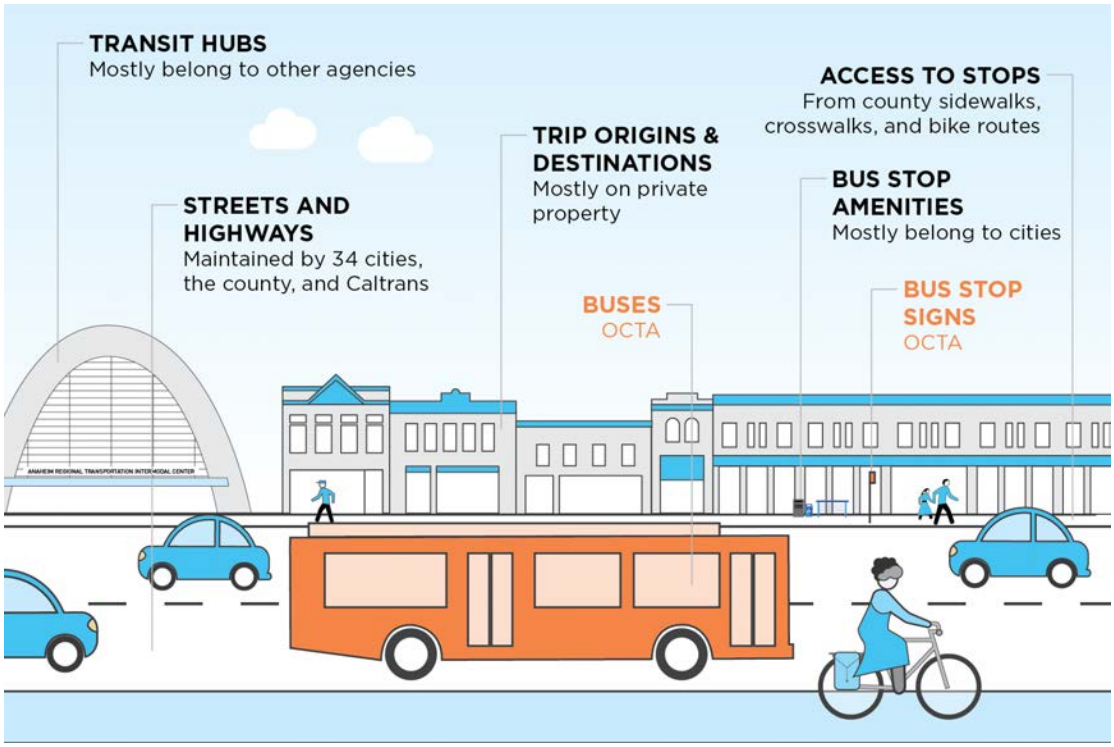
8 TRANSIT-SUPPORTIVE DESIGN AND POLICIES

This chapter briefly describes steps that OCTA's community partners—cities, developers, and others—can take to support effective transit. (The complete *Transit-Supportive Design and Policy Handbook* can be found in Appendix E.) These steps fall into two general areas: high-quality access to transit, and transit-supportive land use design and policy.

NEED FOR TRANSIT-SUPPORTIVE DESIGN AND POLICIES

OCTA's vehicles operate on streets and highways maintained by the county's 34 cities, the county itself, and the California Department of Transportation. OCTA bus stops are on city and county property, as are the sidewalks, crosswalks, and bike routes that provide access to them. Transit hubs are mostly the property of other public agencies. For OCTA to be successful in its mission of providing high-quality transit service, it must partner with other public and private entities (see Figure 8-1).

