



Figure 3.
Existing Bicycle Facilities

3. TDM MEASURES AND STRATEGIES

The City of Sunnyvale has a long list of TDM measures and strategies that are described in *Transportation Demand Management (TDM) Tool Kit*, prepared by The Hoyt Company in December 1999. Since that time new measures and strategies have been developed due to the emergence of web-based tools. The list of measures from the toolkit is summarized in Tables 2 and 3. Measures from this list plus more recent measures that are included in the TDM program for the Central Sunnyvale Campus development are described in the next chapter.

SUNNYVALE TDM TOOLKIT

The Sunnyvale TDM Tool Kit Measures can be divided into two sets of strategies: Planning and Design, and Programs and Services. The Planning and Design strategies, presented in **Table 2**, are part of the initial planning of the development to ensure that multiple modes of travel will be supported by a project’s design, including sidewalks, bicycle parking, and urban design features. Further, these provisions help connect the project to its surrounding environment and transportation networks.

**TABLE 2:
SUNNYVALE TDM TOOL KIT MEASURES: PLANNING AND DESIGN**

TDM Measure	Description
<i>Building Design & Layout</i>	
Building entries	Building entries located towards pedestrian-oriented activities and transit stops
Building setbacks	Reduced setbacks provide closer access to sidewalks and transit stops
Passenger loading zones	Passenger loading zones near building entrances provide accessible locations for drop-off and pick-up of carpool, vanpool, and transit/shuttle passengers
Building wiring	Wiring with fiber optics facilitates teleworking
<i>Transit Design Elements</i>	
Intersection geometrics	Streets and intersections designed to accommodate transit vehicle turning radii
Street design	Streets designed to structurally support the weight of transit vehicles
Land dedication for transit facilities	Land dedicated for construction of a future rail station or bus stop



**TABLE 2:
SUNNYVALE TDM TOOL KIT MEASURES: PLANNING AND DESIGN**

TDM Measure	Description
Transit passenger shelter/bus stop	Transit passenger amenities provided for on-site
Bus/rail station subsidy	Payment for the cost of constructing a bus stop or rail station
<i>Parking Design Measures</i>	
Off-street parking	Parking located on the side or rear of the building; not between building entrance and transit service
Parking configuration	Parking lot layout conducive to pedestrian access and circulation
Preferential parking	Designated parking spaces for carpools and vanpools near building entrances
Reduced parking	Reducing the number of parking spaces (with a strong TDM program) to shift people to alternative modes of transportation
Reduced parking fees	Free parking or reduced fees for preferential spaces (for sites that have paid parking)
<i>Pedestrian Design Measures</i>	
Minimize walking distances	Design pedestrian access with minimum walking distance and/or the most direct route to transit stops
Pedestrian connections	Safe, convenient pedestrian connections between buildings and surrounding streets
Internal pedestrian access	Safe, convenient pedestrian connections between buildings on the site
<i>Bicycle Design Measures</i>	
Showers/clothes lockers	Shower facilities and clothes lockers for those who walk and bike to work
Bicycle parking (short + long term)	Secure bicycle parking including racks, lockers, and enclosed locked limited access areas
<i>On-Site Amenities</i>	
Cafeteria with hot food service, ATM, exercise facilities, convenience retail, childcare, valet service, post office/stamps, onsite transit pass sales, etc.	On-site amenities provide services that would otherwise require a separate trip before, during, or after work hours

Source: *Transportation Demand Management (TDM) Tool Kit*, prepared for the City of Sunnyvale by The Hoyt Company, December 1999.

Fehr & Peers, 2013.



The Program and Service TDM measures are typically property management and employer-implemented strategies that support employee specific commuting options. These programmatic measures are often dependent on the design measures. For example, bicycle parking at the project site will be necessary for an effective employee bicycle program. The program and service measures are listed and described in **Table 3**.

