MOBILITY element

City of Long Beach General Plan

OCTOBER 2013

people | goods | resources

"Transportation systems provide one of the most essential human services and comprise a large proportion of our everyday urban environment. Although transportation is rarely desired for its own sake, we travel in order to get to work, obtain medical care, become better educated, and participate in recreational, social, cultural, and religious pursuits. The ability to access places and activities provides choices that are the essence of human freedom."

Martin Wachs
Distinguished Professor Emeritus
UCLA Luskin School of Public Affairs

mobility

City of Long Beach

MOBILITY element

of the City's General Plan

Adopted by the Long Beach City Council on October 15, 2013.

Prepared by the City of Long Beach Department of Development Services and Department of Public Works.

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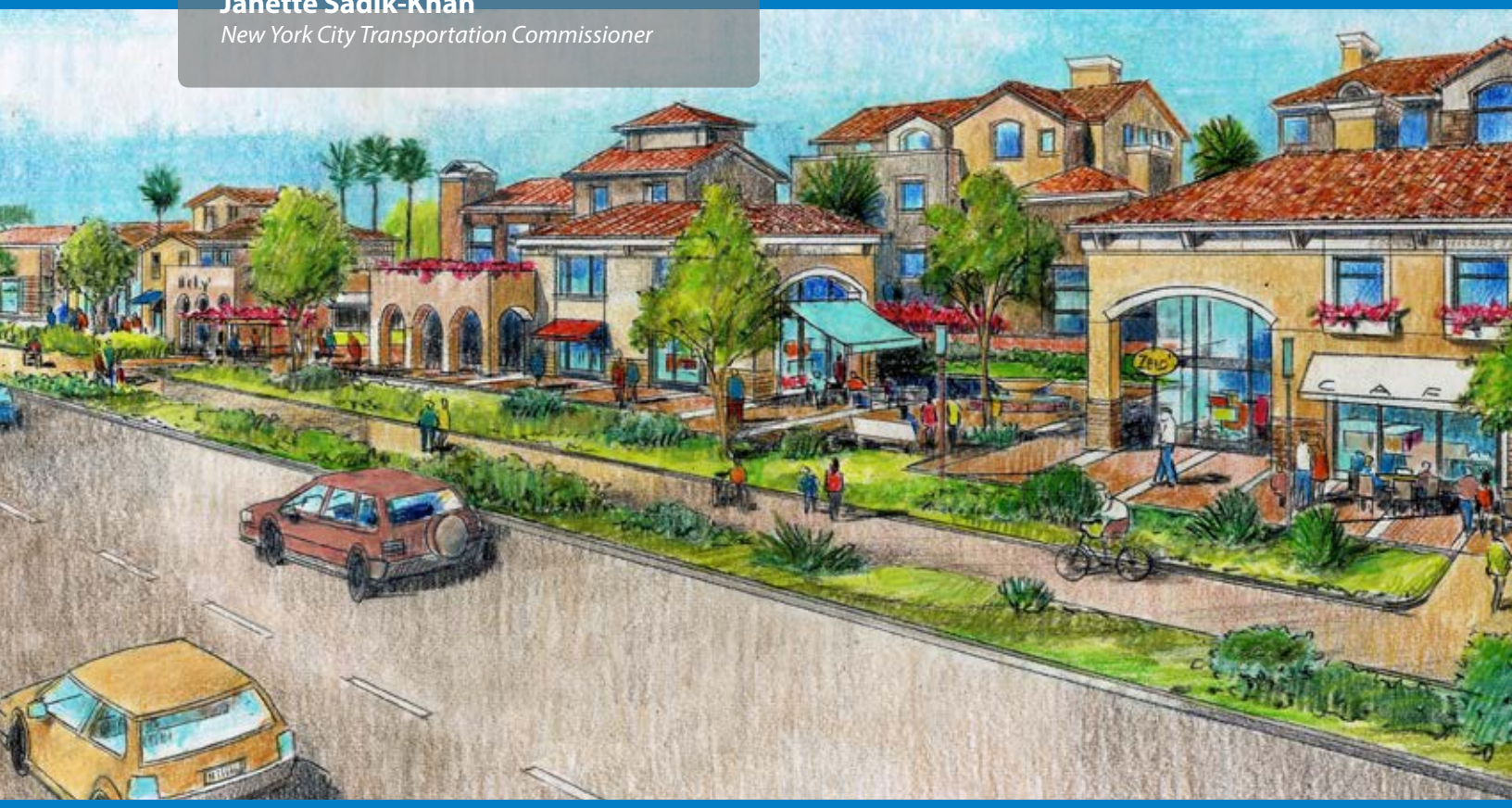
Vision:

From Isolated Coast Town to Thriving City

1

"…It's a matter of balance. Until a few years ago, our streets looked the same as they did 50 years ago. That's not good business, to not update something in 50 years! We're updating our streets to reflect the way people live now. And we're designing a city for people, not a city for vehicles."

Janette Sadik-Khan
New York City Transportation Commissioner



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Vision:

From Isolated Coast Town to Thriving City

- A Coastal Village Transformed by Transportation Investment 5
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A COASTAL VILLAGE TRANSFORMED BY TRANSPORTATION INVESTMENT

It's hard to imagine Long Beach as a small, isolated beach town with a reported population of just 2,252. But in the year 1900, that's exactly what it was — before the summer of 1902, the year retired army Colonel and millionaire Charles Rivers Drake introduced an entirely different future for this sleepy little coastal village. His vision: to construct a bath house and amusement park resort along the community's beachfront, creating a weekend and summer destination for the growing population of Los Angeles and Southern California.

A visionary and a realist, Colonel Drake knew that if he built his resort destination, people would come. But first, they would need an affordable and convenient way to get there. And so, Colonel Drake turned to his colleague Henry E. Huntington, owner of an electric railway company. Huntington quickly saw the potential of Colonel Drake's ambitious vision. After lobbying the City Trustees and winning a competitive bidding process, Huntington was awarded the right to bring his electric railway from Los Angeles to Long Beach.

Huntington's electric railway line and Drake's Bath House opened for business on the same day, on July 4, 1902. And from that day forward, the lives of Long Beach residents and business owners were forever changed. For the first time in Long Beach's history, residents awoke to the sound of trolley bells and the rumbling of electric streetcars traveling down American Avenue (now Long Beach Boulevard). Before the scheduled Independence Day fireworks show began that evening, an estimated 60,000 visitors had rolled into town to celebrate the nation's birth. With hotels filled to capacity, many slept on the beach.

More than bringing residents to a resort destination, Huntington's "Red Car" trolley system brought dramatic growth and prosperity to Long Beach. As the town expanded rapidly, new trolley lines were built to facilitate this growth. In 1930, with a population now reaching over 142,000, Long Beach emerged as the second-largest city in the region. To serve this burgeoning population, over 30 miles of local streetcar tracks crossed the community's neighborhoods.

Fast forward to today. While Long Beach and Southern California have been completely transformed since the early 1900s, the vision of Colonel Drake still holds true: a community needs a convenient and affordable transportation network in order to prosper and develop to its full potential. Perhaps what Colonel Drake did not envision, however, are today's transportation networks overburdened, increasingly less convenient, and increasingly more costly. We need a new vision now, one that encompasses innovative new transportation and land use solutions that support Long Beach's continued growth and prosperity for generations to come. In the following pages, we share with you this vision.

This 1925 United States Geological Survey map shows that early Long Beach is crisscrossed with the Pacific Electric trolley system. The Pacific Electric trolley (Red Car) system allowed Long Beach to grow and prosper.

MOVING TOWARD OUR VISION FOR TOMORROW

Today, the City of Long Beach has a bold vision for its future, one that requires substantial investment in local and regional transportation systems. This Mobility Element establishes the vision, goals, policies, and implementation measures required to improve and enhance the City's local and regional transportation networks, transforming Long Beach into a community that:

- Offers flexible, convenient, affordable, and energy-efficient transportation options.
- Follows mobility practices that maintain and enhance safety while strengthening community, sense of place, urban design, and the natural environment.
- Encourages the use of the most efficient and convenient mode of travel for any particular trip.
- Embraces innovation and appropriate transportation technology.
- Maintains professional standards in transportation planning and traffic engineering.
- Integrates land use planning with a multimodal mobility network, providing people with options to choose various forms of convenient transportation.
- Plans, maintains, and operates mobility systems consistent with the principles of complete streets, active living, and sustainable community design.

Introduction:

What Does Mobility Mean to You?

2

"If we can develop and design streets so that they are wonderful, fulfilling places to be — community-building places, attractive for all people — then we will have successfully designed about one-third of the city directly and will have had an immense impact on the rest."

Allan B. Jacobs
Urban Designer

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OVERVIEW: MOBILITY MAKES AN IMPACT

Mobility, defined as the ability to move people, goods, and resources within and through a city or region, greatly affects a community's overall quality of life. When mobility systems are overburdened and inefficient, communities simply fail to live up to their full potential and the community's overall quality of life declines. A breakdown in mobility results in lost quality time, less efficient and profitable businesses, wasted energy resources, degraded air quality, and damaged natural resources.

According to the Texas Transportation Institute, the cost of congestion is more than $100 billion annually, nearly $750 for every commuter in the United States.

If you live in Southern California, you probably confront traffic congestion on a regular, if not daily, basis. The impact of this ongoing battle with traffic is felt across all aspects of life. Perhaps you're sacrificing sleep to get up early so you can beat the morning rush. If you commute to and from work, chances are, you're wasting countless hours sitting in standstill traffic. By the time you make it home, you're probably stressed and exhausted with little energy left over for your family.

Your personal well-being and quality of life are negatively affected by congestion as well. Your long commute may drain you of the time, energy, or motivation to go to the gym or park for exercise. On smoggy days, you may notice that the beautiful views of the distant mountains have disappeared, raising concerns about your child's asthma. On summer weekends, the hassles of traffic and parking may prevent you from taking that trip to the beach.

Congestion affects your bottom line as well. Your business may be less efficient and less profitable because your employees are often late to work, stuck behind an accident, or in the middle of a traffic bottleneck. There's no doubt, as a resident of Southern California, you've experienced the impact of mobility — or lack thereof — firsthand.

Why Mobility Matters

Just as poor mobility hinders quality of life, efficient, convenient, and affordable mobility systems have the potential to make life easier, better, and more enjoyable. This is especially true when these systems are combined with smart land use development.

