Public Transportation

- **is estimated** to reduce CO_2 emissions by 37 million metric tons annually.

- **saves fuel**, reduces an individual's carbon footprint, and reduces congestion.

- **provides** an immediate option individuals can take to reduce their energy consumption and greenhouse gas emissions.

- **use** by a solo commuter switching his/her commute from a private vehicle can reduce CO_2 emissions by 20 pounds per day—more than 4,800 pounds in a year.

- **use saves** the U.S. the equivalent of 4.2 billion gallons of gasoline annually—more than 11 million gallons of gasoline per day.

- **provides** an affordable alternative to driving. Households that use public transportation save an average of $6,251 every year.

- **ridership** has increased 30% since 1995, with more than 10 billion trips taken annually.

- **is a national priority** that should be specifically targeted by climate change and energy legislation. We all have a stake in expanding public transportation use.

Tourist Transport Management

Improving Leisure Travel Choices

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TDM Encyclopedia
Victoria Transport Policy Institute
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Updated 4 June 2014

This chapter describes how to manage tourist travel for efficiency, by improving recreational travel options and reducing automobile traffic in resort areas.

Description

Tourist Transport Management (also called Resort Community Transport Management) involves improving transportation options for recreational travel and reducing automobile traffic in resort areas. Tourist travel has predictable patterns and needs, and often occurs in areas that have unique environmental and social features that are particularly sensitive to degradation by excessive automobile traffic. Tourist Transport Management can preserve the amenities that attract visitors to an area, whether it is an historic city center or a pristine natural environment.

Tourist Transport Management programs can include a variety of specific strategies to improve transport options, integrate alternative transportation into tourist activities, provide disincentives to drive, and promote alternative modes. These can include:

- Transit Improvements
- Shuttle Services
- Taxi Service Improvements
- Cycling and Walking Improvements
- Public Bike Systems
- Bicycle Parking
- Parking Management
- Traffic Calming, Speed Reductions and Streetscape Improvements.
- Smart Growth, New Urbanism and Access Management
- Car-Free Planning and Vehicle Restrictions.
- Marketing to encourage visitors to arrive without a car.
- Commute Trip Reduction programs for staff.
- Freight Management to minimize truck traffic.
- Aviation Transport Management
- Transportation Access Guides, which provide concise directions to reach destinations by alternative modes.
- Equipment Rentals (Bikes, Scooters, Skies, etc.).

Traffic to resort areas often peaks at particular seasons and times of the week. Visitors have particular mobility needs (e.g., travel between transport terminals, accommodations, restaurants and shops, tourists attractions, etc.) and baggage requirements (skis, surf boards, gifts to carry home). Tourist Transport Management must take these travel patterns and needs into account.

Many resort visitors will use alternative modes if they are convenient, enjoyable and Affordable. Tourist

TDM programs can involve developing car-free travel options and packages. This requires coordination to insure that visitors' mobility needs are served, and that such travel options are well Marketed. When planning a trip, potential visitors must be assured that they can arrive at their accommodations, access local activities and attractions, and carry any baggage they need, reliably and in comfort without a car.

How it is Implemented

Tourist Transport Management programs are usually implemented by regional planning agencies, a parks agency, a TDM Program, a Transportation Management Association, tourist marketing organizations, tourist-related businesses (such as a large hotel), or by organizers of a Special Event (such as a major festival). These TDM programs are often initiated to deal with specific problems (such as inadequate parking or traffic congestion during peak periods), but may expand over time with more Comprehensive Transport Planning to deal with a broader range of problems and objectives. Parks agencies can establish transit services (Cambridge Systematics, 2001), bicycle rentals and guided tours, or help private companies provide suitable services. In more isolated areas it may be implemented as part of an overall Rural Community TDM program.

Tourist Transport Management may involve policies that Restrict Automobile Travel or favor alternative modes. For example, some cities, towns and parks prohibit or limit the number of private automobiles allowed in certain areas or at certain times, and provide visitor access by shuttle services, bicycle rentals and pedestrian facility improvements. Visitor organizations or private companies may organize and publicize new car-free tour options and packages.

Travel Impacts

Travel impacts depend on the nature of the TDM strategies that are implemented, the types of trips, location, and demographics of visitors. Large travel impacts are possible. Some resorts and destination parks have virtually eliminated private vehicle traffic.

Table 1 Travel Impact Summary

Travel Impact	Rating	Comments
Reduces total traffic.	2	Reduces total travel.
Reduces peak period traffic.	3	Reduces traffic during peak seasons and times.
Shifts peak to off-peak periods.	0	
Shifts automobile travel to alternative modes.	3	Encourages mode shifting.
Improves access, reduces the need for travel.	0	
Increased ridesharing.	1	May include rideshare encouragement.
Increased public transit.	3	Often includes transit improvements.
Increased cycling.	3	Often includes cycling improvements.
Increased walking.	3	Often includes pedestrian improvements.
Increased Telework.	0	
Reduced freight traffic.	1	May include some freight management.

Rating from 3 (very beneficial) to –3 (very harmful). A 0 indicates no impact or mixed impacts.

Benefits And Costs

Benefits include reduced Traffic Congestion and Parking problems, road and parking facility cost savings

(particularly if road and parking facilities would otherwise be expanded to accommodate a short period of peak demand), improved community Livability and support for strategic Land Use objectives, such as preservation of environmental and cultural resources (greenspace and views, clean air, quiet, traditional customs, etc.), increased Transportation Choice (particularly for non-drivers), improved Walking and Cycling conditions, increased Road Safety, reduced impacts of tourist travel on residents, and a more enjoyable and unique experience for visitors.

Costs are primarily the financial expenses associated with developing a TDM program and providing services such as shuttle buses. Some potential visitors may be discouraged if restrictions on car use are considered burdensome or confusing.

Table 2 Benefit Summary

Objective	Rating	Comments
Congestion Reduction	3	Reduces peak-period vehicle traffic.
Road & Parking Savings	2	Reduces vehicle travel and trips.
Consumer Savings	2	Can increase affordable transport options.
Transport Choice	3	Increases transport choice for non-drivers.
Road Safety	2	Reduces vehicle traffic volumes and speeds.
Environmental Protection	3	Reduces vehicle traffic and pavement requirements.
Efficient Land Use	2	Reduces road and parking requirements.
Community Livability	3	Reduces traffic impacts, preserves unique community amenities.

Rating from 3 (very beneficial) to –3 (very harmful). A 0 indicates no impact or mixed impacts.

Equity Impacts

Most Tourist Transport Management programs provide services that are available to the general public and benefit a variety groups. Some involve restrictions that are particularly burdensome on certain groups (for example, restrictions on using private automobiles may limit access by people with physical disabilities who have trouble walking). Some programs involve special benefits or subsidies to a particular group or travel mode (for example, funding for transit services and shuttle buses), but not necessarily greater subsidies than the full Costs of accommodating additional automobile traffic through increased road and parking capacity. Such programs often increase the range of affordable travel options, which tends to benefit lower-income and transportation disadvantaged people, and helps provide Basic Mobility.

Table 3 Equity Summary

Criteria	Rating	Comments
Treats everybody equally.	2	Generally benefits all groups.
Individuals bear the costs they impose.	0	Usually requires subsidies, but these are often equal or less than subsidies to accommodate more vehicle traffic.
Progressive with respect to income.	2	Usually improves affordable transport options.
Benefits transportation disadvantaged.	3	Increases transport options for non-drivers.
Improves basic mobility.	2	Usually improves basic transport.

Rating from 3 (very beneficial) to –3 (very harmful). A 0 indicates no impact or mixed impacts.

Applications

This strategy is most appropriate for implementation in resort communities, which includes any region, city, town and rural area that attracts large numbers of visitors. Implementation is often managed by regional or local government, parks agencies or business associations.

Table 4 Application Summary

Geographic	Rating	Organization	Rating
Large urban region.	2	Federal government.	1
High-density, urban.	2	State/provincial government.	2
Medium-density, urban/suburban.	2	Regional government.	3
Town.	2	Municipal/local government.	3
Low-density, rural.	2	Business Associations/TMA.	3
Commercial center.	2	Individual business.	3
Residential neighborhood.	2	Developer.	2
Resort/recreation area.	3	Neighborhood association.	2
		Campus.	2

Ratings range from 0 (not appropriate) to 3 (very appropriate).

Category

TDM Program

Relationships With Other TDM Strategies

Tourism trip management can include a variety of specific TDM strategies, including Transit Improvements, Cycling and Walking Improvements, TDM Marketing, Transportation Access Guides and Commute Trip Reduction programs for employees. Parking Management, Parking Pricing and Traffic Calming are often important components of resort community TDM. It can also include Smart Growth, New Urbanism, Context Sensitive Design and Access Management strategies to better integrate transportation and land use planning. Many resort areas implement various types of Car-Free Planning, Vehicle Restrictions and Freight Management. This strategy overlaps Special Event Trip Management.

Stakeholders

Stakeholders can include tourism businesses and communities, various government agencies, travel services, visitors, and employees.

Barriers To Implementation

Program funding is often a major barrier. Some businesses and community members may oppose policies that restrict automobile use on the grounds that they discourage visitors.

Best Practices

Tourist TDM planning should:

- Make it affordable, convenient and enjoyable to visit a resort community without using a private automobile.
- Coordinate stakeholders (tourist agencies, transportation providers, hotels, resorts) to provide and promote car-free travel packages.

- Provide detailed information on the travel choices that are available and how to use them.
- Take into account visitors' transport needs and preferences, including baggage requirements and the need to accommodate changing schedules.
- Provide benefits to visitors who arrive without a car, such as priority access for buses.
- Include Commute Trip Reduction programs to reduce employee trips.
- Create functional and attractive pedestrian and cycling facilities.

Wit and Humor

Three friends take a sailing trip together through the tropical Indian Ocean, but their boat is wrecked on a beautiful desert island in a storm. They make the best of it, building shelters and finding plenty of food. They even brew coconut beer.

After a few weeks an ancient bottle washes up on the beach. When they open it, a genie comes out. "You must give us each three wishes for freeing you," one of the friends says. The genie scowls at this demand and replies, "I'll give you each ONE wish, and that's it."

The first friend doesn't hesitate a second. "I wish to be returned home," he says. Poof – he disappears.

The second friend thinks for a few seconds, then smiles and says, "I wish to be returned home with my pockets full of gold coins and jewels." Poof – he disappears.

The third friend ponders for a minutes, then says, "I really enjoy this lovely island. I'd like to stay here, but I sure will be lonely. I wish that my two friends were back here with me."

Examples and Case Studies

Seattle Area Car Free Getaways (www.cityofseattle.net/carsmart/carfree.htm)

The City of Seattle's Car Smart Communities program provides information on car-free holiday trips in the Puget Sound region, including specific information on transit, train, cycling and walking adventures.

NETS - An Initiative for Sustainable Mobility in Tourism (www.soft-mobility.com)

Building on an EU pilot project, "Sustainable Mobility in Tourist Destinations" which took place between January 1996 and July 1997, several European Ministries supported the creation of a Europe-wide Network for Sustainable Mobility in Tourism - NETS. NETS was founded in 1998 by the following groups, working on a more sustainable mobility in the Alps:

- Association for Sustainable Mobility, Austria
- G.A.S.T. - Association of Car Free Tourist Destinations
- IAKF - Association for Car Free Tourist & Spa Destinations in Bavaria

NETS members/partners are from European countries, among them, Germany and Austria. They are: tourist destinations with sustainable mobility enterprises, travel and mobility service providers, public institutions,

Ministries, NGOs, and other networks promoting environmentally friendly mobility in tourism. In order to become a member of NETS, certain criteria must be met. The main purpose of NETS is to be the primary contact for matters relating to "Sustainable Mobility in Tourism" in Europe, for its members, marketing partners, and everyone interested in sustainable, quality tourism. Tourism and transportation experts are invited to exchange knowledge and experiences of pilot projects. Sponsors are welcome to support endeavors for developing sustainable tourism.

The overall objective of NETS is to improve the quality of vacations and the environment as well as to raise the standard of living for both guests and locals. NETS partners develop and promote environmentally sound and sustainable tourism packages of high quality and improve their competitiveness in the tourism market. NETS supports members with the following services and activities: information and "how to" exchanges; lobbying and promotion of environmentally friendly mobility in tourism; development and consultation services; marketing services and PR; organization of workshops and seminars.

Sustainable Mobility – Car free Tourism in Austria

The project was initiated by the Ministry for the Environment and is carried out together with two other Ministries, the Ministry for Transport and Science and the Ministry for Economic Affairs, as well as two model communities and the Province of Salzburg. Two communities were selected for the project: Bad Hofgastein and Werfenweng, both situated in the Province of Salzburg.

The five-year project started in 1998. It has an advisory board consisting of all project partners, which has the task of coordination and financing. Local coordinators supervise the implementation of the measures in the communities. Public-private-partnerships are established in the field of transport services, electric vehicle manufacturers, logistic and telematic enterprises, energy industry as well as tourism organisations and travel agencies. The implementation of all measures of the model project will afford financing funds of about 8 million ECU.

Bad Hofgastein

Bad Hofgastein has 6,000 inhabitants and is situated 850 m above sea level in the spacious Gastein valley, which is surrounded by mountains up to 3,000 m high. With about 8,000 beds and 1 million overnight stays per year, Bad Hofgastein is among the ten most tourism-intensive communities in Austria. About 90% of the visitors are German and Austrian. Car-free travel to Bad Hofgastein is easy because the community is situated on the Tauern railway, the main connection between Munich and the South. The only problem is that the railway station lies 2 km off the city center. This affords a change to bus or taxi. A private bus service therefore connects the railway station with the city centre. The city centre has been redesigned during the last years. A pedestrian zone was implemented and only few vehicles like the city bus are allowed to enter it. Delivery of goods is allowed between 7:30 and 10:30 a.m.

Traffic management has been implemented in the residential and hotel area around the pedestrian zone. This helps to avoid through-traffic in those areas. Each point in Bad Hofgastein now can be reached only from one of the three entrances to the city. The number of parking spaces in the streets is very low, since parking is provided at the edge of the city and in an underground car park. Two free bus lines serve the city center. In winter, ski-buses connect the city with the stations of the ski lifts.

Werfenweng

Werfenweng is situated about 45 km south of the city of Salzburg on a plateau above the Salzach valley. It lies 1,000 m above sea level and has 650 inhabitants. The settlement consists of scattered groups of houses. 1,800 beds are offered and about half of the 190,000 overnight stays per year are counted during the winter season. As Werfenweng has not got a railway station of its own, the community is implementing several measures to improve its connection to the railway stop in Bischofshofen, which is in 14 km distance from Werfenweng. A dial-

a-taxi-service has been established, called Werfenweng-Shuttle, and a luggage logistics program will soon be developed. In 1997 two electric vehicles were bought and now are offered in a local public car-sharing project. The cars can also be rented by visitors who arrived without their own car.

Project components

The following measures are implemented as part of the project:

- The establishment of a mobility management centre is a cornerstone of the project. It will promote integration between various means of transport, and travel information, and provide transport services including demand-oriented dial-a-bus-systems, booking and coordination for the car-sharing programme, and rental of bicycles and sports equipment.

- Streets will be redesigned to be more pedestrian- and cycle-friendly. This will allow visitors and inhabitants to walk unimpeded everywhere in the communities. Pedestrians are given priority to cyclists and motorized vehicles. The speed of motorized traffic will be adjusted to that of pedestrians. Cycling will be an important means of travel for visitors and inhabitants. It will be possible to rent bicycles e.g. from hotels or at public service points like the tourist information or the railway station. Public transport services will also transport bicycles. A network of cycling routes is prepared and information material on it will be provided.

- Information packages on car-free travel, and attractive car-free travel services will be provided. To relieve the visitors from their heavy load, a concept of door-to-door luggage logistics is implemented. Sports equipment will be offered for rent.

- Regional public transport is being improved, including railway, buses, taxis, lifts and the electric-car-rental. Information about regional car-free mobility will be provided, including an information map and suggestions for excursions using public transport.

- To allow environmentally sound freight delivery, a freight logistic concept is elaborated and a freight delivery center will be built on the edge of Bad Hofgastein.

- Conventional cars will be replaced by zero-emission-vehicles as far as possible. The aim is to finance the additional costs (compared to the costs of conventional vehicles) of 100 zero-emission-vehicles. It is also planned to replace the two now diesel-powered city buses in Bad Hofgastein by electric buses.

- An integrated travel information and booking system will be created. Upon entering a home address and an address for the desired destination, a user of the travel information system will be able to retrieve information about all options for car-free travel to the desired holiday destination. The travel information system may also serve as a regional information system, and can be used to inform visitors about the best transport for excursions or about the availability of car-sharing. This travel information system will be simple and easy to use.

- The number of parking spaces in the streets will be reduced.

- A new quality product ”car-free tourism”, including “all-inclusive-packages” with transfer to and from train stations and door-to-door luggage services will be developed.

Acadia National Park Transit (www.exploreacadia.com) (Cambridge Systematics, 2002)

Mount Desert Island, Maine, is home to Acadia National Park, a 40,000-acre preserve of forests, mountains, lakes, and coastline. It receives nearly three million visitors annually. More than 90% of visitors arrive between

May and September. In recent years, park officials have become concerned that growing traffic and parking problems are making access to the park more difficult, detracting from the visitor experience, and posing a threat to the environment. Not only is the park itself at risk, but so are the island's four small towns, Bar Harbor (the commercial center), Southwest Harbor, Mount Desert, and Tremont.

In response, a seasonal shuttle bus service was introduced in 1999, serving both Acadia and the Mount Desert Island community. Called the Island Explorer, the service is a public-private partnership involving federal, state, and local agencies, as well as non-profit private partners. Its purpose is to permit continued growth in tourism without continued growth in traffic congestion and vehicle emissions. At the same time, it enhances the visitor experience by providing a convenient and less stressful alternative to driving. On board the Island Explorer, visitors can meet and socialize, or watch the scenery without worrying about missing the turnoff to the campground. Additionally, hikers can trek across the park's many one-way trails without having to loop back around to their cars.

As early as the late 1980s, an Acadia National Park general management plan identified traffic congestion and transportation needs as pressing issues. A transport feasibility study determined that a truly effective solution to the problem would serve both the park and the local community, whose interests were intertwined. Three potential solutions were considered: adding new parking lots, limiting the number of private vehicles allowed in the park, and introducing a fixed-route shuttle bus service. Because neither the park nor local residents favored additional parking, this option was definitively put aside. Vehicle quotas were seen as a somewhat drastic measure, one that should not be taken before efforts to convince visitors to voluntarily reduce automobile use had been made. This left the third solution, a shuttle service, as the most viable alternative.

In the mid-1990s, the Mount Desert Island League of Towns and a representative of Acadia National Park, started to develop the shuttle program. They hired a local transportation consultant, who wrote a proposal that received funds from the Congestion Mitigation and Air Quality (CMAQ) Improvement Program to purchase an initial eight buses and pay a portion of their operating cost. In 1999, the Island Explorer shuttle service was born with seventeen vehicles on seven routes connecting hotels, inns, campgrounds and nearby village centers with Acadia National Park in Maine. It carried 142,000 passengers during its 76-day first season. In 2000, ridership increased to 193,000, and in 2001 to 240,000.

Propane-powered buses serve seven island routes during the months of June, July, and August. These routes link destinations inside the park to hotels, inns, campgrounds, shops, and restaurants in all four island towns. The routes also serve the Hancock County Airport in Trenton, the Bass Harbor state ferry terminal, and the Bar Harbor international ferry terminal, which provides high-speed catamaran service to Nova Scotia. The Island Explorer is operated by Downeast Transportation, Inc., a non-profit transit company that contracts with the Maine DOT. Since 1994, Downeast has successfully operated a bus route serving campgrounds along State Route 3 on Mount Desert Island, including Blackwoods Campground in Acadia. In fact, the campground shuttle bus service provided the model for the expanded island-wide system.

The Island Explorer relies on a variety of funding sources. The most important of these has been the National Park Service, which has provided both direct funding of capital and planning efforts, and entry fees for operations. CMAQ funds were used to pay for the first eight buses and part of the operating costs. Other important contributions come from the U.S. DOT, the Maine DOT, the National Park Service, local municipalities, local businesses, and Friends of Acadia (a private, non-profit park support organization). Hotels pay a fee in order to have the bus stop at their front door. The local chamber of commerce solicits donations as well. In 2000, nine more buses were purchased using Federal Lands Highways Funds, bringing the total to 17. "The system gets a little bit better each year," Len Bobinchock, Acadia's deputy superintendent says proudly. "But it still needs to grow." In 2002, thanks to joint funding from the U.S. DOT and the Department of the Interior, all buses will be equipped with automatic vehicle location systems. Electronic departure boards located on the village green and

at popular stops in the park will inform users when the next shuttle is due to arrive and depart.

What lies behind the Island Explorer's remarkable success? The shuttle was carefully designed to offer a number of advantages over the private automobile, advantages that would make park visitors voluntarily leave their cars at their campground or motel. "Don't expect someone to make a personal sacrifice," planner Tom Crikelair warned at the start of the project. "Is the service you're envisioning good enough for you to use? If it isn't, tourists won't use it either."
Visitors are encouraged to use the Island Explorer because:

- Vehicles are clean, modern, and efficient. Twenty-eight passenger, fully accessible transit buses were purchased specifically for the service. Each bus in equipped with two bus racks with a capacity to transport four bicycles. The buses burn propane fuel, producing fewer emissions and less noise than diesel buses.
- The service provides a direct connection with most motels and campgrounds on Mount Desert Island at 30- or 60-minute intervals. Ideally, service would be more frequent on certain routes and at certain times, but the number of available buses proves the limiting factor.
- The service is "farebox free" for both passengers and their bicycles. That is, no fare is collected on board. An Acadia National Park visitor survey found that 48 percent of visitors surveyed would use a free shuttle bus service, but only 25 percent would use a bus if a fee were collected at boarding. Acadia's experience operating a more modest campground shuttle service prior to the Island Explorer bears out these statistics. In 1996 roughly 2,000 campers rode the shuttle, paying a two dollar fare to do so. The following year, when the fare had been eliminated, ridership reached 12,000. Ridership rose again to 15,000 in 1998, the second year after the change.
- The service is promoted extensively. A marketing plan, including visitor guides, maps, timetables, posters, public service announcements, and television and radio messages were all developed. In 1999, more than 50,000 copies of the visitor guide were printed and inserted into the park's newspaper, the Beaver Log, and 70,000 visitor guides were produced as stand-alone items. Advertising campaigns rely on positive reinforcement, rather than stern language. "We advertise by showing people that if they use the service they can have a better experience," Bobinchock explains.
- The Island Explorer is strongly supported by the Maine Office of Tourism and the Maine Department of Tourism.

The shuttle benefits visitors to Acadia because it allows more people to experience the national park each summer than could otherwise if the private automobile were the only form of island transportation. The shuttle benefits local residents and businesses because it increases tourism revenues without increasing the strain on the island's overburdened transportation infrastructure.
"The Island Explorer is a great service," avows Bar Harbor's town manager, Dana Reed. "We hope it is continued, and expanded into the shoulder season." In the future, Reed hopes that car-free travel options to Mount Desert Island will increase, as various transportation providers realize their own customers will not need a car when they reach their destination. For example, Vermont Transit Lines provides direct motorcoach service to Bar Harbor from New York City via Boston and Portland, but offers just one daily arrival and departure. Cruise liners frequently make Bar Harbor a port of call (approximately 47 cruise ships docked at the international ferry terminal in 2001), but usually do not remain long enough for passengers to fully explore the island on their own.

The future of the Island Explorer is clouded only by concerns over how to pay for service expansions to meet growing demand. It is not unusual for demand to exceed the capacity of the buses, typically in late afternoons when visitors return to their campgrounds and motels. At times, the on-board bike racks also become filled, forcing bicycle riders to wait for the next bus. Planners are hoping to purchase eight more buses, perhaps with more capacity than the current 28 seats. They also are hoping to lengthen the operating season. One source of funding, that is favored by Friends of Acadia, would be a transit fee added to the existing Acadia National Park entrance fee. This would provide a dedicated source of revenue, allowing the park to cover 75 percent to 90 percent of the Island Explorer's costs. The dollar contribution of the Mount Desert Island towns would remain the

same, but their percentage contribution would decline.

The possibility of year-round, separately funded shuttle service has also been invoked. This would benefit Mount Desert Island's sizable workforce that commutes every day from off-island. A feasibility study in now underway, funded in part by Jackson Laboratory, the region's largest employer.

Eventually, planners hope to create a transit hub and visitor center outside of Bar Harbor, perhaps off the island altogether. This would be a tremendous convenience to day-trippers, who would not need to search for parking spaces in downtown Bar Harbor or inside the park before boarding the shuttle. Natchez, Mississippi (population 18,000) has recently taken this approach to traffic management, building a transit hub/visitor center on the outskirts of the historic city in order to intercept visitors arriving on the main highway before they find themselves driving down Natchez's narrow, congested streets.

Greater Sedona Transportation

The Sedona/Red Rock region in northern Arizona is a popular destination for tourists who are attracted by its spectacular Red Rock cliffs, expanses of forest and grasslands, rushing rivers and striking canyons. The area has approximately 14,000 residents and 4-5 million annual visitors driving 2.5 million cars through Oak Creek Canyon each year, with a doubling of visitors projected in the next two decades. Currently, the only viable way for most people to get to or around Sedona is by car.

The City of Sedona, Yavapai and Coconino Counties, the Coconino National Forest, the Northern Arizona Council of Governments (NACOG) and the Arizona Department of Transportation (ADOT), with technical assistance from the Community Transportation Association of America, are exploring innovative and cost effective ways to manage transportation to enhance the region's livability and preserve its cultural and environmental assets. These efforts will control automobile access to scenic sights and areas within the Coconino National Forest, promoting a balanced choice of transportation options for residents and visitors, including limited highway and parking facilities, establishing a convenient public shuttle system, and pedestrian improvements.

The transportation plan is designed to increase travel choices and enhance visitors' experience. Most in town restaurants and businesses will be accessible by shuttle. Hotels and resorts would serve as staging areas for trips to scenic sights or up the Canyon. A network of gateway centers coupled with a downtown transit hub will serve as collection points for people heading for recreation spots, state parks, trailheads, shopping excursions and other outings. Visitors who arrive by air or shuttle bus would be able to get around without the need of rental cars. Many visitors to Red Rock country pass through Sedona on chartered tours. While these "package" visitors currently depend upon tour operators or jeep companies to get around locally, the availability of a low-cost public shuttle, with proper marketing and promotion, is expected to entice many independent travelers to remain a day or two in the area. The scenic shuttle system will provide the transportation link between many major visitor destinations in the area. The following actions are being planned or implemented to support this plan:

- Public Shuttle System: The City will take the lead role in jointly developing a community shuttle system—the centerpiece of the strategy for increasing mobility and access to the region's most important attractions while reducing reliance on the automobile. The shuttle system will be designed to provide frequent, convenient and accessible service within Sedona, between the Village of Oak Creek and the Uptown area, including key attractions within the Red Rock area, and throughout Oak Creek Canyon.

- Shuttle Stops: In-town shuttle stops will be designated adjacent to core commercial areas, major motels and resorts, municipal offices, medical offices and parks. Passenger shelters, benches and other "street furniture" would be constructed, adding to the transit system's convenience and attractiveness to both passengers and non-passengers.

- Street Configuration: The City will enhance auto, bicycle and pedestrian access to the shuttle system. The

street system needs to be interconnected and provide alternate routes between core business areas and surrounding neighborhoods without requiring use of major highways.

- Bicycle/Pedestrian Connections: Travel by foot or bicycle will need to be facilitated for shuttle passengers at either end of their trip. A key element of a successful transit system will be a convenient network of sidewalks, jogging paths and bike pathways serving shuttle stops.

- Transit-Oriented Development: Transit-oriented development and transit-friendly land use would be promoted through a mix of housing densities and higher intensity development in locations easily served by transit.

- Parking: City officials will need to manage parking to reduce congestion and promote transit ridership, including limiting right-of-way parking, create a central parking district, and encourage visitors' to leave their cars at park-and-ride lots and resorts. Forest officials are prepared to limit parking in a number of scenic areas within the national forest. Limits would be placed on roadside parking along two highways that run through Oak Creek Canyon and the Red Rocks scenic area. These limits will serve as an incentive for the shuttle system and will help address safety, water quality and other resource issues. A coordinated plan for shuttle and controlled parking will be developed to ensure sufficient access to trailheads, residences, businesses, and developed recreation areas, with the intent of providing strong incentives for forest visitors to leave their private vehicles behind and use a shuttle service.

- Permit System: The Forest Service is considering implementing a "parking pass" or "passport" for drivers accessing the public lands. Studies indicate that this system could provide significant revenue to support the infrastructure of a shuttle system. At the same time, these methods can be used to encourage visitors to use a shuttle system rather than paying for parking. Subsidized seasonal or annual passes would be available for Sedona area residents.

- Enhancements: Shuttle stops will be designated at one mile or less intervals within the Canyon and at vista points elsewhere. Appropriate vehicle turnouts, parking and loading areas, passenger shelters and information kiosks at each stop will also have to be constructed.

- Pathways: It is also contemplated that shuttle stops would be connected by pathways, allowing people the convenience of taking the shuttle, bicycling or walking to various destinations along the way within the recreation areas.

- Gateways: The partnership between jurisdictions will also allow the development of a network of "gateway" centers and "orientation" sites to serve visitors entering the area. At least four gateways are contemplated. Each would serve as possible "orientation sites", and serve as visitor information centers, day and long-term parking facilities, and transfer points to access the shuttle.

Various funding strategies are being considered for this program. Daily charges could be applied for parking on road right-of-ways. Visitors would be encouraged to leave their cars in motel and Inn parking lots, while free or reduced priced parking also would be available at Gateway Centers and other designed areas. Shuttle passes would be available for sale on a daily, seasonal or annual basis. The following rate schedule has been proposed for shuttle bus service:

- $2.50 Daily Visitor Pass
- $10 Monthly Resident Pass
- $1 Trip Ticket

An alternative is to fund the shuttle system with a national forest entrance fee. Visitors could either purchase a lower-price pass that would allow travel through the area, or visitor "Passport" that would allow entry to the forest, scenic attractions, and recreational facilities, and unlimited use of the shuttle system. Local residents

could obtain free or subsidized passes to ride the shuttle.

Talerbus (www.movingtheeconomy.ca)

The Lungau region of Switzerland contains ecologically rich valleys that attract thousands of people each month. With this increased tourism comes car traffic, which contributes to air, noise and water pollution in the area. The highly fragile nature of Alpine ecosystems means that these problems are a significant concern. In 1989, Professor Hocevar, a biologist concerned about these increasingly negative impacts, began work on the Talerbus project. This project provides electric vehicles, minibuses and taxis to take visitors up the narrow valleys. Talerbuses provide the sole means of access for many of these areas.

The talerbus service is integrated with regional bus services under the regional timetabling system, which enables visitors to plan round trip expeditions and to access the talerbuses from towns throughout the region. Those arriving outside of timetabled hours can use a taxi. Stops in the valleys connect to hiking trails and ski lifts.

Over 300,000 people each year use the Talerbus service, including tourists, local residents and school children. The scheme has now been expanded into the neighbouring region of Murau, allowing more hikers to visit the area without using their cars. Plans are now underway to close valley roads to private car traffic, or to charge cars for entering the valley, as is done in the "Lessachtal" valley.

Car-Free Tour Book (www.whisky-jack.com)

For less than the price of a tank of gas, BC Car-Free (Grover, 2001) will introduce you to the finest in outdoor recreation that coastal British Columbia has to offer. All excursions begin in Vancouver, British Columbia and can be undertaken without a car, using public transportation. More than 100 trips are describes, including hiking, kayaking, backpacking, cycle touring, whale watching, horseback riding, birding, river rafting, canoeing and cave exploring.

MOST (Mobility Management Strategies) (http://mo.st)

MOST is a European partnerships to encourage sustainable transportation, with special programs dealing with travel related to tourism, medical services, education and special events. It's main aim is to develop and evaluate Mobility Management (MM) strategies. It is a combined research and demonstration project. MOST is sponsoring a number of case studies and examples of tourist mobility management, some of which are described below.

Málaga Spain

Málaga, Spain (570,000 inhabitants) is the Capital of the "Costa del Sol," one of the larger tourist areas of Spain and the European Union. Each year about 5 million tourists arrive by plane or train, and about 4 million arrive by car. After extensive analysis in the main tourist intermodal points and cultural sites the following actions have been pre-selected to be implemented during the second term of 2001:

- A tourist mobility plan
- A new tourist bus line
- Internet online tourist transport information
- Tourist maps and leaflets
- Implementation of a mobility centre.

Sintra, Portugal

Sintra, located 30km from Lisbon, is the fourth biggest municipality of Portugal, with 320,000 inhabitants. UNESCO declared Sintra a World Heritage Site in 1995. An important historical, cultural and nature site, consisting of 4 different nuclei and the natural parks. Sintra is one of the most important tourist attraction in Portugal with 1-1.5M visitors each year, most of whom stay for less than half a day. Around 11 % of the tourist

trips are made by coach and 89 % by private car. Although the railway terminal is located only 1 km from the old town, the number of tourists using this suburban line to Lisbon is negligible. Given the present road network, physical conditions and lack of alternative itineraries, all tourists arrive at and transit the old town which has no parking facilities to speak of (saturation of traffic). New mobility management measures include:

- Installation of park and ride facilities near bus and train stations.
- Setting up of cycling and walking tracks.
- Mobility information via Internet.
- Establishment of a mobility centre.
- Rental bicycles in the city centre.

Zug, Switzerland

The Canton of Zug is located in the central part of Switzerland. Zug is a small Canton with 100,000 inhabitants, accessed in 30 minutes by car and train from the city of Zurich. It is an important leisure destination, especially on weekends for people living in the region. Although the most important leisure areas are well connected by public transport and by the regional bike-path network, most visitors arrive by car. This project aims to promote the use of sustainable transport modes in leisure traffic with the implementation of new mobility management services. New services will provide information to visitors on ways to reach this area by public transport or by bicycle (using the existing Zug Tourism website) and by promoting car-free weekend tourism.

Tourist Park And Ride (Anderson, Das and Tyrrell, 2006)

A survey of visitors to Newport, Rhode Island found that many tourists would be willing to park and use transit rather than drive, provided that these options are affordable, convenient and pleasant, with relatively low parking fees and transit fares, fast travel times, good walking conditions at destination areas, and attractive scenery along the transit route.

National Park Road Toll (Steiner and Bristow, 2000)

A survey of visitors to the Yorkshire Dales National Park indicates that more than 2/3 of respondents support a road toll with revenues used to support a Park & Ride transit service through the park. The survey indicates that given a fee of £2.00 per vehicle, a bus fare of £0.90, and 5 minute headways, about half of current car trips would be reduced, with 34% using the transit service and 17% shifting to other destinations.

Santa Barbara Car Free Vacations (www.santabarbaracarfree.org)

The Santa Barbara Car Free Project offers a Car Free Vacation Package featuring discounts from 17 hotels and 10 car free activities. “Let someone else do the driving and enjoy America's RivieraT car free and carefree,” says Mary Byrd, Project Manager with the Santa Barbara County Air Pollution Control District (APCD), the lead agency for the cooperative partnership, which encourages car free travel to and around Santa Barbara to promote cleaner air. Visitors can receive information on hundreds of car free options and a special map with full details.

Visitors can arrive in Santa Barbara by train, plane, bike, boat or bus-or by auto and leave it parked awhile-and enjoy discounts on hotel stays and car free activities. As a special early bonus, visitors can receive an AmtrakR Free Companion Fare coupon for travel on the Pacific Surfliner or Coast Starlight trains serving Santa Barbara. (Restrictions apply.)

By mentioning the “Santa Barbara Car Free Vacation Package” when making a reservation, visitors will receive significant discounts of 10-50% off regular room rates at various hotels and resorts (Some restrictions apply, rooms subject to availability). Then, upon hotel check-in, guests will receive a CAR FREE-bies gift envelope with maps, luggage tags and a list of special activity discounts for tours, whale watching cruises, bike & kayak trips,

trolley sightseeing tours, catamaran cruises, rollerblade rentals and wine country excursions.

Copenhagen Free Bike Program (www.cios.com)

In 1995, the Free City-Bike Program was implemented by the City of Copenhagen. One thousand specially designed free City-Bikes were stationed at 120 stands around the City at train and subway stations, parking lots and large housing blocks. The bikes were also stationed around common final destinations, such as office buildings, shopping districts, parks and other tourist attractions. For a deposit of only 20 Dkr. (US$3), anyone can take a bike and cycle wherever they want, within downtown (restricted area). When the bike is returned to any bike stand within the area, the user gets their deposit back. With the cooperation of sponsors, the project went so well that 500 more bikes were added when Copenhagen was named the "European Culture City" in 1996. The number of bikes increased by 300 in 1997 and 300 in 1998 for a total of more than 2,000 bikes. 38% of users are tourists.

South Beach, Florida

South Beach comprises the southern third of the city of Miami Beach, located on an Atlantic barrier island separated from the mainland by Biscayne Bay. It has a population of about 100,000 in an urban region with a total population of about 4 million residents. In addition to being a bedroom community it is a national tourist destination, with a core business and entertainment district that is on the National Register of Historic Places.

In order to deal with growing traffic congestion and parking problems the community established the SoBe TMA to coordinate transportation management activities. Specific projects include:

- Establish a shuttle bus system with 5-10 minute headways to link fringe parking with the Historic District.
- Implement parking management, such as park-and-ride lots, improved signage, and pricing.
- Develop a marketing and promotion program, including a Miami Beach Mobility Map that will show municipal parking areas, bikeways, water taxis, and transit routes between common destinations in the region.
- Pedestrian and bicycle facility improvements.

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This Encyclopedia is produced by the Victoria Transport Policy Institute to help improve understanding of Transportation Demand Management. It is an ongoing project. Please send us your comments and suggestions for improvement.

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Department Home

Envision San Jose 2040 Task Force Members

Meeting Materials

On Track to 2040: General Plan 4-Year Review

The Envision San Jose 2040 General Plan establishes a four year review cycle, providing opportunity to evaluate the City's achievement of key goals and mid-course adjustments to the General Plan. This work will be done through open, public meetings of the Envision San Jose 2040 Task Force and City Council.

Envision San Jose 2040 Task Force

The Envision San Jose 2040 Task Force was created in 2007 to assist staff with the update of the City's General Plan. This update process ended in 2011 and resulted in the Envision San Jose 2040 General Plan.