Figure 8-1 Control of Transit-Related Features in Orange County



Source: Nelson\Nygaard

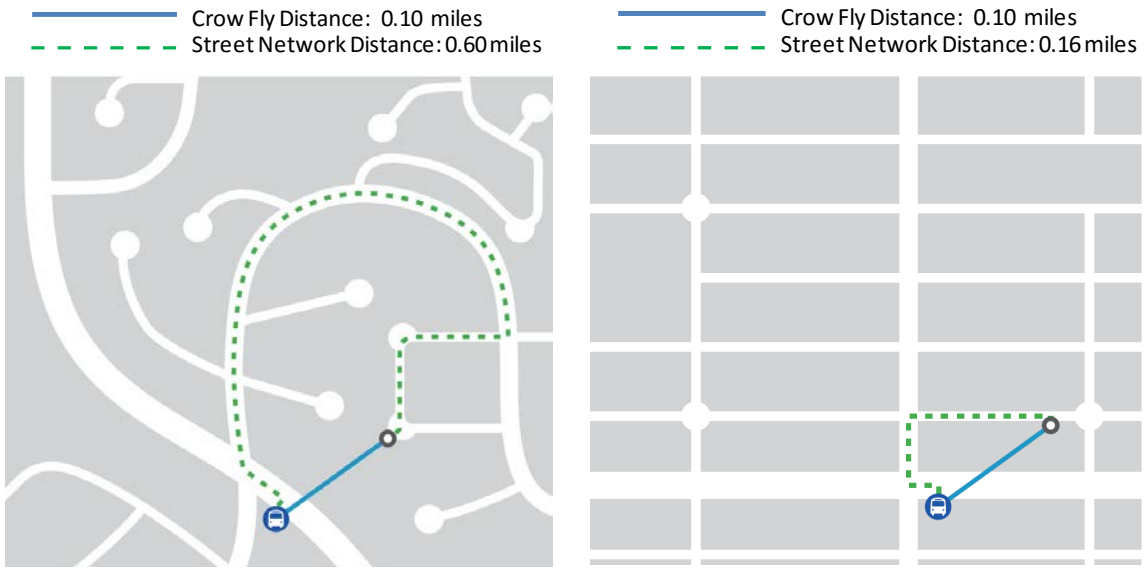
TRANSIT-SUPPORTIVE TRANSPORTATION SYSTEMS

This section discusses street networks, transit stop location and design, street design, and transit system integration.

Street Networks

Figure 8-2 shows the street networks in a typical post-World War II subdivision and a pre-World War II neighborhood. Walking distances are much shorter in the latter, and straight streets offer more direct routes for transit.

Figure 8-2 Street Networks and Travel Distance



Source: TransLink Transit Oriented Communities (2011)

Many older neighborhoods in Orange County (typically in the north/central part of the county) sit on traditional street grids, and it is in these neighborhoods that OC Bus ridership is highest. Serving subdivisions is more challenging, but they can be retrofitted with cut-through pedestrian paths.

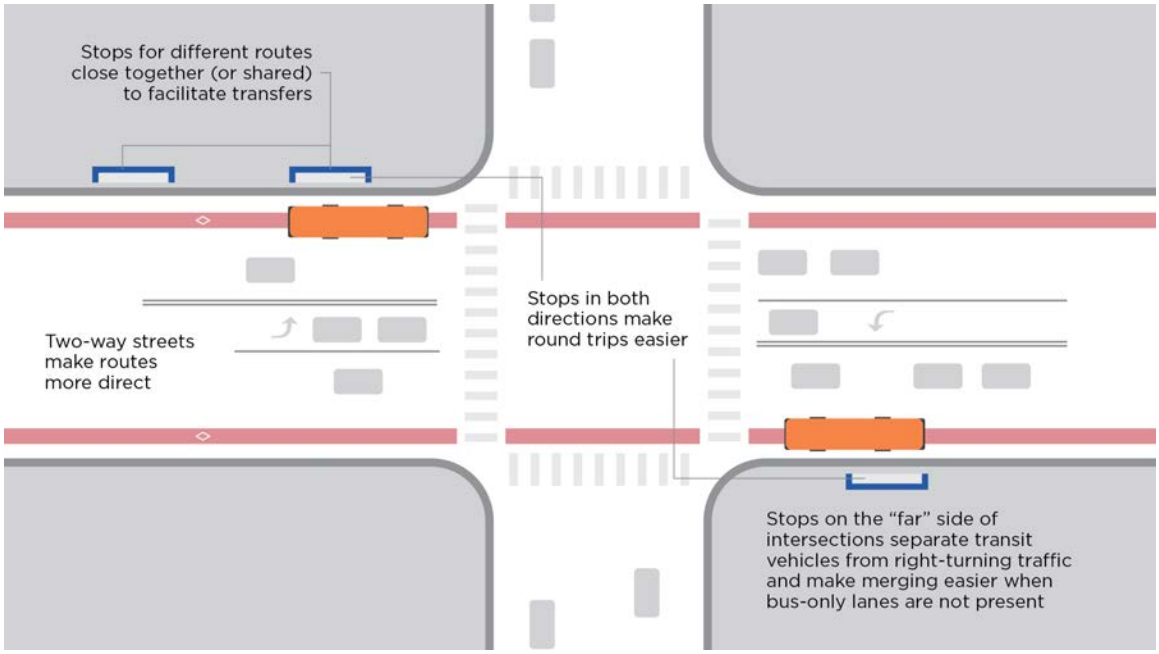
Transit Stop Location and Design

Figure 8-3 illustrates several principles for locating transit stops. Transit stops must be located at intersections a short walk from origins and destinations and accessible via direct paths. Stops should also be along wide, continuous sidewalks. Stops where routes converge should be close together to facilitate transfers.