At their best, well-designed mobility systems have the power to:

- Reduce your commute time, giving you more time to relax, sleep, participate in a hobby, or spend time with friends and family.
- Reduce your transportation costs, giving you more disposable income and wealth.
- Reduce your level of stress and give you a more positive outlook on life, thereby improving your personal and professional relationships, increasing physical activity and helping reduce obesity and related health problems and costs.
- Provide access to new customers and expand business opportunities.
- Make your employees more efficient and your business more profitable.
- Reduce pollution and greenhouse gas emissions that contribute to global warming, resulting in improved air quality.
- Reduce the amount of oil and particulates that enter the storm drains, improving the water quality of our streams, rivers, and oceans.

There's no question: transportation and mobility are extremely important issues for all communities, including the City of Long Beach. Long Beach has grown into a major population and employment center, a coastal destination,

a college and university community, and home of the second-largest maritime Port in the nation. Which means our City's mobility affects not only local residents and businesses, but the greater population and economy of Southern California as well as the nation.

Long Beach's transportation systems provide mobility for the City's residents and workers, students, shoppers, and visitors. Long Beach businesses, large and small, rely on these transportation systems to bring in employees and customers, as well as goods. The safety and attractiveness of streets, sidewalks, bicycle paths, transit facilities, seaport facilities, marinas, airport, and infrastructure are also critical to the development and preservation of Long Beach's unique and dynamic neighborhoods and business districts. So it's no wonder that enhancing mobility within and through the City of Long Beach is a key priority of our City's General Plan.

This Mobility Element presents our future plan for improving the way people, goods, and resources move from place to place. More than improving transportation and mobility, this plan is about improving the quality of life for today's generation, as well as generations to come. It's about improving the quality of our natural environment and our neighborhoods and districts. It's about opportunity, choice, and convenience. It's about making our community and region safer, more affordable, and more livable.

In 1911, the Port of Long Beach was officially dedicated. Today, it is the second-largest maritime Port in the nation and a major economic engine for the City, region, and nation.[1]

A CITY BUILT ON BOLD MOVES

History

Historically, the City of Long Beach has taken a progressive approach to transportation and mobility, making bold moves to support this community's growth, prosperity, and quality of life. The first of these moves started in 1902, the year the City Trustees granted Henry E. Huntington the rights to construct an electric railway linking the Long Beach waterfront to Downtown Los Angeles. This regional transportation connection allowed the town to quickly develop and prosper into a major city and a popular Southern California destination.[2]

The Early 1900s: First Steps

In 1909, just seven years later, the Long Beach electorate recognized that our City was ideally positioned to be more of a transportation center for the shipment of goods and products. Their next action was to approve a harbor bond issue for $245,000, used to purchase land and construct new piers, wharves, and sheds. And in 1911, the Port of Long Beach was officially dedicated. Today, it is the second-largest maritime Port in the nation and a major economic engine for the City, region, and nation.[1]

In 1923, the Long Beach City Council set aside 150 acres near the intersection of Spring and Cherry Streets for use as an airfield. In another pioneering move, the City established Daugherty Field (named after a local pioneer in aviation), connecting Long Beach to the nation's infant air transportation system. This move also attracted Donald Wills Douglas to the City, where he launched the enterprise that would become McDonnell Douglas and eventually a part of The Boeing Company. This enterprise has manufactured thousands of aircraft in Long Beach and generated thousands of aerospace jobs throughout the region.[3]

The 1950s - 1980s: Progress on the Move

The City's progressive stance on transportation continued for the next three decades. In 1958, the City adopted its first Master Plan which detailed a transition toward strategically linking land development policies to transportation infrastructure. In 1960, Long Beach residents, recognizing the value of local transit, voted to increase their property taxes to finance a municipal transit agency. This funded the formation of the Long Beach Public Transportation Company, better known as Long Beach Transit, which began operating in 1963. In 1976, Long Beach Transit added a "Dial-A-Lift" service, making it the first major transit system in the country to offer specialized service to the disabled.[4]

The 1980s saw the integration of progressive transportation and land use projects to help revitalize Downtown Long Beach. In 1982, the City and Long Beach Transit constructed a state-of-the-art transit and pedestrian mall, an initiative that would bring a new wave of construction and redevelopment to Downtown Long Beach. These projects included the construction of major hotels, an expanded convention and entertainment center, office towers, and the World Trade Center.[4]

Donald W. Douglas opened the new aircraft assembly plant adjacent to Daugherty Field in Long Beach on the eve of World War II. During its 65-plus-year history, McDonnell Douglas (now Boeing) 717 Manufacturing Plant in Long Beach has produced more than 15,000 commercial and military airplanes.

The 1990s and the Aughts: Multimodal Mobility

It seems history does indeed repeat itself. On July 14, 1990, eighty-eight years and 10 days after the first Pacific Electric "Red Car" rolled into Long Beach from Los Angeles, the Los Angeles County Metropolitan Transportation Authority reestablished passenger rail transit service between Long Beach and Los Angeles with the launch of their first light rail train, the Metro Blue Line. Expected ridership for the Blue Line predicted around 5,000 passengers per day. The reality far exceeded those expectations. Today, over 90,000 people choose the convenience of the Blue Line during a typical workday.[5]

In 1991, the City adopted a General Plan Transportation Element that was, in many ways, ahead of its time. The 1991 Transportation Element called for several innovative strategies, including a balanced approach to solving local and regional transportation problems. The plan also identified the importance of transit, bicycling, and walking in managing the demands of transportation and neighborhood traffic to achieve local and regional goals.[6]

On July 14, 1990, eighty-eight years and 10 days after the first Pacific Electric "Red Car" rolled into Long Beach from Los Angeles, the Los Angeles County Metropolitan Transportation Authority reestablished passenger rail transit service between Long Beach and Los Angeles with the launch of their first light rail train, the Metro Blue Line.

In 1994, the Port of Long Beach and the Port of Los Angeles joined together to make a bold move, purchasing the Alameda Railway Corridor for $235 million. Together, they constructed a grade separated freight rail "expressway" that connects the national rail system near Downtown Los Angeles to the Ports of Los Angeles and Long Beach. This move is credited with significantly relieving congestion on local freeways and reducing the air quality effects of Port operations.[7]

The 2000s brought more progressive approaches to enhancing our City's transportation. In 2007, the Long Beach City Council established a vision to become the most bicycle-friendly large city in the United States. Since announcing this vision, the City has implemented several innovative bicycle projects, including the green lane "sharrow" in Belmont Shore, dedicated bike lanes on Third Street and Broadway, and the Vista Bicycle Boulevard, bike corrals, and the new state-of-the-art Bikestation. While not included in the 1991 Transportation Element, the City implemented these projects spurred by the strong advocacy and support of the local bike community. This Mobility Element details plans for additional bicycle projects and other innovative ideas for relieving our City's traffic challenges.

Combined, these tactics taken by the City of Long Beach have drastically shaped the growth and development of our community, improving both our economy and our quality of life. To address the challenges of today and tomorrow and to ensure that our City continues to thrive, more forward-thinking strategies will be needed in the years ahead.

Big Steps for Today and Tomorrow

Today, the City of Long Beach is committed to continuing its tradition of making progress in transportation and mobility. This commitment is seen in one of the primary strategies of the overall Long Beach General Plan: to reduce dependence on the automobile in order to achieve multiple and interrelated goals, including:

» Increased mobility.

» Reduced greenhouse gas emissions.

» Enhanced quality of life.

» Improved water quality.

» Compact and transit-oriented development.

» Reduced housing costs.

» Walkable neighborhoods and districts.

To achieve these goals the City will continue to embrace many past mobility concepts, including several from the 1991 Transportation Element. But the City must also broaden its overall approach and priorities related to transportation and mobility to improve our success and outcomes.

In the following pages, you'll read about the next series of bold moves that support the City's forward-looking approach and priorities in improving transportation and mobility. These strategies serve as a framework for the vision, goals, and policies within this Mobility Element.

THE NEXT BOLD MOVE: VISION IN MOTION

Balance the Needs of All Mobility Users

While the City has always supported alternative modes of transportation, the 1991 Transportation Element generally focused on making the street network safe and more efficient for automobiles by maintaining acceptable level-of-service standards. This Mobility Element takes a much more balanced approach to multiple modes of mobility. Goals, policies, and implementation measures are designed to create a system of complete streets that support and encourage all mobility users, regardless of age or ability, including pedestrians, bicyclists, transit riders, motorists, and truckers.

To promote a more balanced system, some streets will be redesigned to create corridors that prioritize walking, bicycling, and/or transit services. Moreover, on street segments where automobile travel is not emphasized or where intersection or roadway widening is not practical, the City may accept some vehicle congestion in exchange for pedestrian, bicycle, and/or transit improvements. For further discussion, see *Streets That Serve Us All* on page 76.

How could this bold move affect you and your community?

» More Convenience and Choice: Walking, bicycling, and transit will become more convenient and desirable modes of transportation. You will have more opportunities to leave your car at home for more local and regional trips.

» Better Streets: Various street corridors within your community will be improved to encourage walking, bicycling, and/or transit. Street improvements will include trees, lights, landscaping, streetscape furniture, transit amenities, enhanced pedestrian crossings, and bike lanes or routes.

» More Mobility for All: Everyone, especially children, persons with disabilities, and seniors, will have more mobility options and will be less dependent on licensed drivers to travel to and from destinations, such as schools, medical appointments, work, parks, community centers, and shopping.

» Neighborhood Specific: Your elected and appointed officials will be able to consider the priorities and values of your local neighborhood when making policy decisions. They will have more flexibility to determine how to best solve or mitigate traffic problems.

With the relatively flat topography, pleasant climate, and highly connected grid system of streets, bicycling provides a very viable alternative to driving in Long Beach.

Context-Sensitive Street Classification

In the past, the City of Long Beach has used a functional street classification system to plan and design street improvements. Under this system, the City's primary consideration in planning and designing streets has typically been the roadway's vehicle capacity, represented by roadway width and number of traffic lanes. In general, functional street classification systems do not consider the context of adjacent land uses and buildings, nor the role of walking, biking, and transit along the street corridor.

In comparison, a context-sensitive street classification system categorizes a jurisdiction's streets into a hierarchy of street types organized by both function and community context, taking into account all road users and the character of adjacent properties and buildings. By using a context-sensitive approach, the City of Long Beach will address the function of the street, neighborhood character, and the needs of all mobility users. This approach will help create a more balanced mobility system, give people more transportation choices, and help with the integration of mobility, land use, and urban design objectives for better "placemaking." For further discussion, see *Creating Context-Sensitive Designs* on page 72.

