors, rather than less frequent but broader coverage.

- **Orientation of service to outward commute markets versus serving local employment centers?** Desirably both strategies are complementary. Solano County is forecast to be a net exporter of workers to jobs in years ahead. Nevertheless, the “backhaul” express bus trip should be able to serve commute trips into Solano job centers. Most of Solano’s employment growth is not located in downtown centers or retail centers, but rather in office and industrial parks. The latter tend to have poor pedestrian systems, be auto oriented and not to be very concentrated. Directing future employment growth towards major transit corridors and centers would facilitate increased service to commuters inbound to Solano’s jobs.
- **Relative importance of intercity bus connections to Davis/Sacramento, Pleasant Hill BART, del Norte BART, and Vallejo Ferry Terminal?** From Chapter 4’s description of current transit patronage characteristics, it is very apparent that parking scarcity and cost are major factors influencing ridership and ridesharing decisions. Good pedestrian systems and local transit services tend to be found in places with scarce parking. Congestion and tolls are other factors. These findings suggest that the commute to San Francisco, SFO, Oakland/Berkeley and increasingly Sacramento are prime markets for intercity express services. The more dispersed employment centers of Napa, Marin/Sonoma and Central Contra Costa County, which are largely characterized by ample free parking and relatively low density employment, will be a much more difficult market to win.
- **Relationship to Capitol Corridor passenger rail service, Vallejo Ferry service and other potential future regional public transportation systems?** Capitol Corridor passenger rail and potential future commuter rail services, along with high capacity ferry services are and will be the backbone of Solano County’s public transit system. Intercity express bus services should be closely coordinated with these high capacity systems and provide complementary services. The express bus services expand the public transportation service market and are important in and by themselves.
- **How best to serve the Benicia Industrial Park?** Industrial parks are difficult to successfully serve with transit. Work shifts tend to be atypical, employment densities (not size) tends to be low, parking tends to be ample and free. Currently, half the Industrial Park is located on the east side of I-680 and the other half is located on the west side of I-680, making it very difficult to efficiently serve with transit. The current sidewalk system and road features complicate stopping buses and safely serving passengers on the west side of I-680. However, a new transit stop for Route 40 has been proposed at Park Road and Industrial Way to provide access to regional bus services. Completion of the second phase development on the west side of I-680 should address the pedestrian and bus stop difficulties and allow provision of additional transit services. Employers should also be encouraged to provide a shuttle to key access points.
- **Design for frequent stops and increase access convenience versus non stop fast service?** The nature of Solano County’s prime transit commute market with transfers to BART and ferries to get to work, argues for park and ride and kiss and ride access to express bus service. Patrons avoid multiple transfers, particularly to infrequent service connections.

Chapter 6

HIGHWAY INTERFACE ELEMENT

BACKGROUND

Intercity express bus service access in the Study Corridors is currently enhanced by a system of transit centers and park and ride facilities. As is highlighted in Chapter 3, patron access demands exceed available capacities at several of the current facilities. Development of new park and ride sites is indicated to more conveniently serve patrons and the provision of opportunities for buses to directly and safely access planned HOV facilities need to be pursued. Actions to address these needs are described in this report chapter.

PLANNING PRINCIPLES FOR IMPROVED ACCESS TO MEDIAN HOV LANES

The HOV lanes that are being planned as part of the Corridor's Highway Study will be located in the freeway median, adjacent to the fast general purpose lanes. Carpools, vanpools and buses will need to weave across the general purpose lanes in order to access/exit the HOV lanes. The Highway improvements will increase the number of total lanes so that vehicles could be weaving across four or more lanes to access the HOV lanes. At times when the general purpose traffic lane traffic is moving well (50 mph or better), the time lost making these weaves would be minimal. When traffic slows to 40 to 50 mph, weave delay increase and the difficulty transitioning from the general traffic lane to the higher speed HOV lane becomes more difficult, particularly if the HOV volumes are high and the gaps between vehicles are short. At general traffic speeds less than 40 mph, the transition move into/out of the HOV lanes get much more difficult and accident risks increase, particularly for large buses. Obviously, at 15 to 25 mph buses will have a very difficult time finding a safe gap in traffic into which to merge.

In addition to safety and increased travel time concerns, weaving buses into and out of the median HOV lanes across congested traffic adversely impacts schedule adherence. A key strength of express buses operating in HOV lanes is that commuters will be able to depend on a reliable commute time. Otherwise, commuters tend to schedule their trip based on worst case times. This worst case time approach to commute decision-making significantly undermines public transit as an attractive commute mode.

In summary, direct access to median HOV lanes are important for express buses because:

- Bus running times are reduced which help to reduce operating costs;
- Passengers get to their destination faster;
- Elimination of bus and rideshare weaving movements improves safety for buses; rideshare and general traffic; and
- Elimination of weave related delays significantly improves schedule reliability.

Observations indicate that traffic congestion levels and associated delays vary widely based not only on incidents on the highway, but also day of the week (Fridays are much worse than other days). Thus, when traffic levels approach capacity thresholds, traffic and weaving conditions degenerate rapidly. These conditions severely impact bus schedule adherence performance.

Recognizing that direct access ramps to HOV facilities are very expensive (\$20 to 40 million each), a set of planning principles were set to balance benefits with investment cost.

1. Locations with projected general traffic lane congestion;
2. Locations with significant bus and rideshare access volumes; and
3. Locations with significant potential passenger transfer traffic.

Current Conditions

As described in Chapter 1, current freeway operating conditions are assessed to be relatively good with a few major exceptions. During the AM commute period approaches to the Carquinez and Benicia bridges both experience traffic backups as does the westbound section of I-80 from SR-12 East to Sr-12 West. In the PM peak eastbound traffic backups occur on I-80 from Air Base Parkway to Red Top Road and northbound traffic backups occur on I-680 from the junction with I-80 to Gold Hill Road. As there are no current HOV lanes, buses are simply delayed along with general traffic on these segments at these times.

Year 2010 Conditions¹

By 2010 HOV median HOV lanes should be in place on I-80 from just north of the Carquinez Bridge all the way to del Norte BART and on to the Bay Bridge. HOV lanes also should extend from the Benicia Bridge to Walnut Creek on I-680. Slightly after 2010 median HOV lanes should be open on I-80 in both directions from SR-12 West to Air Base Parkway. As shown in Figure 6-1, forecast traffic conditions for 2010 with these improvements in place are for the westbound AM peak Carquinez Bridge traffic backup to extend pass Tennessee Street and for the westbound backup in Fairfield to slide farther to the east (SR-12 East to North Texas Street). In the PM peak the only backup is forecast for I-80 between SR-12 East to I-680. Significant intercity bus service as well as rideshare traffic will attempt to weave across the Carquinez Bridge traffic backup in the morning from the Curtola Parkway on ramp. Some intercity bus traffic will also experience weaving difficulties at the FTC freeway ramps.

Year 2030 Conditions

In 2030 AM peak traffic backups are projected to remain at the Carquinez Bridge approach (11.5 minute delay) and along I-80 between SR-12 and Alamo Road (15 minute delays) In the PM peak period the only significant traffic backup would be eastbound on I-80 between Travis Boulevard and Suisun Valley Road. The Carquinez Bridge backup is projected to extend east to the SR-37 junction. Buses at Curtola and at FTC along with some buses at Turner Road would experience weaving difficulties on typical days. On really bad traffic days, the weaving movements would be very difficult and time consuming.

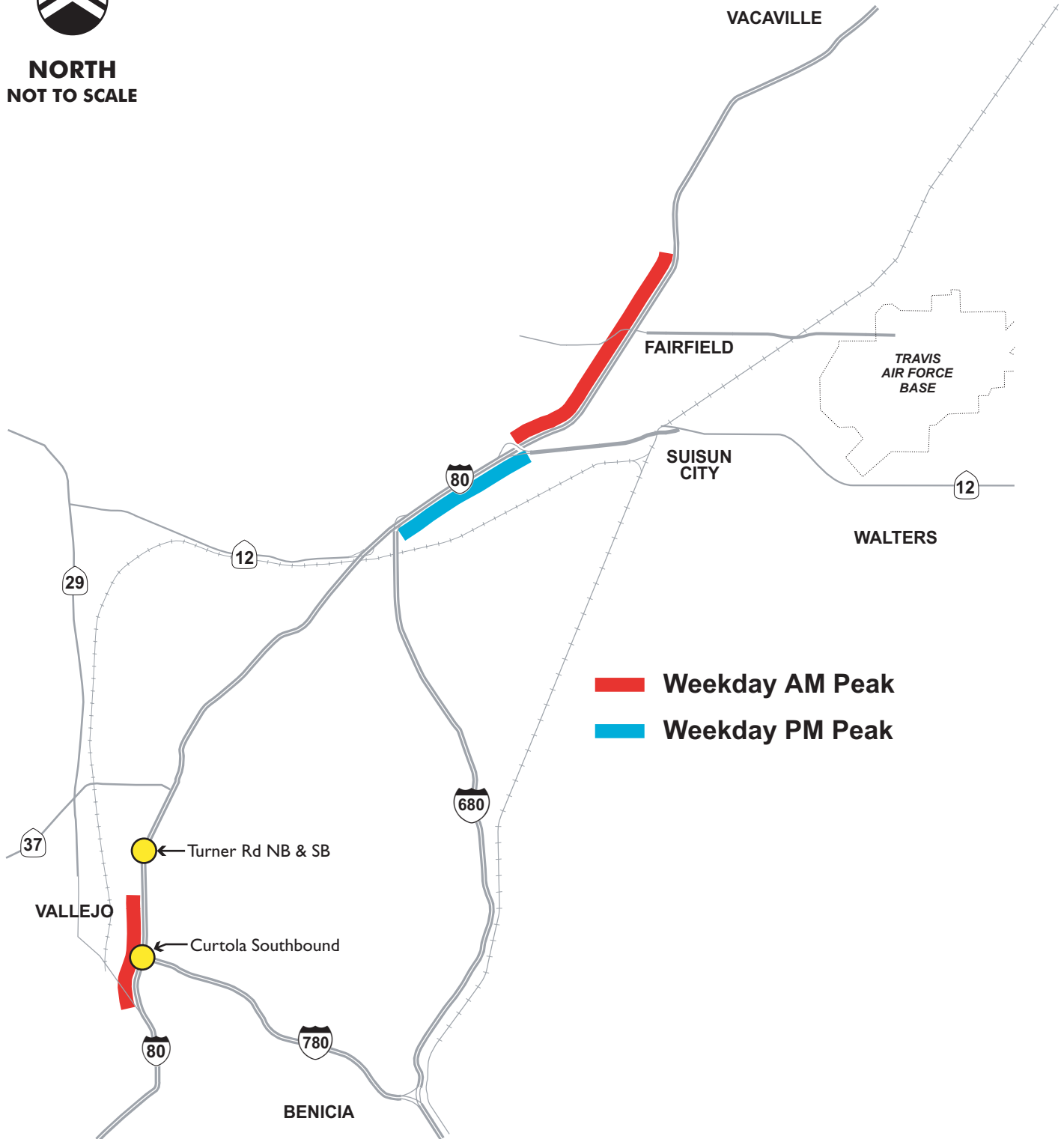
¹ Based on Regional Measure 2 passing in March 2004 and adequate funding is made available.

LOCAL DIRECT ACCESS TO CENTER MEDIAN HOV FACILITIES

A range of concepts exist to provide direct access to center median HOV facilities for buses and for rideshare vehicles. These concepts tend to be expensive and to require substantial right of way. They are also the ideal way to ensure that transit buses do not get delayed weaving to/from the HOV lanes and help to minimize the risks of accidents. The most common type of connections to median HOV lanes is the approach used on I-80 at Richmond Parkway and also at Cutting Boulevard (see photo below). Main-line traffic lanes are bowed out to make room for HOV acceleration and deceleration ramp lanes.



NORTH
NOT TO SCALE



SOURCE: I-80/I-680/I-780 Major Investment
and Corridor Study, Kolve Engineering



Wilbur Smith Associates

Figure 6-1
PROPOSED DIRECT HOV ACCESS
2010 WEEKDAY TRAFFIC CONGESTION QUEUES

388000\CHAPTER 6\FIGURE 6-1 - 10/4/04



HOV Direct Ramps on I-80 at Richmond Parkway in Richmond

The most common direct ramp HOV access facilities are directionally oriented rather than bidirectional. Bidirectional ramps would allow buses to operate along the corridor in the center HOV lanes and make “station stops” at specially designed interchanges. Directional ramps are good for rideshare users that do not need to get on and off the HOV lanes at a single interchange. They are also useful for express buses that do not need to make station stops (quick bus off freeway and return to freeway movements to pickup passengers) along the freeway corridor.