**TABLE 3:
SUNNYVALE TDM TOOL KIT MEASURES: PROGRAMS AND SERVICES**

TDM Measure	Description
Information Board	
Information board	Permanent locations for updated TDM information
Transportation Coordinator	
Transportation coordinator	Transportation coordinators are responsible for developing, marketing, implementing, and evaluating TDM programs
Carpool Programs	
Carpool programs	Carpool programs help carpools to form by matching drivers and passengers
Vanpool Programs	
Vanpool programs	Vanpool programs help vanpools to form by matching drivers and passengers and by providing or subsidizing vans
Transit Programs	
Transit subsidies	Employers subsidize transit passes through programs such as Commuter Check or by purchasing passes
Onsite pass outlet	Providing transit passes for sale onsite as a convenience for employees
Shuttle programs	Operation of a shuttle service to nearby rail and transit stations and possibly to midday destinations
Parking Programs	
Preferential parking	Designated parking spaces for carpools and vanpools near building entrances
Paid parking	Free parking or reduced fees for preferential spaces (for sites that have paid parking)



**TABLE 3:
SUNNYVALE TDM TOOL KIT MEASURES: PROGRAMS AND SERVICES**

TDM Measure	Description
Parking cashout	Employees receive the cash equivalent of employer-provided parking if they elect to forgo parking
<i>Pedestrian Programs</i>	
Pedestrian programs	Walking programs encourage employees to walk to work and may include mapping walking routes, creating walking groups or buddies, and providing incentives
<i>Bicycle Programs</i>	
Bicycle programs	Bicycle programs encourage employees to bike to work and may include mapping routes, creating biking groups or buddies, and providing incentives
<i>Promotional Programs</i>	
New employee orientation	Introduces new employees to the TDM program
Flyers, posters, emails	Ways to keep the TDM message in front of employees on a regular basis
Transportation fairs	Transportation fairs provide alternative mode information in a fun event
Newsletter articles	Articles about TDM in company newsletters
Commuter information center	An on-site, one-stop shop for transit and commute alternatives information
Transit field trips	Orient new transit riders by showing them the local routes, fare collection method, transfer points, and other operational features
Free trial rides	Free transit tickets for employees interested in using transit
Transit riders guide	A guide with transit routes and schedules to the site
Bike-to-work day	A regional event to introduce bicycle commuting
Bicycle riders guide	A guide with bicycle routes, lanes, and paths to the site and bicycle parking facilities on the site
Guaranteed Ride Home Program	Employees who use transit, carpools, or vanpools are guaranteed a ride home in case of emergency or if they need to work late
Car share	Employees who bike or walk or use transit, carpools, or vanpools can utilize a car share vehicle located on site for errands or meetings



**TABLE 3:
SUNNYVALE TDM TOOL KIT MEASURES: PROGRAMS AND SERVICES**

TDM Measure	Description
Telecommuting	
Telecommuting	Telecommuting allows employees to work from home or from neighborhood telecenters via telecommunications
Alternative work schedule	
Flextime	Employees set or modify their arrival and departure times
Staggered Work Hours	Work units or groups select or are assigned different starting and ending times for their work day
Compressed Work Week	Employees work more hours in a single day, but fewer days of the week

Source: *Transportation Demand Management (TDM) Tool Kit*, prepared for the City of Sunnyvale by The Hoyt Company, December 1999.
Fehr & Peers, 2013.

OTHER TDM MEASURES

Other measures that may be included but that are not on the toolkit list are presented in **Table 4**.

**TABLE 4:
OTHER TDM MEASURES**

Measure	Description
On-Site Shuttle Stop	Shuttle stops on site making shuttle use convenient
Bike Share Program	Program provides employees with campus bicycles and free bicycle helmets
Tax Incentives	Passing employer tax benefits to employees who use non drive alone modes
Transit App	Downloadable smart phone application providing schedule and stop information for private shuttles and public transit
Financial Incentives	Employees who use alternative modes are provided financial incentives
Electric Bicycle Charging Station	Charging stations for electric bicycle could be located throughout the site which can be used for longer trips than standard bicycles



4. SELECTED TDM MEASURES AND STRATEGIES

The TDM measures and strategies for Central Sunnyvale Campus are divided into three general categories: (1) developer provided, including site planning and design measures based on the physical attributes of the site and the proposed buildings, plus the transportation facilities and services currently near the site, (2) those provided by the property manager and that could be used by multiple tenants, and (3) measures provided by the tenants. The last category of measures may need to be included in lease agreements or some other instrument to ensure their implementation if it is determined that they are mandatory.