Most memorable places within Long Beach are experienced within the visible zone formed by the buildings that face the street and including the sidewalks and roadway. The cross section below illustrates the major elements that contribute to how we perceive and experience most neighborhoods.

Our frame of reference is usually limited to the lower three floors of a building when we are a pedestrian on the sidewalk and include the building's street wall, the sidewalk width (setback, walking zone, and curb zone), landscape (parkways and street trees), lighting (pedestrian and roadbed), and amenities (furnishings, wayfinding signs, transit shelters).

How could this bold move affect you and your community?

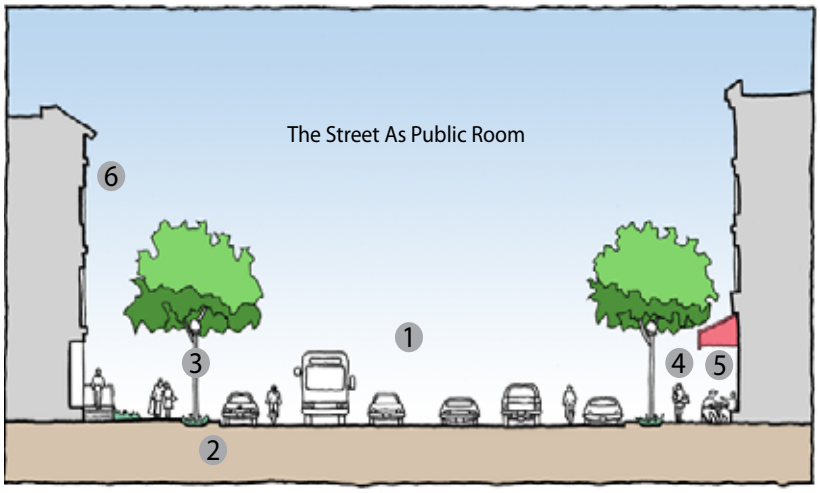
» More Choices: A more multimodal, balanced, and complete street network that provides more choices to take multiple modes of transportation.

» Better Planning: Added consideration given to context-sensitive solutions by elected and appointed officials when evaluating plans, development applications, and mitigation measures.

» Fewer Cars: For families that choose to live within walkable neighborhoods and/or near transit, the option to live with fewer or no cars.

» Reduced Truck Traffic: Reduction in truck traffic through residential neighborhoods as local delivery trucks are relegated to using designated local delivery routes.

» Safer Neighborhoods: Traffic-calming features that discourage high-speed, cut-through traffic and encourage drivers to stay on corridors where auto traffic is emphasized, resulting in safer and more livable neighborhoods.



Elements of the Street As Public Room

1 Street
2 Curb Zone
3 Planting/Amenity Zone
4 Walk Zone
5 Setback
6 Streetwall

The public room of the street is comprised of six major elements: the street, curb zone, landscaping, walking zone, building setbacks, and the streetwall created by buildings. The street itself may include parking stalls, bike lanes, travel lanes, and a median. These elements work together to establish the character of the street, and in turn, the neighborhood.

Driving Efficiencies

Long Beach is mostly a built-out city with a developed street network. Very limited opportunities exist to acquire additional rights-of-way to widen streets and accommodate additional vehicular traffic. As a result, the City is aiming future improvements at making the existing mobility network more efficient by encouraging other modes of transportation (primarily walking, bicycling, and public transit) and by using innovation and technology to improve the flow of traffic along our corridors. For further discussion, see *How Corridors Become Complete Streets* on page 88.

How could this bold move affect you and your community?

» Less Traffic: The more people walk, bike, or take transit for local and regional trips, the fewer cars clogging up our roadway system, making them more efficient.

» Better Coordination: Traffic signals along major corridors will be better coordinated to more efficiently move vehicles during peak traffic hours.

» Faster Flow: Parking will be prohibited along certain corridors during rush hour to facilitate the efficient flow of traffic.

» Safer Intersections: Roundabouts may be installed, where appropriate, to ease congestion, improve travel flow, and create safer intersections for all users.

» Port Traffic Improvements: Innovative improvements to the Port of Long Beach, including on-dock rail facilities, will substantially reduce the number of truck trips to and from the Port, thereby enhancing safety and increasing the capacity and travel flow along the I-710 and other freeways.

» Separate Truck Lanes: The I-710 Freeway may be improved by installing dedicated electrified truck lanes to separate Port-related traffic from regular vehicle traffic. This would improve the safety and efficiency of the freeway, improve air quality, and reduce regional commute times.

» Rush Hour Relief: Telecommuting, flexible work hours, and alternative work weeks will give people the option to avoid the rush hour commute. This will make the roadway system more efficient.

Roundabouts reduce vehicle speeds on residential streets and provide convenient movement for bicyclists.

Multimodal Connectivity

Most trips involve more than one mode of transportation. The City's goal is to create a seamless link between all modes of transportation so that trips are not disrupted by system delays, burdensome ticketing procedures, unreasonable waiting times, and extended loading and unloading periods. A key strategy of this Mobility Element is the creation of an easy-to-navigate multimodal system that promotes seamless transitions between travel modes. For further discussion, see *Spotlight on Public Transit: Catching Momentum* on page 43.

How could this bold move affect you and your community?

» Better Bicycle Access: More bike routes and bike lanes will be added to provide better bicycle access to transit stations and stops.

» Secure Bike Storage: Safe and secure bike storage will be provided at transit stations and major destinations. New housing developments will also provide a safe and secure place to store bikes.

» Pedestrian-Friendly Improvements: Street improvements along major transit routes will create a more attractive and pedestrian-friendly environment featuring more landscaping, decorative pavers, lighting, and attractive streetscape furniture and amenities. Your walk to transit stations will be more enjoyable.

» Transit-Oriented Districts: More housing options within a close and convenient walk of transit stations will be made available.

» Ticket Innovations: Transit providers will use innovative technology for patrons purchasing tickets to facilitate a more efficient process for accessing transit vehicles and making seamless transfers to other routes or systems.

» Access for Travelers and Visitors: Travelers will enjoy many convenient and affordable opportunities to access local and regional airports, cruise terminals, and rail stations. Visitors will be encouraged to take advantage of transit and ground transportation services when staying in Long Beach for conventions, cruises, and vacations.

The key to achieving a functional multimodal transportation system is providing efficient connections between different modes.

Active Transportation and Living

Active transportation uses the energy of the human body to get from place to place. Modes of active transportation include walking, bicycling, roller-skating, and skateboarding. By making active transportation a viable option for everyday travel, the City of Long Beach can help alleviate roadway congestion, reduce greenhouse gas emissions and improve air quality, improve physical health and wellness, and reduce obesity rates. For further discussion, see *Spotlight on Walking* and *Spotlight on Bicycling* starting on pages 78 and 81.

How could this bold move affect you and your community?

» More Active Choices: Residents and families will enjoy greater opportunities to walk or bike within their local neighborhoods, and experience an active lifestyle within Long Beach.

» Safer Routes: Our City's children will have safer and more convenient routes to walk or bike to schools, libraries, parks, community centers, and other local destinations.

» Universal Access: Sidewalk improvements will include sidewalks free from physical obstructions, Americans with Disabilities Act (ADA) compliant ramps, street trees, and other pedestrian amenities for the hearing, sight, and physically impaired.

» More Bike-Friendly Features: Increased number of bike lanes, bike paths, bike racks, and lockers will encourage more bicycle use.

» Decline in Obesity: An increase in active mobility will result in obesity rates declining, creating a number of public health benefits.

» Active Transportation Network: Every resident will be within a mile of a bike path, walking trail, or greenbelt repurposed or shared with utility corridor or other regional infrastructure.

Active living is an approach that integrates physical activity, such as walking to the store or biking to work, into daily routines.

Protecting Natural Resources

The transportation system has a huge impact on natural resources. Mobile sources account for approximately 30% to 40% of greenhouse gas emissions. Oil, fluids, exhaust, and particulates from automobiles also degrade water quality and marine habitats. This Mobility Element includes strategies for creating sustainable mobility systems and water infrastructure that reduce automobile travel and related environmental impacts. For further discussion, see *Moving Toward Cleaner Air* on page 96.

How could this bold move affect you and your community?

» Air Quality: Cleaner air leads to healthier residents and families.

» Alternative Fuel Vehicles: Increase access to electric charging facilities and promote the purchase of Neighborhood Electric Vehicles, electric cars, or hybrid gas/electric cars.

» Greater Permeability: Street improvements will be more porous with permeable pavement and more landscaping in medians, parkways and other sustainable stormwater management systems that filter runoff before recharging the local aquifers.

» Cleaner Waterways: Our City's streams, rivers, and beachfront will be affected by less pollution resulting in fewer beach closures and safer fishing.

Streetscapes should integrate native, drought-tolerant plant species, and innovative "first flush" stormwater techniques such as bioswales to prevent runoff into the rivers, oceans, and wetlands.

MOVING FROM VISION TO REALITY

To enact these innovative strategies for improved mobility in our City, we must first establish the plans, goals, and policies that put our vision into motion. The following sections of this Mobility Element identify and define the components needed to move from vision to reality.

In Section 3, we discuss existing and anticipated transportation challenges (local and regional) as well as new regional, State, and federal regulations that affect transportation and land use planning. We also summarize the context in which the Mobility Plan was developed.

In Section 4, we present our response to the challenges and regulations outlined in Section 3. Section 5 covers the implementation measures the City will put into place to make these mobility improvements, while Section 6 describes how the plan will be administered as well as potential funding sources for projects.

But above all, perhaps the most important element needed to move our vision to reality is the support of our community, its residents, its workforce, its businesses, its leaders. In other words: You.

