Transportation Demand Management Plan for 1001 North Shoreline Boulevard

Prepared for the City of Mountain View

Submitted by
W-Trans

March 6, 2020

TRAFFIC ENGINEERING
TRANSPORTATION PLANNING
Balancing Functionality and Livability since 1995
w-trans.com

This page intentionally left blank

Table of Contents

Introduction 1

Transportation Setting 5

TDM Measures and Analysis 8

TDM Implementation and Monitoring 13

Study Participants and References 15

Plates

1. Site Location with Quarter Mile Buffer 2
2. Project Site Plan 3
3. VTA Route Map in Mountain View 6

Tables

1. Adjacent Transit Facilities 7

Appendices

A. Trip Generation Estimates
B. CAPCOA TDM Reduction Output

This page intentionally left blank

Introduction

W-Trans has prepared a transportation demand management (TDM) plan for the proposed residential and retail development to be located at 1001 North Shoreline Boulevard in the City of Mountain View. The purpose of a TDM plan is to (A) Reduce project generated trips; (B) Reduce the amount of parking needed and traffic generated by new development or the expansion of existing development; (C) Promote the more efficient utilization of existing transportation facilities and ensure that new developments are designed in ways to maximize the potential for alternative transportation usage; and (D) Establish an ongoing monitoring program to ensure that alternative mode use goals are achieved.

For the 1001 N. Shoreline Boulevard project, this TDM Plan, combined with the shared parking strategy, were developed so that the proposed project would be completely self-parked on-site, and there would be no spillover parking into the adjacent neighborhood. The recommendations of the TDM Plan include specific measures to ensure no parking spillover, including establishing a TDM Coordinator, an unbundled parking strategy, support for a Residential Permit Parking Program (if desired by neighborhood residents), annual TDM monitoring that includes on-street parking in the neighborhood, annual reporting (and adjustments if needed) of the project's trip reduction and shared parking goals, bike share program, and participation in the City's Transportation Management Association. Further the target trip reduction associated with the TDM plan is 8-percent which is considered to be standard for new development projects.

Project Profile

The Residences at Shoreline Gateway in the City of Mountain View is the second phase of a mixed-use development located at 1001 North Shoreline Boulevard. Phase I of the project, approved in 2015 and completed in 2018, includes an 111,443 square foot office building and 371 parking spaces in a surface lot on approximately 7.81 acres. Phase II proposes to create a vibrant mixed-use community by replacing the existing surface parking lot with two, seven-story residential buildings, including up to 3,000 square feet of neighborhood serving retail space, adjacent to the newly constructed office building. The residential buildings will include dedicated parking spaces for residents. In addition, the projects as proposed includes a new parking garage providing 359 spaces that would serve to replace the existing surface lot to primarily serve the office tenant(s). However, the project will maximize the efficiency of existing on-site parking by utilizing the parking garage 24 hours per day. During the week, the garage will be reserved for employees of the office tenant. After work hours, however, when the garage would typically experience minimal use, the garage will be available for shared use with both apartment and condominium residents as further detailed below.

The proposed apartment building to be located on the northwest corner of the project site along Shoreline Boulevard is to be comprised of 203 one-, two- and three-bedroom units along with 244 dedicated podium garage spaces. The condominium building proposed for the southeast corner of the project site on Terra Bella Avenue is to be comprised of 100 one-, two- and three-bedroom condominiums and 128 dedicated podium garage spaces. Combined, the project provides a total of 372 residential parking spaces within the two podium garage structures. In addition to the two podium garages, the project also includes the construction of a six-story above-ground parking garage with a total of 359 spaces. Parking spaces within the garage will primarily be reserved for tenants of the office building. However, after business hours on weekdays (Monday - Friday, 6:00 p.m. – 8:00 a.m.) and on weekends, the project will make up to 100 parking spaces available for shared use with guests of residents of the apartments and condominiums. The hours will be adjusted as needed.

With the availability of these additional 100 spaces, the project will be able to offer a total of 472 residential parking spaces, and the overall residential parking ratio will increase. The proposed project also includes up to 3,000 square feet of retail space, 12 surface parking spaces specifically allocated to service the retail space, and 40 additional surface spaces to be shared by retail customers, residential guests and office employees. In total, the

project proposes to provide 783 parking spaces on-site, with an effective parking capacity of 883 spaces once the shared parking within the office garage is accounted for.

The project site is located at 1001 North Shoreline Boulevard, as shown in Plate 1, with a quarter-mile buffer highlighting the nearby transit stops. The site plan is shown in Plate 2.