DEVELOPER-PROVIDED – PLANNING AND DESIGN MEASURES

BUILDING DESIGN & LAYOUT

Building Setbacks

The buildings are located close to both N. Wolfe Road and E. Arques Avenue. Only Building 2 is slightly separated from the adjacent roadway by an internal circulation roadway. Locating the buildings near pedestrian and transit facilities encourages walking and transit use. Alternatively, having seas of parking between a roadway and a building would encourage driving.

Passenger Loading Zones

Passenger loading zones are located in the auto courts near the main entries to each building. They are convenient for carpools and vanpools dropping off passengers.

Building Wiring

The building will be wired with fiber optics for fast internet access which will facilitate telecommuting (employees working at home or other off-site location).

TRANSIT DESIGN ELEMENTS

Transit Passenger Shelter/Bus Stop

A new bus pad will be constructed for the bus stop on the east side of N. Wolfe Road, south of E. Arques Avenue as part of the site frontage improvements. The



new bus pad will accommodate transit buses stopping near the site facilitating transit as an access mode.

On-Site Shuttle Stop

An added site design measure that is not included in the Sunnyvale list is an on-site shuttle depot – or shuttle passenger loading and unloading zone - located on-site near Building 3. The depot could be used as a new stop on the ACE 822 Gray Line South Sunnyvale Shuttle route, the Caltrain Duane Avenue Shuttle route, which serves the Mountain View and Lawrence Caltrain Stations, or by a new shuttle serving downtown Sunnyvale and the Sunnyvale Caltrain Station. The shuttle depot provides a dedicated on-site area for shuttle riders thus supporting shuttle use.

PARKING DESIGN MEASURES

Off-Street Parking

Parking is located beneath the office space and in a standalone garage located behind the buildings. Therefore it is not located between the building entrances and transit service, which would increase the distance transit riders and pedestrian would need to walk. The short walking distances make the site more appealing for transit and pedestrian access.

Parking Configuration

The parking location supports pedestrian access and circulation. The building entrances are a short distance from the street sidewalks with clearly defined pedestrian walkways and crossings. Replacing surface parking with safe, secure, and covered podium and structured parking garages creates convenient walking distances for employees and visitors.

Preferential Parking

Parking spaces in the parking podiums near the building entrances could be designated as carpool and vanpool spaces. These spaces would be located in premium and convenient locations to incentivize carpooling. These spaces could be made available for other vehicles after 10:00 am.

PEDESTRIAN DESIGN MEASURES

Minimize Walking Distances

As described under Building Setbacks, the buildings are located on the site such that pedestrian walking distances to the sidewalks on the adjacent streets are minimized.



Pedestrian Connections and Internal Pedestrian Access

The site is designed with numerous pedestrian walkways and connections. Sidewalks are located around the perimeter of the site with connections to the internal pedestrian circulation system and to the central landscape quad. These walkways create a pedestrian-friendly environment on the site and provide safe and convenient connections between the buildings and to the surrounding streets. One hundred percent of employees are within a 2.5-minute walk (or less) from the center of the campus quad.

BICYCLE DESIGN MEASURES

Showers and Lockers

The buildings will have shower facilities and lockers and/or changing rooms. Shower and changing rooms will help promote bicycling (and walking) as an alternative commute option for interested employees.

Bicycle Parking

The site will contain bicycle lockers and/or a secure, limited access room for bicycle storage. The number and placement of bicycle facilities will meet the City of Sunnyvale municipal code. The City follows the VTA Bicycle Technical Guidelines when determining the required amount of Class I and Class II bicycle parking.



Electric Bicycle Charging Stations

Electric bicycle charging stations could be added to support the use of electric bicycles. Electric bicycles can be used by employees for whom a standard bicycle is not practical due to the length of their commute or other physical/health limitations.

POTENTIAL ON-SITE AMENITIES

Amenities will be provided on-site as a convenience for all employees, especially those who travel to the site by walking, bicycling, carpooling/vanpooling, or riding transit. The amenities on the Central Sunnyvale Campus site may include a cafeteria, a fitness facility, coffee bar, grab-and-go meals, general store, an ATM, a barbershop, sport courts, banking, dry cleaning pick-up, health and wellness, and a bicycle repair station. Food truck access may also be provided in and around the central quad.