Broadway and 3rd Street Protected Bikeway

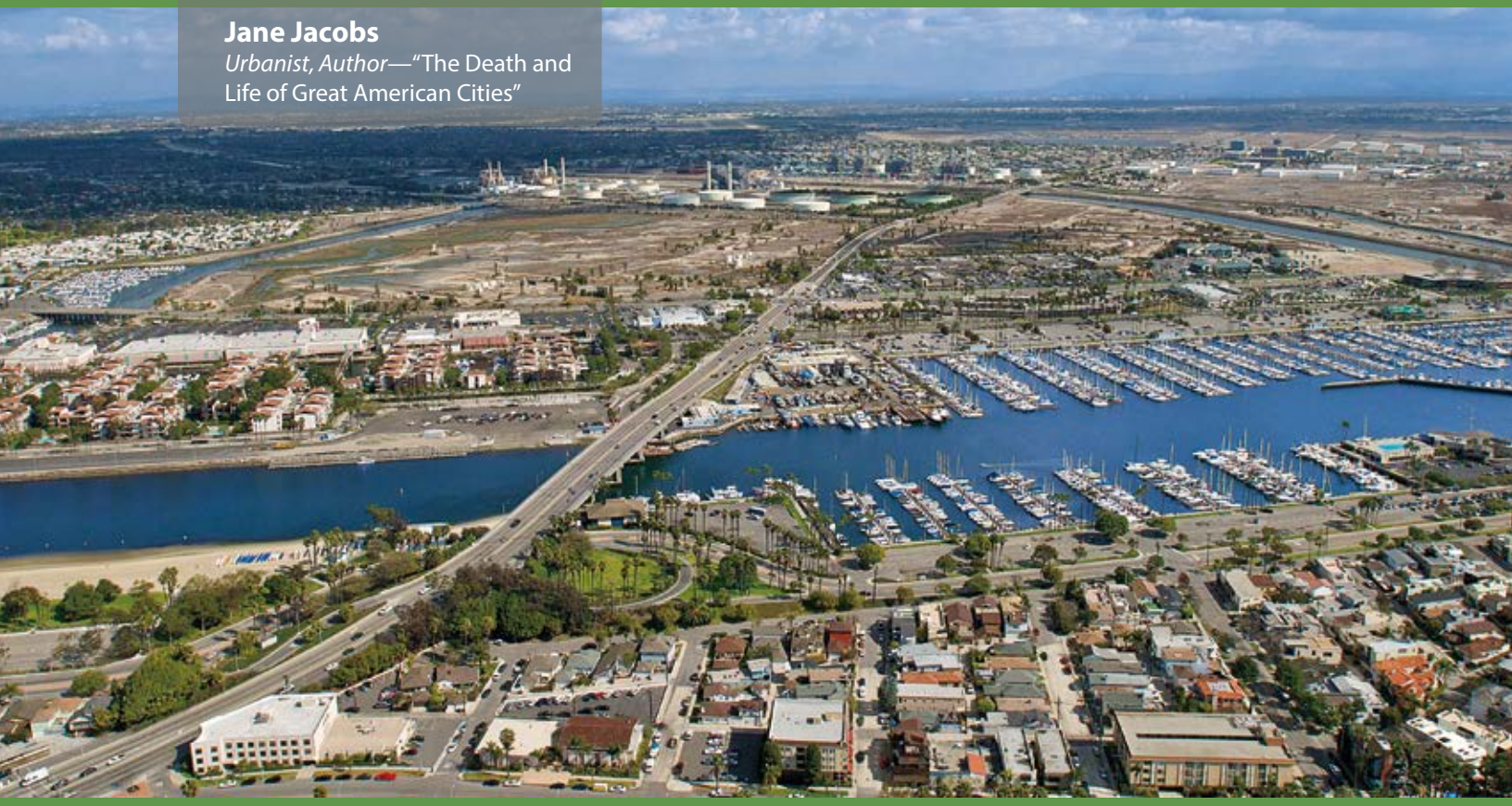
In April 2011, the City of Long Beach installed two 1-way cycle tracks on Broadway and 3rd Streets, as a Federal Highway Administration (FHWA) demonstration project to increase bicycle ridership and public safety. The project provides one-way bikeways along the left side of each street, separated from traffic by a parking lane and a raised curb. One traffic lane was removed to accommodate the protected bike lane. Traffic signals were also modified at most intersections to provide bicycle signals and left turn arrows for vehicle traffic. The results from the "before" and 12-month "after" study on pedestrian, bicycle, and motor vehicle conditions reveal positive outcomes for all modes. Implementation of the protected bikeway project on 3rd and Broadway resulted in a 33% overall increase in the number of bicyclists using the two streets. At the same time there has been a nearly 60% decrease in the total number of bike- and pedestrian-related collisions, and a 30% decrease in the number of bicyclists on the sidewalk. In addition, vehicle traffic volumes and speeds are down since project implementation.

Creating the Context

3

"Traffic congestion is caused by vehicles, not by people themselves."

Jane Jacobs
Urbanist, Author—"The Death and Life of Great American Cities"



3

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REGULATORY CONTEXT

How We're Meeting State General Plan Requirements

This Mobility Element is but one critical component of the City of Long Beach's larger General Plan for future growth. In this section of the Mobility Element, we address the California State requirements and legal mandates that determine how the strategies covered here integrate with and support our City's General Plan.

Cities and counties in California are required to prepare and adopt a General Plan, a comprehensive guide for the long-term development of a community. According to Section 65302 of the California Government Code, a community's General Plan must address seven primary topics: land use, circulation, housing, conservation, open space, noise, and safety. This Mobility Element focuses on the circulation component of the City of Long Beach General Plan: our community's systems designed to handle the movement of people, goods, and resources. In compliance with the General Plan Guidelines, this document tackles the following topics:

- The movement of people by walking, bicycling, public transit, automobiles, wheelchair, private transportation services, boats and cruise ships, airplanes, and helicopters.
- The movement of goods by cargo ships, port facilities, rail, trucks, and airplanes.
- The movement of resources, including energy resources (electricity, natural gas, and crude oil), water resources (water, wastewater, and stormwater), and communication resources (telephone, cellular phone, Internet, fiber optics, and cable).
- The City's goals for achieving greater energy independence and adoption of renewable energy.

As part of State requirements, this Mobility Element describes the general location and extent of existing and proposed major thoroughfares, transportation routes, terminals, ports, and other local public utilities and facilities. In these pages, we also strive to balance the use of our transportation network that meets the needs of all users of streets, roads, and highways, while providing safe and convenient travel options that are suitable for the urban and suburban context of the City's neighborhoods and districts.

Consistency in Planning

According to State law, a city's General Plan must be internally consistent. This means that the plan can contain no policy conflicts, either textual or diagrammatic, between the components of an otherwise complete and adequate General Plan. All elements of the General Plan, including both mandatory and optional elements, must be internally consistent.

In accordance with State law, this Mobility Element is consistent with all elements of the Long Beach General Plan. The City was intentional in its efforts to create internal consistency between the Land Use Element, the Urban Design Element, and the Mobility Element to create a unified system that links and integrates land use, mobility, and urban design principles and strategies.

The Impact of Mobility on State Legislative Acts

In developing this Mobility Element, the City of Long Beach took into consideration a number of California legislative acts recently passed that directly affect the planning and development of mobility systems in our communities. Here we provide background on these acts, and how our mobility strategies respond to them.

Complete Streets: Accounting for all Users

In 2008, Governor Arnold Schwarzenegger signed into law the Complete Streets Act (Assembly Bill 1358), calling for transportation and land use planners and engineers statewide to plan, design, and operate roadways for all users, including pedestrians, bicyclists, and transit riders. The law requires cities and counties in California to account for the needs of all roadway users when updating their General Plans, including bicyclists, children, persons with disabilities, motorists, movers of commercial goods, pedestrians, users of public transportation, and seniors.

Based on the Complete Streets Act, in December 2010 the Governor's Office of Planning and Research issued General Plan update guidelines for implementing the act's provisions. While the act was being adopted, the California Department of Transportation unveiled a revised version of Deputy Directive 64, an internal policy document that explicitly embraces complete streets as the policy covering all phases of State highway projects, from planning, to construction, to maintenance, and repair.[8]

Creating Our Own Complete Streets

The City of Long Beach and this Mobility Element place a priority on creating "complete streets" and a multimodal approach that balances the needs of all users of the streets (see *A City Built on Bold Moves*, page 11). The goal is to provide people more choices when making transportation decisions for local and regional trips.

Before (First St. and Linden Ave.)

After (First St. and Linden Ave.)

Sustaining Our Climate and Communities

The State of California's Global Warming Solutions Act (Assembly Bill 32), passed in 2006, requires a statewide reduction in greenhouse gas emissions to 1990 levels no later than 2020. To support this goal, the State passed the Sustainable Communities and Climate Protection Act of 2008 (Senate Bill 375), requiring the State's 18 Metropolitan Planning Organizations (MPOs) to connect the reduction of greenhouse gas emissions from cars and light trucks to regional land use and infrastructure planning.

According to the California Air Resources Board (CARB), passenger vehicles are in fact the top emitter of greenhouse gas emissions in California. Senate Bill 375 — the Sustainable Communities and Climate Protection Act of 2008 — asserts that "without improved land use and transportation policy, California will not be able to achieve the goals of Assembly Bill 32." To address this challenge, Senate Bill 375 calls for:

» A regional transportation planning process that directs funding to transportation projects that reduce greenhouse gas emissions by coordinating land use and transportation planning;

» A streamlined California Environmental Quality Act (CEQA) as an incentive to encourage residential development projects that help achieve greenhouse gas emission-reduction goals identified in Assembly Bill 32; and

» Better coordination between State-required regional housing planning and regional transportation planning.[8]

Improving air quality is a multilevel partnership of governmental agencies. Local governments are primarily responsible for reducing emissions in the areas of energy conversion, dust control, and trip reduction.

Investing in Regional Transportation and Sustainable Communities

In addition to these acts, a number of State laws also play an important role in the City's General Plan as well as the Mobility Element. Let's take a closer look at how these laws influence our approach to mobility across our City as we move forward.

Across the State of California, MPOs are required to prepare and update a Regional Transportation Plan (RTP). The Southern California Association of Governments, which serves as the MPO for the Southern California region, has developed an RTP that provides a vision for transportation investments throughout the region. Using growth forecasts and economic trends that project out to year 2035, Southern California's RTP considers the role of transportation in the broader context of economic, environmental, and quality-of-life goals for the future, and identifies regional strategies to address mobility needs.[9]

In compliance with Senate Bill 375, new RTPs must include a Sustainable Communities Strategy aimed at reducing vehicle miles traveled as well as greenhouse gas emissions from passenger vehicles. This strategy can be prepared by the MPO, or a subregional council of governments and the County transportation commission.

The Gateway Cities Council of Governments (27 cities including the City of Long Beach) and the Los Angeles County Metropolitan Transportation Authority (Metro) elected to prepare the subregional Sustainable Communities Strategy adopted by our City. This Sustainable Communities Strategy focuses on reducing greenhouse gas emissions through regional transportation projects and transportation, land use, and Transportation Demand Management (TDM) strategies.[10]

Managing Congestion

State law requires that a Congestion Management Program (CMP) be developed, adopted, and updated biennially for every county that includes an urbanized area. In Los Angeles County, Metro holds the responsibility for implementing the CMP. Required elements of this CMP include Highway and Roadway System monitoring, multimodal system performance analysis, the Transportation Demand Management Program, the Land Use Analysis Program, and local conformance for all the County's jurisdictions.

