

MEMORANDUM

To: Lisa Ring
From: Jessica ter Schure and Magnus Barber
Date: May 13, 2010
Subject: Station Park Green TDM Program –Final Plan

Introduction and Background

Nelson\Nygaard Consulting Associates has been retained by the City of San Mateo to prepare a Transportation Demand Management (TDM) Program for Station Park Green, a mixed-use project in the Rail Corridor Plan area in San Mateo.

The project program includes development of up to 599 residential units, a minimum of 10,000 square feet and up to 45,000 square feet of office uses, a minimum of 25,000 square feet and up to 60,000 square feet of retail uses, including the incorporation of a new 19,000 square foot Michael's retail store. The TDM program below evaluated a project description of 599 residential units, 60,000 square feet of retail uses and 10,000 square feet of office as well as a project description with 599 residential units, 25,000 square feet of retail, and 45,000 square feet of office. If the project were developed with an office and retail component whose square footage is between the ranges evaluated in the two alternatives described, the potential vehicles trips generated by the project would be within the range of what is evaluated in this TDM plan.

Additionally, the project will likely include a mix of both rental and for-sale residential units, however the ratio of for-sale and rental housing units has not yet been determined. As such this analysis incorporates a trip generation rate for rental housing and a rate for for-sale housing. Depending on the mix of housing types ultimately developed on the project site, the project would result in different trip reduction percentages ranging from 30% to 40%, thus meeting the Corridor Plan criteria of 25% trip reduction. See Figure 1 Mitigated Trip Reduction with URBEMIS

The development proposes underground parking to allow for streets with attractive, residential or retail ground-floor entrances. Transit-oriented features will include amenities for pedestrians, bicyclists, area shuttles, and motor vehicles alike. Station Park Green is envisioned as a defining, new neighborhood for San Mateo and its overarching premise is to fulfill the goals of the Corridor Plan – to foster TOD and, thereby, implement San Mateo's chosen approach to growth in the area. Parking management and TDM are important tools to fulfill these goals.

This project will be one of the first projects to be developed within the San Mateo Rail Corridor (Transit Oriented Development Plan, adopted June 6, 2005) (the "Rail Corridor Plan"). A goal of the Rail Corridor Plan "is to achieve an overall reduction in new vehicle trips of at least 25 percent corridor wide." (p. 7-13) It is recognized that this reduction will occur over time and that the reduction achieved by individual projects will vary based on the specific characteristics of the project, such as location and proposed uses" (p. B-11). Since the project is located within the Hayward Park TOD Zone, there is even a larger reason for achieving a trip reduction goal of 25%.

In addition, the Rail Corridor Plan provides for the formation of the Transportation Management Association (TMA) for the Rail Corridor area. The applicant will be required to become a member of the yet to be formed San Mateo Corridor Plan TMA, that will encourage efficient use of transportation and parking resources in the Hayward Park TOD Zone and other Rail Corridor Plan areas. It is important to note that the TMA will be responsible for undertaking the annual monitoring to verify if the 25% trip reduction target is met.

Within this document, the number of vehicle trips that will be generated by the proposed development is estimated using both the weighted average trip rates shown in the Institute for Transportation Engineers (ITE) *Trip Generation* manual as well as the URBEMIS software model. In addition, a number of Transportation Demand Management (TDM) programs are evaluated to determine the potential for reduction in the number of vehicle trips generated by this development. The list of measures includes the following strategies:

- First-Class Tele-Commuting Opportunities
- Carsharing
- Shuttle Service
- Neighborhood-Serving Retail
- Bicycle Storage
- Unbundled Parking
- Shared Parking
- TMA Participation
- Transportation Kiosk
- Improved Transit Stop
- Transportation Coordinator

Station Park Green will meet a trip reduction goal of 25% by implementing the TDM measures listed above. Alternatively, Station Park Green may implement TDM measures that are not within this menu, should the feasibility of such measures improve at a later date. Some additional TDM measures that are not currently included as part of the project, but could be added or substituted while still meeting the 25% vehicle trip reduction are listed at the end of this report.

Station Park Green Proposed Trip Reduction Program

Station Park Green is proposing to implement the following trip reduction measures:

1. **First-Class Tele-Commuting Opportunities:** All residential units and commercial space will be equipped with high-speed Internet (10 Mb/Second). There will be dedicated 'office

hotel' spaces available, equipped with phone, fax, printers and computers to give the residents the opportunity to work from home instead of at the work place.

