# Appendix I

## Technical Memorandum #10

Design Guidelines

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ALAMEDA
County Transportation Commission

# Transit-Oriented Communities in **Alameda County**

# design guidelines


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**Alameda County**

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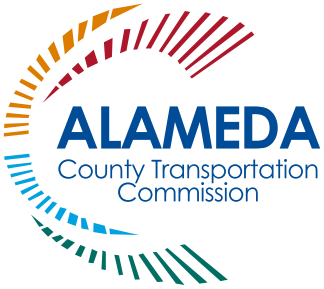


# Contents

# Introduction

1



Transit-oriented communities (TOCs) are designed to encourage people to walk, bicycle, and take transit more and to drive less. Existing and new TOCs share a variety of qualities, including the following:

- Concentrated, mixed-use development around frequent transit
- A well connected and designed street network
- Streets and land uses that are walk and bicycle-friendly

Communities built in this way are generally more livable, sustainable, and economically resilient. These characteristics also make it possible to operate efficient, cost-effective transit service. Because of these benefits, making communities more transit-oriented is one of the key goals of the *Countywide Transit Plan*. The Alameda County Transportation Commission (CTC) encourages and supports transit-oriented development (TOD) and TOCs that provide land use patterns and complete streets networks that encourage higher transit ridership. The *Countywide Transit Plan* goals are as follows[1]:

**Goal 1: Increase transit mode share**
The number of people living in Alameda County is growing significantly faster than the number of people who are riding transit. By capturing a larger share of all trips on transit, a more sustainable transit system can be achieved. The goal is not only to increase transit ridership, but also to reduce dependence on auto travel on a per-capita basis.

**Goal 2: Increase effectiveness**
Much of the existing transit supply in the off-peak hours remains underutilized. Demand for some peak-hour services, such as Transbay BART service, exceeds capacity, and use of the system is constrained by lack of supply. To achieve a more financially sustainable transit system, it is important to ensure that major transit investments benefit the greatest number of people and supply matches demand accordingly.

**Goal 3: Increase cost efficiency**
The cost of transit service is increasing without a commensurate increase in service levels or passengers. To maintain and expand transit services and to increase frequency and service hours, resources must be used as efficiently as possible.

**Goal 4: Improve access to work, education, services, and recreation**
The transit system should make it easier for people to travel without having to rely on private automobiles. This suggests the creation of an integrated transit network that provides fast, reliable connections between major residential populations and activity centers. Additionally, the potential to capture more trips on transit and to enhance first- and last-mile connectivity will be improved by promoting land use patterns that provide a mix of uses and greater density around transit or activity hubs.

**Goal 5: Reduce emissions**
Transportation is the single largest contributor to emissions. Shifting travel away from cars and onto transit helps reduce emissions (of both greenhouse gases and air pollutants) and enhances the quality of life and the environment in Alameda County.

**Goal 6: Achieve a state of good repair**
The transit system must be in good working condition to provide a safe and reliable transit experience. Maintenance of existing transit facilities and fleets should be balanced against system expansion.

**Goal 7: Increase effectiveness of inter-regional travel**
Alameda County is a key gateway to and from the San Francisco Bay Area. A significant portion of inter-regional trips either travel through or begin or end in the County. More effective inter-regional transit service could shift some of these inter-regional trips from roads and highways onto passenger rail, buses, and shuttles.

The recommended framework for TOCs in Alameda County seeks to balance these goals while supporting community values. Figure 1.1 illustrates key origin and destination zones based on the 2040 forecast population and employment per the land use assumptions in the *Plan Bay Area: Strategy for a Sustainable Region*. These key origins and destinations were the starting point in the analysis of transit markets that ultimately led to the recommended transit corridors included in the Alameda *Countywide Transit Plan.*

## 1.1 Transit-Oriented Communities in Alameda County

Much of Alameda County already includes transit-oriented communities. Some were originally developed as neighborhoods and corridors served by streetcars or were centered around commuter rail stations. Others developed more recently and include a combination of focused TODs with more auto-oriented development around them.

The existing land use context of the County's varied communities greatly affects what types of transit-supportive improvements can or should be made to improve the quality and function of TOCs throughout the County. In addition, the quality of TOCs will affect where transit investments should be made and the success of transit investments in attracting funding from regional, state, and federal sources.

The development pattern and street networks that characterize communities in Alameda County can be divided into two categories:

- pre- or early automobile, streetcar-oriented street networks
- post-WWII auto-oriented, suburban street networks with land uses organized into residential subdivisions, retail commercial centers, and office/business parks.

Generally, pre-automobile areas are more supportive of transit, while post-WWII auto-oriented development patterns present more challenges for developing TOCs.

Older, more urban neighborhoods in North County and some other county subareas were built upon the traditional street grid with denser housing and a mix of employment types. This allows for greater connectivity and better proximity to diverse uses. Transit stops and stations in these areas provide residents with greater access to regional employment centers, as well as connections to recreational and other non-employment destinations.

# Benefits of Building for Transit

**Transit-oriented communities experience many community-oriented and regional benefits in addition to improved transit service:**

### Transportation Equity

TOCs provide people with access to a broader range of jobs and services via transit as well as the option to walk or cycle to work or services in the TOC itself. People and households within the TOCs may also benefit from lower overall household transportation costs by reducing or removing the need for a private automobile.

### Environmental Sustainability

Agricultural lands, open spaces, and other natural resources can be preserved by focusing new housing and jobs into TOCs that are already located in existing developed areas. Accommodating growth in TOCs can reduce pressure to use undeveloped lands to accommodate new jobs and housing. It also can reduce the need to build new infrastructure to connect these currently undeveloped areas with other parts of the county and region.

### Public Health

The land use patterns and complete streets networks of TOCs support walking and biking. This contributes to lower obesity, better physical fitness, and improved mental health. TOCs also improve safety for all people traveling in the community and reduce pollution from motor vehicles.

### Economic Vitality

Nationally, the number of jobs in transit-served locations is growing, particularly in high-skill sectors such as information and professional services. In addition to regional, countywide, and city economic benefits, recent studies on economic activity indicate that people who visit businesses by walking, biking, or transit often spend more than those who arrive by automobile. They also tend to shop more at local businesses.

### Economic Resiliency

Emerging research indicates that urban form and transportation options play a key role in the ability of residential properties to maintain their value during an economic downturn. A national study found that during the Great Recession, high-density neighborhoods located near transit held value more effectively and outperformed regions without transit by 41.6%.

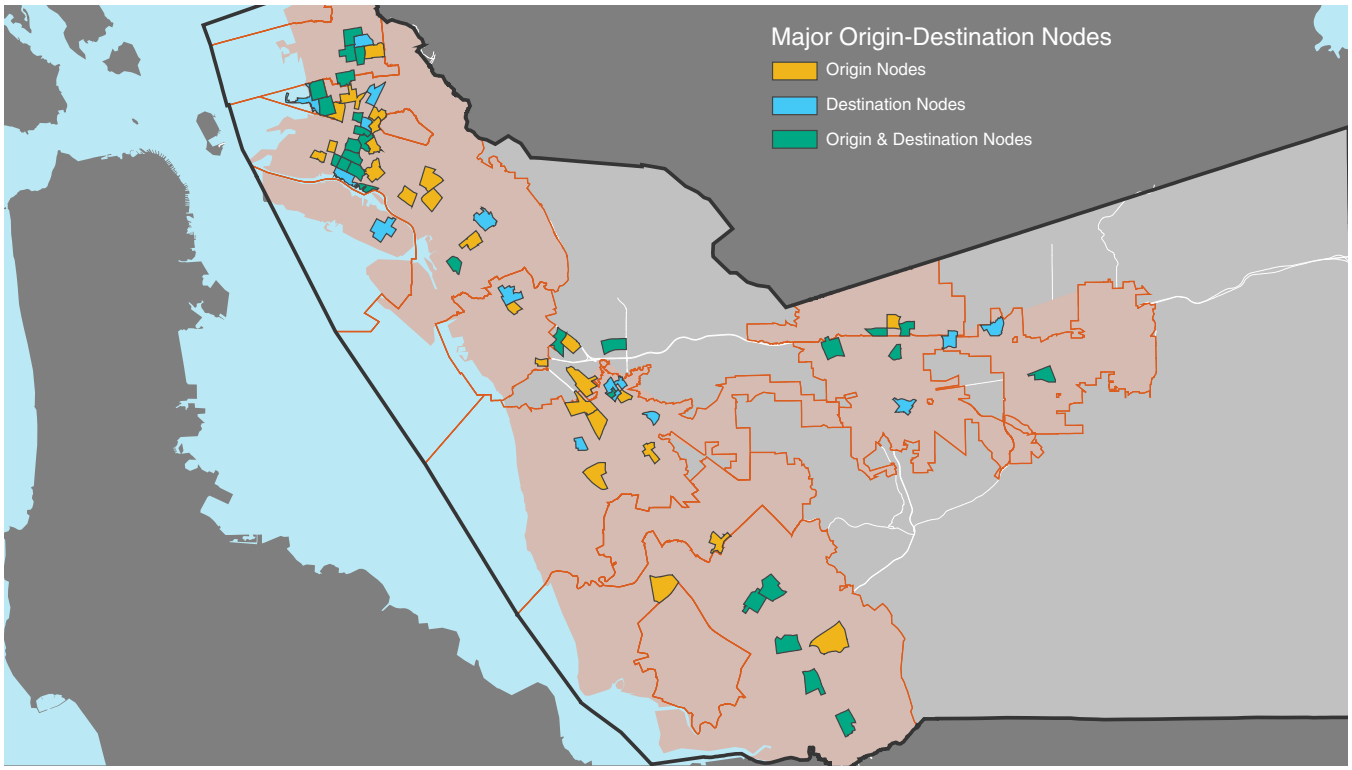



**Figure 1.1** - 2040 major origin-destination nodes within Alameda County (Source: Cambridge Systematics: TCI tool, density maps, market indices, and Alameda County Travel Demand Model, 2015).

Other cities, such as San Leandro and Hayward, have focused multimodal infrastructure investments and land use planning efforts in their downtowns which also have BART station access (the Regional Express transit service tier). These cities can use their existing pattern to improve existing TOCs by zoning for higher intensity and a mix of uses along well connected complete streets that improve access to transit and throughout the TOC.

In contrast, more suburban cities such as Dublin and Union City primarily have post-WWII land use patterns, which make them more auto-centric. This poses challenges for transforming streets and neighborhoods into more intense, mixed-use TOCs. In newer suburban communities, many collector and arterial streets lack frequent access from the surrounding low density neighborhoods and are fronted by landscaping and soundwalls.

In older corridors, commercial centers can be changed through infill and reuse of underutilized properties and reconstruction of existing streets into complete streets. These cities may support higher intensity mixed-use TODs around existing and planned transit stations that would be part of a larger, overall lower density TOC. In these cases, connectivity to the transit station would be augmented with improved pedestrian and bicycle networks and other “last-mile” connectivity strategies. These include shuttles and ride-sourcing providers such as taxis, Uber, and Lyft, as well as parking for transit riders that is integrated into the TOC or TOD without overwhelming the pedestrian network.

These cities may also be able to create additional TOCs by infilling with housing and retail in suburban office and business parks or commercial districts, such as the current development in Fremont. Land currently used for surface parking could be used to add housing and other commercial and community uses that support high-frequency/high-capacity bus transit.

# Retrofit and Infill of Auto-Oriented Places to Make Transit-Oriented Communities

The lower intensity and minimal land uses of auto-oriented post-WWII areas, including the presence of wide streets and large surface parking lots, results in poor walking and biking environments for accessing nearby transit stops or stations. However, these areas can be improved upon to create walkable and livable TOCs and TODs.

The Fremont *Downtown Community Plan* was developed to create a vibrant pedestrian- and transit-oriented downtown core with improved pedestrian access and links to adjacent bus lines and the Fremont BART station. Implementation of the plan will transform underutilized, low density and vehicle-oriented parcels and surface parking lots into a higher intensity, mixed-use downtown that includes residential, commercial, entertainment, and civic uses. The plan also introduces new streets and a finer grain block system (Figure 1.2). Streets are to be designed or redesigned to improve pedestrian and bicycle comfort, accessibility, and safety.

| **Existing Downtown Development** | |
|---|---|
| Commercial / Retail | 497,880 gsf |
| City Offices | 145,000 gsf |
| Office | 470,880 gsf |
| Residential | 11,200 gsf |
| Residential Units | 7 dwelling units |
| TOTAL - 0.28 FAR | 1,125,060 gsf |

The current zoning for the area has a control FAR of 0.8 for parcels within 1/2 mile of the Fremont BART station and 0.5 FAR for all other parcels, which translates into a potential of 2,364,400 gsf of development. The actual existing square footage of Downtown is 1,125,060 gsf, which is an FAR of 0.28 showing the district is underutilized.

| **Near-Term Development - Projected** | |
|---|---|
| Commercial/Retail | 400,000 gsf |
| City Offices / P.Arts | 250,000 gsf / 28,000 gsf |
| Office | 705,000 - 1,905,000 gsf |
| Residential | 2,000,000 - 800,000 gsf |
| Residential Units | 2,000 - 800 dwelling units |
| TOTAL - 0.8 FAR | 3,383,000 gsf |

The near-term development scenario increases residential uses, currently the stronger market and necessary to create a more vibrant Downtown. Two permitted mixed-use projects are included. Existing, thriving commercial properties remain. A new City Center with performing arts center (P.Arts) creates a destination. FAR of 0.8 is minimum density.

| **Long-Term Development - Projected** | |
|---|---|
| Commercial/Retail | 500,000 gsf |
| City Offices / P.Arts | 250,000 gsf / 28,000 gsf |
| Office | 2,000,000 gsf |
| Residential Units | 2,500,000 gsf |
| Residential Units | 2,500 dwelling units |
| TOTAL - 1.5 FAR | 5,278,000 gsf |

The long-term development scenario represents the maximum development program allowable under the current CEQA analysis, in progress for 2012 approval. To respond to future market demands, a range is given for permitted office and residential development. In total, however, the program cannot exceed a 1.5 FAR, or 5.2 million gsf.

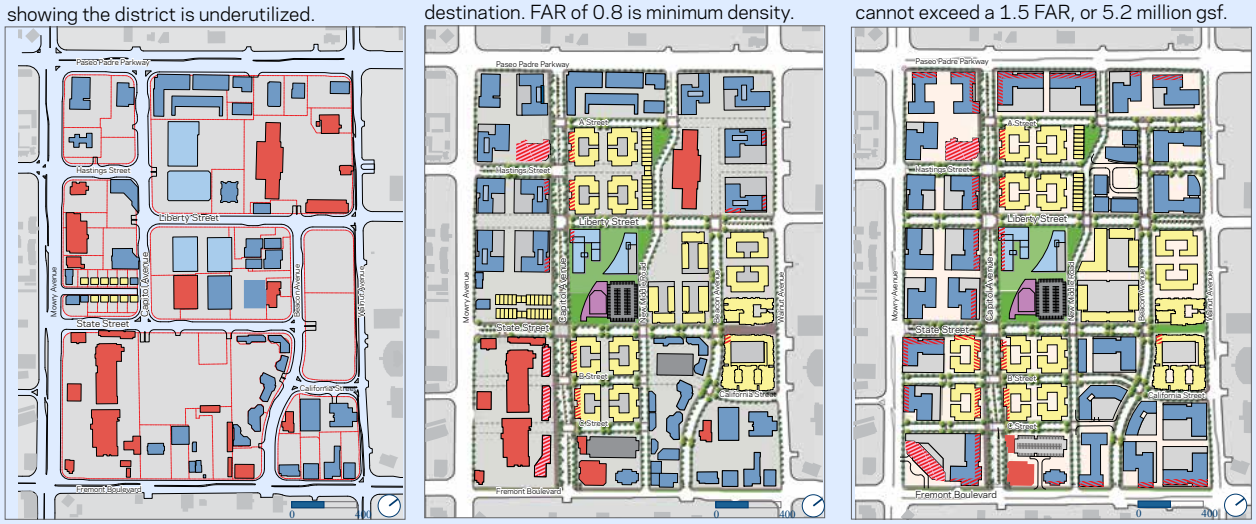



**Figure 1.2** - Fremont Downtown District Implementation Phasing Diagram. Source: City of Fremont

# 1.2 The "Six Ds" for Transit-Oriented Communities

Successful transit-oriented communities are the product of a variety of factors, contexts, and cultural forces. There is no one strategy for creating successful TOCs. Many variations of the guidelines presented in this chapter could apply depending on how a community wishes to grow. The shape of a community may also evolve in response to changes in transit service, market forces, cultural and demographic shifts, and other factors. However, several attributes are common to transit-oriented places. These attributes present a road map for building communities and developments that support high levels of transit demand and productive transit service. This document summarizes the link between the built environment and travel behavior through a concept called the "Six Ds of transit-oriented communities." Each of the "Ds" refers to different elements of the built environment or to transportation demand management (TDM). The "Six Ds" are described in the following sections.

### D1 Destinations:
Land Use and Transportation

Coordinated land use and transportation leads to fast, direct, and cost-effective transit service. Land use and transportation can be coordinated in two ways: at the community and regional scales. At the community scale, new development should be located along reasonably direct corridors so that most destinations are "on the way" to other destinations. At the regional scale, the highest densities of development and the most important destinations should be located at the intersection of several frequent transit corridors.

### D2 Distance:
Well-Connected Street Network

A street network should have a high level of connectivity, shortening travel distances and making it possible for people to quickly and conveniently walk or bicycle to where they want to go or to easily connect with transit.

### D3 Design:
Building Attractive Places

Transit-oriented communities should be well designed and attractive places that meet the needs of people of all ages and abilities. Buildings should be oriented toward the street, and the public realm should be inviting and accessible for all.

### D4 Density:
Density near Transit

Most growth and development in TOCs are concentrated within a short walk of frequent transit stops and stations. A high density of homes, jobs, and activities creates a market for transit, allowing frequent service to operate efficiently. The form of development varies by community based on local goals, character, and needs. There is no one approach to achieving an appropriate level of density to support transit.

### D5 Diversity:
Diverse Land Use Mix

A vibrant mix of land uses helps create complete and walkable neighborhoods around transit stations and stops, and supports a transit system that is well-utilized throughout the day. TOCs should encourage a mix of land uses at both the community and regional levels.

### D6 Demand Management:
Policies to Discourage Driving

TDM strategies should be implemented to discourage unnecessary driving and to promote walking, bicycling, and transit. TDM can provide incentives for travelers to shift automobile trips to other modes in a number of ways. This can include increasing the amount of travel options, setting appropriate prices for parking or road usage, providing information and marketing, and allocating more road space to transit, bicycling, and pedestrian uses.

Each of the "Six Ds" is important in shaping travel behavior and community character. However, some aspects of the built environment are more permanent than others. For example, street grids, once established, are very difficult to change, whereas building form and land use can transform more over time. It is critically important to make quality decisions on street and urban layouts in the early stages of community development and design to establish an urban fabric supportive of walking, biking, and transit.

No measure is truly effective in isolation. Successful transit-supportive communities integrate and implement the "Six Ds" in a coordinated effort. No specific thresholds for density or any other variable will automatically produce desired travel outcomes. Instead, the "Six Ds" work together to support improved transit service and reduce automobile dependence.

Accordingly, in order to be effective, all "Six Ds" must be implemented at all spatial scales of planning in support of all of Alameda County's transit tiers – starting at a regional scale and moving down to community, neighborhood, and site scales.

### Further Guidance

These guidelines have been developed to supplement existing manuals and standards including:

- NACTO *Urban Street Design Guide*
- NACTO *Urban Bikeways Design Guide*
- NACTO *Transit Street Design Guide*
- FHWA *Separated Bike Lanes Guide*
- *Manual on Uniform Traffic Control Devices* (MUTCD)
- Trans Link *Transit-Oriented Communities Design Guidelines*
- Trans Link *Managing the Transit Network*

## 1.3 Using This Guide

This document provides a set of guidelines, examples, and references to best practices for the creation and enhancement of transit-oriented communities in Alameda County. These guidelines were prepared in the context of the Alameda *Countywide Transit Plan,* which proposes a set of transit improvements throughout the County and provides the link between different types of transit and the communities they serve. While acknowledging the diversity of Alameda County's development patterns, this document describes actions that can be applied to a variety of transportation networks, community settings, and transit types.

