APPENDIX D

3000-3500 MARINA PARKING AND TDM ANALYSIS

This page intentionally left blank

MEMORANDUM

Date: July 31, 2018

To: Mike Gerrity and Fritz Gutenberg, P3-LSP II, LLC

From: Daniel Jacobson and Eric Womeldorff, Fehr & Peers

Subject: 3000-3500 Marina Parking and TDM Analysis

SF18-0960

This memorandum presents an analysis of parking demand and transportation demand management (TDM) strategies for the 3000-3500 Marina project in Brisbane ("Project"). The Project is located in Brisbane's Sierra Point district adjacent to several office/R&D uses along the US-101 freeway and Bay Trail. The Project includes 422,552 square feet of office (40% of total uses) and R&D (60% of total uses) as well as 781 parking spaces. A Transportation Impact Analysis was prepared for the Project in 2016.

Figure 1: Project Site (yellow) in the City of Brisbane

This memorandum finds that Project parking demand will exceed the proposed parking supply by 19 to 28 percent. In order to reduce parking demand, the property manager would implement a TDM program consisting of a range of services and incentives. A review of current literature and local commute data suggests a 28 percent reduction in parking demand is feasible via implementation of a TDM program. Therefore, the implementation and ongoing monitoring of a TDM program is feasible to align the proposed parking supply with the Project's parking demand.

EXISTING TRANSPORTATION CONDITIONS

This section describes the existing transportation system near the Project site as it relates to the attributes that support TDM measures, including bicycle and pedestrian facilities, transit services, and other available services.

Bicycle and Pedestrian Conditions

The Project site is served by a 6.7 mile segment of the Bay Trail, which connects Sierra Point and Oyster Point. North of the Project site, bike lanes on Sierra Point Parkway connect to Downtown Brisbane and Bayshore Boulevard, a four mile (20 minute) bike ride to the San Francisco city limits. The Project site is typically served by two dockless bikeshare operators, LimeBike and Spin, as a part of South San Francisco's dockless bike share program. Marina Boulevard has a sidewalk along the Project site.

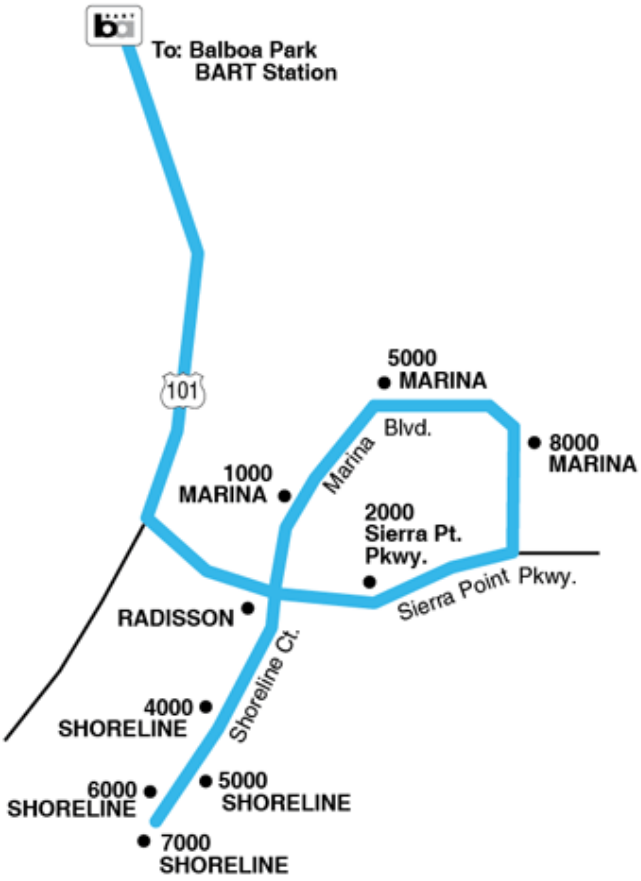


Figure 2: Sierra Point BART Shuttle

Transit Conditions

The Project site is served by the Sierra Point Shuttle (shown in Figure 1), which provides service to the Balboa Park BART Station every 20 minutes and service to the Millbrae Caltrain/BART Station every 35 to 50 minutes during peak periods. The Project Site is located 2.2 miles (approximately a ten minute bike ride) from the South San Francisco Ferry Terminal (via the Bay Trail) and from the South San Francisco Caltrain Station (via the Bay Trail and local streets).