2. **Carsharing:** The applicant will enter into an agreement with a carsharing provider to provide carsharing vehicles on-site. There are currently two providers in the Bay Area: City CarShare and Zipcar. Carsharing makes a common fleet of vehicles available to members, and can be an important tool to reduce parking demand. For residents, carsharing reduces the need to own a vehicle, particularly a second or third car. A recent Transportation Research Board study¹ shows that more than half of carsharing members have sold at least one vehicle since joining their program. All carsharing vehicles within the site will have assigned parking spaces at no cost to the provider.
3. **Shuttle Service:** The project includes a high-standard shuttle service between the development and downtown San Mateo. The shuttle will be open to neighboring residents as a public benefit. The number of stops will be limited to as few as possible in order to maintain high on-time performance and to cut travel time to a minimum. The developer is proposing a 30-minute frequency during the morning and evening commute hours. A separate chapter later in this memo will address the specifics and costs of such a program. The applicant will also explore the installation of a real-time information system, which would show the shuttle users when the next shuttle will arrive.

Caltrain is currently exploring the possibilities of replacing the existing diesel-driven fleet with electrified rail cars, which could be carrying three times as many peak-hour commuters, and which would allow more trains, even faster trips and more station stops. If the Hayward Park stop becomes a fast-train stop, the shuttle service will most likely be discontinued.

- a. The Developer additionally proposed that this service begin operating upon 75% of the Project being occupied. Until that point, the traffic generated will be 25% lower than at full build-out of the project. If nearby developments are interested in cooperating on the shuttle program, it could be started at an earlier date.
 - b. Further, the shuttle would cease operations if demand and use did not materialize or if the planned rail electrification occurred.
4. **Neighborhood-Serving Retail:** The Developer proposes the following retail types at the Project: a small grocery store, as well as neighborhood-serving retail, which could include services such as dry cleaning and a coffee shop. The types of retail businesses allowed in the plan area are limited to those uses allowed in the C1 (Neighborhood Commercial District) of the City of San Mateo Municipal Code. These businesses will reduce the need for residents and employees to drive to other locations to run several types of common errands.
5. **Bicycle Storage:** There will be long-term secure bicycle parking provided to residents and employees in the garages. Typical requirements on the West Coast vary between 1 space per 4 residential units and 1 space per 10 units.² To meet the San Mateo code

¹ Millard-Ball, A. et al. (2005) Carsharing: Where and How it Succeeds. TCRP Report 108. Downloadable from http://www.trb.org/news/blurbs_detail.asp?id=5634.

² Portland, OR requires one space per 5 to 10 units; San Jose requires 1 space per 4 units. San Francisco is considering a 1:4 requirement in the mid-Market neighborhood.

requirements³, there would need to be such a bicycle storage area for every one hundred car parking spaces. Because the project will encourage the use of the nearby train, it is expected that bicycle storage will be necessary in the amount of 1 space per 10 units. These spaces will be located in bicycle storage rooms/cages for residents, mixed with racks at garage entrances for less security-conscious bicycle users and employees. The initial recommendation of 1 space per 10 units will need to be adjusted in line with demand; should the demand for storage facilities for bicycles grown beyond what is provided, additional storage areas will be provided. The provision of plentiful secure bicycle parking will make it easier and more convenient for the residents to replace local auto trips with bicycle trips. Employee bike parking would be provided in the same cages, at 1 space per 10,000 square feet of retail area or 1 space per 3,750 square feet of office area⁴.

Short-term bicycle parking should be provided by means of on-street racks immediately adjacent to high-demand locations, such as at retail frontages and next to the primary transit stops. Initially, a single “U” or similar rack should be placed as close as possible to the entrance of all retail businesses where this is not prevented by other obstructions. Additional racks are easy to install and this should be done based on demand. Nelson\Nygaard recommends initially 1 rack for every 10 residential units, and additionally 1 rack for every 2,500 square feet of retail area.⁵

6. **Unbundled Parking:** The applicant will provide between 1.25 and 1.5 spaces per residential unit by providing one parking space per residential for-sale housing unit, and unbundling the cost of any additional detached parking spaces. This means that condo owners and apartment tenants will be given one parking space per residential unit, but that second or third spaces are provided at a cost to the tenant. Parking fees are generally subsumed into lease fees or sale prices for the sake of simplicity and because that is the more traditional practice in real estate. However, providing anything for free or at highly subsidized rates encourages use and means that more parking spaces have to be provided to achieve the same rate of availability. Charging for parking is also the single most effective strategy to encourage people to use alternatives to the single-occupant vehicle.
7. **Shared Parking:** The applicant will implement shared parking between all visitors and customers at Station Park Green. Parking ratios are typically based on suburban developments where all uses are physically isolated and all trips are made by car. Therefore, ITE parking ratios are not suitable to dense, pedestrian-friendly, mixed-use developments such as Station Park Green, where many different land uses are within walking distance and trips to multiple destinations can be achieved by parking once and walking in between uses. This means that the majority of visitor parking can be shared between the different uses. If visitor parking is shared, a 10% reduction in the visitor parking supply can be achieved.