This guide can be used by transit agencies, Alameda CTC, or municipalities when implementing transit corridors proposed in the *Countywide Transit Plan* or when opportunities arise for private development or infrastructure projects (roadway, sidewalk, bike network, etc.) in the vicinity of the proposed or existing transit infrastructure. In general, the guidelines are intended to be used in the following manner:

- Refer to this guide for the type of service proposed, corridor locations, and how those relate to potential opportunities to create or improve transit-oriented communities.
- Review the "Six Ds" and related references for best practices that can improve the relationship between the transit facility and service and the community in which it operates.
- Review funding opportunities and implementation strategies in this guide for ideas that can help inform and support the development of transit-oriented communities.

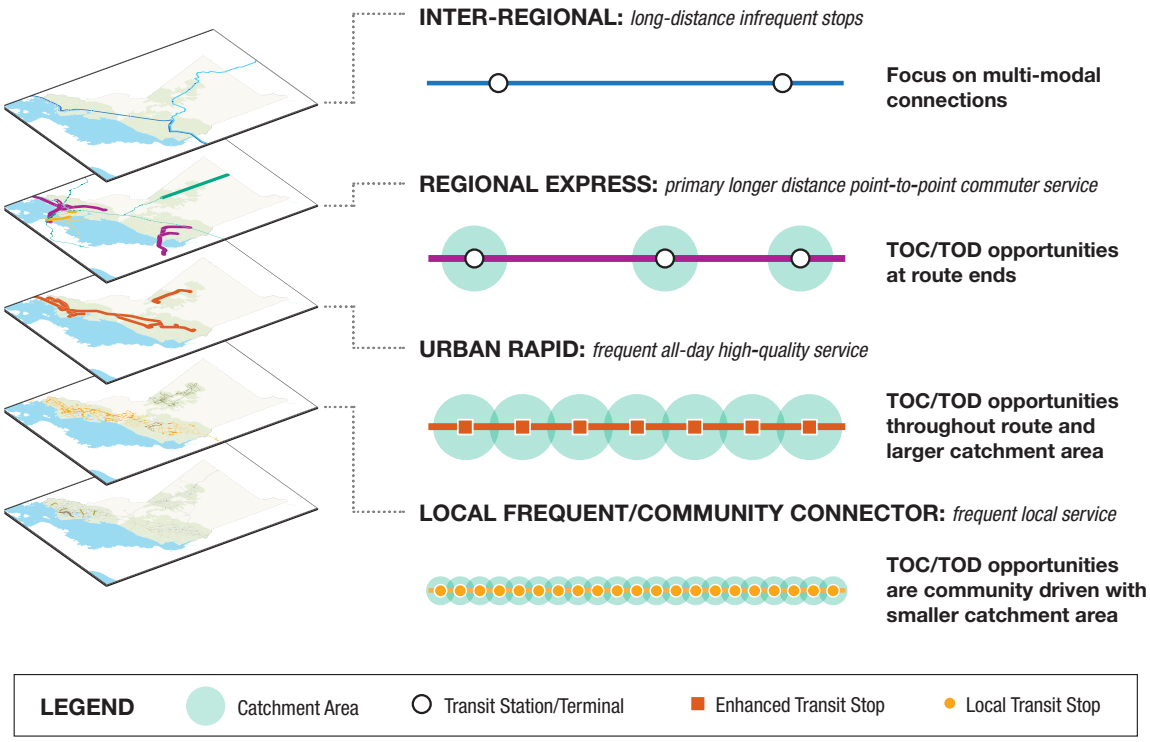



**Figure 1.3** - Relationship between transit tiers and service frequency and area

### 1.3.1 Aligning Transit-Oriented Community Characteristics with Transit Tiers

The characteristics of TOCs vary based on existing development, the overall context of the area, and the type of transit service that links them to the rest of the county and region. The following transit tiers were identified in the Alameda *Countywide Transit Plan*:

- Inter-Regional
- Regional Express
- Urban Rapid
- Local/Frequent/Community Connector
- Streets Plus

Each tier serves a different purpose and need for transit riders and County residents. As a result, the "Six Ds" apply in different ways to each tier. The variations that exist in Alameda County between development patterns and existing and proposed transit service (in the various tiers) presents a number of challenges for coordinating and developing communities that meet the diverse travel needs of the County's residents. It is important that future land-use decisions be made in coordination with plans for existing and future transit services.

Figure 1.3 presents the five transit tiers identified in the Alameda *Countywide Transit Plan* and indicates the general linkage each tier has with TOC and TOD opportunities. Although the TOC design guidelines apply in some form to all tiers, the *Countywide Transit Plan* is focusing recommendations on the Regional Express and Urban Rapid tiers only.

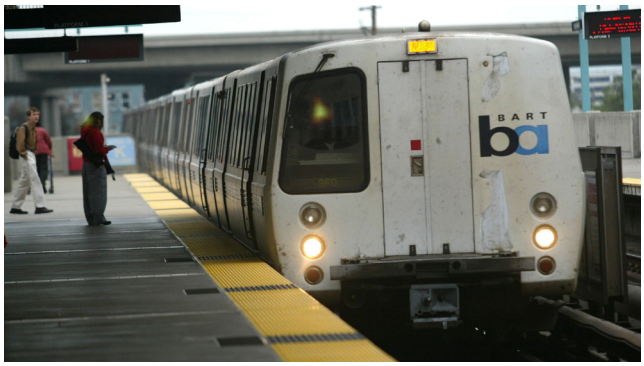
Additional details regarding the relationship between the transit tiers and the "Six Ds" is Described in the following six chapters.


## Inter-Regional Tier

- Trips tend to have dispersed origins arriving at the station via a variety of modes
- Stations act as hubs for longer-distance travel and provide an opportunity for intermodal connections
- Very limited stops (3 to 15 miles apart)
- Peak or hourly service frequency
- Typically longer-distance lines than other tiers, usually greater than 40 miles
- Carries a small portion, less than 1 percent, of the total transit ridership in Alameda County

## Regional Express Tier

- Travel occurs between major nodes where there is substantial point-to-point travel. Provides access to major employment centers (e.g., downtown Oakland, Berkeley, and San Francisco)
- Very limited stops (1 to 3 miles apart or greater)
- Transit stations act as hubs for intermodal connections and can serve as a catalyst for transit-oriented development
- Carries a large portion, 66 percent, of County's transit trips
- High service frequency (greater than 8 trips per hour or headways of 8 minutes or less)





## Urban Rapid Tier

- Provides travel options between major nodes from productive major transit origins to concentrated destinations. Provides access to major employment centers, universities, and other high trip generators
- Considered within the spectrum of bus rapid transit, but may or may not include complete exclusive right-of-way operations for the full length of the route
- Limited stops (0.3 to 1.0 mile depending on the presence of underlying local service)
- High service frequency (5 to 8 trips per hour or headways of 12 minutes or less)
- Serves trips primarily within Alameda County but could combine with Transbay service

## Local Frequent/Community Connector Tier

- Travels along a corridor with productive, dispersed origins and destinations
- Serves local trips within communities and cities in Alameda County
- About 32 percent of the County's transit trips are currently carried by this tier of service
- Frequent stops (less than 0.25 mile apart)
- Mid-service frequency (3 to 5 trips per hour or 15- to 20-minute headways)

# D1
# Destinations

2



The coordination of transportation and land use is a key strategy to provide fast, direct, and cost-effective transit access to more people and more destinations. Transportation and land use can be coordinated in two ways:

- At a regional scale, the highest densities of development and most important destinations should be located where several frequent transit services meet.
- At a community scale, new development should be constructed along reasonably direct corridors so that more destinations can be conveniently and efficiently served.

When development and service are coordinated in this manner, transit can provide faster and more frequent service. Improved transit that serves more people more efficiently becomes a more attractive option for many potential riders.

## 2.1 Plan Development in Direct Corridors

Efficient transit corridors that support frequent transit service connect multiple high-demand destinations along a direct line. With poor transit geography, as shown in Figure 2.1, destinations do not line up and the transit service meanders, thus increasing trip length and travel time. This can reduce the attractiveness of the service and potential ridership. The dilemma for transit planners in locations where geography does not lend itself to direct service is balancing the trade-off between route efficiency and serving population centers and destinations.

Good transit geography, shown in Figure 2.2, has destinations aligned on a direct path, ideally anchored at each end by major trip generators. These anchors often justify services to smaller destinations. In addition, transit use increases as the transit network progressively links more concentrations of people with jobs and commercial centers, educational opportunities, and cultural facilities.

Ultimately, the most important step to creating transit-supportive communities is to align major destinations along a reasonably direct route. This should be a preliminary consideration when determining future transit routes and investments in transit-oriented development.

## 2.2 Increase Density in Urban Centers and Transit Nodes

Transit service becomes inefficient, expensive, and unreliable when destinations and development are spread out and decentralized. A coordinated land use and transportation strategy that concentrates development and intensity in urban centers, transit nodes, and Priority Development Areas (PDAs) is critical to providing efficient, cost-effective, and frequent transit service.

- Develop higher densities in urban centers, transit nodes, and PDAs (see **D4 Density**)
- Locate development at frequent transit node (e.g., multimodal hug with regional express and urban rapid service) to provide more connections and access to overall transit network
- Develop and maintain diverse mix of land uses at transit nodes to reduce walking distance between destinations and diversify transit trip purposes (see **D5 Diversity**)

## 2.3 Focus Growth along Transit Corridors

Focusing growth along transit corridors helps provide optimal access to transit for people living in those areas and increases the ridership base for transit service.

- Develop well connected street networks and make connections where possible to improve the connectivity of existing street networks and to provide the most convenient and direct access to transit service (see **D2 Distance**)
- Provide appropriate densities for the type and frequency of each transit service (see **D4 Density**)
- Orient development toward the street and provide parking (if necessary) in the back to shorten the distance between destinations and transit service (see **D2 Distance**)

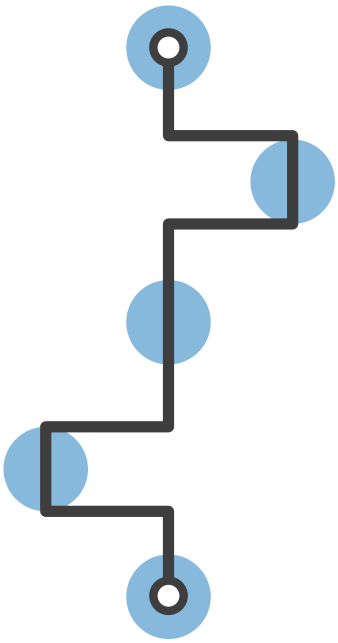


**Figure 2.1** - Poor transit geography forces a choice between providing a slow, meandering route or one that bypasses key destinations (figure adapted from Trans Link).

**Figure 2.2** - Good transit geography lines up destinations along a reasonably direct corridor (figure adapted from Trans Link).

# D2
# Distance

3



A connected and convenient transportation network is dependent on the built context through which the transit service travels. Street connectivity is a critical component of a successful transit system, not only from the standpoint of providing faster and more efficient transit service but also by providing more direct connections for passengers to access transit by any mode.

## 3.1 Provide Highly Connected Street Network

A comprehensive network of interconnected streets within a TOC allows for more direct travel between the transit station or stop and multiple locations in the TOC. This convenience encourages the use of public transit. Figures 3.1 and 3.2 show two different street patterns: a less connected street pattern in Figure 3.1 and a more connected street pattern in Figure 3.2. The orange line is the direct “as the crow flies” distance between the transit stop and the origin of a transit rider’s trip. The person accessing transit in Figure 3.1 must walk much farther than the person walking to transit in Figure 3.2. The person in Figure 3.2 also could walk the other way around the block to the transit stop. The person in Figure 3.1 might not have a reasonable alternative to the path of travel shown.

The LEED® for Neighborhood Development (LEED®-ND) rating system recommends that an uninterrupted block face be no longer than 450 feet.[3] It also requires the average block length to be no more than 500 to 600 feet, with no individual block length exceeding 800 feet. In locations near transit stations, commercial centers, and along commercial/transit corridors, block lengths between 250 and 350 feet are encouraged.[4]

In addition to block lengths, TOCs should have a high density of intersections. The LEED®-ND system states a requirement of at least 140 intersections per square mile within a development that includes new streets and at least 90 existing intersections per square mile within one-quarter mile of a project without internal streets.[5]

## 3.2 Create Shortcuts for People Walking and Bicycling

Existing impediments to accessing transit can be reduced or eliminated to create more direct shortcuts for pedestrians and bicyclists. In the case of a transit transfer facility sited within a large block or large surface parking lot, the layout of the existing facility could be reconfigured to provide more direct and safe routes to and from the station entrance. Around the transit station, public access easements with active frontages could be created through large blocks. Mid-block crosswalks also could be added where there are long distances between intersections. In addition, parking lots could be reconfigured to create direct pedestrian and bicycle connections from building entrances to public streets.

## 3.3 Shorten Travel Time

In addition to physical changes to increase connectivity, other tools can be used to reduce the time it takes to reach a transit station. For streets within the walkshed and bikeshed of a transit facility, traffic signals could be prioritized to reduce pedestrian and bicycle wait times at intersections, particularly those in close proximity to a transit stop. The Transportation Research Board's *Highway Capacity Manual 2000* states, "When pedestrians experience more than a 30-s delay [at signalized intersections], they become impatient, and engage in risk-taking behavior… (i.e., disregard for signal indications)."[6] It may be appropriate to redesign traditional kiss-n-ride facilities to accommodate access to ride-hailing services, local public transit, and private employment shuttles.

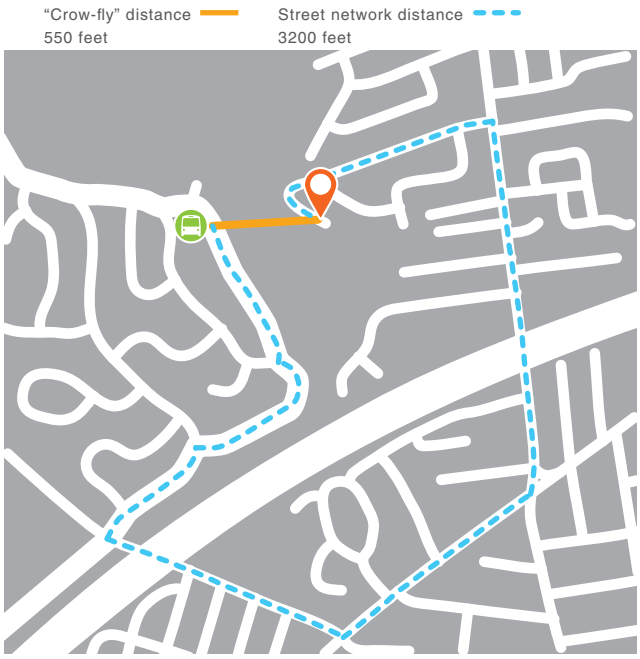



**Figure 3.1** - A disconnected street network full of cul-de-sacs results in long walking distances and less efficient transit operations.

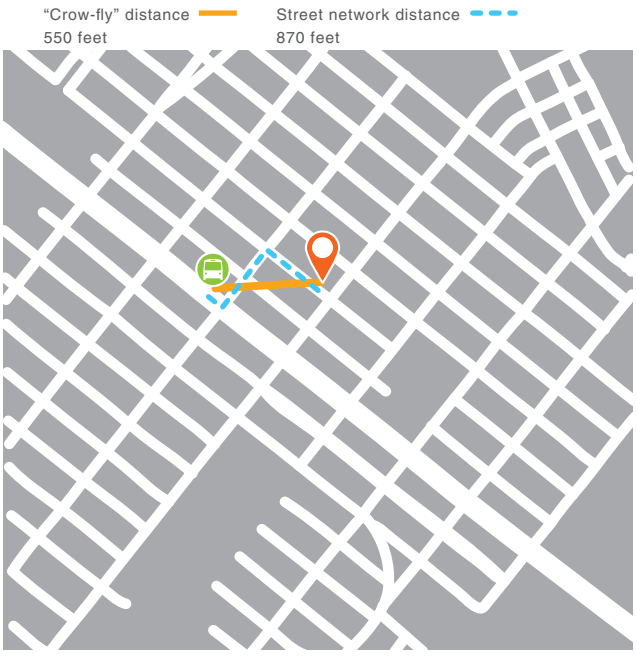



**Figure 3.2** - A well-connected street network enables shorter, more direct walking connections and is easier to serve cost-effectively with transit.

# D3
# Design

4



An attractive, engaging, and well-designed public realm is a critical component of a community that supports walking, cycling, and transit. First-rate walking and cycling infrastructure is also a key component. This includes wide and connected pedestrian and bicycling routes that are accessible to users of all ages and ability.

The design quality of a street influences rates of walking, cycling, and transit use. Certain design elements, such as street trees, pedestrian-scale lighting, street furniture, bus shelters, and public art, all enhance the attractiveness and safety of the street environment. They also invite more walking, cycling, transit use, and overall enjoyment of the street. Furthermore, streets should be designed with universal accessibility to ensure that the entirety of the urban environment is accessible to people of all ages and abilities.

Walkable and transit-supportive communities are also defined by fine-grained building placement with active frontages that have many doors and windows. Café seating and sliding window walls can also be used to engage with the street. Surface parking lots, parking structures, and other large buildings should be avoided or wrapped with attractive street-oriented uses to minimize negative impacts. Figure 4.1 shows an auto-oriented urban design with lower density uses that prioritize high-speed automobiles. Figure 4.2 shows a pedestrian-oriented urban design. Although the land usage between the two is similar, the site and urban design of Figure 4.2 creates a far more friendly and supportive environment for walking, bicycling, and transit use.

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**The relationship between buildings and the street is critical in creating a comfortable, attractive, and usable space for pedestrians. It also supports the economic viability of adjacent uses and fosters a sense of liveliness and vitality. Building features, such as the transparency of facades along the street, the location of entries, and establishing active uses on the ground floor, encourage pedestrians to walk and linger. The placement of seating, landscaping, and other elements along the street, such as public art, creates a comfortable and attractive space for pedestrians.**

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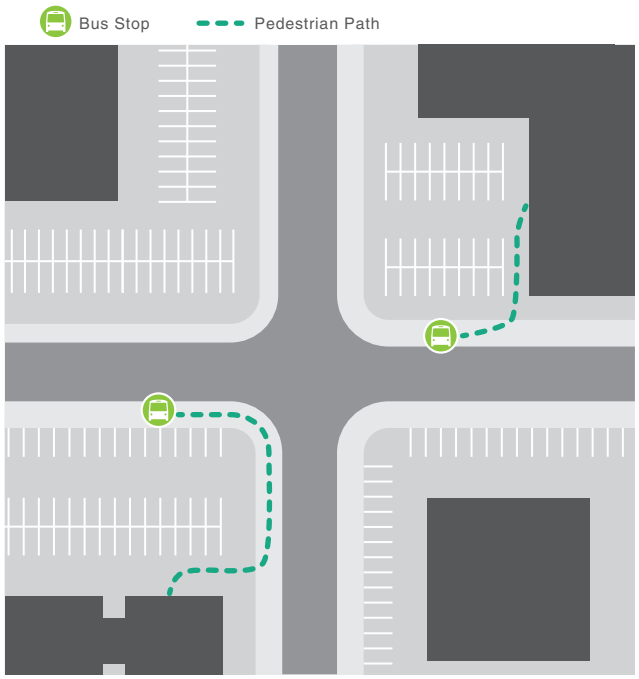



**Figure 4.1** - Automobile-oriented urban design often sets buildings back from the street with parking in front (figure adapted from Trans Link).