To support round-trip travel, every stop should be accompanied by a stop in the other direction. Two-way streets support more direct routes and enable clear sightlines between pairs of stops.

Stops on the far side of intersections are usually preferable, as they separate transit vehicles from right-turning traffic, make it easier for them to merge back into traffic, and allow pedestrians to cross the street behind the transit vehicle.

Figure 8-3 Elements of Transit Stop Location

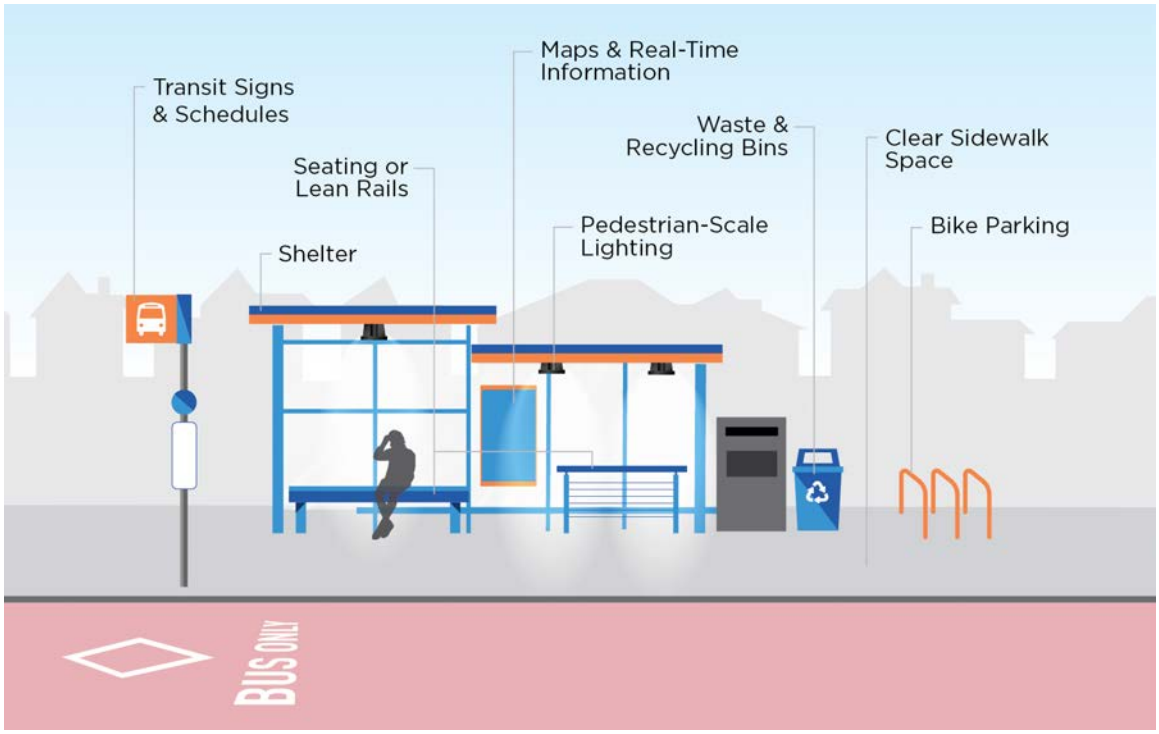


Source: Nelson\Nygaard

Many communities locate stops at turnouts where buses can pull out of traffic, forcing buses to merge back into travel lanes. If there are multiple lanes of traffic, buses should be allowed to stop in the outside lane. If streets are quiet enough, buses can temporarily block traffic. On streets with curbside parking, stops can be located on sidewalk extensions.

New stops must be ADA-accessible and older stops should be retrofitted to meet ADA standards for seniors and people with disabilities. Stops should be comfortable, safe, and clean, with seating, shelters at busier stops, pedestrian-scale lighting, and trash cans (see Figure 8-4). They should provide schedules, maps, and (at busier stops) real-time updates. They should provide enough space for wheelchair, walker, stroller, and bike access, and room for pedestrians to pass easily.

Figure 8-4 Amenities at High-Quality Bus Stops



Transit centers have varying design requirements, but a few universal rules apply. Distances between stops or platforms should be minimized. Where possible, transit centers and their stops should be close to the street and should avoid circuitous access and circulation pathways. In some cases, putting some stops on the street next to the transit center may reduce passenger travel time. Wayfinding and directional signage are essential. Transit centers should also be designed around intermodal connectivity and access, as discussed later in this chapter.