³ City Municipal Code (27.64.262): “A minimum of one bicycle parking facility shall be provided in parking lots and parking structures containing from thirty (30) to one hundred (100) parking stalls with another such facility being provided for each additional one hundred (100) parking stalls or fraction thereof. Additional bicycle facilities shall be provided where projected usage as determined by the Zoning Administrator indicates a greater need.”

⁴ Palo Alto Zoning Ordinance, 18.52.040: Off-Street Parking, Loading and Bicycle Facility Requirements

⁵ Ibid.

For additional information regarding parking please refer to the Station Park Green Traffic Impact Analysis dated September 16, 2009.

8. **TMA Participation:** The City of San Mateo and the Peninsula Traffic Congestion Relief Alliance (the Alliance) are currently in the process of forming a Transportation Management Association (TMA) for the Rail Corridor area. The applicant will become a member of the yet to be formed San Mateo Corridor Plan TMA, a member-controlled transportation management association that will encourage efficient use of transportation and parking resources in the Hayward Park TOD Zone and other Rail Corridor Plan areas. Many of the TDM tools discussed in this report could be efficiently administered through a TMA. TMA participation will assist the development in maintaining the TDM Program as well as undertake annual monitoring to verify if the 25% trip reduction target is met. A representative for the development will also be required to be on the TMA Board of Directors.
9. **Transportation Kiosk:** A transportation board with up-to-date information on transit, ridesharing (e.g. 511.org), carsharing, bicycling and other alternative transportation will be located in a central location within the development.
10. **Improved Transit Stop:** SamTrans route 292 with service between Hillsdale Shopping Center and downtown San Francisco (via San Francisco International Airport) currently runs every 30 minutes throughout the day and stops right outside the proposed site. The bus stop on the Station Park Green side of Delaware Street will be upgraded with a shelter and bicycle racks as part of the project.
11. **Transportation Coordinator:** A staff member within the master HOA (or property management) will be a designated transportation coordinator. This person will communicate with the TMA once it is formed, and will also be responsible for maintaining the TDM Program. This includes providing new residents with a welcome package about transportation, updating the transportation kiosk, monitoring bicycle parking usage and requesting more parking if need arises, communicating with the carsharing provider on success and the need for more vehicles etc.

Shuttle Route

Nelson\Nygaard has estimated the cost of the shuttle program. Based on the provision of service between Station Park Green and downtown San Mateo, with one or two public stops, the route would be two miles in total and take approximately 20 minutes round trip, including dwell time, layover and recovery. One shuttle vehicle would be sufficient to yield a 30-minute frequency. It is assumed that this service would run between 6AM and 9AM and 4PM and 7PM during weekdays. During weekends, when all trains stop at Hayward Park station, the shuttle would not be required. The annual operating cost for a turn-key shuttle service would be around \$85,250 and \$98,250 annually based on an hourly cost of between \$68 and \$78. The applicant additionally will need to share the shuttle's expense amongst current projects currently using a shuttle, future projects that will use the shuttle, and the County's transportation program.

Nelson\Nygaard recommends that Station Park Green contract with a shuttle bus provider for this service. A private operator avoids the necessity of hiring dedicated staff, and eliminates the costs of bus storage. It also avoids the need to purchase expensive buses, and gives Station Park Green maximum flexibility, in case service plans need to be changed. If a particular type of bus is required, Station Park Green has the option of negotiating bus features with the contractor. A bus shelter and passenger amenities at Station Park Green would cost approximately an additional

\$15,000. The Peninsula Traffic Congestion Relief Alliance (www.commute.org) provides subsidies to several existing joint public/private shuttle routes in San Mateo County. However, recent budget cuts have also cut the Alliance's potential for implementing new routes.

Trip Reduction Analysis

The proposed location is a very suitable spot for Transit Oriented Development (TOD), with existing retail, the Hayward Park Caltrain station and bus route 292 (with service between Hillsdale Shopping Center and San Francisco) within easy walking distance. The location and mixed-use factors will have the largest impact on trip generation. Nelson\Nygaard has used URBEMIS to calculate the trip reduction effects of the various program elements.