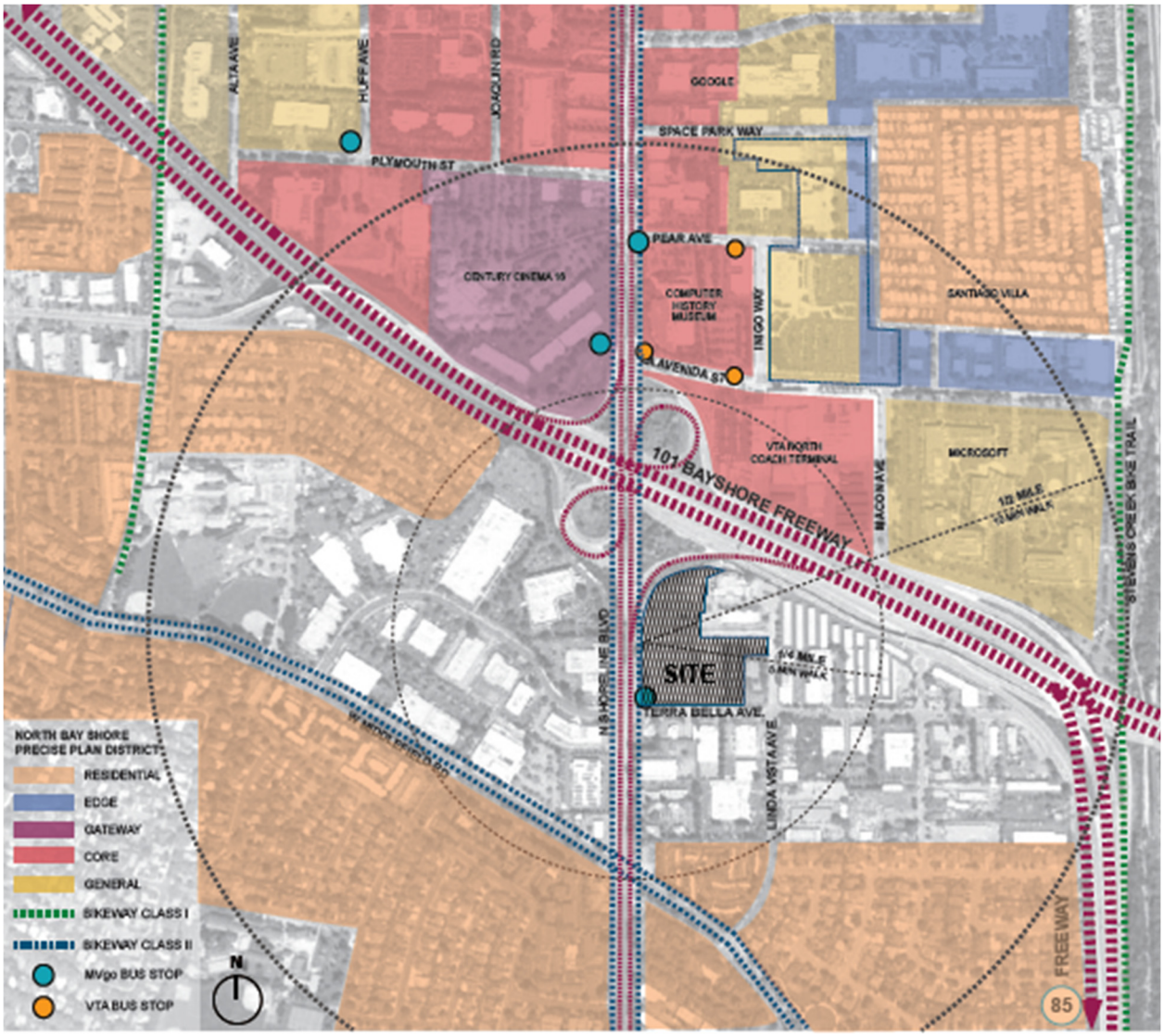


Plate 1 Site Location with Quarter Mile Buffer

Plate 2 Project Site Plan

Project Trip Generation

The anticipated trip generation for Phase II of the proposed project was estimated using standard rates published by the Institute of Transportation Engineers (ITE) in *Trip Generation Manual*, 10th Edition, 2017 for "Multi-family Housing (ITE LU #221) and "Coffee/Donut Shop without Drive-Through Window" (ITE LU #936). After applying the mixed-use and pass-by trip reduction, the proposed project, including the retail, is expected to generate an average of 2,597 trips per day, including 291 net new vehicle trips during the a.m. peak hour and 178 net new vehicle trips during the p.m. peak hour. Of this total, it should be noted that the retail space is expected to account for a high percentage of projected total trips during peak hours. To be conservative, the trip generation forecast

assumes a coffee shop or similar sort of café will occupy the retail space, although this may or may not be viable. Under this conservative assumption, the retail alone generates an average of 1,246 net new vehicle trips per day, or 48% of the total, including 201 net new vehicle trips during the a.m. peak hour and 65 net new vehicle trips during the p.m. peak hour. The anticipated trip generation table is provided in Appendix A.

It is also important to note that the anticipated trip generation includes reductions allowed by Santa Clara Valley Transportation Authority (VTA) and the City of Mountain View for mixed use development comprised of housing and employment, as well as housing and retail land uses. The anticipated trip generation also includes a pass-by reduction applied to the retail portion of the project. Some portion of traffic associated with retail uses is drawn from existing traffic on nearby streets. These vehicle trips are not considered "new," but are instead comprised of drivers who are already driving on the adjacent street system and choose to make an interim stop and are referred to as "pass-by." The percentage of these pass-by trips was developed based on information provided in the *Trip Generation Manual*. This reference includes pass-by data collected at numerous locations for many land uses, such as the fast food restaurant use applied in this traffic analysis.

Applicable Standards

The City of Mountain View has adopted standards set forth in VTA's *Transportation Impact Analysis Guidelines*, 2014 regarding applicable TDM strategies. VTA encourages development projects to implement several types of TDM strategies, but only two such strategies allow for standard trip reductions in the model. Section 8.2.3 Transportation Demand Management Program within *Transportation Impact Analysis Guidelines*, 2014, stipulates that financial incentives and shuttle programs associated with new projects can account for trip reductions. Financial incentives, including parking cash-outs, transit subsidies, etc., qualify for a maximum trip reduction of five percent (5%). Shuttle programs are considered to qualify for a three percent (3%) reduction when the program links the site to locations with high employee densities. The full three-percent reduction, however, can only be applied if a project is committed to fully funding a dedicated shuttle to light rail, Caltrain, or BART facilities. If a project (such as 1001 North Shoreline Boulevard) is committed to partially funding a shuttle to other sites including the project site, a two percent (2%) reduction can be applied.

It should be noted that although VTA only provides guidance for standard reductions for the two aforementioned TDM strategies, additional strategies which can be effective and are widely accepted throughout the San Francisco Bay Area and State of California will be discussed throughout this document. Although not accepted under the standard deductions provided by VTA, the potential effectiveness of all proposed TDM strategies will be discussed, as they are intended to reduce single occupant vehicle trips and parking demand associated with the proposed project. As such, under VTA guidelines this TDM Plan is assuming and planning for trip reductions under a peer/study-based methodology (see Trip Reduction Calculations later in this TDM Plan).

