2.1

Transportation and Circulation

This section outlines current circulation conditions and examines the estimated effects of the proposed 2009 CTP. In addition, this section evaluates the ability of the proposed investments in transit, freeways, and local roadways to serve expected growth in travel demand.

Existing Setting

The transportation system in Contra Costa consists of the highway and road system, BART and commuter rail, and express and local bus services, along with a bicycle and pedestrian network. As with all transportation systems, the roadway, transit facilities, and other services that make up Contra Costa's system serves a variety of functions, from providing access to businesses, homes, and other land uses to connecting those land uses to other parts of the county, and to the San Francisco Bay Area and beyond.

TRANSPORTATION MODES AND COMMUTE PATTERNS

According to the 2006 American Community Survey (the most recent survey data available from the U.S. Census), Contra Costa residents use a variety of transportation options to get to work. As shown in Table 2.1-1, nearly 82 percent of workers use a private vehicle to get to work, either by driving alone or carpooling. Of the remaining 18 percent, just over half use transit to get to work, with the remainder either using other modes to get to work or working at home. Compared to the 2000 Census, a much higher proportion of residents worked at home (growing from 4.3 percent to 5.2 percent in 2006). Persons who took other modes (such as walking or bicycling) increased from 1.5 to 1.8 percent, which represents a 20 percent increase in a six year period. The number of persons who carpooled fell from 13.5 percent to 11.7 percent. All other modes remained at about the same level in both years.

Table 2.1-1: Contra Costa County Resident Workers by Means of Transportation to Work, 2000 - 2006

	2000		*2006*	
	Number	*Percent*	*Number*	*Percent*
Drive Alone	310,286	70.2%	340,601	70.5%
Carpool	59,769	13.5%	56,583	11.7%
Transit	39,652	9.0%	43,812	9.1%
Walk	6,631	1.5%	8,033	1.7%
Other (Bicycle, taxi, etc.)	6,694	1.5%	8,552	1.8%
Worked at Home	18,976	4.3%	25,264	5.2%
Workers	442,008	100.0%	482,845	100.0%

Sources: U.S. Bureau of the Census – 2000, Summary Tape File 3A (1990) and Demographic Profile 2, 3, 4 (2000), 2006 ACS

The pattern of where Contra Costa residents worked in 2006 was very similar to that in 2000. As shown in Table 2.1-2, about 53 percent of residents worked within the county in 2006, a slight decrease from the approximately 55 percent in 2000. Alameda County remained the second most frequent destination for commuters from Contra Costa. San Francisco remained the third most common destination, its share increasing from 13 to 15 percent of the total. The remaining counties together made up less than 10 percent of commute destinations. Employed residents increased by 21,000 from 2000 to 2006, a 4.5 percent increase over six years.

Table 2.1-2: Job Location for Contra Costa Employed Residents, 2000-2006

	2000		*2006*		*Change*	
Work Location	*Number*	*Percentage*	*Number*	*Percentage*	*Number*	*% Growth*
Contra Costa	253,002	54.8%	254,229	52.6%	1,227	0.5%
San Francisco	61,300	13.3%	71,486	14.8%	10,187	16.6%
San Mateo	9,468	2.0%	12,667	2.6%	3,198	33.8%
Santa Clara	12,440	2.7%	16,545	3.4%	4,105	33.0%
Alameda	110,132	23.8%	115,881	24.0%	5,748	5.2%
Solano	6,523	1.4%	4,854	1.0%	-1,669	-25.6%
Napa	1,418	0.3%	1,155	0.2%	-263	-18.5%
Sonoma	813	0.2%	411	0.1%	-402	-49.4%
Marin	6,905	1.5%	5,773	1.2%	-1,132	-16.4%
TOTAL	**462,000**	**100%**	**483,000**	**100%**	**21,000**	**4.5%**

Source: Prepared by staff of Metropolitan Transportation Commission (MTC); adjusted to Employed Resident Totals from ABAG Projections 2005 (note that some residents work at more than one job)

As shown in Table 2.1-3, workers living in Contra Costa fill about 75 percent of the jobs in the county. Virtually all of the increase in commuting to jobs in Contra Costa over the past decade came from intra-county commuting. The proportion of workers coming to Contra Costa decreased from San Francisco, San Mateo, Santa Clara and Alameda counties, and

increased from within Contra Costa, Solono, Napa, Sonoma, and Marin counties. Of the workers that commute into the county for employment, 20 percent are from two neighboring Bay Area counties – Alameda (10.4 percent) and Solano (9.3 percent). A comparison of tables 2.1-2 and 2.1-3 shows that there are approximately 90,700 fewer jobs than employed residents in the county.