ON LINE BUS STOPS

Facilities can be designed that allow buses to stop along side the freeway or even in the center median. Pedestrian access can be a challenge for these on line stops, as can transfer pedestrian connection to stops for cross street local bus service. Side of the freeway bus stops, such as those located along Highway 101 in Marin County, are not the normal practice (see photo below). Thus, new bus stops located along the side of the freeway are no longer being approved and built. On line bus stops located in the freeway median consume a lot of space and are rarely built. These median bus stops necessitate buses crossing opposing bus movements in order to load and unload passengers. Operation of buses with left and right side doors could, however, eliminate the need for this crossover movement.



On-line freeway bus stop in Marin County

Curtola Parkway Direct Access Ramp

The intercity express bus plan for the Corridor provides for frequent Route 80 service between the Curtola Parkway and I-80 to the Carquinez Bridge. Some Route 80 bus trips might originate from Benicia and pass through the Curtola Transportation Center. In addition to the bus trips, a significant increase in rideshare traffic is also forecast for this movement. The increase in Bridge tolls, the Bay Bridge to Vallejo continuous HOV lanes and an expansion of parking at Curtola all favor increased rideshare and transit patronage for this key traffic movement. As discussed previously, traffic backups are forecast for typical conditions extending north to Turner Road. Buses are not as nimble as cars and will have a difficult time safely weaving to the HOV lane. The stop and go general traffic flow conditions will therefore add delays to bus running times and adversely impact schedule reliability.

Figure 6-2 illustrates a concept for providing direct access for westbound buses and rideshare vehicles to directly access the westbound median HOV lane. The proposal is for a single direction access for three reasons:

1. Because the traffic queues are only forecast for the southbound movement;
2. Because the widening needed to drop the new ramp into the median is less than needed for a two direction ramp (right of way availability is very tight); and
3. Because an eastbound on ramp connected into the Curtola Parkway Lemon Street intersection would complicate operation and impair capacity of the intersection.

The concept would require minor modifications to access along the frontage road (Lincoln Road West), pushing the westbound I-80 lanes over to allow for the drop down ramp and some

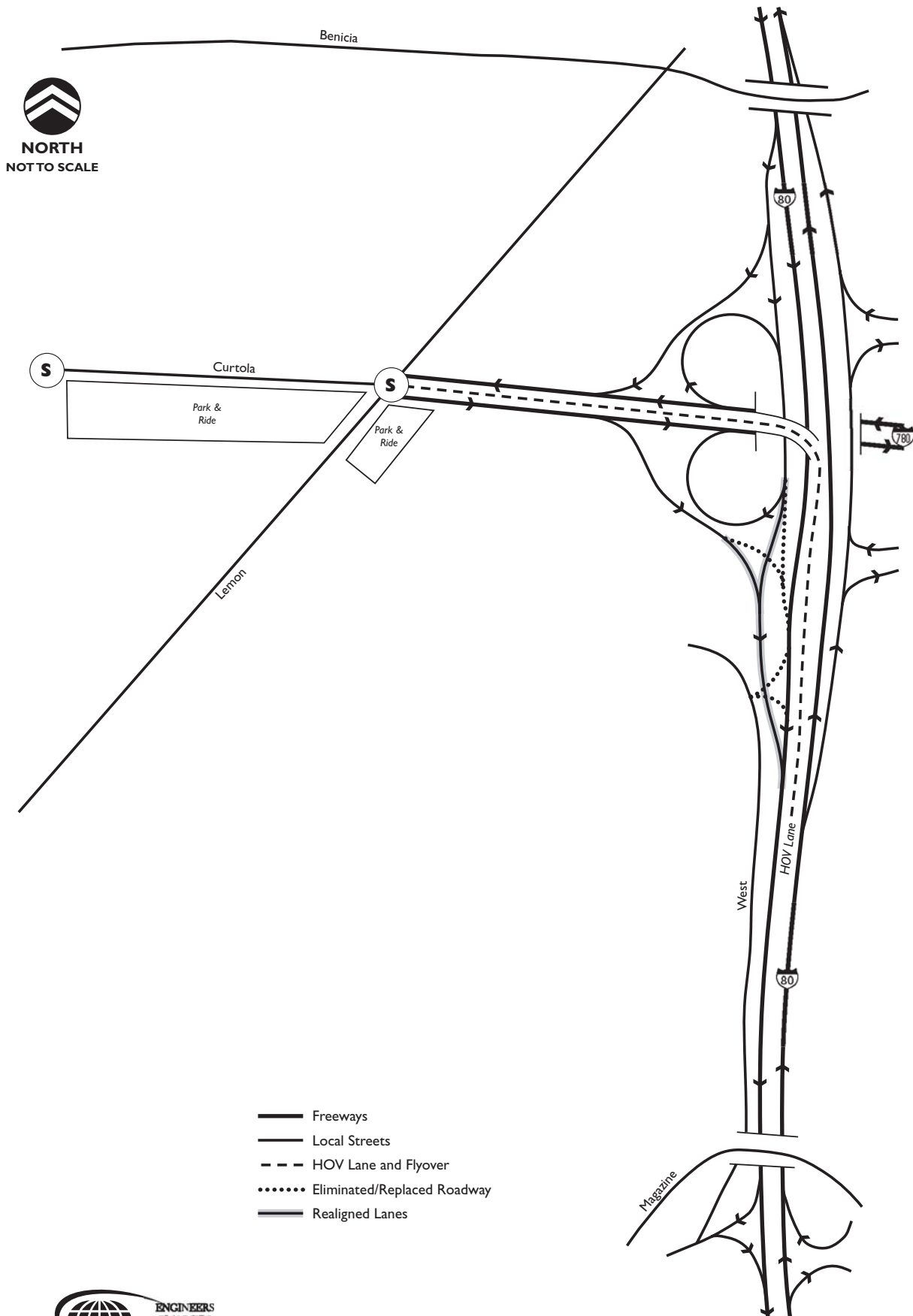


Figure 6-2

CURTOLA DIRECT HOV RAMP

388000\DFR\CHAPTER 6\FIGURE 6-2 - 11/17/03

reconstruction of the freeway ramps associated with moving the main line lanes. The access ramp might be either in the median of Curtola Parkway or alongside the southern curbface.

During the AM peak 90 minute commute period, approximately 22 buses carrying 600 passengers are forecast to use the direct ramp in 2030. In addition, another 200 rideshare vehicles are projected to use the ramp carrying 700 persons. Thus, in total the direct ramp would serve 222 vehicles and 1,300 persons during the 90 minute commute peak (about 165 vehicles and 900 people during the 60 minute peak). Estimating a typical commute period traffic condition savings of 11.5 minutes per person, yields a savings of 250 person hours each weekday or 62,000 person hours annually. These are conservative savings, in that traffic conditions are often worse than the typical day. If one factors this into the benefit analysis, the benefits probably are double these amounts.

The direct ramp connection is estimated to cost approximately \$45 million. Prorated over 50 years this simplistically amounts to about \$15 for every person hour saved. Not accounted for in this simple analysis are benefits to general traffic and accident avoidance benefits.

Turner Road Direct Access Ramps

Discussions are underway to commercially develop part of the Solano Fairgrounds and to extend Turner Road over I-80 for connection with Fairgrounds Drive. Turner Road presently stubs into Callaghan Road on the east side of I-80. The construction of the new overpass of I-80 would provide the opportunity to integrate direct HOV ramps into the overpass construction. Figure 6-3 describes the proposed concept.

Turner Road is located just at the northern edge of the forecast 2030 AM peak westbound traffic backup. As it requires one mile to safely weave across many lanes of traffic, this southbound ramp would allow buses and rideshare patrons to safely reach the median HOV lanes. The Turner Road Direct HOV ramps are envisioned to serve Route 80A and Route 90 buses along with rideshare patrons. Approximately nine buses are estimated to use the direct ramps during the 90 minute peak AM commuter period. These buses are estimated to carry 270 patrons and the 150 rideshare vehicles are estimated to carry 500 persons. The rideshare estimate is based on a required 3-person HOV occupancy. The Turner Road direct ramps are estimated to cost \$20 to \$38 million to provide. The most critical direct HOV connections are to/from the west where congestion is forecast. The connections to the east would be useful, but less important.

As the HOV ramps would only be needed on weekdays, they could be used to augment general traffic access to the Fairgrounds development on weekends. Partnership funding with the developer therefore seems logical for funding these direct ramps.



Figure 6-3

TURNER ROAD PARK & RIDE LOT SITES

388000\DFR\CHAPTER 6\FIGURE 6-3 - 11/17/03



Wilbur Smith Associates

Fairfield Transportation Center

The segment of I-80 near West Texas Street is envisioned to be congested during commute periods. While many peak period buses serve the FTC, provision of a direct ramp to median HOV lanes appears to be difficult (see below for more information). Recommended access improvements (Figure 6-4) to the FTC include:

1. Modification of the traffic control for the eastbound I-80 off ramp and Auto Mall Drive to a three way STOP control in order to reduce delays for buses using this off ramp;
2. Adding a second westbound approach lane on Oliver Road at the West Texas Street intersection at I-80 in order to allow buses to make a left turn onto West Texas from the new through designated lane. The new lane would begin just west of Chuck E Cheese's Restaurant. Only buses would be allowed to make this dual left movement from the through traffic lane; and
3. Conversion of the eastbound off ramp "free" right turn movement to a signal in order to control right turns and provide space to allow a direct entry driveway for buses from West Texas Street into the transit island.

Approximately \$800,000 is estimated for the access improvements.

Direct HOV lane ramps, such as those proposed for Curtola and Turner were explored for the FTC interchange, but would conflict with expansion plans with the FTC parking garage. Provision of direct access ramps to I-80's center median HOV lanes near the West Texas Street interchange would help facilitate bus and rideshare access to/from the Fairfield Transportation Center. Though the year 2030 some congestion is projected to remain during peak commute periods near the interchange. This all argues for direct HOV access ramps. Unfortunately, provision of direct access ramps does not appear possible at the West Texas Street interchange. Should the I-80/I-680/SR-12 interchange EIS process show that the Abernathy Road interchange needs to be rebuilt, an opportunity might exist to provide a direct ramp to/from the west to HOV lanes.

PARK AND RIDE SITING AND PLANNING PRINCIPLES

Almost all intermodal facilities are publicly owned, while a number of park and ride facilities are either ad hoc facilities or are shared use of private parking resources. Most park and ride facilities are surface lots, which tend to be less expensive to construct, operate and maintain than parking structures.

Principles employed to site and plan intermodal centers and park and ride facilities include:

- Intercept site location along primary commute paths;
- Location close to residential commute market-sheds;
- Location upstream of congestion;