Lastly, goals and policies within The Mountain View 2030 General Plan (July 2012) include developing, adopting, and monitoring TDM strategies to reduce vehicle trips and parking demand. These recommended strategies include, but are not limited, to the following:

- **Neighborhood/Site Design** – Bicycle and pedestrian network improvements, traffic calming and site design to support alternative travel modes.
- **Parking Policies** – Parking supply limits, unbundled parking and public parking pricing.
- **Transit System Improvements** – Network expansion, service frequency and speed and transit access improvements.
- **Commute Trip Reduction Programs** – Transit Fare subsidies, employee parking cashouts, alternative work schedules, workplace parking pricing, shuttles or employer-sponsored vanpools.

Transportation Setting

Alternative Modes

Pedestrian Facilities

Pedestrian facilities in the project vicinity include sidewalks, crosswalks, pedestrian signal phases, curb ramps, curb extensions, and various streetscape amenities such as lighting, benches, etc. In general, a network of continuous sidewalks, crosswalks, and curb ramps provide access for pedestrians in the vicinity of the proposed mixed-use development. There is a seven-foot-wide sidewalk along the east and west sides of North Shoreline Boulevard and a five-foot-wide sidewalk along the north and south sides of Terra Bella Avenue. The four-legged signalized intersection located at North Shoreline Boulevard/Terra Bella Avenue includes marked crosswalks and curb ramps at all approaches. Both North Shoreline Boulevard and Terra Bella Avenue include overhead lighting along the project frontage. Full sidewalk connectivity exists spanning in all directions of the project including the North Bayshore Precise Plan Area.

Bicycle Facilities

The *Highway Design Manual*, Caltrans, 2017, classifies bikeways into four categories:

- **Class I Multi-Use Path** – a completely separated right-of-way for the exclusive use of bicycles and pedestrians with cross flows of motorized traffic minimized.
- **Class II Bike Lane** – a striped and signed lane for one-way bike travel on a street or highway.
- **Class III Bike Route** – signing only for shared use with motor vehicles within the same travel lane on a street or highway.
- **Class IV Bikeway** – also known as a separated bikeway, a Class IV Bikeway provides a separated path for one-way bicycle travel adjacent to a street or highway. Bicycles are separated from motor vehicle traffic by a raised curb, bollards, parking with a painted buffer, or other vertical physical barrier.

In the project vicinity, Class II bike lanes exist on both sides of North Shoreline Boulevard. The Class II bike lanes extend in both the northbound direction until Charleston Road and to El Camino Real in the southbound direction. It is important to note that improvements included in the 2015 Mountain View Bicycle Transportation Plan along roadway segments and intersections adjacent to the project site include the following:

- A Class IV Bikeway along Shoreline Boulevard between North Road and Montecito Avenue.
- Crossing and turning improvements to be located at the intersection of Shoreline Boulevard/Pear Avenue.
- A protected intersection to be located at the intersection of Shoreline Boulevard/Terra Bella Avenue.
- Bicycle intersection crossing markings to be added to the intersection of Shoreline Boulevard/Middlefield Road.
- A protected intersection to be located at the intersection Shoreline Boulevard/Middlefield Road.
- A pedestrian and bicycle bridge providing a connection the intersection of Terra Bella Avenue/Shoreline over US 101 to the intersection of Pear Avenue/ Shoreline Boulevard.

Transit Facilities

Valley Transportation Agency (VTA), Mountain View Go (MVgo), and the Mountain View Community Shuttle provide fixed route transit service within Mountain View and the greater Santa Clara County. With the exception of the school only and overnight routes, all VTA routes provide off-peak service in addition to the peak-period

service described below. The following VTA, MVgo, Mountain View Community Shuttle routes operate within the vicinity of the project site and are shown in Plate 3.