In November 2015, the Envision San Jose 2040 Task Force reconvened many of the same key community stakeholders and organizations; visit the Task Force Members page to see the membership. The Task Force evaluated the City's achievement of planned job goals, implementation of the Urban Village concept, environmental indicators, and affordable housing needs; and made recommendations to City Council on mid-course adjustments to the Plan. Task Force meetings were held from November 2015 to April 2016.

Task Force Meetings

At the conclusion of the final 4-Year Review Task Force meeting in April 2016, the Task Force approved a set of recommendations for the City Council to consider regarding changes to the Envision San José 2040 General Plan. These recommendations are included in the April 7, 2016 Meeting Synopsis. Currently, the City's environmental consultant is conducting an environmental analysis of the Task Force's recommended amendments. This environmental review process will be completed in the early fall, with City Council Hearings anticipated in November 2016.

Meeting Materials

Meeting agendas and presentations can be found on the Meeting Materials page.

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4.13 TRANSPORTATION AND TRAFFIC

This chapter describes the regulatory framework and existing conditions in Palo Alto related to transportation and traffic, and the potential impacts of the proposed Plan on transportation and traffic.

4.13.1 ENVIRONMENTAL SETTING

4.13.1.1 REGULATORY FRAMEWORK

This section describes federal, State, regional, and local statutes, regulations, and policies that would apply to the proposed Plan. This information provides a context for the discussion of existing and future traffic conditions, as well as the environmental laws and policies that are relevant to the California Environmental Quality Act (CEQA) review process for transportation and circulation.

Federal Regulation

Federal Highway Administration

The Federal Highway Administration (FHWA) is the agency of the United States (US) Department of Transportation (DOT) that supports State and local governments in the design, construction, and maintenance of the Nation's highway system (Federal Aid Highway Program) and various federally and tribal owned lands (Federal Lands Highway Program). State highways such as Interstate 280 (I-280) and US 101 are part of the National Highway Network.

Title VI

Title VI of the 1964 Civil Rights Act (42 U.S.C. 2000d-1) states that "No person in the United States shall, on the ground of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving federal financial assistance." Title VI bars intentional discrimination as well as disparate impact discrimination (i.e., a neutral policy or practice that has a disparate impact on protected groups).[1] The Federal Transit Administration (FTA) monitors transit providers that receive federal funding, including Caltrain and VTA, to ensure they operate in compliance with Title VI. Transit providers must collect and report specific information on the populations they serve and their efforts to provide equitable service to all groups.

[1] U.S. Department of Transportation, Federal Transit Administration, *Implementing Title VI Requirements in Metropolitan and Statewide Planning*, October 7, 1999. Accessed online at http://www.fta.dot.gov/civilrights/sitemap_11706.html, January 19, 2015.

Americans with Disabilities Act

The Americans with Disabilities Act (ADA) of 1990 provides comprehensive rights and protections to individuals with disabilities. The goal of the ADA is to assure equality of opportunity, full participation, independent living, and economic self-sufficiency for people with disabilities. To implement this goal, the US Access Board, an independent federal agency created in 1973 to ensure accessibility for people with disabilities, has created accessibility guidelines for public rights-of-way. While these guidelines have not been formally adopted, they have been widely followed by jurisdictions and agencies nationwide in the last decade. The guidelines, last revised in July 2011, address various issues, including roadway design practices, slope and terrain issues, and pedestrian access to streets, sidewalks, curb ramps, street furnishings, pedestrian signals, parking, and other components of public rights-of-way. These guidelines would apply to proposed roadways in Palo Alto.

The United States Access Board is an independent federal agency that promotes equality for people with disabilities through leadership in accessible design and the development of accessibility guidelines and standards. Created in 1973 to ensure access to federally-funded facilities, the Board is now a leading source of information on accessible design. The Board develops and maintains design criteria for the built environment, transit vehicles, telecommunications equipment, medical diagnostic equipment, and information technology. It also provides technical assistance and training on these requirements and on accessible design and continues to enforce accessibility standards that cover federally funded facilities.

State Regulation

California Transportation Commission

The California Transportation Commission (CTC), consisting of nine members appointed by the Governor, administers the public decision-making process that sets priorities and funds projects envisioned in long-range transportation plans. The CTC's programming includes the State Transportation Improvement Program (STIP), a multi-year capital improvement program of transportation projects on and off the State highway system, funded with revenues from the State Highway Account and other funding sources. The California Department of Transportation (Caltrans) manages the operation of State highways.

California Department of Transportation

Caltrans is the primary State agency responsible for transportation issues. One of its duties is the construction and maintenance of the State highway system. Caltrans approves the planning, design, and construction of improvements for all State-controlled facilities including I-280, US 101, and the associated interchanges for these facilities located in Palo Alto. Caltrans' jurisdiction includes State Route 82 (SR 82), El Camino Real, in Palo Alto. Caltrans has established standards for roadway traffic flow and developed procedures to determine if State-controlled facilities require improvements. For projects that may physically affect facilities under its administration, Caltrans requires encroachment permits before any construction

work may be undertaken. For projects that would not physically affect facilities, but may influence traffic flow and levels of services at such facilities, Caltrans may recommend measures to mitigate the traffic impacts of such projects.

The following Caltrans procedures and directives are relevant to the proposed Plan, particularly State roadway facilities:

- *Level of Service Target*. Caltrans maintains a minimum level of service (LOS) at the transition between LOS C and LOS D for all of its facilities.[2] Where an existing facility is operating at less than the LOS C/D threshold, the existing measure of effectiveness should be maintained.[3]
- *Caltrans Project Development Procedures Manual*. This manual outlines pertinent statutory requirements, planning policies, and implementing procedures regarding transportation facilities. It is continually and incrementally updated to reflect changes in policy and procedures. For example, the most recent revision incorporates the Complete Streets policy from Deputy Directive 64-R1, which is detailed below.
- *Caltrans Deputy Directive 64*. This directive requires Caltrans to consider the needs of non-motorized travelers, including pedestrians, bicyclists, and persons with disabilities, in all programming, planning, maintenance, construction, operations, and project development activities and products. This includes incorporation of the best available standards in all of Caltrans' practices.
- *Caltrans Deputy Directive 64-RI*. This directive requires Caltrans to provide for the needs of travelers of all ages and abilities in all planning, programming, design, construction, operations, and maintenance activities and products on the State highway system. Caltrans supports bicycle, pedestrian, and transit travel with a focus on "complete streets" that begins early in system planning and continues through project construction and maintenance and operations.
- *Caltrans Director's Policy 22*. This policy establishes support for balancing transportation needs with community goals. Caltrans seeks to involve and integrate community goals in the planning, design, construction, and maintenance and operations processes, including accommodating the needs of bicyclists and pedestrians.

Caltrans Aeronautics division of Caltrans administers noise regulations and land use planning laws to lessen the impacts caused by aviation. Caltrans Aeronautics issues permits for and inspects hospital heliports and public-use airports, makes recommendations regarding schools sites near airports, authorizes helicopter landing sites near schools, and provides grants and loans at airports.

[2] Refer to Table 4.13-1 above for definitions of each level of service (LOS).
[3] California Department of Transportation, 2010, *Guide for the Preparation of Traffic Impact Studies.*

Senate Bill 743 (Steinberg, 2013)

Senate Bill 743 (SB 743) requires the California Governor's Office of Planning and Research (OPR) to amend the CEQA Guidelines to provide an alternative to LOS as the metric for evaluating transportation impacts under CEQA. Particularly within areas served by transit, the alternative criteria must promote the reduction of greenhouse gas (GHG) emissions, development of multimodal transportation networks, and diversity of land uses. Measurements of transportation impacts may include vehicle miles travelled (VMT), VMT per capita, automobile trip generation rates, or automobile trips generated. Once alternative criteria are incorporated into the CEQA Guidelines, auto delay will no longer be considered a significant impact under CEQA. SB 743 also amended State congestion management law to allow cities and counties to opt out of LOS standards in certain infill areas. At the time of the preparation of this analysis, OPR is anticipated to release revised guidelines in early 2016.

California Complete Streets Act of 2008 (AB 1358)

Originally passed in 2008, California's Complete Streets Act came into force in 2011 and requires local jurisdictions to plan for land use transportation policies that reflect a "complete streets" approach to mobility. Complete streets comprises a suite of policies and street design guidelines which provide for the needs of all road users, including pedestrians, bicyclists, transit operators and riders, children, the elderly, and the disabled. From 2011 onward, any local jurisdiction—county or city—that undertakes a substantive update of the circulation element of its general plan must consider complete streets and incorporate corresponding policies and programs. Palo Alto already has policies in its Comprehensive Plan addressing this issue, but nonetheless was asked by regional agencies to adopt an affirming resolution by the end of 2015. This issue will also be explicitly addressed in the proposed Plan.

California Building Code

The State of California provides a minimum standard for building design through the California Building Code (CBC), which is located in Part 2 of Title 24 of the California Code of Regulations. The CBC is based on the 1997 Uniform Building Code, but has been modified for California conditions. The CBC provides fire and emergency equipment access standards for public roadways in Part 9, Appendix D. These standards include specific width, grading, design and other specifications for roads which provide access for fire apparatuses; the code also indicates which areas are subject to requirements for such access. The CBC also incorporates by reference the standards of the International Fire Code (IFC). The modification of streets in Palo Alto would be subject to these and any modified State standards. The City of Palo Alto adopted the 2013 edition of the California Building Code on November 18, 2013.

California Highway Design Manual

The California Highway Design Manual (HDM) provides guidance on the design, geometry, materials and construction of State roadways.

California Manual of Uniform Traffic Control Devices

The California Manual of Uniform Traffic Control Devices (MUCTD) does not regulate traffic but is a technical manual that provides standards and specifications related to traffic control devices such as signals, signage, and lane striping. The most recent 2014 edition of the MUCTD was issued by Caltrans in December 2015.

Regional Agencies, Plans, and Policies

Metropolitan Transportation Commission

The Metropolitan Transportation Commission (MTC) is the transportation planning, coordinating, and financing agency for the nine-county Bay Area, including Santa Clara County. It also functions as the federally mandated metropolitan planning organization (MPO) for the region. It is responsible for regularly updating the *Regional Transportation Plan* (RTP), a comprehensive blueprint for the development of mass transit, highway, airport, seaport, railroad, bicycle, and pedestrian facilities.

With the passage of Assembly Bill (AB) 32, the Global Warming Solutions Act of 2006, the State of California committed itself to reducing statewide GHG emissions to 1990 levels by 2020. Subsequent to adoption of AB 32, the State adopted Senate Bill 375 (SB 375) as the means for achieving regional transportation-related GHG targets. Among the requirements of SB 375 is the adoption of targets to be met by 2020 and 2035 for each MPO in the State, as well as the creation of a Sustainable Communities Strategy (SCS) that provides a plan for meeting regional targets. The SCS and the RTP must be consistent with one another, including action items and financing decisions. MPOs must use transportation and air emissions modeling techniques consistent with guidelines prepared by the State CTC.

The current RTP, *Plan Bay Area: Strategy for a Sustainable Region*, adopted by MTC on July 18, 2013 and includes both the region's Sustainable Communities Strategy and the *2040 Regional Transportation Plan*. *Plan Bay Area* was prepared by MTC in partnership with the Association of Bay Area Governments (ABAG) and cities and counties throughout the region. *Plan Bay Area* is an integrated long-range transportation and land-use/housing plan intended to support a growing economy, provide more housing and transportation choices, and reduce transportation-related pollution in the Bay Area. It also specifies a detailed set of investments and strategies to maintain, manage, and improve the region's transportation system, specifying how anticipated federal, State, and local transportation funds will be spent.

State and federal law requires the regional transportation plan to be updated at least every four years to reflect new funding forecasts and respond to growth issues. The next update to *Plan Bay Area*, called *Plan Bay Area 2040*, is scheduled for adoption in 2017.[4]

[4] Metropolitan Transportation Commission, http://www.mtc.ca.gov/our-work/plans-projects/plan-bay-area-2040/plan-bay-area, accessed on December 22, 2015.

Bay Area Air Quality Management District

The air quality district that addresses air pollution in the Plan Area is the Bay Area Air Quality Management District (BAAQMD). Since a primary source of air pollution in the Palo Alto region is from motor vehicles, air district regulations indirectly affect transportation planning in the Plan Area, even though BAAQMD's regulatory authority addresses stationary sources only (the California Air Resources Board has jurisdiction over mobile sources). BAAQMD is a public agency tasked with regulating air pollution in the nine-county Bay Area, including Santa Clara County. BAAQMD's goals include reducing health disparities due to air pollution, achieving and maintaining air quality standards, and implementing exemplary regulatory programs and compliance of federal, State, and regional regulations. Air quality impacts are discussed in detail in Chapter 4.2, Air Quality.

Santa Clara Valley Transportation Authority

Congestion Management Plan

MTC requires the local transportation authority, such as the Santa Clara Valley Transportation Authority (VTA), to establish transportation plans that can feed into the larger RTP. In Santa Clara County, the VTA is the Congestion Management Agency (CMA) tasked with preparing the *Congestion Management Plan* that describes the strategies to address congestion problems and monitoring compliance. The VTA works cooperatively with MTC, transit agencies, local governments, the Caltrans and the BAAQMD. The CMP contains LOS standards for highways and arterials, multimodal performance standards, a capital improvement program, a program for analyzing land use decisions, and a travel demand management (TDM) program.

The minimum LOS standard for VTA-monitored CMP intersections is LOS E, except for facilities grandfathered in at LOS F, which states that intersections operating at LOS F at the baseline year for implementation of an LOS standard can be grandfathered in. The standards for Santa Clara County were established in October of 1991; thus, any intersection operating at LOS F prior to the established 1991 LOS standards are not held to the minimum standard of LOS E.[5] Member Agencies, which include the cities and County of Santa Clara, must ensure that CMP roadways operate at or better than the minimum LOS standard. The VTA monitors the performance of CMP facilities at a minimum of every two years. If the minimum LOS standards are not met, Member Agencies plan for improvements to address the congestion.[6] Palo Alto uses a minimum LOS standard of LOS D for its intersections not monitored as part of the VTA CMP program.

To manage the transportation system and monitor performance in relation to established LOS standards, the VTA has designated a CMP roadway system for Santa Clara County. If adopted standards are not being

[5] Santa Clara County VTA, 2013, *Congestion Management Plan*,, page 29.
[6] Santa Clara County VTA, 2013, *Congestion Management Plan*, pages 29-30.

maintained on a specific roadway in the designated system, actions must be taken to address problems on that facility or plans must be developed to improve the overall LOS of the system and improve air quality. The CMP roadway system is a subset of the broader Metropolitan Transportation System (MTS).

Bicycle Program

In 1998, the VTA implemented a comprehensive Bicycle Program to improve the bicycle infrastructure throughout the Santa Clara County, and to encourage people to utilize biking as a form of commute and recreation. The Bicycle Program provides facilities, services, and programs to make provide bikes a safer option for residents and visitors in Santa Clara County. Under the Bicycle Program, the VTA prepared a *Countywide Bicycle Plan*, and associated Bicycle Technical Guidelines.

Countywide Bicycle Plan

In 2008, the VTA completed the *Santa Clara Countywide Bicycle Plan* (SCCBP),[7] which provided a foundation for maintaining and enhancing the countywide bicycle network. The vision of the SCCBP is:

> *To establish, protect, and enhance bicycling as a viable transportation mode and to assure that bicycling is a practical and safe mode of travel, by itself and in combination with other modes.*

The SCCBP identifies existing and proposed cross county bicycle corridors, some which pass through Palo Alto, such as the Dumbarton East-West Connector Corridor, which stretches from North Palo Alto to Los Altos, and the Matadero Creek/Page Mill Trail, which stretches from the southeast corner of the Foothill Expressway/Page Mill Road intersection along Page Mill Road to Arastradero Road. In total, Santa Clara County has a total of 48 cross county bicycle corridors, including 24 roadways, 17 trails, and seven expressways. The SCCBP establishes several goals, and policies to achieve the vision through transportation planning and programming, land use and transportation integration, local ordinance and guidelines development, and design and construction. The VTA's Bicycle Expenditure Program (BEP) was created to provide a funding stream to implement the SCCBP. In May 2013, the VTA Board adopted the BEP Project List for inclusion in the *Valley Transportation Plan 2040*. Of the 70 Category 1 projects adopted in 2013, zero are completed, eleven are fully funded, 13 are partially funded, and 46 are unfunded.

Bicycle Technical Guidelines

The VTA Bicycle Technical Guidelines (BTG) [8] establish standards and guidance for planning, designing, operating, retrofitting and maintaining roadways and bikeways throughout Santa Clara County, including parts of Palo Alto. The BTGs are intended to improve the quality of bicycle facilities and to ensure countywide consistency in the design and construction of the countywide bicycle network, including

[7] Santa Clara VTA, 2008 ,*Santa Clara Countywide Bicycle Plan*.
[8] Santa Clara VTA, 2012, *Bicycle Technical Guidelines*.

roadways. The BTGs apply to projects that are a part of the countywide bicycle network. The BTGs are divided into the following four parts:

- Part 1 provides an introduction and general guidance, including purpose and policy guidance, as well as bicycle characteristics, such as bicyclist skill levels and facilities that best accommodate them.
- Part 2 includes the technical guidelines for roadways, including roadway design elements, construction zones and maintenance, intersections and interchanges, and signalized intersections.
- Part 3 establishes technical guidelines for on-road bikeways, including bikeways on major rural roads, and local roads.
- Part 4 includes technical guidelines for bike-only facilities, including bike paths, and bike bridges, as well as bike parking.

Santa Clara County Expressway Plan 2040

Santa Clara County (as distinct from the VTA) maintains a system of eight expressways located throughout the County. Two of these expressways, Oregon-Page Mill and Foothill, are all or partially within Palo Alto. The *Expressway Plan 2040* details the policies, improvement recommendations, priorities, and funding strategy for the County Expressway System. It is currently in draft form and expected to be finalized in 2016.

The Santa Clara County *Expressway Plan 2040* identifies the following preliminary expressway improvements in Palo Alto to improve traffic flow countywide:

- Oregon-Page Mill Expressway would be widened between I-280 and Foothill Expressway to include an additional travel lane in each direction and a pedestrian/bicycle trail on one side.
- Freeway interchange improvements on the Oregon-Page Mill Expressway, which could include signalization, realignment of the southbound ramp, or a roundabout, or a combination of these improvements. The improvements would include bicycle and pedestrian facilities.
- Full or partial grade separation at the Foothill Expressway/Junipero Serra Boulevard/Page Mill Road interchange.
- Bridge improvements at Alma Street/Oregon Expressway.
- Full grade separation at the Arastradero Road and Foothill Expressway intersection.
- Intersection improvements on Page Mill Road at El Camino Real.

The Palo Alto City Council has discussed the pros and cons of the proposed Foothill Expressway/Page Mill Road and Foothill Expressway/Arastradero Road interchanges and expressed concern about the cost effectiveness. Council members also requested that any additional lanes be prioritized for high-occupancy vehicles (HOV) and transit. Local intersections along Page Mill Road should be prioritized for improvements which can be partially funded with City traffic impact fees.

Local Plans and Policies

Palo Alto Bicycle + Pedestrian Transportation Plan

The 2012 *Bicycle + Pedestrian Transportation Plan* (BPTP 2012) was adopted in July 2012 and builds upon the *2003 Bicycle Transportation Plan* by adding coverage of pedestrian issues, priorities, and design standards. The *Bicycle + Pedestrian Transportation Plan* contains the policy vision, design guidance, and specific recommendations to increase walking and biking rates over the next decade and beyond – rates that will be instrumental in helping to address the impacts of regional growth while maintaining mobility. The BPTP 2012 contains an Objective 4 to "Plan, construct, and maintain 'Complete Streets' that are safe and accessible to all modes and people of all ages and abilities." In addition, the *Bicycle + Pedestrian Transportation Plan* includes an objective to "double the rate of bicycling for both local and total work commutes by 2020 to 15 percent and 5 percent respectively,"

Palo Alto Climate Protection Program

The *Climate Protection Plan* (CPP) is Palo Alto's guiding document for GHG emissions reduction. Since adoption of the CPP by the City Council in December 2007, and the adoption of updated goals in 2010, the City's municipal operations and community members have made considerable progress in reducing GHG emissions through increasing City employee telecommute options, working with PAUSD and parents to reduce school commutes, working with transit agencies to improve transit services, and encouraging land use patterns that support transit use, walking, and biking.[9] The CPP and its successor document, the *Sustainability/Climate Action Plan* (S/CAP) currently being prepared by the City, are discussed in more detail in Chapter 4.6, GHG and Climate Change. However, these plans will also have direct effects on transportation in Palo Alto since road travel is the largest single emissions sector in Palo Alto.[10]

Palo Alto Municipal Code

Title 10 Vehicles and Traffic

Title 10 regulates vehicle and traffic operations within the city, including traffic-control devices, pedestrian safety, bicycling safety and routes, and general vehicle and traffic safety. Chapter 10.32 establishes pedestrian safety regulations, such as the establishment of crosswalks. Chapter 10.36 addresses general parking regulations, such as where parking is permitted.

Title 16 Building Regulations

[9] City of Palo Alto, 2007, *Climate Protection Plan*, pages 43 to 56.

[10] City of Palo Alto Office of the City Manager, April 20, 2015, *Annual Earth Day Report Study Session and Sustainability/Climate Action Plan (S/CAP) Update*, pages 10-11. Accessed online at http://www.cityofpaloalto.org/civicax/filebank/documents/46821, on October 21, 2015.

Title 16 regulates building and construction that occurs within the city limits. Chapter 16.56 requires that every building occupancy type, except non-publicly funded housing, be made accessible to the physically handicapped. Chapter 16.57 establishes an in-lieu parking fee applicable to nonresidential development within the University Avenue parking assessment district. Fees collected under this chapter shall fund the construction of public parking spaces within the assessment district to serve the parking needs of the district created by the developments that paid the fees. Chapter 16.59 establishes a citywide transportation impact fee imposed as a condition of the issuance of any permit for any new development, unless expressly exempted by the chapter. Exemptions include city buildings, public school buildings, affordable housing, retail service, eating, and drinking service establishments less than 1,500 square feet in size, day care centers, and below market rate housing. Fees collected under this chapter are put into a special Citywide Transportation Impact Mitigation Fund to be used for the installation, acquisition, construction, maintenance, and operation of eligible citywide transportation capacity entitlements.

4.13.1.2 EXISTING CONDITIONS

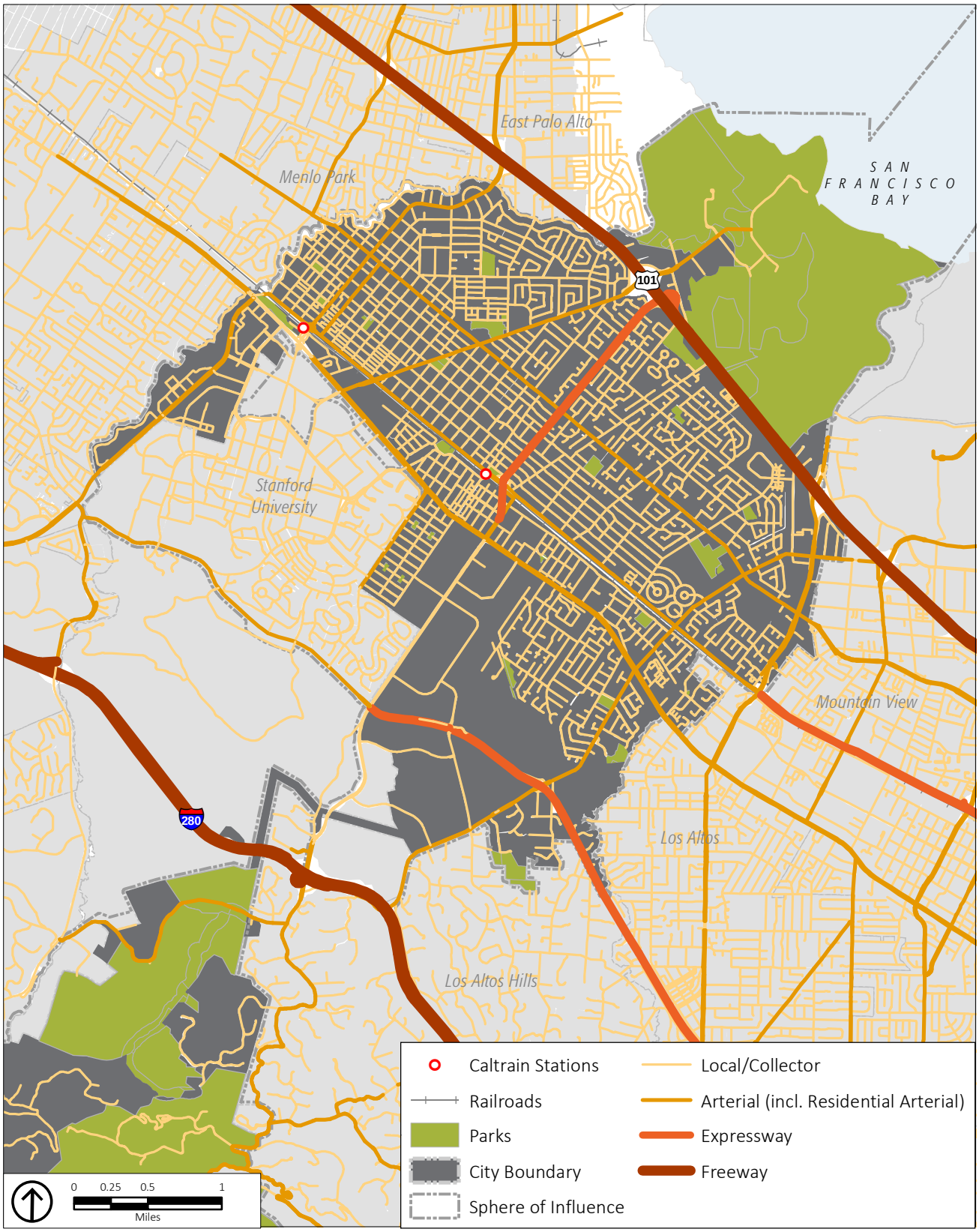
This section describes the existing circulation network in Palo Alto, including motor vehicle circulation, public transit service, bicycle circulation, pedestrian circulation, and parking. It also identifies the study network and methodology used to calculate existing operating conditions for the above-mentioned modes of transportation, and it includes data summarizing existing operating conditions.

Vehicular Circulation

Regional motor vehicular access to Palo Alto is provided by two freeways and one State highway. I-280 passes through the city to the west of the Urban Service Area, proving connections north to San Francisco and south to San Jose. US 101 runs along the eastern perimeter of the city, also providing a north-south freeway connection between San Francisco and San Jose. Additionally, SR 82 (El Camino Real) passes through the heart of Palo Alto on a north-south axis.

Local travel throughout Palo Alto is provided through a series of local, collector, arterial, and residential arterial roadways. Figure 4.13-1 presents the EIR Study Area circulation network. A description of each roadway classification is provided below, as well as shown in Figure 4.13-1.

- **Local** streets are minor roadways that provide access to adjacent properties only.
- **Collector** streets are roadways that collect and distribute local traffic to and from arterial streets, and provide access to adjacent properties.
- **Arterial** streets are major roadways primarily serving through traffic, and take traffic to and from expressways and freeways, along with providing access to adjacent properties.
- **Residential Arterials** are similar to arterial streets except these arterials have residential properties on both sides of the roadway with direct frontages and driveways on that roadway.



Source: City of Palo Alto, 2013; PlaceWorks, 2015.

Figure 4.13-1
Roadway Network

- **Expressways** are major roadways with limited access to adjacent properties; devoted almost exclusively to traffic movement, mainly serving through-traffic.
- **Freeways** are major roadways with controlled access; devoted exclusively to traffic movement, mainly of a through or regional nature.

Existing traffic volumes are based on traffic counts conducted in 2013 and 2014, except for the PM peak hour counts for Congestion Management Program (CMP) intersections, which were conducted in 2012. The data required for the analysis were obtained from new traffic counts, the City of Palo Alto, and field observations. Traffic conditions at the study intersections were analyzed for the weekday AM and PM peak hours of traffic. The AM peak hour of traffic is generally between 7:00 and 9:00 a.m., and the PM peak hour is typically between 4:00 and 6:00 PM. It is during these periods that the most congested traffic conditions occur on an average day.

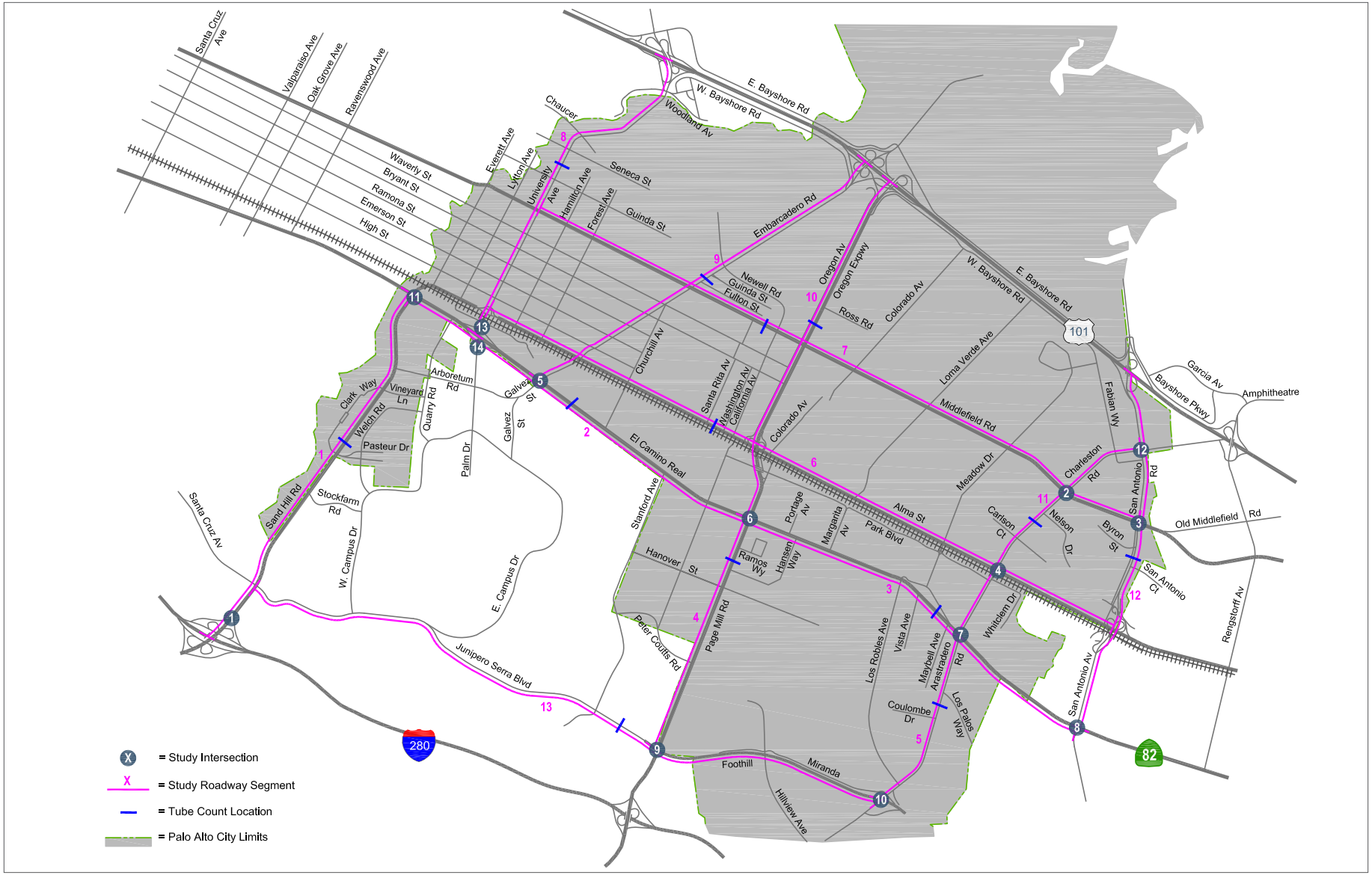
Traffic congestion and roadway safety are key concerns for Palo Altans, and to address these concerns metrics that accurately quantify the issues are required. Typically, traffic studies in California use an automobile LOS methodology to describe traffic conditions and assess impacts, but this conventional approach tells only part of the story. Moreover, conventional LOS analysis focused primarily on driving conditions often leads to mitigation measures that increase roadway capacity, inviting increased use of automobiles and associated GHG emissions and discouraging alternative forms of transportation.

To present a balanced view of current traffic conditions for all roadway users in Palo Alto, this analysis uses a range of metrics to document existing conditions, including intersection LOS, roadway segment volumes, and VMT. This range of metrics is consistent with the new methods being studied by the OPR pursuant to SB 743.

Intersection Motor Vehicle Level of Service

Intersections are critical to the operation of a community's circulation network because they control the capacity of the local street system. Travel delays and congestion typically occur at intersections, and insufficient capacity to handle traffic volumes is most noticeable at intersections. Thus, one of the most common ways to characterize how well a city's circulation system is functioning for the motor vehicle drivers using it is to evaluate key intersections. The proposed Plan would substantially affect the circulation system if it would cause significant deteriorations in the operation of intersections. The EIR Study Area intersections are listed below and shown in Figure 4.13-2:

1. I-280 Northbound Off-Ramp and Sand Hill Road (Menlo Park)
2. Middlefield Road and East Charleston Road
3. Middlefield Road and San Antonio Road (CMP)
4. Alma Street and East/West Charleston Road
5. El Camino Real (SR 82) and Embarcadero Road/Galvez Road (CMP)
6. El Camino Real (SR 82) and Page Mill Road/Oregon Expressway (CMP)



Source: Hexagon Transportation Consultants, 2015.

Figure 4.13-2

Study Intersections, Tube Count Locations, and Multimodal Roadway Segments

7. El Camino Real (SR 82) and Arastradero Road/Charleston Road (CMP)
8. El Camino Real (SR 82) and San Antonio Road (CMP; Mountain View)
9. Foothill Expressway/Junipero Serra Boulevard and Page Mill Road (CMP)
10. Foothill Expressway and Arastradero Road (CMP)
11. El Camino Real (SR 82) and Sand Hill Road/Alma Street (CMP)
12. Charleston Road and San Antonio Avenue (CMP)
13. University Avenue & El Camino Real, northbound ramps (CMP)
14. University Avenue/Palm Drive & El Camino Real, southbound ramps (CMP)

Eleven of the study intersections are included in the County's Congestion Management Program (CMP), which means that they are intersections of Countywide importance, and they are regularly monitored for performance. All intersections are signalized.

Twelve of the 14 study intersections are located in the City of Palo Alto and are therefore subject to the City of Palo Alto LOS standards. *LOS* is a qualitative description of operating conditions and delay, ranging from LOS A, or free-flow conditions with little or no delay, to LOS F, or jammed conditions with excessive delays. The City of Palo Alto evaluates LOS at signalized intersections based on the *2000 Highway Capacity Manual* (HCM) LOS methodology using TRAFFIX software. This method evaluates signalized

intersection operations based on average control delay (time) for all motor vehicles at the intersection. Since TRAFFIX is also the CMP-designated intersection LOS methodology, the City employs the CMP default values for the analysis parameters. The LOS definitions for signalized intersections are shown in Table 4.13-1.

The City of Palo Alto motor vehicle LOS standard for signalized non-CMP intersections is LOS D or better. For CMP intersections, the City's LOS standard is LOS E or better, meaning that only LOS F is considered unacceptable. Intersection #1, I-280 northbound off-ramp and Sand Hill Road, is located in the City of Menlo Park. Menlo Park's level of service standard for this intersection is LOS D or better. Intersection #8, El Camino Real and San Antonio Road, is partially located in the City of Mountain View and partially located in the City of Los Altos, but Mountain View is considered the responsible jurisdiction under the CMP program. Mountain View's level of service standard for this intersection, since it is a CMP intersection, is LOS E or better.

Significance criteria are used to establish what constitutes an impact at an intersection. The City of Palo Alto uses the same impact criteria as the CMP, as follows. A Project (scenario) would create a significant adverse impact on traffic conditions at a signalized intersection in the City of Palo Alto if for either peak hour:

1. The level of service at the intersection degrades from an acceptable level of service (LOS D or better for non-CMP intersections and LOS E or better for CMP intersections) to an unacceptable level of service.

TABLE 4.13-1 SIGNALIZED INTERSECTION LOS DEFINITIONS BASED ON AVERAGE DELAY

LOS	Description	Average Control Delay Per Motor Vehicle (Seconds)
A	Signal progression is extremely favorable. Most motor vehicles arrive during the green phase and do not stop at all. Short cycle lengths may also contribute to the very low motor vehicle delay.	10.0 or less
B	Operations characterized by good signal progression and/or short cycle lengths. More motor vehicles stop than LOS A, causing higher levels of average motor vehicle delay.	10.1 to 20.0
C	Higher delays may result from fair signal progression and/or longer cycle lengths. Individual cycle failures may begin to appear at this level. The number of motor vehicles stopping is significant, though may still pass through the intersection without stopping.	20.1 to 35.0
D	The influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable signal progression, long cycle lengths, or high V/C ratios. Many motor vehicles stop and individual cycle failures are noticeable.	35.1 to 55.0
E	This is considered to the limit of acceptable delay. These high delay values generally indicate poor signal progression, long cycle lengths, and high V/C ratios. Individual cycle failures occur frequently.	55.1 to 80.0
F	This level of delay is considered unacceptable by most drivers. This condition often occurs with oversaturation, that is, when arrival flow rates exceed the capacity of the intersection. Poor progression and long cycle lengths may also be major contributing causes of such delay levels.	Greater than 80.0

Source: Transportation Research Board, 2000, *2000 Highway Capacity Manual*, pages 10 to 16.

2. The intersection is already operating at an unacceptable level of service (LOS E or F for non-CMP intersections and LOS F for CMP intersections), and the project causes both the average control delay for the critical movements at the intersection to increase by four or more seconds and the critical volume-to-capacity ratio (V/C) to increase by one percent (0.01) or more.

For both CMP and non-CMP intersections, if an intersection is operating at an unacceptable level of service and the change in critical delay is negative (i.e., decreases), a significant impact is said to occur if the project causes the V/C ratio to increase by 0.01 or more. This can occur if the critical movements at an intersection change.

Intersection #1, at the I-280 NB off-ramp and Sand Hill Road, is located in the City of Menlo Park. Menlo Park's criteria for determining a significant traffic impact on arterial streets or local approaches to State-controlled signalized intersections is:

1. The level of service at the intersection degrades from an acceptable LOS D or better to an unacceptable level (LOS E or F) or the project causes the intersection to have an increase of 23 seconds greater in average motor vehicle delay, whichever comes first.

