



North Bayshore Residential Transportation Demand Management Guidelines

May 2018



NORTH BAYSHORE RESIDENTIAL TDM GUIDELINES

City of Mountain View

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1 DOCUMENT PURPOSE

The *North Bayshore Residential TDM Guidelines* report provides direction on how to implement and monitor a transportation demand management (TDM) program for future **residential developments** in North Bayshore. The document is structured as follows:

- **Chapter 1:** Provides a summary overview of the North Bayshore Residential TDM Guidelines.
- **Chapter 2:** Provides the context for a TDM program for residential development in North Bayshore.
- **Chapter 3:** Details TDM strategies that new residential developments are required to implement, as well as additional best practices to reduce parking and vehicle trip generation further.
- **Chapter 4:** Describes the tools that project applicants can use to effectively monitor their TDM program and ensure that the program complies with City of Mountain View monitoring requirements.
- **Appendix:** Includes a technical justification of potential trip reduction impacts for the both required and best practice TDM strategies.

RESIDENTIAL TDM REQUIREMENTS: AN OVERVIEW

Any new residential development in North Bayshore shall comply with the following:

- (1) Meet the North Bayshore residential vehicle trip performance standard for peak hour vehicle trips; and
- (2) Attain a minimum 50% non-driving mode share for a site's daily trips.

Based on a transportation modeling analysis,¹ residential developments should be able to meet the abovementioned requirements by doing the following:

- Comply with North Bayshore Precise Plan's affordable housing and unit mix policies;²
- Comply with North Bayshore Precise Plan's parking ratios;³ and
- Implement five required TDM strategies.

¹ Daniel Rubins and Julie Morgan, Fehr and Peers (2017). *North Bayshore Precise Plan with Residential – Residential Trip performance standard*.

² City of Mountain View (2017) *North Bayshore Precise Plan – Affordable Housing Administrative Guidelines*. Retrieved from <https://www.mountainview.gov/civicax/filebank/blobdload.aspx?BlobID=22584>.

³ Ibid. pp. 186.

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If a site is unable to meet the required residential vehicle trip performance standard or the 50% non-driving mode share, the developer of the site needs to implement *additional* TDM strategies to avoid a financial penalty. Please note that along with identifying the required TDM strategies, any additional TDM strategies will also need to be addressed in the site's TDM plan.

Figure 1 on the following page identifies how property managers and developers can comply with Mountain View's TDM program requirements. Residential developments must submit a TDM Plan regardless of whether they meet the affordability and unit mix targets.

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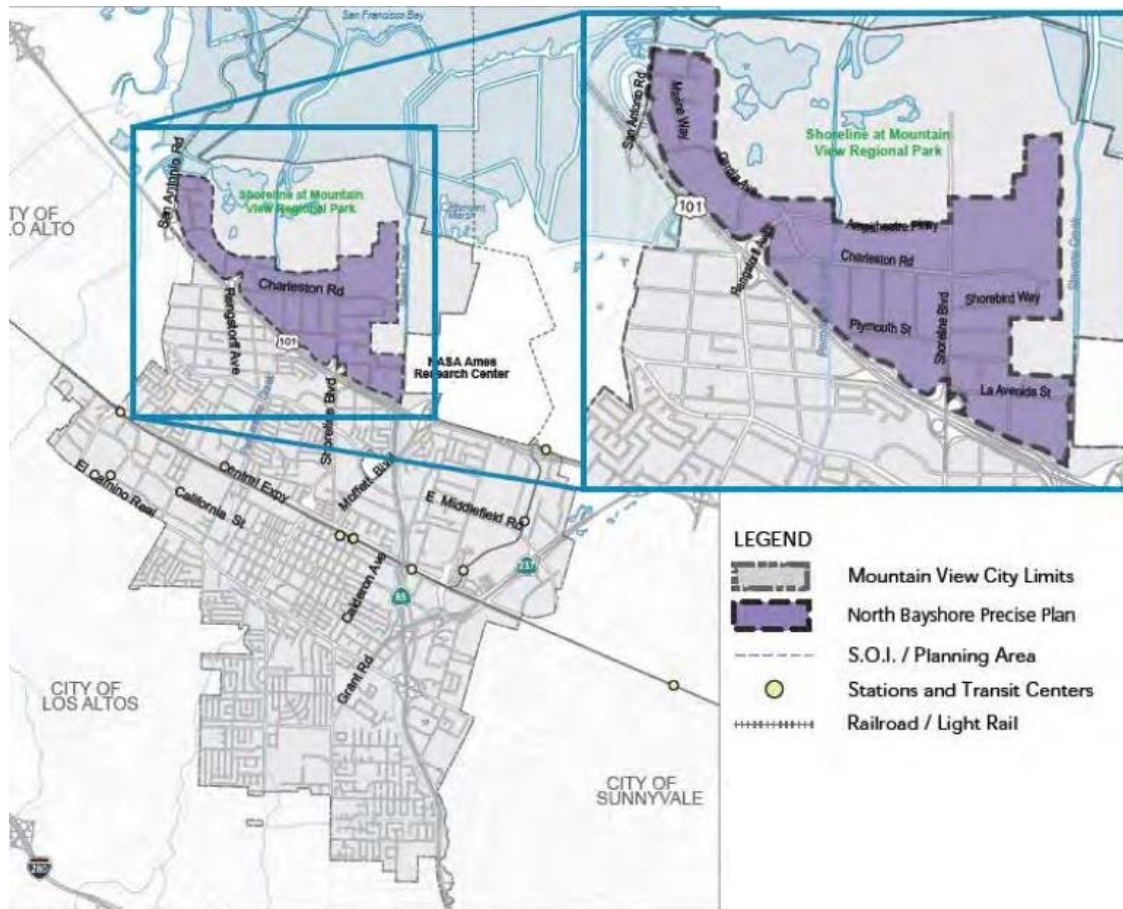
Figure 1 TDM Program Eligibility and Next Steps Diagram



2 NORTH BAYSHORE RESIDENTIAL TDM OBJECTIVES AND REQUIREMENTS

Located in the northern end of the City of Mountain View, North Bayshore is bordered by Mountain View Regional Park to the north, Stevens Creek to the east, Highway 101 to the south, and the City of Palo Alto to the west. The area is a regional employment center with many recreational and social amenities such as the Shoreline Amphitheater, Stevens Creek, and plentiful open space, which makes it uniquely attractive for visitors.

Figure 2 North Bayshore Precise Plan Boundaries⁴



⁴ City of Mountain View (2017). *Final Draft of North Bayshore Precise Plan – Location Map*. Retrieved from <https://www.mountainview.gov/civicax/filebank/blobdownload.aspx?BlobID=25628>

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In 2012, the City of Mountain View adopted a General Plan that identified North Bayshore as one of several “change area” locations, stating: *“The North Bayshore Planning Area is envisioned to become a model for a highly sustainable mixed-use campus environment with a focus on improved transportation options.”*⁵ The General Plan has set the stage for the City to establish principles with the community and private sector partners to guide new developments and investments in North Bayshore.

North Bayshore is not only a place with environmental sensitivity and stewardship responsibility, but it is also home to innovative commercial development and growing communities. As such, effective management of access to and from the area is paramount. Without changes in travel behavior and transportation infrastructure, additional growth in North Bayshore will increase vehicle trips and congestion, particularly at the three primarily vehicular access points: Shoreline Boulevard, San Antonio Road, and Rengstorff Avenue.