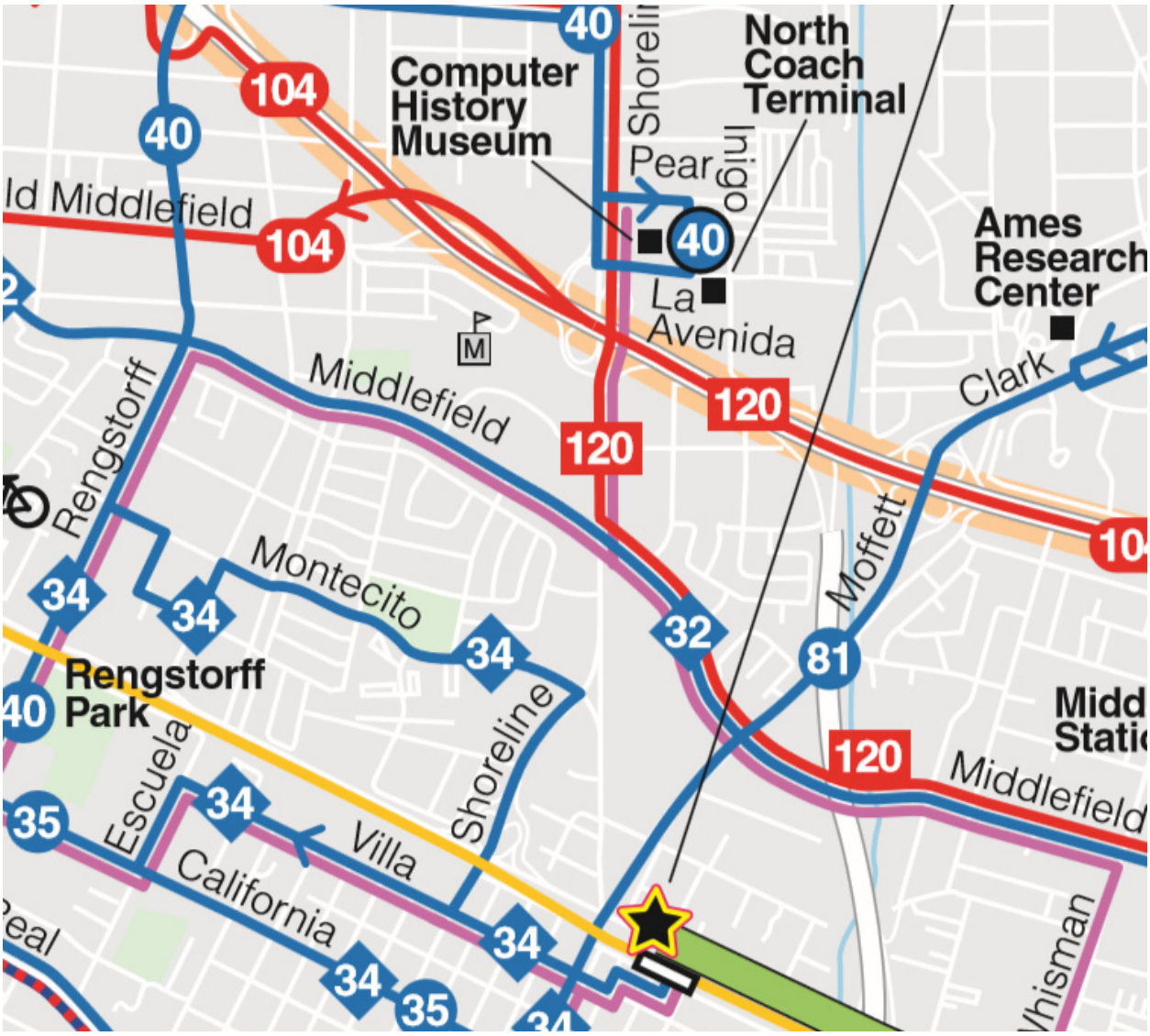


Plate 3 VTA Route Map in Mountain View

VTA provides fixed route bus service in Mountain View and Santa Clara County and operates three routes in the vicinity of the project site. Route 120 provides service between the Fremont Bart Station and the intersection of San Antonio Road/Casey Avenue in Mountain View with 30 minute to one-hour headways on weekdays, both northbound and southbound. Route 32 provides service between the San Antonio Shopping Center in Mountain View and the Santa Clara Caltrain Station with approximately 30 minute headways in both the east bound and westbound directions. On weekends the routes provide service consisting of approximately 60-minute headways. Route 185 provides service between the intersection of San Antonio Road/Bayshore Avenue and the Gilroy Transit Center with 45-minute headways on weekdays only.

Two bicycles can be carried on most VTA buses. Bike rack space is on a first come, first served basis. Up to two additional bicycles are allowed on VTAs buses depending on passenger loads.

The Mountain View Community Shuttle also provides free loop service throughout Mountain View via two routes. Stops located within the vicinity of project site exist at the intersection of North Shoreline Boulevard/Middlefield Road. Service is provided every day of the week between the hours of 10:00 a.m. and 6:00 p.m. During the week routes operate with headways of approximately 30 minutes. On weekends headways are approximately 60 minutes.

MVgo provides service within the vicinity of the project via the West Bayshore and East Bay Shore Routes. The West Bayshore Route provides service between the Mountain View Transit Center and the intersection of Casey Avenue/Marine Way with 15-30 minute headways between 7:00 a.m. and 8:00 p.m. The East Bayshore Route provides service between the Mountain View Transit Center and Crittenden Lane.

It should be noted that a reversible bus lane is proposed along the Shoreline Boulevard corridor adjacent to the project site. The proposed transit improvements along the corridor include additional bus stops, including a stop near the intersection of Shoreline Boulevard/Terra Bella Avenue.

VTA Access Paratransit

VTA Access Paratransit is an on-demand service for persons with disabilities who cannot independently use regular fixed-route transit services. VTA provides daily service throughout Mountain View and adjacent jurisdictions between the hours of 5:30 a.m. and midnight.

Caltrain

Caltrain is the commuter rail line serving the entire San Francisco Peninsula. It connects Mountain View with San Francisco to the north and San Jose and Gilroy to the south. On weekdays, there are 80 trains servicing the Mountain View Station in both the northbound and southbound directions including limited-stop and express service. On weekends, there are 88 trains that stop at the station in each direction on Saturdays and Sundays. The Mountain View Caltrain Station is located on West Evelyn Street between Castro Street and Bush Street, approximately 1.2 miles from the project site. Both bicycle racks and lockers are provided at the Mountain View station. Bicycle racks are available on a first-come-first-served basis, while lockers must be reserved. Furthermore, paid vehicle parking is available at the station for riders. It is important to note that the Mountain View Caltrain Station is located over just one mile from the project site. Further, it should be noted that several "first and last mile" travel modes are currently present including transit, local shuttles, as well as shared mobility opportunities.

The transit facilities mentioned above which are located within the immediate area of the project are listed in Table 1. Metrics such as frequency, distance, as well as service schedule are provided in detail.