The URBEMIS mitigation component is a simple yet powerful tool; it employs standard traffic engineering methodologies, but provides the opportunity to adjust ITE average rates to quantify the impact of a development's location, physical characteristics and any demand management programs for commercial uses. In this way, it provides an opportunity to fairly evaluate developments that minimize their transportation impact, for example, through locating close to transit or providing high densities and a mix of uses. For more information on the URBEMIS component, see Appendix A.

Figure 1 shows the inputs that have been used to complete the URBEMIS mitigation component, along with data sources. The number of trips generated by a development depends not only on the characteristics of the project itself, but also on the surrounding area. High-density housing in an urban area, for example, will generate fewer trips than the same housing located close to a freeway interchange and surrounded by low-density subdivisions. For this reason, URBEMIS requires data for the area within approximately a half-mile radius from the center of the project, or for the entire project area, whichever is larger.

The project allows for some flexibility in the mix of retail and office space, with a minimum of 10,000 square feet and up to 45,000 square feet of office uses, and a minimum of 25,000 square feet and up to 60,000 square feet of retail uses. For the purposes of the trip reduction analysis both the maximum retail scenario was chosen (60,000 square feet of retail and 10,000 square feet of office) and the maximum office scenario (45,000 square feet of office and 25,000 square feet of retail). If the project were developed with an office and retail component whose square footage is between the ranges evaluated in the two alternatives described, the potential vehicles trips generated by the project would be within the range of what is evaluated in this TDM plan.

Figure 1 URBEMIS Data Input

Factor	Input Value	Source
Housing units in development	599	Project plan
Retail component	Option 1: 60,000 sq ft Option 2: 25,000 sq ft	Project plan
Office component	Option 1: 10,000 sq ft Option 2: 45,000 sq ft	Project plan
Project Acreage	12 acres, of which 8.6 acres are residential	Project plan, with NN assumptions
Net residential density (1)	50 units per acre (if including entire site)	Project plan
Below-market-rate units within development	10%	Developer
Number of housing units within ½ mile radius	2746	Census Transportation Planning Package (2000)
Number of jobs located within ½ mile radius	6630	Census Transportation Planning Package (2000)
Local-serving retail within ½ mile radius	Yes	Project plan and on-site observation
Transit service	68 daily buses stop within ¼ mile (existing) 37 daily trains stop within ½ mile (existing) 18 dedicated shuttle trips (2)	Caltrain/SamTrans maps/schedules
Intersection density (3) within ½ mile radius	374 valences, east of rail tracks	Street plan
Sidewalk completeness within ½ mile radius	75% have sidewalk on both sides, 25% on one side	Site observation
Bike lane completeness within ½ mile radius	25% of arterials have bike lanes (Delaware Street only)	Site observation
Other Employee Transportation Demand Management measures	Secure bike parking, carsharing service, transportation kiosk, dedicated Transportation Coordinator	Developer

Notes:

(1) Net residential data excludes land not devoted to residential uses, prorating mixed-use sites by the percentage square footage of each use.

(2) Assumes 20-minute frequency between 6AM – 9AM and 4PM - 7PM on weekdays

(3) Calculated from existing street network, based on the number line segment terminations, or each “valence”.

Intersections have a valence of 3 or higher - a valence of 3 is a “T” intersection, 4 is a four-way intersection, and so on.

Hexagon's preliminary trip generation analysis for Station Park Green results in a total of 6,669 trips (when disregarding pass-by trip reduction, since this analysis focuses on all trips, including the ones that are considered pass-by trips) (refer to the Station Park Green Traffic Impact Analysis dated June 7, 2010). Taking all the above mentioned factors into consideration, the URBEMIS model results in a total trip reduction of 26% to 36% depending on the mix of rental and for-sale housing developed as part of the project as well as the development option, see Figure 2 and Appendix B. There is currently a good mix of uses around the development, with many employees working in both public and private sectors. This factor, including the residential density of the project itself, yields a 17-27% trip reduction compared to the standard trip generation rate. Proximity to retail, the Hayward Park station, and Bus 292 yield another 4% trip reduction. Pedestrian and bicycle friendliness as well as the provision of 10% affordable housing units will further reduce trip generation to 64%-74% of ITE trip generation rates.