NORTH
NOT TO SCALE

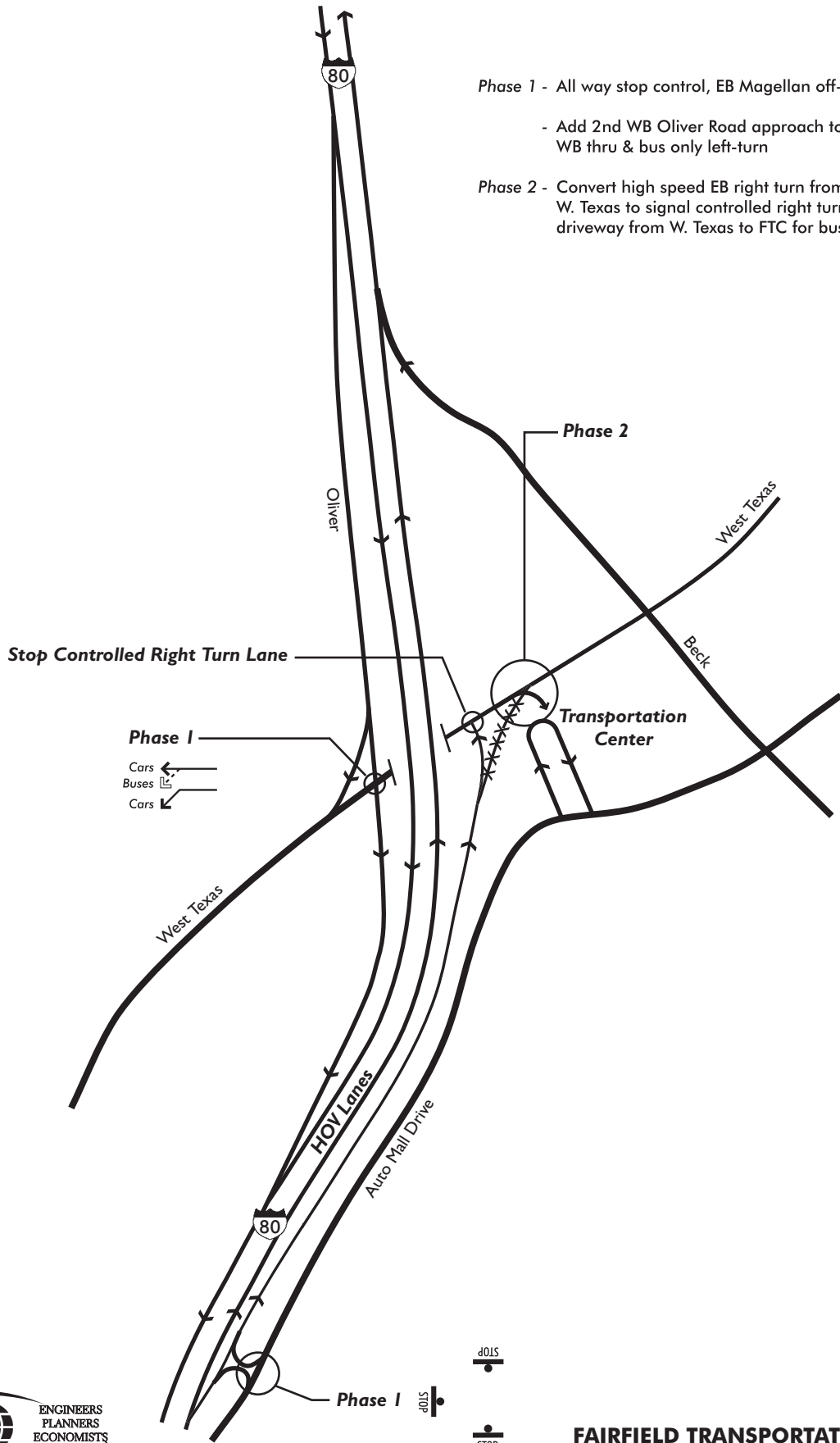


Figure 6-4
FAIRFIELD TRANSPORTATION CENTER
WEST TEXAS STREET

388000\CHAPTER 6\FIGURE 6-4 - 6/14/04



Wilbur Smith Associates

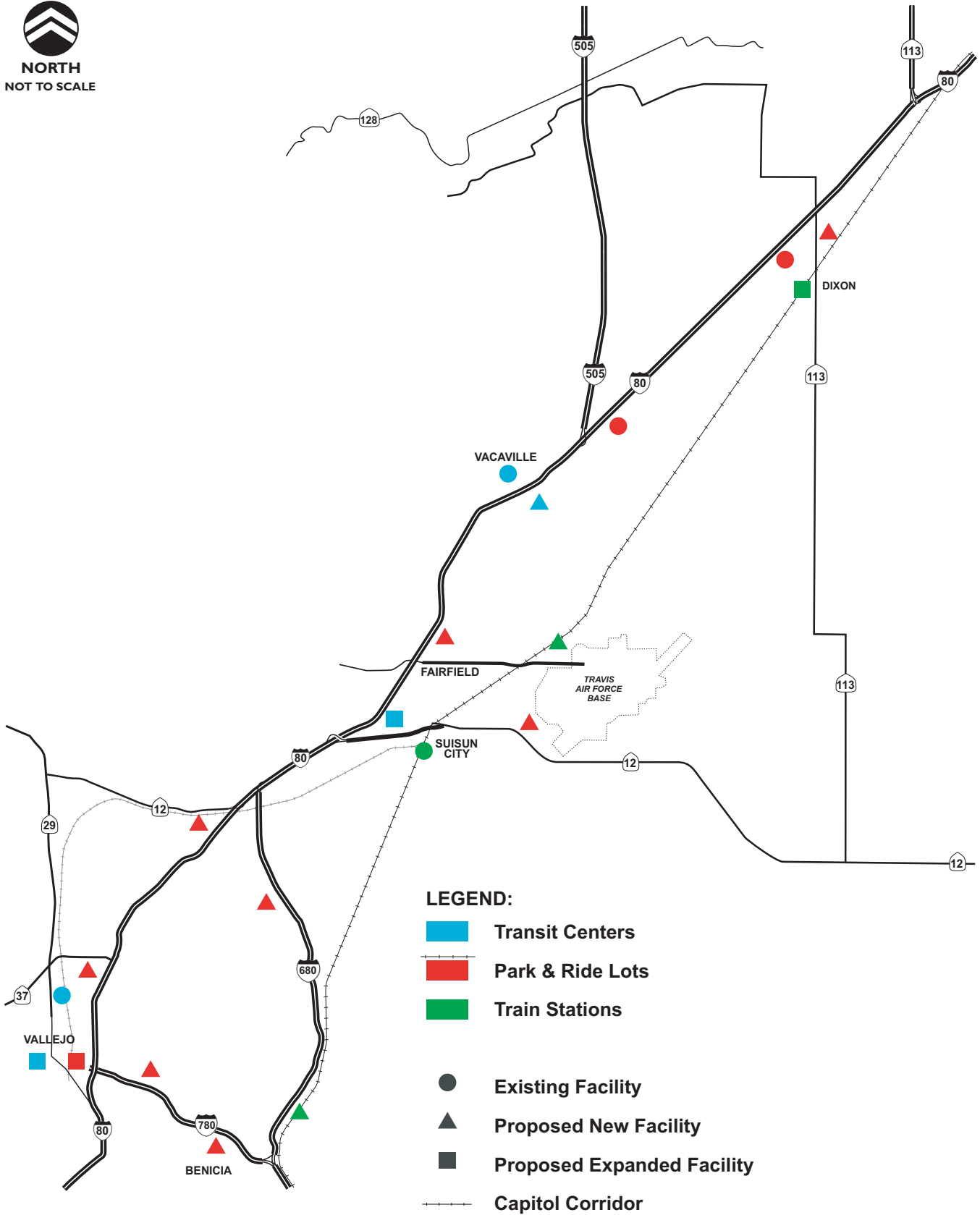
- Locations upstream of HOV facility access points;
- Locations convenient to bus lines;
- Locations adjacent to compatible land uses;
- Seek opportunities for commercial joint use;
- Visible locations to enhance security; and
- Convenient and safe access.

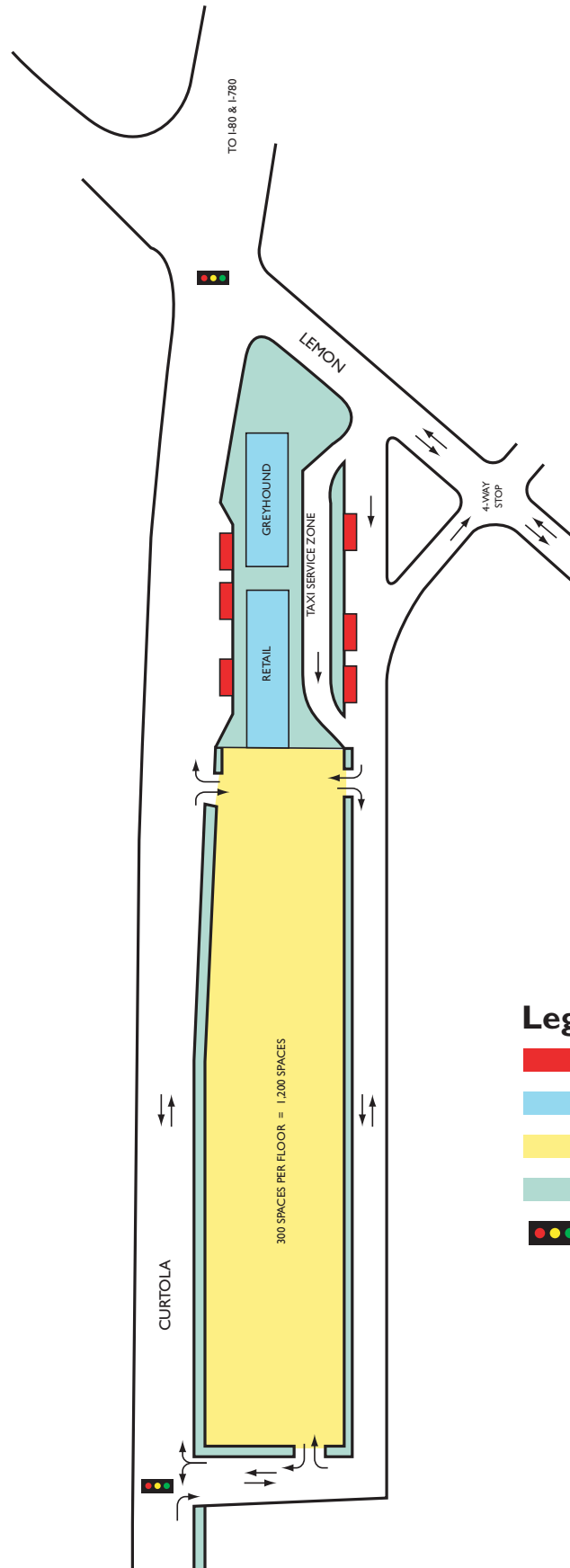
System Strategy

Figure 6-5 describes the location of current and future transit centers and park and ride facilities serving the I-80/I-680/I-780 Corridor. The transit center, park and ride lots and train stations would provide comprehensive coverage of the corridor. Recommended improvements to these facilities include (in sequential order, generally west to east and south to north):

- Capacity expansion at the Curtola Parkway Park and Ride lot;
- Development of a new park and ride lot at Turner Road (Fairgrounds);
- Improvement of the Hiddenbrooke Parkway Park and Ride lot;
- Development of a new park and ride facility at Red Top Road to replace the Green Valley Road Park and Ride lot;
- Expansion of the Fairfield Transportation Center facility;
- Development of a new park and ride lot at North Texas Street;
- Development of the Bella Vista Park and Ride lot;
- Development of park and ride lots in Dixon at North First Street and at West A Street;
- Development of a park and ride lot at Gold Hill Road;
- Development of park and ride facilities at Vista Point and the Benicia Intermodal Center;
- Development of a new park and ride lot at West Military and Southampton;
- Development of a new park and ride lot at Columbus Parkway and Rose Drive;
- Development of park and ride and transit facilities for the Vacaville Intermodal Transportation Center project; and
- Development of a park and ride lot on East H Street.

Curtola Transportation Center - As reported in Chapter 3, the current facility has a major shortfall in parking and has poor access and circulation features. The recommended plan is to construct a 1,200 space parking structure on the west end of the site and to consolidate the bus loading at the eastern end of the site (Figure 6-6). A new traffic signal would be installed on Curtola Parkway to improve access and to allow buses destined to Downtown Vallejo to directly exit onto Curtola Parkway. At present these buses must double back to Lemon Street. The increased parking supply also requires increased driveway access to support it. Location of the





Legend

- Buses
- Greyhound Station & Retail
- Parking Garage
- Pedestrian Areas
- Traffic Signals

Figure 6-6

PROPOSED CURTOLA PARK & RIDE PARKING STRUCTURE/TRANSPORTATION CENTER

388000\FR\CHAPTER 6\FIGURE 6-7 - 12/31/03

bus loading facilities at the eastern end of the site is proposed to enhance its pedestrian accessibility and also to increase its visibility. The transit center element of the project is intended to serve Greyhound buses, which can have long dwell times and intercity express buses, which primarily will stop only long enough to load and unload passengers. Prepayment of fares could be considered for this high passenger activity location. Real time passenger information is also recommended for this site. The parking structure would be four levels and would be constructed in two phases in order to minimize parking loss during construction. Access to the PG&E yard would be maintained. The estimated cost for this project is \$15 million. During construction of the garage, an interim replacement facility should be identified. One possibility is the site that is located on the south side of Curtola Parkway at Sonoma Boulevard.

Turner Road Park and Ride – The Turner Road Park and Ride facility could be constructed as a park and ride site even before the direct HOV ramps are constructed. It would probably be best to construct them in coordination with the proposed commercial redevelopment of the Fairground site. This coordination should be proactive rather than post development concept fitting it into the plan. A surface lot holding 400 cars is proposed. The cost of constructing this lot is estimated to be \$5 million.

Hiddenbrooke Parkway Park and Ride – The current parking lot is graveled. This project would merely provide paving for 50 spaces (Figure 6-7). The cost for this improvement is estimated to be \$200,000.