Street Design

Most transit in Orange County operates on city streets, and street design is essential to providing effective transit service. Historically, this has meant simply accommodating bus movements, but current best practice is to design "complete streets" for all people.

The Orange County Council of Governments has published a handbook providing detailed guidance for complete-street design in Orange County. In general, complete streets support transit. Even where they don't provide transit priority, they provide additional space for transit stops, improve pedestrian and bicycle access to transit, and bolster land uses such as pedestrian- and transit-oriented retail.

OCTA's Bus Stop Safety and Design Guidelines provide detailed specifications on street design and engineering requirements for transit vehicles and transit-priority treatments. Transit-priority treatments reduce delay for transit vehicles and passengers. The transit-priority toolbox ranges from the simple to more extensive interventions such as exclusive transit lanes. Three relatively simple measures cities can implement to significantly reduce transit travel times are shown in Figure 8-5

Figure 8-5 Simple Measures to Reduce Transit Travel Times

Signal timing adjustments

Signal timing adjustments, synchronization, and adaptive signal systems optimize traffic flow.

Transit signal priority (TSP)

TSP uses sensors to extend green lights a few seconds for approaching transit vehicles, allowing them to avoid red lights (or, in some cases, to turn red lights green a few seconds early).

Queue jumps

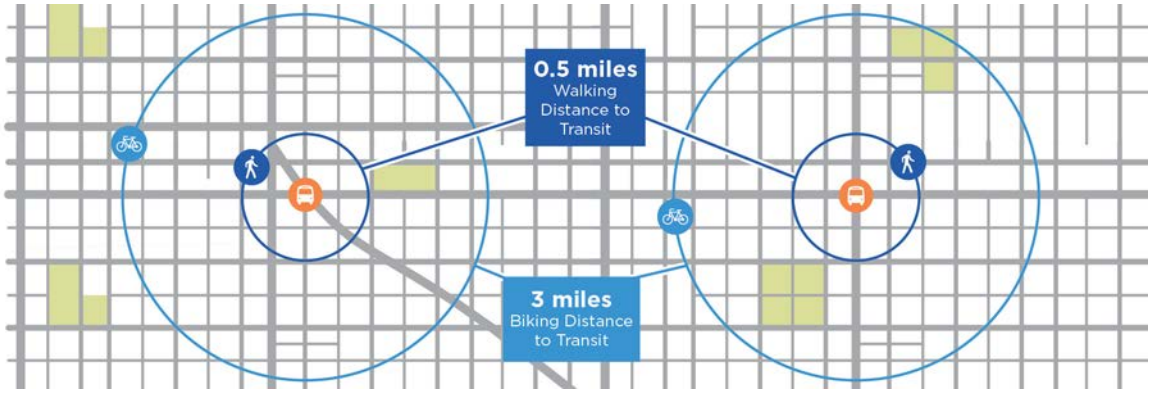
Bypass lanes on intersection approaches accompanied by brief transit-only signal phases allow transit vehicles to bypass lines of cars stopped at red lights.

A fourth type of transit-only treatment is transit-only lanes, which may be exclusive or semi-exclusive and can be somewhat more challenging to implement. Transit lanes are most effective when physically separated from traffic, but lanes that are not can be made more effective by coloring them (most often red) or posting signs. Where transit service is relatively frequent, transit-only lanes can increase a street's capacity, as transit vehicles carry many more people than individual cars.

Transportation System Integration

Ideally, transit stops should be located a short walk from trip origins and destinations. But for a variety of reasons, they may be a half-mile, a mile, or even several miles away. In these cases, passengers rely on first-/last-mile connections to sidewalks, bike routes, and to other transit services. Research has found that most transit riders will walk up to a quarter- or half-mile to stops, and that most cyclists will ride three to five miles (see Figure 8-6). Improvements to pedestrian and bicycle infrastructure can improve access to transit.

Figure 8-6 Walking and Biking Distance to Transit Stops



Source: Nelson\Nygaard

Transit stops should support direct pedestrian connections. Pathways should be as comfortable and safe as possible, using complete streets practices. Marked street crossings should be both relatively close together and as short as possible. Crossings can be shortened by aligning them at right angles to sidewalks, by reducing travel lanes, and by providing sidewalk extensions and pedestrian refuges in medians. Crossing times at signals should be sufficient to allow people of all