Other Mobility Services

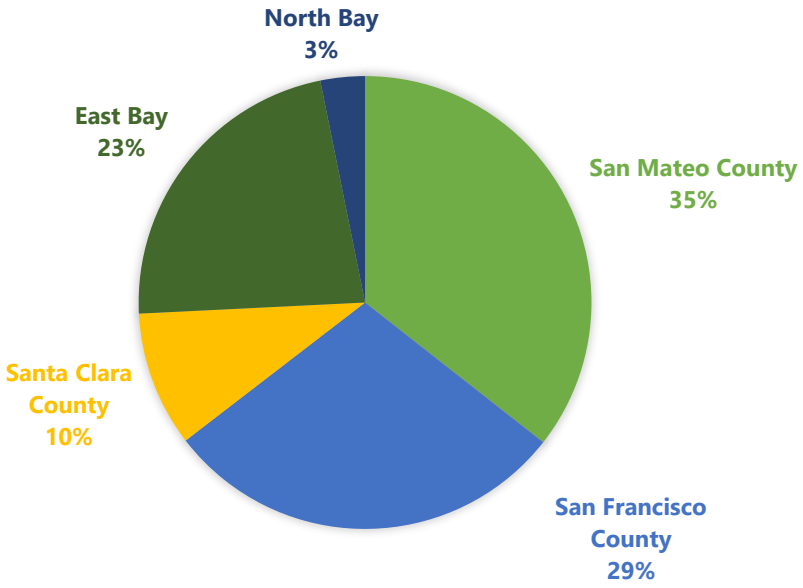
The Project site is served by a range of additional mobility services, including:

- Scoop and Waze Carpool provide dynamic one-way carpooling, pairing drivers and riders via a smartphone app. C/CAG's *Carpool in San Mateo County!* program provides $2 subsidies for carpooling with Scoop in San Mateo County.
- Uber and Lyft provide ride-hailing services for solo or shared rides. According to Lyft, approximately one-fifth of rides on the Peninsula begin or end at a rail station.

Existing Commute Patterns

Sierra Point employees commute from across the Bay Area, as shown in Figure 2. Approximately 35 percent of employees live in San Mateo County, 29 percent live in San Francisco County, and 23 percent live in the East Bay; the remainder commute from the South Bay and North Bay. Mode share data is not available; however, field observations suggest that a substantial majority of Sierra Point commuters drive alone to work. The Sierra Point BART Shuttle serves approximately 250 trips per day (about ten percent of Sierra Point employees), while the Caltrain shuttle serves approximately 100 trips per day (about four percent of Sierra Point employees).[1] Carpooling, bicycling, and other modes may serve a relatively small share of trips as well.

Figure 2: Home Origins of Sierra Point Commuters



Source: US Census LEHD, 2015

[1] Derived from SamTrans shuttle ridership data, September 2015, and US Census Longitudinal Empoyer-Household Dynamics, 2015.

PARKING DEMAND ANALYSIS

The Project Sponsor is seeking a use permit to provide fewer parking spaces than required by City code. The City of Brisbane requires a parking supply of 3.33 spaces per 1,000 square feet of office space; the City has no dedicated parking requirement for R&D uses, which typically have a lower employee density than office uses. The previous project entitlement included 1,386 parking spaces, a supply rate of 3.16 spaces per 1,000 square feet of office space. The Project's proposed parking supply is 1.85 spaces per 1,000 square feet.

Peak parking demand was estimated based on the ITE *Parking Generation Manual, 4th Edition*, ITE *Trip Generation Manual, 10th Edition*, and local data from the Genentech campus in South San Francisco and Gilead campus in Foster City. The ITE Parking Generation Manual, 4th Edition includes site surveys for 176 suburban office sites across the country conducted between 1970 and 2008. The peak rate of parking demand for these office sites was observed to be 2.84 spaces per 1,000 square feet. *Parking Generation, 4th Edition* does not provide data for R&D uses; however, *Trip Generation, 10th Edition* provides trip generation counts for both office and R&D uses. For purposes of analyzing R&D parking demand, this memorandum assumes that the difference in peak parking demand between office and R&D uses is proportional to the difference in AM peak hour trip generation between these uses in *Trip Generation, 10th Edition*. Based on this assumption, the estimated rate of peak R&D parking demand would be 2.36 spaces per 1,000 square feet – approximately 17 percent lower than office uses, or 0.48 spaces lower per 1,000 square feet.