In October of 2010, the Metro Board adopted the 2010 CMP for Los Angeles County, which summarizes the results of 18 years of CMP highway and transit monitoring and 15 years of monitoring local growth. CMP implementation guidelines for local jurisdictions are also contained in the 2010 CMP.[11]

OUR REGION. OUR CITY.

Overview

The City of Long Beach is located in the region of Southern California as shown on Map 1. Home to 18 million people, Southern California would be the fifth most populous State in the nation if given its own statehood.[9]

Those numbers are expected to keep growing. Between 2012 and 2035, the Southern California region anticipates adding 4 million people to its cities and communities.[9] With more people comes higher demands on the region's already constrained mobility systems.

Most of the population growth is expected to occur in the suburban inland counties of Riverside and San Bernardino, resulting in more commuters traveling long distances to and from the job-rich areas of Los Angeles County and Orange County. And with the aging Baby Boomer generation, the region will soon have a greater need for efficient modes of transportation for those who can no longer drive as their main form of transportation. In fact, an estimated 18% of the regional population will be over 65 in the year 2035. This demographic will need safe, efficient, and viable options for transportation as well.[9]

One of Southern California's most populous communities is the City of Long Beach. Located in Los Angeles County, approximately 20 miles south of Downtown Los Angeles and along the Pacific Ocean, Long Beach boasted a 2010 population of 462,257 people. This makes it the seventh-largest city in California and the 36th-largest city in the nation.[12]

A City Growing Strong

As shown in Table 1, based on the Southern California Association of Governments (SCAG) traffic model, the City of Long Beach's population is projected to increase approximately 15% between 2008 and 2035. What's more, the number of households is projected to increase 16%, and the number of jobs is projected to increase 10%. While indicating a slower growth rate when compared to Los Angeles County as a whole, the City of Long Beach is still seeing an influx of people, homes, and jobs.[13]

Table 1: Projected Growth in Population, Households, and Employment Between 2008 and 2035

	2008	2035
City of Long Beach		
Population	462,200	534,100
Households	163,500	188,900
Employment	168,100	184,800
Los Angeles County		
Population	9,778,000	11,353,000
Households	3,228,000	3,852,000
Employment	4,340,000	4,827,000

Source: SCAG

Moving People Across the Region

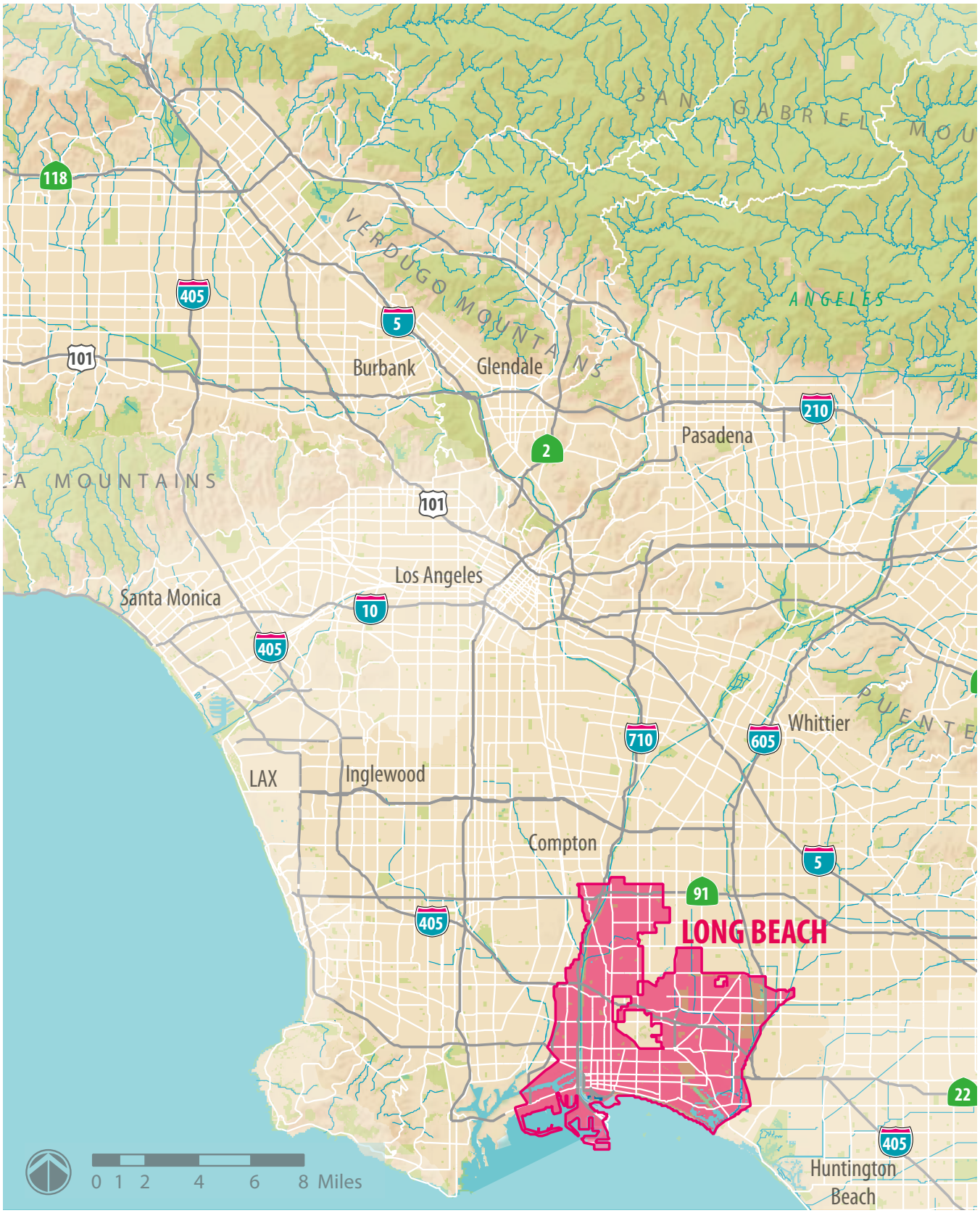
Southern California is served by a multimodal transportation network that allows people to move within the region, as well as across the State, nation, and world. This regional transportation network supports a variety of transportation modes, including the automobile, public transit, bicycling, and walking, and includes 21,630 miles of freeways, highways, and arterials; 470 miles of passenger rail lines; and the nation's largest and most complex aviation network.[9]

Much like our regional transportation network, the City of Long Beach is served by a number of mobility networks that allow for the mobility of people, both locally and regionally. Here we take a closer look at those modes of mobility.

Spotlight on Freeways and Highways: Connecting Destinations

Planned and developed after World War II, Southern California's freeway and highway system was built to address transportation bottlenecks on regional roads and railways. Faced with the region's booming population, Southern California leaders embraced the construction of freeways and "parkways" to solve the region's transportation problems. In 1947, the California Department of Public Works (now Caltrans) introduced a comprehensive freeway plan for Los Angeles. This plan included several freeways and parkways that would intersect Long Beach: San Diego Freeway (I-405), Long Beach Freeway (I-710), Artesia Freeway (SR-91), and San Gabriel River Freeway (I-605).[14]

Map 1:
REGIONAL LOCATION



Eventually, several of these parkways and freeways became part of today's Interstate Highway System, funded by the Eisenhower Administration in 1956. The Sepulveda Parkway became Interstate 405, the Long Beach Freeway became Interstate 710, and the Harbor Parkway became Interstate 110, while the other parkways and freeways became State Routes. Map 1 shows the modern day freeway and highway system that serves Long Beach and the greater Southern California region.

San Diego Freeway (I-405)

Although serving as a north-south regional travel corridor, the San Diego Freeway (I-405) runs east-west through the middle of the City of Long Beach. The 405, as it's commonly known, provides regional access to Interstate 5 and communities in Los Angeles County and Orange County. It also provides regional access to the Long Beach Airport and is one of the most congested freeways in the United States.

Long Beach Freeway (I-710) and Harbor Freeway (I-110)

The Long Beach Freeway (I-710) runs north-south on the City's west side. Along with the Harbor Freeway (I-110) located just west of the City, I-710 is one of the major routes for trucks transporting goods from the Ports of Long Beach and Los Angeles to the rail yards and distribution centers in Downtown Los Angeles and provides connections to other east-west corridors.

Artesia Freeway (SR-91) and San Gabriel River Freeway (I-605)

The Artesia Freeway (SR-91) runs east-west through the northern part of Long Beach, connecting the City to several communities in Los Angeles County, Orange County, and the Inland Empire. East Long Beach is served by the San Gabriel River Freeway (I-605) running north-south and connecting to cities of the San Gabriel Valley.

State Routes

Other State Routes that serve Long Beach include the Garden Grove Freeway (SR-22) and Pacific Coast Highway (SR-1).

Congestion in Our City

Within the City of Long Beach, freeways and highways are generally congested in the morning and evening commute hours. Congestion on the I-710 fluctuates throughout the day, based on the volume of truck traffic entering and leaving the Port of Long Beach and other traffic to and from Downtown Long Beach. Beach traffic can also cause congestion, especially on weekends during the summer months.

Freeway and Highway Maintenance

All freeways and State highways are maintained by the California Department of Transportation (Caltrans). Caltrans District 7 serves Los Angeles County and the City of Long Beach.

Congestion Relief

After World War II, Southern California freeways and highways replaced the region's once prominent rail transportation network. Many of these major arteries of transportation are now being redesigned and improved to accommodate central railways and dedicated busways for transit.

Interestingly, planners back in the 1930s had hoped to include light rail lines within the medians of the planned freeway network. Eight decades later, their original idea is only now coming to fruition.[14]

In another effort to reduce congestion, freeways and highways within the region are receiving the addition of carpool and express toll lanes to discourage single-occupancy vehicle trips. These lanes give people an economic incentive to carpool, thereby reducing vehicle miles traveled and related greenhouse gas emissions. Drivers of single-occupancy vehicles have the choice to travel on the more congested lanes or pay to access the convenience of the express lanes.