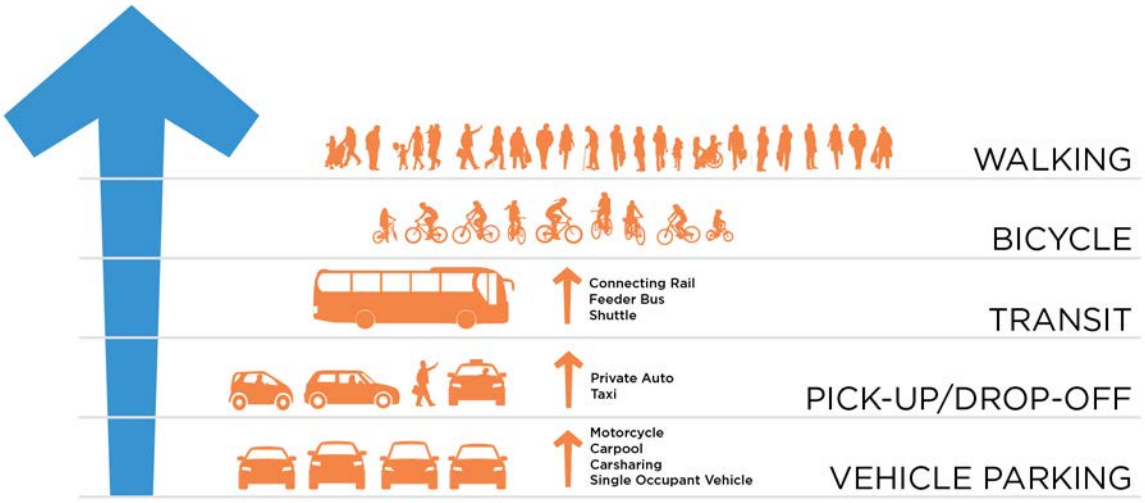
ages and abilities time to cross the street safely. Motorist awareness of pedestrians can be enhanced by using high-visibility crosswalk treatments and other measures to improve safety.

ADA-compliant curb ramps should be provided at all intersections. Grade-separated crossings, including pedestrian bridges, should be avoided, as these make pathways less direct and can be difficult for less mobile people to navigate.

Bicycle routes to transit stops should follow the same principles: direct paths with frequent, short, high-visibility crossings. Ideally, busy transit stops should connect to designated bicycle routes featuring high-quality facilities such as off-street paths, separated or buffered on-street lanes, or prioritized treatments on lower-volume streets. Jurisdictions can minimize conflicts between transit and bicycles by providing dedicated space for both modes.

Transit centers should prioritize pedestrians and bicycles over people using other modes (see Figure 8-7). Connecting or feeder transit routes, kiss-and-rides, taxis, and services like Uber and Lyft should all be conveniently located. Finally, park-and-ride lots and garages can be located somewhat farther away from transit stops. Within parking lots, space for high-occupancy vehicles, low-emission vehicles, carshare vehicles, and motorcycles should be prioritized.

Figure 8-7 Potential Access Hierarchy for Orange County Transit Centers



The emerging best practice is to provide full-featured mobility hubs at transit centers. Mobility hubs ensure that transit riders have access to a wide range of options for first-/last-mile connectivity, greatly increasing the range and utility of transit routes serving the transit center. Such hubs feature bike stations with secure bike parking, repair, and rental facilities (and extensive rider amenities, such as showers); bikeshare docks; carshare vehicles; information kiosks; cafés; restrooms; and placemaking features such as plazas, art, and landscaping (see Figure 8-8).