The intersection is already operating at LOS E or F, and the project causes an increase of more than 0.8 seconds of average delay to motor vehicles on all critical movements at the intersection. Menlo Park's

impact criteria are much more stringent than Palo Alto's. However, in the case of Intersection #1, each scenario would have an impact using Palo Alto's criteria as well as Menlo Park's criteria.

Intersection #8, at El Camino Real (SR 82) and San Antonio Road, is a CMP intersection under the jurisdiction of the City of Mountain View. Mountain View uses the same significance criteria as the City of Palo Alto for CMP intersections.

Traffic conditions at the study intersections were analyzed for the weekday AM and PM peak hours of traffic. The AM peak hour of traffic is generally between 7:00 and 9:00 a.m., and the PM peak hour is typically between 4:00 and 6:00 p.m. It is during these periods that the most congested traffic conditions occur on an average day.

The intersection LOS under existing conditions are based on turning movement count data that were conducted in March and April of 2014. The results of the LOS analysis under existing conditions are summarized in Table 4.13-2. The results show that, relative to the City of Palo Alto and Santa Clara County Congestion Management Program (CMP) LOS standards, all except two intersections are currently operating at an acceptable LOS.

The intersection of I-280 Northbound off-ramp and Sand Hill Road (#1) operates at LOS F, which is below the LOS standard, with 121 seconds of average delay during the AM peak hour. The intersection of Foothill Expressway/Junipero Serra Boulevard and Page Mill Road (#9), which is a CMP intersection, operates at LOS F with 189.7 seconds of average delay during the PM peak period. This LOS F is considered acceptable under the "VTA 2013 Congestion Management Program, October 2013," because this intersection was operating at LOS F in the 1991 Baseline condition. However, the City of Palo Alto has not adopted VTA's CMP standard for this intersection and adheres its own standard of LOS E or better at all CMP intersections.

Roadway Segment Motor Vehicle Level of Service

In addition to looking at intersections, the TIA evaluated existing traffic conditions in selected roadway segments. Average Daily Traffic (ADT) is the number of motor vehicles travelling along each roadway segment in both directions during a 24-hour period on an average weekday. ADT and roadway segment Motor Vehicle LOS provide a rough guide to the overall capacity and operations of the road system for motor vehicles throughout the city.

The following study roadway segments were analyzed:

1. Sand Hill Road between I-280 and El Camino Real (SR 82)
2. El Camino Real (SR 82) between Sand Hill Road and Page Mill Road (CMP)
3. El Camino Real (SR 82) between Page Mill Road and San Antonio Road (CMP)
4. Page Mill Road between I-280 and El Camino Real (SR 82) (CMP)
5. Arastradero Road between I-280 and El Camino Real (SR 82)

TABLE 4.13-2 EXISTING INTERSECTION LEVELS OF SERVICE

#	Intersection	Existing Conditions			
		Peak Hour	Average Delay (sec)	LOS	Critical V/C
1	I-280 NB Off-Ramp & Sand Hill Road (Menlo Park)	AM	**114.5**	**F**	**1.269**
		PM	27.0	C	0.939
2	Middlefield Road & East Charleston Road	AM	47.6	D	0.660
		PM	39.8	D	0.695
3	Middlefield Road & San Antonio Road *	AM	48.9	D	0.668
		PM	39.0	D	0.789
4	Alma Street & Charleston Road	AM	33.2	C	0.642
		PM	48.6	D	0.743
5	El Camino Real (SR 82) & Embarcadero Road/Galvez Street*	AM	46.1	D	0.729
		PM	42.5	D	0.824
6	El Camino Real (SR 82) & Page Mill Road/Oregon Expressway*	AM	62.7	E	0.819
		PM	52.4	D	0.910
7	El Camino Real (SR 82) & Arastradero Road/West Charleston Road*	AM	35.3	D	0.663
		PM	47.7	D	0.841
8	El Camino Real (SR 82) & San Antonio Road (Mountain View)*	AM	40.5	D	0.768
		PM	54.0	D	0.816
9	Foothill Expressway/Junipero Serra Blvd & Page Mill Road*	AM	55.7	E	0.909
		PM	**189.7**	**F**	1.064
10	Foothill Expressway & Arastradero Road*	AM	48.7	D	0.276
		PM	57.0	E	0.849
11	El Camino Real (SR 82) & Alma Street/Sand Hill Road*	AM	22.7	C	0.452
		PM	36.5	D	0.651
12	San Antonio Road & East Charleston Road*	AM	48.4	D	0.729
		PM	42.0	D	0.844
13	El Camino Real (SR 82) NB Ramps & University Avenue*	AM	22.5	C	0.666
		PM	32.4	C	0.619
14	El Camino Real (SR 82) SB Ramp & University Ave/Palm Drive*	AM	20.9	C	0.424
		PM	24.9	C	0.487

Notes:* Denotes CMP intersection
BOLD indicates a level of service worse than the standard for that intersection.
Source: Hexagon Transportation Consultants, Inc., 2015.

6. Alma Street between University Avenue and San Antonio Road
7. Middlefield Road between University Avenue and San Antonio Road
8. University Avenue between El Camino Real (SR 82) and US 101
9. Embarcadero Road between El Camino Real (SR 82) and US 101
10. Oregon Expressway between El Camino Real (SR 82) and US 101 (CMP)
11. East/West Charleston Road between El Camino Real (SR 82) and San Antonio Road
12. San Antonio Road between El Camino Real (SR 82) and US 101 (CMP)
13. Foothill Expressway between Sand Hill Road and Arastradero Road (CMP)

Six of the study roadway segments are part of the VTA CMP system roadway network, as indicated above. ADT volume data were collected on the 13 roadway segments using automatic 24-hour tube counts on a typical weekday in March 2014, collected with tubes laid across the roadway in the locations shown on Figure 4.13-2.

The motor vehicle level of service (LOS) for each segment is determined by comparing the daily traffic volume on the roadway to its capacity, as determined by the type of roadway and the number of lanes available for vehicular traffic. The capacities used in this analysis are based on the *2000 Highway Capacity Manual* (HCM) calculations and are consistent with local policies in Palo Alto and throughout Santa Clara County.

ADT volume data are shown in Table 4.13-3. The daily capacities are factored from hourly capacities using typical directional splits and peak hour percentage of daily traffic. Some of Palo Alto's streets are shown to carry more traffic (their "volume") on a daily basis than the typically assumed capacities. This means that some Palo Alto streets are busy in both directions during peak hours. Volume-to-capacity (V/C) ratios greater than 1.0 also indicate that the hours of peak congestion are longer in Palo Alto than in many other cities. As shown in Table 4.13-3, ADT on the University Avenue segment exceeds capacity, so this segment currently operates at LOS F.

The two roadway segments on El Camino Real, Segments #2 and #3, are under the jurisdiction of Caltrans (see Table 4.13-3) because El Camino Real is a State highway (SR 82). Two segments, Page Mill Road (#4) and Oregon Expressway (#10) are under the jurisdiction of the Santa Clara County Department of Roads and Airports because they are part of the County Expressway system. Segment #13, includes a portion that is named Foothill Expressway and is part of the County Expressway system. At Page Mill Road, this segment changes names to Junipero Serra Boulevard, which is not part of the County Expressway system.

Freeway Segments and Freeway Ramps

Palo Alto is served by both US 101 and I-280. This analysis considers the following six interchanges and the freeway segments north and south of them:

- US 101 at University Avenue
- US 101 at Embarcadero Road/Oregon Expressway

TABLE 4.13-3 EXISTING ADT AND ROADWAY SEGMENT LOS

							Existing Conditions	
#	Street	From	To	Jurisdiction	# of Lanes	Capacity	Existing ADT	LOS
1	Sand Hill Road	I-280	El Camino Real	City	4	38,200	29,035	D
2	El Camino Real[a]	Sand Hill Road	Page Mill Road	Caltrans	6	59,300	35,862	C
3	El Camino Real[a]	Page Mill Road	San Antonio Road	Caltrans	6	59,300	30,443	B
4	Page Mill Road [a,c]	I-280	El Camino Real	County	4	39,888	34,204	E
5	Arastradero Road	I-280	El Camino Real	City	4	38,200	15,144	A
6	Alma Street	University Ave	San Antonio Road	City	4	38,200	28,475	D
7	Middlefield Road	University Ave	San Antonio Road	City	2	17,300	12,492	D
8	University Avenue[b]	El Camino Real	US 101	City	2	17,300	19,022	**F**
9	Embarcadero Road	El Camino Real	US 101	City	4	38,200	24,859	C
10	Oregon Expressway[a]	El Camino Real	US 101	County	4	39,888	30,925	D
11	East/West Charleston Road	El Camino Real	San Antonio Road	City	2	17,300	12,371	D
12	San Antonio Road[a]	El Camino Real	US 101	City	4	38,200	35,885	E
13	Foothill Expressway / Junipero Serra[a,d]	Sand Hill Road	Arastradero Road	County/ City	4, 2	23,000	15,580	C

a. Roadway segments are part of the VTA CMP System Roadway Network.
b. Segment LOS **bolded** represents LOS below acceptable standards.
c. According to the "Page Mill Road Expressway Corridor Study Report", Santa Clara Roads and Airports Department, June 2015, the portion of Page Mill Road between I-280 and Porter Drive would be expanded from 4 to 6 lanes. However, the location where the ADT volume was counted (between Hansen Way and Ramos Way) would still have four lanes, so the capacity is based on four lanes under all four scenarios.
d. The portion of this segment east of Page Mill Road is called Foothill Expressway, has four lanes, and is a County Expressway. The portion of this segment west of Page Mill Road is called Junipero Serra Boulevard, has two lanes, and is not a County Expressway. The location where the ADT volume was counted (on Junipero Serra Boulevard, between Stanford Avenue and Page Mill Road) has two lanes. The capacity has been estimated as 23,000 because of the longer green time for Junipero Serra at signals.
Source: Hexagon Transportation Consultants, Inc., 2015.

- US 101 at San Antonio Road
- I-280 at Sand Hill Road
- I-280 at Alpine Road
- I-280 at Page Mill Road

Table 4.13-4 shows existing motor vehicle LOS on the study freeway segments. As shown, the majority of segments on both US 101 and I-280 are currently functioning at LOS F. Table 4.13-5 shows the existing volume-to-capacity ratio of the study freeway ramps.

TABLE 4.13-4 FREEWAY SEGMENTS – EXISTING CONDITIONS

Freeway	Segment	Direction	Total # of Lanes	Capacity (vph)[a]	1% of Capacity	Peak Hour	Existing LOS[b]
US 101	Rengstorff Avenue to San Antonio Road	NB	4.5	9,700	97	AM	**F**
						PM	**F**
US 101	San Antonio Road to Oregon Expressway	NB	4.5	9,700	97	AM	**F**
						PM	E
US 101	Oregon Expressway to Embarcadero Road	NB	4.5	9,700	97	AM	D
						PM	D
US 101	Embarcadero Road to University Avenue	NB	4.5	9,700	97	AM	**F**
						PM	**F**
US 101	University Avenue to Willow Road	NB	4.5	9,700	97	AM	**F**
						PM	**F**
US 101	Willow Road to University Avenue	SB	4.5	9,700	97	AM	**F**
						PM	**F**
US 101	University Avenue to Embarcadero Road	SB	4.5	9,700	97	AM	**F**
						PM	**F**
US 101	Embarcadero Road to Oregon Expressway	SB	4.5	9,700	97	AM	E
						PM	**F**
US 101	Oregon Expressway to San Antonio Avenue	SB	4.5	9,700	97	AM	E
						PM	**F**
US 101	San Antonio Avenue to Rengstorff Avenue	SB	4.5	9,700	97	AM	D
						PM	**F**
I-280	El Monte Avenue to Page Mill Road	NB	4	9,200	92	AM	D
						PM	C
I-280	Page Mill Road to Alpine Road	NB	4	9,200	92	AM	C
						PM	D
I-280	Alpine Road to Sand Hill Road	NB	4	9,200	92	AM	A
						PM	**F**
I-280	Sand Hill Road to Woodside Road (SR 84)	NB	4	9,200	92	AM	A
						PM	**F**
I-280	Woodside Road (SR84) to Sand Hill Road	SB	4	9,200	92	AM	A
						PM	**F**
I-280	Sand Hill Road to Alpine Road	SB	4	9,200	92	AM	A
						PM	**F**

TABLE 4.13-4 FREEWAY SEGMENTS – EXISTING CONDITIONS

Freeway	Segment	Direction	Total # of Lanes	Capacity (vph)[a]	1% of Capacity	Peak Hour	Existing LOS[b]
I-280	Alpine Road to Page Mill Road	SB	4	9,200	92	AM	D
						PM	C
I-280	Page Mill Road to El Monte Avenue	SB	4	9,200	92	AM	C
						PM	**F**

Notes: **Bold** indicates a significant impact. For segments already operating at LOS F, an impact occurs if the additional trips generated by a scenario are greater than 1% of the segment's capacity. For segments not already operating at LOS F, an impact occurs if the scenario would cause the LOS to drop to F. It was assumed that if the additional trips generated by a scenario were greater than 10% of capacity, the level of service would drop by one grade level. If additional trips were greater than 20% of capacity, the level of service would drop by two grade levels.
a. Capacity is based on the capacities cited in the VTA's Transportation Impact Guidelines, October 2014.
b. Sources for Existing LOS: Santa Clara County LOS levels taken from the VTA CMP Monitoring Report, 2013.
San Mateo County LOS levels for US 101 taken from a recent TIA prepared for a proposed project.
San Mateo County LOS levels for I-280 taken from C/CAG 2013 Monitoring Report.
Source: Hexagon Transportation Consultants, Inc., 2015.

Motor Vehicle Miles Traveled (VMT) under Existing Conditions

For purposes of looking at additional characteristics of trip making, VMT by trip orientation was analyzed. VMT is a statistic that is used in noise and air quality analyses because it provides an indication of the overall performance of the automobile and truck transportation system within the city. A greater number of VMT generally means more noise and more air pollution. VMT refers to Palo Alto trips multiplied by the trip distances. Palo Alto trips were defined as trips that begin, end, or both within Palo Alto and its Sphere of Influence.[11] The daily (24-hour) VMT were tabulated for existing conditions using the travel demand models for the City of Palo Alto. Trip orientations can be broadly classified as:

- Internal-External: when a trip is made from Palo Alto to outside the city,
- External-Internal: when a trip is made to Palo Alto from outside the city, and
- Internal-Internal: when a trip is made within the city of Palo Alto.

Table 4.13-6 shows VMT, number of motor vehicles (or trips), average trip length, and the directional orientation of the trips under existing conditions. All data provided in Table 4.13-6 were calculated by the Palo Alto travel demand forecasting model for the base year (2013) ,which is the forecasting method that has the capability to calculate VMT.[12]

[11] The Cortese-Knox Act (1986) and the Cortese-Knox-Hertzberg Local Government Reorganization Act (2000) govern Local Agency Formation Commissions (LAFCOs) in each county in California, empowering LAFCOs to review, approve, or deny proposals for boundary changes and incorporations for cities, counties, and special districts. Santa Clara County LAFCO establishes both an urban service area (USA) and a Sphere of Influence (SOI) for each city that describes the city's probable future physical boundaries and service areas. These important city boundaries are discussed in more detail in Report 8, Land Use and Planning.

[12] The Palo Alto travel demand forecasting model is based on VTA's countywide model and MTC's regional model, and includes household and job data for every TAZ (traffic analysis zone) for 2013 and 2030. A technical discussion of the model is included in the *Palo Alto Comprehensive Plan Update Draft Transportation Impact Analysis, (TIA)* which is included as Appendix H of this Draft EIR.

TABLE 4.13-5 FREEWAY RAMPS – EXISTING CONDITIONS

				Existing		
Interchange	Code	Ramp	Capacity	Model	Count	v/c
US 101/ University	1	NB on	20,000	6,430	8,800	0.44
	2	NB off	40,000	8,185	10,500	0.26
	3	SB off	36,000	4,415	12,400	0.34
	4	SB on	40,000	9,940	15,000	0.38
US 101/ Embarcadero/ Oregon Expressway	5	NB on fr. Embarcadero Road WB	20,000	1,155	1,950	0.10
	6	NB off to Embarcadero Road EB	20,000	3,735	5,800	0.29
	7	NB on fr. Embarcadero Road EB (loop)	18,000	60	3,850	0.21
	8	NB off to Embarcadero Road WB (loop)	18,000	9,895	6,800	0.38
	9	SB off to Oregon Expressway	20,000	10,070	12,900	0.65
	10	SB off to Embarcadero Road EB (loop)	18,000	1,545	2,750	0.15
	11	WB Embarcadero Road to WB Oregon Expressway (loop)	18,000	1,255	6,600	0.37
	12	SB off to Embarcadero Road WB	20,000	2,410	2,750	0.14
	13	SB on fr. Oregon Expressway EB	40,000	3,065	8,000	0.20
	14	NB on fr. Oregon Expressway EB (loop)	18,000	7,525	16,000	0.89
	15	NB off to Oregon Expressway WB	20,000	2,010	7,200	0.36
US 101/ San Antonio	16	NB on	18,000	440	1,800	0.10
	17	NB off	20,000	5,410	8,200	0.41
	18	NB on (loop)	18,000	8,705	10,900	0.61
	19	SB off (loop)	18,000	540	1,500	0.08
	20	SB off	20,000	7,970	10,300	0.52
I-280/Sandhill	21	NB on fr. Sand Hill Road WB	20,000	11,975	9,000	0.45
	22	NB off to Sand Hill Road	20,000	8,260	5,300	0.27
	23	SB on fr. Sand Hill Road EB	20,000	275	1,050	0.05
	24	SB off to Sand Hill Road WB	20,000	0	910	0.05
	25	SB on fr. Sand Hill Road WB (loop)	18,000	2,855	4,200	0.23
	26	NB off to Sand Hill Road WB (loop)	18,000	215	1,100	0.06

TABLE 4.13-5 FREEWAY RAMPS – EXISTING CONDITIONS

				Existing		
Interchange	Code	Ramp	Capacity	Model	Count	v/c
	27	NB on fr. Sand Hill Road EB (loop)	18,000	0	1,000	0.06
	28	SB off to Sand Hill Road EB (loop)	18,000	13,480	9,100	0.51
I-280/Page Mill	29	NB off	40,000	13,320	12,000	0.30
	30	SB on	20,000	1,285	1,900	0.10
	31	SB off	20,000	12,700	7,900	0.40
	32	NB on	20,000	6,340	6,300	0.32
	33	NB on (loop)	18,000	2,740	2,000	0.11
	34	SB on (loop)	36,000	6,760	8,900	0.25
I-280/Alpine	35	NB off	20,000	1,905	8,600	0.43
	36	SB on	20,000	2,185	2,250	0.11
	37	SB off	20,000	2,225	4,000	0.20
	38	NB on	20,000	2,255	4,300	0.22
	39	SB on (loop)	18,000	3,890	5,300	0.29

Note: Existing counts for all ramps were obtained from the Caltrans website, http://traffic-counts.dot.ca.gov/docs/2013-ramp-vol-district04.pdf.
Source: Hexagon Transportation Consultants, Inc., 2015.

Average trip length was derived by dividing the total VMT by the total number of trips. This existing VMT data has been updated and corrected since the *Traffic and Transportation Existing Conditions Report* published in August 2014.[13] For the purposes of this EIR, trips with both trip ends in Palo Alto (Internal-Internal) were counted as two trips, while trips with only one trip end in Palo Alto (Internal-External and External-Internal) were counted as one trip. This is standard practice, because, for trips with an origin or destination outside Palo Alto, half of the "responsibility" for the trip lies outside Palo Alto for purposes of air quality and GHG analyses.[14]

[13] The VMT data included in the 2014 Existing Conditions Report had computation errors that resulted in TAZs outside of Palo Alto being counted as if they were inside Palo Alto.

[14] the California Air Resources Board , September 2009, *Recommendations of the Regional Targets Advisory Committee (RTAC) Pursuant to Senate Bill 375: A Report to the California Air Resources Board*. Accessed online October 21, 2015 at http://www.arb.ca.gov/cc/sb375/rtac/report/092909/finalreport.pdf.

TABLE 4.13-6 EXISTING DAILY MOTOR VEHICLE MILES TRAVELLED (VMT) BY DIRECTIONAL ORIENTATION (CITY + SOI)

	Existing	
Total Palo Alto+SOI VMT[a]	**6,391,293**	**100.0%**
Internal-External[b]	2,828,732	44.3%
External-Internal[c]	3,132,854	49.0%
Internal-Internal[d]	429,707	6.7%
Total Motor Vehicle Trips[a]	**499,013**	**100.0%**
Internal-External[b]	190,992	38.3%
External-Internal[c]	200,982	40.3%
Internal-Internal[d]	107,039	21.5%
Average Trip Length [Miles] [e]	**12.81**	
Internal-External	14.81	
External-Internal	15.59	
Internal-Internal	4.01	
Total Palo Alto+SOI Commercial VMT[f]	**258,293**	**100.0%**
Internal-External[b]	119,252	46.2%
External-Internal[c]	135,372	52.4%
Internal-Internal[d]	3,670	1.4%
Total Commercial Motor Vehicle Trips[a]	**9,776**	**100.0%**
Internal-External[b]	4,464	45.7%
External-Internal[c]	4,572	46.8%
Internal-Internal[d]	739	7.6%
Average Commercial Trip Length [Miles][e]	**26.42**	
Internal-External	26.71	
External-Internal	29.61	
Internal-Internal	4.96	

Note: Numbers may not add up to 100% due to rounding.
a. Trips with one trip end outside Palo Alto +SOI were counted as one trip, whereas trips with both ends in Palo Alto+SOI were counted as two trips.
b. "Internal-External" refers to VMT generated by motor vehicle trips that start in Palo Alto+SOI and end outside Palo Alto+SOI.
c. "External-Internal" refers to VMT generated by motor vehicle trips that start outside Palo Alto+SOI and end in Palo Alto+SOI.
d. "Internal-Internal" refers to VMT generated by motor vehicle trips that start and end in Palo Alto+SOI.
e. Average Trip Length is calculated by dividing the Total VMT by the Total Number of Motor Vehicle Trips..
f. Commercial VMT (related to heavy trucks) is not included in "Total Palo Alto+SOI VMT" shown in the table.
Source: Hexagon Transportation Consultants, Inc., 2015.

An alternative method for calculating VMT within a city's boundaries is currently being developed by the Office of Planning and Research, as part of SB 743's new focus on VMT as a key metric, but it has not yet been adopted or incorporated into the travel demand forecasting models in use today.

Table 4.13-6 presents the total number of existing motor vehicle trips, the total daily VMT, and the average trip lengths for non-commercial traffic and for commercial truck traffic separately. For purposes of this analysis, the terms "motor vehicles trips," "motor vehicles" and "trips" are used interchangeably. The data for commercial truck traffic are reported separately because it is used as an input for air quality analyses.

As can be seen in Table 4.13-6, under Existing Conditions in the EIR Study Area, over 21 percent of all motor vehicle trips are Internal-Internal trips – that is, they both begin and end in Palo Alto. Since Internal-Internal trips are shorter than most trips coming from or going to locations outside the city, the VMT for Internal-Internal trips is only about 7 percent of the total VMT. Conversely, Internal-External and External-Internal trips represent approximately 79 percent of the motor vehicle trips per day, but over 93 percent of the total VMT, because most of these trips are longer than trips entirely within Palo Alto. Existing VMT figures for the city only are provided in Table 4.13-7.

Public Transit Service

The Palo Alto Transit Center, located on University Avenue between El Camino Real and Alma Street, is a regional transit hub, providing excellent connections to neighboring communities and the wider Bay Area. Caltrain (both rail and shuttle service), the VTA, the San Mateo County Transit District (SamTrans), and AC Transit all provide service to and from Palo Alto. Additionally, the City of Palo Alto operates a free, public shuttle service to points throughout the city, and Stanford University provides free shuttle service. Figure 4.13-3 shows public transit routes in Palo Alto. Details of the service provided by each transit operator are described below.

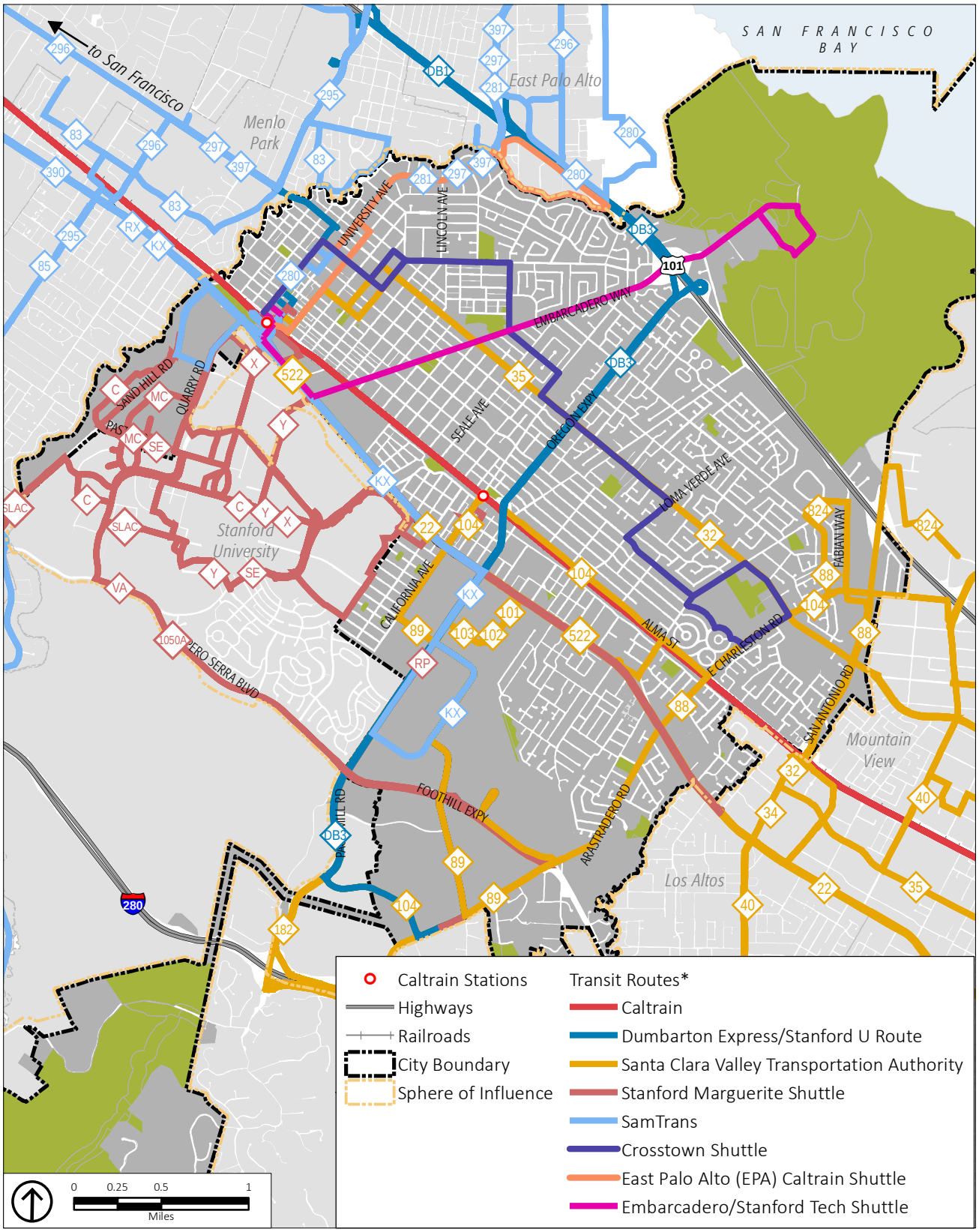
Santa Clara Valley Transportation Authority

VTA provides bus service throughout the cities of Campbell, Cupertino, Fremont, Gilroy, Los Altos, Los Altos Hills, Milpitas, Morgan Hill, Mountain View, Palo Alto, San Jose, San Martin, Santa Clara, Saratoga, and Sunnyvale, as well as Stanford. VTA operates several bus routes in Palo Alto as shown in Figure 4.13-3, providing connections to VTA light rail, Caltrain, Altamont Corridor Express (ACE), and AMTRAK Capitol Corridor. VTA routes that operate in Palo Alto include Local Bus Routes 22, 32, 35, 88, 88L, 88M, and 89; Express Routes 101, 102, 103, 104, and 182; and Rapid Route 522 (limited stop service). Times vary by weekday and weekend on each local route; however, each local route generally operates from the early morning hours to evening hours. Route 22 operates overnight. Express routes generally operate only on weekdays during the commute periods in the peak direction of travel.

TABLE 4.13-7 EXISTING DAILY MOTOR VEHICLE MILES TRAVELLED (VMT) BY DIRECTIONAL ORIENTATION (CITY ONLY)

	Existing	
Total Palo Alto+SOI VMT[a]	**5,320,931**	**100.0%**
Internal-External[b]	2,410,604	45.3%
External-Internal[c]	2,600,249	48.9%
Internal-Internal[d]	310,078	5.8%
Total Motor Vehicle Trips[a]	**432,122**	**100.0%**
Internal-External[b]	171,108	39.6%
External-Internal[c]	177,227	41.0%
Internal-Internal[d]	83,786	19.4%
Average Trip Length [Miles] [e]	**12.31**	
Internal-External	14.09	
External-Internal	14.67	
Internal-Internal	3.70	
Total Palo Alto+SOI Commercial VMT[f]	**240,869**	**100.0%**
Internal-External[b]	111,444	46.3%
External-Internal[c]	126,369	52.5%
Internal-Internal[d]	3,056	1.3%
Total Commercial Motor Vehicle Trips[a]	**9,182**	**100.0%**
Internal-External[b]	4,222	46.0%
External-Internal[c]	4,327	47.1%
Internal-Internal[d]	634	6.9%
Average Commercial Trip Length [Miles][e]	**26.23**	
Internal-External	26.40	
External-Internal	29.21	
Internal-Internal	4.82	

Note: Numbers may not add up to 100% due to rounding.
a. Trips with one trip end outside Palo Alto +SOI were counted as one trip, whereas trips with both ends in Palo Alto were counted as two trips.
b. "Internal-External" refers to VMT generated by motor vehicle trips that start in Palo Alto and end outside Palo Alto.
c. "External-Internal" refers to VMT generated by motor vehicle trips that start outside Palo Alto and end in Palo Alto.
d. "Internal-Internal" refers to VMT generated by motor vehicle trips that start and end in Palo Alto.
e. Average Trip Length is calculated by dividing the Total VMT by the Total Number of Motor Vehicle Trips..
f. Commercial VMT (related to heavy trucks) is not included in "Total Palo Alto VMT" shown in the table.
Source: Hexagon Transportation Consultants, Inc., 2015.



Source: City of Palo Alto, 2013; Metropolitan Transportation Commission (MTC), 2013; PlaceWorks, 2015.

Figure 4.13-3
Public Transit Service in Palo Alto

* Note: Not all routes are shown.

SamTrans[15]

SamTrans operates 73 bus routes throughout San Mateo, San Francisco, and Santa Clara counties, including parts of Palo Alto. SamTrans regularly provides more than 1,000 trips per day using a fleet of 296 fixed-route revenue vehicles, comprised of 55 articulated coaches, 237 standard coaches, and four mini coaches. Additionally, SamTrans operates a fleet of 83 paratransit vehicles, including buses, vans, and sedans. SamTrans Lines 280, 281, 297, 397 provide service to Palo Alto residents.[16]

Caltrain[17]

Since 1992, Caltrain has provided commuter rail service along the San Francisco Peninsula from San Francisco to San Jose and Gilroy. In 2013, Caltrain provided service to approximately 15,595,559 riders, which represented a 10 percent increase from 2012 ridership. The average weekday ridership in 2013 was approximately 49,031 passengers. Caltrain operates 92 weekday trains, 36 Saturday trains, and 32 Sunday trains.[18] Palo Alto has two Caltrain stations that operate seven days per week: the Palo Alto station is located at 95 University Avenue, and the California Avenue station is located at 101 California Avenue. Both stations are served by Caltrain's local service, which stops at every station between San Francisco and San Jose, as well as by limited local service, which stops at fewer stations between Redwood City and San Francisco Baby Bullet trains stop at only nine or ten of the stations between San Jose and San Francisco, including the University Avenue station. Additionally, Caltrain operates a station at 100 Embarcadero Road during Stanford University football games only.

The Palo Alto station provides 178 bike racks, 94 bike lockers, and an indoor Bikestation, as well as paid parking for up to 389 motor vehicles. Caltrain provides weekday and weekend northbound and southbound service from Palo Alto to Gilroy. Transit connections from this station can be made to SamTrans (Lines ECR, 280, 281, 297, and 397), shuttles (Stanford Marguerite, East Palo Alto/Caltrain, Crosstown, and Embarcadero), and VTA (Routes 22, 35, 522, DB Express). Shuttle service is mapped in Figure 4.13-3.

The California Avenue station currently provides 33 bike racks, with more racks planned, paid parking for up to 185 motor vehicles, and 42 bike lockers,[19] although some lockers were removed recently as part of the California Avenue Streetscape Improvements Project. Caltrain provides weekday and weekend northbound and southbound service from Palo Alto to San Francisco and Gilroy.

[15] SamTrans, http://www.samtrans.com/about/Bus_Operations_Information.html, accessed on May 16, 2014.
[16] City of Palo Alto, Public Transit, http://www.cityofpaloalto.org/news/displaynews.asp?NewsID=495&TargetID=107, accessed on May 16, 2014.
[17] Caltrain, http://www.caltrain.com/about.html, accessed on May 16, 2014.
[18] Caltrain 2013 Annual Passenger Counts, Attachment 1.
[19] Caltrain, http://www.caltrain.com/stations/californiaavenuestation.html, accessed on August 20, 2014.

AC Transit (Dumbarton Express)[20]

The Dumbarton Express, which is governed and operated by AC Transit, operates two bus lines, the DB and DB1 providing express bus service between the East Bay (including Bay Area Rapid Transit [BART], ACE, and AMTRAK Capitol Corridor service) and the Peninsula, including Palo Alto

Stanford University Marguerite Shuttle[21]

Stanford University Parking and Transportation Services operates a free public shuttle service connecting the campus to nearby transit, shopping, dining, and entertainment. The shuttle is free to the public and operates Monday through Friday all year, except on University holidays. In addition, limited evening and weekend service from mid-September to mid-June is provided. All shuttles are wheelchair-accessible and have bike racks.

The Marguerite Shuttle serves the Stanford campus, Stanford Shopping Center, the Stanford Medical Center, the SLAC National Accelerator Laboratory, the Stanford Research Park, and the San Antonio Shopping Center, and its service also extends into Menlo Park. The Marguerite Shuttle provides service via several lines, as shown in Figure 4.13-3.

Palo Alto Shuttle Service[22]

The City of Palo Alto provides a free shuttle service (Palo Alto Shuttle) throughout the city and is currently considering an expansion of the system. The Palo Alto Shuttle operates three routes. Each Shuttle is wheelchair accessible and stops are marked with a "Palo Alto Shuttle" sign, a sticker on a regular VTA bus stop sign, or a "Shuttle" decal on a stop sign pole in residential areas.

Paratransit

The Santa Clara Valley Transportation Authority operates paratransit service administered through a contract with Outreach and Escort, Inc. (OUTREACH).[23] Riders may reserve paratransit trips from one to three days in advance, between 8:00 a.m. and 5:00 p.m. for service the next day. The paratransit service area is within a ¾-mile corridor around the VTA bus routes and light rail stations. For travel outside of the service area, customers can arrange a transfer to the paratransit operator in the adjacent county. Paratransit hours of operation are the same hours and days of week that bus and light rail run on their regular schedules.

[20] The Dumbarton Express, http://dumbartonexpress.com/, accessed on May 16, 2014.

[21] Stanford University, Parking and Transportation Services, http://transportation.stanford.edu/marguerite/MargueriteSched.shtml#online, accessed on May 16, 2014.

[22] City of Palo Alto, http://www.cityofpaloalto.org/news/displaynews.asp?NewsID=212&TargetID=107, accessed on June 20, 2014.

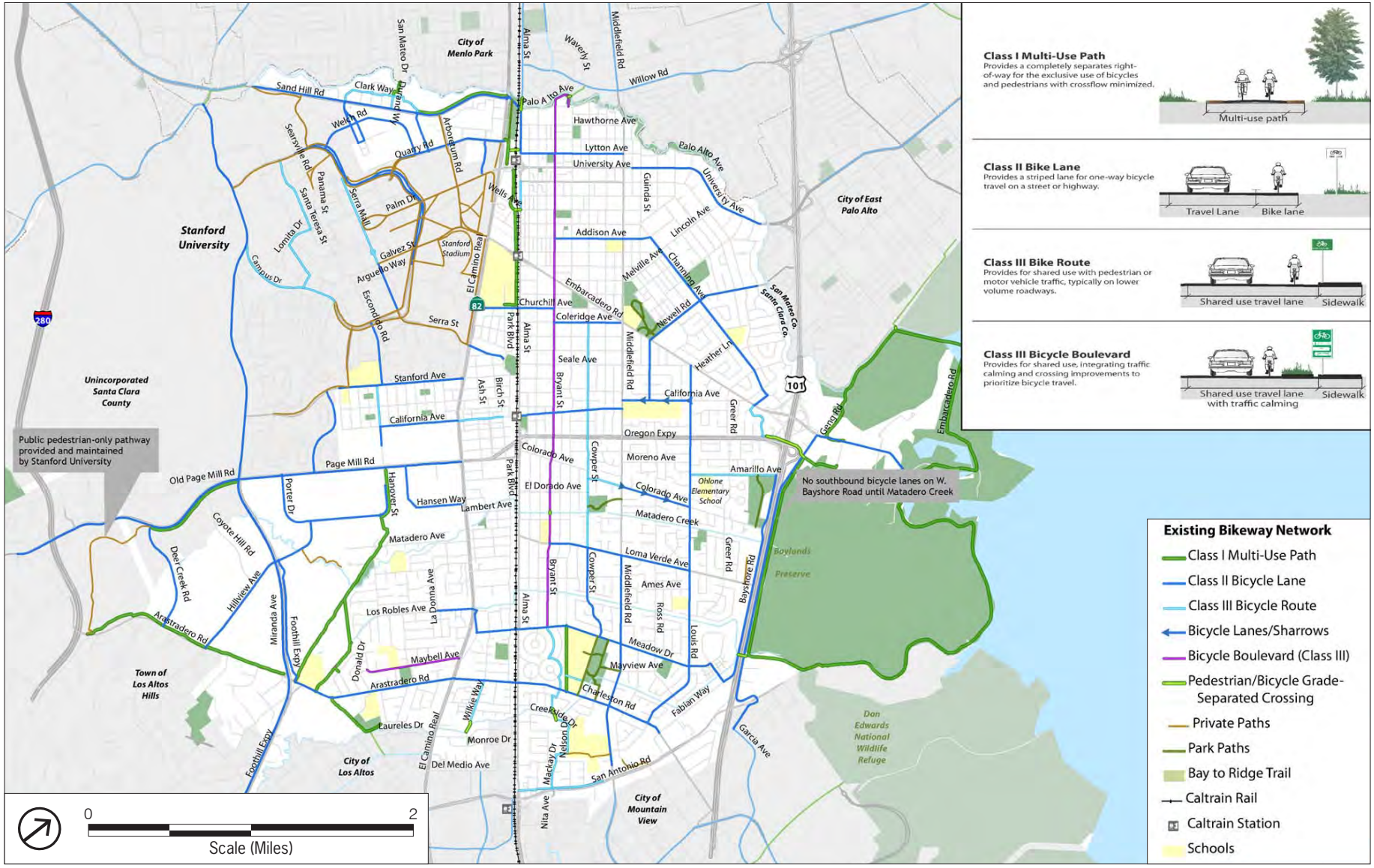
[23] Santa Clara Valley Transportation Authority, 2013, *Paratransit Rider's Guide*, page 2.