Local Street Network: The Streets Where We Live

Long Beach's local street network contains infrastructure that allows people to walk, bike, drive, and ride transit to and from local and regional destinations. The City's street system is arranged in a grid pattern, typical of most major cities in Southern California. Major streets are generally spaced about one-mile apart, with intermediate minor arterials spaced approximately a half-mile apart.

In the older Downtown area of the City (south of Anaheim Street), blocks are smaller and the street spacing is much closer, at one-quarter-mile intervals or less. Local and collector streets are located between the major streets and provide access to adjacent homes and businesses.

Connectivity to Adjacent Cities

The City of Long Beach is bounded by the cities of Paramount, Bellflower, and Lakewood to the north, Hawaiian Gardens, Cypress, Los Alamitos, Rossmoor, and Seal Beach to the east, the Pacific Ocean to the south, and Carson, Rancho Dominguez, and Compton to the west/northwest. The City of Long Beach completely surrounds the city of Signal Hill, which is loosely bounded by Wardlow Road and Spring Street to the north, Redondo Avenue to the east, Pacific Coast Highway to the south, and Atlantic Avenue to the west.

Our City is connected to those neighboring cities via a network of arterial roadways. Lakewood Boulevard (SR-19) serves as the main north-south Regional Corridor within east Long Beach, and extends north from Pacific Coast Highway through Lakewood. Pacific Coast Highway (SR-1) serves as the main east-west Regional Corridor within the City, and extends east through Los Angeles and south-west through Seal Beach. Several boulevards and avenues also serve as connectors to adjacent jurisdictions, including, but not limited to: Long Beach Boulevard, Cherry Avenue, Wardlow Road, and 7th Street.

Spotlight on Bicycling: Linked by Regional Bikeways

Roadways aren't our only means of intercity connection. A network of bikeways (Class I bike paths, Class II bike lanes, and Class III bike routes) crisscross Long Beach and link to neighboring jurisdictions. Class I bike paths extending north-south through the City include the San Gabriel River/ Coyote Creek bike path on the eastside and Los Angeles River bike trail which extends along the western border of Long Beach from the Shoreline bike path in Downtown Long Beach north to the City of Paramount. The San Gabriel River bike trail extends along the eastern border of Long Beach from the Pacific Ocean north to Lakewood, connecting to the Coyote Creek bike path near the Orange County border and continuing north to Rossmoor and Los Alamitos.

Class I bikeways extending east-west through the City include the Shoreline Beach bike path and the Heartwell Park bike path. The Shoreline Beach bike path extends along the southern boundary of Long Beach along the waterfront from the Los Angeles River to 54th Place near Naples. While it doesn't quite reach Seal Beach, the Shoreline Beach bike path does connect to other Class II and III bikeways that extend east via 54th Place, Bay Shore Avenue, and 2nd Street in southeast Long Beach. The Heartwell Park bike path extends along the northern border of Long Beach via Carson Street from the Lakewood Golf Course east to Hawaiian Gardens.

TAMING OUR CITY'S TRAFFIC PROBLEMS

Following the Traffic Flow

Typically, travelers will encounter more traffic on the City's east-west arterials than on the City's north-south arterials. This heavier congestion can be attributed to the east-west roadways that connect to cities to both the east and west. In comparison, the north-south roadways terminate at the ocean and only connect to cities to the north, resulting in less traffic. The east-west streets, such as Pacific Coast Highway, Anaheim Street, 7th Street, and Ocean Boulevard, generally carry two to three times as much traffic as most of the corresponding north-south streets, such as Pacific Avenue, Long Beach Boulevard, and Atlantic Avenue. Second Street is a major route to coastal communities and has two major impacted intersections — Livingston and PCH.

Most street corridors and intersections in the City have relatively good levels of service. During peak commute periods, the City — like most cities — does experience areas of congestion. To alleviate these areas, corridors with greater vehicle capacity can be reconfigured to encourage other modes of transportation. By reducing the number and/or width of vehicle travel lanes, some corridors could accommodate bike paths or bike lanes, wider sidewalks featuring streetscape furniture and amenities for pedestrians, and/or dedicated travel lanes for transit services.

Fast Fact

Streets, alleys, and other public rights-of-way comprise approximately 20% to 25% of land area in Long Beach. That comes out to almost 300-million square feet of land used by people every day! While the existing network must continue to function as mobility infrastructure, we're looking at strategies to transform streets into quality public spaces.

Evolving the Way We Evaluate Road Performance

In these pages, you've likely come across the term "level of service." Level of service refers to a system used to evaluate the performance of roadway segments and intersections. Similar to elementary school grades, the level of service of a roadway segment or intersection can range from A (best conditions with free-flowing traffic) to F (worst conditions with heavy congestion, back-ups, and travel delays). Planners and engineers use the level of service rating to identify transportation problems and prioritize improvements. Facilities with a level of service of E or F are generally considered in need of improvement.

The conventional level of service approach has been widely adopted and seems to make sense; however, it's also caused some challenges. Implementing this level of service system has resulted in automobile-centric street corridors and intersections that often ignore the needs of other roadway users, mainly pedestrians, bicyclists, and transit riders. For example, streets and intersections that carry a significant number of vehicular trips may receive a failing score under this current system. To maintain an acceptable level of service, the conventional approach is to widen the street or intersection with additional travel lanes and/or turning lanes.

This may improve the flow of vehicle traffic, but it can often degrade walking and bicycling conditions, as well as discourage infill development, which brings with it pedestrians, bicyclists, and transit riders. What's more, analysis based on the traditional level of service approach does not give specific consideration to other modes of transportation such as transit service that may be working efficiently to move lots of people from point A to point B.

To address these issues, some cities and counties are adopting more flexible policies to solving traffic problems. For example, some communities have started accepting a lower (worse) automobile level of service standard in their downtowns and in urban neighborhoods or along transit corridors to help encourage higher density development that might otherwise not be permitted. At the same time, these cities are increasing capacity for other modes like transit and bikes.

Historically, the City of Long Beach has used a conventional level of service approach. This Mobility Element proposes a bold departure from this method and moves toward a multimodal level of service methodology and standard where and when it is appropriate to do so (see Section 4: *Mobility Plan: Keeping Our City on the Move*).

Multimodal level of service offers another solution to addressing roadway capacity. This approach is more closely aligned with the Complete Streets Act mentioned earlier in this section, which looks at how various roads can be effectively and safely used by modes other than automobiles. This complete streets approach is well suited to Long Beach, where not all roads are suited for all modes. By assessing multimodal level of service, we can gauge how certain streets currently work for pedestrians, transit users, and bicyclists. What's more, we can evaluate opportunities for street improvements that encourage other modes of transportation beyond the automobile.

Multimodal level of service takes a three-pronged approach to measuring the success of roadways and streets.

Transit Level of Service: Assessed by looking at transit frequency; the hours of transit service operation; number of bus stops; the presence of bus shelters/benches; the average passenger trip length; route frequency; load factor; on-time performance; and scheduled speed.

Pedestrian Level of Service: Looks at traffic/pedestrian density, road crossing difficulty, and the separation between traffic and pedestrians, including bike lanes, parallel-parked cars, and landscape.

Bicycle Level of Service: Based on environmental and design factors that affect the bicyclists' experiences, including shoulder width, on-street parking occupancy percentage, quality of the pavement, and the speed of the vehicles on the urban street.

By using multimodal level of service techniques, the City stands to better understand which streets and routes are best for bicycle and transit users, as well as how to improve the travel experience for other modes.

A Closer Look at Level of Service

To better understand the impact of current and future traffic conditions, we must also understand the way traditional level of service works. Level of service (LOS) is a system used to measure the efficiency and performance of traffic operations at a specific location. For example, level of service may look at the volume-to-capacity (V/C) ratio at a particular intersection over the course of an hour. Levels range from A to F, with A representing excellent (free-flow) conditions and F representing extreme congestion.

Here in Long Beach, level of service was initially calculated at 88 key intersections throughout the City. Consistent with City of Long Beach guidelines for traffic impact analyses, traffic operating conditions for study intersections were analyzed using the Intersection Capacity Utilization (ICU) methodology. The ICU methodology compares the level of traffic during the peak hours at an intersection (volume) to the amount of traffic that intersection is able to carry (capacity). Intersections with vehicular volumes that are at or near capacity (V/C > 1.0) experience greater congestion and longer vehicle delays.

For an overview of the level of service concept and the operating conditions expected under each level of service for signalized intersections, take a look at Table 2.

Table 2: Intersection Level of Service (LOS) Definitions

Level of Service		Description	Signalized Intersection (V/C) Ratio
A		Excellent operation. All approaches to the intersection appear quite open, turning movements are easily made, and nearly all drivers find freedom of operation.	0-0.60
B		Very good operation. Many drivers begin to feel somewhat restricted within platoons of vehicles. This represents stable flow. An approach to an intersection may occasionally be fully utilized and traffic queues start to form.	> 0.60-0.70
C		Good operation. Occasionally drivers may have to wait more than 60 seconds, and back-ups may develop behind turning vehicles. Most drivers feel somewhat restricted.	> 0.70-0.80
D		Fair operation. Cars are sometimes required to wait more than 60 seconds during short peaks. There are no longstanding traffic queues.	> 0.80-0.90
E		Poor operation. Some longstanding vehicular queues develop on critical approaches to intersections. Delays may be up to several minutes.	> 0.90-1.00
F		Forced flow. Represents jammed conditions. Back-ups from locations downstream or on the cross street may restrict or prevent movement of vehicles out of the intersection approach lanes; therefore, volumes carried are not predictable. Potential for stop-and-go-type traffic flow.	> 1.00

Current Traffic Conditions

Since 2008, traffic volumes have generally remained unchanged or even lessened in most locations. To measure the impact of current traffic conditions, we must have something to compare it to. Given the economic downturn in 2008 and higher gasoline prices, 2008 traffic volumes serve as a valid baseline for existing traffic conditions for purposes of this Mobility Element.