Table 2.1-3: Origin of Workers Commuting to Contra Costa County, 2000-2006

	2000		*2006*		*Change*	
Work Location	*Number*	*Percentage*	*Number*	*Percentage*	*Number*	*% Growth*
Contra Costa	280,290	75.5%	295,540	75.0%	15,249	5.4%
San Francisco	5,744	1.5%	4,838	1.2%	-905	-15.8%
San Mateo	2,291	0.6%	1,780	0.5%	-510	-22.3%
Santa Clara	3,192	0.9%	2,643	0.7%	-549	-17.2%
Alameda	42,176	11.4%	41,059	10.4%	-1,116	-2.6%
Solano	28,765	7.7%	36,655	9.3%	7,890	27.4%
Napa	2,906	0.8%	3,721	0.9%	815	28.1%
Sonoma	1,853	0.5%	3,293	0.8%	1,440	77.7%
Marin	4,094	1.1%	4,471	1.1%	377	9.2%
TOTAL	**371,310**	**100%**	**394,000**	**100%**	**22,690**	**6.1%**

Source: Prepared by staff of Metropolitan Transportation Commission (MTC); adjusted to Employment Totals from ABAG Projections 2005 (note that some residents work at more than one job)

EXISTING TRANSPORTATION SYSTEM

Contra Costa is served by an extensive system of roadways, transit services, and bicycle and pedestrian facilities that support the movement of automobiles, buses and rail, and bicycles and pedestrians. The 2009 CTP outlines improvements to these transportation facilities and services and programs that rely on them.

Roadways

The roads and streets that make up the roadway system of Contra Costa range from freeways and major arterials to local streets and rural roads. The county's freeways include portions of both the federal interstate system (I-80, I-580 and I-680) and State freeways (State Routes 4, 24 and 242). State highways also include the non-freeway portions of State Route 4 in West and East County as well as State Route 123 (San Pablo Avenue) in El Cerrito and Richmond. The freeways and other State highways are designated as both Routes of Regional Significance and as part of the CMP network.

The county roadway network also includes many arterial and collector streets. The most important of these streets are designated as part of the Congestion Management Program (CMP) network, Routes of Regional Significance or both (the CMP network and Routes of

Regional Significance are listed in the adopted Contra Costa CMP and the CTP, respectively). The majority of roadway miles, however, are either local streets or rural roads. While these streets and roads individually carry relatively little traffic, they are essential to provide access and mobility throughout the county and region. The State CMP legislation does not require LOS standards for non-CMP streets.

A number of the existing freeways in the county have HOV lanes; these include:

- Interstate-80 between State Route 4 and the Contra Costa County/Alameda County line;
- State Route 4 between State Route 242 and Railroad Avenue; and
- Interstate 680 between south of Walnut Creek and the Contra Costa County/Alameda County line, and between Pleasant Hill and the Martinez-Benicia Bridge.

The 2009 CTP includes several programmed and planned improvements to expand and connect the HOV lane system in the county, as described in Table 2.1-4.

Table 2.1-4: Proposed expansions to the HOV lane system in Contra Costa

Project Code	*Project Name*	*Description*	*Project Limits*
0944	I-680 SB HOV Extension	Extend SB HOV from North Main to Livorna	North Main to Livorna
0964	I-680/Sycamore Valley Rd HOV Ramps	Includes construction of new HOV-only on- and off-ramps in both the northbound and southbound directions. The ramps would be HOV only for the same hours of operation as the HOV lanes.	At the interchange of I-680/Sycamore Valley Rd in Danville.
0965	I-680 NB HOV Gap Closure Between Livorna and N. Main	This project provides an HOV lane in the northbound direction between Livorna and N. Main through the I-680/SR24 Interchange via a flyover.	Northbound - between Livorna and N. Main in Walnut Creek
0966	I-680 SB HOV Gap Closure Between N. Main and Livorna	Widen I-680 and/or restrip to add one HOV lane through the I-680/SR24 I/C between N. Main and Livorna in the southbound direction.	Southbound- between N. Main and Livorna in Walnut Creek
0967	I-680 NB HOV Gap Closure between N. Main and SR242	Provide an HOV lane in the northbound direction between N. Main and SR242, which will significantly shorten a gap in the HOV network which currently exists between Livorna and SR242.	Northbound - between N. Main and SR242