Bicycle Circulation

Palo Alto has approximately 65 miles of existing bikeways, as shown in Figure 4.13-4. This network is made up of Class I, II, and III Bikeways, as defined by Caltrans and defined as follows:

- **Class I** bikeways are referred to as multi-use or shared-use paths that are physically separated from a roadway by either at least five feet of landscape or other form of barrier. Class I bikeways provide exclusive use for non-motorized modes of transportation and must contain a paved path with a minimum width of eight feet and two-foot-wide graded shoulders. Palo Alto has approximately 15.3 miles of Class I paths. Further, while Palo Alto has additional paved paths that are physically separated from traffic, these are not considered Class I because they do not meet the width requirements. Additionally, several paths on the Stanford University campus do not qualify as Class I bikeways, but nonetheless are considered an important component of the overall bikeways that serve Palo Alto.
- **Class II** bikeways are striped lanes on roadways that provide for one-way bicycle travel. Class II bike lanes that are located on streets without parking, are required to be a minimum of four feet in width, including any concrete gutter, with a minimum of three feet of asphalt. Bike lanes on streets with parallel parking must be at minimum five feet wide; however, it is important to note that many communities have adopted wider minimum width standards to reduce potential conflict with the "door zone" to provide additional safety. There are approximately 30 miles of Class II bike lanes in the city.
- **Class III bikeways** are signed bike routes where bicyclists share travel lanes with motorists. Class III lanes are typically routes where roadways cannot provide for Class II bike lanes, but still have a bicycle demand. Palo Alto has approximately eight miles of Class III routes, most of which are signed routes only and do not contain shared lane markings.
- **Class III bicycle boulevards** provide for shared use, integrating traffic calming and crossing improvements to prioritize bicycle travel on low-volume, low-speed local streets.
- **Class IV** bikeways are known as separated bicycle lanes in California. Caltrans is currently working on updating its design standards to reflect recent changes to state law, which clearly permit the installation of Class IV bikeways. Palo Alto has a contraflow separated bicycle lane on Homer Avenue between Alma Street and High Street, and is considering the installation of additional Class IV facilities throughout the City.

Additionally, Palo Alto has several enhanced Class III routes, called Bicycle Boulevards, where convenient and safe bicycle travel is prioritized over motor vehicle circulation. Bicycle Boulevards are signed, shared roadways; however, motor vehicle traffic is very low and bicyclists can use the full width of the roadway. There are currently three designated Bicycle Boulevards in Palo Alto: Bryant Street, Maybell Avenue, and Park Boulevard.



Source: City of Palo Alto, Bicycle + Pedestrian Master Plan, 2012.

Figure 4.13-4
Existing Bikeways in Palo Alto

In addition to bikeways operated and maintained by the City of Palo Alto, regional bikeways operated by the VTA and San Mateo County provide connections to points throughout Palo Alto and beyond. The local bicycle network in Palo Alto is also connected to the networks of neighboring communities, including Menlo Park, Mountain View, Los Altos, and Los Altos Hills.

Although Palo Alto has an extensive bicycle network, there are areas that are recommended for improvement that would add a total of approximately 60 miles of enhanced or new routes to the existing bicycle roadway network, according to the Palo Alto *Bicycle + Pedestrian Transportation Plan* (2012).[24]

Bicycle Facilities at Intersections

The Palo Alto *Bicycle + Pedestrian Transportation Plan* recommends intersection improvements such as street markings, curb extensions, and signalization changes at approximately 40 different intersections throughout the city, including along major roadways such as El Camino Real, Arastradero Road, Embarcadero Road, California Avenue, Middlefield Road, East/West Charleston Road, and Oregon Expressway, to name a few.[25] The City is currently adding bicycle traffic signal detection (through the use of video cameras) to some intersections and bicycle stencils at detection areas. In order to allow for adequate crossing time for bicyclists, the City is also increasing green time at some signals. Bicycle detection at intersections will be facilitated by the City's new signal system.

Pedestrian Circulation

Pedestrian circulation is provided with dedicated facilities separated from motor vehicle traffic, such as sidewalks; unpaved trails and private paths; courtyards, pedestrian alleys, pass-throughs, and parks, as described below. Pedestrian circulation is also provided through shared facilities, which consist of shared-use paths and barrier crossings, streets without sidewalks, and service alleys/public parking lots.[26]

Dedicated Facilities

- **Sidewalks.** In most parts of the city, pedestrians have access to a network of sidewalks, with the exception of southwest Palo Alto and other select corridors where feasibility is limited and there is low demand from residents for sidewalks in these areas. In some areas, including El Camino Real, existing sidewalks are narrow and in poor condition. Further, although much of the city contains adequate sidewalks, a few significant sidewalk gaps remain, including areas fronting Rinconada, Robles, and Monroe Parks; the west side of Alma Street heading north and south from the Palo Alto Transit Center; portions of Hanover Street, Porter Drive, and Hansen Way in the Research Park; and the approach to the San Antonio Overpass. Additionally, sidewalk deficiencies include the El Camino Real approach from Matadero Avenue, and the west approach to Middlefield Avenue from Colorado Avenue.[27]

[24] City of Palo Alto, 2011, *Bicycle and Pedestrian Transportation Plan*, Table 6-1.
[25] City of Palo Alto, 2011, *Bicycle and Pedestrian Transportation Plan*, page 6-14.
[26] City of Palo Alto, 2011, *Bicycle and Pedestrian Transportation Plan*.
[27] City of Palo Alto, 2011, *Bicycle and Pedestrian Transportation Plan*.

- **Unpaved Trails and Private Paths.** Unpaved trails and private paths within Palo Alto are typically located in the regional open space areas, as well as within larger private developments and parcels. These facilities include a trail network opposite the Bol Park Path and Veterans Administration Medical Center in the Stanford Research Park, and behind development near Loma Verde Avenue and Matadero Creek. In recent years, Stanford University has completed an unpaved pedestrian-only path which runs from Page Mill Road at Deer Creek Road to the Arastradero Trail.
- **Courtyards, Pedestrian Alleys/Pass-Throughs, and Parks.** These pedestrian facilities are generally located at the interior of city blocks and provide dedicated space for pedestrian activity. Examples of courtyards, pedestrian alleys, and pass-throughs, include Downtown, including the Ramona Plaza development, and the connection between Scott Street and Heritage Park. Other examples of pedestrian pass-throughs are located in the California Avenue business district.

Shared Facilities

- **Shared-Use Paths and Barrier Crossings.** Shared-use paths are off-road facilities where bicycle and pedestrian traffic mixes.
- **Streets without Sidewalks.** In addition to providing a vast network of interconnected sidewalks, Palo Alto also includes streets without sidewalks that can also serve as pedestrian facilities. These streets are primarily located in the Barron Park and Monroe Park neighborhoods and lack sidewalks to maintain the rural character of those neighborhoods. At some locations, there is a soft shoulder provided; however, most of these streets lack sufficient width for continuous facilities.
- **Service Alleys and Public Parking Lots.** For most service alleys and publicly owned surface parking lots, pedestrians and motor vehicles share the travel way. Service alleys are typically narrower and adjacent to commercial activity centers. While these areas are not typically considered pedestrian facilities, the predominance of these areas are featured in the Downtown and California Avenue Business Districts and do serve as pedestrian facilities for circulation in those areas.

Pedestrian Facilities at Intersections

The City is currently making efforts to maximize walk time at signalized intersections Downtown and to implement pedestrian-friendly signal timing throughout the city. These efforts include all-red exclusive pedestrian phases and leading pedestrian intervals at several intersections near schools. These improvements will be facilitated by the City's new signal system.

Mode Share

Mode share refers to the percentage of trips made by each of the primary modes of transportation: Driving Alone, Shared Ride, Taking Transit, Bicycling, and Walking. The Palo Alto travel demand forecasting model for the base year (2013) calculates the mode split based on input factors taken from survey data or other

sources that have been validated[28]. For example, the factors for calculating the transit mode share include residential development density, proximity to transit, household income, the cost of using transit versus auto, and travel times for transit versus auto.

Table 4.13-8 presents the total number of daily person-trips made in Palo Alto under existing conditions. The table includes all trips beginning and/or ending in Palo Alto, i.e., trips that begin and end in Palo Alto, trips that begin in Palo Alto and end in another jurisdiction, and trips that begin in another jurisdiction and end in Palo Alto.

TABLE 4.13-8 EXISTING MODE SHARE FOR PALO ALTO DAILY PERSON TRIPS

	Existing	
Mode	Sum	% Share
Drive Alone	353,779	61.5%
Shared Ride	130,651	22.7%
Transit	29,494	5.1%
Bike	15,875	2.8%
Walk	45,470	7.9%
Total	**575,269**	**100.0%**

Source: Hexagon Transportation Consultants, Inc., 2015. Data is from the Palo Alto Travel Demand Forecasting Model for 2013 and is based on validated survey data.

Both the "Drive Alone" and "Shared Ride" modes are made by automobiles. The shared ride mode includes all person-trips with more than one occupant in the motor vehicle. For example, both a parent with a child in the car and two employees who carpool to work together will be shown in the table as two person-trips made by ridesharing. (Recent years have seen the growth of services such as Uber, Lyft, and other alternative taxicab services. These services are being referred to as Transportation Networking Companies (TNCs). The definition of a TNC was created by the California Public Utilities Commission in 2013. The model treats those trips as single-occupant trips.)

Transit Ridership

The Palo Alto travel demand forecasting model estimates that 29,494 person trips per day were made by transit in 2013 (Existing Conditions), as presented in Table 4.13-8, Mode Share for Palo Alto Daily Person Trips. Table 4.13-9 breaks down that total number of transit trips into the number of boardings made on different transit service providers. For example, if someone boards Caltrain in Palo Alto and then transfers to a Caltrain shuttle in San Mateo to reach their final destination, the table presents that as two boardings for one transit trip. As another example, if

TABLE 4.13-9 EXISTING DAILY TRANSIT BOARDINGS – TRIPS TO, FROM, AND WITHIN PALO ALTO

Transit Mode	2013
BART	2,872
Caltrain	13,883
VTA Bus	8,177
VTA LRT	762
SamTrans	2,636
Stanford Shuttles	6,197
Caltrain Shuttles	4,376
Palo Alto Shuttles	2,114
Muni	3,036
Total Boardings	**44,053**
Transit Trips	29,494
Boardings/Trip	1.49

Source: Hexagon Transportation Consultants, Inc., 2015. Data is from the Palo Alto Travel Demand Forecasting Model for 2013.

[28] The Palo Alto travel demand forecasting model is based on VTA's countywide model and MTC's regional model, and includes validated survey data for the base year of 2013. A technical discussion of the model is included in the *Palo Alto Comprehensive Plan Update Draft Transportation Impact Analysis (TIA)* included as Appendix H of this Draft EIR.

someone boards a BART train in Oakland and then transfers to Caltrain in Millbrae and rides to Palo Alto, and then takes a Stanford Marguerite shuttle to the Stanford campus, all three boardings of that transit trip are shown in the table. The primary reason why it is important to consider boardings by transit operator in addition to the total number of daily transit trips is to highlight which services would receive the greatest increases in ridership in the future.

Table 4.13-9 presents the number of boardings and the number of transit trips under existing conditions. Like the mode share data, Table 4.13-9 includes all transit trips that begin and/or end in Palo Alto, i.e., trips entirely within Palo Alto, trips that begin in Palo Alto and end in another jurisdiction, and trips that begin in another jurisdiction and end in Palo Alto.

Transportation Demand Management

The City Council has authorized formation of a Transportation Management Authority (TMA) to manage and market alternative modes of transit in the Downtown areas, as well as collect data on modes of travel. The process of forming the TMA began in 2014. The TMA has a goal of reducing single-occupant vehicle trips Downtown by 30 percent.

4.13.2 STANDARDS OF SIGNIFICANCE

Appendix G of the California Environmental Quality Act (CEQA) Guidelines contains standards of significance for the evaluation of a project's impacts. Section 15064.7 of the CEQA Guidelines encourages each public agency to develop and publish its own thresholds of significance that the agency uses in evaluating the significance of environmental effects for projects in its jurisdiction. The City of Palo Alto prepared its *Environmental Criteria Used by the City of Palo Alto* in 2007. Since the City's criteria were adopted, changes in the CEQA guidelines have been enacted that deemphasize parking impacts. In addition, the California Governor's Office of Planning and Research is studying alternatives to LOS in response to SB 743. In determining which standards of significance to use for evaluating the transportation and traffic impacts of the proposed Plan, Appendix G of the CEQA Guidelines, the City's published environmental criteria, and SB 743 were considered. Based on this consideration, the analysis in Section 4.13.3 uses the following standards of significance. The proposed Plan would result in a significant transportation impact if it would:

- Cause an intersection to drop below its level of service standard, or if it is already operating at a substandard level of service, deteriorate by more than a specified amount. The precise definitions of significant impact at local and Congestion Management Program (CMP) intersections are provided in Impact Statement 1 below.
- Cause a roadway segment to drop below its level of service standard, or deteriorate operations that already operate at a substandard level of service.
- Cause a freeway segment or ramp to operate at LOS F or contribute traffic in excess of 1 percent of segment capacity to a freeway segment or ramp already operating at LOS F.

- Impede the development or function of planned pedestrian or bicycle facilities.
- Increase demand for pedestrian and bicycle facilities that cannot be met by existing or planned facilities.
- Impede the operation of a transit system as a result of congestion.
- Create demand for transit services that cannot be met by current or planned services.
- Create the potential demand for through traffic to use local residential streets.
- Create an operational safety hazard.
- Result in inadequate emergency access.

In addition, although neither the State nor the City have adopted a standard of significance relating to VMT, in recognition of the emerging requirements under SB 743 to consider VMT as an alternative metric to LOS, the impact discussion below includes an analysis of VMT and VMT per capita under each of the four scenarios.

4.13.3 IMPACT DISCUSSION

The remaining sections of this chapter provide an analysis of the potential project impacts, including impacts from growth expected to occur during the life of the proposed Plan, as well as cumulative transportation and traffic impacts that could occur as a result of the implementation of the proposed Plan when combined with projects outside of Palo Alto. As explained in detail in the Project Description, Chapter 3 of this EIR, four planning scenarios were developed in order to explore the range of possible outcomes to the proposed Plan planning process. For ease of reference, some of the key differences in transportation investments and land use assumptions among the four scenarios are summarized here:

Scenario 1: The Business As Usual scenario assumes the continuation of existing plans, with regard to both land use and transportation. Only currently funded transportation infrastructure projects and network changes are included. ABAG jobs projections are used along with City of Palo Alto projections for housing/population within the city limits and ABAG projections for housing/population in the rest of the region.

Scenario 2: Assumes that the improvements proposed by Santa Clara County in the *County Expressway Plan 2040 Study* will be constructed on Page Mill Road and Foothill Expressway. Assumes the same number of new housing units and new population as Scenario 1, but the lowest number of new employees of the four scenarios. Includes employer incentives for bicycling.

Scenario 3: Assumes that the Caltrain tracks will be trenched under West Meadow Drive and West Charleston Road (both in anticipation of possible future High Speed Rail service and to alleviate existing safety and traffic congestion issues). Assumes more new housing units and population than Scenarios 1 and 2, but less than Scenario 4. Assumes fewer new employees

than Scenario 1, but more than Scenario 2. Includes employer incentives for bicycling and unbundled parking costs for multi-family housing units.

Scenario 4: Assumes that bus rapid transit (BRT) will be implemented on El Camino Real, with queue-jumping lanes and signal pre-emption at intersections, but not a dedicated lane for buses.[29] Also assumes that other measures, such as free transit passes for Palo Alto residents in transit-accessible areas and parking charges in the Downtown and California Avenue areas, will be taken to maximize the use of transit. Like Scenario 3, assumes that the Caltrain tracks will be trenched under West Meadow Drive and West Charleston Road. Assumes the greatest number of new housing units and new population of the four scenarios (consistent with ABAG projections), and the same number of new employees as Scenario 1. Includes employer incentives for bicycling, unbundled parking costs for multi-family housing units, and the potential to create a new program that would require parking charges for existing workplaces with over 50 employees.

The four scenarios have been compared using the Palo Alto 2030 travel demand forecasting model. A technical discussion of the model inputs and outputs is included on page 7 of the *Palo Alto Comprehensive Plan Update Draft Transportation Impact Analysis* (TIA), which is Appendix H of this Draft EIR. The TIA has been prepared in accordance with the standards and methodologies set forth by the City of Palo Alto, by the VTA Congestion Management Program's *Transportation Impact Analysis Guidelines* (October 2014), and by CEQA. The TIA identified significant impacts under the four scenarios presented above, in accordance with current CEQA guidelines and as input to the EIR being prepared for the proposed Plan. Each potential impact identified in Section 4.13-2, *Standards of Significance,* is addressed in an impact statement related to its respective travel mode or topic area.

TRANS-1 Implementation of the project would cause an intersection to drop below its motor vehicle level of service standard, or deteriorate operations at representative intersections that already operate at a substandard level of service. (Significant and Unavoidable – All Four Scenarios)

Summary: As described below, although the proposed scenarios would result in varying levels of potential impact to the representative study intersections, the impact to motor vehicle level of service would be significant under all four scenarios. In summary, the growth assumed in all four scenarios would result in at least one impacted intersection during the AM or PM peak hour. The number of impacted intersections would be six impacted intersections under Scenario 1, three impacted intersections under Scenario 2, four impacted intersections under Scenario 3 and four impacted intersections under Scenario 4, requiring mitigation. Impacts are summarized in Table 4.13-16.

[29] A queue-jumping lane is an extra outside lane, specifically for transit vehicles, added on the approach to a signalized intersection. It is often accompanied by a signal that allows the transit vehicles to get a head start before the vehicles in the regular lanes to the left.

The results of the motor vehicle LOS analysis under Existing Conditions and under the four scenarios are summarized in Table 4.13-10. Palo Alto's definitions of acceptable LOS are explained in Section 4.13.1.2, above.

For Scenario 2, to reflect the implementation of expressway improvements, lane configuration changes were assumed at the following three intersections:

- At El Camino Real and Page Mill Road (#6), the County plans to add a right-turn lane and realign the left-turn lanes on the east approach to the intersection. Also, parking would be removed from the south side of Page Mill Road. Although the LOS would remain at E, the average delay would be shorter in the AM and PM peak hours with this change.
- At Foothill Expressway/Junipero Serra Boulevard and Page Mill Road (#9), the County plan proposes a grade separation where the through traffic on Page Mill Road would cross over or under Foothill Expressway. This proposed grade separation would result in an improvement from LOS E under the other three scenarios to LOS C under Scenario 2 in the AM peak hour, and from LOS F (with over 5 minutes of average delay time) to LOS D under Scenario 2 in the PM peak hour.
- At Foothill Expressway and Arastradero Road (#10), the County plan proposes a grade separation, with Foothill Expressway passing under Arastradero Road, and the construction of a roundabout east of Foothill Expressway. The only signalized intersection would be a T- intersection west of Foothill Expressway, at the Foothill Expressway southbound ramp and Arastradero Road. This newly constructed T-intersection would operate at LOS A in both the AM and PM peak hours.

For Scenarios 3 and 4, the following change was assumed at Intersection #4 for the LOS analysis:

- At the intersection of Alma Street and East/West Charleston Road (#4), these scenarios assume that Caltrain would be in a trench. Removing the train pre-emption from the intersection means that the signal timing could be changed to run much more efficiently. With that change, the level of service is projected to improve from LOS D in the AM peak hour under Scenarios 1 and 2 to LOS C under Scenarios 3 and 4. In the PM peak hour, the intersection would improve from LOS F (and a significant impact) under Scenarios 1 and 2 to LOS D under Scenarios 3 and 4.

In addition, for Scenario 4, queue jump lanes were assumed on El Camino Real to reflect the implementation of BRT at the intersections along El Camino. However, because the queue jump lanes would be added closest to the right curb, no changes would be made to the general purpose lanes. (There would be on-street parking reductions as discussed in VTA's *El Camino Real Bus Rapid Transit Project Environmental Impact Report/Environment Assessment* (August 2014).)

As shown in Table 4.13-10, all 14 intersections are projected to have longer average delays under most of the scenarios than under Existing Conditions. In general, there are more intersections with a substandard level of service in the PM peak hour than in the AM peak hour

TABLE 4.13-10 EXISTING AND 2030 INTERSECTION LEVELS OF SERVICE BY PLANNING SCENARIO

			Existing			Scenario 1			Scenario 2			Scenario 3			Scenario 4		
#	Intersection	Peak Hour	Avg. Delay (sec)	LOS	Crit. V/C	Avg. Delay (sec)	LOS	Crit. V/C	Avg. Delay (sec)	LOS	Crit. V/C	Avg. Delay (sec)	LOS	Crit. V/C	Avg. Delay (sec)	LOS	Crit. V/C
1	I-280 NB Off-Ramp & Sand Hill Road (Menlo Park)	AM	**114.5**	**F**	**1.269**	**164.6**	**F**	1.459	**162.9**	**F**	1.454	**163.0**	**F**	1.455	**164.0**	**F**	1.458
		PM	27.0	C	0.939	**57.1**	**E**	1.086	**53.8**	**D**	**1.076**	**55.5**	**E**	1.081	**55.7**	**E**	1.083
2	Middlefield Road & Charleston Road	AM	47.6	D	0.660	50.9	D	0.727	49.7	D	0.702	50.5	D	0.719	50.8	D	0.727
		PM	39.8	D	0.695	**56.1**	**E**	0.949	53.2	D	0.930	54.7	D	0.945	**55.9**	**E**	0.952
3	Middlefield Road & San Antonio Road*	AM	48.9	D	0.668	50.3	D	0.761	49.4	D	0.740	49.7	D	0.750	49.7	D	0.750
		PM	39.0	D	0.789	41.9	D	0.857	44.2	D	0.906	44.3	D	0.904	44.0	D	0.901
4	Alma Street & Charleston Road	AM	33.2	C	0.642	38.7	D	0.824	37.2	D	0.802	27.2	C	0.657	28.2	C	0.679
		PM	48.6	D	0.743	**88.9**	**F**	1.063	**81.4**	**F**	1.036	41.2	D	0.794	41.5	D	0.797
5	El Camino Real (SR 82) & Embarcadero Road/Galvez Street*	AM	46.1	D	0.729	58.5	E	0.928	58.4	E	0.914	58.1	E	0.914	59.6	E	0.929
		PM	42.5	D	0.824	69.0	E	1.049	68.8	E	1.043	73.2	E	1.061	72.8	E	1.061
6	El Camino Real (SR 82) & Page Mill Road/Oregon Expressway*	AM	62.7	E	0.819	67.3	E	0.882	63.4	E	0.815	66.9	E	0.876	67.4	E	0.878
		PM	52.4	D	0.910	74.2	E	1.056	61.4	E	0.970	74.6	E	1.062	78.5	E	1.082
7	El Camino Real (SR 82) & Arastradero Road/Charleston Road*	AM	35.3	D	0.663	38.8	D	0.791	38.2	D	0.771	38.3	D	0.777	38.2	D	0.772
		PM	47.7	D	0.841	68.6	E	1.016	64.1	E	0.992	65.8	E	1.002	66.0	E	1.003
8	El Camino Real (SR 82) & San Antonio Road (Mountain View)*	AM	40.5	D	0.768	51.9	D	0.942	50.7	D	0.930	50.9	D	0.933	51.4	D	0.936
		PM	54.0	D	0.816	**97.9**	**F**	1.069	**93.9**	**F**	1.057	**96.0**	**F**	1.066	**97.7**	**F**	1.077
9	Foothill Expressway/Junipero Serra Blvd & Page Mill Road*	AM	55.7	E	0.909	72.6	E	1.007	27.5	C	0.538	71.4	E	0.999	73.2	E	1.011
		PM	**189.7**	**F**	1.064	**306.1**	**F**	1.185	43.9	D	0.895	**300.1**	**F**	1.160	**309.7**	**F**	1.185

TABLE 4.13-10 EXISTING AND 2030 INTERSECTION LEVELS OF SERVICE BY PLANNING SCENARIO

			Existing			Scenario 1			Scenario 2			Scenario 3			Scenario 4		
#	Intersection	Peak Hour	Avg. Delay (sec)	LOS	Crit. V/C	Avg. Delay (sec)	LOS	Crit. V/C	Avg. Delay (sec)	LOS	Crit. V/C	Avg. Delay (sec)	LOS	Crit. V/C	Avg. Delay (sec)	LOS	Crit. V/C
10	Foothill Expressway & Arastradero Road*	AM	48.7	D	0.276	52.1	D	0.540	7.1	A	0.190	51.8	D	0.524	52.0	D	0.535
		PM	57.0	E	0.849	**147.3**	**F**	1.330	9.4	A	0.468	**139.1**	**F**	1.299	**144.8**	**F**	1.322
11	El Camino Real (SR 82) & Alma Street/Sand Hill Road*	AM	22.7	C	0.452	22.9	C	0.567	22.8	C	0.547	22.8	C	0.551	23.1	C	0.572
		PM	36.5	D	0.651	39.3	D	0.848	39.0	D	0.847	38.8	D	0.850	38.7	D	0.850
12	San Antonio Road & East Charleston Road *	AM	48.4	D	0.729	50.9	D	0.812	51.9	D	0.823	51.7	D	0.824	51.8	D	0.830
		PM	42.0	D	0.844	45.5	D	0.878	44.0	D	0.857	43.9	D	0.855	43.7	D	0.851
13	El Camino Real (SR 82) NB Ramps & University Avenue*	AM	22.5	C	0.666	35.4	D	0.902	34.2	C	0.891	33.9	C	0.888	35.8	D	0.903
		PM	32.4	C	0.619	32.1	C	0.805	32.3	C	0.807	32.5	C	0.803	32.4	C	0.804
14	El Camino Real (SR 82) SB Ramp & University Avenue/Palm Drive*	AM	20.9	C	0.424	19.5	B	0.553	19.1	B	0.534	19.2	B	0.535	19.6	B	0.557
		PM	24.9	C	0.487	23.8	C	0.594	22.3	C	0.562	22.2	C	0.571	23.4	C	0.576

Notes: All data (level of service, average delay, and critical volume-to-capacity ratio) were calculated with the TRAFFIX software, which incorporates the 2000 Highway Capacity Manual methodology. The VTA CMP guidelines require the use of this methodology to analyze intersections. For the four planning scenarios, the traffic volumes at each intersection, which were used as inputs to the TRAFFIX analysis, were calculated with the Palo Alto travel demand forecasting model.

*Denotes CMP Intersection

Bold indicates a level of service worse than the standard for that intersection.

Bold/grey indicates a significant impact.

Source: Hexagon Transportation Consultants, Inc., 2015.

Under Scenario 1, the Business As Usual scenario, there is one intersection with a substandard LOS in the AM and PM peak hours and five intersections with a substandard LOS in the PM peak hour. All six intersections would experience a significant impact under Scenario 1.

- I-280 NB Off-Ramp and Sand Hill Road (in Menlo Park) (#1)
- Middlefield Road and East Charleston Road (#2)
- Alma Street and East/West Charleston Road (#4)
- El Camino Real (SR 82) and San Antonio Road (in Mountain View and Los Altos) (#8)
- Foothill Expressway/Junipero Serra Boulevard and Page Mill Road (#9)
- Foothill Expressway and Arastradero Road (#10)

Under Scenario 2, there are three intersections with a substandard level of service and where there would be a significant impact.

- I-280 NB Off-Ramp and Sand Hill Road (in Menlo Park) (#1)
- Alma Street and East-West Charleston Road (#4)
- El Camino Real (SR 82) and San Antonio Road (in Mountain View and Los Altos) (#8)

Under Scenario 3, the LOS results indicate that there would be four intersections with a substandard level of service and where there would be a significant impact.

- I-280 NB Off-Ramp and Sand Hill Road (in Menlo Park) (#1)
- El Camino Real (SR 82) and San Antonio Road (in Mountain View and Los Altos) (#8)
- Foothill Expressway/Junipero Serra Boulevard and Page Mill Road (#9)
- Foothill Expressway and Arastradero Road (#10)

Under Scenario 4 there would be five intersections with a substandard level of service and where there would be a significant impact during at least one of the peak hours.

- I-280 NB Off-Ramp and Sand Hill Road (in Menlo Park) (#1)
- Middlefield Road and East Charleston Road (#2)
- El Camino Real (SR 82) and San Antonio Road (in Mountain View and Los Altos) (#8)
- Foothill Expressway/Junipero Serra Boulevard and Page Mill Road (#9)
- Foothill Expressway and Arastradero Road (#10)

Each intersection is discussed individually below.

- **I-280 Northbound Off- ramp and Sand Hill Road (#1)**. This intersection, which is located in Menlo Park, is projected to operate at LOS F under all four scenarios, during the AM peak hour, largely due to the very high volume of traffic coming from southbound I-280 to the west approach of this intersection, combined with the volume of motor vehicles exiting the northbound off-ramp from I-280. The intersection is projected to operate at LOS D or E in the PM peak hour. The intersection would be significantly impacted under all four scenarios in both the AM and PM peak hours. Expanding Sand Hill Road from four lanes to six lanes would mitigate the significant impact. Expansion to six lanes would require widening the curb-to-curb street width and modifying the traffic signals. However, this

intersection is located in Menlo Park and is under the control of Caltrans. Due to the extremely stringent impact criteria used by Menlo Park, virtually all of the additional trips generated by the four scenarios at this intersection would need to be eliminated in order to avoid the significant impact. It would not be possible for the City of Palo Alto to eliminate all additional trips. Furthermore, it is not considered feasible to expand capacity on Alpine Road, a parallel route, in order to serve as mitigation for the impact on Sand Hill Road, due to right-of-way constraints, habitat issues, local opposition, and other factors.

- **Middlefield Road and East Charleston Road (#2).** This intersection is projected to operate at LOS E during the PM peak hour and to be significantly impacted under Scenarios 1 and 4, but not under Scenarios 2 and 3, suggesting that the more intense land use assumptions included in Scenarios 1 and 4 are the reason for the impact. The Charleston-Arastradero Corridor Plan Line indicates that new bike lanes through this intersection will be added in the future, but they would not be expected to mitigate the motor vehicle level of service. In order to avoid the significant impact under Scenarios 1 and 4 through TDM measures, described in Section 4.13-5, below, the added traffic would need to be reduced by approximately nine percent, so that the intersection would remain at an acceptable level of service. A decrease of nine percent would be feasible with implementation of the TDM mitigation program described below.
- **Alma Street and East/West Charleston Road (#4)**. This intersection is projected to operate at LOS F in the PM peak period and would be significantly impacted under Scenarios 1 and 2, but would operate at LOS D under Scenarios 3 and 4, due to placing the Caltrain tracks in a trench. Thus, trenching the Caltrain tracks would provide substantial congestion relief at this intersection. The Charleston-Arastradero Corridor Plan Line indicates that new bike lanes through this intersection will be added in the future, but they would not be expected to mitigate the motor vehicle level of service. In order to avoid the significant impact under Scenarios 1 and 2 through implementation of a TDM mitigation program, the traffic would need to be reduced by over 80 percent so that the intersection would remain at LOS D during the PM peak hour. Such a large reduction is not generally considered feasible, even with an extremely aggressive TDM program.
- **El Camino Real (SR 82) and San Antonio Road (#8).** This intersection is projected to operate at LOS F during the PM peak period and would be significantly impacted under all four scenarios. This intersection includes a total of five lanes on its north, east, and south approaches, but only three lanes on the west approach, which is in the City of Los Altos. Although adding lanes on the west approach of the intersection would likely mitigate the substandard level of service, such a measure would require consideration of secondary impacts on the safety of bicyclists and pedestrians. In addition, changes to the west approach of this intersection would require additional right-of-way acquisition, displacement of existing businesses, and is outside the City of Palo Alto, and is therefore not considered feasible. In order to eliminate the significant impact through TDM mitigation measures, the traffic would need to be reduced by 38 percent to 43 percent, so that the intersection remained at LOS E during the PM peak hour. A reduction of that magnitude is considered feasible for aggressive TDM programs that are applied to worksites. However, it is unlikely that such a substantial reduction also could be achieved within new

housing projects on the El Camino Real corridor or the southern portion of the City near this intersection.

- **Foothill Expressway/Junipero Serra Boulevard and Page Mill Road (#9).** This intersection is projected to operate at LOS F during the PM peak hour and would be significantly impacted under Scenarios 1, 3, and 4. Scenario 2 includes a grade separation for this intersection, which would result in an acceptable level of service. The County has proposed to widen Page Mill Road from four to six lanes between Porter Drive and I-280, in addition to the grade separation proposal. Widening would partially mitigate the impact at this intersection under Scenarios 1, 3, and 4, even if the grade separation were not constructed. All of the proposed expressway improvements would be implemented by the Santa Clara County Department of Roads and Airports, and therefore are outside the control of the City of Palo Alto. The County is currently working with both the City of Palo Alto and the Town of Los Altos Hills to develop a plan for Page Mill Road, but a plan has not yet been adopted and funding sources for the improvements have not yet been identified. If the City of Palo Alto ends up being supportive of the grade separation project, it should be included in the City's traffic impact fee. Because this intersection is already operating at LOS F, the increase in average delay in order to avoid an impact under Scenarios 1, 3, and 4 would have to be less than four seconds. Since these scenarios are projected to result in 110 to 120 seconds in increased delay, a TDM mitigation program would need to reduce traffic by over 96 percent. Such a large reduction would not be feasible, even with an extremely aggressive TDM program.
- **Foothill Expressway and Arastradero Road (#10).** This intersection is projected to operate at LOS F during the PM peak hour and would be significantly impacted under Scenarios 1, 3, and 4. Scenario 2 includes a re-design of this intersection to include a roundabout east of Foothill Expressway and a grade separation. However, the intersection is fully built out and no other physical improvements short of grade separation are feasible to mitigate the impact under Scenarios 1, 3, and 4. If the City of Palo Alto is supportive of the grade separation project, it should be included in the City's traffic impact fee. The grade separation is part of the proposed expressway improvements that would be implemented by the Santa Clara County Department of Roads and Airports, and therefore are outside the control of the City of Palo Alto. In order to eliminate the significant impact through a TDM mitigation program, such a program would need to reduce the additional traffic at this intersection by approximately 75 percent, so that it would remain at LOS E during the PM peak hour. Such a large reduction would not be feasible, even with an extremely aggressive TDM program.

Motor Vehicle Miles Traveled

As explained above, both VMT and VMT per capita have been proposed as replacement metrics for motor vehicle LOS by the Governor's Office of Planning and Research in its *Draft of Updates to the CEQA Guidelines*, prepared pursuant to SB 743. It is anticipated that VMT and/or VMT Per Capita will become a basis for findings of significant impact under CEQA in the future. An alternative method for calculating VMT within a City's boundaries is currently being developed by the Office of Planning and Research, as part of the new focus on VMT as a key metric, but it has not yet been adopted or incorporated into the travel demand

forecasting models in use today. For this reason, the analysis below relies on the daily motor vehicles miles traveled, which refers to daily Palo Alto trips multiplied by the trip distances. Palo Alto trips were defined as all trips that begin and/or end in Palo Alto or its Sphere of Influence. Chapter 5 of the TIA discusses the methodology to calculate VMT and presents the VMT, number of trips, average trip lengths and directional orientation.

Table 4.13-11 presents for the City of Palo Alto and SOI the total number of vehicle trips, the total daily VMT, and the average trip lengths for non-commercial traffic and for commercial truck traffic separately. The data for commercial truck traffic are reported separately because it is used as an input for air quality analyses. As seen in Table 4.13-11, Scenario 1, the Business As Usual scenario, leads to the highest VMT projection (7,110,437) and the greatest number of motor vehicle trips (549,691) of the four scenarios, which is consistent with its land use and other assumptions. Scenario 2 results in the lowest VMT projection of the four scenarios (6,897,508), followed closely by Scenario 4 (6,932,573). This result indicates that even though Scenario 4 includes even more housing units than Scenario 1, its pro-transit policies succeed in reducing VMT to a level closer to that of Scenario 2, which has the lowest combined new housing and jobs.

Not surprisingly, Scenario 4, which includes the most policies to maximize transit usage, results in the lowest estimate of non-commercial motor vehicle trips (533,336). As shown on Table 4.13-11, the average trip length is longest under Scenario 4, because more of the shorter trips are being made by bicycling, walking or transit. This mode shift for shorter trips under Scenario 4 is also evidenced by the fact that the percentage of total motor vehicle trips that are Internal-Internal (entirely within Palo Alto) is lowest under Scenario 4. In Table 4.13-11, 19.6 percent of the total motor vehicle trips are Internal-Internal under Scenario 4; this rate is at least one percentage point higher under the other scenarios, and almost 2 percentage points higher under Existing Conditions.

The results for the City only presented in Table 4.13-12 are very similar to the ones presented in Table 4.13-11, which include the City and its Sphere of Influence. The VMT for the City only data also concludes that Scenario 1 leads to the highest VMT projection (5,320,931) and the greatest number of motor vehicle trips (432,122) of the four scenarios, Scenario 2 results in the lowest VMT projection of the four scenarios (5,741,373). In summary, the results for the VMT for Palo Alto without its SOI would result in the same findings discussed above for the City+SOI.

VMT per capita is a metric that utilizes total VMT divided by total residents and jobs, since both residents and workers contribute to VMT in Palo Alto. Table 4.13-13 presents information on VMT per capita under each scenario within the EIR Study Area for the City and its Sphere of Influence. VMT per capita is projected to decrease under all four of the 2030 scenarios compared with Existing Conditions.