Table 1 – Adjacent Transit Facilities

Service	Distance to stop/station	Peak Headway	Off-peak Headway	Span	High Quality Transit
VTA Rte 32	1,355 ft	15 min	30 mins	6:00 a.m. – 9:00 p.m. (Mon – Fri), 8:45 a.m. – 6:00 p.m. (Sat)	Yes
VTA Rte 120	2,000 ft	30 min	N/A	6:00 a.m. – 8:00 p.m. (Mon – Fri)	No
VTA Rte 185	2,000 ft	45 min	N/A	6:00 a.m. – 8:00 p.m. (Mon – Fri)	No
Mountain View Community Shuttle	1,500 ft	30 min	30 mins	10:00 a.m. – 6:00 p.m. (Mon – Sun)	No
MVgo	300 ft	20 min	N/A	7:00 a.m. – 10:30 p.m., 3:30 p.m. – 8:40 p.m. (Mon – Fri)	No
Caltrain	1.2 mi	15 min	30-60 min	4:45 a.m. – 10:30 p.m. ,3:30 p.m.	Yes

TDM Measures and Analysis

This chapter describes the TDM measures that are included in the proposed Plan. Section 8.2.3 within VTA's *Transportation Impact Analysis Guidelines* provides trip reduction measures that can be implemented to achieve the vehicle trip generation reductions.

TDM Measures for Project Site

The project's TDM Program will provide information, encouragement, and access to non-motorized travel options with the goal of reducing the number of vehicle trips and shifting these trips to alternative modes. The proposed TDM measures include:

- **Participation in MVTMA**. The City of Mountain View requires the project to participate in the Mountain View Transportation Management Association (MVTMA) for the life of the project. The MVTMA operates in all employment centers in the city, including Whisman, North Bayshore, San Antonio, and East Whisman. By participating in the MVTMA, the project would partially fund the MVgo shuttle which operates within convenient walking distance of the project site, including stops located at Shoreline Boulevard/Terra Bella Avenue. The standard trip reduction applied by VTA for partially funding a shuttle is two-percent (2%).

- **On-Site TDM Coordinator.** The on-site TDM transportation Coordinator will provide TDM services for both the condominium and apartment land uses. They will perform a key role in marketing, implementing, and monitoring the various TDM strategies intended to reduce single occupant vehicle trips and parking demand. The TDM Coordinator will be in charge of providing up-to-date information to residents regarding parking, on-site bike share opportunities, shuttles, transit facilities, and shared mobility opportunities. This includes informing residents not to park on local streets in the Stierlin Estates neighborhood, and acting as a liaison between the property and the Stierlin Estates neighborhood association. Additionally, the TDM Coordinator will enroll the project and join the Mountain View Transportation Management Association on behalf of the development. The coordinator will also encourage activities such as walking school buses, bike trains, and other promotional events for alternative modes of transportation. Finally, the Coordinator will arrange and manage the annual monitoring and reporting program which will establish the efficacy of the TDM plan itself.

- **TDM Marketing.** The TDM Coordinator will provide materials to residential leasing and management employees to make sure they are aware of the programs available, including the benefits of trip and parking reduction, alternate mode options, and local street parking restrictions. Marketing materials will include welcome packets to new residents and also include relevant information regarding the Mountain View TMA.

- **Subsidized Transit Passes.** The project applicant will offer a VTA SmartPass to any resident or employee of the apartment building who requests one (in order to prevent waste). This offering will continue for the life of the apartment building (the mechanism through which the transit passes are offered may change as offerings in the City change over time). Homebuyers at the condominium building will be given a one-year VTA SmartPass with the initial purchase of their new home. The SmartPass benefits will be loaded onto a Clipper Card that residents and employees can also use for transit agencies across the Bay Area. Based on the CAPCOA report Quantifying *Greenhouse Gas Mitigation Measures*, CAPCOA 2010, it is estimated that the provided transit subsidy has the potential to reduce the trip generation associated with the apartment building by approximately thirteen-percent (13%).

- **Pedestrian Connections.** The mixed-use nature of the project and the proposed site plan encourages residents to walk instead of drive for their daily commute trips and errands. The on-site pedestrian network is designed to conveniently link the residential units and office space to the common open space, and proposed on-site retail. The design does not include physical barriers such as walls, landscaping, or slopes

that could impede pedestrian circulation. The on-site pedestrian network seamlessly connects to the public sidewalks on North Shoreline Boulevard, Terra Bella Avenue, and Linda Vista Avenue and will include pedestrian scale lighting on-site to enhance pedestrian safety. Based on the California Air Pollution Officers Association (CAPCOA) report *Quantifying Greenhouse Gas Mitigation Measures*, CAPCOA 2010, it is estimated that the seamless on-site pedestrian connections would reduce the site's trip generation due to the mixed-use nature.

- **On-Site Bicycle Amenities.**

a. **Long Term Bicycle Storage.** In accordance with City of Mountain View Municipal Code, the proposed residential project includes long-term bicycle parking for 303 bicycles split between the two residential buildings, including 100 secure spaces serving the condominium building and 203 secure spaces in the apartment building. The Class I (restricted access) bicycle storage areas will be accessed via the lobbies of each residential building. The office the office project provides a total of 40 secure parking spaces 57 indoor bicycle spaces for their employees. Based on the CAPCOA report *Quantifying Greenhouse Gas Mitigation Measures*, CAPCOA 2010, long-term bicycle storage has a minimal effect on trip generation and parking demand, but supports the greater trip reduction program by providing opportunities for non-motorized travel.

Source: homedesignersuite.com

b. **Short Term Bicycle Storage.** In accordance with the City of Mountain View Municipal Code, the project will also provide 21 short-term outdoor bike parking spaces for the apartments and 10 for the condominiums. According to the existing TDM program for the office building approved by the City on February 22, 2016 and updated on March 31, 2016, the office project provides a total of 17 outdoor bike racks (34 spaces) for their employees. Similar to long term bicycle storage, the provision of short term bicycle storage is expected to have a minimal effect on trip generation and parking demand.

c. **Bike Share.** To further reduce the number of trips generated by the project, a bike share program will be established and administered by the on-site TDM coordinator. A total of 10 bike share bicycles will be provided on-site located within the apartment ground floor lobby. Residents will be able to check-out and reserve bikes via the bike share program. The TDM coordinator will be responsible for procurement and maintenance of the bike share fleet. Based on the CAPCOA report *Quantifying Greenhouse Gas Mitigation Measures*, CAPCOA 2010, a bike share program has a minimal effect on trip generation, but supports the greater trip reduction program by providing opportunities for non-motorized travel.