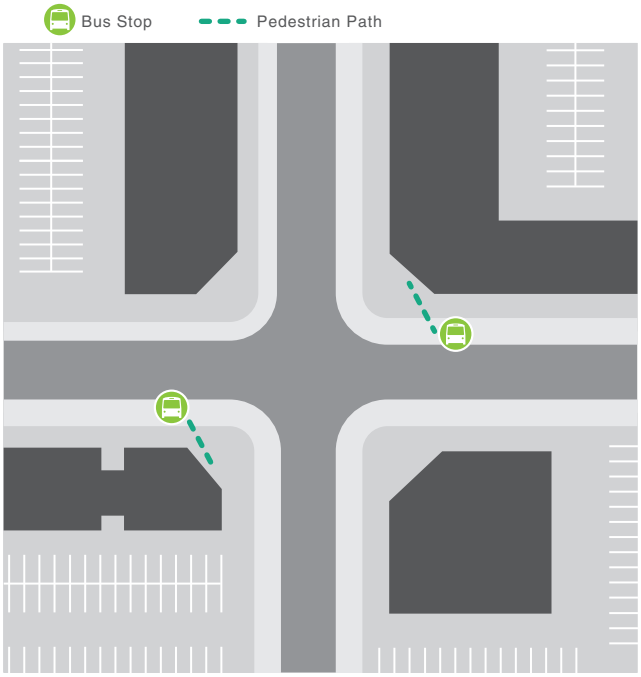



**Figure 4.2** - Pedestrian-oriented urban design features buildings with active frontages built right to the street and with parking behind (figure adapted from Trans Link).

## Placemaking with Transit: Integrating Public Open Space with Transit Access

Placemaking can be supported by and achieved with transit when public open space is considered and integrated with access to transit. BART and the City of Berkeley are working together to improve the Downtown Berkeley BART station plaza as a public open space that supports the revitalization of downtown as planned by the *Downtown Area Plan* (Figure 4.3). A large number of BART and AC Transit riders pass through this plaza, which makes this location important both for BART (the Regional Express service tier) and the Urban Rapid service tier.

A range of activities and programming can be facilitated by the design of the plaza while accommodating transit rider access and waiting areas. These include café seating with movable tables and chairs, street fairs, pop-up retail, various performances, and other public events.

**Figure 4.3** - Simulation of planned improvements to the main BART entry and plaza in Downtown Berkeley (Source: BART).

## 4.1 Implement Complete Streets

Complete Streets are streets designed, built, and maintained to be safe, convenient, and inviting for all users. This includes pedestrians, bicyclists, motorists, the disabled, movers of commercial goods, users and operators of public transit, seniors, and children. Streets built for all users generate multiple benefits, including increased safety, improved air quality through the reduction of automobile traffic, improved health through increased physical activity, and greater cost effectiveness.

A critical component included in the design of a Complete Street is that the accommodations provided for automobiles are also provided to other users with the same level of detail and attention. This means that sidewalks, bicycle lanes, and other elements are both comprehensive and interconnected. The design elements for Complete Streets emphasize safety, mobility, and accessibility for all modes and users.

All jurisdictions in Alameda County have adopted Complete Streets resolutions under a Complete Streets policy, any new or retrofit projects must consider all modes and users in their design. Although Complete Streets may initially be designed and built as disconnected segments, the intent of these policies is to incrementally grow and develop community-wide networks of Complete Streets over time.

The design of a street using Complete Streets principles takes into consideration a street's unique context, surrounding land use patterns, and the needs of those who use the street. It is recognized that highways serve an important function in the transportation network, providing the highest level of efficiency for moving high volumes of traffic over longer distances. However, the purpose and function of a street are different from those of a highway. As a result, street design should also differ.

## Walking and Bicycling Supported by a Mix of Uses

New streets and other improvements that support walking and bicycling have been developed around the Dublin/ Pleasanton BART station (Figures 4.4 and 4.5). The creation of a comprehensive bicycle network enables residents and employees to fully utilize the 3-mile radius bikeshed around this transit station. Well-designed and integrated bike facilities are critical in communities with more dispersed land uses as it makes the bicycle network more accessible and usable.

**Figure 4.4** - Iron Horse Trail in Hacienda Business Park, Pleasanton, CA
(Source: www.independentnews.com).


**Figure 4.5** - Bicycle network for TOC around Dublin/Pleasanton BART station (Source: CD+A).

### 4.1.1 Complete Networks

The philosophy behind Complete Streets is not to provide accommodations for all modes on every street in a network. Not every street requires a bike lane and a bus lane. Complete Streets design focuses on meeting the context and need of each particular street. Therefore, Complete Streets focuses on *Complete Networks* to create integrated networks that meet the mobility of all users and modes, including pedestrians, bicyclists, transit users, drivers, and freight.

### 4.1.2 Alameda County Multimodal Arterial Plan

Alameda CTC is leading the development of a *Countywide Multimodal Arterial Plan.* This plan will provide a better understanding of the existing and future role of the countywide arterial system. The plan will consider surrounding land uses to develop a framework for designing, prioritizing, and implementing improvements to address the needs of all modes on the county's arterial roadways.

The cornerstone of this plan is the development of typology and modal priority for each major arterial in the County through a technical and collaborative process. The typology concept consists of three key components: land use context, street type in terms of vehicle travel and access characteristics, and the emphasis given to transit, bicycles, pedestrians, and the movement of goods. Modal priorities are informed by a combination of land use type, street type, and any modal overlays that apply to a particular section of street. The *Multimodal Arterial Plan* will support the creation of Complete Streets networks in TOCs throughout the County.

## 4.2 Design for Universal Access

Universal design is an approach to designing the built environment to provide accessibility for people of all ages, abilities, and situations. Streets and building design must accommodate safe travel and access for everyone, including those with disabilities. Many streets, however are difficult to navigate, are dangerous, or do not provide accommodations for people who use wheelchairs, those who have diminished vision, hearing, or limited mobility, or even parents with strollers.

An incomplete street might feature unpaved, disconnected, narrow, or deteriorated sidewalks. This not only impedes travel for those with limited mobility, but also makes wheelchair use almost impossible. The lack of a curb ramp or an incorrectly placed curb ramp can force a pedestrian into the street or significantly impede mobility. Wide intersections, designed for the quick movement of motorized traffic, might not provide enough signal time for someone with a disability to cross safely.

Pedestrian signals that only use visual cues (or no pedestrian signal at all) can lead to dangerous situations for the visually impaired. Bus stops that are not connected by a sidewalk are not accessible to many pedestrians with disabilities and might prevent them from reaching their destination. A construction project that closes a sidewalk and does not make alternate accommodations creates a new barrier for those with disabilities; this can also lead to confusing or dangerous situations for the visually impaired. Because many people with disabilities rely on sidewalks or public transit, incomplete streets can make their trips almost impossible. Many of these people must instead rely on costly paratransit services or forgo their trip altogether.

Designing for accessibility benefits those with disabilities, limited mobility, or those with strollers. It also helps create a more complete and mobile built environment for everyone. Complete and maintained sidewalk networks, accessible transit stops, properly placed and designed curb ramps, and other accessible designs make it easier for all people to travel, while providing a more dignified and aesthetically pleasing built environment. Accessibility for all is not just a matter of good planning, it is also required by law for new construction and rennovations.

The following general principles should be followed for accessible street design. More information can be found from the U.S. Access Board's Americans with Disabilities Act Accessibility Guidelines (ADAAG).

- Ensure sidewalks are paved and continuous with a minimum 5-foot-wide pedestrian path.
- Feature ADA-accessible curb ramps with textured warning surfaces at all intersections.
- Shorten street crossing distances to the greatest extent feasible and give pedestrians the priority at intersections.
- Provide a direct path of travel along sidewalks and through public spaces, parking lots, etc.
- Maximize the evenness of pedestrian lighting and smooth gradations to the extent feasible.
- Simplify the path of travel for transfers and provide adequate time for people who may move slower when transferring between vehicles.

## 4.3 Integrate Building Design with Public Space

Vibrant street life is a critical component of TOCs. To achieve a vibrant street life, buildings should front the street and ground-floor uses should be visible. In many cases, blurring the edge between the street and adjacent properties can also enliven the street. Examples include: café seating, displays of goods on the sidewalk, and sliding window walls or open spaces within the property that bring public activity in and increase engagement between retail or restaurant activities and the street. For residential uses, porches or stoops can also engage the street. Zoning codes, development standards, and specific plans should provide guidance such as the following:

- Build-to lines and minimum and maximum setbacks
- Minimum front façade coverage of the street edge
- Active ground floor uses fronting the street, such as retail and restaurants
- Minimum and maximum building heights, and standards for cornice lines and building step backs to maintain a street character that is not overwhelmed by building height while still allowing for appropriate intensity of use
- Façade transparency requirements (the percentage and sizing of transparent glass windows) that are defined based on ground-floor use types or frontage types if form-based coding is used (see discussion below regarding form based codes)
- Entrance guidance to include maximum distance between entrances, guidance on entrance recesses, transparency, and other articulation
- Blank wall controls such as maximum length and articulation guidance
- Shade and rain protection guidance for awnings, arcades, bay window projections, etc.
- Landscape requirements for yards and courtyards
- Restrictions on exposure of on-site parking to the street and requirements for visual buffering with landscape, walls, or fences
- Location and design of driveways and garage access points
- Location, design, and screening of loading, garbage, and building service access

## 4.4 Design for Healthy Communities

A number of BART stations in Alameda County are within freeway rights-of-way, and many bus routes are on busy streets. This creates significant air quality and noise impacts for transit riders, as well as the residents of TOCs surrounding transit stations and stops. The health impacts of harmful emissions at high concentrations can be serious, particularly for children, the elderly, and people with respiratory or cardiovascular conditions.[7]

Buildings and landscaping in TOCs and TODs should be designed to minimize harmful exposure. This is particularly important for buildings facing busy streets or transit stations. The California Air Resources Board recommends several strategies to reduce the impacts of air and noise pollution[8], including the following:

- Adding mechanical filtration systems in buildings affected by high concentrations of particulate matter
- Locating air intakes for mechanical ventilation systems on the opposite side of buildings from nearby outdoor sources and prevailing wind direction
- Providing a combination of vegetation and sound walls to help reduce exposure to noise and air pollutants

On the other hand, reducing the size and number of openable windows on the side of the building nearest the outdoor source would likely do little to reduce entry of particles and other pollutants into homes.

## 4.5 Improve Non-Motorized Access and Mobility

Every transit trip begins and ends as a pedestrian trip; therefore, the starting point for TOC design is the pedestrian. The following guidelines highlight some core best practices for the design of pedestrian and transit-oriented environments that make walking safe, easy, convenient, and enjoyable. Many of these treatments also improve cyclist safety and comfort.

### 4.5.1 Sidewalks

*Sidewalk Zones*

As shown in Figure 4.6, sidewalks generally have the following four distinct zones, each with a different function:

- **Pedestrian Zone** – The pedestrian Zone is the area of the sidewalk that is intended specifically for pedestrian travel. This zone should be free of all physical obstructions, including street furniture, plantings, and surface utilities. The quality of the sidewalk surface in the Pedestrian Zone is extremely important and must meet standards for ADA accessibility. The surface material should be smooth, level, and have minimal gaps or rough surfaces.
- **Frontage Zone** – In locations where buildings are adjacent to the sidewalk, the Frontage Zone provides a buffer between passing pedestrians and opening doors and other architectural elements. The Frontage Zone keeps the Pedestrian Zone safe and clear of obstacles and obstructions.

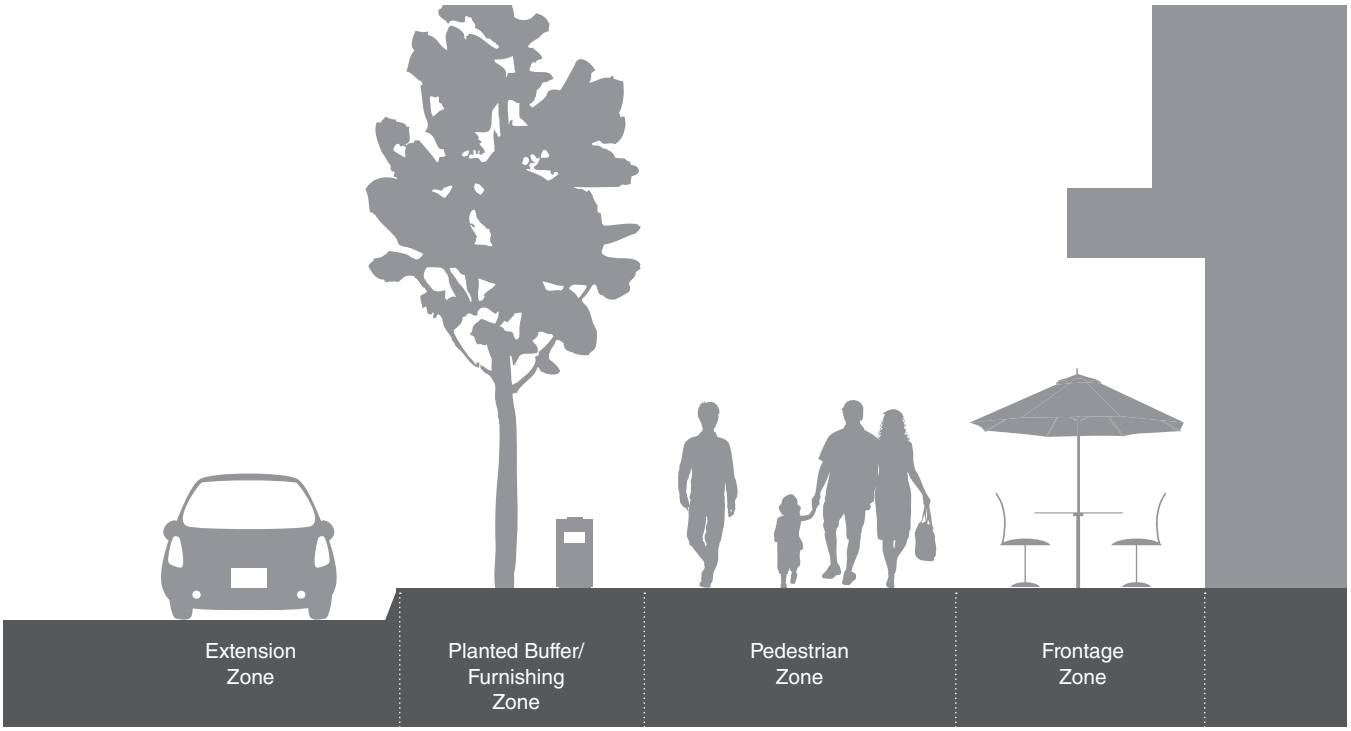



**Figure 4.6** - Sidewalk Zones

- **Planted Buffer/Furnishing Zone** – Where there is sufficient space, a planted buffer/furnishing zone should be established to delineate space for objects that would otherwise obstruct pedestrian movement. This zone also provides a buffer for pedestrians from the adjacent roadway. Potential obstructions should be located in this zone, including: street trees, stormwater elements, street lights, signage, hydrants, benches, trash and recycling receptacles, parking meters, signal and lighting control boxes, and utility poles.
- **Extension Zone** – The Extension Zone widens the usable pedestrian space at mid-block and at the corners. It also accommodates additional amenities such as bus shelters and other pedestrian features.

### *Recommended Widths*

ADA standards specify a minimum 5-foot-wide clear path to accommodate two passing wheelchairs. In addition to providing a more accessible facility, this minimum width creates a more comfortable environment for pedestrians to walk side-by-side and to pass each other, as well as accommodating families with strollers. Sidewalks should be constructed as wide as possible to accommodate foot traffic and improve pedestrian comfort.

Sidewalk width should support the surrounding street context, land uses, and current and future pedestrian demand. The greater the density, demand, and mix of activities, the wider the sidewalks should be. For example, downtown and commercial areas generally require wider sidewalks. The following minimums should be used for the Frontage, Pedestrian, and Furnishing Zones:

- **Frontage Zone** – 2 feet
- **Pedestrian Zone** – 5 feet
- **Planted Buffer/Furnishing Zone** – 2.5 feet (including trees)

### *Use of the Extension Zone*

The concept of the Extension Zone is important to the redesign of existing urban streets as Complete Streets because it provides opportunities to enhance the pedestrian environment without incurring the expense of moving the curb. This zone is also important because many existing vehicle-oriented urban streets do not have rights-of-way that are wide enough to accommodate the needs of all users with the highest level of improvements recommended by Complete Streets guidance. The potential for creative use of the Extension Zone balances the space needed to improve the environment for all modes. Opportunities for enhancing the pedestrian environment within the Extension Zone include the following:

- Install curb extensions and parklets (a sidewalk extension that provides more space and amenities for people using the street) to provide additional pedestrian space
- Design parking lanes for flexable uses, including: parking, seating, or street vending space
- Use intermittent planters with trees in the parking lane to increase the buffer of the sidewalk while allowing space behind the curb to be used for purposes other than landscaping
- Extend the transit curb into the Extension Zone to maximize sidewalk space for other uses while allowing transit vehicles to stop in the travel lane. Bus extensions should be sized to allow the bus to stop without encroaching into the adjacent crosswalk and be long enough for the size and number of buses that could be stopped at one time. Depending on the size of the street and traffic considerations, the bus could stop in a single travel lane. Design details can allow for vehicles and/or bicycles to pass around a stopped bus without going into the opposing travel lane

## 4.5.2 Safe Intersection Design

Intersections are critical parts of the transportation network and streetscape. They are key decision points for all users as they navigate the street network, and are important activity nodes for community life as well as transportation. Intersections often account for the most serious and frequent conflicts between pedestrians, bicyclists, and drivers. Poorly designed intersections dramatically reduce mobility and safety for all modes. However, well-designed intersections reduce crashes, improve mobility, enhance public spaces, and tap the civic and economic potential of the street. Well-designed intersections also facilitate visibility and predictability for all users, reduce motor vehicle travel speeds, and make complex movements feel safe and intuitive. An intersection should promote eye contact between all street users, allowing the street space to be effectively shared by pedestrians, motorists, and bicyclists. The following paragraphs describe design elements that should be considered for intersections in TOCs:

### *Curb Extensions*

Within the Extension Zone, the sidewalk should be extended into the parking lane at intersections, at transit stops, or at mid-block crossings to reduce pedestrian crossing distances and improve pedestrian visibility.

### *Curb Ramps*

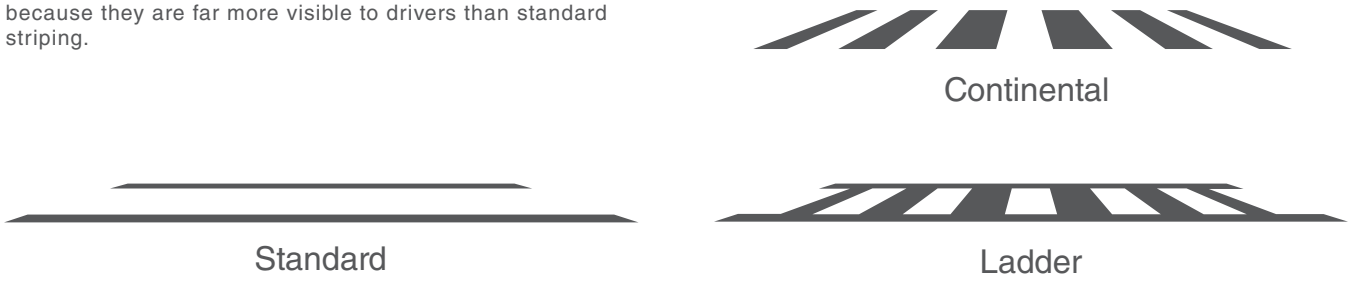
Curb ramps should be provided at all new street crossings and those undergoing renovation to improve mobility for wheelchair users. Curb ramps should be designed to meet ADAAG guidelines for slope and material. Curb ramps should always orient pedestrians toward the crosswalk and receiving ramp on the other side of the crossing.

### *Curb Radii*

Corner treatments and curb radii have a significant impact on the safety, operation, and comfort of an intersection for all modes of travel. To increase pedestrian safety, curb radii should be designed so they are as tight as possible while still accommodating the turning movements of vehicles expected to use the street. Design treatments, such as recessed stop bars on the receiving streets or mountable curb extensions, accommodate larger vehicles while maintaining a smaller and safer curb radius.

**Figure 4.7 - Preferred Crosswalk Design**

Continental or ladder crosswalks are preferred treatments because they are far more visible to drivers than standard striping.




### *Crosswalks*

Effective crosswalk striping improves pedestrian safety, enhances the visibility of the crossing to motorists, improves motorist awareness, creates an expectation of potential pedestrian activity, and indicates to pedestrians a preferred crossing location.

Striping design significantly affects the visibility of a crosswalk. 'Standard' striping, typically a pair of parallel lines oriented perpendicular to the driver, has a very limited visual profile to motorists. Conversely, longitudinal striping (often referred to as "continental" striping) is oriented parallel to motor vehicle travel, which significantly improves the visibility of the crossing to motorists.