Of the four scenarios, Scenario 1 results in the highest projection, at 34.0 VMT per capita, and Scenario 4 results in the lowest projection, at 32.5 VMT per capita. Table 4.13-14 presents information on VMT per capita under each scenario within the EIR Study Area for the City only.

TABLE 4.13-11 EXISTING AND 2030 DAILY MOTOR VEHICLE MILES BY DIRECTIONAL ORIENTATION – CITY + SOI

			2030							
	Existing[g]		Scenario 1		Scenario 2		Scenario 3		Scenario 4	
Total Palo Alto+SOI VMT[a]	**6,391,293**	**100.0%**	**7,110,437**	**100.0%**	**6,897,508**	**100.0%**	**7,000,886**	**100.0%**	**6,932,573**	**100.0%**
Internal-External[b]	2,828,732	44.3%	3,162,070	44.5%	3,071,606	44.5%	3,117,386	44.5%	3,087,179	44.5%
External-Internal[c]	3,132,854	49.0%	3,488,759	49.1%	3,377,815	49.0%	3,426,597	48.9%	3,413,825	49.2%
Internal-Internal[d]	429,707	6.7%	459,608	6.5%	448,088	6.5%	456,903	6.5%	431,569	6.2%
Total Motor Vehicle Trips[a]	**499,013**	**100.0%**	**549,691**	**100.0%**	**538,480**	**100.0%**	**545,826**	**100.0%**	**533,336**	**100.0%**
Internal-External[b]	190,992	38.3%	213,188	38.8%	209,021	38.8%	211,452	38.7%	209,350	39.3%
External-Internal[c]	200,982	40.3%	222,636	40.5%	217,782	40.4%	220,289	40.4%	219,275	41.1%
Internal-Internal[d]	107,039	21.5%	113,867	20.7%	111,677	20.7%	114,085	20.9%	104,711	19.6%
Total Average Trip Length [Miles][e]	**12.81**		**12.94**		**12.81**		**12.83**		**13.00**	
Internal-External	14.81		14.83		14.70		14.74		14.75	
External-Internal	15.59		15.67		15.51		15.55		15.57	
Internal-Internal	4.01		4.04		4.01		4.00		4.12	
Total Palo Alto+SOI Commercial VMT[f]	**258,293**	**100.0%**	**306,896**	**100.0%**	**287,470**	**100.0%**	**296,665**	**100.0%**	**305,083**	**100.0%**
Internal-External[b]	119,252	46.2%	141,948	46.3%	133,138	46.3%	137,335	46.3%	141,134	46.3%
External-Internal[c]	135,372	52.4%	160,941	52.4%	150,709	52.4%	155,496	52.4%	159,936	52.4%
Internal-Internal[d]	3,670	1.4%	4,007	1.3%	3,623	1.3%	3,834	1.3%	4,013	1.3%
Total Commercial Motor Vehicle Trips[a]	**9,776**	**100.0%**	**11,448**	**100.0%**	**10,833**	**100.0%**	**11,160**	**100.0%**	**11,448**	**100.0%**
Internal-External[b]	4,464	45.7%	5,274	46.1%	5,008	46.2%	5,152	46.2%	5,274	46.1%
External-Internal[c]	4,572	46.8%	5,382	47.0%	5,107	47.1%	5,252	47.1%	5,382	47.0%
Internal-Internal[d]	739	7.6%	793	6.9%	718	6.6%	756	6.8%	793	6.9%

TABLE 4.13-11 EXISTING AND 2030 DAILY MOTOR VEHICLE MILES BY DIRECTIONAL ORIENTATION – CITY + SOI

		2030			
	Existing[g]	Scenario 1	Scenario 2	Scenario 3	Scenario 4
Commercial Average Trip Length [Miles][e]	**26.42**	**26.81**	**26.54**	**26.58**	**26.65**
Internal-External	26.71	26.92	26.58	26.66	26.76
External-Internal	29.61	29.91	29.51	29.60	29.72
Internal-Internal	4.96	5.05	5.05	5.07	5.06

Note: Numbers may not add up to 100% due to rounding.
a. Trips with one trip end outside Palo Alto +SOI were counted as one trip, whereas trips with both ends in Palo Alto+SOI were counted as two trips.
b. "Internal-External" refers to VMT generated by motor vehicle trips that start in Palo Alto+SOI and end outside Palo Alto+SOI.
c. "External-Internal" refers to VMT generated by motor vehicle trips that start outside Palo Alto+SOI and end in Palo Alto+SOI.
d. "Internal-Internal" refers to VMT generated by motor vehicle trips that start and end in Palo Alto+SOI.
e. Average Trip Length is calculated by dividing the Total VMT by the Total Number of Motor Vehicle Trips.
f. Commercial VMT (related to heavy trucks) is not included in "Total Palo Alto+SOI VMT" shown in the table.
g. Existing and 2030 daily motor vehicle miles were calculated by the travel demand forecasting model ,which is the forecasting method that has the capability to calculate VMT.
Source: Hexagon Transportation Consultants, Inc., 2015. All data calculated by the Palo Alto travel demand forecasting model, for both 2013 and 2030 with assumptions for each planning scenario in accordance with each scenario's description (e.g., population, jobs, roadway network changes)..

TABLE 4.13-12 EXISTING AND 2030 DAILY MOTOR VEHICLE MILES BY DIRECTIONAL ORIENTATION (CITY ONLY)

			2030							
	Existing[g]		Scenario 1		Scenario 2		Scenario 3		Scenario 4	
Total Palo Alto+SOI VMT[a]	**5,320,931**	**100.0%**	**5,947,158**	**100.0%**	**5,741,373**	**100.0%**	**5,853,201**	**100.0%**	**5,788,497**	**100.0%**
Internal-External[b]	2,410,604	45.3%	2,708,446	45.5%	2,618,931	45.6%	2,668,290	45.6%	2,638,651	45.6%
External-Internal[c]	2,600,249	48.9%	2,903,127	48.8%	2,797,144	48.7%	2,851,560	48.7%	2,839,746	49.1%
Internal-Internal[d]	310,078	5.8%	335,585	5.6%	325,298	5.7%	333,351	5.7%	310,100	5.4%
Total Motor Vehicles[a]	**432,122**	**100.0%**	**479,198**	**100.0%**	**467,567**	**100.0%**	**475,362**	**100.0%**	**463,255**	**100.0%**
Internal-External[b]	171,108	39.6%	191,317	39.9%	186,833	40.0%	189,489	39.9%	187,202	40.4%
External-Internal[c]	177,227	41.0%	197,070	41.1%	191,907	41.0%	194,718	41.0%	193,740	41.8%
Internal-Internal[d]	83,786	19.4%	90,811	19.0%	88,827	19.0%	91,156	19.2%	82,313	17.8%
Total Average Trip Length [Miles][e]	**12.31**		**12.41**		**12.28**		**12.31**		**12.50**	
Internal-External	14.09		14.16		14.02		14.08		14.10	
External-Internal	14.67		14.73		14.58		14.64		14.66	
Internal-Internal	3.70		3.70		3.66		3.66		3.77	
Total Palo Alto+SOI Commercial VMT[f]	**240,869**	**100.0%**	**288,129**	**100.0%**	**268,859**	**100.0%**	**278,078**	**100.0%**	**286,510**	**100.0%**
Internal-External[b]	111,444	46.3%	133,641	46.4%	124,865	46.4%	129,092	46.4%	132,907	46.4%
External-Internal[c]	126,369	52.5%	151,092	52.4%	140,948	52.4%	145,752	52.4%	150,202	52.4%
Internal-Internal[d]	3,056	1.3%	3,396	1.2%	3,045	1.1%	3,234	1.2%	3,401	1.2%
Total Commercial Motor Vehicles[a]	**9,182**	**100.0%**	**10,816**	**100.0%**	**10,195**	**100.0%**	**10,526**	**100.0%**	**10,816**	**100.0%**
Internal-External[b]	4,222	46.0%	5,015	46.4%	4,743	46.5%	4,890	46.5%	5,015	46.4%
External-Internal[c]	4,327	47.1%	5,113	47.3%	4,833	47.4%	4,982	47.3%	5,113	47.3%
Internal-Internal[d]	634	6.9%	688	6.4%	619	6.1%	654	6.2%	688	6.4%

TABLE 4.13-12 EXISTING AND 2030 DAILY MOTOR VEHICLE MILES BY DIRECTIONAL ORIENTATION (CITY ONLY)

		2030			
	Existing[g]	Scenario 1	Scenario 2	Scenario 3	Scenario 4
Commercial Average Trip Length [Miles][e]	26.23	26.64	26.37	26.42	26.49
Internal-External	26.40	26.65	26.33	26.40	26.50
External-Internal	29.21	29.55	29.16	29.26	29.38
Internal-Internal	4.82	4.94	4.92	4.94	4.94

Note: Numbers may not add up to 100% due to rounding.
a. Trips with one trip end outside Palo Alto were counted as one trip, whereas trips with both ends in Palo Alto were counted as two trips.
b. "Internal-External" refers to VMT generated by motor vehicle trips that start in Palo Alto and end outside Palo Alto..
c. "External-Internal" refers to VMT generated by motor vehicle trips that start outside Palo Alto and end in Palo Alto.
d. "Internal-Internal" refers to VMT generated by motor vehicle trips that start and end in Palo Alto.
e. Average Trip Length is calculated by dividing the Total VMT by the Total Number of Motor Vehicles.
f. Commercial VMT (related to heavy trucks) is not included in "Total Palo Alto VMT" shown in the table.
g. Existing and 2030 daily motor vehicle miles were calculated by the travel demand forecasting model ,which is the forecasting method that has the capability to calculate VMT. Data in the model are based on surveys and other validated sources.
Source: Hexagon Transportation Consultants, Inc., 2015.

TABLE 4.13-13 EXISTING AND 2030 VMT PER CAPITA (CITY + SOI)

		2030			
	Existing	Scenario 1	Scenario 2	Scenario 3	Scenario 4
Daily VMT	6,391,293	7,110,437	6,897,508	7,000,886	6,932,573
Total Households	31,546	35,266	35,266	36,028	36,866
Total Population	82,577	92,491	92,491	94,327	96,348
Total Jobs	100,829	116,700	111,071	113,977	116,700
VMT per Capita	**34.8**	**34.0**	**33.9**	**33.6**	**32.5**

Source: Hexagon Transportation Consultants, Inc., 2015.

TABLE 4.13-14 EXISTING AND 2030 VMT PER CAPITA (CITY ONLY)

		2030			
	Existing	Scenario 1	Scenario 2	Scenario 3	Scenario 4
Daily VMT	5,320,931	5,947,158	5,741,373	5,853,201	5,788,497
Total Households	27,119	29,703	29,703	30,465	31,303
Total Population	65,686	72,284	72,284	74,121	76,141
Total Jobs	95,458	110,940	105,311	108,216	110,940
VMT per Capita	**33.0**	**32.5**	**32.3**	**32.1**	**30.9**

Source: Hexagon Transportation Consultants, Inc., 2015.

Mode Share

Mode share refers to the percentage of trips made by each of the primary modes of transportation: Driving Alone, Shared Ride, Taking Transit, Bicycling, and Walking. It is relevant to this analysis of congestion and VMT under the four scenarios because trips made by transit, bicycling, and walking reduce motor vehicle congestion and motor vehicle miles traveled. It is also a metric for considering existing and future demand on transit, pedestrian, and bicycle facilities, which are discussed below under standards TRANS-5 and TRANS-7.

As shown in Table 4.13-15 all four scenarios are projected to result in a lower mode share for both of the Automobile modes (Drive Alone and Ridesharing) in comparison to Existing Conditions. Under Existing Conditions, the alternative modes of travel (Transit, Bikes, and Walking) account for 15.8 percent of person-trips.

TABLE 4.13-15 EXISTING AND 2030 MODE SHARE FOR PALO ALTO DAILY PERSON TRIPS

	Existing		Scenario 1		Scenario 2		Scenario 3		Scenario 4	
Mode	Sum	% Share	Sum	% Share	Sum	% Share	Sum	% Share	Sum	% Share
Drive Alone	353,779	61.5%	391,591	59.9%	380,518	60.0%	387,366	59.7%	390,389	58.5%
Shared Ride	130,651	22.7%	145,087	22.2%	141,393	22.3%	143,894	22.2%	145,901	21.9%
Transit	29,494	5.1%	44,503	6.8%	41,659	6.6%	43,820	6.8%	51,975	7.8%
Bike	15,875	2.8%	20,177	3.1%	19,553	3.1%	20,316	3.1%	21,406	3.2%
Walk	45,470	7.9%	52,655	8.1%	51,317	8.1%	53,143	8.2%	57,303	8.6%
TOTAL	575,269	100.0%	654,012	100.0%	634,440	100.0%	648,538	100.0%	666,974	100.0%

Source: Hexagon Transportation Consultants, Inc., 2015.

This mode share analysis is based on the modeling of the following components of individual scenarios that would be expected to reduce demand for driving. All scenarios assume implementation of the BPTP 2012. The analysis is Citywide and does not reflect the Downtown-focused efforts of the Palo Alto TMA.

- Unbundled parking costs for multi-family housing units. This measure, which is included in Scenarios 3 and 4, has the effect of transferring the cost of auto ownership to only those with cars, which in turn could make alternative modes relatively more attractive.
- The City would explore the option to put in place a parking charge program for existing businesses with more than 50 employees. For employees who live within reasonable walking or biking distance of their workplace, parking charges, included in Scenario 4, make walking or biking to work more attractive, by transferring the relative cost of driving to only those with cars.
- Paid parking in Downtown and California Avenue business districts. By increasing the total cost of driving to the Downtown or California Avenue business districts, this Scenario 4 measure would also make walking or bicycling more attractive.

Scenarios 1 and 2 would result in the least change, with those modes totaling 18.0 percent and 17.8 percent of person-trips in 2030, respectively. The slightly lower mode share for transit in Scenario 2, compared with Scenario 1, is due to the fact that Scenario 2 includes fewer new jobs, and transit generally has a higher mode share for work trips than for other trip purposes. The ridesharing mode for Scenarios 1 and 2 follows the same pattern as the drive alone mode, in that as more people take transit, ride bikes, or walk, fewer people use cars—whether as single-occupant or multiple-occupant motor vehicles.

Scenario 4 would result in the greatest increase in the non-auto modes, with a total of 19.6 percent of travelers choosing to use transit, ride a bike, or walk. The significant increase in transit's mode share under Scenario 4 is consistent with that scenario's pro-transit policies, such as implementing BRT, providing free transit passes to Palo Alto residents who live near transit, and charging for parking in the Downtown and California Avenue areas.

All scenarios would see increases in the total number of trips by each mode over existing conditions. Of the four future scenarios, Scenario 2 results in the lowest number of total daily trips, which is consistent with the fact that it includes the lowest projections of new housing units and new jobs. Scenario 4 results in the greatest number of total daily person trips, which is consistent with the fact that it includes the greatest combined number of new housing units and new jobs.

The combined auto mode share (Drive Alone and Shared Ride) under Scenarios 1 and 4 are 82.1 percent and 80.4 percent, respectively. The total number of auto trips (Drive Alone and Shared Ride) under Scenarios 1 and 4 are 536,678 and 536,290, respectively. Thus, even though the two auto modes have a declining mode share under Scenario 4 (compared with Scenario 1), the total number of auto trips remains nearly the same as under the Business As Usual scenario, due to the additional housing units and population in Scenario 4.

Understanding mode share contributes to an understanding of traffic congestion and motor vehicle levels of service, but mode share is not the basis for a standard of significance used in this EIR. Therefore, no impact finding regarding mode share is made.

Applicable Regulations:

- *Santa Clara Valley Transportation Authority Congestion Management Plan*

Significance before Mitigation: Traffic congestion under all planning scenarios, expressed in terms of intersection LOS, would be significant, requiring mitigation.

Mitigation Measures

Mitigation Measure TRANS-1a: Adopt a programmatic approach to reducing traffic with the goal of achieving no net increase in peak period motor vehicle trips from new development, with an exception for uses that directly contribute to the neighborhood character and diversity of Palo Alto (such as ground floor retail and below market rate housing). The program should, at a minimum:

- Require new development projects to prepare and implement a Transportation Demand Management (TDM) Plan to achieve the following reduction in peak period motor vehicle trips from the rates included in the Institute of Transportation Engineers' *Trip Generation Manual* for the appropriate land use category. These reductions are deemed aggressive, yet feasible, for the districts indicated.
  - 45 percent reduction in the Downtown district
  - 35 percent reduction in the California Avenue area
  - 30 percent reduction in the Stanford Research Park
  - 30 percent reduction in the El Camino Real Corridor
  - 20 percent reduction in other areas of the city

  TDM Plans must be approved by the City and monitored by the property owner on an annual basis. The Plans must contain enforcement mechanisms or penalties that accrue if targets are not met.

- Require new development projects to offset remaining peak period motor vehicle trips through one of the following methods:
  - By directly contracting with another property owner or organization to reduce trips generated from another site; or
  - By paying an annual fee to the City for use in reducing motor vehicle trips to the extent feasible through the provision of transit services, carpool/rideshare incentives, bicycle lanes, and other similar programs and improvements.

Mitigation Measure TRANS-1b: Establish and implement a policy that eliminates ("unbundles") free or subsidized parking in new commercial and residential development (i.e. requiring employees and residents to pay separately for parking).

Mitigation Measure TRANS-1c: Work to advance plans for grade separation at intersections along the Caltrain tracks to reduce traffic congestion/delay and improve safety; seek funding for design and implementation from local, regional, State, and federal sources. Ensure that future grade separation projects include a community participation and review process, and undergo environmental review. Future grade separation improvement projects would have the potential to cause environmental impacts, such as impacts associated with construction-related emissions, noise, and traffic, and aesthetics and land use impacts. These impacts, and alternatives to these grade separation projects, would be evaluated in detail when the projects are more clearly defined.

Mitigation Measure TRANS-1d: Take a leadership role in regional transportation planning and advocating for specific transit improvements and investments, such as Caltrain service enhancements, Dumbarton Express service, enhanced bus service on El Camino Real with queue jumping and curbside platforms, and additional VTA bus service.

Mitigation Measure TRANS-1e: Work with the PAUSD to ensure that decisions regarding school assignments are analyzed to reduce peak period motor vehicle trips to and from school sites.

Significance after Mitigation: Significant and Unavoidable. As summarized in Table 4.13-16, at the intersection of Middlefield Road and East Charleston Road (#2), implementation of these TDM measures would mitigate the projected impact to a less-than-significant level. However, assuming that the "no net new trips" goal in Mitigation Measure TRANS-1a would not be applied to all new housing projects or some other land uses that the City chooses to encourage, all of the scenarios would still generate some additional motor vehicle trips. The affected intersections are operating close to or below level of service standards under existing conditions, so even small increases in traffic at these intersections would trigger impacts. Therefore, all of the above traffic mitigation measures would reduce, but not eliminate the projected impacts at five of the six impacted representative study intersections, and the impact is considered *significant and unavoidable.*

TABLE 4.13-16 IMPACTED INTERSECTIONS

Impacted Intersection	Scenario Affected	Significance After Mitigation (In All Scenarios)
I-280 NB Off-Ramp and Sand Hill Road (#1) (in Menlo Park)	1,2,3,4	Significant and unavoidable
Middlefield Road and East Charleston Road (#2)	1,4	Less than significant
Alma Street and East/West Charleston Road (#4)	1,2	Significant and unavoidable
El Camino Real (SR 82)and San Antonio Road (#8) (in Mountain View)	1,2,3,4	Significant and unavoidable
Foothill Expressway/Junipero Serra Blvd and Page Mill Road (#9)	1,3,4	Significant and unavoidable
Foothill Expressway and Arastradero Road (#10)	1,3,4	Significant and unavoidable

Source: Hexagon Transportation Consultants, Inc., 2015.

All of the above traffic mitigation measures would benefit bicyclists and pedestrians, and would not cause any secondary impacts to them.

TRANS-2 Implementation of the project would not cause a roadway segment to drop below its level of service standard, or deteriorate operations that already operate at a substandard level of service. (Less than Significant– All Four Scenarios)

Summary: As described below the only roadway segment anticipated to operate with an LOS of F in 2030 is University Avenue between El Camino Real to US 101, which already operates at LOS F under Existing Conditions. None of the four scenarios would result in significant impacts on roadway segments.

The proposed Plan would substantially affect roadway segments if growth assumed during the life of the Plan would cause a substantial increase in traffic that would deteriorate levels of service at roadway segments.

The LOS for each segment is determined by comparing the traffic volume on the roadway to its capacity, as determined by the type of roadway and the number of lanes available for vehicular traffic. As shown in Table 4.13-17, daily volumes on all roadway segments would be higher in the year 2030 than today under all four of the scenarios.

When compared with Existing Conditions, none of the scenarios would cause a significant impact on any street segments. The only segment with an LOS of F (University Avenue) is already at LOS F under Existing Conditions. That is, the only segment on which the Average Daily Traffic volume exceeds its capacity is University Avenue.

TABLE 4.13-17 EXISTING AND 2030 ADT AND ROADWAY SEGMENT LOS

							Existing Conditions		Scenario 1		Scenario 2		Scenario 3		Scenario 4	
#	Street	From	To	Jurisdiction	# of Lanes	Capacity	Existing ADT	LOS	ADT	LOS	ADT	LOS	ADT	LOS	ADT	LOS
1	Sand Hill Road	I-280	El Camino Real	City	4	38,200	29,035	D	37,075	E	37,523	E	37,619	E	37,166	E
2	El Camino Real[a]	Sand Hill Road	Page Mill Road	Caltrans	6	59,300	35,862	C	43,581	D	42,866	D	43,384	D	44,176	D
3	El Camino Real[a]	Page Mill Road	San Antonio Rd	Caltrans	6	59,300	30,443	B	38,209	C	37,415	C	37,972	C	38,347	C
4	Page Mill Road [a,c]	I-280	El Camino Real	County	4	39,888	34,204	E	38,995	E	37,656	E	38,477	E	39,372	E
5	Arastradero Road	I-280	El Camino Real	City	4	38,200	15,144	A	21,605	C	20,852	C	21,200	C	21,022	C
6	Alma Street	University Ave	San Antonio Rd	City	4	38,200	28,475	D	34,596	E	34,222	E	34,535	E	34,415	E
7	Middlefield Road	University Ave	San Antonio Rd	City	2	17,300	12,492	D	13,513	D	12,543	D	12,601	D	13,047	D
8	University Avenue[b]	El Camino Real	US 101	City	2	17,300	19,022	**F**	20,226	**F**	20,146	**F**	20,220	**F**	20,301	**F**
9	Embarcadero Road	El Camino Real	US 101	City	4	38,200	24,859	C	32,646	E	31,984	D	32,794	E	32,862	E
10	Oregon Expressway[a]	El Camino Real	US 101	County	4	39,888	30,925	D	31,940	D	31,025	D	31,720	D	32,454	D
11	Charleston Road	El Camino Real	San Antonio Rd	City	2	17,300	12,371	D	16,625	E	15,663	E	16,035	E	16,440	E
12	San Antonio Road[a]	El Camino Real	US 101	City	4	38,200	35,885	E	37,745	E	37,996	E	37,669	E	37,437	E
13	Foothill Expwy/ Junipero Serra[a,d]	Sand Hill Road	Arastradero Rd	County/ City	4, 2	23,000	15,580	C	21,592	E	20,928	E	21,213	E	21,489	E

a. Roadway segments are part of the VTA CMP System Roadway Network.
b. Segment LOS **bolded** represents LOS below acceptable standards.
c. According to the "Page Mill Road Expressway Corridor Study Report", Santa Clara Roads and Airports Department, June 2015, the portion of Page Mill Road between I-280 and Porter Drive would be expanded from 4 to 6 lanes. However, the location where the ADT volume was counted (between Hansen Way and Ramos Way) would still have four lanes, so the capacity is based on four lanes under all four scenarios.
d. The portion of this segment east of Page Mill Road is called Foothill Expressway, has four lanes, and is a County Expressway. The portion of this segment west of Page Mill Road is called Junipero Serra Boulevard, has two lanes, and is not a County Expressway. The location where the ADT volume was counted (on Junipero Serra Boulevard, between Stanford Avenue and Page Mill Road) has two lanes. The capacity has been estimated as 23,000 because of the longer green time for Junipero Serra at signals.
Source: Hexagon Transportation Consultants, Inc., 2015.

On 11 out of 13 segments, the scenario with the lowest amount of ADT growth compared with Existing Conditions is Scenario 2. This is consistent with the fact that Scenario 2 assumes the lowest growth in housing units and jobs. However, even under Scenario 2, the level of service declines from the existing level of service on eight out of 13 segments.

Scenarios 1 and 4 would have the highest ADT on 11 out of 13 roadway segments, which is consistent with the fact that these scenarios include the highest number of new housing units and new jobs. In general, however, the differences in ADT under the four scenarios are fairly small and do not result in a change in level of service when the four scenarios are compared with each other. The only segment that would experience a different level of service under one of the scenarios (compared with the other scenarios) is Embarcadero Road (Segment 9), which would operate at LOS D under Scenario 2, compared with LOS E under the three other scenarios. This difference is attributable to the lower number of housing units and new jobs under Scenario 2.

Scenario 2 includes an expansion from four to six general purpose lanes on Page Mill Road between I-280 and Porter Drive (a portion of segment #4), as proposed in the County of Santa Clara's *Page Mill Road Expressway Corridor Study Report* (June 2015).[30] Page Mill Road between Porter Drive and El Camino Real (also part of segment #4) would remain four lanes, with several intersection improvements. Because the ADT count was conducted between Hansen Way and Ramos Way, where Page Mill Road would remain at four lanes, Table 4.13-17 shows this segment with four lanes and that the level of service would remain at LOS E under Scenario 2.

The level of service on the portion between I-280 and Porter Drive would be expected to improve if the capacity expansion from four to six general purpose lanes were built as assumed in Scenario 2. It would also be possible to reserve the additional lanes exclusively for high-occupancy motor vehicles (HOV) during peak periods.

Creation of HOV lanes on that portion of Page Mill Road would incentivize transit and carpooling, but somewhat reduce the benefit of the additional lanes in terms of their effect on motor vehicle level of service. The County's *Page Mill Road Expressway Corridor Study Report* also proposes a grade separation at the intersection of Foothill Expressway and Page Mill Road, which is also assumed in Scenario 2. The key to improving the motor vehicle level of service on this segment would be the proposed grade separation of through traffic on Page Mill Road at this intersection, since it is the critical constraint where capacity is less than vehicular volume.

As there would be no deterioration in the level of service due to the project at any roadway segment, impacts would be less than significant. It should be noted that the roadway segment LOS is based on daily

[30] The *Page Mill Road Expressway Corridor Study Report* gives peak hour volumes on very short portions of Page Mill Road, so the data are not directly comparable to the ADT volume for segment #4. Because the County's 2040 Expressway Plan has not yet been published, no comparison with that data is possible at this time.

volumes and provides a general representation of traffic operations on the specified segment. Intersection levels of service during peak hours, which present a more detailed picture of traffic operations, are analyzed in Impact TRANS-1.

Construction-Period Impacts

The section above addresses potential long-term impacts to roadway segment operations. Short-term impacts to roadway segment operations could potentially occur during the construction of individual projects that would be built during the life of the proposed Plan. Each of the four scenarios makes different assumptions about the growth in households and jobs due to new development and the changes to the city's transportation infrastructure by the year 2030. The growth in households and jobs would be the result of new development projects, which would generate site-specific construction-related traffic during the time period that each project is under construction. Changes to the city's transportation infrastructure would also generate construction-related traffic. All construction-related traffic impacts would be temporary, even if significant, and are therefore not included in the forecasting model assumptions for the year 2030. In some cases, such as building a trench for Caltrain, construction-related traffic impacts would likely be substantial, but would be addressed through project-specific review and mitigation, not as part of the proposed Plan. The City and/or VTA, would require major projects to address construction traffic impacts prior to approval.

Applicable Regulations:

- *Santa Clara Valley Transportation Authority Congestion Management Plan*

Significance before Mitigation: Development under all four scenarios would not result in an existing roadway segment to drop below its level of service standard, or deteriorate operations that already operate at a substandard level of service. Therefore, traffic congestion expressed as roadway segment LOS would be less than significant under all planning scenarios.

TRANS-3	**Implementation of the project would cause a freeway segment or ramp to drop below its level of service standard, or deteriorate operations that already operate at a substandard level of service. (Significant and Unavoidable – All Four Scenarios)**

Summary: As described below all four scenarios would result in significant impacts on six freeway segments during the PM peak hour and on one freeway segment during both the AM and PM peak hours. None of the scenarios would cause an impact on any of the freeway ramps.

The proposed Plan would substantially affect freeway facilities if growth assumed during the life of the Plan would cause an increase in traffic that would deteriorate levels of service at freeway segments and ramps. Motor vehicle level of service standards and definitions of significant impact for freeways in Santa Clara County have been established by the VTA as part of the Congestion Management Program. A scenario would

cause a freeway segment impact if it caused the segment to operate at LOS F, or, if it is already operating at LOS F, if the scenario would add traffic in excess of one percent of segment capacity. Although not explicitly stated in the CMP TIA guidelines, freeway ramps can be analyzed in the same fashion as freeway segments. The City/County Association of Governments of San Mateo County (C/CAG) administers the Congestion Management Program for San Mateo County and has established a motor vehicle Level of Service standard of LOS F for the segment of US 101 between Whipple Avenue and the Santa Clara County line and a motor vehicle Level of Service standard of LOS D for the segment of I-280 between Woodside Road (SR 84) and the Santa Clara County line. C/CAG has traditionally used the same definition of significant impact as the VTA.

In analyzing the freeway segments and ramps, the 2030 travel demand forecasting model was used to project the increase in traffic volumes under all four scenarios.

Freeway Segments

The results of the freeway segments evaluation is presented in Table 4.13-18. The volumes shown in Table 4.13-18 represent the increase (or decrease) in the number of trips made to and/or from Palo Alto on each freeway segment under each scenario in 2030. That is, the table excludes 2030 volumes related to regional traffic growth and shows only the increase or decrease in trips that begin and/or end in Palo Alto. Because trips that begin outside Palo Alto and end outside Palo Alto, due to regional traffic growth, are not included in the table, it is possible to identify freeway segments where one or more of the planning scenarios would have a significant impact.

Several freeway segments on US 101 and I-280 show a decrease in the number of Palo Alto-related trips under all four scenarios. This model result is primarily because the model projects a 25 percent to 30 percent increase in regional freeway volumes in 2030. Because the freeways would become so much more congested by 2030, the model's trip assignment process assumes that many people will seek alternate routes in order to avoid the freeways. Thus, the negative number of trips shown in Table 4.13-18 for some segments indicates that there would be so much more regional traffic on that freeway segment that fewer Palo Alto-related trips would use the freeway than under existing conditions. Those trips would presumably be made by taking a different mode (i.e., Caltrain instead of the freeway) or a different route (i.e., Foothill Expressway, El Camino Real, Alma Street, Middlefield Road, etc.).

For segments that are operating at LOS F, the increased volume for each scenario was compared to one percent of the segment's capacity to determine if there would be a significant impact. For example, for all segments on US 101 for which the existing LOS is F, if a scenario would result in more than 97 additional trips (one percent of capacity is 97), then the scenario would result in a significant impact. For segments that are not operating at LOS F, the volume of additional trips was examined to see if they would cause the level of service to become LOS F.

TABLE 4.13-18 FREEWAY SEGMENT EVALUATION

								Increase in Palo Alto Volumes				Trip Reduction Required to Avoid Impact[c]			
Freeway	Segment	Dir.	Total # of Lanes	Capacity (vph)[a]	1% of Cap.	Peak Hour	Existing LOS[b]	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 1	Scenario 2	Scenario 3	Scenario 4
US 101	Rengstorff Ave to San Antonio Road	NB	4.5	9,700	97	AM	**F**	**265**	**232**	**257**	**258**	63%	58%	82%	62%
						PM	**F**	**244**	**174**	**185**	**249**	60%	44%	48%	61%
US 101	San Antonio Road to Oregon Expressway	NB	4.5	9,700	97	AM	**F**	**277**	**265**	**264**	**266**	65%	63%	63%	64%
						PM	E	379	299	296	360				
US 101	Oregon Expressway to Embarcadero Rd	NB	4.5	9,700	97	AM	D	110	101	104	116				
						PM	D	414	228	268	402				
US 101	Embarcadero Road to University Ave	NB	4.5	9,700	97	AM	**F**	15	4	6	16				
						PM	**F**	**312**	**170**	**218**	**281**	69%	43%	56%	65%
US 101	University Avenue to Willow Road	NB	4.5	9,700	97	AM	**F**	-63	-109	-66	-71				
						PM	**F**	-57	-171	-129	-93				
US 101	Willow Road to University Avenue	SB	4.5	9,700	97	AM	**F**	-340	-367	-342	-263				
						PM	**F**	-61	-87	-72	-43				
US 101	University Avenue to Embarcadero Rd	SB	4.5	9,700	97	AM	**F**	-436	-481	-450	-380				
						PM	**F**	-90	-109	-101	-70				
US 101	Embarcadero Rd to Oregon Expressway	SB	4.5	9,700	97	AM	E	-130	-138	-107	-155				
						PM	**F**	-209	-204	-199	-237				
US 101	Oregon Expressway to San Antonio Ave	SB	4.5	9,700	97	AM	E	242	227	268	220				
						PM	**F**	**156**	**151**	**164**	**134**	38%	36%	41%	28%
US 101	San Antonio Avenue to Rengstorff Ave	SB	4.5	9,700	97	AM	D	182	182	219	173				
						PM	**F**	**114**	**107**	**131**	**99**	15%	9%	26%	2%
I-280	El Monte to Page Mill Road	NB	4	9,200	92	AM	D	-259	-324	-296	-262				
						PM	C	-40	-53	-40	-26				

TABLE 4.13-18 FREEWAY SEGMENT EVALUATION

								Increase in Palo Alto Volumes				Trip Reduction Required to Avoid Impact[c]			
Freeway	Segment	Dir.	Total # of Lanes	Capacity (vph)[a]	1% of Cap.	Peak Hour	Existing LOS[b]	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 1	Scenario 2	Scenario 3	Scenario 4
I-280	Page Mill Road to Alpine Road	NB	4	9,200	92	AM	C	-11	-18	-13	3				
						PM	D	-25	-69	-36	-49				
I-280	Alpine Road to Sand Hill Road	NB	4	9,200	92	AM	A	-61	-52	-50	-36				
						PM	**F**	-50	-109	-73	-75				
I-280	Sand Hill Road to Woodside Road (SR 84)	NB	4	9,200	92	AM	A	323	305	323	354				
						PM	**F**	**180**	**106**	**128**	**130**	49%	13%	28%	29%
I-280	Woodside Road (SR 84) to Sand Hill Road	SB	4	9,200	92	AM	A	222	145	180	221				
						PM	**F**	**264**	**248**	**263**	**285**	65%	63%	65%	68%
I-280	Sand Hill Road to Alpine Road	SB	4	9,200	92	AM	A	-17	-76	-40	-32				
						PM	**F**	9	31	10	31				
I-280	Alpine Road to Page Mill Road	SB	4	9,200	92	AM	D	-17	-79	-42	-38				
						PM	C	-153	-158	-158	-134				
I-280	Page Mill Road to El Monte Avenue	SB	4	9,200	92	AM	C	-3	-15	-7	-4				
						PM	**F**	-397	-439	-434	-364				

Notes: **Bold and shaded** indicates a significant impact. For segments already operating at LOS F, an impact occurs if the additional trips generated by a scenario are greater than 1% of the segment's capacity. For segments not already operating at LOS F, an impact occurs if the scenario would cause the LOS to drop to F. It was assumed that if the additional trips generated by a scenario were greater than 10% of capacity, the level of service would drop by one grade level. If additional trips were greater than 20% of capacity, the level of service would drop by two grade levels.

a. Capacity is based on the capacities cited in the VTA's Transportation Impact Guidelines, October 2014.

b. Sources for Existing LOS: Santa Clara County LOS levels taken from the VTA CMP Monitoring Report, 2013.
San Mateo County LOS levels for US 101 taken from a recent TIA prepared for a proposed project.
San Mateo County LOS levels for I-280 taken from C/CAG 2013 Monitoring Report.

c. For impacted intersections, this is the amount by which the increased volume is in excess of the segment capacity as a percentage of the total increased volume.

Source: Hexagon Transportation Consultants, Inc., 2015.

All four scenarios would have a significant impact on the following seven freeway segments:

- Northbound US 101, between Rengstorff Avenue and San Antonio Road, both AM and PM peak hours
- Northbound US 101, between San Antonio Road and Oregon Expressway, AM peak hour
- Northbound US 101, between Embarcadero Road and University Avenue, PM peak hour
- Southbound US 101, between Oregon Expressway and San Antonio Road, PM peak hour
- Southbound US 101, between San Antonio Road and Rengstorff Avenue, PM peak hour
- Northbound I-280, between Sand Hill Road and Woodside Road (SR 84), PM peak hour
- Southbound I-280, between Woodside Road (SR 84) and Sand Hill Road, PM peak hour

Caltrans has no plans to widen the freeways beyond what is already assumed in the capacities shown in the table, and improvements to the freeways are outside the City of Palo Alto's jurisdiction. Therefore, all four scenarios would result in *significant* impacts at the six freeway segments presented above.

Freeway Ramps

To analyze potential impacts on ramps, the additional volume generated by each of the scenarios was added to the existing ramp volume. Existing ramp volumes were obtained from Caltrans. The total volume under each scenario was compared to the ramp capacity. A significant impact would occur if the volume-to-capacity ratio for a given ramp would exceed 1.0. Table 4.13-19 presents the results of the freeway ramp evaluation. None of the scenarios would have a significant impact on any of the ramps, because the volume-to-capacity ratio would remain less than 1.0 at all of the ramps. None of the scenarios would cause an impact on any of the freeway ramps; *no impact* would occur.

Applicable Regulations:

- *Santa Clara Valley Transportation Authority Congestion Management Plan*

Significance before Mitigation: Traffic congestion measured on freeway segments would be considered significant under all scenarios, requiring mitigation. There would be no impact to freeway ramps.

Mitigation Measures

Mitigation Measure TRANS-3a: The City shall require new development projects to prepare and implement TDM programs, as described in TRANS-1a. TDM programs for worksites may include measures such as private bus services and free shuttle services to transit stations geared towards commuters.

Mitigation Measure TRANS-3b: Take a leadership role in regional transportation planning and advocating for specific multi-modal freeway improvements, such as dynamic pricing, express bus service, transit and HOV priority, and other enhanced mobility options.