Figure 8-8 Elements of a Mobility Hub

Source: SANDAG

TRANSIT-SUPPORTIVE LAND USE AND POLICIES

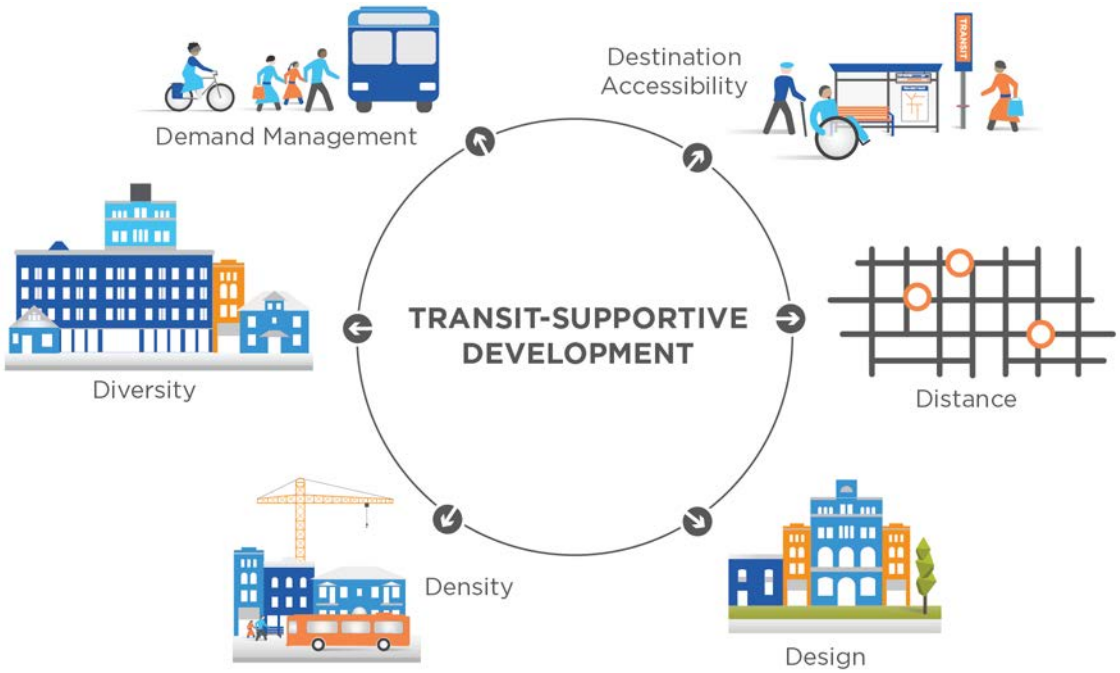
This section discusses land use in general as well as transit-supportive policies in the important areas of parking and transportation demand management (TDM).

Transit-Supportive Land Use

When considering the relationship between transit, buildings, and neighborhoods, it is useful to think in terms of the "6 Ds" (see Figure 8-9). Each of these is essential to building transit-friendly environments:

- **Destinations:** Land uses should be grouped together to form busy destinations, and destinations should be in locations that are easily accessible to transit.
- **Distance:** Origins and destinations should be relatively close together and connected by direct paths.
- **Density:** Putting more residents and workers or students close to transit increases the number of transit riders.