Hiddenbrooke Parkway park and ride activity in Vallejo

Red Top Road Park and Ride – The upgrading of the I-80/I-680/SR-12 interchange (Segment #1) will displace the current Green Valley Road 61 space Park and Ride lot. The proposed project would construct a new 418 space park and ride lot adjacent to the railroad crossing (Figure 6-8). This park and ride site is envisioned to ultimately allow shared use with a future commuter rail service. Initially it would serve rideshare patrons and intercity Route 85 bus



service. In the future it would also serve the extended version of Route 30 to the Vallejo Ferry Terminal and new bus service along SR-12. These buses will be making quick passenger stops and not pulsing schedules (pulsing has all buses from different routes schedule to arrive together in order to allow passengers to transfer routes). Coordinated timed transfers are best performed at the Fairfield Transportation Center. The design challenge for this site is the need to ramp Red Top Road up to cross over the railroad tracks. The estimated cost for the 418 space surface parking lot is \$3 million. It is possible that the project might be constructed in two phase, matching capacity with the growth in demand (initially it replaces a 61 space Green Valley Road lot). Figure 6-9 illustrates the current concept for this park and ride facility and Figure 6-10 illustrates the proposed revision to this plan that reflects the proposed bus service to the site. The revised site development concept loads buses along the curbside of Red Top Road near the park and ride site's signalized driveway. This proposed site development approach minimizes delays to through routed bus passengers and also minimize site space required to load and turn large buses. Location of the bus stops on/near Red Top Road will result in a more secure waiting area for passengers.



Red Top Road Park and Ride lot in Fairfield

Fairfield Transportation Center – The second phase of this project to provide 234 surface spaces is in progress. The long term forecast, however, exceeds the Phase 2 supply of new spaces. The recommended improvement plan for this site is to construct a 600 space parking garage on the site occupied by the Phase 2 surface parking lot. This expansion is estimated to cost \$12 million.

As noted earlier, the FTC is the logical place to schedule coordinate (pulse) intercity express buses. In the long range, buses will arrive sufficiently frequently so as not to need pulsing during peak commute periods. During off peak times, however, buses would be pulsed.

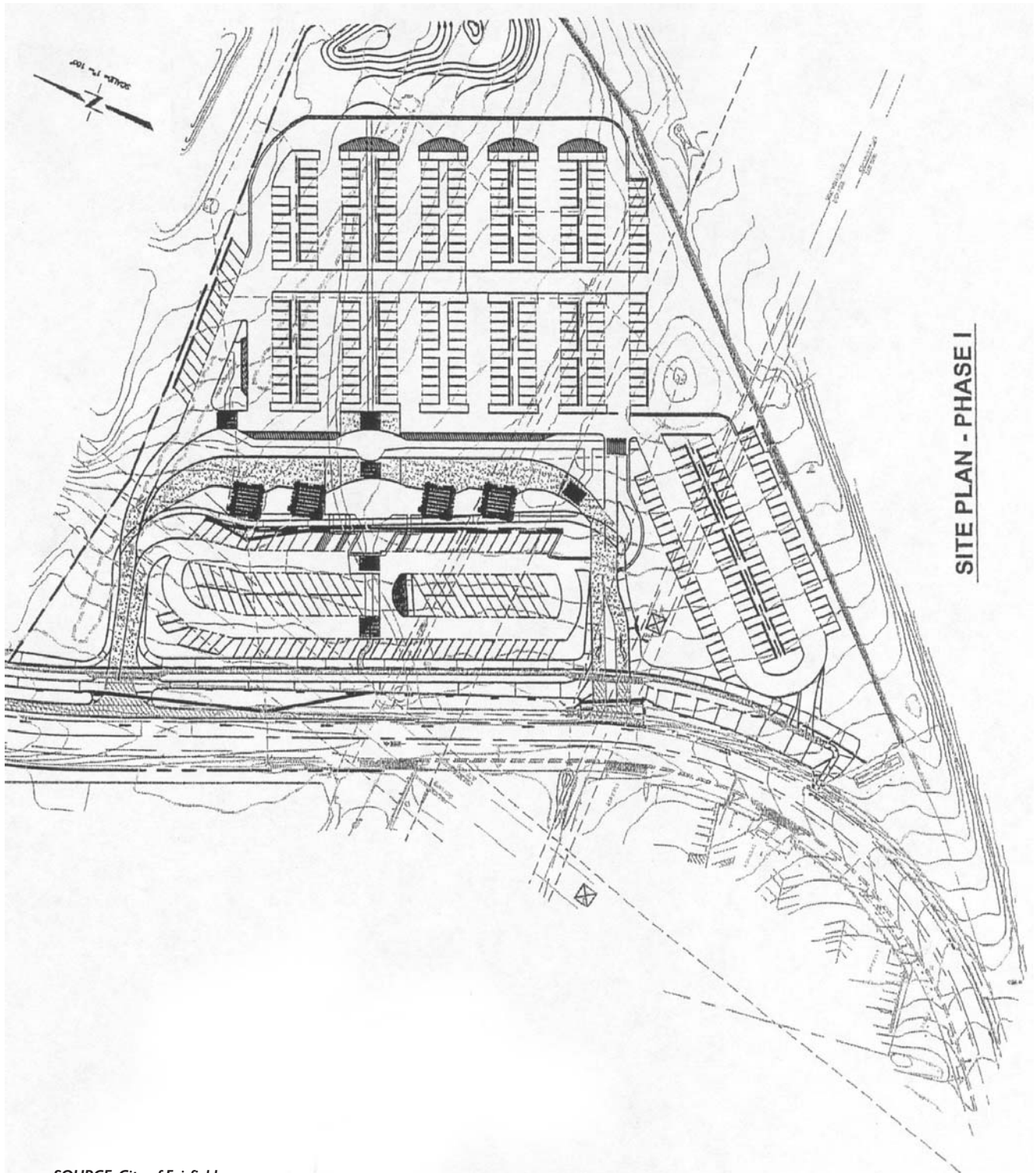
Alternatively the capacity expansion could be accomplished as a surface park and ride lot near Abernathy Road (Figure 6-11). This would require eastbound buses on I-80 to exit at Abernathy



Figure 6-8

RED TOP ROAD PARK & RIDE LOT SITE

388000\FR\CHAPTER 6\FIGURE 6-8 - 12/31/03



SITE PLAN - PHASE I

SOURCE: City of Fairfield

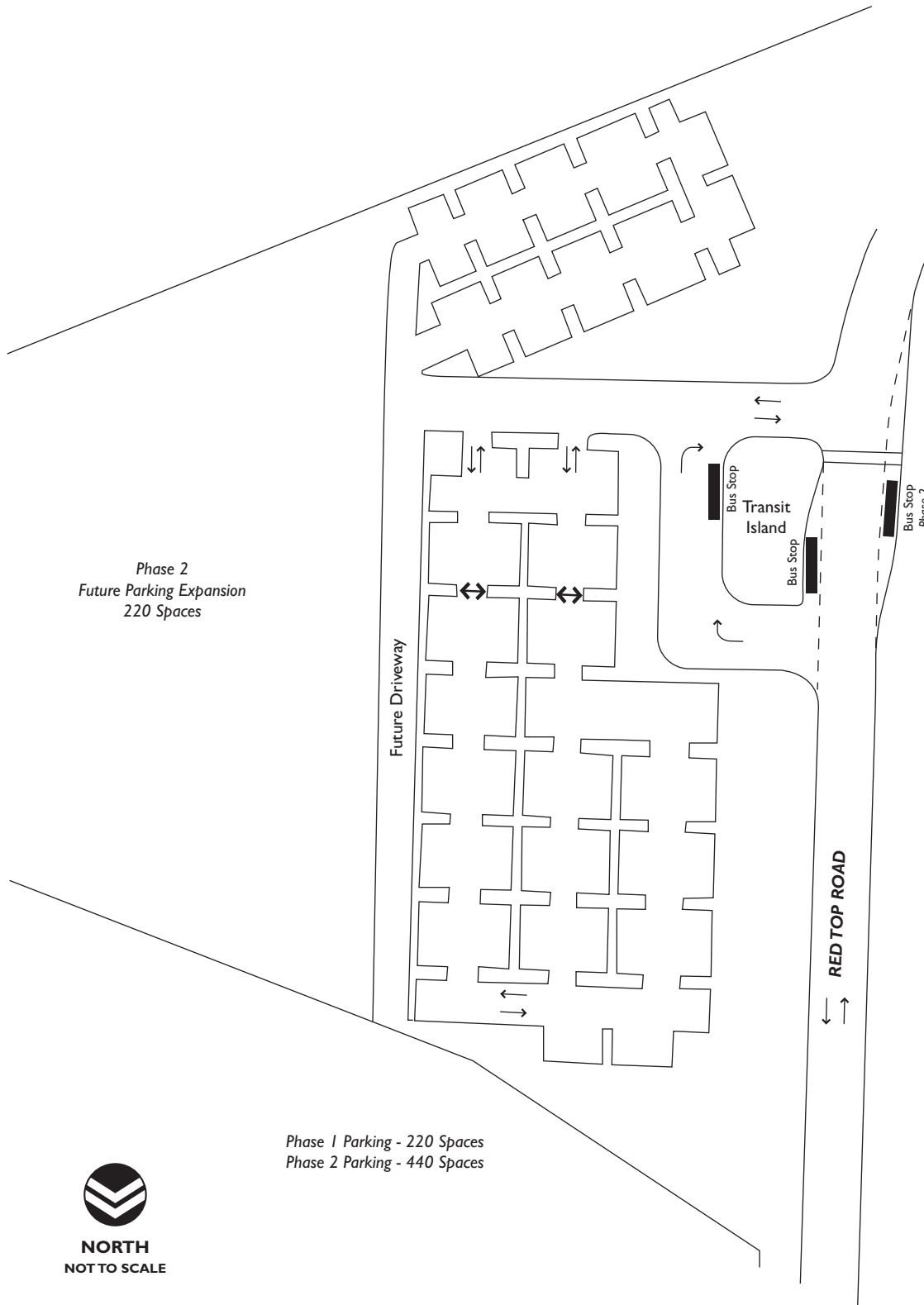


Figure 6-10

**RED TOP ROAD PARK & RIDE LOT
ILLUSTRATIVE SITE DEVELOPMENT CONCEPT**

388000\FR\CHAPTER 6\FIGURE 6-10 - 2/4/04



Figure 6-11

POTENTIAL ABERNATHY ROAD PARK & RIDE LOT SITE OPPORTUNITY

388000\CHAPTER 6\FIGURE 6-11 - 11/18/03

Road rather than at Auto Mall Drive. The cost for this option would depend on the cost of the land, but is estimated at \$4 million.

North Texas Street Park and Ride – Plans are underway to extend Manuel Campos Parkway to the I-80 North Texas Street interchange and to rebuild the interchange. North Texas Street would be realigned to intersect Manuel Campos Parkway on the east side of the current Chevron Station. The park and ride concept recommended for this site would be to use the right-of-way currently used for North Texas Street as shown in Figure 6-12. Provision of about 200 surface spaces is estimated to cost \$3 million (exclusive of interchange improvement cost). If the Chevron Station needs to be rebuilt to accommodate the interchange improvements its design should be integrated into the park and ride lot. Figure 6-13 describes the recommended site development concept. It is important that the new interchange include a park and ride lot.

Davis Street - Bella Vista Park and Ride – The City's plans (Figure 6-14) to construct a new park and ride lot at Bella Vista to augment the capacity of the Davis Street facility should be pursued. Upgrades to the freeway interchange should seek to include improvements to the pedestrian connections between the two lots. If possible vanpoolers should be encouraged to use the Bella Vista lot in order to allow bus riders to park adjacent to the bus stop at Davis Street.

Vacaville Intermodal Transportation Center – The City of Vacaville has developed plans for development of an Intermodal Transportation Center near the Vacaville Cultural Center. It is estimated to cost \$12 million to construct, provide 400 to 500 parking spaces, retail spaces, and would be the terminal facility for Route 40 and for Route 91.

West A Street Park and Ride – Relatively little demand is forecast for this location. When the I-80 interchange is upgraded or when local development proposals surface, provision of a small park and ride lot would be useful. The best strategy would be to integrate the park and ride with a local development project, rather than building a stand alone project. Financial participation towards the added parking (50 spaces) would be appropriate. The interchange area is currently open providing a range of siting opportunities (Figure 6-15). The ideal location for a park and ride at this location would be the southwest quadrant of the interchange.

North First Street Park and Ride - Similar to West A Street, forecast demands are relative low for this site. It too should be pursued in conjunction with interchange rebuilds and private development proposals. About 50 spaces should suffice at this location, which is proposed to be served by the extended version of Route 30 (Vallejo Ferry to Sacramento). Figure 6-16 shows that the interchange area is not fully developed and offers a range of siting opportunities for park and ride lots. Ideally, the lot should be located on the southeast quadrant of the interchange where a Walmart is currently under construction, suggesting that a public private partnership should be explored for the provision of 50 parking spaces. This location would intercept commuters before they pass the interchange and would facilitate a good pedestrian interface with a commuter bus stop.