PROPERTY MANAGEMENT-PROVIDED MEASURES

In addition to the Planning and Design attributes that contribute to alternative mode use, the property manager of the building can provide additional measures to meet the TDM goal. (Some of these measures can be provided by the property manager and/or by individual tenants.) These measures include a Transportation Coordinator and various components that together create a Commute Trip Reduction Program.

Commuter Information Center/Information Board

Information kiosks/boards can be located in the building lobbies. The kiosks contain information on shuttles, Caltrain, ACE, VTA bus and LRT service, carpool and vanpool organizations, bicycle routes, and other transportation options information. Alternatively, this information could be provided on a website. The Transportation Coordinator would be in charge of updating information. (Individual tenants may also post commuter information in their employee break rooms or other common gathering areas.)

Transportation Coordinator

A Transportation Coordinator will be hired by the property manager to promote the TDM Program, activities, and features to employees of all or some of the tenants. (Larger tenants may elect to have their own Transportation Coordinator.) The Transportation Coordinator would develop an on-site transportation information center or website as discussed above. The Transportation Coordinator may provide information via new employee orientation packets, flyers, posters, email, and/or educational programs. The Transportation Coordinator's role also includes actively marketing alternative mode use, administering a carpool and vanpool matching program, developing pedestrian and bicycle programs, and promoting special programs such as Bike-to-Work Day or Carpool Week. The Transportation Coordinator can notify employees of Spare the Air days (as declared for the Bay Area region) and associated transit promotions. Prizes may be offered for non-SOV travel on these days to encourage participation. The Transportation Coordinator may offer prizes as incentives for ridesharing, using transit, bicycling, and walking.



Carpool/Vanpool Programs

Carpools in the Bay Area consist of two or more people riding in one vehicle for commute purposes. Vanpools provide similar commuting benefits as carpools, though a vanpool consists of seven to 15 passengers, including the driver, and the vehicle is either owned by one of the vanpoolers or leased from



a vanpool rental company. The Transportation Coordinator can provide an Internet link to the 511.org Rideshare website to access ride matching services. The Transportation Coordinator can also administer an on-site carpool and vanpool matching service for employees or via peer-to-peer matching programs such as ZimRide and RideSpring. A list of available vanpools that provide service between the project site and various points in the Bay Area can also be provided.

Shuttle Programs

Two Caltrain Duane Avenue shuttle routes are located near or adjacent to the project site location, however, neither of them have a stop near the project site. The property manager can consider requesting additional stops on the routes, which originate from the Mountain View and Lawrence Caltrain Stations. Caltrain will consider adding shuttle stops to an existing route after determining the impact on the existing route's schedule, capacity, and funding. The VTA is the principal entity managing the allocation and distribution of shuttle funding, however, most shuttles receive between 25-90% of their funding from employers. The property manager/lead employer may be responsible for all additional service costs beyond those budgeted.

Pedestrian Programs

The purpose of pedestrian programs is to encourage employees to walk to work. They include maps showing the most pedestrian-friendly routes in the area, programs that describes the health benefits of walking, and creating walking buddies for people who choose to walk together to and from work. Another way to encourage walking is to have periodic pedometer challenges with prizes for the most steps in a selected time period. Pedestrian programs would be administered by the Transportation Coordinator.

Bicycle Programs

Similar to pedestrian programs, the purpose of bicycle programs is to encourage employees to cycle to work. Bicycle program include maps of bicycle facilities in the area, which can be annotated to describe the cycling conditions, bicycling buddies (bike commuters with common bike routes), and bicycle support



items such as water bottles and tire patch kits. Bicycle programs would be administered by the Transportation Coordinator.

Promotional Programs

There are many items that can be categorized as general promotional programs that are used to provide information regarding non-solo driving modes and to create excitement around using alternative modes. These programs would be administered by the Transportation Coordinator.

Transportation Fairs – Usually include booths/tables sponsored by transit agencies and bicycle advocacy groups with information on commute options, and can include demonstrations on bicycle riding tips and bicycle repairs, and raffles for bus tickets, transit passes, water bottles, bike helmets, etc.