Transportation demand management (TDM) refers to policies, physical amenities, programs, tools, and services that support the use of sustainable modes to facilitate non-driving access to an area. In the case of North Bayshore, TDM is intended to work with the existing transportation system to expand and support mobility options that accommodate future growth while meeting larger City of Mountain View goals. Supporting bicycling, walking, and using transit makes it easier for people to reduce their reliance on driving, and provides larger environmental benefits through lower emissions, health benefits through increased activity, and community benefits by activating public spaces and streets.

This chapter provides the context for a residential TDM program in North Bayshore, along with additional details regarding the determination of the associated targets.

THE TDM CONTEXT IN NORTH BAYSHORE

Given the current and projected level of development, North Bayshore will continue to have limited available vehicular capacity, particularly during the peak period at the three Bayshore vehicle gateways.⁶ To ensure that vehicular volumes do not exceed capacity, the City monitors vehicle volumes at each of the gateways twice a year. The drive-alone mode split for North Bayshore is also monitored twice a year.

In December 2014, the City of Mountain View adopted the North Bayshore Precise Plan.⁷ The document was revised and finalized in December 2017 to include goals, policies, development standards, and guidelines for new residential development in addition to existing and future commercial development.⁸ The purpose of the Plan is to provide transportation standards and guidelines to minimize vehicle trips and enhance the area’s multimodal access.

New residential development in North Bayshore will need to complement the area’s existing commercial development without significantly increasing the number of vehicles already entering

⁵ City of Mountain View (2012) *General Plan*. Pp. 30. Retrieved from <http://www.mountainview.gov/civicax/filebank/blobdload.aspx?blobid=10702>

⁶ City of Mountain View (2012) *Mountain View 2030 General Plan*, pp. 104. Retrieved from <http://www.mountainview.gov/civicax/filebank/blobdload.aspx?blobid=10702>

⁷ The Precise Plan was amended and an updated version was approved December 2017.

⁸ Please refer to the North Bayshore Precise Plan and North Bayshore Transportation Demand Management (TDM) Plan Guidelines (<http://www.mountainview.gov/civicax/filebank/blobdload.aspx?BlobID=15164>) for standards and guidelines for commercial/office TDM in North Bayshore.

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the area. Research shows that increasing the mix of land uses – residential, commercial, and retail – in an integrated way facilitates convenient access to amenities without additional vehicle trips. Locating housing close to jobs and services reduces travel distances, making it easier to walk, bike, and take transit to multiple destinations in the same trip.⁹

A residential development's housing type also affects its ability to reduce vehicle trips. Projects that incorporate affordable housing usually have lower parking demand and vehicle trip generation rates.¹⁰ This typically occurs because there is a lower auto ownership rate among residents in lower-income/affordable units. As there is a strong need for affordable housing in the North Bayshore district and Mountain View in general, the City has established a goal of 15-20% affordable housing in North Bayshore.¹¹ In addition to providing affordable housing, the North Bayshore Precise Plan also aims for a diverse mix of unit types to provide a variety of housing needs for diverse household types and residents. Ensuring diverse housing options in North Bayshore, by targeting a specific mix of unit sizes, will support vibrant communities and augment the benefits of mixed-use development.

Ultimately, a residential development's parking demand is often a good proxy for both housing affordability and a site's total vehicle trips. Although the recent emergence of transportation network companies like Uber and Lyft are influencing transportation choices, including the choice to drive and/or own a car, industry research has demonstrated a clear relationship between guaranteed vehicular parking and automobile use.¹² To simplify implementation and monitoring, this document focuses on compliance with the Precise Plan's maximum allowed residential parking ratios to help meet a project's TDM goals.

Mountain View Transportation Management Association

Mountain View's Transportation Management Association (TMA) is sponsored by Mountain View businesses and landowners, including property owners in the North Bayshore and East Whisman areas.¹³ The key purpose of the TMA is to help its members and the surrounding community reduce vehicle congestion and improve connectivity by pooling resources and developing coordinated transportation strategies.

MVMTA's formation began in the summer of 2013 and was fully incorporated on October 18, 2013. The TMA is an independent nonprofit membership organization, which operates under the direction of its Board of Directors. The TMA is independent of the City and is not a public agency.

⁹ Transportation Research Boards (2011). National Cooperative Highway Research Program Report 684: Enhancing Internal Trip Cap Estimation for Mixed-Use Developments.

¹⁰ TransForm, GreenTRIP Parking Database <http://database.greentrip.org/> Assembly Bill 744, which was approved on October 9, 2015, recognizes the lower parking demand and VMT associated with affordable housing developments. http://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201520160AB744.

¹¹ City of Mountain View (2017). *North Bayshore Precise Plan Draft Final*. Pp.7 Retrieved from <http://www.mountainview.gov/civicax/filebank/blobdload.aspx?BlobID=24429>.

¹² Rachel Weinberger, Death by a thousand curb-cuts: Evidence on the effect of minimum parking requirements on the choice to drive. *Transport Policy*, 20, March 2012. Chris McCahill, et al., Effects of Parking Provision on Automobile Use in Cities: Inferring Causality, Transportation Research Board, November 13, 2015.

¹³City of Mountain View, *North Bayshore Precise Plan Final Draft* (2017). pp. 191, Section 6.1.4. Retrieved from <http://www.mountainview.gov/civicax/filebank/blobdload.aspx?BlobID=24429>

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Initial steps undertaken by the TMA have included the creation of a work plan, an assessment of the transportation needs of its members, the establishment of a new shuttle service (MVgo), and the creation of a TMA website (www.mvgo.org).

Key functions of the TMA as stated in the Precise Plan also include:¹⁴

- Create and manage a coordinated employee shuttle service that is also open to the general public
- Assist TMA members in meeting their TDM targets
- Coordinate monitoring and reporting of data on TDM strategies and progress towards meeting trip reduction and SOV targets
- Develop transportation management strategies and secure funding from private employers, property owners, the City, regional, state, and federal agencies

The role of the TMA will continue to grow over time as more employers join and funding increases. All new residential and commercial development projects are required to join the TMA.¹⁵ With this growth, there will be increased opportunities for employers to utilize coordinated district-wide services provided by the TMA rather than provide services directly to employees on an individual employer basis. The participation of residential developments in the TMA will enable further coordination and identify potential efficiencies in programs provided.

The role of the TMA in residential developments' TDM Plans is discussed further in Chapter 3.

RESIDENTIAL DEVELOPMENT TDM REQUIREMENTS

To minimize vehicle trips and improve multimodal access to and within North Bayshore, the City of Mountain View requires residential projects of 10 or more units to meet a **(1) residential vehicle trip performance standard; (2) residential mode split target; and (3) maximum parking standards**, as described below. These help implement the vision, goals, and policies of the City's General Plan¹⁶ and the North Bayshore Precise Plan.¹⁷

1. Residential Vehicle Trip Performance Standard¹⁸

Residential projects in North Bayshore will need to limit the number of vehicles coming in and out of their site during the morning and evening peak hour periods. The residential vehicle trip performance standard aligns with the average residential driveway trip rate according to the North Bayshore Precise Plan's housing unit mix and parking ratio.¹⁹

Developers can calculate their site's trip performance standard for each commute period by **multiplying North Bayshore's average trip rate by the number of planned**

¹⁴ Mountain View Transportation Management Association (2017). About Us. Retrieved from <http://mvgo.org/about-us.html>

¹⁵ See standards under Section 6.13 of the North Bayshore Precise Plan.

¹⁶ City of Mountain View (2012) *General Plan*. Retrieved from <http://www.mountainview.gov/civicax/filebank/blobdload.aspx?blobid=10702>

¹⁷ City of Mountain View (2017) *North Bayshore Precise Plan Final Draft*. Retrieved from <http://www.mountainview.gov/civicax/filebank/blobdload.aspx?BlobID=24429> (INSERT NEW LINK)

¹⁸ Ibid. pp. 123

¹⁹ Fehr & Peers, (2017, September). *Residential Trip Standard memo*.