Gold Hill Road Park and Ride – A significant demand for park and ride is forecast for the Gold Hill Road area once it receives intercity bus service (Route 40). The recommended project is to



Figure 6-12

NORTH TEXAS PARK & RIDE LOT SITE

388000\DFR\CHAPTER 6\FIGURE 6-12 - 12/31/03



Wilbur Smith Associates

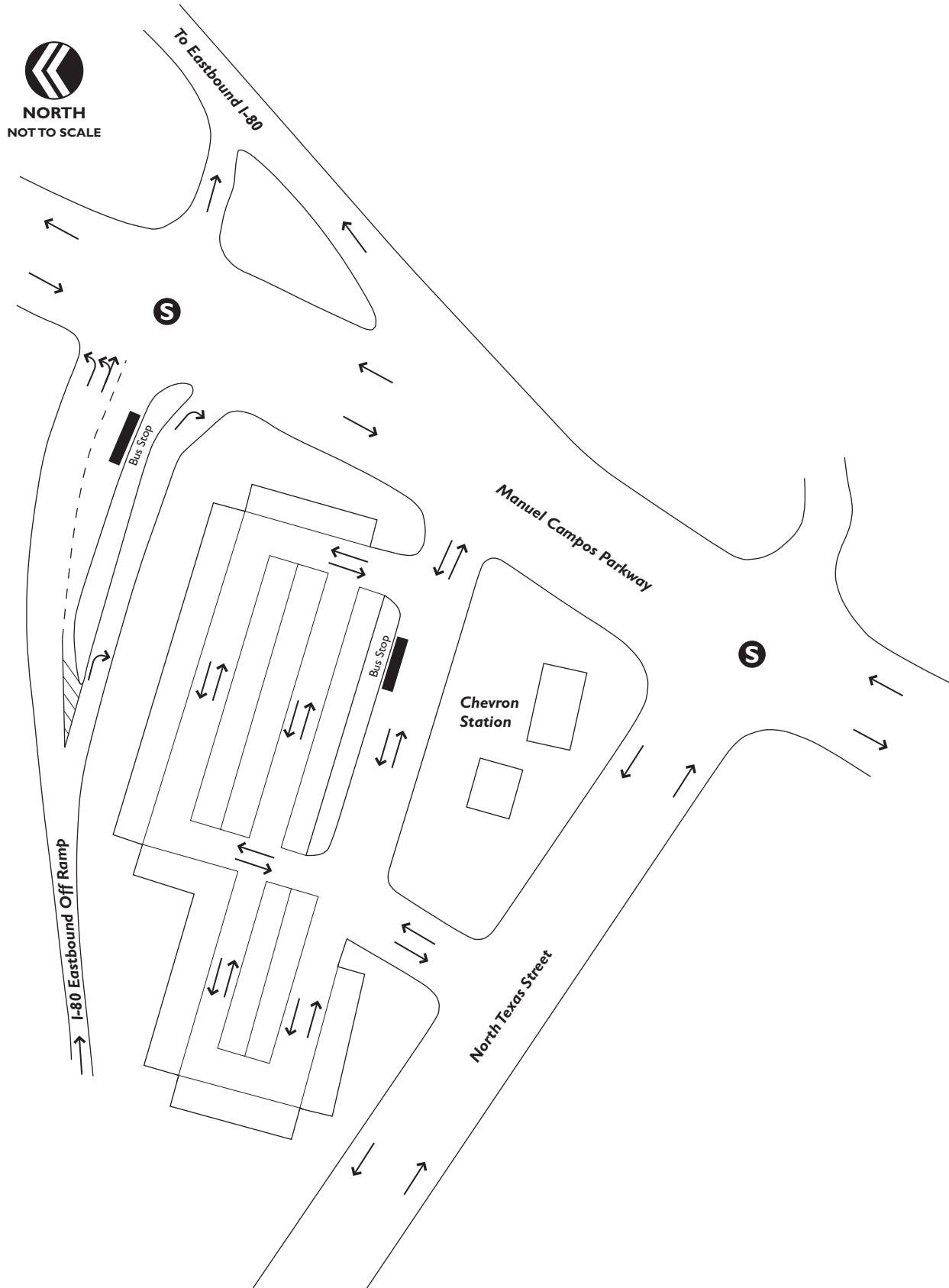


Figure 6-13
NORTH TEXAS STREET PARK & RIDE LOT
ILLUSTRATIVE DEVELOPMENT CONCEPT

388000\FR\CHAPTER 6\FIGURE 6-13 - 12/31/03









Figure 6-16

NORTH FIRST STREET PARK & RIDE LOT SITE

388000\DFR\CHAPTER 6\FIGURE 6-16 -11/18/03



Figure 6-17

GOLD HILL ROAD PARK & RIDE LOT SITE

388000\DFR\CHAPTER 6\FIGURE 6-17 - 11/17/03

construct a 200 park and ride lot on the southwest quadrant of the interchange (Figure 6-17). It should be integrated into joint use commercial if possible for enhanced security. Ideally the southbound buses should simply make a stop at a pullout on the southbound on ramp in order to minimize delay (morning commute times tend to be more important to passengers than evening times). Figure 6-18 describes the proposed site development concept. Northbound buses would need to enter the park and ride site to board passengers. The cost for this concept is estimated to be \$3.2 million. It is important to coordinate with the owner/developer of this parcel as soon as possible in order to ensure the viability of a park and ride site at this location.

Vista Point and Benicia Intermodal Center – Development of about 50 parking spaces appears possible for park and ride use at the Vista Point site near Lake Herman Road. These spaces are estimated to cost \$800,000 to construct. Figure 6-19 describes the proposed concept.

In the longer range future, construction of the Benicia Intermodal Center serving commuter rail passengers and perhaps Capitol Corridor passengers would provide an opportunity for added park and ride spaces. The Benicia Intermodal Center program indicates that more than 1,000 spaces could be provided at this site. Patronage estimates for the rail services, however, indicate that only 200 spaces would be required for its passengers. Provision of 300 surface spaces would cost an estimated \$2 million to provide. Provision of the 300 spaces, rather than more than 1,000 spaces would reduce the project cost and free site area for commercial and station supportive development.

West Military and Southampton Park and Ride – Available sites for potential park and ride lots are difficult to find along the I-780 corridor. Development of a park and ride lot at the northeast corner of West Military and Southampton Road would involve a partnership with the Calvary Church, which owns the vacant corner lot. In exchange for weekday use of the lot by park and ride patrons, church goers would have more parking on Sunday. Ideally, access to the expanded lot would be at a common church driveway. Benicia buses pass directly by the lot turning from West Military onto Southampton. About 50 park and ride spaces would cost \$300,000 to construct. Figure 6-20 describes the proposed park and ride lot siting.

East H Street Park and Ride – Rearranging parking on East H Street to angle parking would provide added parking capacity for bus riders.

Walters Road and State Route 12 Park and Ride – The northeast quadrant of the intersection is currently undeveloped and would be a good location for a park and ride lot. This facility would function as the eastern terminus of the proposed extension of Route 90 serving El Cerrito del Norte BART. Desirably the park and ride facilities should be coordinated with and integrated into future development of this site. Provision of 200 parking spaces with a small bus layover facility is estimated to cost \$3 million.



Potential West Military and Southampton Park and Ride lot site

Columbus Parkway and Rose Drive Park and Ride – A development plan has been proposed for the corner of Columbus Parkway and Rose Drive. Construction of 200 park and ride spaces just to the west of the development would cost an estimated \$1.5 million. A new access should be developed directly to Benicia Road. If possible the commercial development design should be coordinated with the park and ride lot plan for improved access to both and better security. Figure 6-21 describes the proposed site location and Figure 6-22 describes the site development concept.

Del Norte BART Station – While outside of Solano County improvements will be needed to support the expanded number of routes and increased frequencies that are proposed for Solano County buses. In addition to improved passenger shelters, an enhanced system for managing passenger queues will be required. Coordination with BART needs to be pursued in the definition of improvements for processing buses and for better managing passenger loading.