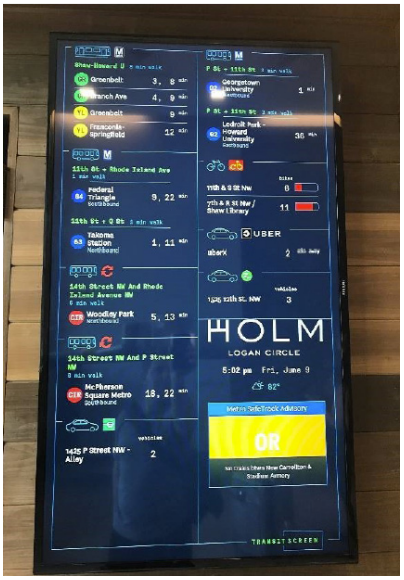
d. **Bicycle Repair Facility.** The bicycle repair stations will consist of tools and amenities to make it convenient for residents and employees to repair bicycles on-site. Two bicycle repair stations will be constructed, one within the apartment building, and the other within the condominium building. Both facilities will be conveniently located.

Example of Bicycle Repair Station

- **Unbundled Parking.** One of the most effective strategies in reducing trips is the use of "unbundled parking". The parking supply for the residential project will be partially unbundled from the sale or rental of the residential units in that parking will be sold or rented separately for residents seeking a second parking space. Unbundling parking separates the cost of constructing parking and the cost of purchasing a residential unit. Therefore, the parking costs are passed through to the vehicle owners/drivers who utilize the parking spaces and not to those who choose not to own a personal vehicle, thus creating a financial incentive for homeowners/renters to own fewer vehicles. The apartment project will provide one reserved parking space for each unit in the base rent. The condominium project will provide one deeded parking space for each unit in the sale price. Renters/Owners will have the option to rent additional spaces, if available, on a first come, first serve basis with priority considered for units with higher bedroom counts. Based on the CAPCOA report *Quantifying Greenhouse Gas Mitigation Measures*, CAPCOA 2010, it is estimated that unbundling the parking supply would reduce the project's trip generation by twelve percent (12%). For the apartment building, this calculation is based on the assumption that one parking space would be leased for $1,200, over a 12 month period, to determine the monthly parking cost of $100 as required for the calculation. It is important to note that higher monthly parking fees would serve as a disincentive for vehicle ownership by residents of the apartments even further.

  The Applicant is committed to unbundled parking as part of their comprehensive TDM Plan to address potential parking spillover into the adjacent neighborhood. A minimum price of $100 will be set for the unbundled spaces in the apartments and market pricing will be established for homeowners who wish to purchase additional spaces, as a method to deter parking spillover and vehicle ownership overall in general. Should the applicant choose to increase the monthly rent/price of a parking space, the expected number of trips generated by the project and the associated parking demand would be expected to further decrease.

- **On-Site Transit Amenities.** The applicant proposes to install an alternative mode kiosk and monitors to provide residents with information about (1) transit routes and schedules, (2) carpooling and vanpooling, (3) bicycle lanes, routes, paths and facilities. The proposed kiosks will be located in the primary ground-floor elevator lobbies of each building. The monitors will display real-time arrival and departure times for nearby transit stops using a Google Transit feed. Each ground level residential lobby will have a monitor prominently positioned to provide this data. This information will be maintained by the designated TDM Coordinator. Additionally, residents will be provided with welcome packets that include information on transit passes, bike share options, transit maps and schedules, and contact information for the TDM Coordinator. Based on the CAPCOA report *Quantifying Greenhouse Gas Mitigation Measures*, CAPCOA 2010, it is estimated that the above on-site transportation amenities will reduce the site's trip generation by four percent (4%).



Source: Transit Screen Display in Holm Apartments, Washington, D.C.

- **Telecommuting Facilities.** The implementation of telecommuting facilities such as high-speed internet connections will allow residents to individually reduce the number of vehicle miles traveled associated with the project. Based on the CAPCOA report *Quantifying Greenhouse Gas Mitigation Measures*, CAPCOA 2010, it is estimated that residents who participate in telecommuting will reduce their respective vehicle miles traveled and greenhouse gas emissions by approximately one-percent (0.7%).

- **Residential Amenities.** Each residential building will include a common workspace area in addition to a secure area for package deliveries and groceries. The common workspaces will include high-speed internet access so that residents will be able to work from home if need be. Including these amenities on-site has the potential to reduce vehicle miles traveled.

Trip Reduction Calculations

The proposed TDM measures were also evaluated using the California Emissions Estimator Model (CalEEMod, version 2016.3.1). CalEEMod is a statewide land use emissions model used to quantify potential emissions impacts associated with a variety of land use projects. The model quantifies direction emissions, including vehicle use, and indirect emissions, including energy and water use. The model was developed for CAPCOA and incorporates the mitigation measures outlined in *Quantifying Greenhouse Gas Mitigation Measures*, CAPCOA 2010.

CalEEMod estimates vehicle travel as a function of land use and geographic location using ITE standard trip generation rates and trip length data collected from various jurisdictions around the State of California. Using this data, CalEEMod is able to determine the number of Vehicle Miles Traveled (VMT) for a given development. The model output includes both unmitigated and mitigated annual VMT calculated using the same average trip length. Since VMT is a function of the number of trips generated and average trip length, the change in VMT represents a proportional change in the number of trips generated by a development. CalEEMod is able to quantify the TDM impacts of the proximity to high-quality transit service, improved pedestrian network connectivity, and traffic calming features on internal roadways for residential developments. However, CalEEMod is unable to quantify the trip reduction impacts of improved transit amenities, a transportation management association for a residential development, information boards/kiosks in residential developments, and promotional programs for residential developments to educate homeowners about trip reduction strategies.