While *Parking Generation, 4th Edition* provides a useful starting point for estimating peak parking demand, it does not include any recent site surveys on the Peninsula to account for local travel patterns for comparable office/R&D uses. A review of parking demand rates observed in the *Genentech Campus Mode Share and Parking Report* (2016) and *Gilead Sciences Campus Master Plan EIR* (2012) suggest that peak demand is slightly lower, about 5 to 15 percent, for comparable sites in South San Francisco and Foster City, after normalizing for rates of non-auto use and of office/R&D split.[2]

The Project includes 40 percent office space and 60 percent R&D space. Based on ITE data and adjustments for local conditions at the Genentech and Gilead campuses, peak Project parking demand is expected to be around 2.17-2.42 spaces per 1,000 feet, translating to 918 to 1,024 spaces.

[2] The Genentech campus has approximately 55 percent office space and 45 percent R&D space, while the Gilead campus has approximately 60 percent office space and 40 percent R&D space.

Assuming a supply target of 95 percent occupancy, the Project's parking supply (781 spaces) is 185 to 297 spaces below expected peak demand, assuming all employees drive alone to work. Tables 1 and 2 show parking demand rates and Project parking demand.

TABLE 1: PARKING DEMAND RATES, NORMALIZED FOR NON-AUTO USE

Land Use	Trip Generation Rate AM Peak Hour	Parking Demand Peak Hour
ITE Office (710)	1.47 per ksf	2.84 per ksf
ITE R&D (760)	1.22 per ksf	2.36 per ksf[1]
Gilead (60% Office-40% R&D)	-	2.24 per ksf (-15% ITE mix)[2]
Genentech (55% Office-45% R&D)	-	2.50 per ksf (-5% ITE mix)[2]

Sources: ITE *Trip Generation Manual, 10 Edition*, ITE *Parking Generation Manual, 4th Edition*, Genentech Campus Mode Share and Parking Report (2016), and Gilead Sciences Campus Master Plan EIR (2012)
[1]R&D parking demand is not provided in *Parking Generation, 4th Edition*. Therefore, R&D parking demand was calculated based on the proportional difference between AM peak hour ITE trip generation rates.
[2]The Gilead Campus has a total parking demand of 1.9 spaces per 1,000 square feet at a 15 percent rate of non-auto use, while the Genentech Campus has a total parking demand of 1.4 spaces per 1,000 square feet at a 43 percent rate of non-auto use.

TABLE 2: PROJECT PARKING DEMAND

Land Use	Parking Demand Peak Hour
ITE 40% Office - 60% R&D	2.55 per ksf
Local Area Adjustments (based on Gilead and Genentech data)	-5% to -15%
Estimated Parking Demand, 40% Office/60% R&D	**2.17-2.42 per ksf (918-1,024 spaces)**
Project Parking Supply Needed at 95% Occupancy Rate	*966-1,078 spaces (2.28-2.55 per ksf)*
Proposed Project Parking Supply	*781 spaces (1.84 per ksf)*
Estimated Parking Shortfall at 95% Occupancy Rate	***185-297 spaces (-19% to -28%)***

In order to align parking demand with parking supply, the Project would implement a TDM program that reduces parking demand by 19 to 28 percent. A 28 percent reduction target has conservatively been assumed as the Project's TDM target. Parking demand estimates assume a near- to mid-term condition and do not take into account the use of increased Transportation Network Company (TNC; e.g. Uber, Lyft), autonomous vehicles, or any other potential fundamental shifts in travel technology that may change travel patterns.

TDM ANALYSIS

In accordance with Mitigation TRAF-5 in the 2009 EIR Project Mitigation Monitoring and Reporting Program, the Project is required to identify and implement TDM measures to reduce project impacts. TDM measures would be consistent with the requirements presented in the City/County Association of Governments ("C/CAG") Guidelines for the Implementation of the Land Use Component of the Congestion Management Program (2004). The Mitigation Monitoring and Reporting Program does not specify a specific target reduction for TDM measures; however, as noted in the previous section, a peak parking demand reduction of at least 28 percent is necessary to align project parking demand with proposed supply.