Flyers and Posters – That advertise commute options and special activities such as Bike-to-Work Day

Free Trial Rides – Free bus or train passes provided to employees so that they can try riding transit

Transit Riders Guide – An informational guide on how transit pay systems work, bus routes and stop locations, etc. to make riding transit more familiar

Bicycle Riders Guide – An informational guide with bicycle safety and riding tips to encourage bicycle riding

Car Share

Car sharing provides an on-demand access to shared vehicles on-site on an as-needed basis, providing alternative mode commuters a means for day trips. A car share program can be created through a local partnership or an existing car share company.

Bike Share

Bicycles and bike helmets can be provided on-site for use by tenants during the day. This allows employees who use transit or walk to work with a way to run errands during the day.



TENANT-PROVIDED MEASURES



The tenant (individual employers) can provide measures that directly affect the commute mode choices of their employees such as financial incentives, accommodating telecommuting and alternative work schedules and programs tailored to their employees' needs.

Promotional Programs

In addition to the promotional programs listed under the measures provided by Property Managers, tenants can also create promotional programs tailored to their employees. These include:

New employee orientation – New employee orientation packets outlining alternative transportation options and an orientation program, which explains the importance and benefits of using alternative transportation modes, and incentives provided by the company, such as commuter checks, ECO Passes, etc.

Newsletter Articles – The tenant may include articles about commute options, including highlighting staff who primarily use commute options, in their internal newsletters and websites

Transit Field Trips – Employees may be offered a transit field trip as a way to become more familiar with travel on buses, Caltrain, or ACE

Subsidized Transit Passes

All employees who use transit can be provided with subsidized transit passes, such as VTA's Eco Pass, through the Commuter Check (<http://www.commutercheck.com/>) or other similar program, which provides vouchers that can be redeemed online for transit passes and tickets, vanpool fares, or park and ride lot costs at Caltrain stations. The Commuter Check credit can be provided tax-free to employees that ride transit to work in amounts up to \$240 per month (amount determined by the IRS (IRS Tax Code Section 132(f) - Qualified Transportation Fringe)). Tenants may also elect to fully subsidize Commuter Checks as an employee benefit. 511.org has an outreach program to help employers get started.

On-Site Transit Pass Sales

Commuter Checks can be made available online through Commuter Check Direct, a service that will deliver the transit passes directly to the employee's home or office.



Guaranteed Ride Home Program

A common reason that employees do not use alternative modes (i.e., carpool, vanpool, or transit) is the inability to leave work unexpectedly for a family emergency or the fear of being stranded if they need to work late. One TDM element that allays these fears is a Guaranteed Ride Home program. With this program, employees can use a taxi service, rental car, or other means to get home, and the employer pays for the service. Employees who wish to use the service would contact the Transportation Coordinator or other designated person to make the travel arrangements.

Telecommuting

Allowing employees to work off-site and providing them with the necessary infrastructure, i.e., internet access and internal data access, reduces the number of vehicle trips entering and exiting the site and on the roadway system.

Alternative Work Schedules

Flextime options such as compressed workweeks and alternative work hours can allow employees to make better use of transit and/or reduce the number of days they travel to the office. As noted above, employees arriving after 10:00 am will be eligible to park in available carpool and vanpool preferential parking locations.

Parking Cash-Out

With a parking cash-out program, employees are offered the option of a “free” parking space or a cash equivalent that can be used to offset the cost of commuting by an alternative mode. Typically employers offer their employees a cash payment equivalent to the cost of the parking space to the employer based on their rent payments.

Tax Incentives

Tax benefits are available for employees that opt for transit and bicycle use. Bicycle commuter subsidies are available via the Commuter Check for Bicycling Program (see <http://www.commutercheck.com/mycommutercheck.aspx>). As of January 1, 2009, employees who regularly use their bicycles to get to and from work are eligible for up to a \$20-a-month, tax-free reimbursement from their employers for bicycle-related expenses. Employers will in turn be able to deduct the expense from federal taxes.



Financial Incentives

Tenants can consider offering employees who commute by transit, bicycling or walking financial incentives such as cash payments, gift cards, monthly raffles with prizes, etc.

Transit App

Tenants could adapt smartphone applications regarding transit access for their site.