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residential units. For example, as shown in Figure 3, a proposed 200-unit residential development could generate a maximum of 38 vehicles during the a.m. peak and 56 vehicles in the p.m. peak. This maximum number of vehicle trips would then become a project’s vehicle performance standard and should be included in the project’s TDM Plan and monitored over time.

Figure 3 Average Residential Vehicle Trip Rates for North Bayshore Residential Development (per unit)²⁰

Time of Day	Trip Rate for Vehicles Entering North Bayshore	Trip Rate for Vehicles Exiting North Bayshore	Total Trip Rate (a)	Proposed Number of Units (b)	Trip Performance Standard (a * b)
Morning Peak Hour	0.05	0.14	0.19	200	38 vehicles
Evening Peak Hour	0.16	0.12	0.28	200	56 vehicles

2. Residential Mode Split

The **residential mode split target** means developments should aim for at least 50% of daily project trips to be made by non-driving transportation modes.²¹ Non-driving modes include riding transit, walking, and bicycling, but do not include driving alone (i.e. single-occupancy vehicle trips), carpooling, or ride-hailing. This directly reflects the North Bayshore Precise Plan goals, supporting “investments in non-automobile infrastructure and transportation demand management measures promoting transit use, walking, and biking.”²²

While a trip performance standard helps reduce traffic congestion during the peak commute periods, deterring vehicle traffic during peak periods may merely *shift* vehicle trips to off-peak periods rather than directly encouraging residents to use more sustainable transportation modes. Therefore, the purpose of the residential mode split target is to encourage the use of non-driving modes for *all* trips, and not just commute trips.

Figure 4 is an example mode split that would comply with this residential mode split target.

Figure 4 Example Mode Split for a Residential Development in North Bayshore

		DRIVING			NON-DRIVING		
		Drive Alone	Carpool/ Rideshare	Subtotal	Transit	Bike/ Walk	Subtotal
Number of Residents	200 ²³	70	30	100	46	54	100

²⁰ These trip rates are based on the North Bayshore Precise Plan transportation analysis (Fehr & Peers, 2017) that estimates the maximum number of vehicles accommodated by the gateways entering North Bayshore.

²¹ The 50% mode share was determined based on Precise Plan transportation modeling and a review of peer cities’ practices.

²² City of Mountain View (2017) *North Bayshore Precise Plan Final Draft*. Retrieved from <http://www.mountainview.gov/civicax/filebank/blobload.aspx?BlobID=24429>.

²³ Anticipating that these units would be composed of the typical mix of North Bayshore residential units; see the NBPP for additional details.

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		DRIVING			NON-DRIVING		
		Drive Alone	Carpool/ Rideshare	Subtotal	Transit	Bike/ Walk	Subtotal
Percent of Residents	--	35%	15%	50%	23%	27%	50%

3. Maximum Parking Standards

Overbuilding and underpricing parking can lead to increased automobile use, traffic congestion, higher housing costs, and greenhouse gas emissions.²⁴ Constraining residential parking supply is therefore an important component of meeting North Bayshore’s trip reduction goals.

A constrained parking supply will help lead to a higher proportion of residents who do not own a vehicle; this is likely to result in fewer vehicle trips to and from the development, and will help to achieve the 50% non-driving mode share requirement. Figure 5 details the maximum parking allowances for new residential development in North Bayshore as specified in the Precise Plan.

Figure 5 Maximum Parking Standards for New Residential Development

Unit Type	Maximum Parking Ratio
Micro-units (up to 450 square feet and without a separate bedroom)	0.25 spaces/unit
1 Bedroom	0.5 spaces/unit
2 Bedroom	1.0 spaces/unit
3 Bedroom	1.0 spaces/unit

A reduced parking supply is more marketable when paired with transportation benefits and services that reduce one’s need to own a vehicle. Therefore, North Bayshore developers and/or property managers need to implement programs and invest in infrastructure that allows residents to more easily travel by means other than driving. The Precise Plan requires residential developments to implement certain TDM strategies, which are described in Chapter 3.

The Precise Plan states that if a planned residential development will exceed the parking ratio for its proposed mix of unit types, the developer is required to submit a parking study to the City. The parking study must be completed by a traffic engineer, and include a justification for the additional parking. The study should include (1) a comparison of parking maximum rates between a proposed and/or similar project, (2) available TMA services and TDM strategies, and (3) confirmation that nearby commercial parking is unable to be shared. Additionally, the study needs to include a strategy for monitoring, reporting, and ultimately eliminating and converting excess parking spaces over time so the project will meet the Plan’s residential parking standards. For example, parking garages should be adaptable to other uses, so that over time, the infrastructure can be converted and used for other uses.²⁵ Chapter 3 includes TDM best practices such as transit subsidies, car share membership, and on-site bicycle facilities that can

²⁴ Cowen, Tyler. (2010). *Free Parking Comes at a Price*. The New York Times. Retrieved from <http://www.nytimes.com/2010/08/15/business/economy/15view.html>

²⁵ City of Mountain View (2017). *North Bayshore Precise Plan*. (pp.195).

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implemented beyond the required strategies to meet their trip performance standard and mode split targets and comply with these parking standards.

3 REQUIRED AND BEST PRACTICE STRATEGIES FOR VEHICLE TRIP REDUCTION

This chapter details the transportation demand management (TDM) programs that all new residential developments will be required to implement.

Residential projects have to implement the five TDM **baseline requirements** summarized in Figure 6. However, if a project exceeds the maximum parking ratio for the development’s unit mix, project applicants are to provide **additional TDM measures** to demonstrate how they will meet the City’s trip performance and mode split requirements and reduce parking supply over time. This chapter describes TDM best practices available to developers and property managers, summarized along with their level of effectiveness in Figure 7. Applicants may propose TDM strategies that are not identified in Figure 7, but the City of Mountain View must approve such strategies. Additional information about the technical justifications for TDM level of effectiveness is located in the Appendix.

Figure 6 Required TDM Strategies

Category	Required Strategies	Details	Effectiveness for Reducing Vehicle Trips and Vehicle Miles Traveled
I. Parking	1. Constrain the residential parking supply with maximum parking ratios <i>(Note: noncompliance with this strategy will require additional TDM strategies to be implemented.)</i>	An average of 0.6 spaces per unit ²⁶	High
	2. Unbundle parking from all residential leases	For market-rate housing	High
II. Trip Reduction Marketing	3. Join the Mountain View TMA	Membership requirements as determined by the MVMTA	Medium

²⁶ This is the average of the parking ratios based on the unit mix goal for North Bayshore.