TDM Strategies

This section identifies and quantifies the effectiveness of measures to be included in the project's TDM program. Sources for these quantifications include *Quantifying Greenhouse Gas Mitigation Measures* by the California Air Pollution Control Officers Association (CAPCOA) and analysis of local commute data. The CAPCOA guidelines follow an evidence-based approach to quantify the effects of TDM programs on reducing vehicle miles traveled (VMT); the same approach can be used to estimate effects for reducing vehicle trips and parking demand.

TDM strategies are presented in approximate order of potential effectiveness. This list includes a range of services, programs, and incentives based on comparable sites in the Bay Area.

Sierra Point Shuttle Service Participation

The property manager would participate in funding the Sierra Point Shuttle via the Sierra Point Owners Association. Based on current travel patterns discussed in the previous section, it is estimated that approximately 14 percent of Project employees will ride the shuttle service. Over time, planned upgrades to Caltrain and BART service may further increase demand for shuttle service.

Parking Cash-Out

The property manager would allow employees who do not drive to "cash-out" subsidized parking. The cost to the property manager and effectiveness of cash-out payments varies depending on the amount paid to employees. Parking cash-out may reduce vehicle trips and parking demand by up to eight percent.

Subsidized Transit Fares

The property manager would provide subsidized transit fares or passes for employees to use on BART, Caltrain, WETA, Muni, and SamTrans services. Transit fares may be subsidized through either pre-tax withholding or direct subsidies. Subsidized transit fares may reduce vehicle trips and parking demand by up to six percent.

TDM Marketing Program

A TDM marketing program provides assistance to employees who do not drive to work. It may include an onsite TDM coordinator, provision of a new hire packet for employees, ongoing promotional and educational materials, guaranteed ride home (in the event shuttle, carpool, or other services are unavailable), and other resources. A TDM marketing program may reduce vehicle trips and parking demand by up to four percent.

Subsidized Shared Ride-Hailing Trips

The property manager would subsidize shared commute trips via Uber or Lyft. Subsidized ride-hailing trips may be particularly effective for residents of nearby cities such as South San Francisco, San Bruno, Daly City, and southeastern San Francisco. While subsidizing ride-hailing trips may not reduce vehicle trips, it could reduce parking demand by approximately three percent based on projected home locations of employees, as ride-hailing vehicles would not park on-site.[3]

Carpool Matching and Incentives

The property manager would provide cash incentives, priority parking, and ridematching services to encourage carpooling to and from the Project site. Carpool incentives reduces vehicle trips and parking by combining multiple commute trips with similar origins and designations into a single trip. Incentives may include subsidies for using of one-way carpool apps such as Scoop and Waze Carpool, which allow for real-time matching of potential carpool partners on a day-to-day basis. By allowing individuals to choose to carpool without needing to identify a recurring carpool partner, it may increase the number of carpool trips. The cost and effectiveness of carpool incentives vary;

[3] Assumes that subsidized shared ride-hailing trips primarily serve San Francisco employees, and that such a service would capture approximately ten percent of these employees.

consequently, there is currently insufficient data to quantify the expected reduction in parking demand from incentivizing carpool use.

Motorcycle Incentives

The property manager would provide cash incentives for motorcycle use for employees commuting to the Project site. Motorcycles parking takes up less space than vehicle parking and may therefore help alleviate parking demand. There is currently insufficient data to quantify the expected reduction in parking demand from incentivizing motorcycle use.

Onsite Bicycle Parking and Bicycle Repair Station

The City of Brisbane requires the property manager to install 76 bicycle parking spaces, including 73 secure long-term bicycle parking spaces and three short-term bicycle rack spaces. A bicycle repair station, complete with a bicycle pump and tools, helps riders perform repairs and maintain reliable bicycles. Conveniently located bicycle parking and a bicycle repair station helps promote bicycling as a commute option, especially for commuters traveling from the South San Francisco Ferry Terminal, South San Francisco Caltrain Station, the City of Brisbane, eastern Daly City, or southern San Francisco. While high-quality bicycle parking and a bicycle repair station is expected to help reduce vehicle trips and parking demand, there is insufficient data to quantify the expected reduction at this time.

Subsidized Bike Share Fares/Memberships

The property manager may provide subsidized bike share fares or memberships for employees to use on Limebike or Ford GoBike services. In particular, Limebike subsidies may be useful for employees to connect with the South San Francisco Ferry Terminal or South San Francisco Caltrain Station. While subsidized bike share fares and memberships are expected to help reduce vehicle trips and parking demand, there is insufficient data to quantify the expected reduction at this time.