Transverse crosswalks must be a minimum of 6 feet wide (measured as the gap between the parallel lines). Crosswalks should be at least as wide as the paths they are connecting. This enables pedestrians moving in opposite directions to comfortably pass each other. Crosswalk designs are shown in Figure 4.7.

### *Crossing Islands*

Crossing islands, or pedestrian refuge islands, calm traffic and improve pedestrian safety. They enable pedestrians to make a crossing in two stages – crossing one direction of vehicular travel lanes, and then pausing at the island before crossing the remaining lanes. Medians and refuge islands should be provided on wide streets to serve as a safe area for pedestrians.

### *Signals*

The allocation of time at a signalized intersection is equally important as the allocation of space. In combination, time and space determine the quality of a street and transportation network: how it operates, and how it meets the mobility, safety, and public space needs of its users and the community. Signal timing should reflect the context and needs of the street.

Signal cycles should be timed to allow the slowest of pedestrians to cross the intersection in one movement (minimum 3.5 feet per second). Shorter cycle lengths reduce pedestrian wait times, which encourage walking and discourage unsafe pedestrian crossing behavior. A single long wait time for pedestrians is frustrating, and multiple long waits discourage walking altogether. Additionally, pedestrians are more likely to not comply with a pedestrian signal when faced with very long wait times. The National Association of City Transportation Officials recommends cycle lengths of 60 to 90 seconds.

### 4.5.3 Speed and Safety

Motor vehicle speed has a dramatic impact on pedestrian fatalities. A pedestrian struck by a motor vehicle traveling 40 miles per hour (mph) has an 80 percent chance of death. At 30 mph, this chance falls to 40 percent. At 20 mph, the fatality rate drops to just 5 percent. Streets in TOCs should be designed and signed for traffic to travel at 25 mph or slower whenever feasible[9]. Methods for reducing travel speeds are described in the following paragraphs:

#### *Road Diet*

Where there is excess capacity, a road diet is used to reduce the number of travel lanes and reallocate space for other modes of travel, often bicycle lanes. An analysis should be conducted to determine whether excess capacity exists. Road diets are generally used on roadways with extra capacity and therefore should not have a negative impact on traffic.

#### *Lane Diet*

In cases where there are wide travel lanes (12 feet or more), a lane diet should be considered to narrow the lanes to 10 to 11 feet. On a four-lane roadway, for example, a lane diet recaptures 10 feet of space by reducing 12.5-foot lanes to 10 feet, enough for two 5-foot bike lanes. Reduced lane widths also encourage slower vehicle speeds and reduce pedestrian crossing widths without reducing vehicle capacity.

#### *Vertical Deflection*

Vertical speed control measures are wide, subtle pavement elevations that self-enforce a slower speed for motorists. Narrow and abrupt speed bumps that are often used in private driveways and parking lots are not recommended for public streets and are hazardous to bicyclists. The following are examples of vertical deflection:

- Speed humps
- Speed tables
- Speed cushions
- Raised crosswalk

#### *Horizontal Deflection*

Horizontal speed control devices are used to slow motorists by either visually narrowing the roadway or deflecting motorists through an artificial curve. Where possible, sufficient space should be provided for bicyclists to pass around the outside of the element. The following are examples of horizontal deflection:

- Curb extensions
- Chicanes
- Center islands
- Neighborhood traffic circles

#### *Curb Radii*

Narrower curb radii promote slower turning speeds. Curb radii should be designed for a 15-mph turning speed.

#### *Roundabouts*

Roundabout are designed with a small diameter and yield control on all entries, which leads to a reduction in vehicular speed and significant safety and operational improvements. Roundabouts provide a variety of benefits for all roadway users, including improved safety and more efficient operation. Compared to a traditional four-way intersection, roundabouts reduce the total number of vehicle conflict points by 75 percent, and eliminate conflicts with crossing traffic that are often associated with more severe crashes.

#### *Signals*

Traffic signals timed to a street's target speed create lower speeds along a corridor.

## The Five Cs

Bicycle routes should be:

- ✓ Continuous
- ✓ Connected
- ✓ Convenient
- ✓ Complete
- ✓ Comfortable

Following the "Five C's" approach helps ensure that bicycle routes accommodate cyclists of all ages and abilities.



# 4.6 Develop a Low-Stress Bicycle Network

Transit-oriented communities need to be designed to support and promote bicycling. The provision of bicycle facilities is critical to accommodate cycling as an essential form of transportation and encourage increased cycling. Bicycle facilities must be properly designed and implemented to ensure they are safe, comfortable, and useful. The guiding principles to achieve effective implementation are known as the "Five Cs:"

- » **Continuous**: Many bike lanes disappear at intersections and other stressful locations. To be successful, bike lanes must be continuous through these locations.
- » **Connected**: Gaps in a bicycle network discourage potential riders. Bike routes should be interconnected to create a robust network.
- » **Convenient**: Bike networks must conveniently and directly connect cyclists to key destinations in order to encourage higher rates of cycling.
- » **Complete**: A successful network takes into account what happens when a bike ride ends. This means considering how complete a street is, including the presence of sidewalks, bike parking, and access to transit.
- » **Comfortable**: A bicycle network should be comfortable and inviting for riders of all ages and abilities, providing the sense that cycling is a safe and convenient activity.

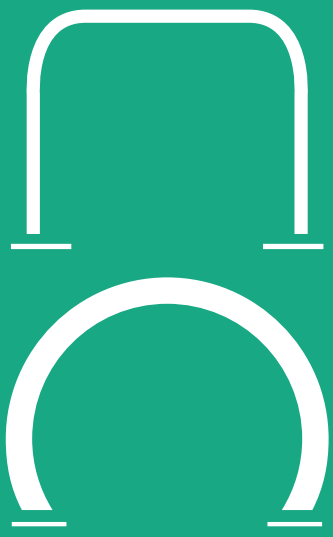
Bicycle-supportive design allows and encourages cyclists to ride to and from transit stops and then use transit, which expands the TOC. By providing a more comfortable and connected bike network, bicycle-supportive design encourages cyclists to ride within TOCs and beyond.

### 4.6.1 Dedicated Bicycle Infrastructure

Dedicated bicycle infrastructure is a critical component of a bicycle network. In general, people are more willing to bicycle if they have a dedicated, separated facility that allows them to ride apart from motor vehicle traffic. Bicycle facilities should separate bicyclists from motor vehicle traffic wherever possible, particularly on roadways with higher speeds and volume. When dedicated bicycle infrastructure is infeasible or impractical, efforts should be made to create traffic-calmed streets where cyclists feel comfortable riding in the road, such as the City of Berkeley's Bicycle Boulevard system.

Bicycle infrastructure has a profound effect on safety. The addition of a standard on-road bicycle lane is associated with a reduced injury and crash rate of approximately 50 percent. Bicycle infrastructure also improves pedestrian safety. In New York City, following the installation of separated bike lanes, pedestrian injuries fell 22 percent along corridors with the lanes.

Figure 4.8
Preferred Bicycle Rack Design



**Inverted U**

This common style is appropriate for many uses and has many variations. It features two points of ground contact and can be installed in a series on rails to create a free-standing parking area in variable quantities.

### 4.6.1 Bicycle Parking

Bicycle parking should be coordinated with expected demand at transit stops and the surrounding TOC. Bicycle parking can take many forms, and the appropriate type depends on factors such as demand, length of time the parking is needed, and the purpose for parking the bicycle. Short-term racks are useful when bicyclists are parking for shorter periods during the day. Long-term parking, such as bike lockers or bicycle sheds, are most appropriate for commuters who park at the same location multiple times throughout the year and when there is a particularly high level of demand for frequent or long-term use.

The typical parked bicycle is 6 feet long and 2 feet wide, making bicycle parking spatially efficient and easy to locate. Parking should be conveniently located, well lit, and easily visible for cyclists arriving at a destination. A variety of bicycle parking racks are available. Based on guidelines from the Association of Pedestrian and Bicycle Professionals (APBP), a bicycle rack should meet the following requirements:

- Support the bicycle upright by its frame in two locations
- Prevent the bicycle from tipping over
- Enable the frame and one or both wheels to be secured
- Support bicycles without a diamond-shaped frame and horizontal top tube
- Allow both front-in and back-in parking with a U-lock through the frame and front or rear wheel
- Resist the cutting or detaching of any rack element with hand tools

The preferred bicycle rack design is the "Inverted U," shown in Figure 4.8. Older style racks, such as the "comb" and "wave," are not recommended because they do not properly support the bicycle frame, generally do not facilitate locking of the frame to the rack, and frequently cause interference between the handlebars of adjacent bikes when the rack is near capacity. In addition to the "Inverted U," recommended racks include the "A" and "post and loop." For more guidance on bicycle parking, reference APBP's *Essentials of Bicycle Parking*.

## Reduce Conflicts between Transit and Bicycles

The Telegraph Avenue *Complete Streets Implementation Plan* was developed to improve access, safety, and comfort for all modes of travel. The plan includes a toolkit of transit design options, including bus bulbs and transit islands, to improve transit reliability as well as the transit rider and operator experience, such as better stop amenities, easier boarding/alighting, and fewer bus and vehicle/bicycle conflicts. Bus bulbs improve bus speed and reliability by reducing the time required to serve a bus stop, providing more room for bus stop amenities, improving the ease of boarding and alighting, and reducing pedestrian crossing distances. Transit islands, where bus bulbs are separated from the curb, provide space for a bicycle facility between the curb and bus stop to eliminate conflicts between bicyclists and buses pulling into and away from stops.[10] One proposed treatment is shown in Figure 4.9.

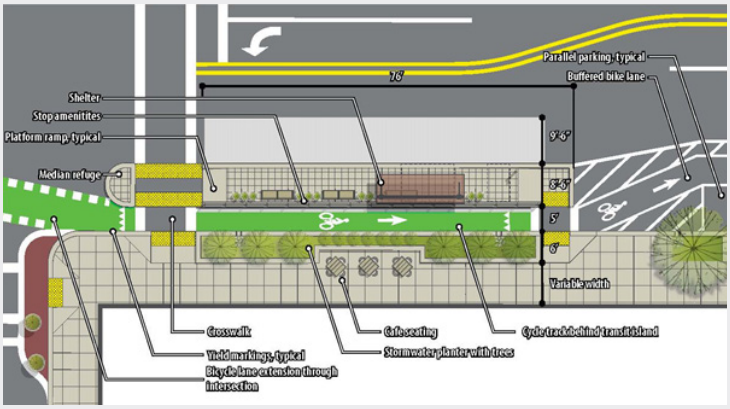



**Figure 4.9** - Transit island with bicycle bypass (Source: City of Oakland).

### 4.6.3 Reducing Conflicts between Bicycles and Transit Vehicles

Transit routes should be designed to be as direct as feasible. Similarly, bicyclists typically seek the most direct route. This combination can lead to transit priority streets also being bicycle priority streets. For example, the Alameda CTC *Countywide Multimodal Arterial Plan's* mapping of the Alameda County Arterial Network designates 143 miles of Major Transit Corridors, 96 percent (137 miles) of which are on streets designated to have cycle tracks or bicycle lanes. This overlap of high priorities can create challenges when redesigning streets to be more complete.

Other potential conflicts between buses and bicyclists occur on streets with both bike lanes/cycle tracks and bus stops in the parking lane or at a transit stop curb extension. In these locations, buses cross over the bicycle facility in many typical conditions. Where bus and bicyclist volumes are particularly high, a "floating bus stop" or "bicycle bypass" can be used to separate buses and bicyclists. This concept is planned for a portion of Telegraph Avenue as part of the Telegraph Complete Streets Project, (Figure 4.9).

## 4.7 Make Great Public Spaces

Public spaces in TOCs provide locations for social interaction that complement the transportation function of the Complete Streets network. These spaces should be designed to be attractive and functional for people who walk, bicycle, and linger in the community. Public spaces can be designed for both passive and active use, and they include such areas as parks, plazas, intimate courtyards, and comfortable spaces between buildings. Great public spaces provide the community with an identity, give people additional reasons to be sociable, draw activity from surrounding buildings into the public realm, and help people orient themselves in the community. Associating public open space with transit facilities can welcome transit riders to the community and provide wayfinding to transportation linkages or destinations.

### 4.7.1 Guidance for Designing Public Space

When designing public space, the following guidelines provide for a range of activities and scales appropriate to the needs of a community:

- Include design elements that balance use needs, public safety, and operations and maintenance considerations
- Consider microclimates and seasonal changes in developing designs that provide shade and protection from sun, wind, and rain
- Scale the space appropriately to the planned use and the number of people the space needs to accommodate; when larger spaces are needed, define subareas as appropriate for different activities
- Apply universal design and consider those who will use the space when selecting materials, benches, and other furnishings
- Use public art when feasible to reflect community identity, give a unique sense of place, and provide additional interest and delight
- Scale and design lighting to be flexible and vary based on uses, time of day, and seasons
- As appropriate, design for and manage programming of the public space for various activities, such as farmer's markets, food vendors, craft or other markets, live entertainment, cultural or civic activities, street performers or buskers, and movable seating managed by adjacent businesses or a business improvement district
- Provide landscaping that serves multiple purposes – providing identity, shade, a wind break, visual interest through movement and color, positive smells, stormwater management, a sense of enclosure and buffering from bustling streets
- Design landscaping with consideration to the level of activity, maintenance costs, drought tolerance, and other Bay-friendly landscaping needs

### 4.7.2 Wayfinding

Pedestrian and bicycle wayfinding systems provide navigational aids that help pedestrians and bicyclists orient themselves within their surroundings and determine the best route to reach a destination. Wayfinding systems also help create a sense of place within a community or corridor, knitting it together through consistent treatments to help residents and visitors navigate between points of interest. Wayfinding signage should clearly identify the locations of key destinations such as businesses, recreational areas, historical or cultural landmarks, bicycling routes, transit, and connections to nearby areas of interest.

# 4.8 Integrate Transit Facilities with Public Space

Designing transit stops to balance their functional needs with placemaking, aesthetics, and other community factors maximizes the positive relationship between transit and TOCs. This section provides general guidance that is applicable to stations, stops, and facility design for all transit tiers. More specific guidance is provided in the transit tier section of the guidelines (Section 5.1). The most basic guidance is that transit facility design should both integrate with and complement the design of streets, open spaces, and in some cases buildings.

## 4.8.1 Transit Facility Design and Ridership

The provision and design of transit passenger facilities and amenities can influence the use of transit. For example, providing real-time information at transit stops and stations has the potential to increase ridership. In addition, the quality of transit facilities at stations, such as signage, travel information, and amenities, can attract new riders.

## 4.8.2 Signs and Information

Signs and other information provided at the transit facility, and in the immediately surrounding area, serve multiple purposes. One purpose is to provide information to help transit riders with their trip (e.g., direction to transfer locations, the appropriate stop or platform, when the next bus or train arrives, and where ticketing is located). Signs also help orient a disembarking transit rider to the surrounding community, local amenities, and their destination.

Wayfinding guidance has been developed by the Metropolitan Transportation Commission (MTC) and some transit providers. The goal is to achieve successful passenger, pedestrian, and bicyclist orientation and wayfinding to, from, and around transit stations and surrounding destinations. It is important that directional and wayfinding signs and maps are placed in clearly visible locations, are intuitively understood, and are tailored to the location where they are used.

## 4.8.3 Wayfinding and Transit Information Guidance

Stations and stops must be easy to locate. Once at a station or stop, passengers should be able to easily navigate the transit system. Facilitating this requires quality and easy-to-understand wayfinding to stations and stops, and easy-to-understand maps and schedules at the station or stop. The availability of real-time information indicating the location of vehicles is an important innovation that dramatically improves the quality of transit service, particularly for buses which often run outside of their schedule. This information is available on many systems via smart phone and online applications.

MTC's regional signage standards were developed to unify the many disparate signs found in transit environments with multiple service providers. These standards assist transit users with efficiently and conveniently navigating the multitude of transit services in the Bay Area.

## 4.8.4 Safety and Comfort

Transportation facilities should be designed with safety and comfort in mind and with the recognition that security is about perception and reality, both of which can affect ridership. Guidelines include the following:

- Transit facilities should be designed to maximize visibility in and around the facility to provide "eyes on the street" from transit users, people using the surrounding public spaces, and those in nearby buildings.
- Clear sightlines and paths of travel should be provided from the transit facility to the surrounding street network. This provides for natural surveillance and allows transit riders to decide what path of travel to take safely.

- Security cameras, intercoms, and "blue light" phones can be used to provide additional safety. However, the provision, monitoring, and maintenance of these systems are expensive and likely only viable in locations and on routes with higher volumes of riders.
- Appropriate levels of lighting should be provided, as described in the following section.

### 4.8.5 Lighting

Adequate light levels and evenness of lighting are needed to provide universal access and security, as well as to discourage vandalism at transit facilities. Within TOCs, the lighting for sidewalks and other pedestrian areas in mixed-use and commercial areas should have illuminance levels as listed in Table 4.1. LED lighting should be used throughout. For additional energy reduction, lighting levels can be reduced to a low of 1.0 foot-candles in late night hours and at transit locations when service is not running at night or in the early morning.

**Table 4.1:** Recommended Illuminance Levels

| Area Type | Illuminance (foot-candles*) |
|---|---|
| Mixed-use or Commercial District | 1.0 to 2.0 |
| Residential | 1.0 to 2.0 |
| Bus Stops | 1.5 to 2.0 |
| Transit Platforms | 5.0 at loading platforms and 2.0 elsewhere |
| Note: Uniformity levels should not exceed 3:1 | |

Source: Valley Transportation Authority[11]
*a unit of illuminance or illumination, equivalent to the illumination produced by a source of one candle at a distance of one foot and equal to one lumen incident per square foot.

### 4.8.6 Defining Use of Space

It is important to clearly define and reinforce the functions and priorities for activities within transit facilities, streets, public spaces, and associated development to maintain functionality and safety. Edges and transitions between public, semi-public, and private areas and types of activity, such as a transit rider waiting area, can be defined through location and design of seating, lighting, landscaping, screening or fencing, signs or other means, as appropriate.

## 4.9 Integrate New Development into Existing Fabric

Transit-oriented communities in Alameda County are almost exclusively a combination of existing and new infill development, smaller-scale reuse, or redevelopment opportunities. Exceptions include portions of Alameda Point and the Warm Springs BART station area. As a result, new development in TOCs and new transit or other public infrastructure should complement and add to existing development and infrastructure to improve the TOC. Factors to consider include how the scale and articulation of the design of new buildings should relate to that of existing development in terms of height and bulk. Development standards for TOCs should consider the following:

- Scale building heights to that of existing development in cases where the existing development is expected to predominately remain into the future
- Give consideration to the protection and maintenance of direct sunlight to important public open spaces


Sunday streets event in Berkeley

Photo courtesy of streetfilms.com

# D4
# Density

5



Building density is a critical ingredient in transit-supportive communities. Without sufficient density, transit demand suffers as origins and destinations become farther apart and less accessible by non-motorized modes, as shown in Figure 5.1. Growth and higher densities should be concentrated within the pedestrian catchment areas of frequent transit stops and stations in order to minimize walking distances to more destinations, as shown in Figure 5.2. Densities can then be reduced to integrate with surrounding development patterns, where applicable.

Automobile parking is often desired by agencies, communities, and riders near transit stops or stations, particularly for higher-capacity services. However, a large supply of dedicated parking adjacent to transit stops or stations can reduce transit accessibility. This occurs by increasing the distance to nearby population centers, employment, and other land uses, as well as increasing the cost of transit facility development in land acquisition, lost potential tax revenue, and maintenance of parking facilities. Demand management strategies, described in Chapter 7, should be implemented to reduce the need and desire for expensive and land-intensive automobile parking.

It is important that most residential, commercial, and employment density within a community be concentrated within a relatively short walk of frequent transit service. Since employment uses tend to generate more trips throughout the weekday and more trips overall than residential uses, concentrating high-intensity employment uses, (such as office buildings), within walking distance of frequent transit service is the most effective way to build transit demand and justify service improvements.