Route 80 bus stop at El Cerrito del Norte BART Station in El Cerrito

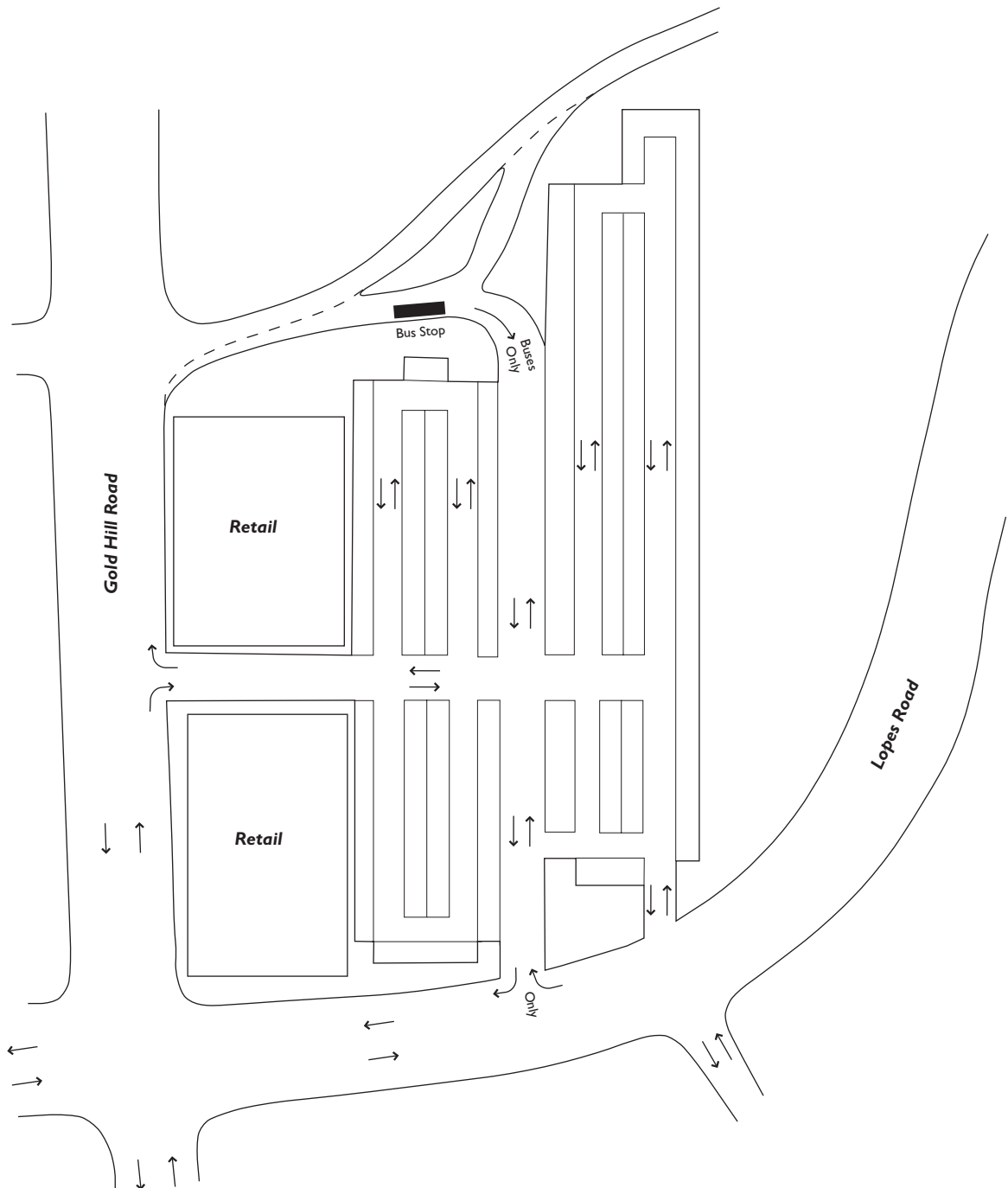


Figure 6-18

**GOLD HILL ROAD PARK & RIDE LOT
ILLUSTRATIVE DEVELOPMENT CONCEPT**

388000\FR\CHAPTER 6\FIGURE 6-18 - 12/31/03



Figure 6-19

VISTA POINT PARK & RIDE LOT SITE

388000\DFR\CHAPTER 6\FIGURE 6-19 - 11/18/03



Figure 6-20

WEST MILITARY AND SOUTHAMPTON PARK & RIDE LOT SITE

388000\DFR\CHAPTER 6\FIGURE 6-20 - 11/18/03



Figure 6-21

COLUMBUS PARKWAY AND ROSE DRIVE PARK & RIDE LOT SITE

388000\DFR\CHAPTER 6\FIGURE 6-21 - 11/17/03

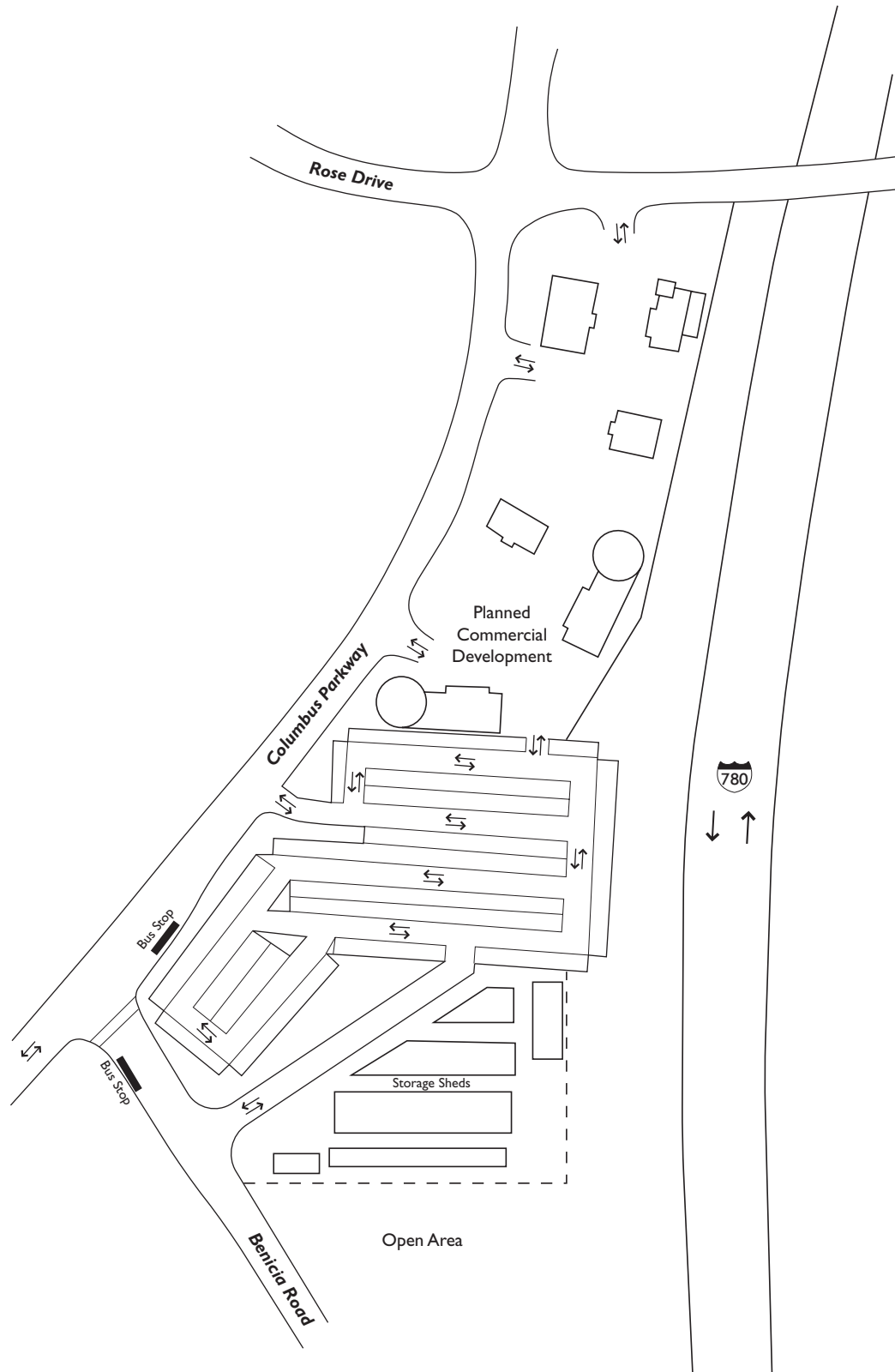


Figure 6-22

**COLUMBUS PARKWAY PARK & RIDE LOT
ILLUSTRATIVE SITE DEVELOPMENT CONCEPT**

388000\FR\CHAPTER 6\FIGURE 6-22 - 12/31/03

SUMMARY

The program of direct ramps to median HOV lanes and the access improvements recommended for the Fairfield Transportation Center are envisioned to reduce travel times, reduce bus operating costs, improve traffic safety and improve schedule reliability. The addition of approximately 4,000 park and ride spaces are envisioned to improve access to the express bus services and support rideshare objectives. The costs associated with the local access improvements total about \$84 million and the park and ride programs is estimated to cost \$55 million.

A number of questions are raised in Chapter 1 regarding park and ride and transit support facilities.

Best BART Station Connection in Central Contra Costa County

The first major employment center reached in Central Contra Costa County is Concord's Downtown. Buses making their first stop at the Pleasant Hill BART station, bypass this major employment center and also the Sun Valley Shopping Center. An analysis of travel times, BART fare cost and likelihood of finding a seat on BART, suggest that the Pleasant Hill BART station is the best connection point for Solano buses, most of whose passengers are connecting to BART rather than to local employment sites. To the extent that commute peak buses are not precluded from making a second peak direction trip, continuing on to the Walnut Creek BART and Downtown is a good idea.

Desired Locations, Size and Features of Park And Ride Facilities

Park and ride patrons prefer sites that are located close to home, close to freeways, on a direct commute path to work, served by good bus service and that are safe. Only larger sites can generally be served by buses and offer security. Where possible, park and ride sites should be located in visible locations adjacent to retail businesses.

Co-existence of Rideshare and Bus Park and Ride Users

Rideshare and bus park and ride patrons co-exist very well at most lots. Where parking capacity is a problem, like at Curtola Park and Ride, conflicts tend to arise. Thus, the solution is to provide adequate capacity to serve both user groups. While it is true that rideshare patrons pay no fee, it is also true that they require no subsidized bus services. The Plan is designed to provide adequate capacity for both groups of park and ride patrons. The design of facilities should attempt to sort bus patrons closer to the bus stop and rideshare patrons closer to the carpool/vanpool assembly area.

Location of Direct HOV Access Ramps

The locations where these direct ramps are most needed are interchange areas with congested general traffic lanes and with significant bus access volumes. Buses are not very nimble and can lose a lot of time safely merging into high speed HOV lanes from stopped general traffic lanes. The time loss adversely impacts schedule reliability, which is a critical attraction feature for express bus service. Recognizing this importance, typical travel conditions should not be solely used for consideration of direct access ramps. The 85 percentile or 90 percentile congestion

levels would be more appropriate traffic conditions for use planning direct ramps and HOV facilities. Direct ramps, however, tend to be very expensive. For this reason, direct HOV ramp facilities are proposed for only three key locations along I-80: Curtola Parkway, Turner Road and at I-680.

Shared Use Park and Ride Lots

Construction of exclusive use park and ride lots is expensive, and land consuming, but ensures long term control of the site. Privately owned shared use lots can be redeveloped and lost after the term of the lease has expired. Nevertheless, shared use of private lots is a cost effective strategy worthy of pursuing. These can be programmed into conditions of project approvals (excess parking) and partnership funding for park and ride spaces can be developed.

Chapter 7

IMPLEMENTATION STRATEGY

BACKGROUND

The pace of implementation will depend on many factors including the amount of funding available to support expanded intercity express bus services and to provide park and ride and other support facilities. It will also be important to coordinate expansion of intercity express bus services with development patterns and with local transit, regional ferry and regional rail services. Major uncertainties relating to funding include funding from the Bridge Toll increase that might be available for Solano County express bus services and potential monies derived from a County sales tax for transportation improvements.

FUNDING RESOURCES

The Plan assumes full usage of TDA funds for public transit. One third of the TDA dollars currently spent on streets and roads is assumed to be allocated to intercity express services in the future (about \$500,000 annually). The total TDA funds are projected to increase directly proportional to the population increase. The Plan also considers two levels of added revenue from a local transportation sales tax (\$1 million and \$2 million annually).

The Plan envisions capital and operating funds from the proposed Bridge Toll increase. On March 2, 2004, Bay Area voters will decide on Regional Measure (RM 2) that would provide a \$1 toll increase (from \$2 to \$3) on seven state owned bridges, including the Carquinez and the Benicia/Martinez bridges. The toll increase would raise approximately \$125 million annually to address congestion relief and enhance convenience and reliability of the Bay Areas public transit system by funding a specific list of regional transportation projects.

Senator Don Perata authored RM 2 enabling legislation (SB 916) that placed specific projects on the ballot. STA staff worked closely in conjunction with other congestion management agencies and transit operators to make sure that Solano County projects were included in the bill's expenditure plan. Solano County projects included in the expenditure plan are as follows:

I-80/I-680/SR 12 Interchange	\$ 100.0 million
Vallejo Station	\$ 28.0 million
Solano County Express Bus Facilities	\$ 20.0 million
Fairfield/Vacaville Train Station and Capitol Corridor Track Improvements	\$ 25.0 million
Competitive Capital Grant Program (North Bay transit and/or park and ride projects)	\$ 16.0 million
Operating Programs	
Vallejo Ferry	\$ 2.7 million per year
Regional Express Bus North Pool	\$ 3.4 million per year

With the passage of RM 2 , the STA Board, its Transit Consortium and Technical Advisory Committee, Bay Area Congestion Management Agencies and MTC's Bay Area Toll Authority (BATA) will work together to develop procedures, criteria and an application process to prioritize and award funding for the Solano County and other regional capital projects and transit services. The recommendations of the I-80/680/780 Transit Corridor Study should be used as the basis to prioritize and implement the Solano County projects. The Bridge tolls are estimated to provide \$3.4 million annually in operating subsidies for regional express bus operations in the Carquinez and Benicia Bridge corridors. Conservatively, at least half of these funds should be allocated to Solano County express buses and perhaps up to one hundred percent.

Table 7-1 below describes the funding contribution to the current express bus services by agency for each route.

Table 7-1 SOLANO COUNTY INTERCITY BUS SERVICE FY 2003-04 FUNDING											
Route	Annual Operating Cost	Fare Revenue	Subsidies								
			Vallejo	Benicia	Fairfield	Suisun	Vacaville	Dixon	Solano County	Air Quality Management District	Other
1 ⁽¹⁾⁽²⁾	749,030	147,409		597,221							4,400
Subtotal	749,030	147,409		597,221							\$ 4,400
20 ⁽¹⁾	213,180	35,532			87,048		90,600				
30	212,065	29,250			30,097		30,097	30,097	17,198	62,065	13,261
40 ^{(1), (3)}	288,000	66,142			85,929		85,929			50,000	
Subtotal	\$713,245	\$130,924	\$0	\$0	\$203,074	\$0	\$206,626	\$30,097	\$17,198	\$112,065	\$13,261
80 ⁽⁴⁾	1,486,951	912,862	574,089								
85 ⁽⁵⁾	685,569	288,811	371,758						25,000		
90 ⁽⁶⁾	773,737	345,951	27,786		400,000						
91	257,312	128,142	1,894				127,276				
Subtotal	\$3,203,569	\$1,675,766	\$975,527	\$0	\$400,000	\$0	\$127,276	\$0	\$25,000	\$0	\$0
Total	\$4,665,844	\$1,954,099	\$975,527	597,221	\$603,074	\$0	\$333,902	\$30,097	\$42,198	\$112,065	\$17,661

Notes:

(1) FY 02-03 amounts

(2) Costs and funding for Benicia loop routes which were terminated in April 2003 are included

(3) \$85,929 funding for Route 40 shared between Fairfield and Suisun

(4) Vallejo funding for Route 80 provided by Section 5307 funds

(5) Vallejo funding for Route 85 provided by Section 5307 funds

(6) \$400,000 funding for Route 90 shared between Fairfield and Suisun

Sources:

Rob Sousa, City of Benicia, January 2004

Mike Dulude, Fairfield-Suisun Transit, November 5, 2003

Letter regarding Operating and Financial Statistics -- Regional Transit Services, from Pamela Belchamber, City of Vallejo to Daryl Halls, STA, October 28, 2003

TDA Budget Matrix FY 03-04, STA, October 16, 2003

Table 7-2 identifies the proportion of TDA funds for each jurisdiction used for streets and roads as well as for transit. A review of the last five year period found that Benicia, Vallejo and Fairfield utilized all of their TDA funds for transit. Dixon and Vacaville have used very little over the past five years for street and roads. The County, Suisun City and Rio Vista have all used large TDA shares for streets and roads.