TABLE 4.13-19 FREEWAY RAMP EVALUATION

				Existing			Scenario 1			Scenario 2			Scenario 3			Scenario 4		
Interchange	Code	Ramp	Cap.	Model	Count	v/c	Model	Adj. Volume	v/c	Model	Adj. Volume	v/c	Model	Adj. Volume	v/c	Model	Adj. Volume	v/c
US 101/ University	1	NB on	20,000	6,430	8,800	0.44	7,085	9,455	0.47	6,715	9,085	0.45	6,885	9,255	0.46	6,765	9,135	0.46
	2	NB off	40,000	8,185	10,500	0.26	14,980	17,295	0.43	14,565	16,880	0.42	14,820	17,135	0.43	14,680	16,995	0.42
	3	SB off	36,000	4,415	12,400	0.34	6,870	14,855	0.41	6,070	14,055	0.39	6,765	14,750	0.41	6,470	14,455	0.40
	4	SB on	40,000	9,940	15,000	0.38	11,005	16,065	0.40	10,585	15,645	0.39	10,010	15,070	0.38	10,210	15,270	0.38
US 101/ Embarcadero /Oregon Expressway	5	NB on fr. Embarcadero Road WB	20,000	1,155	1,950	0.10	2,220	3,015	0.15	2,065	2,860	0.14	2,195	2,990	0.15	2,240	3,035	0.15
	6	NB off to Embarcadero Road EB	20,000	3,735	5,800	0.29	5,035	7,100	0.36	4,965	7,030	0.35	5,145	7,210	0.36	5,215	7,280	0.36
	7	NB on fr. Embarcadero EB (loop)	18,000	60	3,850	0.21	310	4,100	0.23	295	4,085	0.23	305	4,095	0.23	300	4,090	0.23
	8	NB off to Embarcadero Road WB (loop)	18,000	9,895	6,800	0.38	13,290	10,195	0.57	12,765	9,670	0.54	12,975	9,880	0.55	12,920	9,825	0.55
	9	SB off to Oregon Expressway	20,000	10,070	12,900	0.65	8,970	11,800	0.59	8,865	11,695	0.58	9,600	12,430	0.62	9,485	12,315	0.62
	10	SB off to Embarcadero Road EB (loop)	18,000	1,545	2,750	0.15	1,050	2,255	0.13	1,045	2,250	0.13	1,160	2,365	0.13	1,155	2,360	0.13
	11	WB Embarcadero to WB Oregon Expressway (loop)	18,000	1,255	6,600	0.37	2,275	7,620	0.42	2,370	7,715	0.43	2,340	7,685	0.43	2,480	7,825	0.43
	12	SB off to Embarcadero RoadWB	20,000	2,410	2,750	0.14	1,425	1,765	0.09	1,200	1,540	0.08	935	1,275	0.06	1,555	1,895	0.09
	13	SB on fr. Oregon Expressway EB	40,000	3,065	8,000	0.20	9,980	14,915	0.37	9,515	14,450	0.36	9,690	14,625	0.37	9,465	14,400	0.36
	14	NB on fr. Oregon Expressway EB (loop)	18,000	7,525	16,000	0.89	7,330	15,805	0.88	7,180	15,655	0.87	7,890	16,365	0.91	8,025	16,500	0.92
	15	NB off to Oregon ExpresswayWB	20,000	2,010	7,200	0.36	2,740	7,930	0.40	2,575	7,765	0.39	2,840	8,030	0.40	2,845	8,035	0.40
US 101/San Antonio	16	NB on	18,000	440	1,800	0.10	3,530	4,890	0.27	3,530	4,890	0.27	3,335	4,695	0.26	3,385	4,745	0.26
	17	NB off	20,000	5,410	8,200	0.41	6,425	9,215	0.46	5,955	8,745	0.44	6,015	8,805	0.44	6,000	8,790	0.44
	18	NB on (loop)	18,000	8,705	10,900	0.61	9,605	11,800	0.66	9,235	11,430	0.64	9,270	11,465	0.64	9,235	11,430	0.64

TABLE 4.13-19 FREEWAY RAMP EVALUATION

Interchange	Code	Ramp	Cap.	Existing			Scenario 1			Scenario 2			Scenario 3			Scenario 4		
				Model	Count	v/c	Model	Adj. Volume	v/c	Model	Adj. Volume	v/c	Model	Adj. Volume	v/c	Model	Adj. Volume	v/c
	19	SB off (loop)	18,000	540	1,500	0.08	1,040	2,000	0.11	1,000	1,960	0.11	950	1,910	0.11	1,020	1,980	0.11
	20	SB off	20,000	7,970	10,300	0.52	10,360	12,690	0.63	9,880	12,210	0.61	9,755	12,085	0.60	9,705	12,035	0.60
I-280/Sandhill	21	NB on fr. Sandhill WB	20,000	11,975	9,000	0.45	14,315	11,340	0.57	13,865	10,890	0.54	13,940	10,965	0.55	13,895	10,920	0.55
	22	NB off to Sandhill	20,000	8,260	5,300	0.27	5,420	2,460	0.12	5,465	2,505	0.13	5,500	2,540	0.13	5,245	2,285	0.11
	23	SB on fr. Sandhill EB	20,000	275	1,050	0.05	520	1,295	0.06	450	1,225	0.06	460	1,235	0.06	480	1,255	0.06
	24	SB off to Sandhill WB	20,000	0	910	0.05	5	915	0.05	5	915	0.05	5	915	0.05	5	915	0.05
	25	SB on fr. Sandhill WB (loop)	18,000	2,855	4,200	0.23	2,865	4,210	0.23	2,800	4,145	0.23	2,785	4,130	0.23	2,775	4,120	0.23
	26	NB off to Sandhill WB (loop)	18,000	215	1,100	0.06	695	1,580	0.09	610	1,495	0.08	605	1,490	0.08	635	1,520	0.08
	27	NB on fr. Sandhill EB (loop)	18,000	0	1,000	0.06	25	1,025	0.06	0	1,000	0.06	15	1,015	0.06	15	1,015	0.06
	28	SB off to Sandhill EB (loop)	18,000	13,480	9,100	0.51	16,275	11,895	0.66	15,590	11,210	0.62	15,550	11,170	0.62	15,690	11,310	0.63
I-280/ Page Mill	29	NB off	40,000	13,320	12,000	0.30	13,830	12,510	0.31	12,830	11,510	0.29	12,935	11,615	0.29	13,180	11,860	0.30
	30	SB on	20,000	1,285	1,900	0.10	2,155	2,770	0.14	2,020	2,635	0.13	2,050	2,665	0.13	2,095	2,710	0.14
	31	SB off	20,000	12,700	7,900	0.40	14,805	10,005	0.50	14,040	9,240	0.46	14,160	9,360	0.47	14,280	9,480	0.47
	32	NB on	20,000	6,340	6,300	0.32	11,165	11,125	0.56	10,705	10,665	0.53	10,765	10,725	0.54	11,035	10,995	0.55
	33	NB on (loop)	18,000	2,740	2,000	0.11	2,290	1,550	0.09	2,190	1,450	0.08	2,200	1,460	0.08	2,255	1,515	0.08
	34	SB on (loop)	36,000	6,760	8,900	0.25	5,230	7,370	0.20	4,915	7,055	0.20	5,020	7,160	0.20	4,900	7,040	0.20
I-280/ Alpine	35	NB off	20,000	1,905	8,600	0.43	3,910	10,605	0.53	3,635	10,330	0.52	3,665	10,360	0.52	3,775	10,470	0.52
	36	SB on	20,000	2,185	2,250	0.11	1,435	1,500	0.08	1,380	1,445	0.07	1,375	1,440	0.07	1,375	1,440	0.07
	37	SB off	20,000	2,225	4,000	0.20	2,115	3,890	0.19	2,170	3,945	0.20	2,105	3,880	0.19	2,110	3,885	0.19
	38	NB on	20,000	2,255	4,300	0.22	975	3,020	0.15	1,045	3,090	0.15	980	3,025	0.15	1,000	3,045	0.15
	39	SB on (loop)	18,000	3,890	5,300	0.29	3,660	5,070	0.28	3,490	4,900	0.27	3,515	4,925	0.27	3,465	4,875	0.27

Note: Existing counts for all ramps were obtained from the Caltrans website, http://traffic-counts.dot.ca.gov/docs/2013-ramp-vol-district04.pdf.
Source: Hexagon Transportation Consultants, Inc., 2015.

Significance after Mitigation: Significant and Unavoidable. Table 4.13-19 shows the percentage by which a TDM mitigation program would need to reduce the increased trip volume in order to avoid an impact. Based on recent experience in Bay Area communities, trip reductions of up to 45 percent are feasible with implementation of TDM programs that include such measures as private bus services and free shuttle services to transit stations.[31] Provision of additional public transit services, especially express bus routes geared towards commuters, would also help mitigate freeway impacts but is beyond the control of the City. Trip reductions of more than 40 percent are generally not considered feasible for a more geographically dispersed program that includes residential uses, even with very aggressive TDM programs. Based on that rough guideline, implementation of TDM mitigation measures would eliminate the projected impact on the following freeway segments, and impacts to these segments would be *less than significant*:

- Southbound US 101, between Oregon Expressway and San Antonio Road, PM peak hour (All four scenarios)
- Southbound US 101, between San Antonio Road and Rengstorff Avenue, PM peak hour (All four scenarios)
- Northbound I-280, between Sand Hill Road and Woodside Road (SR 84), PM peak hour (Scenarios 2, 3, and 4)

However, on the following four impacted freeway segments, the trip reduction needed to avoid an impact is greater than 40 percent and therefore the additional TDM mitigation measure would reduce but not eliminate the impact:

- Northbound US 101, between Rengstorff Avenue and San Antonio Road, both AM and PM peak hours. (All four scenarios)
- Northbound US 101, between San Antonio Road and Oregon Expressway, AM peak hour. (All four scenarios)
- Northbound US 101, between Embarcadero Road and University Avenue, PM peak hour. (all four scenarios)
- Southbound I-280, between Woodside Road (SR 84) and Sand Hill Road, PM peak hour. (All four scenarios)

Thus, these impacts are considered *significant and unavoidable*.

[31] A few very strong employer-based TDM programs, such as those at Google and LinkedIn, have achieved a 45 percent trip reduction by providing private bus services, free shuttle services to transit stations, free transit passes, and many other measures. A 55 percent Drive Alone rate has also been reported for a group of employers in downtown Palo Alto. (See: http://www.paloaltoonline.com/print/story/2015/10/16/in-search-of-the-new-commute.) The 45 percent usage of alternative modes achieved by these employer-based programs can be partially attributed to their location near a Caltrain station and/or large investment in private bus services. For a citywide program that includes residential projects, therefore, trip reductions of more than 40 percent would be unlikely.

TRANS-4 Implementation of the project would not impede the function of planned bicycle or pedestrian facilities. (Less than Significant– All Four Scenarios)

Summary: As described below, Scenario 2 includes the expansion of a segment of Page Mill Road that generally can be considered detrimental to pedestrians. However, Scenario 2 also includes construction of improved bicycle and pedestrian facilities along that segment. As discussed below, that scenario would enhance rather than degrade the bicycle and pedestrian facilities. None of the other scenarios include components that would impede the function of planned bicycle or pedestrian facilities.

The Comp Plan Update would substantially affect the function of planned bicycle or pedestrian facilities if transportation investments or growth assumed during the life of the Plan would interfere with the development of the Palo Alto *Bicycle + Pedestrian Transportation Plan* (2012) or the operation of pedestrian and bicycle facilities in Palo Alto.

All four scenarios assume the implementation of all improvements included in the City's *Bicycle + Pedestrian Transportation Plan*. In addition, under Scenarios 2, 3, and 4 new bicycle and pedestrian improvements would be guided by concept area plans in the California Avenue area.

Scenario 2 includes the expansion of Page Mill Road from four to six lanes between I-280 and Porter Drive, and wider roadways can generally be considered detrimental to pedestrians. However, Scenario 2 also includes construction of improved bicycle and pedestrian facilities along that segment of Page Mill Road. For example, on Page Mill Road between Foothill Expressway and I-280, a new Class I shared-use path would be provided on one side, in addition to adding another travel lane in each direction to the roadway. There are currently no pedestrian facilities at all between I-280 and Deer Creek Road. Thus, on balance, that scenario would enhance rather than degrade the bicycle and pedestrian facilities. Therefore, the proposed Plan would not result in an impact for pedestrians and bicycle travel in that facility.

In both Scenarios 3 and 4, the trench for the Caltrain tracks at the East Meadow Drive and East Charleston Road crossings would improve the function of bicycle and pedestrian crossings significantly at these locations.

Applicable Regulations:

- Santa Clara Valley Transportation Authority Bicycle Program
- *Santa Clara County Bicycle Plan*
- *Palo Alto Bicycle + Pedestrian Transportation Plan*

Significance before Mitigation: Compliance with existing City regulations and procedures would maintain existing and may improve the function of planned bicycle and pedestrian facilities. Therefore, impacts on bicycle and pedestrian facilities would be considered less than significant for all planning scenarios.

TRANS-5 Implementation of the project would not increase demand for pedestrian and bicycle facilities that cannot be met by existing or planned facilities. (Less than Significant– All Four Scenarios)

Summary: As described below, all four scenarios would increase demand for pedestrian and bicycle facilities, however, the City would continue to implement its adopted Palo Alto *Bicycle + Pedestrian Transportation Plan* (2012) and the increased demand for pedestrian and bicycle facilities would be met by existing or planned facilities. Therefore, none of the scenarios would have a significant impact.

The proposed Plan would substantially affect the function of planned bicycle or pedestrian facilities if the transportation investments or growth assumed during the life of the Plan would create more demand than could be met by existing or planned facilities.

All four scenarios assume the implementation of all improvements included in the City's *Bicycle + Pedestrian Transportation Plan*. All four scenarios would increase demand for pedestrian and bicycle facilities in that they each assume (to varying degrees) an increase in population and employment, and any increase in population and employment would also increase the number of bicyclists and pedestrians in the city. Scenarios 2, 3, and 4 also include specific improvements or other policies that would increase demand for pedestrian and bicycle facilities beyond the level that would occur under the Scenario 1. Under Scenarios 2, 3, and 4 new bicycle and pedestrian improvements would be guided by concept area plans in the California Avenue area. The specific assumptions of each scenario that would increase demand for pedestrian and bicycle facilities are provided in Chapter 3 of the TIA.

The Palo Alto travel demand forecasting model estimates that the existing mode share for bicycling is 2.8 percent, as shown in Table 4.13-7. To provide context for that estimate, a typical Bay Area city currently has a one to two percent bike mode share in MTC's regional model, so 2.8 percent is double the bike share in most other cities in the region. Both the Palo Alto model and the regional model include both home-based trips (trips that begin or end at the traveler's home) and non-home-based trips, and they both include all common trip purposes, including work, school, shopping, and social/recreational trips. At the state level, Caltrans has recently adopted goals to double the mode share for walking and triple the mode share for bicycling statewide.[32]

Because the census data for Palo Alto shows a bike mode share of 8.6 percent as the means of transportation to work, it is important to understand the differences between these two data sources. Census data for Palo Alto reports the mode choice of Palo Alto residents, and only for their journey to work. The travel demand forecasting model includes all trips to, from, and within Palo Alto, regardless of the traveler's residence and regardless of trip purpose. Because of the jobs – housing imbalance in Palo Alto, many commute trips are made into and out of the city every day by non-Palo Alto residents, and very few of those trips are made by bicycle. In addition to those journey-to-work trips, Palo Alto is a destination for non-Palo Alto residents for

[32] Caltrans, 2015, *Strategic Management Plan 2015 – 2020*, page 11.

many other trip purposes (e.g., shopping at Stanford Shopping Center, restaurants downtown, etc.) and relatively few of those trips will be made by bicycling, simply because they are longer than most trips that are entirely within Palo Alto. In short, it is primarily the relatively longer distance trips into and out of Palo Alto by non-residents that likely account for the 2.8 percent bike mode share estimated by the model.

All four 2030 scenarios assume that Palo Alto's adopted *Bicycle + Pedestrian Transportation Plan* will be implemented. The increase in mode share for bicycling from 2.8 percent under Existing Conditions to 3.1 percent or 3.2 percent under all four future scenarios, is primarily the result of the improvement in bicycle facilities resulting from implementation of that plan. In addition, since virtually all the new housing units in all four scenarios are assumed to be multi-family housing located in mixed use corridors, the resulting increase in development density also serves to increase the proportion of people choosing to bike to some nearby destinations. Employer incentives for bicycling would also be expected to contribute to the bicycling mode share in Scenarios 2, 3, and 4.

The *Bicycle + Pedestrian Transportation Plan* includes an objective to "double the rate of bicycling for both local and total work commutes by 2020 to 15 percent and 5 percent respectively," and the existing Comprehensive Plan includes goals and strategies that support that objective. The 3.1 to 3.2 percent bicycling mode share for the four 2030 scenarios is a model output, as calculated by the Palo Alto travel demand forecasting model for purposes of this Draft EIR, not a goal or objective. Also, the mode share calculated by the model is for all trip purposes, not just work trips.

Similarly, the increase in mode share for walking, from 7.9 percent under Existing Conditions to 8.1 percent or 8.2 percent under Scenarios 1, 2, and 3, is also attributable to improved pedestrian facilities resulting from implementing the *Bicycle + Pedestrian Transportation Plan*. The substantial increase to 8.6 percent in the walking mode share under Scenario 4 is due to the fact that this scenario includes the greatest development density, due to the inclusion of multi-family housing on corridors that include other land uses, so that people may walk to more destinations. The policy of charging for parking in the Downtown and California Avenue areas also increases the attractiveness of walking instead of driving.

All measures to promote bicycle and pedestrian travel would increase the number of trips made by walking and biking, but they would not increase demand beyond the capacity of the planned pedestrian and bicycle facilities.

Applicable Regulations:

- Santa Clara Valley Transportation Authority Bicycle Program
- *Santa Clara County Bicycle Plan*
- Palo Alto *Bicycle + Pedestrian Transportation Plan*

Significance before Mitigation: All scenarios would meet demand for pedestrian and bicycle facilities, so this impact would be considered less than significant.

TRANS-6 Implementation of the project would impede the operation of a transit system as a result of congestion. (Significant and Unavoidable – All Four Scenarios)

Summary: As described below, all scenarios would cause some degradation in level of service on roadway segments and intersections. Transit services that travel on those roadway segments and use those impacted intersections would be slowed down by the increased congestion. Thus, all four scenarios would have a significant impact on transit operations by increasing congestion.

The proposed Plan would substantially impede the operation of the transit system if transportation investments or growth assumed during the life of the plan would result in substantial increased levels of congestion at intersections and roadway segments where bus and shuttle services operate.

Although this is a transit-related impact, it can only be evaluated in light of the projected levels of congestion at the intersections and on the roadway segments where bus and shuttle services operate. Additional roadway congestion would not impact Caltrain operations. Buses are subject to the same delays caused by roadway congestion as other motor vehicles. In fact, travel times for buses are even more sensitive to congestion than other vehicular traffic as it becomes more difficult for bus drivers to merge back into a traffic lane after pulling over into a bus stop. Thus, if a segment or intersection becomes more congested in the future, buses would experience longer travel times.

The exception to this congestion impact on transit would be an exclusive lane for buses, as proposed by the VTA in some of the alternatives in its El Camino Real Bus Rapid Transit (BRT) Traffic Operations Analysis Report, but none of the scenarios included in this TIA incorporate a dedicated lane for buses within Palo Alto. Scenario 4 includes queue jump lanes for buses on El Camino Real to allow them to proceed more quickly through congested intersections than they otherwise would.

All four scenarios would cause some degradation in level of service on at least one roadway segment (see Table 4.13-17, Existing and 2030 ADT and Roadway Segment LOS) and have a significant impact on multiple intersections (see Table 4.13-10, Existing and 2030 Intersection LOS). Transit services that travel on those roadway segments and use those impacted intersections would be slowed down by the increased congestion. Thus, all four scenarios would have a *significant* impact on transit operations by increasing congestion.

Applicable Regulations:

- *Santa Clara Valley Transportation Authority Congestion Management Plan*

Significance before Mitigation: All four planning scenarios assume growth that would cause congestion which would in turn impede transit service. This impact would be considered significant, requiring mitigation.

Mitigation Measures

Mitigation Measure TRANS-6: Provide traffic signal prioritization for buses at Palo Alto intersections, focusing first on regional transit routes. Also, provide queue jump lanes and curbside platforms for buses on El Camino Real.

In concert with Mitigation Measure TRANS-6, Mitigation Measures TRANS-1a, TRANS-1b, and TRANS-3 would eliminate the impact on transit at the following intersections, which are projected to operate at a substandard level of service and are used by at least one bus route:

- Middlefield Road and East Charleston Road (#2) under Scenarios 1 and 4
- El Camino Real (SR 82) and San Antonio Road (#8) under Scenarios 1, 2, 3, and 4
- Foothill Expressway and Page Mill Road (#9) under Scenarios 1, 3, and 4
- Foothill Expressway and Arastradero Road (#10) under Scenarios 1, 3, and 4
- Alma Street and East/West Charleston Road (#4) under Scenarios 1 and 2

VTA Route 88 runs on East/West Charleston Road and crosses the Caltrain tracks and Alma Street. The intersection of Alma Street and East/West Charleston Road (#4), is one of the impacted intersections under Scenarios 1 and 2, but signal *pre-emption* for VTA's bus service would not be possible at this location, due to the railroad crossing and the need for Caltrain to have signal pre-emption capabilities. However, signal *priority* for VTA buses should be possible at this intersection, and would provide sufficient mitigation to eliminate the impact on transit at this intersection. However, impacts on transit at all intersections and segments where buses operate would not be eliminated.

No further feasible mitigation measures have been identified. Thus, all four scenarios would have a significant impact on transit operations by increasing congestion. These impacts are considered *significant and unavoidable*.

Significance after Mitigation: Significant and Unavoidable.

TRANS-7 Implementation of the project would not create demand for transit services that cannot be met by current or planned services. (Less than Significant–All Four Scenarios)

Summary: As described below, all scenarios would increase demand for transit services. Scenarios 3 and 4 include several additional policies that would increase demand for transit. The only service that is likely to approach full capacity is Caltrain, but its capacity will not be exceeded, assuming planned and funded service enhancements (including Caltrain modernization) are implemented. None of the scenarios would create more demand than could be met by existing or planned facilities.

The proposed Plan would substantially impede the operation of the transit system if growth assumed during the life of the plan would result in substantial increased levels of congestion at intersections and roadway segments where bus and shuttle services operate.

Table 4.13-20 presents the number of boardings and the number of transit trips for each of the four Comprehensive Plan scenarios. The table breaks down that total number of transit trips into the number of boardings made on different transit service providers. Chapter 4 of the TIA provides more details on the methodology utilized to estimate transit service and the assumptions related to transit improvements under each scenario.

TABLE 4.13-20 EXISTING AND 2030 DAILY TRANSIT BOARDINGS - TRIPS TO, FROM, AND WITHIN PALO ALTO

Mode	2013	Scenario 1	Scenario 2	Scenario 3	Scenario 4
BART	2,872	3,758	3,430	3,556	3,984
Caltrain	13,883	23,930	21,947	23,571	25,269
VTA Bus	8,177	8,739	8,473	8,719	11,328
VTA LRT	762	1,445	1,361	1,421	1,582
SamTrans	2,636	3,130	2,934	3,115	3,918
Stanford Shuttles	6,197	8,913	8,041	8,496	10,640
Caltrain Shuttles	4,376	6,971	6,472	6,886	7,178
Palo Alto Shuttles	2,114	3,424	2,849	3,397	4,179
Muni	3,036	1,867	1,780	1,852	1,967
Total	**44,053**	**62,177**	**57,287**	**61,013**	**70,045**
Transit Trips	29,494	44,503	41,659	43,820	51,975
Boardings/Trip	1.49	1.40	1.38	1.39	1.35

Source: Hexagon Transportation Consultants, Inc., 2015.

The following two improvements are included in the model's 2030 transit assumptions:

- The increased Caltrain service level included in the *Peninsula Corridor Electrification Project Environmental Impact Report* (2014). This includes shorter headways and increased travel speeds in 2030, as well as electrification of the trains. All four scenarios in this analysis include the same assumption regarding future Caltrain service levels.[33]
- Implementation of bus rapid transit (BRT) on El Camino Real within the existing six general purpose lanes, with 14 curbside bulbout stations along the 17.6-mile El Camino Real corridor between the Palo Alto Transit Center and downtown San Jose, and bus signal priority at all signalized intersections that do not currently have it. Scenarios 1, 2, and 3 include this assumption regarding BRT, which corresponds to Alternative 2 in the VTA's *El Camino Real Bus Rapid Transit Project Environmental Impact Report/Environment Assessment* (August 2014). Scenario 4 includes a different assumption as described below.[34]

[33] The projected 2030 Caltrain boardings presented in Table 4.13-16 are not directly comparable to the ridership estimates in the *Peninsula Corridor Electrification Project Environmental Impact Report*, which presents only boardings that occur at each station (i.e., trips originating from the Palo Alto and California Avenue stations), but not boardings that occur at other stations for trips to Palo Alto. Also, whereas the Palo Alto Comprehensive Plan Update and this TIA focus on the year 2030 for the future scenarios, the Caltrain Electrification EIR focuses on the years 2020 and 2040. However, the general Caltrain ridership trend presented in Table 4.13-16 is consistent with the trend presented in the Caltrain Electrification EIR.

[34] The projected VTA bus boardings presented in Table 4.13-16 are not comparable to the ridership figures in the VTA's *El Camino Real Bus Rapid Transit Project Environmental Impact Report/Environment Assessment* (August 2014) for a number of reasons. That EIR presents ridership

Scenario 4 was designed to be the most "pro-transit" of the four planning scenarios. Accordingly, it includes several specific assumptions that are different from the other three scenarios, as follows:

- Bus Rapid Transit (BRT). Scenario 4 assumes the improvements included in Scenarios 1,2, and 3, plus a short dedicated lane for transit in Santa Clara and bus queue jump lanes at intersections in Palo Alto, where possible. Scenario 4 corresponds to Alternative 3b in VTA's BRT EIR, with the addition of queue jump lanes in Palo Alto. The bus queue jump lanes would be created by removing on-street parking and narrowing the existing general purpose lanes close to the intersection, but not eliminating any general purpose lanes. The lane would be used by both bicycles and buses. Queue jump lanes allow buses to proceed through congested intersections more quickly than they otherwise would.
- Free transit passes for all Palo Alto residents in transit-accessible areas. This Scenario 4 measure would clearly generate greater transit demand. However, partly because household income is so high in Palo Alto, many residents are more sensitive to travel time than to the cost differential between using transit and other modes of travel.
- The City would explore the option to put in place a parking charge program for existing businesses with more than 50 employees. The parking charges included in Scenario 4 would make transit more attractive by increasing the relative cost of driving.
- Paid parking in Downtown and California Avenue areas. By increasing the total cost of driving to the Downtown or California Avenue areas, this Scenario 4 measure would make transit more attractive, especially in combination with free transit passes.
- Unbundled parking costs for multi-family housing units. This measure, which is included in both Scenarios 3 and 4, would have the effect of transferring the cost of auto ownership to only those with cars and making alternative modes relatively more attractive.

Table 4.13-20 shows that Scenario 1 results in 62,177 transit boardings in the year 2030, which is 18,124 more boardings than the existing level, a 41 percent increase. Most of the new boardings are on Caltrain and the Caltrain shuttles, which is a reflection of increased Caltrain service in 2030, plus the travel time advantage that Caltrain would provide, as compared with driving, as road congestion increases. With Caltrain's electrification project, there would be more trains scheduled, so wait times for passengers would decrease, reducing their total travel time.

While it is not possible to separate out the influence of each transit priority policy, the results indicate that Scenario 4, which includes the greatest number of policies and actions to increase transit ridership, results in 70,045 total boardings, which is 25,992 more than existing conditions (a 59 percent increase) and 7,868 more than the Business As Usual scenario (a 13 percent increase). Under Scenario 4, VTA bus ridership would be substantially higher than under the other three scenarios, due to the combination of the BRT

data for Routes 22 and 522 only (not all of the VTA routes serving Palo Alto) for the entire BRT corridor (not for specific cities) in 2040 (not 2030). Further, the BRT definition included in Scenario 4 does not correspond precisely to any of the alternatives studied in the *BRT EIR*, as explained in the first bullet point under "Scenario 4."

project and other pro-transit policies. Compared with the Business As Usual scenario, Scenario 4 would result in an additional 2,589 VTA bus boardings per day.

The total number of transit trips increases by 15,009 (51 percent) under Scenario 1 and 22,636 (77 percent) under Scenario 4, compared with Existing Conditions. The increase in transit trips under Scenario 4 is due to the specific pro-transit measures included in that scenario and the fact that it includes the highest combined number of new housing units and new jobs. Scenario 2 results in the fewest boardings and transit trips of the four scenarios, which is consistent with its assumption of the lowest combined number of new housing units and new jobs.

The decrease in the number of boardings per transit trip for all the scenarios, compared with Existing Conditions, indicates that there are projected to be more transit trips in the future that would be made with a single boarding, i.e., fewer transfers would be made. This metric suggests a slightly greater level of convenience in using transit in 2030, since transfers add to a passenger's total travel time and frequently reduce the reliability of the transit option.

All four scenarios would increase demand for transit services, since all four scenarios include, to varying degrees, increased population and increased employment in 2030, compared with existing conditions in 2013. Scenarios 3 and 4 include a policy of unbundled parking costs for multi-family housing, which would make transit more attractive by increasing the cost of car ownership for those residents. Scenario 4 includes several additional policies that would increase demand for transit.

This EIR does not include a detailed quantitative analysis of the capacity of each individual transit service as compared to each scenarios demand. However, local knowledge suggests that the only service that is likely to approach full capacity is Caltrain. The EIR for the Caltrain electrification project, which projects increased ridership consistent with the 2030 forecasts herein, includes a detailed capacity analysis for the ridership estimated for 2040. That EIR concludes that all peak period trains would operate at 97 percent of capacity in 2040, but that demand would not exceed capacity. None of the scenarios would increase demand beyond the current or planned capacity of the transit network. Therefore, the impact would be *less than significant*.

Applicable Regulations:

- *Santa Clara Valley Transportation Authority Congestion Management Plan*

Significance before Mitigation: Implementation of the project would not create demand for transit services that cannot be met by current or planned transit services and impacts would be less than significant under all four scenarios.

TRANS-8	**Implementation of the project would create the potential demand for through traffic to use local residential streets. (Significant and Mitigable – All Four Scenarios)**

Summary: As described below, all four scenarios would result in additional traffic on arterials which could result in additional traffic being diverted from arterials onto local residential streets, requiring mitigation.

Growth assumed under all four planning scenarios would create the potential demand for through traffic to use local residential streets if the projected growth would result in substantial increased levels of congestion at intersections and roadway segments that would divert traffic into nearby local streets.

Increased congestion on arterials can result in some drivers attempting to avoid the congestion by using local residential streets instead. A degradation in the motor vehicle level of service on some segments in the future may motivate some drivers to seek alternate routes, diverting traffic onto local residential streets. The greater the decline in level of service, the more likely that some drivers would seek alternate routes, some of which could be local residential streets. For example, on Embarcadero Road, the level of service is projected to decline from LOS C to LOS E under Scenarios 1, 3, and 4, which may motivate some drivers to seek alternate routes. Eight of the 13 studied segments are projected to experience a decline in level of service under at least one scenario, compared with Existing Conditions, and all four scenarios include at least one segment where the level of service would decline. Therefore, all four scenarios would potentially cause a significant impact on local residential streets. Without mitigation, this would be a *significant* impact.

Applicable Regulations:

- None

Significance before Mitigation: Growth assumed under all four planning scenarios would result in increased congestion, which in turn would increase the potential for drivers to divert onto local streets. This impact is considered significant, requiring mitigation.

Mitigation Measures

Mitigation Measure TRANS-8: Develop a proactive neighborhood traffic calming program with a tool box of specific improvements that can be used to discourage non-local drivers from using local, neighborhood streets to bypass traffic congestion on arterials.

Significance after Mitigation: Less than Significant. It should be noted that implementation of traffic calming is highly site-specific, depending on the physical characteristics of the street, the circulation pattern of a neighborhood, and whether the residents support such measures, among many other factors. It is not possible at the Comprehensive Plan level to determine where traffic calming measures would be appropriate or feasible or which specific measures should be implemented along a given roadway or at a given intersection. For example, one neighborhood might support the installation of speed humps, whereas other neighborhoods might not—or, some residents of a specific neighborhood may advocate for speed humps while other residents oppose them. The proactive neighborhood traffic calming program should be designed to provide ample opportunity for public input and develop appropriate solutions based on community context.

TRANS-9 Implementation of the project would create an operational safety hazard. (Significant and Mitigable – All Four Scenarios)

Summary: All four scenarios could cause an increase in traffic on local residential streets, therefore increasing the potential for accidents on local streets. This would be a significant impact, requiring mitigation under all four scenarios.

The proposed Plan would create the potential for operational safety hazards if it would call for policies or physical changes to the city's transportation network that would introduce hazards.

None of the scenarios call for any policies or physical changes to the city's transportation network or other facilities that would introduce any safety hazards. The proposed Plan is a long-range planning document that would guide future development in the city, but would not introduce any physical features that would create an obvious safety hazard. Scenarios 3 and 4 would put Caltrain in a trench below Charleston and Meadow, thereby improving safety by eliminating two at-grade crossings of the train tracks. For these reasons, none of the four scenarios would result in a significant impact by creating an operational safety hazard due to physical changes in the transportation network.

However, growth assumed under all four planning scenarios would result in increased congestion, which in turn would increase the potential for drivers to divert onto local streets. Increased traffic on local streets could result in an increase in accidents and incidents with pedestrians and bicyclists due to more exposure and interactions with vehicles. It should be noted that traffic safety assessments are highly site-specific, depending on the physical characteristics of the street, the circulation pattern of a neighborhood, the circumstances and design at a given location, driver and vehicle characteristics, and several specific factors. There are no specific thresholds to determine if there would be an increase in accidents at a given location due to increased vehicular activity alone. Given that all four scenarios would potentially cause an increase in traffic on local residential streets and therefore increase the potential for accidents on local streets, without mitigation this would be a *significant* impact.

Applicable Regulations:

- None

Significance before Mitigation: None of the scenarios would introduce physical features that would introduce safety hazards. However, growth assumed under all four planning scenarios would result in increased congestion, which in turn would increase the potential for drivers to divert onto local streets and therefore causing a potential for increase in accidents onto local streets. This impact is considered significant, requiring mitigation.

Mitigation Measures

Mitigation Measure TRANS-9: Implement Mitigation Measure TRANS-8.

Significance after Mitigation: Less than Significant.

TRANS-10 Implementation of the project would not result in inadequate emergency access. (Less than Significant– All Four Scenarios)

Summary: While all planning scenarios would result in increased congestion, emergency vehicles can generally bypass congestion and achieve the agencies' desired response times. Thus, while adequacy of emergency access would need to be evaluated during approval process for individual projects, none of the scenarios would result in inadequate emergency access.

The proposed Plan would create the potential for inadequate emergency access if it would call for policies or physical changes to the City's transportation network that would result in inadequate emergency access to specific developments or if congestion would substantially cause delay of emergency vehicles.

The issue of adequate emergency access typically applies to specific development proposals where a project's street access may be evaluated. Individual projects would be reviewed by the City and the Fire Department to ensure that adequate site access is provided. Adequacy of emergency access requires case-by-case site analysis of individual projects, which is not possible for the four scenarios evaluated at a program level for the Comp Plan Update.

To the extent that global land use and transportation assumptions included in the scenarios result in roadway congestion that causes delay for other motor vehicles, emergency vehicles could be slowed down. In addition, incidents have been reported of emergency vehicle access being delayed from responding to accidents due to severe congestion on US 101 in a timely manner. Traffic increases as a result of all four scenarios would contribute to congestion on freeway segments, as identified in Impact TRANS-3. Therefore, the proposed Plan could contribute to cumulative traffic conditions that have the potential to impede emergency vehicle access on US 101. However, isolated instances of emergency vehicles being impeded vary on a case-by-case basis and more information would be needed to determine the precise problem causing a particular event. It would be speculative to try to determine how future traffic associated with development in Palo Alto would cumulatively contribute to such events.

Emergency vehicles have the right to use lights and sirens to allow them to bypass the congestion. Even in cases where an intersection is operating at LOS F or a roadway segment is operating at LOS F, all other vehicles are required by State law to pull over to the right and allow the emergency vehicle to pass. Thus, none of the four scenarios would result in a significant impact to emergency access. The impact would be *less than significant* under all four scenarios. In addition, approximately 15 percent of the traffic signals

maintained by the City of Palo Alto are equipped with emergency vehicle preemption devices. The City will continue to install traffic signal preemption devices where appropriate.

Applicable Regulations:

- None

Significance before Mitigation: None of the scenarios would substantially delay emergency vehicles or result in inadequate emergency access and impacts would be less than significant.

4.13.4 CUMULATIVE IMPACTS

The transportation analyses in impact statements TRANS-1 to TRANS-10 evaluated potential impacts due to the four proposed Plan scenarios in conjunction with anticipated ambient growth and cumulative projects in the region. The travel demand forecast model utilized to provide estimates incorporates county and regional growth projections for Santa Clara County and the rest of the Bay Area for 2030. The potential cumulative impacts of the proposed Plan at the regional level are examined through analysis related to the County's Congestion Management Program.

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Draft
Environmental Impact Report

Great America Office Campus Expansion

File Numbers: **PLN2007-06715, PLN2008-07324, CEQ2007-01051**
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City of Santa Clara
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PREFACE

The project proposes the construction of 600,000 s.f. of net new office space to an existing 418,000 s.f. office development at the northeast corner of Great America Parkway and Mission College Boulevard in northern Santa Clara. The Planned Development rezoning would allow the demolition of an existing 118,000 s.f. office building and new construction of up to approximately 718,000 s.f. of office/research and development (R&D) uses for a total of 1,018,000 s.f. of office development on the site.

This document has been prepared by the City of Santa Clara as the Lead Agency in conformance with the California Environmental Quality Act (CEQA) and the *CEQA Guidelines*. The purpose of this EIR is to inform decision makers and the general public of the environmental effects which might result from approval of the Great America Office Campus Expansion project.