On-Site Carshare Space and Subsidized Memberships

The property manager may partner with a carshare operator (e.g. Zipcar) to provide an onsite carshare space and subsidized memberships. Carshare enables vehicle access for employees during the workday. While on-site carshare is expected to help reduce vehicle trips and parking demand, there is insufficient data to quantify the expected reduction.

TABLE 3: POTENTIAL TDM REDUCTIONS		
Category	**TDM Measure**	**Maximum Percentage Parking Reduction**
Core	Sierra Point Shuttle Service	-14%
Core	Parking Cash-Out	-8%
Core	Subsidized Transit Fares	-6%
Core	TDM Marketing Program	-4%
As Needed	Subsidized Shared Ride-Hailing Trips	-3%
Core	Carpool Matching and Incentives	N/A
Core	Motorcycle Incentives	N/A
Core	Onsite Bicycle Parking and Bicycle Repair Station	N/A
As Needed	Subsidized Bike Share Fares/Memberships	N/A
As Needed	On-Site Carshare Space and Subsidized Memberships	N/A
Total TDM Reduction for Core Program		**-30%**
Target TDM Reduction		***-28%***

Note: Due to diminishing returns, the maximum potential reduction of all TDM measures (30%) is less than the sum of all individual measures (35%).

Total Potential Reductions: TDM and Parking Demand

Based on this analysis, the Project's provision of 1.85 spaces per 1,000 square feet of office/R&D space is achievable after implementation of a TDM program that reduces parking demand by 28 percent. Data from similar developments further supports this finding, as parking ratios at other Office/R&D campuses in San Mateo County, the Genentech and Gilead campuses, achieve parking demand rates of 1.4 to 1.9 parking spaces per employee with similar TDM programs in place. TDM programs at these similar sites achieve reductions in single-occupancy vehicle trips by up to 43 percent depending on the types of services and incentives offered.

TDM PROGRAM IMPLEMENTATION & MONITORING

In order to implement a TDM program that sufficiently reduces parking demand to meet the project's parking supply, the property manager would develop, implement, and monitor the core TDM program described in the previous section and summarized in Table 3. The property manager would monitor parking conditions via counts of parking demand and employee travel surveys to

ensure that demand does not exceed supply. If parking demand exceeds supply after implementing the TDM program, corrective measures shall be pursued to address supply-demand imbalances. Such measures may include:

1. Changes to TDM incentives: The property manager may further increase incentives to participate in TDM services (including parking cash-out, subsidized transit fares, subsidized carpool use, and motorcycle incentives) until these incentives achieve a sufficient reduction in parking demand. Such an incentive structure is used by employers like Genentech and Stanford University to managed demand.
2. Implementation of additional TDM measures as needed: The property manager may implement additional TDM measures such as subsidized shared ride-hailing trips, subsidized bike share fares/memberships, and on-site carshare to further incentivize commute alternatives.
3. Implementation of valet parking during peak periods: The property manager may implement valet service during peak periods to increase parking supply for employees and visitors, particularly those arriving during late mornings and early afternoons. Fire access constraints limit surface lot capacity gains to approximately eight percent, or ten additional vehicles. However, valet services in the parking garage may increase capacity by 10 to 20 percent, or 65 to 130 vehicles (Table 4).

TABLE 4: ESTIMATED EFFECT OF VALET PARKING

Parking Type	Project Parking Supply	Net Gain (Spaces)	Project Parking Supply with Valet Parking
Surface Lot	127	10	137
Garage	654	65-130	719
Total	**781**	**75-140**	**856-931**

4. Charging for parking: If a shortage of parking supply persists after implementation of the measures described above, the property manager may price parking such that demand matches supply. Parking revenues may be used to fund TDM incentives and programs.

About Fehr & Peers

Fehr & Peers has specialized in providing transportation planning and engineering services to public and private sector clients since 1985. We develop creative, cost-effective, and results-oriented solutions to planning and design problems associated with all modes of transportation. We offer our clients the right combination of leading-edge technical skills and extensive knowledge of the communities in which we work to deliver comprehensive solutions and superior client service. We are nationally-recognized experts who routinely publish original research, serve on national committees, and teach courses to others in the industry. We do this while maintaining our commitment to translating those techniques into practical solutions.

Fehr & Peers completed the Transportation Impact Analysis for the 3000-3500 Marina Project in 2018.

This page intentionally left blank