Figure 2 Mitigated Trip Reduction with URBEMIS

Mitigation Step (1):	Option 1				Option 2			
	Number of trips Generated (Rental Housing)(1)	% of Step 0	Number of trips Generated (For-Sale Housing)(2)	% of Step 0	Number of trips Generated (Rental Housing)(1)	% of Step 0	Number of trips Generated (For-Sale Housing)(2)	% of Step 0
0. Assuming Standard ITE Trip Generation	6,669	100%	6,167	100%	5,552	100%	5,049	100%
1. Residential Density and Mix of Uses	5,105	76%	5,105	83%	4,079	73%	4,079	81%
2. Transit Service, including Step 1	4,855	72%	4,855	79%	3,863	69%	3,863	77%
3. Pedestrian/Bicycle Friendliness, including Steps 1-2	4,542	68%	4,542	74%	3,588	64%	3,588	71%

Notes:

(1) Standard ITE Trip generation Rate is based on Rental Residential Units

(2) Standard ITE Trip generation rate is based on For-Sale Residential Units

(3) Steps 0-3 are results from the URBEMIS model.

(4) Hexagon’s pass-by trip reduction has been excluded since this analysis focuses on all trips, including the ones that are considered pass-by trips.

In addition to the trip reducing features from the site’s location, density, urban amenities and proximity to transit, the impacts of the proposed TDM program were also analyzed in URBEMIS (see Figure 3). The first group of TDM measures, including shuttle service and shared parking, mitigate trip generation across all proposed land uses. The second group of TDM measures, including advanced telecommuting and carsharing, mitigate trip generation from residential uses. They contribute 2 percentage points reduction each, leading to an overall trip generation rate of 60 - 72% compared to the ITE baseline. Adding the GO Pass program when it becomes available would reduce trip generation by a further 0.2% points.

Figure 3 URBEMIS Mitigated Trip Generation with TDM

Baseline Daily Trips	Option 1				Option 2			
	Rental Housing		For Sale Housing		Rental Housing		For Sale Housing	
	% Trip Reduction	% Trip Generation Compared to ITE	% Trip Reduction	% Trip Generation Compared to ITE	% Trip Reduction	% Trip Generation Compared to ITE	% Trip Reduction	% Trip Generation Compared to ITE
ITE Generated Trips	-	100%	-	100%	-	100%	-	100%
URBEMIS Baseline Trips	32%	68%	26%	74%	26%	64%	29%	71%
Currently Proposed TDM Measures								
<ul style="list-style-type: none"> • Shuttle service • Neighborhood Serving Retail • Bicycle Storage • Shared Parking • TMA Participation • Improved Transit Stop • Advanced Telecommuting • Carsharing • Transportation Kiosk • Secure Bicycle Parking • Transportation Coordinator • Unbundled Parking 	4%	64%	4%	70%	4%	60%	4%	67%
Additional TDM Measures								
GO Pass								
<ul style="list-style-type: none"> • GO Pass 	0.2%	64%	0.2%	70%	0.2%	60%	0.2%	67%

Appendix B shows a break-down of the trip generation for each land use and mitigation measure.

Additional TDM Programs

The following section provides a discussion of the TDM measures that Nelson\Nygaard recommends the applicant could adopt in addition to the measures identified in their proposed TDM program.

- **GO Pass implementation:** Caltrain currently has an eco-pass program called Go Pass, in which participating employers purchase annual passes for all their full-time employees at a cost of \$112 per person, which is 6-8% of the regular cost if buying monthly passes to San Francisco or San Jose. The GO Pass is good for travel on Caltrain all week and between all zones and is provided free-of-charge to the employees on an annual basis. This program could potentially be implemented for residents as well, initially as a pilot program, and administered by the property management office.
- **Subsidized carsharing program:** Viable carsharing markets are places with high density, a mix of uses, and low vehicle ownership rates. Ultimately, carsharing is likely to be successful at Station Park Green and in surrounding neighborhoods, but it may be a marginal location for carsharing in the early phases of development, before density and mix of uses mature. This means that some form of risk-sharing arrangement between the carsharing provider and the applicant, such as a revenue guarantee, may be necessary in order to secure carsharing service. To further strengthen the potential for carsharing in this location, the applicant could consider providing visible parking (especially on-street) and subsidizing memberships for residents and encouraging employers to use carsharing vehicles instead of having a fleet on their own or business vehicles.

Conclusions

With the TDM measures included as part of the Station Park Green Development, the project will result in a 30% to 40% reduction in vehicles trips generated compared a project that did not include TDM measures, meeting the Corridor plan goals of 25% trip reduction. It is expected that Station Park Green will continue to modify and refine the TDM program over time, to address market conditions and to respond to TMA annual monitoring results. However, the project will at all times be required to meet the trip reduction percentage of 28-40% (dependent on the mix of rental and for-sale housing developed in the project) regardless of the TDM measures included as part of the project.