- **Diversity:** A mixture of land uses enables walkable, transit-friendly environments.
- **Design:** Architecture built around pedestrians is architecture that also supports transit. Adding interest to the streetscape is key to creating pedestrian-friendly places.
- **Demand Management:** Strategies to reduce driving are important to successful transit.

Figure 8-9 The 6 Ds of Transit-Supportive Land Use



Source: Nelson\Nygaard

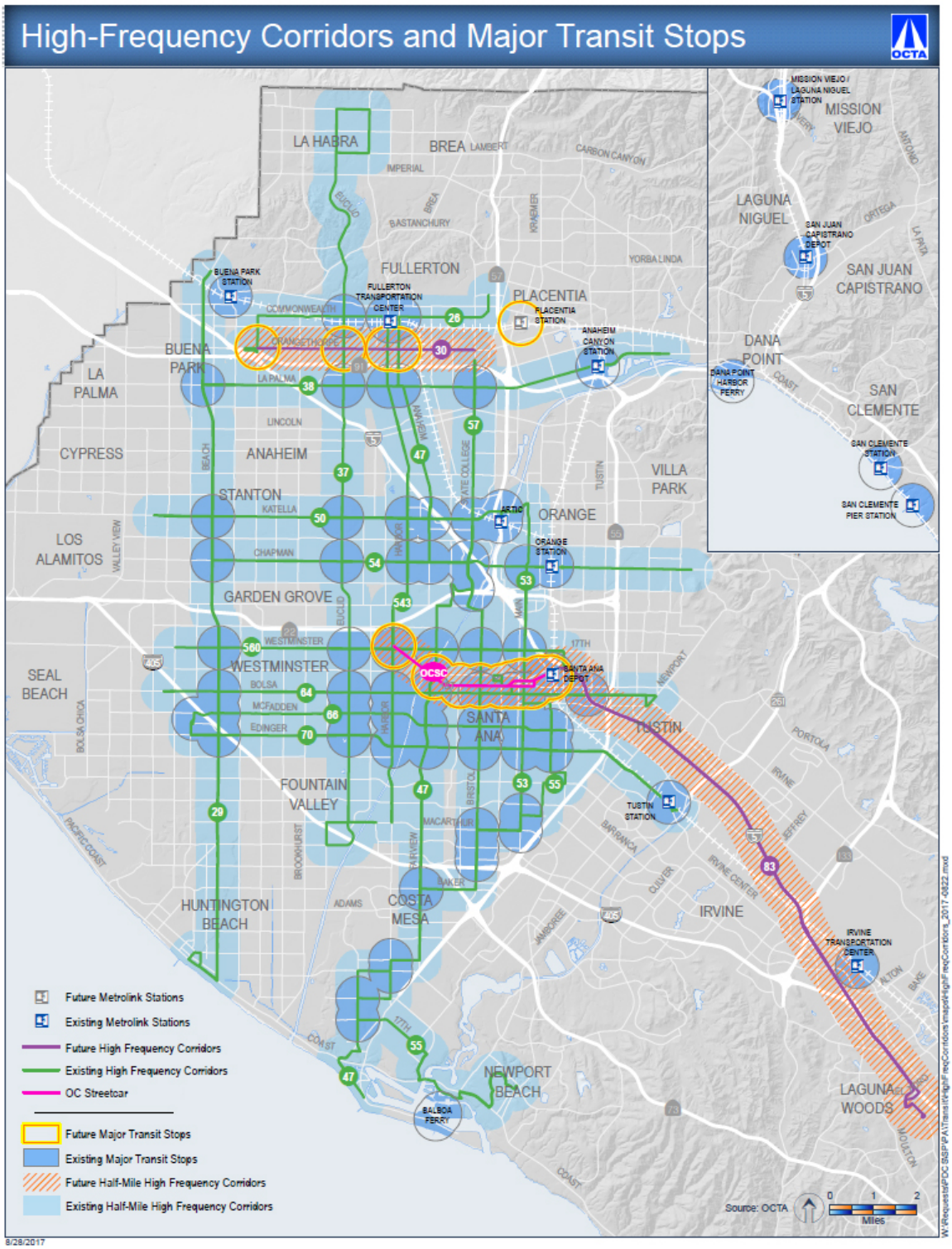
Transit-oriented development (TOD) is one important type of transit-supportive land use. TOD offers cities many benefits, including improvements to health and safety, reduced air and noise pollution, and lower costs to taxpayers from use of existing infrastructure. Transit-accessible locations are good places to concentrate higher-density residential and commercial development, and they make good sites for affordable housing, as lower-income residents benefit from access to transit.