Purpose of an EIR

The purpose and role of an EIR are detailed in CEQA and the CEQA Guidelines. The following guidelines are included in CEQA to clarify the role of an EIR:

> **§15121(a). Informational Document.** An EIR is an informational document, which will inform public agency decision makers, and the public of the significant environmental effects of a project, identify possible ways to minimize the significant effects, and describe reasonable alternatives to the project. The public agency shall consider the information in the EIR, along with other information which may be presented to the agency.
>
> **§15151. Standards for Adequacy of an EIR.** An EIR should be prepared with a sufficient degree of analysis to provide decision makers with information which enables them to make a decision which intelligently considers environmental consequences. An evaluation of the environmental effects of the proposed project need not be exhaustive, but the sufficiency of an EIR is to be reviewed in light of what is reasonably feasible. Disagreement among experts does not make an EIR inadequate, but the EIR should summarize the main points of disagreement among the experts. The courts have looked not for perfection, but for adequacy, completeness, and a good-faith effort at full disclosure.

Copies of all documents referred to in this EIR are available for review at the City of Santa Clara, Department of Planning and Inspection, 1500 Warburton Avenue, Santa Clara, CA 95050, during normal business hours.

SUMMARY

Summary Description of the Proposed Project

The project proposes the construction of 600,000 s.f. of net new office space to an existing 418,000 s.f. office development at the northeast corner of Great America Parkway and Mission College Boulevard in northern Santa Clara. The Planned Development rezoning would allow the demolition of an existing 118,000 s.f. office building and new construction of up to approximately 718,000 s.f. of office/R&D uses for a total of 1,018,000 s.f. of office development on the site (refer to Figure 1.4-1).

Up to three new buildings (for a total of six buildings) would be constructed on the site, not including parking structures. Development on the site would not exceed a floor area ratio (FAR) of 1.26. Maximum building heights would be up to 12-stories. Proposed office buildings would be set back a minimum of 30 feet from the property lines along the street frontages of the project site. A minimum 10-foot setback would be provided from the east/side property line. The existing 300,000 s.f. of office space in the two buildings at the corner of Great America Parkway and Mission College Boulevard would remain on the site.

The project proposes structured parking up to six stories in height in one or multiple garage structures. No below grade parking is proposed. The project would provide a minimum of 3.3 parking spaces per 1,000 s.f. of office space on the site at buildout.

Project construction would be divided into phases, in response to market conditions and to ensure adequate parking is provided for the existing buildings on the site. The timing and duration of construction phases has not been determined at this time. Due to the height of the proposed buildings, project construction may require the use of pile driving.

Summary of Impacts and Mitigation Measures

The following information summarizes the significant effects of the proposed project and mitigation measures proposed to reduce these effects. A complete description of the project and its impacts and proposed mitigation measures can be found in the text of the EIR, which follows this summary.

SIGNIFICANT ENVIRONMENTAL IMPACTS	MITIGATION AND AVOIDANCE MEASURES
Transportation	
Impact TRANS-2: The Bowers Avenue and Augustine Drive intersection would operate at LOS E during the PM peak hour under background conditions. The addition of project traffic would cause the critical-movement delay at the intersection to increase by four or more seconds and the volume-to-capacity ratio (V/C)	**MM TRANS-2:** At the intersection of Bowers Avenue and Augustine Drive, improvements consisting of the addition of a second southbound left-turn lane, a separate westbound right-turn lane, and a third eastbound left-turn lane have been identified as part of other approved development in the project area. The intersection would, however, continue to operate at LOS E

SIGNIFICANT ENVIRONMENTAL IMPACTS	MITIGATION AND AVOIDANCE MEASURES
to increase by .01 or more during the PM peak hour under background plus project conditions.	during the PM peak hour with the planned improvements with or without the proposed project. There are no further feasible improvements at the intersection due to right-of-way constraints. Therefore, the project impact is significant and unavoidable. **(Significant Unavoidable Impact)**
Impact TRANS-3: The Bowers Avenue and Central Expressway intersection would operate at LOS F during the PM peak hour under background conditions. The addition of project traffic would cause the critical-movement delay at the intersection to increase by four or more seconds and the volume-to-capacity ratio (V/C) to increase by .01 or more during the PM peak hour under background plus project conditions.	**MM TRANS-3:** The significant impact at the Bowers Avenue and Central Expressway intersection could be satisfactorily mitigated by adding third eastbound and southbound left-turn lanes. With these improvements, the intersection would continue to operate at LOS F during the PM peak hour. The average vehicular delay; however, would be less than that under background conditions; therefore, the impact would be considered mitigated. While the intersection is under the jurisdiction of the County and not the City of Santa Clara, the City has discussed this improvement with the County and they are conceptually in agreement with the identified improvements which can be constructed within the existing roadway right-of-way. The City intends to add these improvements to the Capital Improvement Plan (CIP) and program funds toward their construction. A previously approved project has already been conditioned to contribute toward a portion of these improvements. The project will pay a fair share contribution towards the improvements; thereby reducing the project's impact to a less than significant level. **(Less Than Significant with Mitigation)**
Impact TRANS-4: The Mission College Boulevard and Montague Expressway intersection is expected to operate at LOS F during the AM peak hour under background conditions. The addition of project traffic would cause the critical-movement delay at the intersection to increase by four or more seconds and the volume-to-capacity ratio (V/C) to	**MM TRANS-4:** The Comprehensive County Expressway Planning Study identifies at-grade improvements at the Mission College Boulevard and Montague Expressway intersection as a Tier 1A priority along with the planned Tier 1B improvement of the US 101 and Montague Expressway partial cloverleaf interchange improvement project. The project will pay a fair

SIGNIFICANT ENVIRONMENTAL IMPACTS	MITIGATION AND AVOIDANCE MEASURES
increase by .01 or more during the AM peak hour under background plus project conditions	share contribution toward these improvements. The effects of the planned improvements cannot be reflected in level of service calculations because the specific details of the interchange design are not available, but it is expected that the intersection would be improved to acceptable levels. **(Less Than Significant Impact with Mitigation)**
Impact TRANS-5: The proposed project would contribute in excess of one percent of segment capacity to 11 directional freeway segments already operating at LOS F during either the AM or PM peak hour.	**MM TRANS-5:** Full mitigation of significant project impacts on freeway segments would require roadway widening to construct additional through lanes, thereby increasing freeway capacity. Due to constraints in acquisition and cost of right-of-way, it is not feasible for an individual development project to bear responsibility for implementing such extensive transportation system improvements. No comprehensive project to add through lanes has been developed by Caltrans or VTA for individual projects to contribute to and, therefore, the significant impacts on 11 directional freeway segments are significant and unavoidable. **(Significant Unavoidable Impact)**
Air Quality	
Impact AQ-5: Dust generated by grading and construction activities would result in a significant temporary impact.	**MM AQ-5.1:** During any construction ground disturbance, implement measures to control dust and exhaust. Implementation of the measures recommended by the Bay Area Air Quality Management District (BAAQMD), and listed below, would reduce the air quality impacts associated with grading and new construction to a less than significant level. The contractor shall implement the following Best Management Practices (BMPs) that are required of all development projects: • All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day.

SIGNIFICANT ENVIRONMENTAL IMPACTS	MITIGATION AND AVOIDANCE MEASURES
	• All haul trucks transporting soil, sand, or other loose material off-site shall be covered. • All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited. • All vehicle speeds on unpaved roads shall be limited to 15 mph. • All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. • Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used. • All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation. • Post a publicly visible sign with the telephone number and person to contact at the Lead Agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The Air District's phone number shall also be visible to ensure compliance with applicable regulations. **(Less Than Significant Impact with Mitigation)**
Impact AQ-6: Project construction activities would emit significant levels of criteria air pollutants that would affect local and regional air quality.	**MM AQ-6.1:** Consistent with guidance from the BAAQMD, the following additional actions shall be required of construction contracts and specifications for the project: • Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to two minutes. Clear signage shall be provided for construction workers at all access points. • The project shall develop a plan demonstrating that the off-road equipment (more than 50 horsepower) to be used in the

SIGNIFICANT ENVIRONMENTAL IMPACTS	MITIGATION AND AVOIDANCE MEASURES
	construction project (i.e., owned, leased, and subcontractor vehicles) would achieve a project wide fleet-average 20 percent nitrous oxides (NO_X) reduction compared to the most recent Air Resources Board (ARB) fleet average. Acceptable options for reducing emissions include the use of late model engines, low-emission diesel products, alternative fuels, engine retrofit technology, after-treatment products, add-on devices such as particulate filters, and/or other options as such become available. • All construction equipment, diesel trucks, and generators shall be equipped with Best Available Control Technology for emission reductions of NO_X. • All contractors shall use equipment that meets ARB's most recent certification standard for off-road heavy duty diesel engines. After implementation of Mitigation Measure AQ-5.1 (estimated five percent reactive organic gases, NO_X and particulate matter reduction for off-road equipment exhaust emissions) and AQ-6.1 (estimated 20 percent NO_X reduction for off-road equipment), NO_X emissions are estimated to be 52.2 pounds per day, which is below the threshold of 54 pounds per day. **(Less Than Significant Impact with Mitigation)**
Noise and Vibration	
Impact NV-4: Noise generated by construction activities at the project site would exceed 70 dBA L_{eq} and the ambient noise environment by five dBA L_{eq} or more for a period exceeding one construction season.	**MM NV-4.1:** The applicant, in coordination with the Director of Planning & Inspection and adjacent land uses, shall implement a construction noise mitigation plan so that construction activities can be scheduled to minimize noise disturbance. The construction mitigation plan shall consider the following available controls to reduce construction noise levels as low as practical.

SIGNIFICANT ENVIRONMENTAL IMPACTS	MITIGATION AND AVOIDANCE MEASURES
	• Prohibit construction on weekends and holidays to minimize disturbance at the Great America Theme Park, • Utilize 'quiet' models of air compressors and other stationary noise sources where technology exists, • Equip all internal combustion engine-driven equipment with mufflers, which are in good condition and appropriate for the equipment, • Locate all stationary noise-generating equipment, such as air compressors and portable power generators, as far away as possible from adjacent land uses, • Locate staging areas and construction material areas as far away as possible from adjacent land uses, • Prohibit all unnecessary idling of internal combustion engines, • Notify all adjacent land uses of the construction schedule in writing, and • Designate a "disturbance coordinator" who would be responsible for responding to any local complaints about construction noise. The disturbance coordinator will determine the cause of the noise complaint (e.g., starting too early, bad muffler, etc.) and will require that reasonable measures warranted to correct the problem be implemented. Conspicuously post a telephone number for the disturbance coordinator at the construction site and include it in the notice sent to neighbors regarding the construction schedule. Noise reduction measures will be incorporated into the construction mitigation plan and implemented during all phases of construction activity to minimize the exposure of neighboring properties. This measure, in combination with the limitations on construction hours set forth in the Noise Ordinance, would reduce the temporary impact of construction noise to a less than significant level. **(Less Than Significant Impact with Mitigation)**

SIGNIFICANT ENVIRONMENTAL IMPACTS	MITIGATION AND AVOIDANCE MEASURES
Hydrology and Water Quality	
Impact HYD-4: Construction of the proposed project could result in a significant temporary increase in the amount of contaminants in stormwater runoff during construction.	**MM HYD-4.1:** The following Regional Water Quality Control Board (RWQCB) BMPs will be required to reduce construction-related water quality impacts. All mitigation will be implemented prior to the start of earthmoving activities on-site and will continue until the construction is complete. • Burlap bags filled with drain rock shall be installed around storm drains to route sediment and other debris away from the drains. • Earthmoving or other dust-producing activities shall be suspended during periods of high winds. • All exposed or disturbed soil surfaces shall be watered at least twice daily to control dust as necessary. • Stockpiles of soil or other materials that can be blown by the wind shall be watered or covered. • All trucks hauling soil, sand, and other loose materials shall be required to cover all trucks or maintain at least two feet of freeboard. • All paved access roads, parking areas, staging areas and residential streets adjacent to the construction sites shall be swept daily (with water sweepers). • Vegetation in disturbed areas shall be replanted as quickly as possible. • All unpaved entrances to the site shall be filled with rock to knock mud from truck tires prior to entering City streets. A tire wash system may also be employed at the request of the City. • A Storm Water Permit will be administered by the RWQCB. Prior to construction grading for the proposed land uses, the project proponent will file a "Notice of Intent" (NOI) to comply with the General Permit and prepare a Stormwater Pollution

SIGNIFICANT ENVIRONMENTAL IMPACTS	MITIGATION AND AVOIDANCE MEASURES
	Prevention Plan (SWPPP) which addresses measures that would be included in the project to minimize and control construction and post-construction runoff. Measures will include, but are not limited to, the aforementioned RWQCB mitigation. Dewatering discharges will be filtered or treated using appropriate technologies to remove sediments prior to discharging to the City's storm drain system. • The project proponent will submit a copy of the draft SWPPP to the City of Santa Clara for review and approval prior to start of construction on the project site. The certified SWPPP will be posted at the project site and will be updated to reflect current site conditions. • When construction is complete, a Notice of Termination (NOT) for the General Permit for Construction will be filed with the RWQCB and the City of Santa Clara. The NOT will document that all elements of the SWPPP have been executed, construction materials and waste have been properly disposed of, and a post-construction stormwater management plan is in place as described in the SWPPP for the site. **(Less Than Significant Impact with Mitigation)**
Biological Resources	
Impact BIO-1: The proposed development on a site with mature trees could result in direct impacts to nesting raptors.	**MM BIO-1.1:** Construction shall be scheduled to avoid the nesting season to the extent feasible. The nesting season for most birds, including most raptors, in the San Francisco Bay Area extends from February through August. If it is not possible to schedule demolition and construction between September and January, then pre-construction surveys for nesting birds shall be completed by a qualified ornithologist to ensure that no nests will be disturbed during project implementation. This survey shall be

SIGNIFICANT ENVIRONMENTAL IMPACTS	MITIGATION AND AVOIDANCE MEASURES
	completed no more than 14 days prior to the initiation of grading, tree removal, or other demolition or construction activities during the early part of the breeding season (February through April) and no more than 30 days prior to the initiation of these activities during the late part of the breeding season (May through August). During this survey, the ornithologist will inspect all trees and other possible nesting habitats immediately adjacent to the construction areas for nests. If an active nest is found sufficiently close to work areas to be disturbed by construction, the ornithologist, in consultation with the California Department of Fish and Wildlife (CDFW), will determine the extent of a construction-free buffer zone to be established around the nest, typically 250 feet, to ensure that raptor or migratory bird nests will not be disturbed during project construction. **(Less Than Significant Impact with Mitigation)**
Impact BIO-2: The proposed project will result in the removal of approximately 519 trees from the site.	**MM BIO-2.1:** The project shall replace all trees removed from the site at a ratio of 2:1 in accordance with an approved landscape plan for the project. **MM BIO-2.2:** In the event the redeveloped portion of the project site does not have sufficient area to accommodate the required tree mitigation, the project applicant will coordinate with the City Arborist to identify further opportunities within the City for the planting of replacement trees. **(Less Than Significant Impact with Mitigation)**
Cultural Resources	
Impact CUL-1: The proposed project may disturb previously unidentified buried archaeological resources.	**MM CUL-1.1:** A qualified archaeologist will be on-site to monitor earth-moving activities during grading on the project site. After monitoring the initial excavation, the archaeologist will make recommendations for further monitoring if it is determined that the site has cultural resources. If

SIGNIFICANT ENVIRONMENTAL IMPACTS	MITIGATION AND AVOIDANCE MEASURES
	the archaeologist determines that no resources are likely to be found on-site, no additional monitoring will be required. **MM CUL-1.2:** In the event that prehistoric or historic resources are encountered during excavation and/or grading of the site, all activity within a 50-foot radius of the find will be stopped, the Director of Planning and Inspection will be notified, and the archaeologist will examine the find and make appropriate recommendations prior to issuance of building permits. Recommendations could include collection, recordation, and analysis of any significant cultural materials. A report of findings documenting any data recovery during monitoring would be submitted to the Director of Planning and Inspection. **MM CUL-1.3:** In the event that human remains are discovered during excavation and/or grading of the site, all activity within a 50-foot radius of the find will be stopped. The Santa Clara County Coroner will be notified and shall make a determination as to whether the remains are of Native American origin or whether an investigation into the cause of death is required. If the remains are determined to be Native American, the Coroner will notify the Native American Heritage Commission (NAHC) immediately. Once NAHC identifies the most likely descendants, the descendants will make recommendations regarding proper burial, which will be implemented in accordance with Section 15064.5(e) of the CEQA Guidelines. **(Less Than Significant Impact with Mitigation)**
Hazards and Hazardous Materials	
Impact HM-1: Workers on site could be exposed to residual agricultural chemicals during grading and construction on the site.	**MM HM-1.1:** Prior to the issuance of grading permits, shallow soil samples shall be taken to determine any location of contaminated soils on the site with concentrations above established construction/trench worker thresholds. The soil

SIGNIFICANT ENVIRONMENTAL IMPACTS	MITIGATION AND AVOIDANCE MEASURES
	sampling plan must be reviewed and approved by the Santa Clara Fire Chief prior to initiation of work. Once the soil sampling analysis is complete, a report of the findings will be provided to the Director of Planning and other applicable City staff for review. **MM HM-1.2:** Documentation of the results of the soil sampling shall be submitted to and reviewed by the City of Santa Clara prior to the issuance of a grading permit. Any soil with concentrations of pesticides above applicable environmental screening levels (ESLs) or hazardous waste limits would be characterized, removed, and disposed of off-site at an appropriate landfill according to all state and federal requirements. **MM HM-1.3:** If contaminated soils are found in concentrations above established thresholds a Site Management Plan (SMP) will be prepared and implemented (as outlined below) and any contaminated soils found in concentrations above established thresholds shall be removed and disposed of according to California Hazardous Waste Regulations. The contaminated soil removed from the site shall be hauled off-site and disposed of at a licensed hazardous materials disposal site. **MM HM-1.4:** A SMP will be prepared to establish management practices for handling impacted groundwater and/or soil material that may be encountered during site development and soil-disturbing activities. Components of the SMP will include: a detailed discussion of the site background; preparation of a Health and Safety Plan by an industrial hygienist; notification procedures if previously undiscovered significantly impacted soil or free fuel product is encountered during construction; on-site soil reuse guidelines based on the California RWQCB, San Francisco Bay Region's

SIGNIFICANT ENVIRONMENTAL IMPACTS	MITIGATION AND AVOIDANCE MEASURES
	reuse policy; sampling and laboratory analyses of excess soil requiring disposal at an appropriate off-site waste disposal facility; soil stockpiling protocols; and protocols to manage groundwater that may be encountered during trenching and/or subsurface excavation activities. Prior to issuance of grading permits, a copy of the SMP must be approved by the Santa Clara County Environmental Health Department, the City's Director of Planning and Inspection, and the Santa Clara Fire Chief. **(Less Than Significant Impact with Mitigation)**

Cumulative Impacts

The proposed project would not contribute to any significant cumulative impacts. Please see Section 5.0 of this EIR for a complete discussion of cumulative impacts.

Summary of Project Alternatives

CEQA requires that an EIR identify alternatives to a project as it is proposed. The CEQA Guidelines specify that the EIR should identify alternatives which "will feasibly attain most of the basic objectives of the project but will avoid or substantially lessen any of the significant effects of the project". The purpose of this section is to determine whether there are alternatives of design, scope or location which will substantially lessen the significant impacts, even if those alternatives "impede to some degree the attainment of the project objectives", or are more expensive. [§15126.6] Please refer to *Section 6.0 Alternatives to the Proposed Project* of this EIR for a complete discussion of these alternatives.

No Project Alternative

The CEQA Guidelines stipulate that an EIR specifically include a No Project Alternative, which should address both "the existing conditions, as well as what would be reasonably expected to occur in the foreseeable future if the project is not approved, based on current plans and consistent with available infrastructure and community services." Since the project site is currently developed with three office buildings, parking lots, and landscaping, the alternative to the City approving the currently proposed project would be to maintain the existing development on the site. Maintaining the current development on the project site would not result in any new significant environmental impacts.

The No Project Alternative would not meet any of the project objectives. The existing development would remain on site and the increased density of employment uses on the site would not occur. The

No Project Alternative would not strengthen the City's economy by providing additional high-tech office space. Although the No Project Alternative would not meet any of the project objectives, it would avoid all of the impacts of the proposed project. For this reason, the No Project Alternative is an environmentally superior alternative to the proposed project.

Reduced Scale Alternative

A Reduced Scale Alternative would be a lower density office development, representing a less intense use of the site. Reducing the size of the proposed project would lessen each of the environmental impacts of the project proportionally and would be less than significant with mitigation measures applied. Reducing the proposed office development to an additional 225,000 square feet of office space (resulting in a total of 643,000 s.f. on-site) would avoid the project's significant impacts to the Bowers Avenue and Augustine Drive intersection and 11 freeway segments in the project area. The Reduced Scale Alternative would also reduce the project's less than considerable contribution to cumulative traffic impacts.

Implementation of a Reduced Scale Alternative would result in substantially less office development on the site than currently proposed. The Reduced Scale Alternative would reduce all of the project's significant intersection and freeway segment impacts to a less than significant level. The amount of development allowed under this alternative, however, would not meet the project objectives to create a high intensity employment center by increasing the density of the site and redeveloping an underutilized site. The Reduced Scale Alternative may also not be financially viable due to the potential costs of redevelopment and the minimal increase in office space allowed under this alternative. Since this alternative would reduce the project's significant intersection and freeway impacts to a less than significant level, it is considered environmentally superior to the proposed project.

Environmentally Superior Alternative

The CEQA Guidelines state that an EIR shall identify an environmentally superior alternative. Based on the discussion above, the environmentally superior alternative is the Reduced Scale Alternative since it would reduce the significant intersection and cumulative impacts of the project to a less than significant level. The Reduced Scale Alternative would not, however, meet the project objectives. The amount of development allowed under this alternative may not be economically feasible.

SECTION 1.0 INTRODUCTION, BACKGROUND, AND PROJECT DESCRIPTION

1.1 INTRODUCTION

This project-specific EIR has been prepared in accordance with the requirements of CEQA and the regulations of the City of Santa Clara. The purpose of the EIR is to inform the public and various governmental agencies of the environmental effects of the proposed Great America Office Campus Expansion. The City of Santa Clara is the Lead Agency for the project, and *Sobrato Development Companies* is the project proponent.

1.2 PROJECT LOCATION

The proposed project is located at 4301, 4401, and 4551 Great America Parkway in Santa Clara, at the northeast corner of Mission College Boulevard and Great America Parkway. The project site includes two parcels, APNs 104-42-009 and -020, with a combined area of approximately 18.5 acres. Development in the project area includes the Great America Theme Park, office parks, hotels, and strip commercial centers.

Regional, vicinity, and aerial maps of the site are shown on Figures 1.2-1, 1.2-2, and 1.2-3, respectively.

1.3 BACKGROUND

The site is designated for *High Intensity Office/Research and Development* use in the City's 2010-2035 General Plan. Parcel 104-42-009 is zoned PD (MP) - Planned Development (Planned Industrial) and Parcel 104-42-020 is zoned MP - Planned Industrial.

The project site is currently developed with approximately 418,000 s.f. of office space in three buildings, surface parking lots, and landscaping. An existing 118,000 s.f., two-story office building is located at the north end of the site. Two 150,000 s.f., six-story office buildings, totaling 300,000 s.f. of gross floor area, are located at the corner of Mission College Boulevard and Great America Parkway.

1.4 PROJECT DESCRIPTION

The project proposes a Planned Development Zoning and Development Agreement with the City of Santa Clara to allow construction of an office campus development, which is described below.

1.4.1 Proposed Uses

The project proposes construction of 600,000 s.f. of net new office space, for a total of 1,018,000 s.f. of office space on the site. The Planned Development rezoning would allow the demolition of an existing 118,000 s.f. office building and new construction of up to approximately 718,000 s.f. of office/R&D uses, for a total of 1,018,000 s.f. of office development on the site (refer to Figure 1.4-1).

Up to three new buildings (for a total of six buildings) would be constructed on the site, not including parking structures. Development on the site would have a maximum floor area ratio (FAR) of 1.26. Maximum buildings heights would be up to 12 stories. Proposed office buildings would be set back a minimum of 30 feet from the property line along the street frontages of the project site. A minimum 10-foot setback would be provided from the side/east property line. The existing 300,000 s.f. of office space in the two buildings at the corner of Great America Parkway and Mission College Boulevard would remain on the site with the project.

1.4.2 Site Access and Parking

Vehicle access to the project site would be provided from two driveways on each of the roadway frontages of the site: Mission College Boulevard, Great America Parkway, and Patrick Henry Drive (refer to Figure 1.4-1). The project proposes structured parking up to six stories in height in one or multiple garage structures. No below grade parking is proposed. The project would provide a minimum of 3.3 parking spaces per 1,000 s.f. of office space on the site at buildout.

Pedestrian access would be provided by sidewalks along the roadways bordering the site and pathways through the site to the existing and proposed buildings.

1.4.3 Landscaping

Landscaping would be planted throughout the project site. Trees would provide a buffer between the project and adjacent land uses and the public roadways. Landscaping will comprise 20 percent of the site.

1.4.4 Construction Phasing

The project would be constructed in phases in response to market conditions and to ensure adequate parking is provided for the existing buildings on the site. The timing and duration of construction phases has not been determined at this time. Due to the height of the proposed buildings, project construction may require the use of pile driving.

1.5 PROJECT OBJECTIVES

Pursuant to CEQA Guidelines Section 15124 the Lead Agency must identify the purpose of the EIR and the discretionary actions required by the Lead Agency. The purpose of this EIR is stated in the project objectives below. The discretionary actions required are listed subsequently in *Section 1.6 Uses of the EIR*.

The project proponent, *Sobrato Development Companies*, has identified the following basic objectives for the proposed project:

- Redevelop an underutilized infill site with approximately 600,000 s.f. of net new space.
- Support the local high-tech economy by replacing obsolete buildings with buildings that are more attuned to the current and future needs of high-tech companies.
- Strengthen the City's economy by attracting new high-tech companies to the area and providing

additional office space to retain companies currently located within the boundaries of the City of Santa Clara.
- Increase the density of office development on the site to efficiently use land in an existing area of the City designated for office/R&D use.
- Provide office space in an area proximate to major transportation arterials, public transit, commercial services and workforce housing.
- Support existing businesses and economic development in the project area by providing additional jobs close to transit connections, retail uses, and various other tenant amenities.
- Support the City's role in the effort to balance regional land use by providing employment and economic development opportunities for residents of the city.

The City has identified the following basic objectives for the proposed project:

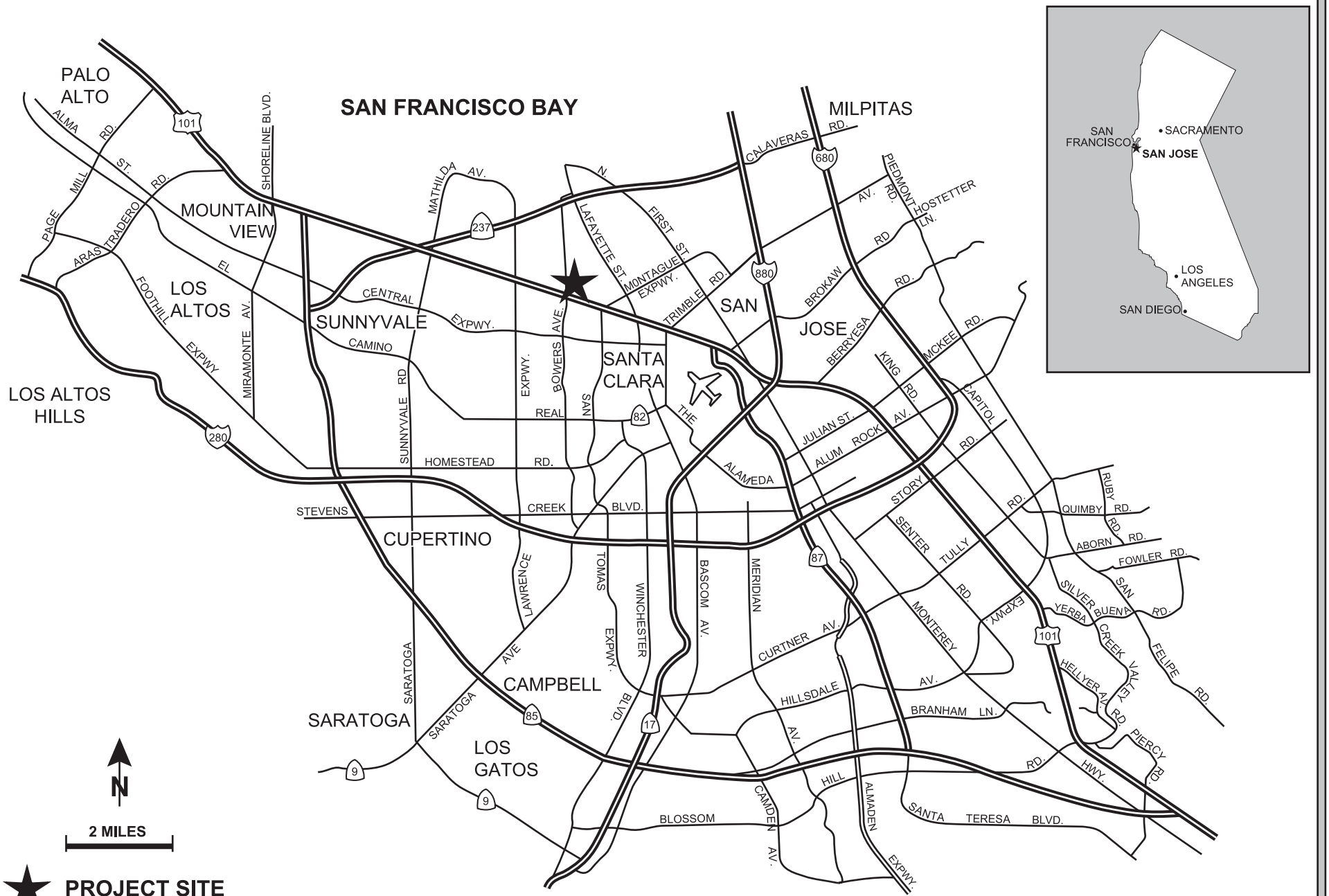
- Promote quality job growth within the City consistent with 2010-2035 General Plan Policy 5.3.5-G1.
- Support higher intensity employment centers that can take advantage of transit opportunities by concentrating jobs near existing transit facilities to reduce vehicle miles travelled consistent with 2010-2035 General Plan Policy 5.3.5-G2.
- Support development of significant employment projects on major local and regional transportation corridors in the City of Santa Clara to minimize traffic on local streets and to facilitate use of transit services consistent with 2010-2035 General Plan Policy 5.3.5-G3.

1.6 USES OF THE EIR

This EIR is intended to be an informational document and is subject to public review, agency review, and consideration by the City of Santa Clara. The purpose of this EIR is to identify potentially significant effects of the project on the physical environment, to determine the extent to which these effects could be reduced or avoided, and to identify feasible alternatives to the project. The EIR is an informational document and in itself does not determine whether a project should or will be approved.

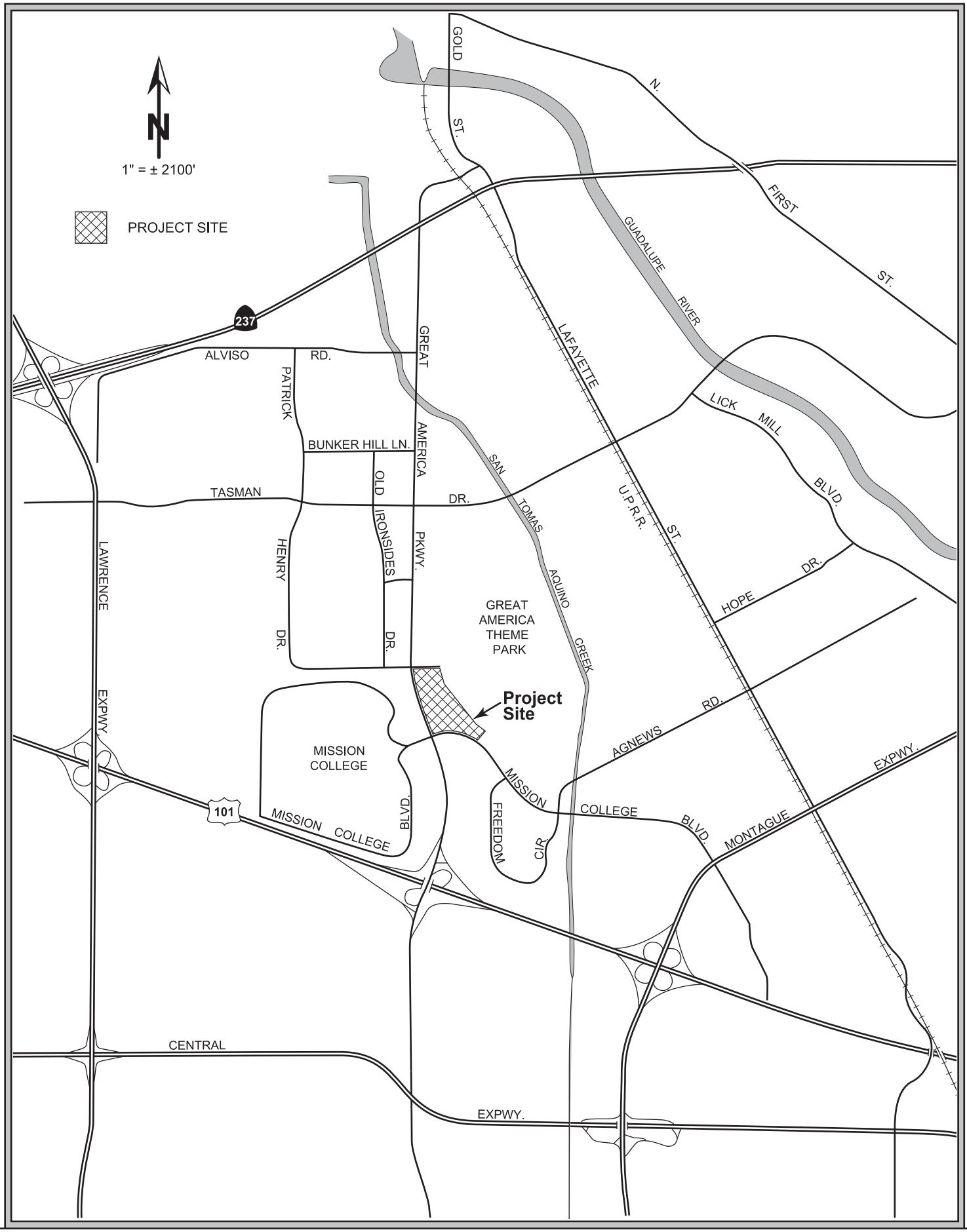
The project-specific discretionary approvals being requested by the project proponent which will be evaluated in the EIR include, but are not limited to, the following:

- Planned Development Zoning
- Tentative Parcel Map
- Site and Architectural Review
- Development Agreement
- Issuance of grading, building, and occupancy permits.