The modeled TDM measures outlined above would be expected to result in an approximately 15-percent reduction in vehicle trips generated by residential land uses, and potentially a corresponding 15-percent

reduction in VMT associated with residential uses. Under VTA guidelines the TDM Plan is assuming the aforementioned reductions under peer/study-based methodology. The CalEEMod output which estimates the impact of each TDM measure is provided in Appendix B.

The underlying CAPCOA methodology limits VMT reductions based on the development's location. The proposed project is located in a suburban area of Mountain View, where the overall maximum reduction allowed by the CAPCOA methodology is 15-percent of all home and work trips. Of that maximum reduction, a total of 10-percent can be based on land use, project location, parking supply, and transit accessibility. The additional five-percent reductions can be accounted for from commute trip reduction strategies. The 15-percent reduction in residential trips would result in approximately 14 fewer trips during the a.m. peak hour (15-percent of 90 a.m. trips), and 17 fewer trips during the p.m. peak hour (15-percent of 113 p.m. trips) compared to the unmitigated peak hour trips.

Although the CAPCOA methodology estimates a 15-percent reduction, a target reduction goal of 8-percent is consistent with other TDM plans approved by the City of Mountain View per city Staff direction. The transportation demand management measures outlined above are expected to go beyond standards set forth by City staff. An 8-percent reduction in residential trips would result in approximately 7 fewer trips during the a.m. peak hour (8-percent of 90 a.m. trips), and 9 fewer trips during the p.m. peak hour (8-percent of 113 p.m. trips) compared to the unmitigated peak hour trips.

Alternative Land Use Scenario

An alternative to the proposed project would remove the retail land use. The number of trips expected to be generated by the residential portion of the project would change due to the internal capture rates applied to the individual land uses. Without the retail portion of the project, the residential portion of the project would be expected to generate approximately 1,599 daily trips, including 106 trips during the a.m. peak hour, and 129 trips during the p.m. peak hours. An 8-percent reduction in residential trips would result in approximately 8 fewer trips during the a.m. peak hour (8-percent of 109 a.m. trips), and 11 fewer trips during the p.m. peak hour (8-percent of 129 p.m. trips) compared to the unmitigated peak hour trips.

TDM Implementation and Monitoring

Implementation

The project applicant will be responsible for planning and developing the TDM Plan and setting up the TDM measures for implementation. Should the TDM Coordinator change for any reason, the City will be notified of the name and phone number of the designated TDM Coordinator. Additionally, the TDM Coordinator will enroll the project and join the Mountain View Transportation Management Association on behalf of the development.

Monitoring and Reporting

As an effort to measure travel behaviors associated with the development, the project will institute an annual monitoring and reporting program to assess the success of the TDM plan. Annual reports will be produced to evaluate the overall effectiveness of all of the TDM strategies, and may suggest new or modified strategies, or substitute strategies, to meet the program's objectives (a 10-percent reduction in residential trips).

The number of vehicle trips generated by the project will be tracked annually using manual counts, conducted using pneumatic hose counters, or similar data collection technologies, placed at the entrance and exit to the project site, and also at each garage entry and exit point. The manual counts will be conducted by an independent firm as arranged by the TDM Coordinator and will be used to determine how many vehicles are entering and exiting the parking garages during the a.m. and p.m. peak hours. Since the buildings will share a common driveway, the 40 shared surface parking stalls, and the structured parking garage, a single TDM report will be prepared for the entire site each year.

The counts will be conducted for 24-hours on three consecutive weekdays, Tuesday through Thursday, while local schools are in session. The counts will not be conducted on national holidays. The a.m. and p.m. peak hours for all three days should be averaged to determine the number of peak hour trips generated by the retail, condominium and apartment uses of the site. The counts will be conducted during the fall each year and baseline data should be collected within a year of occupancy of all residential units. The average peak hour should be compared to the expected number of peak hour trips generated by the site based on ITE standard rates. In order to distinguish trips generated by the residential, office and retail uses, intercept surveys will also be conducted.

The target 8-percent trip reduction associated with the residential portion of the project will be measured using a baseline of 83 a.m. peak hour trips, and 104 p.m. peak hour trips. Additionally, a supplementary intercept survey should be administered between 7:00 a.m. – 9:00 a.m. and 4:00 p.m. – 6:00 p.m. on the same days as the traffic count to obtain the mode choice of residents who are not driving a vehicle parked on-site, as well as to verify trip generation rates. Without the retail portion of the project, the project would be measured using a baseline of 95 a.m. peak hour trips, and 116 p.m. peak hour trips.

In addition to the annual trip monitoring, annual parking utilization surveys will also be conducted on-site for a period of 24-hours over the course of three weekdays (Tuesday to Thursday) during the fall when local schools are in session. Further, in order to monitor the potential of parking spilling into the adjacent residential neighborhood, the annual monitoring report will include an analysis and report of on-street parking occupancy in the Stierlin Estates neighborhood, including Terra Bella Avenue from N. Shoreline Boulevard to San Rafael Avenue, and Linda Vista Avenue from Moonbeam Avenue to the eastern end of the street adjacent to the project site. Similar to the driveway counts, the parking utilization surveys are not to be conducted on national holidays. The proposed project is to be comprised of distinct land uses which are expected to occupy the off-street parking spaces during all periods of a normal day. The annual parking occupancy surveys will capture peak occupancy periods on-site for each land use and determine the adequacy of the supply dedicated to each use (i.e. retail, condominiums, and apartments). Because of the shared parking program on-site, it is recommended the parking

surveys for each phase of the development coordinate with one another. A coordinated effort to analyze the trips generated by both phases of the project has the potential to more accurately analyze the success of the proposed TDM strategies.