Table 2.1-4: Proposed expansions to the HOV lane system in Contra Costa

Project Code	*Project Name*	*Description*	*Project Limits*
0968	I-680/Norris Canyon Rd HOV Ramps	Includes construction of new HOV-only on- and off-ramps in both the northbound and southbound directions. The ramps would be HOV only for the same hours of operation as the HOV lanes.	at the interchange of I-680 and Norris Canyon in San Ramon
0069a	I-80: Construct Eastbound HOV Lanes, Willow Road to Crockett I/C	Construct eastbound HOV lane from Willow Ave. (where existing HOV lanes end) north to the Crockett interchange, where they will connect with HOV lanes that will be constructed as part of the Carquinez Bridge project.	Willow Ave..to Carquinez Bridge
0069b	I-80: Westbound HOV Lanes, Crockett I/C to Willow Ave.	Construct westbound HOV lanes on I-80 from south of the Cummings Skyway interchange south to Willow Ave. Project will connect exist westbound HOV lane from south of Willow Ave. interchange with HOV lane to be constructed as part of new Carquinez Bridge.	Cummings Skyway to State Route 4
1295	I-80 Corridor Mobility Improvement Project	Includes HOV bypass lanes at ramps.	Carquinez Bridge in Contra Costa to Bay Bridge in Alameda Co.
1296	Restrip I-680 SB to extend HOV lane northwards of Livorna	Restripe 680 SB to extend HOV lane northwards of Livorna	S. of Olympic to Livorna

Source: Dyett & Bhatia, 2008.

Transit

Contra Costa is also served by both bus and rail transit systems. The BART system has three lines within Contra Costa County. There are two Richmond lines, operating through El Cerrito and Richmond in West County: one to San Francisco (through Daly City on the Peninsula) and the other to Fremont in southern Alameda County. The Pittsburg/Bay Point line also provides service to San Francisco and Oakland and through to Millbrae on the Peninsula with stations at Lafayette and Orinda in Lamorinda; Walnut Creek, Pleasant Hill, Concord and North Concord in Central County; and Pittsburg/Bay Point in East County. Both lines that provide service to San Francisco connect with BART trains that now serve the San Francisco International Airport. BART also serves the Tri Valley area (just south of the Contra Costa County/Alameda County line) through a train route that runs from the Dublin/Pleasanton area directly to San Francisco International Airport.

Two diesel locomotive rail lines provide intercity rail service within the county. The Amtrak-operated Capitol Corridor rail service runs between Auburn and San Jose. The San Joaquin rail service operates between Oakland and the Central Valley (including service to Stockton and Modesto), with stops in Contra Costa at Martinez and Richmond. The stop at Richmond also provides direct connections to BART. Hercules also has a new rail station under development. A third commuter rail line, Altamont Commuter Express, operates through the Alameda portion of Tri Valley with service from Tracy to San Jose, and is used by some Contra Costa residents who commute to jobs in Santa Clara County.

BART stations serve as the key transit center points for feeder and express buses in East County (Tri-Delta Transit) and Central County (County Connection). The Alameda-Contra Costa Transit District (AC Transit) system serves most parts of West County, and operates both local services, as well as direct service to San Francisco. The local WestCAT system serves the northwestern portion of the County with local service, and feeder service to BART. Several bus systems from Solano County run feeder buses to Contra Costa BART stations at El Cerrito del Norte and Pleasant Hill BART. Targeted services are also in place to feed the Altamont Commuter Express, and connect with the Wheels service operating in the Alameda County portion of Tri-Valley. All bus services, regardless of the provider, provide fixed route service with varying headways during the day.

Bicycle and Pedestrian Facilities

The Authority adopted the Contra Costa Bicycle and Pedestrian Plan, or CBPP, in December 2003. This plan outlines bicycle and pedestrian needs for Contra Costa; encourages local efforts to improve the environment for bicycling and walking in the communities of Contra Costa; and seeks to spur greater interest in and support for bicycling and walking generally.

When the last plan was adopted, there were approximately 250 miles of off-street and 230 miles of on-street bicycle lanes within the county. Another 470 miles are proposed in various plans, including city general plans. The CBPP recommends bicycle facilities in 17 priority corridors throughout the county:

- Richmond BART connector bikeway;
- San Pablo Avenue bikeway: south;
- Central I-80 bikeway;
- Crockett/Martinez connector bikeway;
- Contra Costa/Main St bikeway in Walnut Creek and Pleasant Hill;
- Central Pleasant Hill bikeway;
- Contra Costa County Canal Trail Gap;
- Concord/Clayton bikeway;
- Concord/Pleasant Hill bikeway;

- Brentwood/Oakley bikeway;
- O'Hara/Minnesota bikeway in the cities of Oakley and Brentwood;
- Pittsburg Loop bikeway;
- Buchanan Road bikeway;
- State Route 24 bikeway;
- Lamorinda linkages;
- Rural Road Improvement Project; and
- Completion of Regional Trails.

The CBPP also identifies two priority programs for pedestrians in the area, including:

- Designating and developing pedestrian districts; and
- Improving mobility for people of all abilities consistent with the Americans with Disabilities Act (ADA) improvements.

The CBPP also recommends programs and projects that support and encourage walking and bicycling, including improved access to transit, new and improved bike parking, signing, safe routes to school programs, pathway rehabilitation, and education.