In recent years, a series of policies have been adopted at the state and regional levels promoting TOD. These have ranged from grants and low-interest loans for transit-oriented development to measures to reduce greenhouse gases or carbon emissions and to promote TOD through changes to environmental review processes.

One of the highest-profile of these is Senate Bill 375, which streamlines California Environmental Quality Act (CEQA) regulations for residential and mixed-use developments that meet certain requirements and are within a half-mile of a transit corridor with frequent service. In the Southern California Association of Governments region, these locations are called "High Quality Transit Areas," and they can be found throughout northern Orange County and near Metrolink stations in the south, as shown in Figure 8-10.

Another, more recent effort by the state to promote TOD through changes to CEQA processes is Senate Bill 743, which will soon require transportation impacts to be analyzed using vehicle miles traveled rather than vehicular level of service. This change will benefit developments in walkable, transit-oriented locations generating fewer impacts, and will encourage use of transportation demand management strategies.

Figure 8-10 Orange County High-Quality Transit Areas

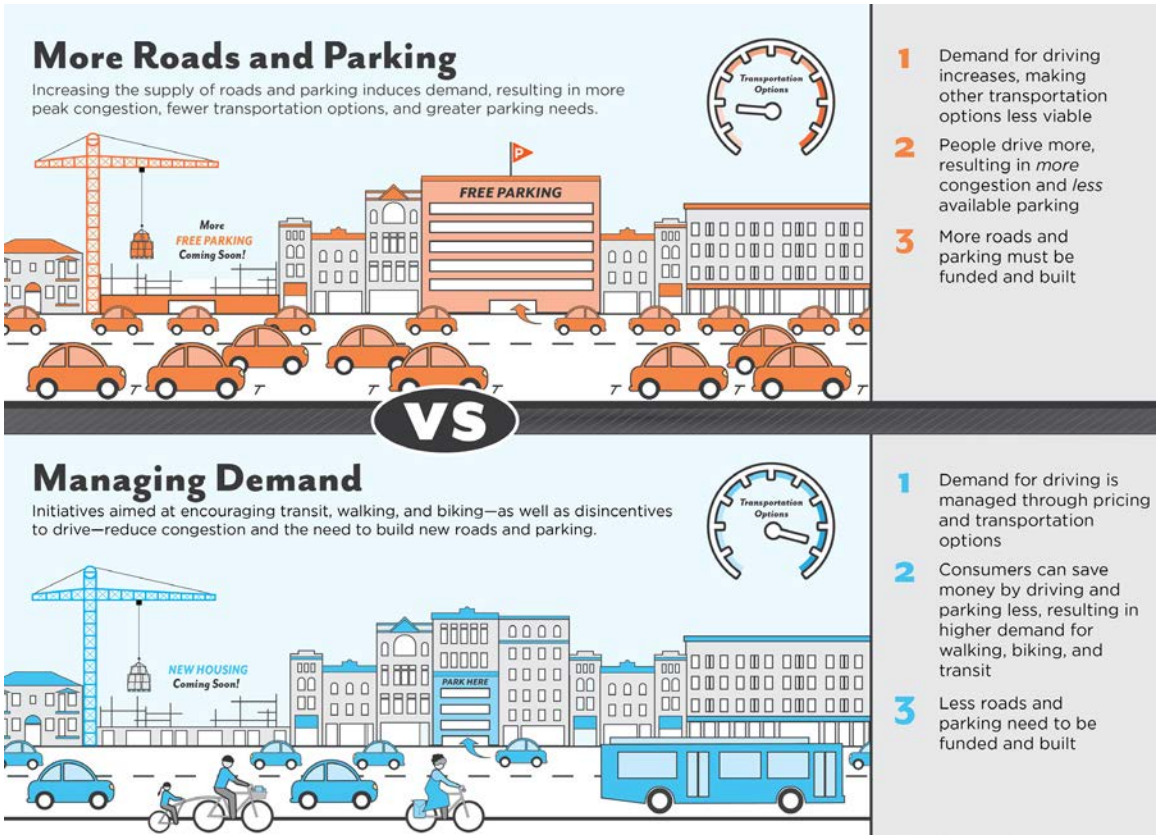


Source: OCTA

Transit-Supportive Policies

Cities, developers, and other entities can support transit by adopting policies and establishing programs to encourage transit use, walking, biking, and ridesharing. Collectively, these policies are referred to as transportation demand management (TDM) or parking demand management (PDM). A demand-management-based approach reduces the need for single-occupant vehicle (SOV) trips, making it easier to take trips in other ways. It also more efficiently and proactively manages limited parking and road supply (Figure 8-11).

Figure 8-11 Impacts of More Roads and Parking vs. Managing Demand



Source: Nelson\Nygaard

Parking Management

Smart parking policy focuses on availability, rather than supply. There are many policies that cities and developers can use to ensure that public and private parking is available when needed. The conventional approach is simply to spend money on more supply (or to require others to spend money). But in addition to its high cost, parking takes up valuable space. Because developments are limited in size, requiring too much parking in new development both reduces space for other uses and increases costs to developers, homebuyers, and tenants.

Generally, more parking means more traffic congestion and collisions, as it results in more cars on the road. Additionally, when existing parking is not proactively managed, lack of availability can lead to motorists "circling" or driving around looking for a space, further increasing traffic.

Strategies that can be used to proactively manage parking supply and ensure availability are described in detail in the *Transit-Supportive Design and Policy Handbook* in Appendix E. OCTA can

work with its member jurisdictions to determine the right parking management strategies for Orange County, focusing first on areas with the potential for high-capacity transit and significant increases in transit ridership.

Transportation Demand Management

TDM strategies reduce demand for solo driving. In California, cities generally require employers above a certain size to implement specific TDM measures; some municipalities have similar requirements for large multifamily residential developments. The emerging best practice is to require all major trip generators to adopt single occupant vehicle (SOV) trip-reduction strategies but provide a flexible menu of options for each employer or developer.

Following are select strategies that can be used to reduce SOV trips and potentially increase transit ridership. (A more complete list of strategies is available in the *Transit-Supportive Design and Policy Handbook* in Appendix E.)

- **Transit Passes:** Discounted bulk passes for large groups of students or employees partly or fully subsidized by an institution or employer can greatly reduce the cost of and increase rates of transit use. OCTA offers both student passes for participating colleges and universities as well as annual "perk passes" for interested employers. More information on the latter can be found at http://www.octa.net/Bus/Fares-and-Passes/Perk-Pass/.
- **Transit Information:** Demystify transit and reduce barriers to use by providing maps, schedules, rider guides, and other information. All of these can be found on the OCTA website at http://www.octa.net.
- **Ridesharing Programs:** Employers can help match their employees with other employees interested in carpooling. In some cases, employers even help arrange vanpools. Information about OC Vanpool can be found at http://www.octa.net/Vanpool/Overview/.
- **Guaranteed Ride Home:** Employees are offered a limited number of free taxi rides for use when they have to leave work unexpectedly or work late. In Orange County, employers who actively participate in the OC Vanpool, Perk Pass, or Metrolink Corporate Partner Programs are eligible to participate in a free Guaranteed Ride Home Program provided by OCTA: https://www.octa.net/Getting-Around/Rideshare/Employers/Guaranteed-Ride-Home-Program/.