## 5.1 Set Transit Service Tier Intensity Guidelines

The *Plan Bay Area: Strategy for a Sustainable Region* focuses on accommodating new growth within the Bay Area along major transit corridors and around transit stations, as reflected in MTC's Priority Development Area (PDA) program. This results in most transit stations and corridors being within a designated PDA. The PDA place-types, as defined by MTC, recommend a target range for the number of housing units and jobs within one-half mile of a transit station.[12] More recent research by Dr. Robert Cervero and Erick Guerra in 2011[13] uses a combined jobs and residents target for transit station areas. This allows for greater development flexibility in the use mix within each TOC.

The "jobs plus residents per acre" method measures the number of potential transit riders per acre in the TOC. This approach to intensity of potential riders is also used by the Puget Sound Regional Council and is described in its guidance paper *Transit-Supportive Densities and Land Uses*.[14]

The transit tier that serves a TOC can also affect the recommended target range because the minimum housing unit thresholds for some place-types are lower than the housing thresholds defined by the type of transit service by the MTC 3434 TOD Policy (shown in Table 5.1). As an example, the Suburban Center PDA place-type has a minimum housing unit threshold of 2,500 units within one-half mile radius of the transit stop; the MTC 3434 threshold for Bus Rapid Transit service is 2,750 units; for a BART station it is 3,850 units. Therefore, a TOC with a Suburban Center PDA place-type that is served by BART would have a minimum residential threshold of 3,850 units rather than 2,500 units.

**Figure 5.1** - Auto-oriented density distribution, where patchy development is not focused around transit.
(figure adapted from Trans Link)

**Figure 5.2** - Transit-oriented density distribution is highest at transit, and steps down to surrounding neighborhood.
(figure adapted from Trans Link)

**Table 5.1** - MTC 3434 TOD Policy Corridor Thresholds Housing Units — Average per Station Area

| Project Type | BART | Light Rail | Bus Rapid Transit | Commuter Rail | Ferry |
|---|---|---|---|---|---|
| Housing Threshold | 3,850 | 3,300 | 2,750 | 2,200 750 | 750 |

Source: MTC

**Table 5.2** - General Jobs plus Residents Densities for PDA Place-Types

| PDA Place-Type | Jobs | | Housing | | Jobs plus Residents per Acre | | |
|---|---|---|---|---|---|---|---|
| | Low | High | Low | High | Low | High | Average |
| **City Center** | 5,000 | 30,000 | 5,000 | 15,000 | 35 | 140 | 85 |
| **Mixed-Use Corridor** | 750 | 1,500 | 2,000 | 5,000 | 15 | 30 | 20 |
| **Regional Center** | 40,000 | 150,000 | 8,000 | 33,000 | 125 | 480 | 290 |
| **Suburban Center** | 7,500 | 50,000 | 2,500 | 10,000 | 30 | 155 | 90 |
| **Transit Neighborhood*** | 1,500 | 12,000 | 1,500 | 4,000 | 10 | 45 | 30 |
| **Transit Town Center** | 2,000 | 7,500 | 3,000 | 7,500 | 20 | 55 | 35 |
| **Urban Neighborhood*** | 4,000 | 7,500 | 2,500 | 10,000 | 20 | 70 | 45 |

Gross Acres

*PDA place-type definitions do not have recommended jobs numbers. Jobs numbers were determined from *Plan Bay Area Jobs-Housing Connection Strategy* recommendations for future jobs for these place-types in Alameda County. The average number of jobs for each place-type was used to determine the jobs plus residents density.

For stations and corridors outside PDAs, any area or specific plan prepared by the jurisdiction and the guidance of the MTC TOD 3434 Policy should be used for guidance on density. Table 5.2 provides a range and average density for each PDA place-type in general. Each tier has customized the density table based on the type of transit in the tier and the defined walkshed (i.e., one-half mile or three-quarters of a mile).

### 5.1.1 Using the Jobs plus Residents per Acre Intensity Measure

This measure provides guidance for the combined jobs and residential population per gross acre within the walkshed of the TOC, either one-half mile or three-quarters of a mile distance from the transit station or stop. It also provides guidance regarding the appropriate levels of jobs and housing within a TOC and flexibility in terms of the mix of uses. In general, the goal should be for a TOC to be at or above the average intensity measure.

Consider the example of a 502 acre (0.5 mile) city center aiming to achieve a jobs-focused TOC. In order to achieve a J+R/A greater than 85, a plan could suggest aiming to create 21,000-30,000 jobs and 8,000-15,000 residential units. Note that in this example, the number of jobs should not be less than 5,000, and the number of housing units should not be less than 5,000 because in order to meet the minimum thresholds for a one-half-mile walkshed TOC (about 502 acres).

## 5.2 Place Highest Density in Closest Proximity to Transit

For the high-capacity and high-frequency transit tiers it is essential to support a strong demand for transit by focusing the highest-intensity uses closest to the transit stations. The land use patterns of a TOC should maximize the highest-intensity housing and employment in concentric circles from the transit facility, ensuring that a majority of jobs and households are within the shortest walking distance to transit. This encourages more people to take transit, as well as to walk and bike in the TOC.

## 5.3 Coordinate Planned Density with Community Character

The intensification of uses within a TOC should consider the existing context of the station, with other factors informing the appropriate scale of intensity. For example, stations in close proximity to urban centers or other regional transit facilities – such as the proximity of Jack London Square in Oakland to multiple transit facilities and Downtown Oakland – results in a TOC with higher-intensity uses farther from the immediate vicinity of the station. However, stations such as Fremont's ACE station have the most intense uses closest to the station, and the intensity of uses rapidly decreases to complement the surrounding lower-intensity neighborhoods.

Local jurisdictions should develop land use policies, zoning regulations, and design guidelines that allow for contextually appropriate, highest-intensity uses around transit stations. The place-type of the transit stations should be identified as defined by the PDAs in the *Plan Bay Area: Strategy for a Sustainable Region.* Policies, regulations, and guidelines should then be developed that relate to the place-type definitions while also considering the specific guidance for each transit tier provided in this document.

With respect to adjacent neighborhoods, local jurisdictions should plan for an intensity and mix of uses that can help complete the TOC by adding missing pieces (e.g., grocery stores, retail, restaurants, community uses, and housing diversity) into the existing urban fabric. For additional information, refer to the discussion of diversity in Chapter 6.

## 5.4 Leverage Market Potential to Achieve Desired Densities

Station area planning policies and individual TOD projects should include phasing strategies that seek to maximize development of parcels closest to transit. Such locations could provide greater benefits if long-term market potential is considered in the decision-making process.

For large-scale developments, a phasing plan should be developed so that parcels near transit are preserved for later phases of development if intensities would otherwise be below the desired thresholds. This allows for lower-intensity uses to be built first. As the market matures, higher-intensity and more mixed-use projects could be developed closer to transit.

Policy requirements that affect the cost of development and can be flexible could make more intense projects feasible. An example is easing parking requirements for developments close to transit.

Public agencies that own land in proximity to higher-level transit tiers should conduct market assessments of properties that may be reused in the future. This will create an understanding of the benefits of land banking those properties to achieve land-use mixes and intensities that exceed the thresholds for a station's transit tier.

# D5
# Diversity

6

## 6.0 D5 DIVERSITY



Transit-supportive communities feature a diverse land-use mix, which is the degree to which different types of land uses (e.g., residential, commercial, institutional, and entertainment) are located within close proximity. A higher degree of mixing of compatible land uses increases the likelihood that a desired destination is in the vicinity. This makes it easier for people to access such destinations by walking or bicycling. In such neighborhoods, multiple errands can be accomplished on foot on the way to transit, over the lunch hour, or on the way home from work.

Many land uses generate demand for transit service only at specific times of the day, week, or year. A mix of uses can encourage people to travel on many different types of trips at different times of the day. This spreads out peak periods and increases the efficiency of transit operations. Land uses that generate trips in off-peak times include retail, service, residential, entertainment, and visitor attractions. A rich land use diversity, particularly along a transit service corridor, can lead to a more balanced bidirectional flow of riders, help optimize existing transit capacity, and justify better service.

Along with land use diversity, demographic diversity can improve transit performance and ridership. Demographic diversity can be fostered by providing a wide range of housing types, rental lengths, and price points within close proximity to frequent transit. A mix of housing types at a variety of affordability levels near transit can increase access and mobility for a large slice of the population. This particularly holds true for lower-income individuals, senior citizens, and students. Neighborhoods with housing that is typically occupied by seniors or students tend to have higher mid-day, evening, and weekend demand, justifying improved off-peak service.

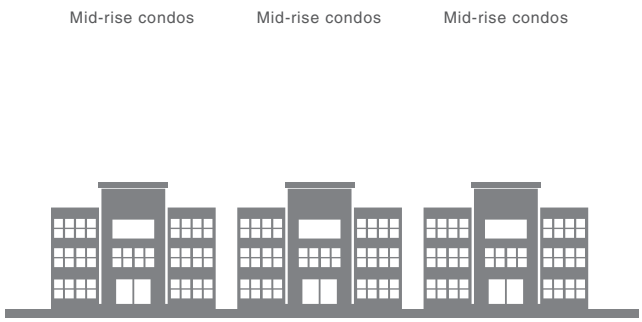



**Figure 6.1** - A poor mix of uses and housing along the corridor leads to poor bi-directional transit productivity (figure adapted from Trans Link).

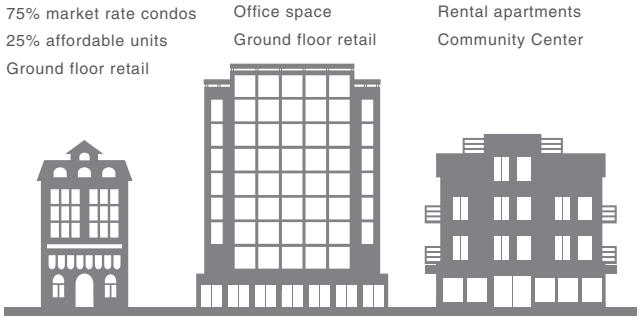



**Figure 6.2** - A rich mix of pedestrian-friendly uses, housing types, and price points distributed along the corridor helps to optimize transit utilization (figure adapted from Trans Link).

## 6.1 Encourage a Mix of Uses to Create Walkable Communities

A rich diversity of uses is crucial to encourage active transportation alternatives and to increase transit ridership. Diverse uses provide multiple destinations within walking and biking distances for people who live and work within a TOC/TOD. This decreases the need to drive and improves the ability to take transit for commuting or other trips. Because of this, jurisdictions should be encouraged to develop and preserve transit-supportive retail and services within TOCs. To facilitate greater transit ridership, jurisdictions also should encourage higher density and diverse employment close to high-capacity/high-frequency transit stations. This is particularly important in downtowns and urban centers so as to provide convenient access for suburban and regional commuters.

Diversity should include the preservation of existing commercial spaces and buildings to provide a spectrum of commercial rents that allow for different types of businesses to thrive within a TOC. Additionally, a diverse mix of building types and architectural styles provide a rich visual context that can make walking more interesting.

Communities should ensure highly active uses at street level to promote pedestrian activity. The mix of uses, which should include entertainment venues and restaurants, should strive to achieve highly varied times of activity to maintain lively streets for longer periods during the day and throughout the week and weekend.

Diversity can be measured using several indices. A commonly cited method is the Land Use Mix Entropy Index[15] which scores defined areas on a scale of zero to one. Zero represents no diversity, and one represents the most diverse area. Jurisdictions and transit agencies can set a diversity index score as a goal for TOCs based on their type of transit tier (a typical base score for a TOC would be 0.5).

## 6.2 Encourage a Mix of Housing Types

A mix of housing types at a variety of affordability levels near transit can increase access to a wide spectrum of the population, particularly to those who are more dependent on public transit. A healthy housing mix within a TOC can help support varied age and income groups, as well as help residents stay in their neighborhoods as their need for space changes. Diverse age groups, incomes, and ethnicities also keep public spaces and streets lively for longer periods throughout the day. Jurisdictions should use the following land use and zoning regulations to increase housing diversity within TOCs:

- Encourage new mixed-income housing projects within TOCs and TODs
- Increase the diversity of housing types and sizes within TOCs and TODs
- Preserve existing affordable housing within TOCs to ensure low-income residents are not forced to move and pay more for transportation costs
- Provide reduced parking requirements or no parking requirement; if parking is provided, require it to be a separate cost from housing

The housing diversity of TOCs can be measured, as explained in the call-out box on this page, and communities and transit agencies can set benchmarks for housing diversity to encourage a greater mix of housing with access to transit.

### Setting Benchmarks for Housing Diversity

Benchmarks for housing diversity should be set within transit-supportive communities. LEED® for Neighborhood Development uses the Simpson Diversity Index, which measures housing diversity within a given area (projects of 125 acres or larger or within a one-quarter-mile area around a project). The index includes twenty housing types/sizes, and scores on a zero to one range, where zero represents no diversity and one is the most diverse.


Fruitvale Village TOD in Oakland

Photo courtesy of Abby Thorne-Lyman

# D6

# Demand Management

7



The previous five “Ds” all focus on infrastructure and physical changes to the built environment to create more transit supportive communities. In contrast, Transportation Demand Management (TDM) is the use of policy and programmatic strategies to achieve desired transportation behavior outcomes.

Many policy decisions directly influence people’s daily travel choices. For example, even residents of high-density, mixed-use, and walkable communities are less likely to take transit if their destination features a supply of ample free parking and toll-free roadways. Individuals make travel choices weighing the relative financial, convenience, and time costs of their different travel options. TDM strategies use policy and program changes in conjunction with the other 5 “Ds” to influence individual travel behavior.

TDM strategies include reducing motor vehicle parking and encouraging bicycling, walking, and transit use. Employer-provided or subsidized transit passes, in lieu of free parking, can encourage employees to use transit for their commute. Cities can partner with building owners and car-sharing companies to provide on-site bike share and car-sharing facilities. Overall, the focus should be on making walking, bicycling, and transit ridership equal to or better than driving based on cost, convenience, and time.

## 7.1 Manage Parking Supply

One effective TDM strategy is to relax or remove minimum parking standards, particularly within close proximity to frequent transit, and to actively manage parking supply and pricing. Parking minimums often force developers to supply “free” parking, which increases the cost of development, reduces transit-supportive density, and encourages driving. When parking is supplied for “free” to the user, the costs of that parking are paid by the society at large. Limiting off-street parking supply and increasing short-term parking rates can reduce the overall attractiveness of driving while encouraging higher levels of parking turn-over that support local retail businesses.

For locations with high parking demand, such as urban centers and retail districts, jurisdictions can use a combination of demand-responsive pricing and time limits to increase turnover and maintain availability.

In addition, jurisdictions can develop parking districts that consolidate parking spaces, reduce cruising for parking, and encourage walking. Parking management districts can also provide a funding stream for managing parking and making multimodal improvements within TOCs.

**Table 7.1** - Parking management applicability to on-street and off-street parking

| Parking Management Tools | On-Street | Off-Street |
|---|---|---|
| Reduce or eliminate minimum parking requirements for residential and employment uses near transit station | | ✓ |
| Set parking maximums to avoid development of excess parking | | ✓ |
| Unbundle parking costs from residential units by allowing or requiring that parking be purchased or rented separately from residential units | | ✓ |
| Restrict or eliminate free parking in TOCs | ✓ | ✓ |
| Use demand-responsive pricing so that the cost of parking reflects the demand at specific locations and times | ✓ | ✓ |
| Integrate bicycle parking along the street and at destinations such as residential, employment, and entertainment uses | ✓ | ✓ |
| Designate loading locations and times, and place off-street where feasible | ✓ | ✓ |
| Encourage shared parking facilities among various establishments and land uses that have different times of parking demand to reduce underutilized parking and condense parking areas | | ✓ |

Source: CD+A

One such technique is demand-responsive, or dynamic, pricing which varies parking rates by location, time of day, and day of the week. Rates are highest at the locations, times, and days with the heaviest demand. The rates are set to achieve a balance between supply and demand so that drivers will change their behavior and not circle around looking for an available space. This helps reduce traffic congestion and vehicle miles traveled. Depending upon the results, rates can be adjusted to achieve the program's goal of a certain amount of turnover and parking stall vacancy. While demand-responsive pricing can be both a management tool and a revenue-generating tool, its use should be geared more toward parking demand management. Table 7.1 provides guidance on parking management strategies and their applicability to on- and off-street parking.

# City of Berkeley's goBerkely Pilot Program


The goBerkeley website includes useful information for all travel modes, including transit, walking, and bicycling. For additional information, visit: **www.goberkeley.info/.**

The City of Berkeley's goBerkeley Pilot Program was developed to encourage alternative modes of transport for employees of the downtown area and of several commercial districts around the city. All of these areas are transit-oriented communities served by a range of transit service tiers, including Inter-Regional and Regional Express, and are in locations that would likely be served by the Urban Rapid, Local Frequent, and Community Connector tiers. An additional goal of goBerkeley is to reduce congestion in commercial districts and to reduce commercial parking in district-adjacent residential neighborhoods. The program includes two major components: one for demand-responsive value-priced parking and one for transportation demand management. The parking management program studied parking behavior and occupancy in three commercial districts: Downtown Berkeley, Southside Berkeley, and the Elmwood District – all notorious for heavy vehicle congestion and confusing parking regulations. For blocks with high-occupancy rates, parking rates were increased; on blocks with low occupancy, rates were decreased. Alongside the rate changes, goBerkeley implemented a signage overhaul where all parking-related signage was replaced with custom parking signs notifying would-be parkers of the new regulations. The signs were the most effective way of communicating to the public that management of parking had changed, and the signs clearly identify the various time-limited areas as well as pricing variations.

goBerkeley streamlined the City's parking regulations, replacing eight time-limited areas and three parking rates – often applied along the same blocks – with two corresponding and complementary rate and time limit areas. These included a "Premium Zone" with 2-hour parking at a higher rate for short-term visitors and a "Value Zone" with 8-hour time limits and low rates for longer-term parkers. Premium Zones were designated around high-traffic corridors, whereas Value Zones were designated in areas a few blocks away with less congestion.

The value price parking program was complemented by a comprehensive TDM program that included several initiatives: distribution of free, unlimited transit passes to all commercial district employees for all of AC Transit's local, rapid, "owl" all-nighter and Transbay services; business-subsidized carshare memberships; and district-based information packets providing transit route options and carshare location information.

The program significantly improved the utilization of parking in every pilot commercial district; balanced parking demand across multiple district blocks; and reduced commercial parking overflow into adjacent residential districts. Moreover, the program received no official complaints during the program pilot period. The goBerkeley Pilot Program was adopted formally in 2015. To date, several other commercial districts have requested the City institute similar parking and TDM programs in their areas, and the City continues to investigate opportunities to expand this successful program.

## 7.2 Utilize TDM Tools to Support Sustainable Travel

Alameda CTC's *Issue Paper: Countywide TDM Strategy* provides a summary of different key TDM and parking management principles and benefits, data demonstrating the effectiveness of TDM, and implementation strategies.[17] TDM and parking management strategies can improve livability, reduce congestion and vehicle emissions, and encourage riders to change to active travel modes in TODs and TOCs. A variety of methods can be used to achieve these goals, including those described in the following paragraphs.

Transit agencies and jurisdictions can offer incentives and use mobility tools to encourage the use of transit and other active transportation options. These TDM strategies can help spread out the peak commute period, thereby reducing pressure of the BART system. One example is increasing the price of parking at BART parking lots during peak periods.

Cities can partner with building owners and car-sharing companies to site car-share "pods." Similar efforts could be undertaken for bike-sharing facilities. Through zoning and design guidance, cities can also regulate development patterns to create compact and mixed-use areas that are walkable and implement "park once" strategies.

Jurisdictions and transit agencies could partner with employers to provide discounted transit passes to employees to encourage less reliance on vehicles to reduce congestion and parking demand. Various studies have found that these programs increased transit use by 3 to 16 percent.[18]

A comprehensive plan to increase bicycling by residents and employees could include identifying and building calmer and safe bike routes to schools, recreational amenities, and employment districts. Employers and building owners could be encouraged to provide bicycle storage and showering/changing facilities for employees. Communities could organize specific biking related "activity days" that encourage both residents and employees to bike.

## 7.3 Align TDM Strategies with Overall Community Goals

Some TDM tools and measures can be used to help achieve other community goals, such as reducing carbon emissions, advancing socioeconomic equity, and improving public health. Communicating the benefits of these other community goals allows residents, visitors, and employees to better understand the rationale for TDM strategies and help achieve their successful adoption and implementation.