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Category	Required Strategies	Details	Effectiveness for Reducing Vehicle Trips and Vehicle Miles Traveled
III. Multimodal Infrastructure	4. Provide on-site car share spaces	2, plus 1 for every 200 units over 200 ²⁷	Medium
	5. Provide short and long-term secure bike parking (cargo-bike accessible)	Short-term: 1 per 10 units Long-term: 1 per unit ²⁸	Medium

Figure 7 Best Practice TDM Strategies by Effectiveness

Category	Strategies	Effectiveness for Reducing Vehicle Trips and Vehicle Miles Traveled
Transit	6. Fund transit passes for residents	High
Urban Form and Land Use	7. Establish leasing partnership with North Bayshore employers	High
Childcare	8. Lease space for on-site childcare	Medium
Multimodal Infrastructure	9. Provide development-specific bike share	Medium
Parking	10. Establish a shared parking agreement	Medium
Trip-Reduction Marketing	11. Sustainable transportation incentive program	Medium
	12. Hire an on-site transportation coordinator	Medium
Urban Form and Land Use	13. Facilitate coordinated delivery services and provide accessible storage options	Medium
Multimodal Infrastructure	14. Provide space for on-site bike share	Low
	15. Provide a bicycle resource center (dedicated space for bike repairs with tools and spare parts, bicycle trip planning information, etc.)	Low
	16. Provide car share membership to residents	Low
Telecommuting	17. Provide on-site common space,	Low

²⁷ City of Mountain View (2017). *North Bayshore Precise Plan Final Draft. Section SF Planning* (2010). *Car-Share Requirements and Guidelines for Car-Share Spaces*, Retrieved from http://default.sfplanning.org/publications_reports/ZAB_06_Car_Sharing_Aug2010.pdf

²⁸ Ibid. PP. 85

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Category	Strategies	Effectiveness for Reducing Vehicle Trips and Vehicle Miles Traveled
	including a collaborative workspace available for residents and their guests.	
Trip Reduction Marketing	18. Create and maintain a mobile-friendly transportation website for residents	Low
Urban Form and Land Use	19. Designate convenient commercial loading and delivery zones internal to the project site	Low

The remainder of this chapter discusses each of the strategies in detail, and how they should be implemented. Additional guidance from best practices and case studies are provided to demonstrate how developers can make each strategy as effective as possible.

DESCRIPTIONS OF REQUIRED BASELINE TDM STRATEGIES

The first strategy of parking maximums is discussed previously in Chapter 2.

2. Provide Unbundled Parking

Unbundled parking means that the cost to lease a parking space at a residential development is separate from the cost of renting or purchasing a unit. Separating the cost of a parking space from the sale or lease of a housing unit saves money for households that do not wish to park a vehicle. This policy recognizes the cost of parking for a resident and helps him or her determine if it is a worthwhile expense, as opposed to it being incorporated into the overall price of renting or buying a home regardless of whether the resident owns a vehicle.

Many projects throughout the Bay Area unbundle parking, including Madera Apartments in Mountain View, Waterford Place and Avalon at Cahill Park in San Jose, Via in Sunnyvale, and Connolly Station in Dublin.²⁹

Best Practices

- The developer should provide copies of the lease agreement demonstrating that parking is unbundled as part of their monitoring process.
- Parking prices should be set to restrict demand and are to be determined as part of the TDM Plan submission.
- Developers should consider offering month-to-month parking leases – rather than annual leases – to give residents more flexibility.

²⁹ Survey data from GreenTRIP database (<http://www.transformca.org/greentrip/parking-database>).

3. Join the Mountain View Transportation Management Association (TMA)

A transportation management association (TMA) is typically a nonprofit, member-based organization that provides transportation services in a particular area, formed to address the transportation needs and challenges of a particular destination with a distinct geographic boundary, such as a central business district. TMAs address parking and circulation through commute programs, trip planning, information about various travel options, and other tools. The TMA can also function as a point of coordination for employers and organizations that deploy their own transportation demand management programs, and also provide information to residents and visitors looking to learn more about their transportation options.

TMAs are quite common throughout California and the West Coast. The Cities of San Leandro and Emeryville both have TMAs that oversee their respective shuttle programs. Other local TMAs include the Mission Bay TMA and TMA-Connects; both provide central clearinghouses of commute information for members on their websites. Their websites include real-time transit information, tips for walking and cycling to key destinations, and alerts on transit service disruptions or major events.

The Mountain View Transportation Management Association (MVTMA) is Mountain View's TMA. The MVTMA operates the MVgo shuttle system that travels throughout North Bayshore and to/from the downtown transit center. New development in North Bayshore must join the MVTMA to support transportation initiatives in North Bayshore.

Best Practices

- Transportation services in North Bayshore from the MVTMA should be tailored to best serve both commercial and residential land uses.

4. Provide On-Site Car Share Spaces

Car share facilities act as both a transportation solution and an attractive building amenity. Programs allow for 24/7 on-demand access to a shared fleet of vehicles. Providing access to carshare helps offset a smaller parking supply by supplying residents with access to a vehicle without having to purchase one.

After joining a car share program, on average, vehicle ownership can be reduced from 0.47 to 0.24 vehicles, per household. By reducing car ownership, car sharing typically reduces the number of vehicle trips.³⁰

The North Bayshore Precise Plan requires the following car share space standards:

- One car share space for developments with 50 to 200 units. Developments with over 200 units shall provide two spaces, plus one for every additional 200 units.
- Spaces shall be located in or near publicly accessible areas to allow use by non-residents.
- The developer or property manager shall give car share operators the right of first refusal to locate vehicles on-site at no cost. If a car share operator chooses not to locate vehicles at the development, the developer and/or property manager will not be penalized.

³⁰ TransForm, GreenTRIP Traffic Reduction Strategies – Free Car share Membership, GreenTrip Connect Car Share Factsheet.

Importantly, the use of all car share vehicles should be monitored on an annual basis to determine if more vehicles are necessary.

As an example, Broadway Family Apartments in San Francisco offers car share vehicles and memberships in addition to other amenities.³¹

Best Practices

- Developers should consider establishing storage near car share areas for car seats and other family amenities to reduce the need for private vehicle ownership by households with young children.

5. Provide Short and Long-term Secure Bike Parking

Residents are more likely to bike when offered the same level of access and security as motorists. Secure bicycle parking is an important feature for new residential developments that helps encourage bike trips shorter errands and first- and last-mile connections. The North Bayshore Precise Plan requires the following bike parking standards:

- One short-term bicycle parking space is required for every 10 units and one long-term bicycle parking space is required for every unit in North Bayshore.
- North Bayshore developers are required to clearly identify secure bike parking locations for residents.
- The space must be located in an easily accessible, well-lit, and attractive location close to main entrances that experience high pedestrian traffic.

Developers shall provide a fob, a key, or another secure access mechanism to residents for long-term bike parking. Bike parking should be designed to also accommodate cargo bicycles.

Publicly available bicycle parking shall be placed according to the recommendations outlined in Appendix D of the City of Mountain View's Bicycle Transportation Plan Update.³²

Best Practices

- Secure bicycle parking should be located above grade and should not be located in underground parking garages or in basements.

DESCRIPTIONS OF BEST PRACTICE TDM STRATEGIES

A developer's TDM plan must describe the TDM strategies and how they will be implemented if the proposed residential development exceeds the Precise Plan's maximum allowed parking ratios. This section presents best practices in reducing vehicle trip generation and parking demand that developers may utilize to meet their targets, in order of general effectiveness.

³¹ City of San Francisco (2017). *Balboa Area Transportation Demand Management (TDM) Framework*. Pp. 53. Retrieved from http://default.sfplanning.org/plans-and-programs/planning-for-the-city/public-sites/balboareservoir/BalboaPark_TDM_Final_121117.pdf

³² City of Mountain View (2015). *Mountain View Bicycle Transportation Plan Update. Appendix D*. Retrieved from <http://www.mountainview.gov/civicax/filebank/blobdload.aspx?BlobID=18294>

6. Fund Transit Passes for Residents – Caltrain Monthly Pass or Clipper E-Cash

Free or subsidized transit passes can increase residents' awareness of nearby transit options, and can reduce the financial barrier by making it a more cost-comparable option between the cost of public transportation and the cost of parking. Especially for residents of affordable units, this strategy can improve transit use, equity, mobility options, and further reduce the need for owning a car.