REGULATORY SETTING

Several federal and State requirements affect the Authority's role in planning for the transportation system.

On August 10, 2005, the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) was signed into law. SAFETEA-LU authorizes the Federal surface transportation programs for highways, highway safety, and transit for the 5-year period 2005-2009. This act continues the initiatives established in prior legislation for transportation funding and planning. SAFETEA-LU continued previous programs, including flexibility in the use of funds for a variety of locally-defined purposes. SAFETEA-LU also encouraged development of Intelligent Transportation Systems (ITS), to help improve operations and management of transportation systems and vehicle safety.

Under SAFETEA-LU, the U.S. Department of Transportation (USDOT) continues to require that Metropolitan Planning Organizations, such as the Metropolitan Transportation Commission (MTC), prepare long-range transportation plans and that these plans be routinely updated. MTC last adopted its long range plan – known as the Regional Transportation Plan, or RTP – in 2005 (Transportation 2030) and is now updating it (to be known as Transportation 2035) with adoption anticipated in early 2009. The RTP must meet several requirements, including planning for at least 20 years into the future, including a financially constrained

element with reasonable revenue assumptions, and conforming to air quality plans and other Federal requirements.

In addition, the RTP must include projects before they can be funded within the STIP, as required by California Transportation Commission (CTC) procedures (this requirement is codified in federal Government Code 65080(c)).

Congestion Management Program, or CMP, requirements were established in 1990as part of a bipartisan State legislative package, and minor updates were made to the requirements in 1994, 1996, 1997, and 2001. Under this legislation, urban counties within California are required to establish a CMA, prepare a CMP, and update it every other year, unless the county "opts out" of the program following procedures added to the CMP legislation in 1995. To date, only Sonoma has opted out of the CMA process. The CMP must designate a network of State highways and principal arterials, set standards for their performance, establish a program for analyzing the impacts of land use changes, promote tools for managing travel demand, maintain a travel demand model, and include a capital improvements program for transportation projects. The Authority, the designated Congestion Management Agency for Contra Costa, adopted its first CMP in 1990. The most recent update, the 2007 CMP, was adopted in November 2007.

Criteria of Significance

According to CEQA guidelines, a project will normally have a significant effect if it would cause an increase in traffic that is substantial in relation to the existing traffic load and capacity of the street system. This definition is somewhat limited for the purposes of a program-level EIR on a regional transportation plan. A more expansive set of criteria has thus been defined to determine whether proposed transportation improvements in the CTP will have a significant adverse effect on future regional mobility in Contra Costa.

The measures discussed here are restricted to those that can be quantitatively evaluated using CCTA's Countywide Travel Demand Forecasting Computer Model (the Countywide Model). Other programs, such as safety, maintenance and alternative transportation improvements are addressed qualitatively.

TRAFFIC CONGESTION

These measures are an appropriate representation of the impact of an alternative on traffic congestion. The EIR evaluates a range of measures designed to define roadway conditions from a variety of user and system perspectives.

- **Criterion 1:** *Vehicle Miles Traveled (VMT) at LOS F.* Implementation of the 2009 CTP would have a potentially significant adverse impact if it results in an appreciable increase in VMT at LOS F compared to existing condition (LOS F defines a condition on roads where traffic substantially exceeds capacity, resulting in very low speeds and stop and go conditions for extended periods of time.)

- **Criterion 2:** *Vehicle Hours Traveled (VHT)*. Implementation of the 2009 CTP would have an adverse impact if the overall vehicle hours traveled increase compared to existing conditions.
- **Criterion 3:** *Average Speeds*. Implementation of the 2009 CTP would have potentially significant impacts if it results in an appreciable decrease in average speeds as compared to existing conditions.

DIVERSION TO OTHER MODES

These measures are an appropriate representation of the impact of an alternative on encouraging shifting to other modes.

- **Criterion 4:** *Transit Mode Share*. Implementation of the 2009 CTP would have potential significant adverse impacts if it results in an appreciable decrease in transit mode shares as compared to existing conditions.
- **Criterion 5:** *Total Number of SOV Vehicle Trips*. Implementation of the 2009 CTP would have a potentially significant adverse impact if it results in an increased number of vehicle trips compared to existing conditions.
- **Criterion 6:** *Transit Ridership*. Implementation of the 2009 CTP would have potentially significant adverse impact if it results in an appreciable decrease in transit ridership as compared to existing conditions.

Method of Analysis

This EIR uses the Countywide Model to assess the impacts of the proposed 2009 CTP on the transportation network. The model assesses the changes to the transportation network against the projected growth in population and employment in the county. CEQA also requires this EIR to compare the Project Alternative to the No Project Alternative—that is, to the conditions without the proposed adoption of the new Countywide Plan. This comparison will provide the benchmark against which the significance of the impacts of the proposed transportation improvements and programs can be assessed.