Table 7-2 SOLANO COUNTY TDA SHARES AVERAGE ANNUAL ALLOCATIONS, BASED ON FY04 FUNDING LEVELS					
Agency	FY04 Annual TDA Allocation⁽¹⁾	Estimated Transit Share⁽²⁾	5 Year Historical Average to Transit⁽³⁾	Estimated Streets & Roads Share⁽²⁾	5 Year Historical Average to Streets & Roads⁽³⁾
Benicia	\$844,000	\$844,000	100%	\$0	0%
Dixon	\$505,000	\$394,000	78%	\$111,000	22%
Fairfield	\$3,134,000	\$3,134,000	100%	\$0	0%
Rio Vista	\$167,000	\$68,000	41%	\$99,000	59%
Suisun City	\$833,000	\$466,000	56%	\$367,000	44%
Vacaville	\$2,886,000	\$2,511,000	87%	\$375,000	13%
Vallejo	\$3,709,000	\$3,709,000	100%	\$0	0%
Solano County	\$613,000	\$110,000	18%	\$503,000	82%
Total	\$12,691,000	\$11,236,000	89%	\$1,455,000	11%

Notes:

1. Based on FY04 TDA formula allocation (not including carryover from previous years); may not equal amount claimed.
2. Average historical share applied to the FY04 annual TDA allocation.
3. Based on 5 year (FY 2000-2004) average share of TDA allocations for transit and streets and roads.

Table 7-3 provides an example of how TDA funds were used for local transit, demand response transit, paratransit, intercity bus, transit planning, transit capital, and streets and roads in FY 2003-04.

Table 7-3 SOLANO COUNTY FY 2003-04 TDA ALLOCATIONS									
AGENCY	FY 2004 TDA Available⁽¹⁾	Local Transit⁽²⁾	Demand Response	Paratransit	Intercity Bus	Transit Planning	Transit Capital	Streets & Roads	Total
Benicia	\$844,360	\$500,000		\$240,000		\$24,232			\$764,232
Dixon	\$860,308	\$365,000		\$36,808	\$30,097	\$14,495		\$370,040	\$816,440
Fairfield	\$3,974,618	\$273,826	\$107,426	\$445,179	\$570,097	\$89,929	\$2,000,000		\$3,486,457
Rio Vista	\$398,777	\$75,000		\$12,327		\$4,802		\$306,648	\$398,777
Suisun City	\$1,263,439	\$611,166	\$6,011	\$142,808	\$25,000	\$23,918		\$454,000	\$1,262,903
Vacaville	\$5,208,050	\$830,000	\$60,000	\$436,614	\$434,097	\$100,838	\$1,280,000	\$500,000	\$3,641,549
Vallejo	\$3,990,252	\$3,294,483	\$270,046	\$335,916		\$106,443	\$125,000		\$4,131,888
Solano Co.	\$691,618		\$5,000	\$37,787	\$102,198	\$17,591		\$520,000	\$682,576
Total	\$17,231,422	\$5,949,475	\$448,483	\$1,687,439	\$1,161,489	\$382,248	\$3,405,000	\$2,150,688	\$15,184,822

Notes:

- (1) MTC estimate, including prior year funds carried forward.
 - (2) Includes Vallejo Ferry Operations and Vallejo funds for operations of Routes 85, 90 and 91.
- Source: TDA Budget Matrix FY 03-04, STA, October 16, 2003

SERVICE IMPROVEMENT PHASING

The phased implementation of the intercity express bus service plan will depend on many factors including: the evolving travel demands; competitiveness of other travel modes relative to express bus services; financial resources available to subsidize service; and the ability to achieve at least a 20 percent farebox recovery ratio target. The recommended phasing plan is constructed to: address current service weaknesses as a first priority, followed by exploitation of new HOV facility opportunities and market growth. With the passage of the Bridge Toll ballot measure (Regional Measure 2), the proposed implementation schedule for early years could and should be accelerated.

2005 Service Improvements

The strongest express bus markets are those that are oriented to the El Cerrito del Norte BART station and the most underserved market is judged to be the Sacramento commute market. To build upon the current market strength and to address the underserved Solano to Sacramento commute market the following service changes are proposed:

1. Establish a new service directly linking Benicia with El Cerrito del Norte BART, making an intermediate stop at the Curtola Park and Ride lot. This service would operate in the peak direction only during peak commute hours. A 30 minute frequency is proposed.
2. Modify the current Route 90/91 bus services to alternate Route 90 and Route 91 bus trips during peak commutes (each at 30 minute frequency providing a combined 15 minute frequencies from the FTC to El Cerrito del Norte BART) and operate the midday hourly service to Davis Street in Vacaville (Route 91). As most of the peak period bus trips will only be able to make one peak direction trip, seek interline opportunities for shared use of these buses on the Route 80 and Benicia to Pleasant Hill BART station bus routes.
3. Establish a new super express service ("Rapid Bus") from the Vallejo Ferry Terminal to Sacramento making intermediate stops at Curtola (Vallejo), FTC (Fairfield), Davis Street (Vacaville) and Pitt School Road (Dixon).
4. Terminate Route 30 at the Davis Train Station after serving UC Davis, rather than continuing to Sacramento (the above super express would cover the Sacramento market).

2010 Service Improvements

By 2010 the HOV lanes on I-80 from SR-4 to Maritime Street and I-680 in Contra Costa County should be open and hopefully the Curtola and FTC Park and Ride capacity deficiencies will be solved. These improvements should provide the foundation for increased patronage demand for El Cerrito del Norte BART express bus services. The following bus service improvements are proposed:

1. Route 20 would be replaced by upgraded midday and commute period service along I-80.
2. Hourly midday service would be established on Route 40 to complement its 30 minute frequency commute service and some trips should be extended to Walnut Creek BART.
3. Commute period frequency on Route 80 would be increased from the current ten minute headways to 7 minute headways in order to attract and accommodate increased ridership.

2015 Service Improvements

HOV lanes on I-80 between SR-12 West and Air Base Parkway should be in place as well as the Gold Hill Park and Ride lot. Congestion on the westbound approach to the Carquinez Bridge should be increasing along with commute period congestion on I-80 between I-680 and North Texas Street. Proposed service improvements are as follows:

1. Route 40 with a new stop at Gold Hill Road.
2. Increasing the frequency of served on Route 80 from 7 minute headways to 5 minute headways during commute periods.
3. Directly routing the northern Vallejo variation of Route 80 serving Severus and Mini Drive to El Cerrito del Norte BART via the Fairgrounds with access to I-80 at Redwood Road (eliminating the stops at the ferry terminal and at Curtola Park and Ride lot).
4. Providing midday service on the variation of Route 80 that was established to directly link Benicia with the El Cerrito del Norte BART station.
5. Providing service to the Benicia Industrial Park from the York and Marin Transit Center, using off-peak direction deadhead buses from Route 90/91.
6. Extend Route 30 bus trips from their current western terminus at FTC to Vallejo Ferry Terminal.
7. Extend the super express route serving Sacramento to Marin County during commute periods.
8. Providing Sunday service on Route 80 and other major routes.

2020 Service Improvements

Congestion should be continuing to extend along I-80 within and outside of Solano County in the general traffic lanes; HOV lanes should be available on I-80 between the Carquinez Bridge and SR-37. Several new park and ride lots will also be in place. Proposed service improvements include:

1. Improve the frequencies on Route 40 to 15 minutes during peak commute periods and extend its eastern terminal to the new Vacaville Intermodal Transportation Center located near Allison and Ulatis.
2. Upgrade service frequencies on the Rapid Bus super express line to 20 minutes during commute periods from Solano County into Sacramento.
3. Upgrade commute periods service frequency on the Benicia to El Cerrito del Norte bus route to 20 minutes.

2025 Service Improvements

As patronage demand continues to grow, service frequencies should be increased as follows:

1. Benicia to Pleasant Hill BART Route commute period headways reduced from 20 to 15 minutes.
2. Added service on the Rapid Bus super express route between the Ferry Terminal and Sacramento.
3. Upgrade commute period frequency on Route 40 to 15 minutes.

2030 Service Improvements

The remaining phases of implementation would generally involve improving the service frequencies to 15 minute service during peak periods and 30 minute service for off peak service. Sunday service would also be expanded on Route 80, the Benicia to Pleasant Hill BART Route and on the extended Route 30 service to the Vallejo Ferry Terminal.

PARTNERED FUNDED SERVICE

Should Golden Gate Transit or private sector interests offer significant local funds, some of the proposed service improvements could be accelerated to earlier years. For example, the patronage for Benicia Industrial Park service is not projected to meet the 20% farebox recovery target until build-out of the Industrial Park. Financial support from the Industrial Park could help to justify earlier implementation of service.

BUS EQUIPMENT AND SUPPORT FACILITY PLAN

Expansion of intercity express bus services will require enlargement of the bus fleet used to provide the service. It will also require expanded capacity to maintain and park overnight these buses.

The numbers of buses that are required to provide the recommended Service Plan are shown in Table 7-4 by five year increments of phased implementation. The number of buses shown in Table 7-4 includes the calculated number of buses needed to provide service during peak commute periods, plus a 15 percent allowance for spares. The spares are needed to account for buses undergoing routine maintenance as well as for service backups (replacement of buses that become disabled while in service).

Table 7-4 BUS FLEET ESTIMATES			
Year	Peak Requirement	Spare Buses @ 15%	Total Buses
2000	29	5	34
2005	36	6	41
2010	46	7	53
2015	53	8	61
2020	59	9	68
2025	68	10	78
2030	77	12	89
Future	100	15	115

Both the Fairfield Suisun Transit and Vallejo Transit bus maintenance and storage facilities are at capacity today and have little reserve capacity to support an expanded intercity bus service. As such, one or more new facilities will need to be developed and opportunities explored to expand the current Vallejo Transit facility. The Fairfield Suisun Transit facility cannot be significantly expanded. Complicating the determination of the best maintenance and overnight

parking strategy for express buses is the need to share these facilities with local bus and paratransit services. Both of these other types of transit service are also expanding service and associated fleet requirements.

The location and size of bus maintenance facilities impact operating costs. Facilities that are located near the points that buses enter and leave service each day, minimize wasted bus miles and bus hours shuttling buses to and from service. For commute peak service oriented to San Francisco, like the Route 91, overnight parking for buses located near Vacaville would minimize the amount of resources (bus miles and hours) needed to get its buses into service. Buses that operate all day are not burdened with the midday deadhead operation. Buses which only operate during commute peaks, however, must “deadhead” back to the bus yard at the end of the morning commute and then must be returned to service prior to the evening commute. Using Route 91 again as an example, after the morning peak period its buses must deadhead back from El Cerrito del Norte BART to the bus yard and then deadhead to del Norte BART just prior to the evening commute period. There are a number of logical questions that arise concerning the midday deadhead operation. Can buses be parked near El Cerrito del Norte BART, Pleasant Hill BART, Vallejo Ferry Terminal and Sacramento midday to avoid the midday deadhead cost? Also can maintenance be performed at these midday holding areas? It is possible to park commute period service buses midday at a “foreign” bus yard (similar to the Transbay Terminal AC Transit buses), but this savings is compromised by the need to shuttle drivers back to their “home” bus yard. Another strategy is to have the drivers park the bus and go to their primary jobs and pick the bus back up at the end of the day for the commute trip home (similar to YoloBus service to Sacramento). This strategy is very cost effective, but requires a place to park the buses midday near the driver’s major employment sites and also provides a lower level of management control of operations (reliability difficulties when driver becomes sick etc.) Lastly, it is possible to perform maintenance of buses parked midday, but most regular running repair and servicing is performed at the end of the service day, rather than midday. Most transit agencies also have found that performing all the normal maintenance for a bus at one location results in simpler accountability and better maintenance.

With respect to Solano County needs, it is clear that support facilities for intercity express bus services need to be coordinated with support facility needs for local transit and paratransit services. The need for one, two or three new support facilities largely will depend on the combined needs of all three types of bus transit services. Another important factor will be the partnership funding/operations strategy adopted for bus service to Sacramento and to Marin County. Both the intercity bus services to Marin County and to Sacramento seem best based in Solano County due to commute patterns.

Where best to develop one or more new support facilities is largely determined by:

- The optimal vicinity for a bus facility is one that minimizes total deadhead costs; and
- The optimal site is one that has good access to regional highways and that has compatible land uses surrounding it (industrial and even office park campuses – residential uses are incompatible).

Expansion of the Vallejo Transit garage appears to offer promise and the relocation of Fairfield Suisun Transit to a larger dedicated facility also seems clear.

SERVICE AND PASSENGER SUPPORT FACILITIES PLAN

Chapter 4 described recommended investments in HOV direct ramps, transit centers and park and ride facilities. The priority, project dependency and resultant phasing plan for these investments are summarized in Table 7-5. Near term projects are funded; mid term projects are programmed for the next 5 to 20 years; and long term projects are programmed for 20 years or farther out.