Level of service graded at D is generally considered to be the lowest acceptable level. Levels of service E and F are considered to be in need of improvement. As shown on Map 2, six of the 88 intersections originally measured for level of service currently operate at levels of E or F during the a.m. peak hour, while 19 intersections currently operate at levels of E or F during the p.m. peak hour. These intersections are:

Intersection	AM Peak Hour LOS	PM Peak Hour LOS
Alamitos Ave & 7th St	E	
Alamitos Ave & 3rd St	F	
Alamitos Ave & Broadway		E
Alamitos Ave/Shoreline Ave & Ocean Blvd	F	F
Alamitos Ave & Anaheim St		E
Long Beach Blvd & Artesia Blvd		F
Santa Fe Ave & Pacific Coast Hwy	E	E
Santa Fe Ave & Wardlow Rd		E
Atlantic Ave & Del Amo Blvd		E
Atlantic Ave & Artesia Blvd		E
Cherry Ave & Wardlow Rd		E
Cherry Ave & Del Amo Blvd		E
Cherry Ave & Artesia Blvd	E	F
Paramount Blvd & Artesia Blvd		E
Redondo Ave & Ocean Blvd		E
Redondo Ave & 7th St	E	
Lakewood Blvd & Del Amo Blvd		F
Livingston Dr & 2nd St		E
Pacific Coast Hwy & Anaheim St		E
Bellflower Blvd & Carson St		E
Los Coyotes Diagonal & Carson St		F
Pacific Coast Hwy & 2nd St		F

The remaining intersections currently operate at levels of D or better. Please see Table 10 in Appendix on page 145 for a complete list of all 88 evaluated intersections.

Most of the existing roadway congestion in the City of Long Beach tends to concentrate at intersections along certain streets. These streets include, but are not limited to, portions of the following roadways:

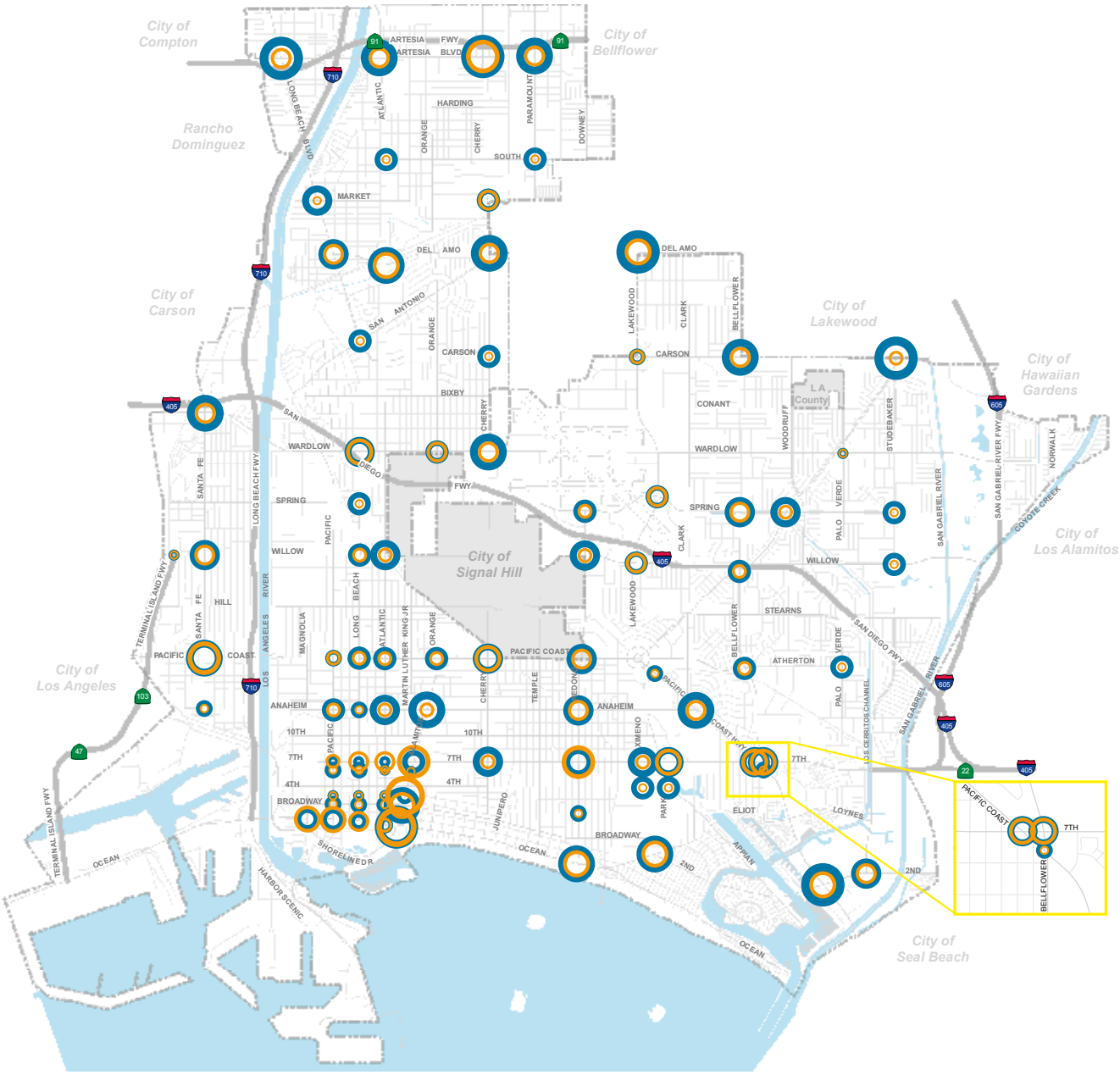
North/South Congested Corridors

» Santa Fe Avenue
» Atlantic Avenue
» Alamitos Avenue
» Cherry Avenue

East/West Congested Corridors

» Artesia Boulevard
» Del Amo Boulevard
» Carson Street
» Anaheim Street
» 7th Street
» Ocean Boulevard
» 2nd Street

Map 2:
2008 CONGESTED INTERSECTIONS



Legend

Level of Service (LOS)	AM	PM
A (Excellent Operation)		
B (Very Good Operation)		
C (Good Operation)		
D (Fair Operation)		
E (Poor Operation)		
F (Forced Flow)		

Future Traffic Conditions

So how are today's traffic conditions in our City expected to change over time? To answer this question, an analysis of future projected 2035 traffic conditions was conducted, based on future 2035 anticipated land use and buildout conditions provided by the Southern California Association of Governments (SCAG) Traffic Model forecasts.

The results indicate that nine of the 88 intersections measured for level of service are projected to operate at levels of E or F during the a.m. peak hour, while 30 intersections are projected to operate at levels of E or F during the p.m. peak hour. These intersections are listed below.

Intersection	AM Peak Hour LOS	PM Peak Hour LOS
Alamitos Ave & 7th St	E	
Alamitos Ave & 3rd St	F	
Alamitos Ave & Broadway	E	F
Alamitos Ave/Shoreline Ave & Ocean Blvd	F	F
Long Beach Blvd & Market St		E
Long Beach Blvd & Artesia Blvd		F
Santa Fe Ave & Pacific Coast Hwy	F	F
Santa Fe Ave & Willow St		E
Santa Fe Ave & Wardlow Rd		E
Atlantic Ave & Willow St		E
Atlantic Ave & Del Amo Blvd		F
Atlantic Ave & Artesia Blvd		F
Alamitos Ave & Anaheim St		E
Cherry Ave & Pacific Coast Hwy	E	F
Cherry Ave & Wardlow Rd		F
Cherry Ave & Del Amo Blvd		F
Cherry Ave & Artesia Blvd	E	F
Paramount Blvd & Artesia Blvd		F
Redondo Ave & Ocean Blvd	E	E
Redondo Ave & 7th St	E	E
Redondo Ave & Anaheim St		E
Redondo Ave & Pacific Coast Hwy		E
Redondo Ave & Willow St		E
Lakewood Blvd & Del Amo Blvd		F
Livingston Dr & 2nd St		E
Park Avenue & 7th St		E
Pacific Coast Hwy & Anaheim St		E
Bellflower Blvd & Carson St		E
Bellflower Blvd & Spring St		E
Los Coyotes Diagonal & Carson St		F
Studebaker Rd & 2nd St		E
Pacific Coast Hwy & 2nd St		F

The remaining intersections are projected to operate at levels of D or better. Please see Table 11 in Appendix on page 146 for a complete list of all 88 evaluated intersections.

As with current traffic conditions, future conditions are expected to occur at intersections along certain corridors — the same corridors currently impacted, with the addition of all or portions of the following roadways:

North/South Congested Corridors (2035)

» Long Beach Boulevard

» Redondo Avenue

» Bellflower Boulevard

East/West Congested Corridors (2035)

» Wardlow Road

» Willow Street

» Pacific Coast Highway

» 7th Street

So what do these findings surrounding traffic conditions — both current and projected — mean to our City and those who travel within it? As shown on Table 3, we have been able to identify congestion "hot spots" within Long Beach caused by a variety of underlying issues: surrounding land use, proximity to adjacent freeways, signal timing, and inadequate roadway and/or intersection capacity, to name a few.

Table 3: Key Congestion Hot Spots in the City of Long Beach

Congestion "Hot Spot"		Possible Causes
1	Artesia Boulevard (between Long Beach Boulevard and Paramount Boulevard)	Trip Generating Land Uses (Compton Community College, Jordan High School, Grant Elementary School, Bellflower Towne Shopping Center); Proximity to SR-91 on/off ramps; Congestion on SR-91 resulting in spillover traffic.
2	Del Amo Boulevard (between Atlantic Avenue and Lakewood Boulevard)	Trip Generating Land Uses (Lakewood Square Shopping Center); Proximity to I-710 on/off ramps.
3	Willow Street (between Santa Fe Avenue and Redondo Avenue)	Termination of SR-103 (Terminal Island Freeway); Proximity to I-710 and I-405 on/off ramps; Use of Del Amo Boulevard as a major east-/west-oriented route; Long Beach Memorial; Metro Blue Line Park and Ride.
4	Pacific Coast Highway (between Cherry Avenue and Bellflower Boulevard)	Trip Generating Land Uses (Long Beach Polytechnic High School, Long Beach City College: Pacific Coast Campus, Community Hospital of Long Beach, CSU Long Beach, Veterans Affairs Medical Center); Proximity to major intersections of Lakewood Boulevard, Los Coyotes Diagonal, and Atherton Street (Long Beach Traffic Circle); High traffic volume as a major State Route facility.
5	Anaheim Street and 7th Street (east of Redondo Avenue)	Trip Generating Land Uses (CSU Long Beach, Veterans Affairs Medical Center, and Wilson High School).
6	Ocean Boulevard/Livingston Drive/2nd Street (east of Redondo Avenue)	Trip Generating Land Uses (Belmont Shore, Naples, Marina, Beach Access); Cut-through to Westminster Boulevard (I-405 access), Main route to coastal communities.
7	Carson Street (between Bellflower Boulevard and Los Coyotes Diagonal)	Trip Generating Land Uses (Long Beach City College: Liberal Arts Campus, Long Beach Towne Center, Long Beach Airport); Proximity to I-605 on/off ramps.
8	Alamitos Avenue (between Ocean Boulevard and Anaheim Street)	Trip Generating Land Uses (Downtown, The Museum of Latin American Art); Proximity to Downtown Long Beach district; Narrow shifting lanes; Discontinuity in the street grid east and west of Alamitos Ave.
9	Bellflower Boulevard (between Carson Street and Spring Street)	Trip Generating Land Uses (Long Beach City College: Pacific Coast Campus); Proximity to I-405 on/off ramps.