A free transit pass can be the incentive that changes residents' travel behavior, particularly for those that commute outside of North Bayshore. In combination with the MVgo shuttle, which acts as a first-and-last mile connector between the Mountain View Transit Center and North Bayshore, a transit pass can encourage residents to use Caltrain and the other nearby public transit options.

Developers should consider paying, at a minimum, the cost of a Caltrain monthly pass³³ or the equivalent cost in Clipper E-Cash.³⁴ Clipper E-Cash maximizes residents' transit options by providing residents' access to multiple transit agencies, rather than just one. The exact amount of the subsidy will need to be negotiated between the City and the developer depending on the size of the project, the project's overall TDM Plan, and percentage of residents who work within North Bayshore.

Each month, the developer and/or property manager can either reissue the monthly pass or add cash value to each unit's assigned Clipper Card.³⁵ If implemented, this program should remain in place for the life of the project, or until it is determined otherwise, by the City amending a project's condition of approval.

As an example, Parkmerced Apartments offers its residents a \$100 monthly transportation credit to use either Uber or Clipper. Residents sign up through the resident portal.³⁶

Best Practices

- The property management company or owner should consider promoting transit passes on their online web portal and through marketing and communication campaigns.

³³ To reduce administrative burdens, the average cost (Fares are zone-based ranging from 96.00 to 433.00.) of a monthly Caltrain fare is the suggested rate. One can reasonably assume that providing the average monthly fare will fully pay for some residents while partially subsidizing, others. A developer should monitor the prices of monthly fares for both agencies, as they are likely to change.

³⁴ E-cash can be used on any participating transit system, Clipper equipped vehicles, and/or stations. Developers should further consider providing residents with a VTA Express, giving residents' access to local and regional lines throughout the South Bay. As of 2018, the price of a VTA Adult Express Pass is \$180. Santa Clara Valley Transportation Authority (2018). Fares. Retrieved from <http://www.vta.org/getting-around/fares>.

³⁴ As of January 2018, the agency is piloting Go Pass on Clipper. Rather than affixing a Go Pass sticker to a Caltrain card, Clipper cards are scanned when boarding a train. The goal of this program is to ensure accurate ridership. As noted on the agency's website, the program will be monitored and evaluated over the course of the year.³⁴

³⁵ Clipper cards can be purchased in bulk through the Metropolitan Transportation Commission, the regional public agency that manages Clipper.

³⁶ Parkmerced (2018). *Parkmerced Residents*. Retrieved from <https://www.parkmerced.com/residents>

7. Establish Leasing Partnership with North Bayshore Employers

A leasing partnership is an agreement between a developer and an employer, which allows an employer to lease a specific number of apartments from a residential development. Unlike traditional rentals or home ownership, an employer can be the main tenant of a building(s) in North Bayshore. As the main tenant, the company can choose to take over property management responsibilities; if so, the employer will be responsible for monitoring the site's trip performance standard and mode split requirements.

If an employer is the property manager and responsible for leasing units, they can choose to lease units to employees who work within North Bayshore. This helps reduce the number of vehicle trips, which is a key objective of the Precise Plan, while also reducing resident transportation costs. This strategy is most successful when developers are able to lease a high percentage of units to North Bayshore employers.

8. Lease Space for On-Site Childcare

On-site childcare facilities can reduce commuting distances between households, places of employment, and childcare facilities. Leasing space to a childcare center would be more convenient and accessible for parents who need to pick up and drop off their children at school or daycare. If incorporated into the development, a childcare facility will need to be designed as part of the site and project plans and be included as a condition of approval.

With approval from the City, a developer or property owner may modify the approved childcare space to meet other unmet needs and services. Examples can include dry cleaners, post office, and package room. As an example, Parkmerced Apartments includes a Montessori School on its premises with full daycare and after-school care.

Best Practices

- Many residential developments in major cities provide childcare services as part of their amenities.

9. Provide Development-Specific Bike Share

To make biking more accessible to residents, the developer and/or property manager can establish a development-specific bike share program. Programs may be structured one of two ways. The developer can create a site-specific bike share program, where the developer and/or property manager purchases bikes for tenant use. The developer can also choose to coordinate with a local bike shop or a bicycle advocacy organization to launch and operate this program; purchasing used bikes is a great way to keep the cost of a loaner program low. Alternatively, a developer may pay to sponsor a docking station operated by an official bike share provider at the residential site.

Best Practices

- In preparation of launching a loaning program, the developer should provide residents with bike safety tips and educational resources from local bike advocates or organizations, such as the Silicon Valley Bicycle Coalition.

10. Establish a Shared Parking Agreement

Shared parking agreements benefit an entire area by using the available parking supply efficiently. Under a shared parking agreement, developments with different uses and peak demands share the parking supply. This arrangement reduces the total number of required parking spaces in an area and lowers construction costs.

To implement this strategy, the developer or property manager establishes a shared parking agreement with an adjacent property owner(s) or among different land uses on a given property. The agreement would allow the properties or uses to share the total parking supply in perpetuity. Shared parking contracts should include coverage for reasonable liabilities that may occur on site.

The agreement should include the following information:

- Detailed information about the responsible parties
- A map of the parking facility
- Dedicated shared parking spaces
- Explicit information about pricing and management
- Contract/agreement terms and duration of terms
- Specific liability language
- Provision of agreement renewals

The number of spaces included in a shared parking agreement will need to be evaluated on an annual basis or as residents or tenants move in, and/or parking spaces are leased, unless specified otherwise by the project conditions of approval. The price of the shared spaces may be different from the price of the spaces used by the development's residents. City staff will need to review and approve the terms of the shared parking agreement as part of the review and approval of the TDM plan.

As an example, Albina Corner is a 48-unit, mixed use, low-income housing development in Portland, Oregon located within walking distance to a commercial district. Albina Corner's parking lot provides enough parking for residents on the nights and weekends, while allowing businesses to use the lot during the day. In turn, this has reduced developer costs and encourages residents to use non-driving modes.³⁷

11. Sustainable Transportation Incentive Program

Residential sites in North Bayshore can incentivize biking, walking, and using transit by providing a financial reward for using these modes. Sustainable transportation marketing services that focus on individual needs can support the reduction of vehicle trips and vehicle miles traveled and the use of transit and active transportation.³⁸

The property management company or owner can establish a platform where residents can log the number of times they travel using sustainable transportation (bike, walk, or transit).

³⁷ Urban Land Institute. *Albina Corner – project reference file*. Retrieved from <https://casestudies.uli.org/wp-content/uploads/sites/98/2015/12/C027007.pdf>

³⁸ California Air Pollution Control Officers Association (CAPCOA), *Quantifying Greenhouse Gas Mitigation Measures: A Resource for Local Government to Assess Emission Reductions from Greenhouse Gas Mitigation Measures*, August 2010.

Residents that log the most trips (or a predetermined number) could qualify for a variety of benefits, such as bike vouchers and gift cards.

Creating and branding a program that proactively engages residents is critical to success. For example, an annual “Transportation Day” could consist of tables or booths where residents can receive information, purchase transit passes, and join carpooling groups, or can engage with larger audiences through games and giveaways. Behavior change campaigns may range include challenges, marketing, from social media blasts, or contests with prizes for individuals or groups who bike, walk, or take transit to and from their home.

As an example, Santa Monica College employees who log commuter trips at the SMC-specific trip planner, Corsair Commute, can earn \$15 to \$30 per month for using sustainable transportation (30% to 100% of all trips). Employees who qualify for three consecutive months in a given academic quarter are entered into a prize drawing for one of four \$50 gift certificates.³⁹ New residential developments should be encouraged to incentivize non-auto travel in similar ways.