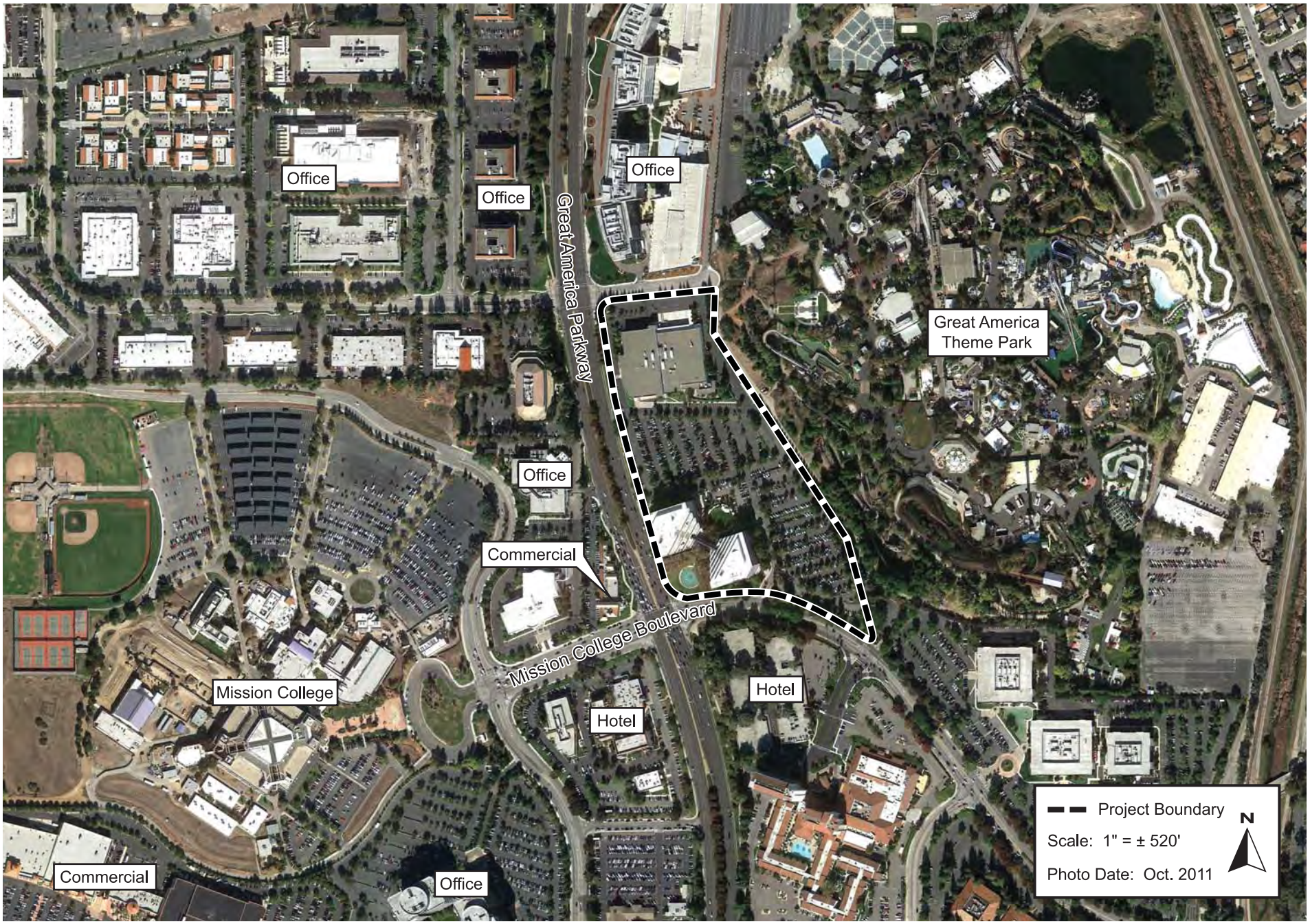


REGIONAL MAP

FIGURE 1.2-1



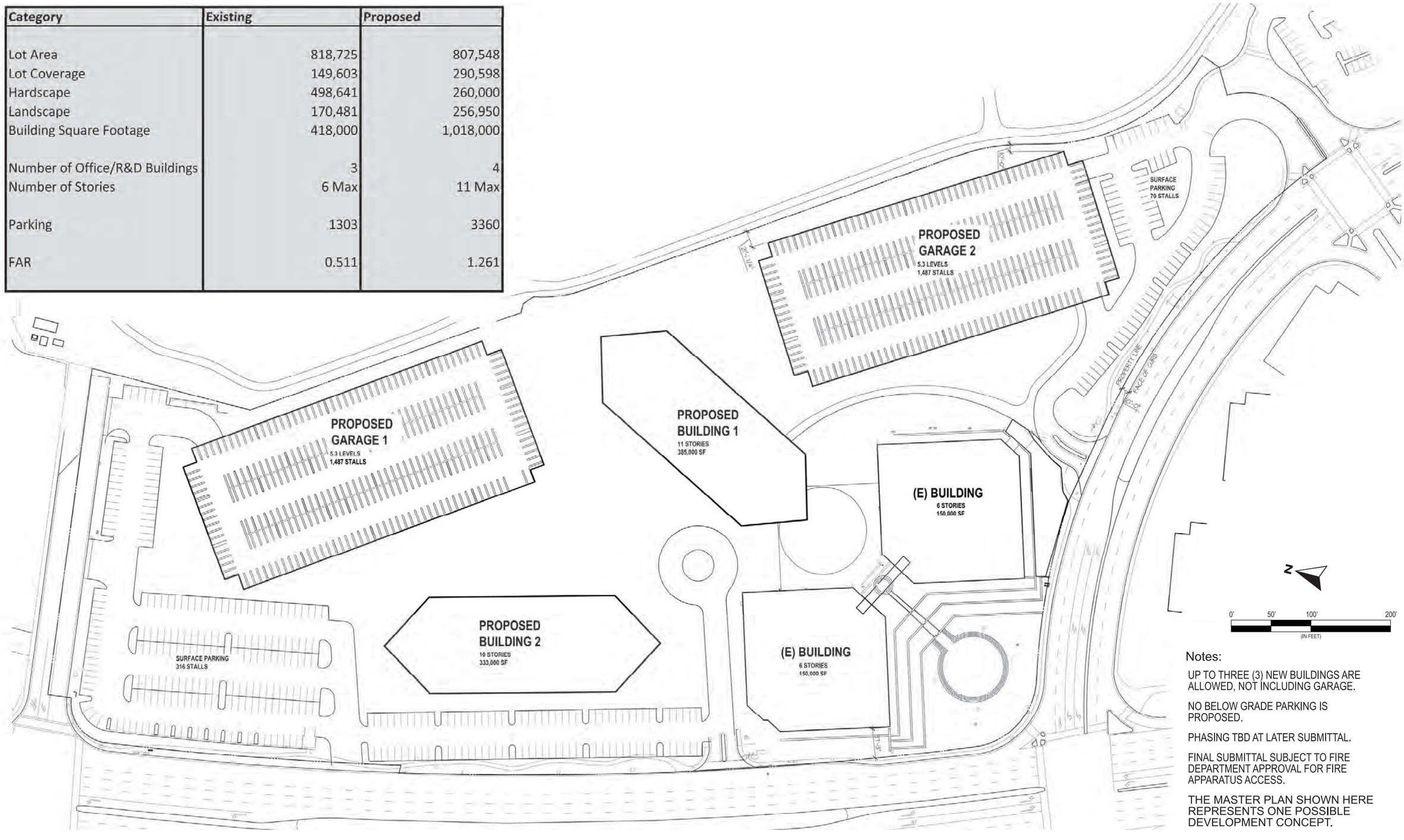
VICINITY MAP FIGURE 1.2-2



AERIAL PHOTOGRAPH AND SURROUNDING LAND USES

FIGURE 1.2-3

Category	Existing	Proposed
Lot Area	818,725	807,548
Lot Coverage	149,603	290,598
Hardscape	498,641	260,000
Landscape	170,481	256,950
Building Square Footage	418,000	1,018,000
Number of Office/R&D Buildings	3	4
Number of Stories	6 Max	11 Max
Parking	1303	3360
FAR	0.511	1.261



Notes:

UP TO THREE (3) NEW BUILDINGS ARE ALLOWED, NOT INCLUDING GARAGE.

NO BELOW GRADE PARKING IS PROPOSED.

PHASING TBD AT LATER SUBMITTAL.

FINAL SUBMITTAL SUBJECT TO FIRE DEPARTMENT APPROVAL FOR FIRE APPARATUS ACCESS.

THE MASTER PLAN SHOWN HERE REPRESENTS ONE POSSIBLE DEVELOPMENT CONCEPT.

CONCEPTUAL MASTER PLAN

FIGURE 1.4-1

SECTION 2.0 CONSISTENCY WITH RELEVANT PLANS AND POLICIES

In conformance with Section 15125(d) of the CEQA Guidelines, the following section discusses the consistency of the proposed project with relevant adopted plans and policies.

2.1 REGIONAL PLANS AND POLICIES

2.1.1 Bay Area 2010 Clean Air Plan

The Bay Area Air Quality Management District (BAAQMD), in cooperation with the Metropolitan Transportation Commission (MTC) and Association of Bay Area Governments (ABAG), prepared the Bay Area 2005 Ozone Strategy (Ozone Strategy). The Ozone Strategy served as a roadmap showing how the San Francisco Bay Area will achieve compliance with the State one-hour air quality standard for ozone (O_3) as expeditiously as practicable and how the region will reduce transport of O_3 and O_3 precursors to neighboring air basins. In 2010, BAAQMD adopted a new Clean Air Plan with the intent of updating the 2005 Ozone Strategy to comply with State air quality planning requirements as codified in the California Health and Safety Code.

The Bay Area 2010 Clean Air Plan (CAP) provides a comprehensive plan to improve Bay Area air quality and protect public health. The CAP defines a control strategy that the Air District and its partners will implement to: (1) reduce emissions and decrease ambient concentrations of harmful pollutants; (2) safeguard public health by reducing exposure to air pollutants that pose the greatest health risk, with an emphasis on protecting the communities most heavily impacted by air pollution; and (3) reduce greenhouse gas (GHG) emissions to protect the climate.

Consistency: The proposed project would result in an increase in employment on a site currently used and planned for employment use. The project as proposed would implement a Transportation Demand Management (TDM) Program (which is required as part of the CAP) that will reduce overall traffic trips by a minimum of five percent. The project, therefore, would be consistent with the CAP.

2.1.2 Santa Clara Valley Congestion Management Program

The Santa Clara Valley Transportation Authority (VTA) oversees the Santa Clara County Congestion Management Program (CMP). State legislation requires that all urbanized counties in California prepare a CMP in order to obtain each county's share of the increased gas tax revenues. The CMP legislation requires that each CMP contain the following five mandatory elements: 1) a system definition and traffic level of service standard element; 2) a transit service and standards element; 3) a trip reduction and transportation demand management element; 4) a land use impact analysis program element; and 5) a capital improvement element. The Santa Clara County CMP includes the five mandated elements and three additional elements, including: a County-wide transportation model and data base element, an annual monitoring and conformance element, and a deficiency plan element.

Consistency: As described in *Section 3.2, Transportation*, the proposed project would significantly impact two CMP intersections during the AM and/or PM weekday peak hour. The construction of high density office development on land proximate to existing transit and housing is generally consistent with the goals of the CMP. The project will also be conditioned to implement a TDM program that will reduce overall traffic trips by a minimum of five percent. The project, therefore, is consistent with the CMP.

2.1.3 State Water Quality Control Board National Pollutant Discharge Elimination System Permit

The Porter-Cologne Water Quality Control Act and Federal Clean Water Act require local municipalities to implement measures to control construction and post-construction pollution entering local storm drainage systems to the maximum extent practicable. To comply with the requirements of the Porter-Cologne Water Quality Control Act and Federal Clean Water Act, the State Water Resources Control Board (SWRCB) implemented a National Pollution Discharge Elimination System (NPDES) permit for the Santa Clara Valley. Subsequent to implementation of the permit, the San Francisco Regional Water Quality Control Board (RWQCB) issued a Municipal Storm Water NPDES Permit to 15 co-permittees. The 15 co-permittees are the City of Santa Clara, 12 other municipalities within the Santa Clara Basin watershed area, the County of Santa Clara, and the Santa Clara Valley Water District (SCVWD). Two programs, the Nonpoint Source Pollution Program and the Santa Clara Valley Urban Runoff Pollution Prevention Program (SCVURPPP), have been implemented under the NPDES permit to control construction and post-construction runoff.

2.1.3.1 *Nonpoint Source Pollution Program*

In 1988 the SWRCB adopted the Nonpoint Source Management Plan in an effort to control nonpoint source pollution in California. In December 1999, the Plan was updated to comply with the requirements of Section 319 of the Federal Clean Water Act and Section 6217 of the Federal Coastal Zone Act Reauthorization Amendment (CZARA) of 1990. The Nonpoint Source Program requires individual permits to control discharge associated with construction activities. The Nonpoint Source Program is administered by the RWQCB under the NPDES General Permit for Construction Activities. Projects must comply with the requirements of the Nonpoint Source Program if:

- they disturb one acre or more of soil; or
- they disturb less than one acre of soil but are part of a larger development that, in total, disturbs once acre or more of soil.

The NPDES General Permit for Construction Activities requires the developer to submit a Notice of Intent (NOI) to the RWQCB and to develop a Stormwater Pollution Prevention Plan (SWPPP) to control discharge associated with construction activities.

Consistency: The proposed project would disturb more than one acre of soil and would require compliance with the Nonpoint Source Pollution Program. Implementation of the measures identified in *Section 3.6 Hydrology and Water Quality* would ensure the

project's consistency with the Nonpoint Source Pollution Program. Therefore, the proposed project is consistent with this plan.

2.1.3.2 *Santa Clara Valley Urban Runoff Pollution Prevention Program*

The SCVURPPP was developed by the RWQCB to assist co-permittees in implementing the provisions of the NPDES permit. This program was also designed to fulfill the requirements of Section 304(1) of the Federal Clean Water Act, which mandated that the U.S. Environmental Protection Agency develop NPDES application requirements for stormwater runoff. The Program's Municipal NPDES stormwater permit includes provisions requiring regulation of stormwater discharges associated with new development and development of an area-wide watershed management strategy. The permit also identifies recommended actions for the preservation, restoration, and enhancement of the San Francisco Bay Delta Estuary.

Applicable projects consist of all new public and private sector projects that create 10,000 s.f. or more of impervious surface collectively over the entire project site, and redevelopment projects that add or replace 10,000 s.f. or more of impervious surface area on the project site. Additional requirements must be met by large projects (formerly known as Group 1 projects) that create one acre or more of impervious surfaces. These large projects must control increases in runoff peak flow, volume, and duration (referred to as Hydromodification) caused by the project if the increase in stormwater runoff has the potential to cause erosion or other adverse impacts to receiving streams.

Consistency: As discussed in *Section 3.6 Hydrology and Water Quality*, the proposed project will include applicable Best Management Practices to ensure there is no increase in erosion or sedimentation that could impact local waterways and that stormwater runoff from the impervious surfaces on the site is treated and retained in accordance with the municipal regional permit. The implementation of erosion control and stormwater management practices during and after project construction would be in accordance with the Municipal Regional Stormwater NPDES permit requirements. The proposed project, therefore, would be consistent with the Municipal Regional Stormwater NPDES permit and Construction General NPDES permit.

2.1.4 Comprehensive Land Use Plan (CLUP) for Norman Y. Mineta San José International Airport

The CLUP for the Norman Y. Mineta San José International Airport was adopted on May 25, 2011. The CLUP includes land use compatibility policies and standards updated from the preceding land use policy plan, which previously covered activities around the airport. These policies and compatibility criteria form the basis for evaluating the land use compatibility of individual proposed projects. The CLUP is not intended to define allowable land use for a specific property, although the plan establishes development standards or restrictions that may limit certain types of uses and structures on a parcel. The CLUP is not retroactive with respect to existing incompatible land uses; it discusses actions to be taken when expansion, replacement or other significant changes are made to incompatible land uses.

Standards in the CLUP focus on the three areas of Airport Land Use Commission (ALUC) responsibility including aircraft noise, the control of objects in navigable airspace, and the safety of persons on the ground and in aircraft. The project site falls within the Airport Influence Area (AIA), which is a composite of the areas surrounding the Airport that are affected by noise, height, and safety considerations. The AIA is defined as a feature-based boundary around the Airport within which all actions, regulations and permits must be evaluated by local agencies to determine how the final draft CLUP policies may impact the proposed development.

Consistency: The project site is located within the referral boundary for the Norman Y. Mineta San José International Airport. The proposed project would be subject to review by the Federal Aviation Administration (FAA) and ALUC but is located outside the 65 dBA CNEL noise contour and appears to be consistent with the Land Use Plan and height restrictions of the FAA (refer to *Section 3.1 Land Use* and *Section 3.4 Noise and Vibration*).

2.2 LOCAL PLANS AND POLICIES

2.2.1 City of Santa Clara 2010-2035 General Plan

The City of Santa Clara's 2010-2035 General Plan is an adopted statement of goals and polices for the future character and quality of development in the community as a whole. The following is a summary of relevant sections of the 2010-2035 General Plan that would apply to the proposed project.

2.2.1.1 Land Use

Policy 5.3.1-P3: Support high quality design consistent with adopted design guidelines and the City's architectural review process.

Consistency: The final design of the proposed project will be subject to the City's architectural review process. Therefore, the project is consistent with Policy 5.3.1-P3.

Policy 5.3.1-P4: Encourage new development that meets the minimum intensities and densities specified in the land use classifications or as defined through applicable Focus Area, Neighborhood Compatibility or Historic Preservation policies of the General Plan.

Consistency: The project would be consistent with the current *High Intensity Office/R&D* land use designation. The proposed project would have a floor area ratio (FAR) of 1.26 which is within the range (up to 2.0 FAR) of allowable development density in the 2010-2035 General Plan for the proposed land use designation. Therefore, the proposed project is consistent with Policy 5.3.1-P4.

Policy 5.3.1-P5: Implement a range of development densities and intensities within General Plan land use classification requirements to provide diversity, use land efficiently and meet population and employment growth.

Consistency: The proposed project would construct up to six additional office buildings on an underutilized site and will increase employment opportunities in the City. Therefore, the proposed project is consistent with Policy 5.3.1-P5.

Policy 5.3.1-P8: Work with property owners to improve or redevelop underutilized and vacant properties.

Consistency: The proposed project is the redevelopment of an underutilized parcel. Therefore, the proposed project is consistent with Policy 5.3.1-P8.

Policy 5.3.1-P9: Require that new development provide adequate public services and facilities, infrastructure, and amenities to serve the new employment or residential growth.

Consistency: The proposed project would redevelop an underutilized site and would not exceed the capacity of existing infrastructure, with the exception of roadway facilities, and can be adequately served by existing public facilities and services. Therefore, the proposed project is partially consistent with Policy 5.3.1-P9.

Policy 5.3.1-P10: Provide opportunities for increased landscaping and trees in the community, including requirements for new development to provide street trees and a minimum 2:1 on- or off-site replacement for trees removed as part of the proposal.

Consistency: The proposed project will plant new trees on-site at a ratio greater than 2:1 to mitigate for the removal of existing trees. In the event the redeveloped portion of the project site does not have sufficient area to accommodate the required tree mitigation, replacement trees will be planted off-site as directed by the City Arborist. Therefore, the proposed project is consistent with Policy 5.3.1-P10.

Policy 5.3.1-P11: Encourage new developments proposed within a reasonable distance of an existing or proposed recycled water distribution system to utilize recycled water for landscape irrigation, industrial processes, cooling and other appropriate uses.

Consistency: Existing recycled water lines are present in Mission College Boulevard and will be utilized for landscape irrigation. Therefore, the proposed project is consistent with Policy 5.3.1-P11.

Policy 5.3.1-P14: Encourage Transportation Demand Management strategies and the provision of bicycle and pedestrian amenities in all new development in order to decrease use of the single-occupancy automobile and reduce vehicle miles traveled.

Consistency: As a Condition of Approval, the project will be required to implement a Transportation Demand Management (TDM) Program that will reduce overall traffic trips by a minimum of five percent. Therefore, the proposed project is consistent with Policy 5.3.1-P14.

2.2.1.2 Mobility and Transportation

Policy 5.8.1-P5: Work with local, regional, State and private agencies, as well as employers and residents, to encourage programs and services that reduce vehicle miles traveled.

Consistency: As a Condition of Approval, the project will be required to implement a TDM Program that will reduce overall traffic trips by a minimum of five percent. Therefore, the proposed project is consistent with Policy 5.8.1-P5.

Policy 5.8.3-P9: Require new development to incorporate reduced on-site parking and provide enhanced amenities, such as pedestrian links, benches and lighting, in order to encourage transit use and increase access to transit services.

Consistency: The project would provide on-site parking at a lower rate than required in the Municipal Code and would provide enhanced pedestrian amenities to encourage transit usage through a TDM Program. Therefore, the project is consistent with Policy 5.8.3-P9.

Policy 5.8.3-P10: Require new development to participate in public/private partnerships to provide new transit options between Santa Clara residences and businesses.

Consistency: The project is located in proximity to existing transit services that include VTA bus service, Caltrain and ACE shuttle service, and Light Rail Transit that provide connection from existing residential areas of the City to the project area. The project will be conditioned to provide a TDM Program and explore the feasibility of adding transportation services to link businesses with multi-modal transit in cooperation with the City, other public agencies, and other local business interests which could include new transit options. The project, therefore, is consistent with Policy 5.8.3-P10.

Policy 5.8.4-P10: Encourage safe, secure and convenient bicycle parking and end-of-trip, or bicycle "stop", facilities, such as showers or bicycle repair near destinations for all users, including commuters, residents, shoppers, students and other bicycle travelers.

Consistency: The TDM program implemented for the project would include bicycle parking as a condition of project approval in accordance with VTA Countywide Bicycle Plan Technical Guidelines. The provision of additional bicycle facilities such as shower and bicycle repair facilities that may be incorporated as part of the program; however, are currently unknown. The project, as conditioned, would be consistent with Policy 5.8.4-P10.

Policy 5.8.5-P1: Require new development to include transportation demand management site-design measures, including preferred carpool and vanpool parking, enhanced pedestrian access, bicycle storage and recreational facilities.

Consistency: As a Condition of Approval, the project will be required to implement a TDM Program that will reduce overall traffic trips by a minimum of five percent and will

include bicycle parking facilities. Therefore, the proposed project is consistent with Policy 5.8.5-P1.

Policy 5.8.5-P2: Require development to offer on-site services, such as ATMs, dry cleaning, exercise rooms, cafeterias and concierge services, to reduce daytime trips.

Consistency: The project may include amenity facilities within the proposed square footage for the project; however, amenities and on-site services will be determined by the TDM Program and needs of the future tenants. The proposed project, therefore, is not consistent with Policy 5.8.5-P2.

Policy 5.8.5-P4: Encourage new development to participate in shuttle programs to access local transit services within the City, including buses, light rail, Bay Area Rapid Transit, Caltrain, Altamont Commuter Express Yellow Shuttle and Lawrence Caltrain Bowers/Walsh Shuttle services.

Consistency: The proposed project is located adjacent to an existing bus stop on Great America Parkway. Shuttles for both Caltrain and ACE train stop at Mission College Boulevard and Great America Parkway. These transit stops will provide future employees access to local and regional transit systems. Therefore, the proposed project is consistent with Policy 5.8.5-P4.

Policy 5.8.5-P5: Encourage transportation demand management programs that provide incentives for the use of alternative travel modes to reduce the use of single-occupancy vehicles.

Consistency: As a Condition of Approval, the project will be required to implement a TDM Program that will reduce overall traffic trips by a minimum of five percent. Therefore, the proposed project is consistent with Policy 5.8.5-P5.

2.2.1.3 Environmental Quality

Policy 5.10.1-P4: Protect all healthy cedars, redwoods, oaks, olives, bay laurel and pepper trees of any size, and all other trees over 36 inches in circumference measured from 48 inches above-grade on private and public property as well as in the public right-of-way.

Consistency: The project would remove approximately 519 trees, many of which are protected as outlined in the City's 2010-2035 General Plan. Therefore, the proposed project is not consistent with Policy 5.10.1-P4. The project will be required to provide trees at a minimum 2:1 replacement ratio through architectural review of an approved landscape plan consistent with Policy 5.3.1-P10.

Policy 5.10.1-P6: Require adequate wastewater treatment and sewer conveyance capacity for all new development.

Consistency: The proposed project will not exceed the capacity of the wastewater treatment system or the sanitary sewer lines that serve the project site. Therefore, the project is consistent with Policy 5.10.1-P6.

Policy 5.10.2-P6: Require "Best Management Practices" for construction dust abatement.

Consistency: The proposed project will implement best management practices consistent with BAAQMD requirements for construction dust abatement. Therefore, the proposed project is consistent with Policy 5.10.2-P6.

Policy 5.10.3-P2: Encourage new development to incorporate sustainable building design, site planning and construction, including encouraging solar opportunities.

Consistency: The project would incorporate green building measures to achieve LEED Silver certification for the core and shell of the proposed buildings. Therefore, the proposed project is consistent with Policy 5.10.3-P2.

Policy 5.10.3-P3: Reduce energy consumption through sustainable construction practices, materials and recycling.

Consistency: The project will salvage or recycle discarded building materials (i.e., existing building and hardscape and remnant materials from construction) to reduce the amount of demolition and construction waste going to the landfill, in accordance with the City's construction and demolition ordinance. Therefore, the proposed project is consistent with Policy 5.10.3-P3.

Policy 5.10.4-P4: Require an adequate water supply and water quality for all new development.

Consistency: Based on the Water Supply Assessment (WSA) prepared for the project, the proposed project can be adequately served by the City's existing water supply. Therefore, the proposed project is consistent with Policy 5.10.4-P4.

Policy 5.10.4-P7: Require installation of native and low-water consumption plant species when landscaping new development and public spaces to reduce water usage.

Consistency: The project will be conditioned to meet LEED Silver Certification standards including measures to reduce water demand from the site. The exact methods used to meet these standards are not currently known. Therefore, the proposed project's consistency with Policy 5.10.4-P7 is unknown.

Policy 5.10.4-P8: Require all new development within a reasonable distance of existing or proposed recycled water distribution systems to connect to the system for landscape irrigation.

Consistency: Existing recycled water lines are present in Mission College Boulevard and will be utilized for landscape irrigation. Therefore, the proposed project is consistent with Policy 5.10.4-P8.

Policy 5.10.5-P5: Regulate development, including remodeling or structural rehabilitation, to ensure adequate mitigation of safety hazards, including flooding, seismic, erosion, liquefaction and subsidence dangers.

Consistency: The proposed project will be required to conform to the requirements of the California Building Code and the recommendations of a site specific geotechnical assessment. Therefore, the proposed project is consistent with Policy 5.10.5-P5.

Policy 5.10.5-P6: Require that new development is designed to meet current safety standards and implement appropriate buildings codes to reduce risks associated with geologic conditions.

Consistency: The proposed project will be required to conform to the requirements of the California Building Code and the recommendations of a site specific geotechnical assessment. Therefore, the proposed project is consistent with Policy 5.10.5-P6.

Policy 5.10.5-P15: Require new development to minimize paved and impervious surfaces and promote on-site Best Management Practices for infiltration and retention, including grassy swales, pervious pavement, covered retention areas, bioswales, and cisterns, to reduce urban water run-off.

Consistency: The project proposes to implement an operational stormwater management plan consistent with the requirements of the RWQCB that will provide treatment and filtration of stormwater prior to the water entering the storm drainage system. Therefore, the proposed project is consistent with Policy 5.10.5-P15.

Policy 5.10.5-P16: Require new development to implement erosion and sedimentation control measures to maintain an operational drainage system, preserve drainage capacity and protect water quality.

Consistency: The project proposes to implement a Stormwater Pollution Prevention Plan to control discharge associated with construction activities consistent with the requirements of the RWQCB. Therefore, the proposed project is consistent with Policy 5.10.5-P16.

Policy 5.10.5-P18: Implement the Santa Clara Valley Nonpoint Source Pollution Control Program, Santa Clara Valley Urban Runoff Pollution Prevention Program and the Urban Runoff Management Plan.

Consistency: The project will comply with the Santa Clara Valley Nonpoint Source Pollution Control Program, Santa Clara Valley Urban Runoff Pollution Prevention Program and the Urban Runoff Management Plan as discussed in Section 3.6, *Hydrology and Water Quality*. Therefore, the proposed project is consistent with Policy 5.10.5-P18.

Policy 5.10.5-P21: Require that storm drain infrastructure is adequate to serve all new development and is in place prior to occupancy.

Consistency: The proposed project will not exceed the capacity of the storm drain lines that serve the project site. Therefore, the project is consistent with Policy 5.10.5-P21.

Policy 5.10.5-P22: Regulate development on sites with known or suspected contamination of soil and/or groundwater to ensure that construction workers, the public, future occupants, and the environment are adequately protected from hazards associated with contamination, in accordance with applicable regulations.

Consistency: Implementation of the proposed project could expose construction workers to contaminated soil from historic agricultural activities. Mitigation measures are proposed to reduce potential impacts to a less than significant level. Therefore, the project is consistent with Policy 5.10.5-P22.

Policy 5.10.6-P1: Review all land use and development proposals for consistency with the General Plan compatibility standards and acceptable noise exposure levels defined on Table 5.10-1.

Consistency: Although noise levels on the project site exceed the acceptable noise exposure levels on Table 5.10-1, standard commercial construction techniques would ensure interior noise levels do not exceed 45 dBA L_{dn}. The project, therefore, is consistent with Policy 5.10.6-P1.

Policy 5.10.6-P2: Incorporate noise attenuation measures for all projects that have noise exposure levels greater than General Plan "normally acceptable" levels, as defined on Table 5.10-1.

Consistency: Commercial construction techniques would ensure the project meets acceptable levels for commercial use identified on Table 5.10-1. The project, therefore, is consistent with Policy 5.10.6-P2.

SECTION 3.0 ENVIRONMENTAL SETTING, IMPACTS AND MITIGATION

3.1 LAND USE

3.1.1 Existing Setting

3.1.1.1 *Existing Land Use*

The approximately 18.5-acre project site is comprised of two parcels located on the east side of Great America Parkway, between Mission College Boulevard and Patrick Henry Drive, in the northern portion of the City of Santa Clara. The project site is located in an urban area developed with commercial and industrial uses. The project site has a 2010-2035 General Plan designation of *High Intensity Office/Research and Development* and is zoned *MP – Planned Industrial* and *PD(MP) – Planned Development (Planned Industrial)*.

The *High Intensity Office/Research and Development* land use designation is intended for high-rise or campus-like developments for corporate headquarters, R&D and supporting uses, with landscaped areas for employee activities. Permitted uses include offices and prototype R&D uses. Accessory, or secondary, small-scale supporting retail uses that serve local employees and visitors are also permitted. Parking is typically structured or below grade. The maximum FAR is 2.00, excluding any FAR devoted to supporting retail uses.

The *MP – Planned Industrial* zoning district is intended to provide an environment exclusively for and conducive to the development and protection of modern large-scale administrative facilities, research institutions, and specialized manufacturing organizations, all of a non-nuisance type. The district is to provide for an aesthetically attractive working environment with park-like grounds, attractive buildings, ample employee parking, and other amenities appropriate to an employee-oriented activity where problems of product handling, storage, advertising, and distribution are not of significant concern.

The *PD(MP) – Planned Development* zoning district is intended to accommodate development that is compatible with the existing community and that integrates uses that are not permitted to be combined in other zone districts or utilizes imaginative planning and design concepts that would be restricted in other zone districts.

The project site is currently developed with approximately 418,000 s.f. of office space in three buildings, surface parking lots, and landscaping. The entire site was previously leased by *Yahoo!* and is now partially occupied by Palo Alto Networks. The northern parcel on the project site is developed with an approximately 118,000 s.f., two-story, office building. The northern parcel has access from two driveways on Patrick Henry Drive and through the southern parcel of the project site from Great America Parkway. The southern parcel of the project site is developed with two, six-story buildings each with approximately 150,000 s.f. of office space.

3.1.1.2 *Surrounding Land Uses*

The project site is surrounded by properties designated for *Regional Commercial*, *High Intensity Office/Research and Development*, and *Light Industrial* land uses in the 2010-2035 General Plan. Existing development surrounding the project site includes office buildings to the north, office buildings and strip commercial development to the west, hotel and restaurant buildings to the south, and office buildings and the Great America Theme Park to the east. There are no properties in the vicinity of the project site that are now or have recently been farmed. The Norman Y. Mineta San Jose International Airport (San Jose International Airport) is located approximately 2.5 miles southeast of the project site. The site is located within the Airport Land Use Commission referral boundary for the San Jose International Airport.

3.1.2 Land Use Impacts

3.1.2.1 *Thresholds of Significance*

For the purposes of this EIR, a land use impact is considered significant if the project would:

- Physically divide an established community;
- Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to, the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect;
- Conflict with any applicable habitat conservation plan (HCP) or natural community conservation plan (NCCP);
- Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping & Monitoring Program of the California Resources Agency, to non-agricultural use;
- Conflict with existing zoning for agricultural use, or a Williamson Act contract;
- Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use;
- Induce substantial population growth in an area, either directly or indirectly;
- Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere; or
- Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere.

The project site is developed and located within an urbanized commercial and industrial area. The site is designated *Urban and Built-Up Land* by the California Resources Agency and is not under a Williamson Act contract. There are no open space uses on or adjacent to the project site. The site is not within the boundaries of an HCP or NCCP. The project will not create a physical barrier within an established community. For these reasons, the proposed project would not result in the loss of farmland directly or indirectly, conflict with a conservation plan or land use plan, or divide an established community.

3.1.2.2 *Land Use Conflicts*

Land use conflicts can arise from two basic causes: 1) a new development or land use may cause impacts to persons or the physical environment in the vicinity of the project site or elsewhere; or 2) conditions on or near the project site may have impacts on the persons or development introduced onto the site by the new project. Both of these circumstances are aspects of land use compatibility. Potential incompatibility may arise from placing a particular development or land use at an inappropriate location, or from some aspect of the project's design or scope. Depending on the nature of the impact and its severity, land use compatibility conflicts can range from minor irritations and nuisance to potentially significant effects on human health and safety. The discussion below distinguishes between potential impacts from the proposed project upon persons and the physical environment, and potential impacts from the existing surroundings upon the project.

The project would allow demolition and replacement of an existing two-story office building and development of up to three new office buildings for a total of six office buildings on the site, along with structured parking. The project site is located in an area with office and commercial development. Development in the project area contains parking lots and landscaped areas along street frontages and buildings with substantial setbacks from adjacent roadways. All new buildings on the site would be set back 30 feet from adjacent roadways. The proposed setbacks are similar to the setbacks for existing buildings on the site at the corner of Great America Parkway and Mission College Boulevard that will remain with the proposed project. The proposed buildings would reach a maximum of 12 stories in height. The project proposes a 1.26 FAR which is consistent with the *High Intensity Office/Research and Development* land use designation. The project proposes a *PD – Planned Development* zoning for the entire site which would allow the proposed buildings to exceed the 70-foot height limitations of the existing zoning district and reduce on-site parking requirements to 3.3:1,000. The proposed buildings would expand the existing office campus development on the site which is compatible with the surrounding land uses.

Construction of the project may cause short-term impacts to adjacent uses from increased dust and noise. These short-term impacts from construction are discussed in more detail in *Section 3.3 Air Quality* and *Section 3.4 Noise and Vibration*.

The project site is located in a commercial and office/industrial area and the proposed development would increase office space on the site. The project would not be affected by incompatible land uses in the project area.

Impact LU-1: The proposed office buildings are compatible with the existing development on the site and in the project vicinity. **(Less Than Significant Impact)**

Airport Land Use Compatibility

Pending review by the Airport Land Use Commission (ALUC), the project appears to be consistent with the ALUC Land Use Plan, because it is located outside the Airport's projected 65 dBA CNEL contour. The impact of aircraft flyovers from the Norman Y. Mineta San José International Airport on ambient noise levels at the project site is discussed in *Section 3.4 Noise and Vibration*. The

proposed building heights would require review by the Federal Aviation Administration (FAA) to confirm consistency with Part 77 regarding objects within navigable airspace. The City of San José holds an existing avigation easement over the site which restricts building heights to 250 feet above existing grade. The proposed building heights would comply with the height restrictions of the existing avigation easement. The proposed project would not be subject to any other FAA surface restrictions.

Impact LU-2: The proposed project would be subject to review by the FAA and ALUC but appears to be consistent with the Land Use Plan and height restrictions of the FAA. **(Less than Significant Impact)**

3.1.2.3 *Population and Housing Impacts*

The City of Santa Clara has a total population of approximately 122,690 residents in 47,123 households.[1] Of the 122,690 residents, approximately 57,318 are employed residents and the City has approximately 108,905 jobs.[2] In 2035 it is estimated that the City will have approximately 154,825 residents, 60,435 households, 154,280 total jobs and 86,800 employed residents.[3]

The jobs/housing ratio quantifies the relationship between the number of housing units required as a result of local jobs and the number of residential units available in the City. When the ratio reaches 1.0 a balance is struck between the supply of local housing and jobs. The jobs/housing ratio is determined by dividing the number of local jobs by the number of employed residents that can be housed in local housing. This is an environmental issue because proximity between jobs and housing strongly influences driving patterns, air quality, and other environmental factors.

The City of Santa Clara had an estimated 1.90 jobs for every employed resident in 2008.[4] The recently adopted 2010-2035 General Plan focuses on increasing housing and the placement of housing near employment. As a result, the overall jobs/employed residents ratio is expected to decrease to 1.77 by 2035. Some employees who work within the City are, and still will be, required to seek housing outside the community with full implementation of the 2010-2035 General Plan. In 2005, the City of Santa Clara had an employment base with approximately 2.12 jobs per employed resident and, therefore, the overall trend in jobs per employed resident in the City is expected to continue to decrease with implementation of the 2010-2035 General Plan.[5]

The proposed project would result in approximately 1,980[6] additional jobs on the site which would increase jobs citywide. By locating additional jobs in the City, the project could incrementally increase the demand for housing in Santa Clara as employees seek residences near the project site. There is currently a shortage of available housing within the City of Santa Clara compared to the

[1] City of Santa Clara. *City of Santa Clara 2010-2035 General Plan.* 2010.
[2] The current number of total employed residents is based on the City's jobs to employed residents ratio which is 1.9 jobs per employed resident.
[3] City of Santa Clara. *City of Santa Clara 2010-2035 General Plan.* 2010.
[4] Ibid.
[5] Association of Bay Area Governments. *Projections 2007.* December 2006.
[6] Based on one employee per 303 square feet of office space.

number of jobs within the City. The increase in jobs will incrementally increase the overall jobs/housing imbalance within the City, but would not represent a substantial change.

Impact LU-3: The project will intensify employment on land already planned for job growth in the 2010-2035 General Plan. The project site is currently developed with office uses; therefore, the proposed project will not displace existing housing or people. Through implementation of the 2010-2035 General Plan, the City's job/housing imbalance will be reduced and, therefore, the incremental increase in the City's jobs/housing imbalance resulting from the proposed project will have a less than significant impact on population and housing in Santa Clara. **(Less Than Significant Impact)**

3.1.3 Mitigation and Avoidance Measures

No mitigation is required or proposed.

3.1.4 Conclusion

Impact LU-1: The proposed office buildings are compatible with the existing development on the site and in the project vicinity. **(Less Than Significant Impact)**

Impact LU-2: The proposed project would be subject to review by the FAA and ALUC but appears to be consistent with the Land Use Plan and height restrictions of the FAA. **(Less than Significant Impact)**

Impact LU-3: The project will redevelop land previously planned for job growth in the 2010-2035 General Plan. The project site is currently developed with office uses; therefore, the proposed project will not displace existing housing or people. Through implementation of the 2010-2035 General Plan the City's job/housing imbalance will be reduced and, therefore, the incremental increase in the City's jobs/housing imbalance within the City resulting from the proposed project will have a less than significant impact on population and housing in Santa Clara. **(Less Than Significant Impact)**

3.2 TRANSPORTATION

The discussion in this section is based on a Transportation Impact Analysis prepared by *Hexagon Transportation Consultants* in May 2013. A copy of this report is included as Appendix A in this EIR.

3.2.1 Existing Setting

The major roadways providing access to the project site are described below and shown graphically in Figure 3.2-1.

3.2.1.1 *Regional Access*

Regional access to the project site is provided via US 101 and State Route 237 (SR 237) as described below.

US 101 is an eight-lane freeway (three mixed-flow lanes and one high-occupancy vehicle (HOV) lane in each direction) in the vicinity of the site. It extends north through San Francisco and south through Gilroy. Regional access to the project site is provided via its interchange with San Tomas Expressway/Montague Expressway and with Great America Parkway/Bowers Avenue.

SR 237 is a six-lane freeway that extends in an east/west direction between Sunnyvale and Milpitas, providing access to I-880 and U.S. 101. Two of the six lanes (one in each direction) are designated as HOV lanes. Access to the project site is provided via its interchange with Great America Parkway.

3.2.1.2 *Local Access*

Local access to the site is provided by San Tomas Expressway, Montague Expressway, Great America Parkway, Bowers Avenue, Central Expressway, Scott Boulevard, Mission College Boulevard, and Patrick Henry Drive as described below.

San Tomas Expressway is a north-south expressway that begins at US 101 and extends southward through Santa Clara and San José and into Campbell, where it transitions into Camden Avenue at State Route 17 (SR 17). Full interchanges are located at US 101 and SR 17. In the north, San Tomas Expressway is an eight-lane roadway including HOV lanes. The HOV lane designation is in effect in both directions of travel during the AM and PM peak commute hours. During other times, the lane is open to all users. South of El Camino Real, San Tomas narrows to a 6-lane facility including HOV lanes. The HOV lane designation in this segment is in effect for only the peak direction of travel (northbound in the AM and southbound in the PM) during the peak commute hours. San Tomas Expressway provides access to and from the project site via its direct connection to Montague Expressway and Mission College Boulevard.

Montague Expressway is generally an east-west expressway that begins at US 101 and extends northward to Lafayette Street and then northeastward to Milpitas where it transitions into Landess Avenue at I-680. Full interchanges are located at I-680, I-880, and US 101. Montague Expressway