Route 40 bus at Fairfield Transportation Center in Fairfield

Table 7-5 SERVICE AND PASSENGER SUPPORT FACILITIES PHASING PLAN				
Project Phase	Project Description	City	Priority	Dependence
Near Term	Bella Vista P&R	Vacaville	Funded	None
Near Term	FTC Surface Lot	Fairfield	Funded	None
Near Term	Red Top P&R Ph #1	Fairfield	Funded	Pre Segment #1
Mid Term	Curtola P&R	Vallejo	1	Const. Staging
Mid Term	FTC Access Improv. & Garage	Fairfield	2	Const. Staging
Mid Term	Red Top Rd Ph #2	Fairfield	3	None
Mid Term	Gold Hill P&R	Fairfield	4	None
Mid Term	Vista Point P&R	Benicia	5	Benicia Intermodal
Mid Term	Benicia Intermodal	Benicia	6	Rail Service
Mid Term	West Military P&R	Benicia	7	None
Mid Term	Hiddenbrooke P&R	Vallejo	8	None
Mid Term	North Texas P&R	Fairfield	9	Manuel Campos Ext
Mid Term	Columbus P&R	Benicia	10	Pre Curtola
Mid Term	North First Street	Dixon	11	None

Long Term	Turner Road P&R	Vallejo	12	Fairgrounds Develop
Long Term	Turner Direct HOV Ramp	Vallejo	13	Turner Overcrossing
Long Term	Curtola Direct HOV Ramp	Vallejo	14	I-80 HOV Lanes
Long Term	Vacaville Intermodal	Vacaville	15	None
Long Term	West A Street P&R	Dixon	16	None
Long Term	I-80 to I-680 Direct HOV Ramp	Fairfield	17	None
Long Term	Walters Road P&R	Suisun	18	Jepson Parkway

The Near Term list of projects includes those already in the pipeline. It includes the Bella Vista Park and Ride Lot and the Fairfield Transportation Center Park and Ride Lot as well as Phase 1 of the Red Top Road Park and Ride Lot. Full build out of the 400 plus Red Top Road lot is not immediately needed and can occur as demand grows in the future. This approach provides the maximum flexibility to adapt the site to serve future Napa-Solano commuter rail services as well integration of complementary retail joint use on the site.

The eleven Mid Term projects are high priority projects requiring some lead time and or are dependent on other projects for their completion. The Curtola parking garage, for example, will require an interim replacement lot identified to accommodate demands during construction. Construction of a garage at the FTC site will also require similar lead time to develop. The Columbus, the Southampton and Gold Hill Park and Ride Lots require right of way negotiations. It is important to tie these three sites down, while they are still available. Development of the Columbus/Rose Park and Ride site hopefully could help to minimize Curtola demands generated in Benicia during the Curtola's construction. Development of a construction staging plan for the Curtola garage needs to be given a high priority. The North Texas Road Park and Ride Lot, for example, is linked to the timing of the Manuel Campos Parkway extension project. If development occurs very soon at the North First Street Park and Ride location, the phasing of this project should be accelerated to integrate into the private development project. Both the Hiddenbrooke and Vista Point park and ride sites are lower priority, but also appear simple to develop.

ESTIMATED COSTS AND FUNDING STRATEGY

Fleet Costs

Cost estimates for the fleet were developed using a unit cost of \$400,000 per bus and a replacement cycle of 15 years. By 2030, approximately 150 buses would need to be purchased. The total cost of these buses is estimated to be \$60 million in 2003 dollars.

Maintenance Facility Expansion Costs

Allowing \$125,000 per net added buses in the fleet for expansion of maintenance facilities yields a total investment of \$10 million needed for this important support system. These costs could vary significantly due to land acquisition cost and to cost efficiencies associated with expanded facilities needed to support expansion of local bus services.

Transit Center and Park and Ride Access Improvement Costs

As reported in Chapter 6, cost to provide direct HOV access ramps at Curtola Parkway to I-80, Turner Road, and the I-80/I-680 connection are estimated at \$45 million, \$38 million and \$25 million, respectively. Access improvements at the Fairfield Transportation Center are estimated to cost \$1 million. Together the local access-improvement costs total \$84 million.

Transit Center and Park and Ride Improvement Costs

The Near Term projects have already been funded. Mid Term projects are estimated to cost \$33 million. Long Term projects are estimated to cost an additional \$22 million.

Bus Operating Cost and Subsidy Requirements

Annual operating and maintenance costs (O&M costs) are projected to increase from today's level of \$4.6 million to \$15 million in 2030 (in 2003 dollars). Table 7-6 describes the estimated annual operating and maintenance costs and anticipated revenue for the service in 2003 dollars. Note that the farebox ratio decreases as service expands, because patronage increases, but not proportionately with service. However, the stated objective (in Chapter 5, Corridor Express Bus Service Plan) of a 20% farebox recovery ratio continues to be met through year 2030.

The additional subsidy required to fund the expanded express bus service could come from TDA funds currently used for streets and roads purposes, from RM-2 operating funds available for the Regional Express Bus North pool, or from a new countywide half cent sales tax. In combination, these funds would provide funds needed for express bus capital and operating under the proposed implementation strategy.

Table 7-6
PROJECTED OPERATIONS AND MAINTENANCE COSTS AND REVENUES
(2003 Dollars)

FY	Peak Buses	O&M Cost	Fare Revenue	Existing Subsidy	Additional Subsidy Required	Farebox Recovery
2005	36	\$5,515,000	\$2,237,000	\$2,711,745	\$566,255	0.41
2006	36	5,515,000	2,237,000	2,711,745	566,255	0.41
2007	36	5,515,000	2,237,000	2,711,745	566,255	0.41
2008	36	5,515,000	2,237,000	2,711,745	566,255	0.41
2009	36	5,515,000	2,237,000	2,711,745	566,255	0.41
2010	46	7,145,000	2,749,000	2,711,745	1,684,255	0.38
2011	46	7,145,000	2,749,000	2,711,745	1,684,255	0.38
2012	46	7,145,000	2,749,000	2,711,745	1,684,255	0.38
2013	46	7,145,000	2,749,000	2,711,745	1,684,255	0.38
2014	46	7,145,000	2,749,000	2,711,745	1,684,255	0.38
2015	53	9,920,000	3,515,000	2,711,745	3,693,255	0.35
2016	53	9,920,000	3,515,000	2,711,745	3,693,255	0.35
2017	53	9,920,000	3,515,000	2,711,745	3,693,255	0.35
2018	53	9,920,000	3,515,000	2,711,745	3,693,255	0.35
2019	53	9,920,000	3,515,000	2,711,745	3,693,255	0.35
2020	59	11,240,000	3,877,000	2,711,745	4,651,255	0.34
2021	59	11,240,000	3,877,000	2,711,745	4,651,255	0.34
2022	59	11,240,000	3,877,000	2,711,745	4,651,255	0.34
2023	59	11,240,000	3,877,000	2,711,745	4,651,255	0.34
2024	59	11,240,000	3,877,000	2,711,745	4,651,255	0.34
2025	68	12,555,000	4,194,000	2,711,745	5,649,255	0.33
2026	68	12,555,000	4,194,000	2,711,745	5,649,255	0.33
2027	68	12,555,000	4,194,000	2,711,745	5,649,255	0.33
2028	68	12,555,000	4,194,000	2,711,745	5,649,255	0.33
2029	68	12,555,000	4,194,000	2,711,745	5,649,255	0.33
2030	77	15,010,000	4,713,000	2,711,745	7,585,255	0.31
TOTAL (26 years)		\$246,885,000	\$87,573,000	\$70,505,370	\$88,806,630	0.35

Notes:

1. O&M costs estimated at \$190,000 per peak express bus per year and \$125,000 per off peak bus per year for incremental service added to the existing 29 peak bus express service.
2. Fare revenue estimated at 20% fare recovery on the incremental new service.
3. Existing subsidies include FTA Section 5307, TDA, and Air Quality Management District funds.
4. Additional subsidies could come from RM-2 and TDA funds currently used for streets and roads purposes.

SUPPORTIVE POLICIES

A number of policy measures would complement the intercity express bus service and facilities improvements. These include land use policies, marketing strategies and additional highway coordination measures.

Land Use Policies

Intercity express bus services desirably should connect Solano County residents to their job sites (and other destinations) in other counties and also connect Solano County job sites to labor catchment areas outside the county. This desired scenario would yield ridership in both directions of travel during peak periods as well as help to reduce commute period traffic. While most of Solano County's downtowns and shopping centers are located along intercity bus corridors, few of the county's office and industrial parks are located along these corridors. Some of these industrial and office parks have minimal pedestrian systems. (i.e. sidewalks that connect people to the roadway and other development and to transit stops rather than just the parking lot). Focusing future office parks and industrial parks to locate along the intercity bus corridors and strengthening requirements for pedestrian systems would allow intercity buses to better serve job sites in the County.

Guidelines for good pedestrian systems are outlined in the CTP Alternative Modes Element and encompass: direct and safe connections from developments to the public right of way sidewalk system, a continuous sidewalk system along public streets (both sides of the street for non-residential areas), and safe access to bus stops. The importance of the latter is underscored by recent court decisions regarding liability of transit operators locating stops at unsafe locations for pedestrian access. Ideally, the sidewalks should not be located immediately adjacent to the street, but should be setback from traffic lanes four or more feet (depends on design speed for traffic). The setback improves safety and minimizes the incidents of being splashed by passing cars. Construction of new freeway interchanges and major capacity upgrades should specifically consider the needs of pedestrians and bicyclists.

New and expanded transportation centers and the larger park and ride facilities should be designed as regional or community activity centers with commercial uses and services incorporated into the project to create more pedestrian amenities, improve security and maintenance, and provide more opportunities for revenue generating uses. Ground floor commercial uses in parking structures, joint use facilities with adjoining shopping centers or office parks and other innovative land use strategies should be considered. The sponsors of these facilities should also consider the goals and pursue funding opportunities provided in the Transportation for Livable Communities Program (TLC).

Marketing Strategies

The plan to increase intercity express bus services in the corridor will increasingly result in Vallejo and FST buses providing complementary services. Regardless of institutional definitions over operating responsibilities, the consumer (rider) would benefit if the I-80/I-680/I-780 transit services were all labeled the same or in the same manner. With over-the-road coaches exclusively dedicated to the intercity service, local bus services could continue to run under their

own names. Passengers would not then have to refer to two express bus schedule charts to see which bus will be arriving first at their stop.

Real-Time Passenger Information System

Implementation of real time passenger information system for the intercity express bus services would help minimize anxiety about bus schedules. Real time information systems advise riders of the actual time buses are scheduled to arrive at the stop based on satellite location technology.

Additional Highway Coordination Measures

Four additional highway coordination measures are recommended:

1. Install ITS changeable message signs at key commute decision points advising motorists if parking spaces are still available at park and ride lots;
2. Ensure that future interchange overpass construction reflects more than minimal pedestrian needs and also accommodates bicycles;
3. Consider bus traffic signal timing preferences at selected high volume intersections – FTC signals (Fairfield), Davis Street Transit Center signals (Vacaville) and Curtola and Lemon Street signal (Vallejo); and
4. Understanding that Caltrans will be constructing new shoulders to full highway design standards, short segments might lend themselves to queue jumps for buses. Caltrans is understood not to favor continuous shoulder use or forced turn for buses using shoulders. The latter queue jump shoulder use should be further explored with Caltrans. Potential locations for queue jumps for buses are the westbound shoulder approaching Oliver Road (Fairfield Transportation Center) and the eastbound shoulder approaching Auto Mall or West Texas Street off ramp (also for FTC).

NEXT STEPS

Ten actions are recommended as “next steps” towards implementation.

- Incorporate I-80/I-680/I-780 Transit Corridor Study’s Plan into the Update of the Solano County Comprehensive Transportation Plan;
- Fund and implement the first five year projects (with particular attention to right of way protection for park and ride facilities);
- Develop an annual and multi-year funding agreement MOU for intercity transit services;
- Fund and conduct a Transit Consolidation Study, which includes bus maintenance and storage yard issues;
- Seek funding through Regional Measure 2 and local measure to implement elements of the Plan;
- Work with Caltrans and Contra Costa County to provide a continuous eastbound HOV facility on I-80 by eliminating the short gap approaching the Carquinez Bridge on I-680;

- Work with Caltrans to provide a southbound HOV approach to the Benicia Bridge and on the bridge;
- Coordinate with BART to upgrade the del Norte shelter for Vallejo Transit passengers, including provision of real time passenger information at the shelter;
- Initiate multi-modal corridor study for SR-12 (in coordination with Caltrans Districts 10 and 4, and Napa and San Joaquin Counties); and
- Coordinate bus service with planned HOV lanes on I-80 through Vallejo and on I-80 through Fairfield and Vacaville.