Best Practices

- Partner with the MVTMA and other local organizations to distribute campaign and incentive program information
- Widely advertise “Transportation Day” in advance through a variety of channels, including social media and email
- Leverage events to survey residents about their travel habits

12. Hire an On-Site Transportation Coordinator

A transportation coordinator provides oversight and management of a site’s TDM program. A property owner /develop can designate a staff person to serve as the contact person for residents with questions about the TDM Plan. Ideally, this staff person would also be able to work directly with the Mountain View TMA and City to relay relevant transportation information.

A designated on-site transportation coordinator creates a point of contact for residents who have specific transportation-related questions. Additionally, this position would be responsible for updating all transportation information that residents receive about nearby non-drive alone options; they also may distribute and monitor the effectiveness of all transportation-related benefits.

The transportation coordinator should have an on-site presence and be responsible for monitoring the use and overall effectiveness of each measure, including tracking the development’s vehicle generation and mode split to comply with the City’s North Bayshore Precise Plan policies. Depending on the developer, this position could coordinate TDM across multiple sites to use their time efficiently.

Responsibilities may include:

- Offering commute trip planning information, including links to the regional 511 Rideshare program
- Providing Clipper card, car share memberships, and parking policy information

³⁹ Santa Monica College. Retrieved from: <http://www.smc.edu/StudentServices/transportation/Pages/STIP-FAQ.aspx>.

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- Providing information on accessing other TDM program details and amenities, such as the in-building storage facilities
- Providing maps and walking and biking routes within the area, estimated walk and bike times to key locations, including transit hubs, and links to area bicycle maps
- Providing information about local transit options and schedules, including links to Caltrain and VTA schedules, route maps, and existing trip planner mobile applications
- Working with the TMA to coordinate messaging and other information with other TDM coordinators

As an example, Parkmerced Apartments has an on-site TDM coordinator. Through the development's residential portal, tenants can ask questions and work with the coordinator to create a personalized travel approach.

Best Practices

- The coordinator can actively develop materials and programs to promote non-driving trips.
- The coordinator can facilitate coordinated ordering and delivery options for more efficient shared delivery vehicle trips.

13. Facilitate Coordinated Delivery Services and Provide Accessible Storage Options

Providing storage space for deliveries – such as groceries and online orders – can have a direct impact on reducing vehicle trips for a residential development. A centralized storage facility within each building can consolidate delivery trips by allowing carriers to make one stop for multiple recipients, instead of having to make several stops at different times. Building residents typically access deliveries through a locker system with unique pick-up codes that include the locker number and access times for the delivery recipient when building staff are unable.

This strategy has been implemented at Parkmerced Apartments, a residential apartment complex in Parkmerced near San Francisco State University. Residents have access to Amazon Lockers to help facilitate online ordering. Residents can have their packages delivered to the lockers and are then notified through the residential portal when their packages have arrived.⁴⁰ Madera Apartments in Mountain View also has a 24/7 package locker system.⁴¹



<https://luxerone.com/properties/>

⁴⁰ Parkmerced (2018). *Parkmerced Residents*. Retrieved from <https://www.parkmerced.com/residents>

⁴¹ Prometheus Apartments (2018). *Madera Apartment Amenities*. Retrieved from <https://prometheusapartments.com/san-francisco-bay-area-apartments/san-francisco-south-bay/madera#amenities>.

Best Practices

- Consider partnering with online personal service providers (i.e. Instacart, Postmates, and Taskrabbit) or facilitate other ways of ordering online. One potential way to do this would be to offer direct ordering through the property's internal website for tenants.⁴²

14. Provide Space for On-site Bike Share

To encourage the use of multimodal travel within North Bayshore and the surrounding area, developers can set aside space on-site for bike share vendors to a bike share station. Developers and/or property managers would identify bike share station or parking areas and the vendor would provide the bikes and maintain the system. However, providing space does not ensure that the bike share operator will choose to locate the station on or near the site.

If bike share is provided, bike share payment can be synced to Clipper Card accounts, similar to how transit passes and e-cash can be loaded. If residents are already receiving Clipper e-cash from the development, then they can easily integrate a bike share membership into their transportation options.

15. Provide a Bicycle Resource Center

Bike repair stations provide convenient bike tools to make it easier for bicyclists to keep their bikes operable. A bike repair station also addresses concerns about ongoing bicycle maintenance—by providing accessible tools and parts in an easily accessible and secure area.

Developers can set aside adequate space for installing at least one bike repair station on site. This space should be adequate for a bike stand and necessary tools and supplies. Tools and supplies should include, at a minimum, those necessary for fixing a flat tire, adjusting a chain, and performing other basic bicycle maintenance. This may include a bicycle pump, wrenches, a chain tool, lubricants, tire levers, hex keys/Allen wrenches, screwdrivers, and spoke wrenches.

As an example, at NEMA in San Francisco, residents have access to bike rentals, storage, and a repair/resource center.

16. Provide Car Share Memberships for Residents

Providing both access to car sharing vehicles and car sharing memberships has been shown to be more effective than implementing each strategy separately.⁴³ As on-site car share vehicles are a required baseline strategy, developers/property managers can leverage this strategy's impact further by providing one annual car share membership for each residential unit. This program should be in place for the life of the project, or until it is determined not to be effective, with the City's approval.

⁴² *Package Concierge*, along with several other companies, offers a locker service for multi-tenant residential buildings. When parcels are dropped off, tenants receive a notification on their mobile. Residents can pick-up parcels at their convenience. Residential developments that have installed *Package Concierge* includes Marshall in Redwood City, CA and Chelsea Place in Boston, MA. For more information and case studies refer to the company's website: <http://packageconcierge.com/>

⁴³ GreenTRIP Traffic Reduction Strategies – Free Car share Membership, GreenTrip Connect Car Share Factsheet.

As an example, several Bay Area residential projects currently offer car share memberships, e.g. Madera Apartments in Mountain View,⁴⁴ the Fox Plaza in San Francisco, and the Uptown in Oakland. Many of these developments have parking ratios of less than one parking space per unit, and all of them have seen parking utilization rates well below capacity.⁴⁵

Best Practices

- Instead of paying for commercial car share memberships, developers/property managers may decide to establish a development-specific car share program by purchasing vehicles for sole use by residents. Residents can reserve their use in advance.

17. Provide On-site Collaborative Workspace

An on-site business services room can encourage residents to work from home, i.e. telecommuting. This can have a direct impact on reducing vehicle trips to and from a residential site. Such an amenity is a typical part of large rental buildings, though the size and specific services can vary.

An on-site collaborative workspace should be included in the pre-rental marketing documents as a building benefit; if a development creates an online portal for residents, the website should promote and market the use of collaborative workspaces.