The estimation of the Existing Condition reflects 2007 conditions. This is the year that was used to develop analyses that supported the Action Plan Updates. To examine future year conditions, this EIR uses the horizon year of 2030, which is consistent with the approved projections for the Authority's 2006 Land Use Information System (LUIS).

In reponse to the California Department of Transportation's request for traffic diagrams and data made in the NOP and scoping period, it is noted that maps depciting percent increase in traffic volumes and planned capacity improvements by sub-area are available in Chapter 2 of the proposed 2009 CTP, as Figures 9 through 12. In addition, plots showing peak hour and peak period (both AM and PM) and daily volumes from the current model for 2000

(observed) and 2030 (forecast) are available for download on the Authority website, http://www.ccta.net/planning/tools/traveldemand.shtml. Because land use changes are not a part of the proposed plan, it is not expected that volumes will be significantly different than those projected in these maps. Trip generation is based on forecast population and employment growth estimated by ABAG, as described below in model assumptions.

MODEL FRAMEWORK

The Authority maintains a travel demand model that has 1,735 zones in Contra Costa and the Tri-Valley portion of Alameda County, and approximately 921 zones for the rest of the Bay Area. The model, which runs on the TransCAD® software platform, includes the nine Bay Area counties and is fully consistent with MTC's model. As with the MTC model (BAYCAST), the Countywide Model uses external gateways in the network to represent those counties that surround the nine Bay Area counties.

In addition to a comprehensive roadway network, the Countywide Model also has a separate transit network that reflects current and future transit operations for the Bay Area. The transit network includes links that provide access to the transit system by walking or driving.

For complete documentation of the countywide model, see the *Decennial Model Update, CCTA Travel Model Documentation, Final Report*, prepared for Contra Costa Transportation Authority, June 2003 and 2006 Addendum, available at www.ccta.net

MODEL ASSUMPTIONS

Land Use Forecasts

To develop the year 2030 future conditions, Authority staff worked with local jurisdictions to allocate land use information from ABAG *Projections 2005* to the refined system of traffic analysis zones within Contra Costa and the Tri-Valley. Land use data for the remaining Bay Area came directly from ABAG and MTC. The land use data set (also known as the Land Use Information System or LUIS), prepared with local review and concurrence, was approved by the Authority in 2006 for use in planning and environmental review work. The 2006 LUIS meets the CMP consistency requirements for Modeling, in that it is within 1% of ABAG P-2005 on an aggregate countywide basis.

Network Assumptions

Project Alternative

This EIR evaluates the effects of the various transportation improvements in the 2009 CTP against baseline conditions and the No Project Alternative. Section 1.2, Project Description, summarizes these proposed changes to the network. The full list of projects is provided in the CTPL shown in Appendix A.

The proposed 2009 CTP includes a wide range of projects and programs, not all of which can be represented in the Countywide Model. The model includes all significant increases in the capacity of the transportation system, from major roadway projects like the Fourth Bore of the Caldecott Tunnel and major transit expansions like the eBART extension to East County to smaller projects like the extension of Panoramic Drive in Concord and the new Capitol Corridor station in Hercules. The model, however, does not reflect the effects of smaller projects such as sidewalk improvements, minor intersection modifications, and transit maintenance facilities.

In some cases, however, the project can be represented in the model using a proxy for the project or program. For example, a series of minor intersection improvements along a corridor can be modeled by assuming a slightly higher throughput capacity.

For this EIR, network assumptions were established that most closely reflect impacts to transit or vehicle performance

No Project Alternative

Generally, transit service between the Existing Condition and 2030 No Project was assumed to be mostly the same throughout the network, meaning that the same routes, frequency and run times operate in both years. Changes include:

- A new train station at Hercules (serving Capitol Corridor and San Joaquin trains);
- E-BART operations between BART at Bay Point and Hillcrest Avenue in Antioch; and
- The Capitol Corridor line between Oakland and Sacramento operations at an improved frequency, going from 99 minutes to 60 minutes during the peak periods.

MEASURES OF PERFORMANCE

The performance of the roadway system was evaluated using the macro-level measures of vehicle miles traveled (VMT), vehicle hours traveled (VHT), and vehicle speed.

The measure of vehicle miles of travel (VMT) is an aggregate measure that estimates how the 2009 CTP affects the path choices of drivers. For example, a driver may choose to take a more circuitous route if the original route is more congested; or a driver may choose a shorter distance if a roadway is improved enough to divert traffic away from circuitous routes and back to the one with the shortest distance.