# $ Funding Resources

8



Infrastructure improvements that support TOC can result in many benefits, such as providing more housing and jobs near transit, reducing reliance on cars, lowering transportation costs, and increasing property and sales tax revenues for local governments. However, because of the high capital costs of TOC infrastructure, it can be difficult to raise the funds needed to pay for these investments. Many infrastructure projects are likely to be funded through combinations of existing local, state, and federal revenue sources. Opportunities also exist to raise additional revenue from new development in transit areas using property-based financing tools. The following section describes the potential local sources of funding for TOC infrastructure.

# 8.1 Typical Revenue Sources for TOC Infrastructure

California jurisdictions typically draw from five categories of revenue to fund infrastructure improvements associated with TOC. For most TOC-related projects, local jurisdictions combine multiple funding sources from these five categories, which are described in Sections 8.1.1 through 8.1.5.

## 8.1.1 General Fund Revenues

General Fund revenues are local funds that have not been designated for a specific use or purpose. Major categories of General Fund revenues include property taxes, sales taxes, transient-occupancy taxes, business license fees, and other local taxes and fees. Traditionally, local governments have dedicated some portion of their General Fund revenues for infrastructure improvements that benefit the whole community and support overall economic development goals. General Fund revenues can be saved up and used on a "pay-as-you-go" basis, or in some cases, they can securitize a General Obligation bond. The passage of Proposition 13 and other California voter initiatives that limit property tax revenues have reduced the amount of General Fund revenues available for infrastructure projects.

## 8.1.2 User Fees

User fees are charges for the use of public infrastructure such as water, sewer, dry utilities, toll bridges, or transit. The fee revenues collected can be used on a pay-as-you-go basis or they can be used to pay debt service on larger capital investments. Cities that run their own municipal utility systems usually have a separate enterprise fund for each utility. The user fee revenues that are deposited into the enterprise fund are used to pay for capital, operations, and maintenance of the system. Often, cities and other public agencies face significant legal and political hurdles when attempting to raise fees or rates in order to fund major investments or upgrades to infrastructure systems.

## 8.1.3 State Taxes and Fees for Transportation

State law authorizes several different state taxes and fees to pay for transportation infrastructure projects. These taxes and fees are collected by the state and allocated to cities and counties as formula funding, competitive grants, or a combination of the two. Formula funding programs, also known as subventions or block grants, are allocated based on a formula that may include population, road miles, or other metrics. Grants are allocated through a competitive process, which is described in Section 8.1.5. State taxes dedicated to transportation infrastructure include the fuel excise tax and the Transportation Development Act Sales Tax, as described below.

### *Fuel Excise Tax (Gas Tax)*

One-third of the state's gas tax funds are allocated to cities and counties based on a formula. These revenues can be used for research, planning, construction, improvement, maintenance, and operations of public streets, highways, transit guideways, or storm drainage facilities related to streets, highways, or transit.

### *Transportation Development Act Sales Tax*

This quarter-cent statewide sales tax measure funds a wide variety of transportation programs, including planning and program activities, pedestrian and bicycle facilities, community transit services, public transportation, and bus and rail projects. The state allocates revenues from the sales tax to county congestion management agencies, including Alameda CTC, based on local population and transit operator revenue

### 8.1.4 County Tax Measures

In addition to these state-wide sources, California law authorizes counties to enact county sales taxes and vehicle registration fees to fund transportation improvements, subject to voter approval. Before placing the taxes or fees before voters, CMAs typically create a spending plan that lays out how revenues will be allocated within the county. Revenues may be allocated to specific transportation projects; on a formula basis to transit operators and/or local governments; through competitive grants; or through some combination of these methods. Alameda County's Measure B and Measure BB are examples of county sales tax measures for transportation projects. Measure F is Alameda County's Vehicle Registration Fee Program which funds local road improvements and repairs, congestion relief transit projects, transportation technology, and pedestrian and bicyclist access programs.

### 8.1.5 Competitive Grants

Several grant programs provide funding for local infrastructure projects on a competitive basis. While the federal and state governments provide much of the funding for infrastructure-related grants, many of the programs in Alameda County are administered by the California Department of Transportation (Caltrans), MTC, the Bay Area Air Quality Management District, Alameda CTC, or other local or regional agencies.

Typically, cities, counties, or other project sponsors access grant funding by submitting an application in response to a notification of funding availability or a call for projects issued by the agency that administers the grant program. Because the grant programs are oversubscribed, only a small fraction of applicants receive funding. In addition, many transportation projects must undergo specific vetting processes before they are eligible for grant funds. Some examples of the existing transportation grant programs in Alameda County for bicycle, pedestrian, transit, and Complete Streets projects include the One Bay Area Grant Program, the Transportation Fund for Clean Air, Safe Routes to School, the Transportation Development Act, and Lifeline. Other funding opportunities include the State and Regional Active Transportation Programs (ATPs) and Cap and Trade Funds, such as the Affordable Housing and Sustainable Communities Program.

# 8.2 Property-Based Tools for TOC Infrastructure

In addition to the traditional revenue sources described above, jurisdictions may be able to finance TOC infrastructure improvements through property-based value capture tools. Many infrastructure improvements, such as high-quality transit and streetscape improvements, enhance the value of nearby properties. Property-based financing mechanisms capture a portion of this increased value to fund infrastructure improvements. Property-based funding tools are described in Sections 8.2.1 and 8.2.2.

## 8.2.1 Special Assessments and Taxes

This category encompasses tools that rely on an additional assessment or tax paid by the business or property owner in a specific district to fund the acquisition, construction, operations, or maintenance of capital improvements, including transportation infrastructure. These taxes and fees are in addition to the 1 percent property tax limitations of Proposition 13. All of the tools presented in this section have some type of voting requirement and vary in the permissible use of the funds. Three examples of these are described below.

### *Special Assessment Districts*

In a Special Assessment District, property owners within a designated district agree to pay an additional assessment to fund specific improvements or services within a defined geographical area. The amount that each property owner pays must be directly proportional to the benefit the property will receive from the proposed improvement. Assessment districts are established by a vote of the property owners and require support from a simple majority (50 percent plus 1) of assessed property owners in the district. There are specific assessment district tools for distinct types of improvements and services. These include everything from business improvement districts to lighting and landscaping, sewer, utility, parking, and community benefit districts. Although California law varies depending on the type of assessment district created, most types of districts can issue tax-exempt bonds.

### *Mello-Roos/Community Facilities Districts*

Mello-Roos Community Facilities Districts (CFDs) are a type of special taxing district. They are formed when registered voters or property owners within a geographic area agree to impose a new tax on property to fund infrastructure improvements, development of public facilities, ongoing maintenance, repair, or services. In contrast to assessment districts, CFDs do not require that property owners reap a "special benefit" from the improvement or service. However, CFDs do carry a higher voting requirement: two-thirds of property owners (weighted by property area) or two-thirds of voters if more than 12 are registered in the district. Because of this voter approval requirement, CFDs are most commonly formed in undeveloped areas with either a single large property owner or a small number of property owners who intend to develop the property and/or subdivide the land for sale.

### *Parcel Taxes*

A parcel tax is a special tax that is levied based on characteristics of the parcel rather than on the value of the property being taxed. In California, parcel taxes must be approved by two-thirds of voters. The tax can be imposed within a city, county, community college, school district, or other special district (e.g., park, fire, sewer, or water districts). They are most commonly used to fund schools, but they can also be used for almost any municipal use, including transportation maintenance and repair. AC Transit partly funds its operations in Alameda and Contra Costa Counties with a parcel tax that has been increased and extended by voters multiple times.

### 8.2.2 Tax Increment Financing Districts

Tax increment financing tools capture the increase (or increment) in tax revenue that is usually associated with new development or an increase in property values in a district due to an infrastructure improvement. Taxing entities within the district continue to receive the base tax revenue during the duration of the tax increment district; however, the incremental tax revenues beyond the base are diverted to fund the improvements. The amount diverted is determined by agreement with the taxing entities. Since the demise of redevelopment in California, two tax increment financing tools for infrastructure have emerged: Enhanced Infrastructure Finance Districts and Community Revitalization and Investment Authorities. Because these tools are new, examples of their use are limited.

#### *Enhanced Infrastructure Finance Districts*

Established in 2014 by Senate Bill 628, Enhanced Infrastructure Finance Districts (EIFDs) capture a portion of the growth in property tax revenues resulting from new development and increasing property values to fund the acquisition or construction of public facilities and infrastructure. A specially constituted public financing authority comprised of elected officials from the participating taxing entities and appointed members of the public is established to govern the EIFD. The participating taxing entities may allocate a share of revenues from several sources to an EIFD, including property tax increment and property tax in-lieu-of vehicle license fee revenues.

EIFDs may not capture revenues from school districts or community college districts. EIFD revenues may be used to pay for a wide range of capital improvements, but may not be used to pay for operations and maintenance. EIFDs also may be used to pay for the development of moderate, low, and very low income housing. The public finance authority administering the EIFD may use the revenues on a pay-as-you-go basis or issue bonds subject to voter or property owner approval. It should be noted that EIFDs can be established in former redevelopment areas, and that residual funds from former Redevelopment Agency obligations can be redirected to an EIFD.

#### Emery-Go-Round – Property and Business Improvement District

In 2001, property owners established a citywide Property and Business Improvement District (PBID) to fund the Emery-Go-Round, a free local circulator system that connects Emeryville and the MacArthur BART station. The system currently has about 1.5 million riders annually. Property owners (both commercial and residential) and businesses have elected to pay a small assessment on their square footage to support the shuttle's operation. The system is managed by a Transportation Management Association (TMA) comprised of representatives from the local business community. The TMA maintains control of the operations and management of the Emery-Go-Round and it is also the administrative entity of the Emeryville PBID. It has the authority to increase the annual assessment rate of properties by 5 percent each year. The TMA Board is completely autonomous of Emeryville city government. Due to the overwhelming success and expansion of the program, in August 2015, property owners in Emeryville voted to approve an extension of the PBID until 2030.[19]

### Rincon Hill, San Francisco – Tax Increment Financing District

The establishment of EIFDs replaced the previous tool, Infrastructure Financing Districts (IFDs), which had similar requirements and characteristics, but was rarely used. The Rincon Hill IFD was established a month prior to Governor Brown's announcement of the end of redevelopment in the state of California. The EIFD subsequently replaced prior tools relying on redevelopment funding.

The Rincon Hill district is composed of 10 sites for residential development, which are expected to provide a total of 2,541 units of new housing by 2022. An IFD was formed in February 2011 to finance the development of three new parks and the redesign of various surrounding streets and alleys, at a total cost of about $31.6 million. Once a bond is issued, it is estimated that the IFD increment will support the issuance of $15.1 million in net bond proceeds. The remaining cost of the infrastructure improvements (estimated at $16.5 million) will be funded by a specially adopted, $14 per-square-foot Rincon Hill Community Infrastructure Impact Fee. Alternatively, the City and property owners may agree to form a Mello-Roos Community Facilities District or for the developers to provide the improvements in-kind (i.e., construct them directly).[20]

### *Community Revitalization and Investment Authorities*

Authorized by the State of California in September 2015, Community Revitalization and Investment Authorities (CRIA) are a new type of tax increment financing tool targeting economically distressed areas. CRIAs may only be formed in areas where the median household income is less than 80 percent of the state median. A CRIA may provide funding for infrastructure improvements, affordable housing, property acquisition, brownfield cleanup, loans or grants for property owner and tenant improvements, and other specified purposes. Twenty-five percent of revenues must be set aside to pay for low- and moderate-income housing. There are not yet any examples of implementation of this tool, and many questions remain regarding the text of the legislation.

## Developer Contributions

Developers can contribute directly to infrastructure projects, either in the form of fee payments or by providing the desired improvements within the development project. There are three types of developer contributions: impact fees, density bonus programs, and negotiated agreements. In the case of development impact fees, there is a legal requirement that a "nexus," or reasonable relationship, be established between the development and the payment. In the case of negotiated agreements or density bonus programs, contributions are voluntary and do not require a nexus.

### *Development Impact Fees*

Impact fees can be imposed on new development projects to mitigate their impact on the need for infrastructure, such as roadways and transit improvements, and cannot be used to fund existing infrastructure deficiencies (e.g., repair or maintenance of existing infrastructure to serve existing needs). Impact fee revenues may be used only for construction or expansion of capital improvements and may not be used for operations and maintenance.[21] For improvements that benefit existing as well as new development, impact fee revenues can only pay for the portion of the improvement that benefits the new uses.

### *Density Bonus Programs*

With density bonus programs, development is eligible for a pre-defined increase in density or floor area ratio (FAR) in exchange for providing public benefits that may be selected from a list of improvements or funding at a pre-determined, per-square-foot price which the city uses to pay for district-wide improvements. Different levels of density or FAR may be available in exchange for providing additional public benefits.

### *Negotiated Agreements*

In some cases, cities and counties may choose to negotiate directly with developers to obtain desired improvements in exchange for development rights. Depending on the jurisdiction and the project, developer contributions may be negotiated as part of a development agreement (a structured bilateral negotiation authorized under state law) or required as part of the conditions of approval for a project.

### San Antonio Center – Negotiated Developer Agreement

San Antonio Center in Mountain View is an example of a negotiated agreement between the City and a developer to incorporate streetscape improvements into a large-scale mixed-use development project. The project involves the transformation of an aging retail shopping center at El Camino Real and San Antonio Road into a mixed-use center with new residential units, office space, a hotel, theater, restaurants, and retail. Phase I was completed in early 2014 and included 144,000 square feet of retail and 330 multi-family residential units. Phase II was approved in December 2014 and is slated to include 400,000 square feet of office space, a 167-room hotel, an 8-screen cinema, and 80,000 additional square feet of restaurants and retail.

Under the conditions of approval for the project, the developer (Merlone Geier Partners) provided significant infrastructure improvements. Phase I included a park, sidewalk and streetscape improvements on El Camino Real and San Antonio Road. As part of Phase II, the developer agreed to: improve the intersection of El Camino Real and San Antonio Road; redesign and reconstruct San Antonio Road between El Camino Real and California Street to include a new median, improve landscaping, and add bicycle lanes and pedestrian enhancements.


Rendering of anticipated BRT on International Boulevard in Oakland

Rendering courtesy of AC Transit

# Guidelines for Moving TOC's Forward

9



## 9.1 Overview of Strategies

Regional Metropolitan Planning Organizations (MPOs) and Congestion Management Agencies (CMAs) are typically not directly involved in creating land use regulations and development standards for TOCs or TODs, which are controlled by local jurisdictions. However, Alameda CTC can play an important role by supporting the following local government activities:

- Funding and technical assistance to local governments to create TOC and TOD plans
- Facilitating multi-jurisdictional corridor planning
- Making strategic infrastructure investments
- Establishing TOC incentive programs
- Working with transit agencies and local jurisdictions to implement the recommended transit network of this *Countywide Transit Plan*

The following is a review of selected programs in the U.S. implemented by regional and county agencies to facilitate TOC or TOD.

### 9.1.1 Regional Plans and Strategies

Regional planning efforts that integrate transit and land use investments are an important step to help coordinate local plans, programs, and policies and ensure that the region has a shared vision for developing TOCs. An example of this is Portland Metro's *Transit-Oriented Development Strategic Plan* which builds a common regional vision for growth including an assessment of existing market conditions and development opportunities and a prioritized set of implementation strategies. The plan clearly defines responsibilities for MPOs, counties, local governments, transit agencies, and other stakeholders.[22] The Metropolitan Transportation Commission's *Plan Bay Area: Strategy for a Sustainable Region* is a similar plan, but it relies on CMAs to take on further coordination with local jurisdictions and transit agencies to fully implement the plan.

### 9.1.2 Corridor Working Groups

CMAs work with local governments, foundations, transit agencies, and other stakeholders to coordinate planning and investment around specific transit corridors or areas. For example, the Metropolitan Council (the Twin Cities MPO) helped form the Central Corridor Working Group during the planning stages of the new Central Corridor light rail line. The Working Group included representatives from the MPO, the cities of St. Paul and Minneapolis, Hennepin and Ramsey Counties, and the Minnesota Housing Finance Authority. The group helped identify and prioritize a comprehensive list of utility, connectivity, beautification, and open space improvements needed to accelerate private investment in the corridor.[23]

Similarly, the Grand Boulevard Initiative (GBI) is a coalition of 2 counties, 19 cities, 2 transit agencies, community organizations, private developers, and nonprofits that seek to improve the performance, safety, and aesthetics of El Camino Real, which stretches from Daly City to San Jose. The GBI serves as a forum for elected leaders and technical staff to coordinate land use and transportation planning and share best practices. Over the years, the GBI has provided communities along the corridor with technical assistance and guidance on topics such as Complete Streets, infrastructure financing, and infill development.

Should planning and design move forward on a corridor, such as San Pablo Avenue, Alameda CTC could work with the Contra Costa Transportation Authority, Caltrans, AC Transit, and cities along the corridor to support implementation of bus rapid transit and other improvements along the street.

### 9.1.3 TOC Incentive Programs

Many MPOs across the country have implemented TOD incentive programs similar to One Bay Area Grants (OBAG). OBAG encourage local governments to plan for higher-intensity development near transit by providing grants for planning and/or infrastructure improvements. These programs can use either federal or regional funding sources and are typically targeted to areas that the region has prioritized for future population and employment growth. Because OBAG relies on federal transportation dollars, funding can only be used to pay for a limited range of project types and can be time-consuming and burdensome to manage.

Other programs that rely on a regional property tax, sales tax, or other local funding measure – such as the San Diego Association of Government's TransNet Smart Growth Incentive Program – are able to invest in a wider range of activities.[24] For example, the Metropolitan Council's Livable Communities program in the Twin Cities uses revenues from a regional property tax levy to fund grants for site assembly, brownfields clean up, and affordable housing development, as well as place-making and basic infrastructure.[25]

### 9.1.4 Knowledge Transfers and Technical Assistance

CMAs and MPOs can help educate local political leaders and residents about the benefits of TOCs and provide capacity and technical assistance to help city staff manage the TOC planning and public participation processes. For example, the Denver Regional Council of Governments hosts a regular series of workshops where local governments share information and ideas about implementing TOCs and other topics of interest, as well as provide additional best practices resources online.[26]

## 9.2 Alameda CTC Programs—Refinements and Additions

Alameda CTC can refine, coordinate, and develop new programs that address each of the "Six Ds." The following are some initial concepts of program refinements or new programs:

- Coordinate and link TOC (formerly TOD), active transportation, and Complete Streets programs so that planning and infrastructure support for TOC encourages active transportation and Complete Streets through evaluation criteria and direct funding.
- Establish incentives for agencies, local jurisdictions, and developers to work collaboratively to overcome the challenges associated with realizing high-density development and implementing Complete Streets improvements.
- Refine reporting of the County jurisdiction's performance in implementing Priority Development Areas (PDAs) in the *Update to the Priority Development Area Investment and Growth Strategy* to include progress in meeting and exceeding performance measures established through the Alameda *Countywide Transit Plan*. Example performance measures include the following:
  - Measure density and land use mix achieved compared to policy goals and PDA targets. Use density thresholds that are scaled to local context and transit service levels, and define mixes that relate to particular place-types.
  - Measure the extent to which housing element implementation is occurring, particularly for opportunity sites within TOC/TOD areas and PDAs.

# End Notes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6 Transportation Research Board. *Highway Capacity Manual 2000*. Pg. 18-7.

7 Translink, *Transit-Oriented Communities Design Guidelines*. July 2012. Page 63.

8 California Environmental Protection: Air Resource Board. *Status of Research on Potential Mitigation Concepts to Reduce Exposure to Nearby Traffic Pollution*. August 2012.

9 California Traffic Code does not allow signing streets for lower than 25 mph in most cases. When feasible, traffic speeds of less than 25 mph should be used.

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Transit Oriented Communities In
Alameda County

# DESIGN GUIDELINES

ALAMEDA
County Transportation Commission

# Transit-Oriented Communities in **Alameda County**

# design guidelines

*A Primer on Key Concepts*


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## Acknowledgments:

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Front-bottom image courtesy of streetfilms.org

# Introduction

This technical memorandum provides a set of guidelines and references to best practices for the creation of transit-supportive places in Alameda County. The guidelines describe the relationship between the transit service tiers defined in the *Countywide Transit Plan* and transit-oriented communities (TOCs), as well as the characteristics of the neighborhoods and districts, streets and public spaces, surrounding development, and transit stops that combine to achieve successful TOCs and transit-oriented developments (TODs).