As an example, NEMA (Market Street, San Francisco) has a business lounge with Apple computers, printers, fax machines, and scanners, and a boardroom with a phone, touch screen monitor, and computer hook-ups. Many newer residences also offer Wi-Fi throughout all common areas.⁴⁶

Best Practices

- Spaces should include free work rooms that can be reserved in advance, equipped with video conferencing equipment, high-speed internet connections, projectors, white boards, basic office supplies, and printing, scanning, and faxing services.
- For residents interested in using this work space long-term, dedicated mailboxes for businesses could be set aside and located nearby. This amenity could be particularly beneficial for residents who work outside of North Bayshore.
- The Mission Rock Development, an approved 1,500 residential and mixed-use project will be constructed with rentable work rooms that can be reserved in advance, equipped with video conferencing equipment, and dedicated mailboxes for businesses.⁴⁷

⁴⁴ City of Sunnyvale (2016). *Multi-family Residential TDM Toolkit - Case Study Madera Apartments, Mountain View*. Retrieved from <https://sunnyvaleca.legistar.com/LegislationDetail.aspx?ID=2817572&GUID=5EEB0FA3-3F65-4B31-92BA-5E8184D2C043&Options=&Search=&FullText=1>

⁴⁵ TransForm, GreenTRIP Parking Database <http://database.greentrip.org/>

⁴⁶ NEMA. *Resident Amenities*. Retrieved from <https://www.rentnema.com/amenities.html>

⁴⁷ Nelson\Nygaard (2017). *Mission Rock Transportation Demand Management Plan*. http://sfmea.sfplanning.org/MissionRock_Appendix%204-5_DraftTransportationDemandManagementPlan.pdf

18. Create and Maintain a Mobile-Friendly Transportation

Website

Mobile-friendly websites are one way to create a dynamic and engaging repository for transportation information, point-to-point navigation tools, travel suggestions, user engagement campaigns, and other efforts. Websites can raise awareness of alternatives to drive-alone travel and encourage residents, employees, and visitors to use other travel options. In addition to supporting the information already provided in the resident and employee handbook, a website could include the following:

- Real-time transit information, including MVgo shuttle arrivals and connections with Caltrain and VTA
- Information on costs and multimodal options available for traveling to and from North Bayshore, as well as information on nearby attractions and services
- Links to citywide or regional transportation information
- Resident-specific portal to allow for the delivery of targeted, individualized TDM information
- Notifications of upcoming transportation-related events
- Integration with internet delivery services for ordering⁴⁸
- Registration for car share and bike share memberships
- On-site childcare services enrollment

As an example, Portland's Go Lloyd is a combined Business Improvement District and TMA, with a membership of 118 businesses and, by extension, approximately 10,000 employees. Go Lloyd manages a suite of TDM programs, which are marketed on a mobile-friendly transportation website. The easy accessibility of information is partly responsible for the success of Go Lloyd.

19. Designate Convenient Internal Commercial Loading and Delivery Zones

The developer can work with the City to designate commercial loading zones internal to the residential site. Loading zones facilitate drop-offs and pick-ups (e.g. carpool and rideshare) and enable efficient deliveries of goods and services. Loading zones must be located near building entrances, elevators, and/or at corners with curb ramps. Strategic location of these delivery zones may reduce the number of vehicle trips circling to serve multiple destinations near one another.

Figure 8 Go Lloyd Website



⁴⁸ See footnote 42.

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Developers must still comply with the North Bayshore Precise Plan's streetscape design guidelines, which could require curbside space for loading and unloading.

4 TDM PLAN SUBMISSION, MONITORING, REPORTING, AND COMPLIANCE

This chapter describes the tools that project applicants can use to effectively monitor their TDM program and ensure that the program complies with City of Mountain View monitoring requirements.

TDM PLAN SUBMISSION

To submit a TDM Plan for residential development, the developer shall complete the following steps:

- Determine project's eligibility (Step 1 in Figure 1, page 3)
- Determine program requirements for parking ratios based on unit mix (Step 2, page 3)
- Draft a TDM plan that includes the following:
 - Calculation of the site's vehicle trip performance standard and comparison to the North Bayshore Precise Plan's vehicle trip performance standard
 - Description of all TDM strategies and how they will be implemented
 - Description of TDM monitoring
 - If parking ratio is exceeded, a parking study that shows:
 - A comparison of parking maximum rates between a proposed and/or similar project
 - Additional TDM strategies
 - Confirmation that nearby commercial parking is unable to be shared
 - A strategy for monitoring, reporting, and ultimately eliminating and converting excess parking spaces over time to eventually meet the Precise Plan's residential parking standards
- Submit TDM plan to the City as part of the entitlement process

If the project's strategies do not include hiring a full-time TDM coordinator, the applicant must name a staff person who will be the point of contact for residents regarding the TDM Plan.

MONITORING PLAN

A robust monitoring program that allows a developer and/or property manager to adjust offerings over time is key to the success of its TDM program. Monitoring will allow for a better understanding of the effects of different strategies on travel behavior and determine how programs are meeting the needs of residents, employees, and visitors.

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The objectives of an annual monitoring program are:

- To measure progress toward complying with both the project's and the North Bayshore trip performance standards and the 50% non-driving vehicle mode share target; and
- To identify the effectiveness of TDM Plan strategies, so the strategies can be modified if necessary to be more effective.

To monitor travel behavior, the developer should work with a transportation consultant or third party to design a plan for (1) collecting annual vehicle, bike, and pedestrian counts, and (2) administering an annual parking and residential travel surveys. A data collection plan should be updated to help facilitate consistent data collection and analysis over the life of the project. Counts should be collected over a one-week period during the fall or spring of a "typical week" – one in which there are no holidays, major events, or inclement weather.

The following metrics should be collected for analysis:

- Residential mode split (all trips and all modes, including differentiating between driving along and carpool/rideshare)
- Parking utilization throughout the day
- Vehicle ownership at the residential development
- TDM program awareness
- Participation in individual TDM programs
- Cost-effectiveness of the TDM program
- Resident survey of travel behavior
- Resident opinions on desired services or amenities in North Bayshore

Data can be analyzed and cross-referenced to derive information such as the mode residents most often travel by, the frequency of travel by mode other than the single-occupant vehicle, or which TDM services residents use and why. This data can also be cross-referenced with demographic data to classify travel characteristics by personal and household characteristics such as occupation, income, vehicle ownership, vehicle availability, and household size. Cross-referencing is valuable in understanding mode split trends across groups.

Plan Adjustments

Throughout development and implementation of a TDM program, the developer and/or property manager may need to adjust their strategies or implementation approach to better meet their targets and replace or modify costly, ineffective programs. The implementation approach can be adjusted at any time; adding or removing strategies included in an approved TDM Plan will need to be documented in an annual report to the City's Community Development Department.

The revised TDM Plan will then be implemented, and the property owner/manager will comply with the monitoring and reporting requirements as described.

ONGOING REPORTING

The first data collection effort shall occur within one year of receiving a Certificate of Occupancy for a residential building. Vehicle trip counts must be conducted annually during the same time period as the original data collection effort. After each data collection period, individual

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employers/property owners shall submit a report to the Community Development Department with the following minimum information:

- Findings of the vehicle trip counts, noting if they are in compliance with the project and Plan's vehicle trip performance standard
- The development's mode split by driving alone, carpooling/ridesharing, transit, walking, and biking
- A description of the TDM programs and services currently offered to residents/tenants and their effectiveness
- A parking utilization study

NONCOMPLIANCE

If the first annual monitoring report indicates that the site has exceeded the maximum number of project vehicle trips or non-driving mode split, the developer/manager shall submit a revised TDM Plan within 90 days that identifies new programs or strategies to meet the required targets. The City shall then review the revised TDM Plan and provide a letter stating the TDM Plan's new or modified strategies.

If the subsequent annual vehicle trip count shows that the project still exceeds the residential trip performance standard after implementation of additional or revised TDM strategies, the City may assess the property owner/developer a financial penalty. Any financial penalties paid through this program will be invested in North Bayshore TDM-related programs and infrastructure.

The City will work with developers prior to imposing financial penalties in proportion to the size of the development and the degree of noncompliance. For every subsequent year a site is non-complaint, the City may consider increasing the fine. Financial penalties will only be levied if the trip performance standard is not met; no financial penalties will be levied if the mode share target is not met. Sites with non-compliant TDM Plans, even with a financial penalty, will still be required to continually alter or modify their TDM Plans until they meet their TDM performance measures.