In order to correlate the VMT with congestion, a subset of the countywide VMT is examined. This subset, based upon the volume-to-capacity (V/C) ratio, presents how much of the VMT is occurring in congested traffic. In order to identify where congestion is beyond the generalized roadway capacity, segments over a V/C ratio of 1.0 are specifically reported. This ratio is presented as "Level of Service F." The concept of level-of-service (LOS) has been developed to report levels of traffic congestion and the worst level ("F") is the point at which traffic is expected to operate over the system capacity. The likely results of a level-of-service F

for these facilities are speeds that are typically one third to one-fourth of a free-flow speed, with intersections experiencing high delays, high volumes, and extensive queuing (Transportation Research Board, 2000).

The measure of vehicle hours of travel (VHT) provides an aggregate view of the general magnitude of congestion – higher vehicle hours of travel indicate that traffic is expected move more slowly on the roadway system. Another aggregate performance measure, average speed, is determined by dividing the VMT by the VHT to get an average speed. This final measure provides an indication of how these two performance measure interact in a way that is directly translatable to what an average user may experience.

Summary of Impacts

Most impacts on transportation and circulation are part of a larger cumulative impact that is due in large part to regional growth in population and employment. These cumulative impacts include an increase in vehicle miles traveled at level-of-service (LOS) F, an increase in total vehicle hours traveled, a decrease in average systemwide vehicle speed decreases, and an increase in total number of vehicle trips. While these impacts are considered cumulatively considerable, the project contribution to these impacts is not considerable. In addition, there are beneficial impacts related to transit use as a reslt of implementation of the 2009 CTP, including an increase or maintenance in transit mode share and an overall increase transit ridership.

Impacts and Mitigation Measures

IMPACT

2.1-1 An increase in vehicle miles traveled (VMT) at leve-of-service (LOS) F would occur compared to the existing conditions. *(Significant Cumulative Impact, Project Contribution Not Cumulatively Considerable)*

Vehicle miles traveled at LOS F is expected to increase significantly between 2007 and 2030 under either the No Project or Project alternatives (see Table 2.1-5). Increased congestion reflects the additional travel generated from future population and employment growth, which cannot be sufficiently accommodated by the proposed improvements to the efficiency and capacity of the regional transportation system under the Project Alternative.

The adoption and implementation of the 2009 CTP would, however, decrease VMT at Level of Service F during peak hours significantly (around 20 percent in both peak hours), as several of the new projects are intended to ease congestion at the most congested locations around Contra Costa.

While the overall increase in VMT at LOS F is forecast to be considerable, since the proposed 2009 CTP will reduce the aggregate vehicle hours traveled compared to the No Project condition, its overall impact is not anticipated to be cumulatively considerable.

Table 2.1–5: Peak Hour Vehicle Miles of Travel at Level of Service F for Roadway Segments

		Vehicle Miles of Travel at Level of Service F		*Vehicle Miles of Travel*	
Scenarios	*Facility Type*	*AM Peak Hour*	*PM Peak Hour*	*AM Peak Hour*	*PM Peak Hour*
EXISTING CONDITIONS	Collector	7,368	910	138,207	165,130
	Expressway / Major Arterial	33,207	20,561	437,796	509,262
	Freeway	95,144	35,355	900,732	952,875
	Other	8,359	2,517	141,694	174,701
	Total	**144,079**	**59,343**	**1,618,430**	**1,801,968**
2030 NO PROJECT	Collector	70,220	63,620	287,525	320,684
	Expressway / Major Arterial	164,213	132,006	759,911	844,797
	Freeway	461,035	486,181	1,236,924	1,290,308
	Other	29,629	33,482	223,556	259,762
	Total	**725,096**	**715,289**	**2,507,916**	**2,715,551**
2030 PROJECT	Collector	29,968	42,072	255,150	287,816
	Expressway / Major Arterial	114,317	103,513	760,614	854,639
	Freeway	389,622	414,453	1,238,215	1,300,621
	Other	24,122	25,474	212,848	249,169
	Total	**558,028**	**585,513**	**2,466,827**	**2,692,246**

Source: DKS Associates, 2008.

"Other" includes primary approaches to toll plazas and HOV lane connectors.

MITIGATION MEASURES

None required.

2.1-2 Total vehicle hours traveled (VHT) would increase when compared to existing conditions. *(Significant Cumulative Impact, Project Contribution Not Cumulatively Considerable)*

Since both the population and the number of workers in the county are projected to increase between 2007 and 2030, the total amount of vehicle miles and hours traveled is also forecast to increase within Contra Costa for both the No Project and Project alternatives when compared to existing conditions. The model forecasts that hours of vehicle travel during peak hours will double or more than double by 2030 under both the No Project and Project alternatives. Total daily travel will increase substantially as well though it is not forecast to double. Worsening roadway traffic reflects the additional travel generated from future population and employment growth, which cannot be sufficiently accommodated by the limited financial resources available in the proposed Project for improving the efficiency and capacity of the regional transportation system.