Study Participants and References

Study Participants

Principal in Charge	Mark E. Spencer, TE
Assistant Planner	Andre Huff
Editing/Formatting	Hannah Yung-Boxdell
Report Review	Dalene J. Whitlock, PE, PTOE

References

CalEEMod, http://www.caleemod.com/
Caltrain, http://www.caltrain.com/schedules.html
Highway Design Manual, 6th Edition, California Department of Transportation, 2017
Mountain View 2030 General Plan, City of Mountain View, 2012
Mountain View Community Shuttle, https://mvcommunityshuttle.com/
Mountain View Municipal Code, Code Publishing Company, 2017
MVgo, https://mvgo.org/
Quantifying Greenhouse Gas Mitigation Measures, California Air Pollution Control Officers Association, 2010
SamTrans, http://www.samtrans.com/
Santa Clara Valley Transportation Authority, http://www.vta.org/
Shared Parking, Urban Land Institute, 2nd Edition, 2005
Transportation Impact Analysis Guidelines, Santa Clara Valley Transportation Authority, 2014
Trip Generation Manual, 10th Edition, Institute of Transportation Engineers, 2017

C: Chris DeHaan

MVI011-1

This page intentionally left blank

Appendix A

Trip Generation Estimates for the Residential Development at 1001 N Shoreline Blvd

This page intentionally left blank

TABLE 4.14-4
PROJECT TRIP GENERATION

Land Use	ITE Code[a,b]	Size	AM Peak Hour			PM Peak Hour			Daily Total
			In	Out	Total	In	Out	Total	
Proposed									
Block A Multi-Family	221	203 DU	19	54	73	54	35	89	1,104
Block B Multi-Family	221	100 DU	9	27	36	27	17	44	544
Retail	936	3,000 SF	155	149	303	54	54	109	2,062
Gross New Project Trips			***183***	***230***	***413***	***136***	***106***	***242***	***3,710***
Trip Reduction									
Mixed-Use Reduction (Housing & Employment)[c]			(1)	(2)	(3)	(3)	(2)	(4)	(49)
Housing/Retail Mixed-Use Reduction - Housing[d]			(4)	(12)	(16)	(8)	(8)	(16)	(247)
Housing/Retail Mixed-Use Reduction - Retail[d]			(12)	(4)	(16)	(8)	(8)	(16)	(247)
Pass-by Reduction[e]			(43)	(43)	(86)	(14)	(14)	(28)	(569)
Total Reduction			***(60)***	***(62)***	***(122)***	***(33)***	***(32)***	***(64)***	***(1,113)***
NET NEW PROJECT TRIPS			**123**	**168**	**291**	**103**	**75**	**178**	**2,597**

NOTES: DU = dwelling unit; SF = square feet

[a] Trip generations rate for the proposed residential units are based on the ITE's Trip Generation Manual, 10th Edition rates for Land Use Code 221 "Multifamily Housing (Mid-Rise)."

[b] Trip generation rates for the proposed retail space are based on the ITE's Trip Generation Manual, 10th Edition rates for Land Use Code 936 "Coffee/Donut Shop without Drive-Through Window"

[c] As prescribed by the VTA Transportation Impact Analysis Guidelines, 2014, a maximum trip reduction of 3 percent for mixed-use development with housing and employment was applied to the housing trip generation.

[d] As prescribed by the VTA Transportation Impact Analysis Guidelines, 2014, a 15 percent trip reduction was applied to the smaller trip generator. The same number of trips were then subtracted from the larger trip generator to account for both trip ends.

[e] As prescribed by the VTA Transportation Impact Analysis Guidelines, 2014, a 30 percent pass-by trip reduction was applied to the retail component of the project. The reduction was applied to the net retail trips after applying the mixed-use reduction.

SOURCE: Hexagon, 2019.

This page intentionally left blank

Appendix B

CAPCOA TDM Reduction for the Residential Development at 1001 N Shoreline Blvd

This page intentionally left blank

Global Max Reduction (all VMT):
15.0%
or
912,961

Cross-Category Max Reduction (all VMT):
10.0%
or
608,641

Max Reduction (all VMT):
6.3%
or
380,400

Land Use/ Location

Category Reduction (all VMT): 5.0%

- **Density** 28.7%
- **Design** 0.0%
- **Diversity** 3.8%
- **Destination Accessibility** 18.0%
- **Transit Accessibility** 0.0%
- **BMR Housing** 0.0%

Neighborhood/ Site Enhancements

Category Reduction (all VMT): 0.0%

- **Pedestrian Network** 0.0%
- **Traffic Calming** 0.0%
- **NEV Network** 0.0%
- **Car Share Program** 0.0%

Parking Policy/ Pricing

Category Reduction (all VMT): 8.7%

- **Parking Supply Limits** 8.7%
- **Unbundled Parking Costs** 0.0%
- **On-Street Market Pricing** 0.0%

Transit System Improvements

Category Reduction (all VMT): 0.0%

- **Network Expansion** 0.0%
- **Service Frequency/Speed** 0.0%
- **Bus Rapid Transit** 0.0%

Commute Trip Reduction (CTR) Progams

(assuming mixed-use development)

Category Reduction (work VMT): 25%

- **CTR Program - Required** (work VMT) 21.0%
- **CTR Program - Voluntary** (work VMT) 0.0%
- **Transit Fare Subsidy** (work VMT) 13.2%
- **Employee Parking Cash-Out** (work VMT) 0.0%
- **Workplace Parking Pricing** (work VMT) 0.0%
- **Alternative Work Schedules and Telecommute Program** (work VMT) 0.7%
- **CTR Marketing** (work VMT) 4.0%
- **Employer-Sponsored Vanpool/Shuttle** (work VMT) 0.0%
- **Ride Share Program** (work VMT) 0.0%
- **School Pool** (school VMT) 0.0%
- **School Bus** (school VMT) 0.0%