The noncompliance penalty for North Bayshore residential developments is as follows:

Figure 9 Annual Financial Penalties for Noncompliance

Number of Units	Financial Penalty for Exceeding Project Vehicle Trip Performance Standard by 1%	Penalty for Each Additional Percent Exceeded
10 to 99 units	\$25,000	\$10,000
100+ units	\$50,000	\$25,000

For levying a penalty against a mixed-use development, any trips exceeding the combined commercial and residential trip caps should be allocated proportionally to their contributions towards the trip cap and fined accordingly. For example, if the commercial trip cap is 60 trips and the residential trip performance standard is 40 trips, then their overall trip cap is 100. If the development counts 110 trips in the peak period, then 60% of the 10 trips would receive the appropriate commercial penalty, and 40% of the 10 trips would receive the appropriate residential penalty. Under the proposed penalty structure for residential, this is a 10% penalty, so it would be a penalty of \$115,000-\$275,000.

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These penalties are intended to encourage compliance; it is not the City's goal to collect penalties but rather to encourage developers to achieve their TDM goals.

5 APPENDIX

ESTIMATED TRIP REDUCTION IMPACTS OF REQUIRED AND BEST PRACTICE TDM STRATEGIES

There are challenges inherent in trying to estimate the effects of any one TDM investment. While research on vehicle trip reduction strategies often attempts to isolate the stand-alone effects of implementing such policies and programs to understand the actual relationship between specific strategies and travel behavior, it is difficult to isolate these effects. In practice, site managers typically implement several strategies concurrently, as TDM programs are synergistic.

For example, a city may implement a subsidized transit pass at the same time that it implements enhanced transit service, and it is difficult to say with absolute certainty which of the two changes caused the resulting increase in transit ridership—the two investments are synergistic. Because trip reduction strategies often support one another in creating high-quality alternatives to commuting by car, multiple strategies implemented jointly can leverage each other for greater impacts when compared to stand-alone implementation. For these reasons, it is not prudent to assume the stand-alone impacts of trip reductions observed in the literature and case studies can simply be “added up” to estimate the total impacts of various strategies together.

A 2010 report by the California Air Pollution Control Officers Association (CAPCOA) presents a way to quantify the total impact of different strategies implemented together, and forms the basis of the trip reduction estimates in these guidelines. The CAPCOA report is based on an extensive literature review of the effectiveness of TDM and other GHG-reduction strategies and provides clear guidance on the assumptions and limitations of each measure. Although implementing similar strategies can lead to a further reduction in VMT, the benefit of each additional measure diminishes. Since the interactions between the various measures is complex, CAPCOA has established maximum reduction values as justified by the literature. These maximum reductions are based on location and project development type; for a suburban environment such as Mountain View, the maximum reduction recommended by CAPCOA is 15%. Generally speaking, the effectiveness levels attributed to the TDM strategies in this document correspond to the following table, which has been simplified for ease of comprehension and implementation by developers and property managers.

Based on information provided by CAPCOA, Figure 10 provides an estimated trip reduction for each of the TDM strategies addressed in Chapter 3.

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Figure 10 Estimated Trip Reduction of Required and Best Practice Strategies⁴⁹

Trip Reduction Mechanism	Associated North Bayshore Strategies	Strategy Requirement	CAPCOA Range and Rationale	Estimated Trip Reduction
Urban form and land use	Provide at least 20% affordable units	Required	Ranges from 0.04 - 1.2% VMT reduction, as determined by the number of units provided at below-market rates. Given that North Bayshore has a target of 20% affordable units, this strategy is likely to have a higher impact.	1.2%
	Leasing partnerships with employers	Optional	The impact of providing residential development near commercial and retail development ranges from 9-30% VMT reduction. This strategy reinforces the connection between residential development and employers in North Bayshore and will likely have a small impact outside of the provision of land use diversity.	9.0%
	Coordinated delivery services and storage options	Optional	Currently, these strategies have no point of reference in the existing emission and trip reduction literature. However, they fill in key gaps between the other recommended TDM strategies, such as by supporting reduction/elimination of trips related to errands and childcare. The potential trip reduction estimate of these strategies is likely to be negligible, as their benefits reinforce other more quantifiable TDM strategies.	n/a
	Designated, convenient loading zones	Optional		
Parking	Unbundled parking for all tenants	Required	Ranges from 2.6-13% VMT reduction, as determined by unbundled parking costs and users' overall sensitivity to price. If developers unbundle all parking and the general cost of parking will be at the high end of the market, the potential trip-reduction impact of this strategy is estimated to be on the higher end.	8.0%
	Shared parking	Optional	Ranges from 5-12.5% VMT reduction, depending on the extent to which spillover parking is managed and the size of the development. A higher reduction is achieved when there is a greater difference between the actual parking supply provided and the ITE parking generation rate.	4.0%
Transit	Subsidized transit passes for all tenants	Optional	Ranges from 0.3-20% commuter VMT reduction, based on the number of residents eligible and the quantity of the subsidy.	8.0%

⁴⁹ Ibid.

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Trip Reduction Mechanism	Associated North Bayshore Strategies	Strategy Requirement	CAPCOA Range and Rationale	Estimated Trip Reduction
Childcare	Childcare services and facilities	Optional	According to the American Planning Association, locating childcare near a person's home may shorten vehicle trip lengths, shift vehicle trips to sustainable modes, or reduce vehicle trips altogether. ⁵⁰ The potential trip impact of this strategy will depend on the percentage of families with children in North Bayshore, which is partly shaped by the extent of housing diversity and affordability.	2.0%
Telecommuting	Collaborative work space	Optional	Ranges from 0.07-5.5% commuter trip VMT reduction, based on the number of employees participating and the level of utilization. Since North Bayshore residential development is indirectly encouraging telecommuting by providing the necessary facilities to do so, and likely many residents will already work nearby, the potential trip reduction is estimated to be small.	0.5%
Trip reduction marketing	Participating in a TMA	Required	Estimated at 0.8-4% of commute VMT reduction, based on the percentage of people utilizing these resources. Estimating the level of effort in robust marketing, including general and personalized information and transportation guidance, the potential trip reduction is estimated to be high. Moreover, individualized marketing has shown to have a positive impact on mode share, reducing auto use by 5-15% due to individualized marketing about transportation options.	4.0%
	Website with real-time transit information	Optional		
	Sustainable incentive programs	Optional		
	TDM coordinator	Optional		
Multimodal infrastructure	Car share spaces	Required	The VMT reduction range is between 0.4-0.7%. In a suburban context, this range is based on deployment of one car per 2,000 people. If car share companies utilize the proffered spaces and memberships are also offered, the potential trip reduction for a car-share program is likely to increase over time, reaching the high-end of the range with time.	0.7%
	Car sharing membership	Optional		

⁵⁰ American Planning Association, The Importance of Ensuring Adequate Child Care in Planning Practice, 2011.

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Trip Reduction Mechanism	Associated North Bayshore Strategies	Strategy Requirement	CAPCOA Range and Rationale	Estimated Trip Reduction
	Bike parking	Required	Ranges from 0.03-2.5% VMT reduction based on location and context. This range is often higher when combined with improved design elements to enhance walkability and connectivity, and other bike-related strategies such as parking and end-of-trip facilities. As the bicycle network within North Bayshore continues to be developed, the potential trip reduction of these strategies is likely to reach the high end of the range with time.	2.5%
	Space for on-site bike share	Optional		
	Development-specific bike share	Optional		
	Bike resource center	Optional		
Land Use Reductions				7.5%
Parking Reductions				11.7%
Other TDM Inducement Trip Reductions				15.0%
Total				15.0%