According to this forecast, however, overall VHT will be lower with the Project when compared to the No Project condition. Overall, the Project would result in a reduction of around six percent in total daily VHT, with more substantial decreases for the peak hours

when compared to the No Project. The VHT by facility type and level-of-service results for the AM peak hour, the PM peak hour and daily conditions are shown in Table 2.1-6.

While the overall increase in VHT is forecast to be cumulatively considerable, since the proposed 2009 CTP will reduce the aggregate vehicle hours traveled compared to the No Project condition, its overall impact is not anticipated to be a cumulatively considerable.

Table 2.1–6: Daily Vehicle Hours of Travel for Roadway Segments

		Vehicle Hours of Travel		
Scenarios	*Facility Type*	*AM Peak Hour*	*PM Peak Hour*	*Daily*
EXISTING CONDITIONS	Collector	4,241	5,132	45,021
	Expressway / Major Arterial	12,467	14,890	131,068
	Freeway	20,528	22,879	228,810
	Other	5,923	7,016	73,455
	Total	**43,159**	**49,917**	**478,355**
2030 NO PROJECT	Collector	17,502	16,036	96,075
	Expressway / Major Arterial	35,844	33,108	231,095
	Freeway	58,199	54,090	435,298
	Other	12,057	12,256	108,222
	Total	**123,601**	**115,490**	**870,690**
2030 PROJECT	Collector	11,301	12,086	78,569
	Expressway / Major Arterial	28,713	29,456	224,138
	Freeway	46,420	46,968	407,772
	Other	10,450	11,087	103,990
	Total	**96,885**	**99,597**	**814,469**

Source: DKS Associates, 2008.

"Other" includes primary approaches to toll plazas and HOV lane connectors.

MITIGATION MEASURES

None required.

IMPACT

2.1-3 Average systemwide vehicle speed decreases, compared to the existing conditions. *(Significant Cumulative Impact, Project Contribution Not Cumulatively Considerable)*

Similar to vehicle hours traveled, average speeds are an indicator of the congestion in a network. Table 2.1-7 lists the average speed on roads within Contra Costa by Facility Type. As these data show, the average peak hour speed is expected to decrease in 2030 no matter what condition is projected, with improvements in travel speeds demonstrated when comparing the Project to the No Project Alternative in 2030.

Decreased speeds reflect congestion from the additional travel generated from future population and employment growth, which cannot be sufficiently accommodated by the

limited financial resources available in the proposed Project for improving the efficiency and capacity of the regional transportation system.

While the forecast decrease in overall speeds from 2007 to 2030 would be considered cumulatively considerable, since the proposed 2009 CTP will allow for increased speeds compared to the No Project condition, its overall impact is not anticipated to be cumulatively considerable.

Table 2.1–7: Average Speed by Facility Type for Roadway Segments

		Average Speed (miles per hour)		
Scenarios	*Facility Type*	*AM Peak Hour*	*PM Peak Hour*	*Daily*
EXISTING CONDITIONS	Collector	*32.6*	*32.2*	*33.9*
	Expressway / Major Arterial	*35.1*	*34.2*	*37.8*
	Freeway	*43.9*	*41.6*	*52.4*
	Other	*23.9*	*24.9*	*24.7*
	Total	*37.5*	*36.1*	*42.4*
2030 NO PROJECT	Collector	*16.4*	*20.0*	*27.5*
	Expressway / Major Arterial	*21.2*	*25.5*	*33.5*
	Freeway	*21.3*	*23.9*	*38.5*
	Other	*18.5*	*21.2*	*23.8*
	Total	*20.3*	*23.5*	*34.1*
2030 PROJECT	Collector	*22.6*	*23.8*	*30.3*
	Expressway / Major Arterial	*26.5*	*29.0*	*35.6*
	Freeway	*26.7*	*27.7*	*41.7*
	Other	*20.4*	*22.5*	*24.2*
	Total	*25.5*	*27.0*	*36.7*

Source: DKS Associates, 2008.

"Other" includes primary approaches to toll plazas and HOV lane connectors.

MITIGATION MEASURES

None required.

IMPACT

2.1-4 Transit mode share increases or stays essentially the same when compared to existing conditions. *(Beneficial)*

Mode share is calculated at the trip purpose level. As an aggregate measure, all trip purposes are added together to obtain overall mode shares throughout the county. Table 2.1-8 lists the mode shares for trips that start or end within the county.

Transit mode share increases in the Project alternative when compared to existing conditions. Transit mode share also increases compared to the No Project alternative. The changes in the transit mode share are minimal but would have a beneficial impact on the transportation system in Contra Costa.