Transit-supportive places are defined in this report using the following terminology:

**Transit-Oriented Community:** A place designed and managed to maximize opportunities for people to walk and ride a bicycle that are in proximity to transit. TOCs provide quality alternatives to driving and support the choice to take transit.

**Transit-Oriented Development:** A specific building or development project within a TOC that is designed to support the choice of riding transit and that is in close proximity to transit service.

This document provides guidelines related to street network and complete streets design, land use policies, design guidance for streetscapes and building design to activate the public realm, parking management strategies, and other recommendations. It also provides a framework for implementation strategies that the Alameda County Transportation Commission (CTC) and its member agencies can take to improve the relationship between the transit investments recommended in the *Countywide Transit Plan* and the land use patterns and complete streets networks of the communities throughout Alameda County.


**Figure 1** - Example of Transit-Oriented Communities and Transit-Oriented Development


RIBUNE
HILL
CASTLE
APARTMENT
HOTEL

# Background

This guide was developed to assist Alameda CTC as it works with local jurisdictions and transit agencies to achieve the goals of the *Countywide Transit Plan*. Alameda CTC encourages and supports transit-oriented development and transit-oriented communities that provide land use patterns and complete streets networks that encourage higher transit ridership. The *Countywide Transit Plan*'s goals are as follows:

**Goal 1: Increase transit mode share**
The number of people living in Alameda County is growing significantly faster than the number of people who are riding transit. By capturing a larger share of all trips on transit, a more sustainable transit system can be achieved. The goal is not only to increase transit ridership, but also to reduce dependence on auto travel on a per-capita basis.

**Goal 2: Increase effectiveness**
Much of the existing transit supply in the off-peak hours remains underutilized. Demand for some peak-hour services, such as Transbay BART service, exceeds capacity, and use of the system is constrained by lack of supply. To achieve a more financially sustainable transit system, it is important to ensure that major transit investments benefit the greatest number of people and that supply matches demand accordingly.

**Goal 3: Increase cost efficiency**
The cost of transit service is increasing without a commensurate increase in service levels or passengers. To maintain and expand transit services and to increase frequency and service hours, resources must be used as efficiently as possible.

**Goal 4: Improve access to work, education, services, and recreation**
The transit system should make it easier for people to travel without having to rely on private automobiles. This suggests the creation of an integrated transit network that provides fast, reliable connections between major residential populations and activity centers. It also includes innovative, flexible services that can more effectively meet transportation needs in areas that cannot be served efficiently by fixed-route transit or for individuals who rely on paratransit services due to a disability. Additionally, the potential to capture more trips on transit and to enhance first- and last-mile connectivity will be improved by promoting land use patterns that provide a mix of uses and greater density around transit or activity hubs.

**Goal 5: Reduce emissions**
Transportation is the single largest contributor to emissions. Shifting travel away from cars and onto transit helps reduce emissions (of both greenhouse gases and air pollutants) and enhances the quality of life and the environment in Alameda County.

**Goal 6: Achieve a state of good repair**
The transit system must be in good working condition to provide a safe and reliable transit experience. Maintenance of existing transit facilities and fleets should be balanced against system expansion.

**Goal 7: Increase effectiveness of inter-regional travel**
Alameda County is a key gateway to and from the San Francisco Bay Area. A significant portion of inter-regional trips either travel through or begin or end in the County. More effective inter-regional transit service could shift some of these inter-regional trips from roads and highways onto passenger rail, buses, and shuttles.

Rendering of anticipated BART station enhancements in Berkeley

Image courtesy of berkeleyside.com

TODs and TOCs can help achieve the County's goals in a variety of ways:

- TOCs can help increase transit mode share and ridership by clustering walkable districts, neighborhoods, and other places around existing transit services and planned transit investments. This supports Goals 1, 2, and 3 of the *Countywide Transit Plan*.
- TOCs improve pedestrian, bicycle, and local transit access to major transit corridors and stations. As a result, transit service becomes more accessible to major destinations, making the choice to walk or bicycle to transit as easy as driving. This aids in achieving Goals 2 and 4 of the *Countywide Transit Plan*.
- TOCs accommodate additional people and jobs at a lower rate of emissions per person. They create options for living and working near transit stations and support the choice to walk or bike rather than drive. This supports Goal 5 of the *Countywide Transit Plan*.
- TOCs make improved transit service and access an integral part of their transportation and economic development strategy. The result of improved service and an increased ridership base will be a higher fare-box recovery ratio and a financially stable system. In addition, those who live in TOCs, as well as local decision makers, are more likely to support increased investment to keep transit service in a state of good repair. This assists meeting Goal 6 of the *Countywide Transit Plan*.

# Benefits of Building for Transit

**Transit-oriented communities experience many community-oriented and regional benefits in addition to improved transit service:**

### Transportation Equity

TOCs provide people with access to a broader range of jobs and services via transit as well as the option to walk or cycle to work or services in the TOC itself. People and households within the TOCs may also benefit from lower overall household transportation costs by reducing or removing the need for a private automobile.

### Environmental Sustainability

Agricultural lands, open spaces, and other natural resources can be preserved by focusing new housing and jobs into TOCs that are already located in existing developed areas. Accommodating growth in TOCs can reduce pressure to use undeveloped lands to accommodate new jobs and housing. It also can reduce the need to build new infrastructure to connect these currently undeveloped areas with other parts of the county and region.

### Public Health

The land use patterns and complete streets networks of TOCs support walking and biking. This contributes to lower obesity, better physical fitness, and improved mental health. TOCs also improve safety for all people traveling in the community and reduce pollution from motor vehicles.

### Economic Vitality

Nationally, the number of jobs in transit-served locations is growing, particularly in high-skill sectors such as information and professional services. In addition to regional, countywide, and city economic benefits, recent studies on economic activity indicate that people who visit businesses by walking, bicycling, or transit often spend more than those who arrive by automobile. They also tend to shop more at local businesses.

### Economic Resiliency

Emerging research indicates that urban form and transportation options play a key role in the ability of residential properties to maintain their value during an economic downturn. A national study found that during the Great Recession, high-density neighborhoods located near transit held value more effectively and outperformed regions without transit by 41.6%.


Rendering of anticipated BRT on International Boulevard in Oakland

Rendering courtesy of AC Transit

# The "Six Ds"

## for Transit-Oriented Communities

Successful transit-oriented communities are the product of a variety of factors, contexts, and cultural forces. There is no one strategy for creating successful TOCs. Many variations of the guidelines presented in this chapter could apply depending on how a community wishes to grow. The shape of a community may also change and evolve in response to new types of transit service, market forces, cultural and demographic changes, and other factors. However, several attributes are common to transit-oriented places. These attributes present a road map for building communities and developments that support high levels of transit demand and productive transit service:

- Major **DESTINATIONS** and nodes are aligned in reasonably direct corridors that can be easily served by efficient and frequent transit
- Well connected street grids minimize **DISTANCE** between population centers, destinations, and frequent transit
- Urban **DESIGN** creates an attractive environment that includes safe and direct pedestrian and cycling routes
- High levels of residential and employment **DENSITY** surround transit stops
- The built environment features a **DIVERSITY** of land uses and housing types
- **DEMAND** management policies and programs discourage unnecessary automobile trips

Each of the "Six Ds" is important in shaping travel behavior and community character. However, some aspects of the built environment are more permanent than others. For example, street grids, once established, are very difficult to change, whereas building form and land use can transform more over time. It is critically important to make quality decisions on street and urban layouts in the early stages of community development and design to establish an urban fabric supportive of walking, biking, and transit.

No measure is truly effective in isolation. Successful transit-supportive communities integrate and implement the "Six Ds" in a coordinated effort. No specific thresholds for density or any other variable will automatically produce desired travel outcomes. Instead, the "Six Ds" work together to support improved transit service and reduce automobile dependence.

Accordingly, in order to be effective, all "Six Ds" must be implemented at all spatial scales of planning in support of all of Alameda County's transit tiers – starting at a regional scale and moving down to community, neighborhood, and site scales.

The following sections explain each of the "Six Ds" in further detail.

# D1
# Destinations

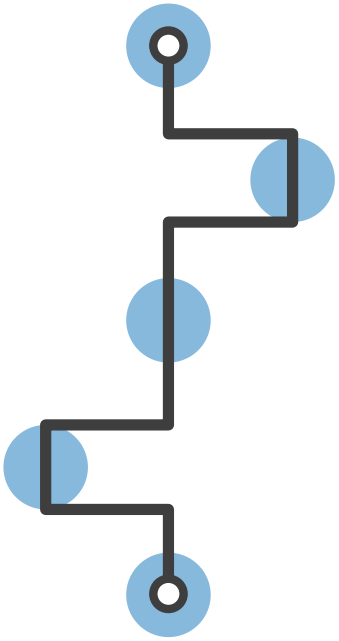


**Figure 2** - Poor transit geography forces a choice between providing a slow, meandering route or one that bypasses key destinations (figure adapted from Trans Link).

**Figure 3** - Good transit geography lines up destinations along a reasonably direct corridor (figure adapted from Trans Link).

Efficient transit corridors that support frequent transit service connect multiple high-demand destinations along a direct line. With poor transit geography, as shown in Figure 2, destinations do not line up and the transit service meanders, thus increasing trip length and travel time. This can reduce the attractiveness of the service and potential ridership. The dilemma for transit planners in locations where geography does not lend itself to direct service is balancing the trade-off between route efficiency and serving population centers and destinations.

Good transit geography, shown in Figure 3, has destinations aligned on a direct path, ideally anchored at each end by major trip generators. These anchors often justify services to smaller destinations. In addition, transit use increases as the transit network progressively links more concentrations of people with jobs and commercial centers, educational opportunities, and cultural facilities.

Ultimately, the most important step to creating transit-supportive communities is to align major destinations along a reasonably direct route. This should be a preliminary consideration when determining future transit routes and investments in transit-oriented development.

# D2
## Distance

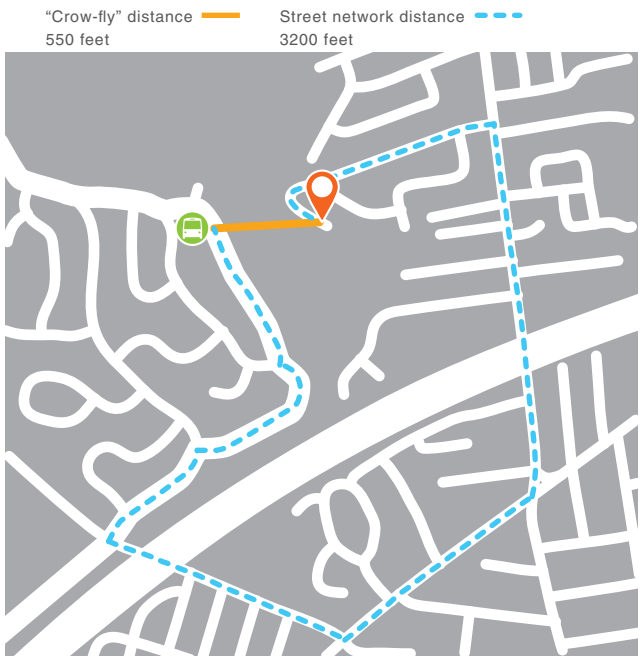



**Figure 4** - A disconnected street network full of cul-de-sacs results in long walking distances and less efficient transit operations.

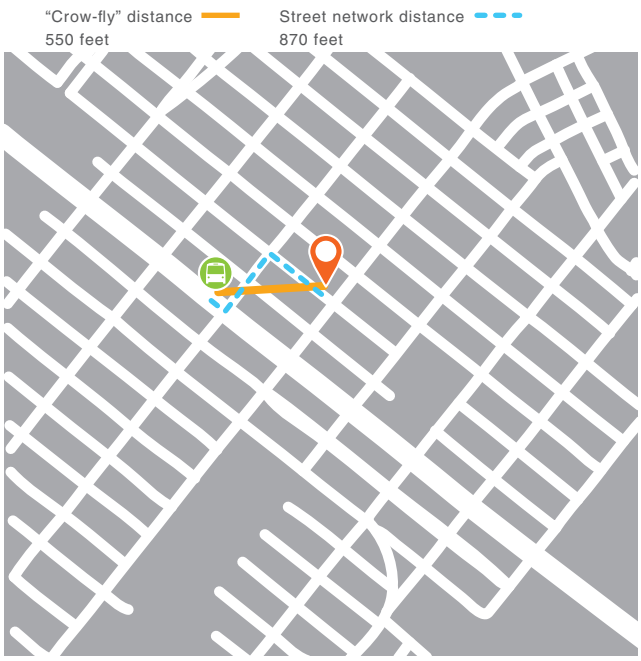



**Figure 5** - A well connected street network enables shorter, more direct walking connections and is easier to serve cost-effectively with transit.

Transit succeeds when people can quickly and conveniently walk to transit service from places they live, work, shop, and play at both ends of the trip. The distance used to define this pedestrian catchment area varies based on local conditions and the tier of transit service. Generally, people will walk farther to access higher-capacity transit services.

It is important to consider true walking distance rather than measuring "as the crow flies" when determining distance from transit. For example, as shown in Figure 4, a poorly connected street network with large blocks and multiple cul-de-sacs can significantly increase walking distance. In contrast, a well-connected street network, as shown in Figure 5, shortens the walk to transit and other destinations by providing more direct walking routes.

Figures 4 and 5 show two different street patterns: a less connected street pattern in Figure 4 and a more connected street pattern in Figure 5. The orange line is the direct "as the crow flies" distance between the origin of a transit rider's trip and the transit stop. The person accessing transit in Figure 4 must walk much farther than the person walking to transit in Figure 5. The person in Figure 5 also could walk the other way around the block to the transit stop. The person in Figure 4 might not have a reasonable alternative to the path of travel shown.

A comprehensive network of interconnected streets within a TOC allows for more direct travel between the transit station or stop and multiple locations in the TOC. This convenience encourages the use of public transit.

# D3
# Design

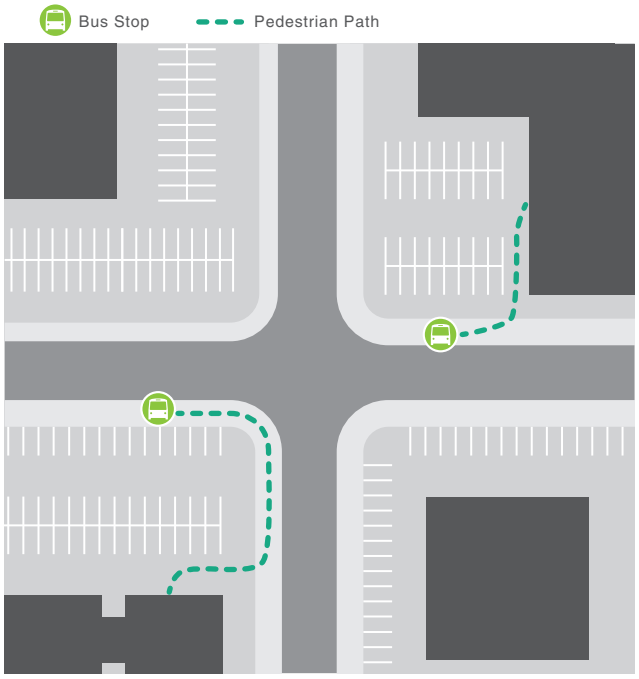



**Figure 6** - Automobile-oriented urban design often sets buildings back from the street with parking in front (figure adapted from Trans Link).

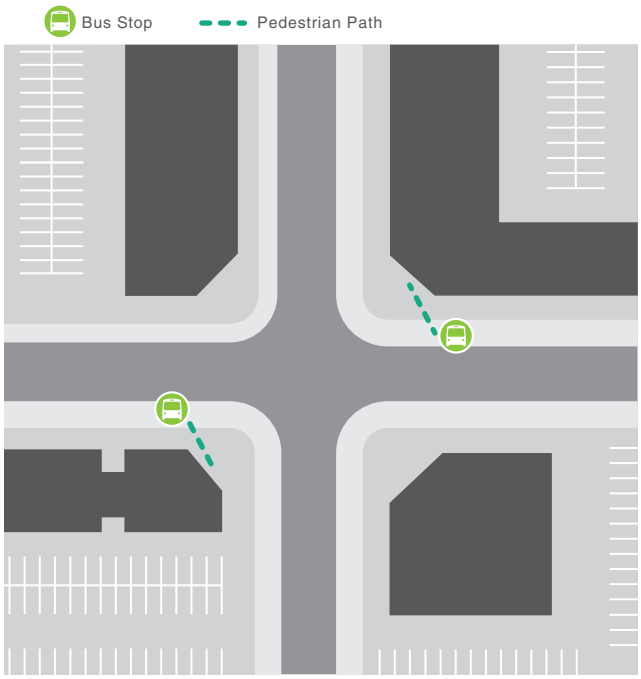



**Figure 7** - Pedestrian-oriented urban design features buildings with active frontages built right to the street and with parking behind (figure adapted from Trans Link).

An attractive, engaging, and well-designed public realm is a critical component of a community that supports walking, bicycling, and transit. A first-rate walking and bicycling infrastructure is a key component. This includes wide, connected pedestrian and bicycling routes that are accessible to users of all ages and ability.

The design quality of a street influences rates of walking, cycling, and transit use. Certain design elements, such as street trees, pedestrian-scale lighting, street furniture, bus shelters, and public art, enhance the attractiveness and safety of the street environment. They also invite more walking, bicycling, transit use, and overall enjoyment of the street. Furthermore, streets should be designed with universal accessibility to ensure that the entire urban environment is accessible to people of all ages and abilities.

Walkable and transit-supportive communities are also defined by fine-grained building placement with active frontages and many doors and windows. Café seating and sliding window walls can be used to engage the street. Surface parking lots, parking structures, and other large buildings should be avoided or wrapped with attractive street-oriented uses to minimize negative impacts. Figure 6 shows an auto-oriented urban design with lower density uses that prioritizes high-speed automobiles. Figure 7 shows a pedestrian-oriented urban design. Although the land usage between the two is similar, the site and urban design depicted in Figure 7 creates a far more friendly and supportive environment for walking, bicycling, and transit use.

# D4
## Density

**Figure 8** - Auto-oriented density distribution (patchy development not focused around transit) (figure adapted from Trans Link).

**Figure 9** - Transit-oriented density distribution (highest at transit, stepping down to surrounding neighborhood) (figure adapted from Trans Link).

Building density is a critical ingredient in transit-supportive communities. Without sufficient density, transit demand suffers as origins and destinations become farther apart and less accessible by non-motorized modes (as shown in Figure 8). Growth and higher densities should be concentrated within the pedestrian catchment areas of frequent transit stops and stations in order to minimize walking distances to destinations (as shown in Figure 9). Densities can then be reduced as distance increases from the transit stops to integrate with surrounding development patterns, where applicable.

Automobile parking is often desired by businesses, communities, and riders near transit stops or stations (particularly for higher-capacity services). However, a large supply of dedicated parking adjacent to transit stops or stations can reduce transit accessibility. This occurs by increasing the distance to nearby population centers, employment, and other land uses, as well as increasing the cost of transit facility development in land acquisition, lost potential tax revenue, and maintenance of parking facilities. Demand management strategies, described later in this chapter, should be implemented to reduce the need and desire for expensive and land-intensive automobile parking.

It is important that most residential, commercial, and employment density within a community be concentrated within a relatively short walk of frequent transit service. Since employment uses tend to generate more trips throughout the weekday and more trips overall than residential uses, concentrating high-intensity employment uses, such as office buildings, within walking distance of frequent transit service is the most effective way to build transit demand and justify service improvements.