Table 2.1-8: Mode Shares (Daily)

	Existing Conditions		*2030 No Project*		*2030 Project*	
	Total	*Percentage*	*Total*	*Percentage*	*Total*	*Percentage*
All Trip Purposes						
Vehicle Driver[1]	874,078	25.89%	1,042,207	24.37%	1,040,337	24.33%
Vehicle Passenger1	183,614	5.44%	235,295	5.50%	234,962	5.49%
Drive Alone	1,299,651	38.50%	1,689,749	39.51%	1,680,439	39.29%
Shared Ride 2+	449,939	13.33%	564,601	13.20%	560,620	13.11%
Shared Ride 3+	293,921	8.71%	351,458	8.22%	350,205	8.19%
Transit	101,236	3.00%	162,432	3.80%	179,505	4.20%
Bicycle	16,950	0.50%	20,581	0.48%	20,496	0.48%
Walk	156,337	4.63%	210,444	4.92%	210,200	4.91%
Total	**3,375,726**	**100%**	**4,276,766**	**100.00%**	**4,276,765**	**100.00%**

[1] *Non-home-based and home-to-school trips are divided into Vehicle Driver and Vehicle Passenger trips. Non-home-based trips include trips by commercial vehicles and errands made from work. Home-to-school trips are divided into three categories: trips to grade school, trips to high school and middle school, and trips to college. Vehicle Driver trips do not include drivers of vehicles making trips to grade school, which are typically included as a home-based shop/other shared ride 2 or shared ride 3+ trips.*

Source: DKS Associates, 2008.

MITIGATION MEASURES

None required.

IMPACT

2.1-5 Total number of vehicle trips increases, compared to existing conditions. (Significant Cumulative Impact, Project Contribution Not Cumulatively Considerable)

This analysis evaluates the change in total vehicle trips. Overall, the amount of vehicle trips generated within Contra Costa is anticipated to grow by 25 percent between 2007 Existing Conditions and 2030 No Project condition. As discussed above, the increase in vehicle trips reflects the additional travel generated from future population and employment growth, which cannot be sufficiently accommodated by the proposed improvements to the efficiency and capacity of the regional transportation system under the proposed Project.

Table 2.1-9 lists the vehicle trips for existing conditions, the Project, and No Project conditions. When compared to the 2030 No Project, there is a slight decrease in number of vehicle trips. Even so, there is a projected change of less than one percent of the total number of vehicle trips within, into or out of Contra Costa.

The impact is considered cumulatively considerable, due to the overall increase in vehicle trips in 2030 compared to existing conditions. However, as the proposed 2009 CTP will allow for essentially the same number of vehicle trips when compared to the No Project condition, the overall impact of the 2009 CTP is not anticipated to be a cumulatively considerable impact.

Table 2.1-9: Total Daily Vehicle Trips

Alternative	*Daily Vehicle Trips*	*% Change compared to Existing Conditions*	*% Change compared to 2030 No Project*
Existing Conditions	2,398,890	—	—
2030 No Project	3,008,101	25.4%	—
2030 Project	2,995,938	24.9%	–0.4%

Source: DKS Associates, 2008.

MITIGATION MEASURES

None required.

IMPACT

2.1-6 Transit ridership increases compared to existing condition. *(Beneficial)*

Under existing conditions, there were about 208,000 daily transit boardings and alightings in Contra Costa. Under the No Project condition, this number is projected to climb to almost 307,000 daily transit boardings and alightings in 2030. As detailed in Table 2.1-10, under the Project alternative, there will be 371,500 daily transit boardings and alightings in 2030, indicating 163,500 more transit trips than in existing conditions, a 79 percent increase from existing conditions. When compared to the No Project, the Project would result in 64,500 additional transit trips in the county, reflecting a 21 percent increase. This increase is largely in bus ridership, since as bus service is improved some people will choose bus transit over rail transit, resulting in a decrease in rail transit when compared to the No Project. However, given the large increase in overall transit use compared to the No Project, the impact of the proposed Project is considered beneficial. It should be noted that eBART is assumed in both the Project and No Project conditions.

Table 2.1-10: Transit Activity in Contra Costa (daily boardings and alightings)

Operator Name	*Existing Conditions*	*2030 No Project*	*No Project compared to Existing Conditions*	*2030 Project*	*Project compared to Existing Conditions*	*Project compared to No Project*
AMTRAK	900	1,600	78%	1,400	56%	-13%
BART / eBART	63,600	99,600	57%	99,500	56%	0%
BUS: Local and Express	143,500	205,800	43%	270,600	89%	31%
TOTAL	**208,000**	**307,000**	**148%**	**371,500**	**79%**	**21%**

Source: DKS Associates, 2008.

MITIGATION MEASURES

None required.