# D5
# Diversity

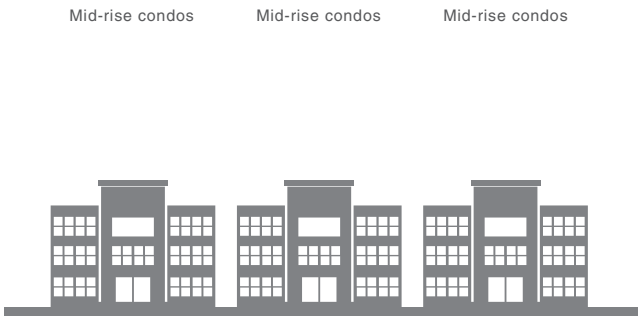



**Figure 10** - A poor mix of uses and housing along the corridor leads to poor bi-directional transit productivity (figure adapted from Trans Link).

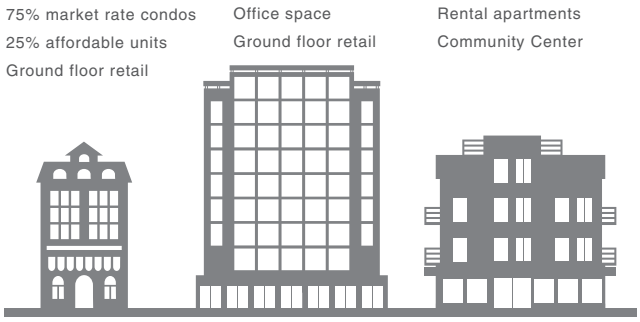



**Figure 11** - A rich mix of pedestrian-friendly uses, housing types, and price points distributed along the corridor helps to optimize transit utilization (figure adapted from Trans Link).

Transit-supportive communities feature a diverse land use mix, which refers to the degree to which different types of land uses (e.g., residential, commercial, institutional, entertainment) are located within close proximity. A larger mix of compatible land uses increases the likelihood that a desired destination is in the vicinity. This makes it easier for people to access such destinations by walking or bicycling. In such neighborhoods, multiple errands can be accomplished on foot on the way to transit, over the lunch hour, or on the way home from work.

Many land uses generate demand for transit service only at specific times of the day, week, or year. A mix of uses can encourage people to travel on many different types of trips at different times of the day. This spreads out peak periods and increases the efficiency of transit operations. Land uses that generate trips in off-peak times include retail, service, residential, entertainment, and visitor attractions. A rich land use diversity, particularly along a transit service corridor, can lead to a more balanced bi-directional flow of riders, help optimize existing transit capacity, and justify better service (Figure 10 and Figure 11).

Along with land use diversity, demographic diversity can improve transit performance and ridership. Demographic diversity can be fostered by providing a wide range of housing types, rental lengths, and price points within close proximity to frequent transit. A mix of housing types at a variety of affordability levels near transit can increase access and mobility for a large slice of the population. This is particularly true for low-income individuals, senior citizens, and students. Neighborhoods with housing that is typically occupied by seniors or students tend to have higher mid-day, evening, and weekend demand, justifying improved off-peak service.

## Setting Benchmarks for Housing Diversity

Benchmarks for housing diversity should be set within transit-supportive communities. LEED® for Neighborhood Development uses the Simpson Diversity Index which measures housing diversity within a given area (projects of 125 acres or larger or a one-quarter-mile area around the project). The index includes twenty housing types/sizes, and scores on a zero to one range, where zero is no diversity and one is the most diverse.

# D6

## Demand Management


**Figure 12** - Free parking is an invitation to drive and leads to inefficient utilization of limited space (figure adapted from Trans Link).


**Figure 13** - Carefully managing the supply and price of parking can discourage unnecessary driving and optimize turnover (figure adapted from Trans Link).

The previous five "Ds" all focus on infrastructure and physical changes to the built environment to create more transit-supportive communities. In contrast, Transportation Demand Management (TDM) is the use of policy and programmatic strategies to achieve desired transportation behavior outcomes.

Many policy decisions have a direct influence on people's daily travel choices. For example, even residents of high-density, mixed-use, and walkable communities are less likely to take transit if their destination features a supply of ample free parking and toll-free roadways (Figure 12). Individuals make travel choices weighing the relative financial, convenience, and time costs of their different travel options. TDM strategies use policy and program changes in conjunction with the other 5 "Ds" to influence individual travel behavior.

One effective TDM strategy is to relax or remove minimum parking standards, particularly within close proximity to frequent transit, and to actively manage parking supply and pricing (Figure 13). Parking minimums often force developers to supply "free" parking, which increases the cost of development, reduces transit-supportive density, and encourages driving. When parking is supplied for "free" to the user, the costs of that parking are paid by the society at large. Limiting off-street parking supply and increasing short-term parking rates can reduce the overall attractiveness of driving while encouraging higher levels of parking turnover that support local retail businesses.

Additional TDM strategies are used to encourage bicycling, walking, and transit use. Employer-provided or subsidized transit passes, in lieu of free parking, can encourage employees to use transit for their commute. Cities can partner with building owners and car-sharing companies to provide on-site bike share and/or car-sharing facilities. Overall, the focus should be on making walking, bicycling, and transit ridership equal to or better than driving based on cost, convenience, and time.

# Transit-Oriented Communities

## in Alameda County

Photo courtesy of Abby Thorne-Lyman

Much of Alameda County already includes transit-oriented communities. Some were originally developed as neighborhoods and corridors served by streetcars, or were centered around commuter rail stations. Others were developed more recently and include a combination of focused TODs with more auto-oriented development around them.

The diverse land use context of the County's varied communities greatly affects what types of transit-supportive improvements can or should be made to suit the needs of each unique TOC throughout the County.

The recommended framework for TOCs in Alameda County seeks to balance these relationships to support community values, economic development, and the need to efficiently invest public funds for transit. The Metropolitan Transportation Commission's *Plan Bay Area: Strategy for a Sustainable Region* outlines a future for the Bay Area where building density is higher in proximity to the higher level of transit service (as identified in the *Countywide Transit Plan)*. The goal of these TOC guidelines is to provide direction and implementation tools that can help ensure the transit-oriented future envisioned in *Plan Bay Area* becomes a reality for Alameda County.

## Development Patterns in Alameda County

The development pattern and street networks that characterize communities in Alameda County can generally be divided into two categories:

- pre- or early automobile, streetcar-oriented street networks
- post-WWII auto-oriented, suburban street networks with land uses organized into residential subdivisions, retail commercial centers, and office/business parks

Generally, pre-automobile areas are more supportive of transit, while post-WWII auto-oriented development patterns present more challenges for developing TOCs.

Older, more urban neighborhoods in North County and some other county subareas were built upon the traditional street grid with denser housing and a mix of employment types. This allows for greater connectivity and better proximity to diverse uses. Transit stops and stations in these areas provide residents with greater access to regional employment centers, as well as connections to recreational and other non-employment destinations.

Other cities, such as San Leandro and Hayward, have focused multimodal infrastructure investments and land use planning efforts in their downtowns which also have BART station access (the Regional Express transit service tier). These cities can use their existing pattern to improve current TOCs by zoning for higher intensity and a mix of uses along well connected complete streets that improve access to transit and throughout the TOC.

In contrast, more suburban cities such as Dublin and Union City primarily have post-WWII land use patterns, which make them more auto-centric. This poses certain challenges for transforming streets and neighborhoods into more intense, mixed-use TOCs. In newer suburban communities, many collector and arterial streets lack frequent access from the surrounding low density neighborhoods and are fronted by landscaping and soundwalls.

In older corridors, commercial centers can be changed through infill and reuse of underutilized properties and reconstruction of existing streets into complete streets. These cities may support higher intensity mixed-use TODs around existing and planned transit stations that would be part of a larger, overall lower density TOC. In these cases, connectivity to the transit station would be augmented with improved pedestrian and bicycle networks and other “last-mile” connectivity strategies. These include shuttles and ride-sourcing providers such as taxis, Uber, and Lyft, as well as parking for transit riders that is integrated into the TOC or TOD without overwhelming the pedestrian network.

These cities may also be able to create additional TOCs by infilling with housing and retail in suburban office and business parks or commercial districts, such as the current development in Fremont. Land currently used for surface parking could be used to add housing and other commercial and community uses to support high-frequency/high-capacity bus transit.

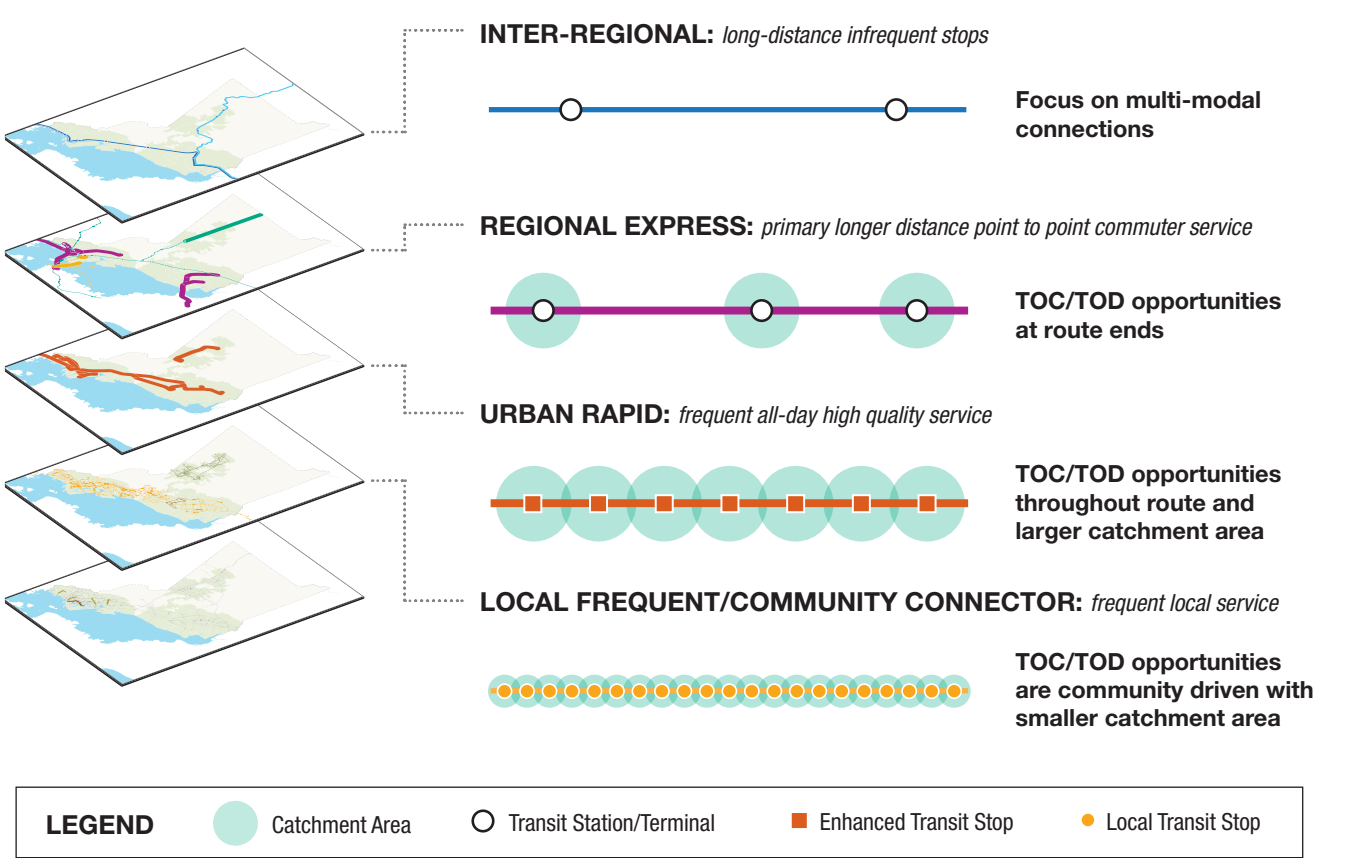



**Figure 14** - Five transit tiers identified in the Alameda Countywide Transit Plan and their relationship to TOD/TOC opportunities

## Aligning Transit-Oriented Community Characteristics with Transit Tiers

The characteristics of TOCs vary based on existing development, the overall context of the area, and the type of transit service that links them to the rest of the County and region. The following transit tiers were identified in the Alameda *Countywide Transit Plan*:

- Inter-Regional
- Regional Express
- Urban Rapid
- Local/Frequent/Community Connector
- Streets Plus

Each tier serves a different purpose and need for transit riders and County residents. As a result, the "Six Ds" apply in different ways to each tier. The variations that exist in Alameda County between development patterns and existing and proposed transit service (in the various tiers) presents a number of challenges for coordinating and developing communities that meet the diverse travel needs of the County's residents. It is important that future land-use decisions be made in coordination with plans for existing and future transit services.

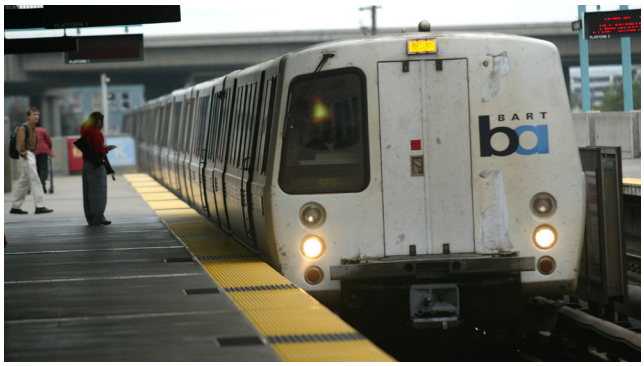
Figure 14 presents the five transit tiers identified in the Alameda *Countywide Transit Plan* and indicates the general linkage each tier has with TOC and TOD opportunities. Although the TOC design guidelines apply in some form to all tiers, the *Countywide Transit Plan* is making recommendations for the Regional Express and Urban Rapid tiers only.


## Inter-Regional Tier

- Trips tend to have dispersed origins arriving at the station via a variety of modes
- Stations act as hubs for longer-distance travel and provide an opportunity for intermodal connections
- Very limited stops (3 to 15 miles apart)
- Peak or hourly service frequency
- Typically longer-distance lines than other tiers, usually greater than 40 miles
- Carries a small portion, less than 1 percent, of the total transit ridership in Alameda County

## Regional Express Tier

- Travel occurs between major nodes where there is substantial point-to-point travel. Provides access to major employment centers (e.g., downtown Oakland, Berkeley, and San Francisco)
- Very limited stops (1 to 3 miles apart or greater)
- Transit stations act as hubs for intermodal connections and can serve as a catalyst for transit-oriented development
- Carries a large portion, 66 percent, of County's transit trips
- High service frequency (greater than 8 trips per hour or headways of 8 minutes or less)





## Urban Rapid Tier

- Provides travel options between major nodes from productive major transit origins to concentrated destinations. Provides access to major employment centers, universities, and other high trip generators.
- Considered within the spectrum of bus rapid transit, but may or may not include complete exclusive right-of-way operations for the full length of the route
- Limited stops (0.3 to 1.0 mile depending on the presence of underlying local service)
- High service frequency (5 to 8 trips per hour or headways of 12 minutes or less)
- Serves trips primarily within Alameda County but could combine with Transbay service

## Local Frequent/Community Connector Tier

- Travels along a corridor with productive, dispersed origins and destinations
- Serves local trips within communities and cities in Alameda County
- About 32 percent of the County's transit trips are currently carried by this tier of service
- Frequent stops (less than 0.25 mile apart)
- Mid-service frequency (3 to 5 trips per hour or 15- to 20-minute headways)

# Funding Sources

Infrastructure improvements that support TOC can result in many benefits, such as providing more housing and jobs near transit, reducing reliance on cars, lowering transportation costs, and increasing property and sales tax revenues for local governments. However, because of the high capital costs of TOC infrastructure, it can be difficult to raise the funds needed to pay for these investments. Many infrastructure projects are likely to be funded through a combination of existing local, state, and federal revenue sources. Opportunities also exist to raise additional revenue from new development in transit areas using property-based financing tools.

## Typical Revenue Sources for TOC Infrastructure

California jurisdictions typically draw from five categories of revenue to fund TOC infrastructure improvements. For most TOC-related projects, local jurisdictions must combine multiple funding sources from the following list:

- General fund revenues
- User fees
- State taxes and fees
- County tax measures
- Competitive grants

## Property-Based Tools for TOC Infrastructure

In addition to typical revenue sources, jurisdictions could finance TOC infrastructure improvements through property-based "value capture" tools. Many infrastructure improvements, such as high-quality transit and streetscape improvements, enhance the value of nearby properties. Property-based financing mechanisms capture a portion of this increased property value to fund infrastructure improvements. Property-based funding tools include the following:

- Special assessments and taxes
- Tax increment financing districts
- Developer contributions

**More information on funding sources can be found in the *Design Guidelines* full report**

# Moving Forward

## Strategies and Programs

Alameda CTC plays an important role in supporting TOC through the following:

- Providing funding and technical assistance to local governments to create TOC and TOD plans
- Facilitating multi-jurisdictional corridor planning
- Making strategic infrastructure investments
- Establishing TOC incentive programs
- Working with transit agencies and local jurisdictions to implement the *Countywide Transit Plan*

The strategies and programs described below can help implement TOCs and TODs.

### Regional Plans and Strategies

Regional planning efforts that integrate transit and land use investments are an important initial step to help coordinate local plans, programs, and policies, ensuring that the region has a shared vision for TOC. For example, Portland Metro's Transit-Oriented Development Strategic Plan builds a common regional vision for growth that is grounded in a realistic assessment of existing market conditions and development opportunities, and contains a prioritized set of implementation activities. The plan also clearly defines responsibilities for Metropolitan Planning Organizations (MPOs), counties, local governments, transit agencies, and other stakeholders. The Metropolitan Transportation Commission's *Plan Bay Area: Strategy for a Sustainable Region* is a similar plan, but it relies on Congestion Management Agencies (CMAs) to take on further coordination with local jurisdictions and transit agencies to fully implement the plan.

### Corridor Working Groups

CMAs can work with local governments, foundations, transit agencies, and other stakeholders to coordinate planning and investments around specific transit corridors or areas. For example, the Metropolitan Council (the Twin Cities MPO) helped form the Central Corridor Working Group during the planning stages of the new Central Corridor light rail line. The Working Group included representatives from the MPO, the cities of St. Paul and Minneapolis, Hennepin and Ramsey Counties, and the Minnesota Housing Finance Authority. The group helped identify and prioritize a comprehensive list of utility, connectivity, beautification, and open space improvements needed to accelerate private investment in the corridor.

### TOC Incentive Programs

Many MPOs across the country have implemented TOD incentive programs similar to One Bay Area Grant (OBAG) program. OBAG encourages local governments to plan for higher-intensity development near transit by providing grants for planning and/or infrastructure improvements. These programs can use either federal or regional funding sources and are typically targeted to areas that the region has prioritized for future population and employment growth. Because OBAG relies on federal transportation dollars, funding can only be used to pay for a limited range of project types and can be time-consuming and burdensome to manage. Other programs that rely on a regional property tax, sales tax, or other local funding measure – such as the San Diego Association of Government's TransNet Smart Growth Incentive Program – can invest in a wider range of activities.

## Knowledge Transfers and Technical Assistance

CMAs and MPOs can help educate local political leaders and residents about the benefits of TOCs and provide capacity and technical assistance to help city staff manage the TOC planning and public participation processes. For example, the Denver Regional Council of Governments hosts a regular series of workshops where local governments share information and ideas about implementing TOCs and other topics of interest, as well as provide additional best practices resources online.

## Alameda CTC Programs

Alameda CTC can refine, coordinate, and develop new programs that address each of the "Six Ds." The following are some initial concepts of program refinements or new programs:

- Coordinate and link TOC (formerly TOD), active transportation, and complete streets programs so that planning and infrastructure support for TOC encourages active transportation and complete streets through evaluation criteria and direct funding.
- Establish incentives for agencies, local jurisdictions, and developers to work collaboratively to overcome the challenges associated with realizing high-density development, and implementing complete streets improvements.
- Refine reporting of the County jurisdiction's performance in implementing Priority Development Areas (PDAs) in the *Update to the Priority Development Area Investment and Growth Strategy* to include progress in meeting and exceeding performance measures established through the Alameda *Countywide Transit Plan*. Example performance measures include the following:
  - Measure density and land use mix achieved compared to policy goals and PDA targets. Thresholds used in these measurements should be scaled to local context and transit service levels, and mixes related to particular place types defined.
  - Measure the extent to which housing element implementation is occurring, particularly for opportunity sites within TOC/TOD areas and PDAs.


Transit-Oriented Communities in
Alameda County

# DESIGN GUIDELINES