Responding to Projected Traffic Conditions

As shown on page 35, Map 2 shows the location of intersections and segments that currently suffer from congestion, and will continue to for the next several decades. Several of these intersections have been identified as ideal candidates for intersection improvements in the City's Capital Improvement Program list (see Section 5 *Implementation Strategies and Projects*).

When looking at ways to resolve traffic congestion, traffic engineers and planners typically study the worst case scenarios. This holds true for environmental studies, as well as mobility elements and other transportation system studies, such as freeway improvement studies and corridor analyses. In studying the worst case, traffic data is typically collected during the peak time of travel during the morning and evening commute time periods — avoiding holidays and weekends. This allows the studies to accurately represent conditions experienced during peak commute hours, and not the remainder of the day or week.

The studies also take into consideration that worst case conditions, such as intersections with a level of service E or F, can be severely affected by even the smallest amount of additional traffic. This often sudden onset of traffic congestion typically occurs because the roadway or intersection was already near the tipping point; where just a small amount of additional traffic can tip the traffic into unstable or unfavorable operating conditions. We've all seen this happen before: driving along the freeway at a good rate of speed, when suddenly, seemingly out of nowhere, we hit congestion and traffic comes to a crawl. This sudden congestion is triggered by some small incident on a roadway that was already nearly filled to capacity.

Small Improvements Go a Long Way

Conversely, when a roadway is operating under excellent conditions (such as level of service A or B), the roadway or intersection can still operate very well even with a large increase in traffic. So how do we keep traffic flowing on roadways and in intersections with a poor level of service? Sometimes, all it takes is a relatively small investment to initiate a large improvement in operating conditions.

Take for example an intersection operating at very poor level of service F condition. It may not be necessary to overhaul the entire intersection to get to a good level of service. If one of the intersection "legs" — the four sides of the intersection — is operating especially poorly, then adding one more lane may significantly improve operations. Perhaps its heaviest traffic flow at this particular intersection is concentrated in the left-turn lane. Going to double left-turn lanes might just be the solution to seeing a significant improvement in the traffic flow at that intersection.

Similarly, implementing multimodal improvements and reducing travel in other ways — such as telecommuting and ridesharing — might remove the top 10% of trips from the system, thus significantly relieving congestion. By identifying strategies designed to incrementally improve mobility systems, reduce trips, and replace them with other modes of transportation, this Mobility Element aims at enhancing future traffic conditions in those areas where the opportunity for improvement exists. In other areas of the City with prolonged and significant congestion throughout the day, greater measures may be required to enhance travel and reduce congestion.

As a coastal destination, traffic volumes within the City of Long Beach increase greatly during summer months. Traffic volumes on the main routes to the City's marinas and beaches increase during weekends. These sporadic traffic challenges may prove more difficult to resolve, and may come with the territory of being a city by the sea.

Manage Traffic, Manage Expectations, and Improve Efficiency

Historically, most cities — including Long Beach — have used a functional street classification system to plan and design street improvements. In this type of system, the vehicle capacity of the roadway has been the primary consideration when it comes to planning and designing streets.

Today, many communities are switching to a context-sensitive street classification system which categorizes streets into a hierarchy based on function and community context. Under this system, the street classification considers all road users — not just automobiles — as well as the character of adjacent properties and buildings.

By using a context-sensitive approach, the City of Long Beach plans to address the function of the street, neighborhood character, and the needs of all mobility users. This approach lends itself to a more balanced mobility system that also integrates land use and urban design objectives for better place-making.

Calming Traffic Where We Live

It's not just the drivers and passengers sitting inside vehicles who suffer the effects of congestion. Traffic affects the people living along the roadways as well. Local residential streets often fall victim to what feels like traffic intrusion caused by excessive vehicle speeds, above-average traffic volumes, or both.

Traffic appears particularly intrusive in neighborhoods designed primarily for people — not automobiles. Residential streets are intended to provide access to the abutting homes, not access for cut-through traffic looking for the shortest route from one area to another. So ideally, residential street volume should be very low, the only traffic coming from residents and their visitors pulling into their driveways and parking spaces.

In reality, however, Long Beach's grid system of streets means that the shortest or most convenient route to a destination is sometimes via a residential street as opposed to an adjacent arterial street. People who do not live on the street may use that roadway to get to school, to a shopping area, or even to the freeway. Over time, the residents notice the increased speeds and/or traffic volumes and look to the City to investigate the problem and provide solutions.

In response to local residential street impacts, the City of Long Beach has implemented various Neighborhood Traffic Control measures on an as-needed basis. This process, called Neighborhood Traffic Control or sometimes Neighborhood Traffic Calming, is aimed at addressing concerns from residents regarding perceived excessive speeds or excessive traffic volumes. As part of the process, the City investigates all requests related to neighborhood traffic, then determines an appropriate course of action on each request. For the most part, these Neighborhood Traffic Control efforts remain focused primarily on local residential streets; however, in some cases, Neighborhood Traffic Control can also be applied to collector streets. Neighborhood Traffic Control is never intended to address issues on major arterial streets.

The City of Long Beach employs a wide range of tactics designed to control neighborhood traffic, including but not limited to:

» Speed feedback signs (electronic speed indicators).

» Speed limit signage.

» Painted crosswalks.

» Painted stop markers on street.

» Posted turn restrictions or through-traffic movement restrictions.

» Other measures as approved by the City Traffic Engineer.

Other Neighborhood Traffic Control devices and techniques are available; however, not all of these are accepted and approved for use in Long Beach as every city has the discretion to choose what traffic control devices and techniques to incorporate. In Long Beach, City staff continuously monitors the state of the practice in Neighborhood Traffic Control to determine which techniques are likely to be most effective in addressing a specific traffic issue.

A critical component of effective Neighborhood Traffic Control is communication and coordination with emergency response teams, including fire and police, whose response time may be slowed by certain Neighborhood Traffic Control measures. To prevent this from occurring, the City of Long Beach does not allow any devices that would reduce emergency response times. City staff continues to work closely with police and fire representatives to ensure all devices and installations are approved by those agencies before implementation.

The public plays another important role in determining which Neighborhood Traffic Control tactics are used in which areas. Neighborhood Traffic Control measures can often be very controversial, appealing to one set of residents but disliked by others. For this reason, the City's installation of Neighborhood Traffic Control devices is done carefully and with as much public input as possible throughout the process.

MOBILITY OF PEOPLE

Fast Fact

According to WalkScore.com, Long Beach is the 11th most walkable large city in the nation. Based on WalkScore.com criteria, Long Beach's most walkable neighborhoods are Carroll Park, Downtown, and East Village. Long Beach's least walkable neighborhoods are El Dorado South, Rancho Estates, and El Dorado Park.[15]

Spotlight on Pedestrians: Building a Pedestrian Network

When speaking of multimodal transportation, it's important to take into account those who travel by foot. Walking is a way of life for many who live and work in the City of Long Beach. The quality of our City's pedestrian environment varies greatly from neighborhood to neighborhood. In general, the founding neighborhoods and historic districts of Long Beach are much more walkable than many of the more contemporary neighborhoods and districts in the City. Let's compare.

Designed during the streetcar era with pedestrians in mind, older areas like Downtown Long Beach, Willmore City/ Drake Park, and Belmont Shore feature smaller blocks laid out in a simple grid pattern, relatively narrow roadways, and buildings generally built close to the street along the sidewalk. These areas generally also feature sidewalks with adequate widths and pedestrian amenities such as shade trees, pedestrian lighting, benches, special sidewalk paving, and trash and recycle receptacles.

Other neighborhoods in Long Beach, especially those built after World War II, share a more auto-centric design — larger blocks with limited connections, buildings set back behind large parking lots, wide roadways with narrow sidewalks, and few pedestrian amenities.

But it's not just the public sidewalks that make up the pedestrian network across our City. Part of this network are the pedestrian paths, trails, passageways, and walkways through parks, public spaces, and other properties found across Long Beach. In the next section of this Mobility Element, we address some of the City's strategies aimed at building a better pedestrian network to ease traffic congestion.

On Track to be the Nation's Most Bicycle-Friendly City

In 2007, along with promoting a more pedestrian-friendly city, Long Beach established a vision to become the most bicycle-friendly city in the United States. Since then, we have implemented several innovative bicycle projects. The City's green lane project in Belmont Shore, which installed sharrows, bike boxes, and green bike lanes, earned a 2010 innovation award from the Institute of Transportation Engineers. In April of 2011, cyclists on two 1-way avenues in Downtown Long Beach welcomed the addition of new separated bike lanes. This project included the placement of bike signals at intersections to control safe crossings.

The City has also implemented an innovative bike signage program, with new bikeway signs located throughout Long Beach to identify designated bike routes. New signage also provides wayfinding information for cyclists, with even numbers generally assigned to east-west routes and odd numbers assigned to north-south routes. In an effort to provide sustainable transportation alternatives to the community, as well as a safe route to several neighborhood schools, the City of Long Beach is also installing a "bike boulevard" on Vista Street, extending from Temple Avenue to Nieto Avenue.

As a result of these improvements, the City of Long Beach is well on its way to becoming the most bicycle-friendly city in the nation. Today, as shown on Map 3, the City's local street network has a well-developed bicycle circulation system that includes signed bike routes (Class III bicycle facilities), striped and signed bike lanes (Class II bicycle facilities), and on-street bike paths that are physically separated from automobile traffic (Class I bicycle facilities). This on-street bicycle network system includes 15 miles of bike routes, 19 miles of bike lanes, and 29 miles of bike paths.

In addition to the on-street bicycle network, the City of Long Beach has over 60 miles of off-street bike and pedestrian paths within its boundaries. Significant paths include:

» The Shoreline Pedestrian/Bicycle Path: A 3.1-mile bike and pedestrian path extending along the beach from Alamitos Avenue to 54th Place.

» The Los Angeles River Bike Trail: A 29.1-mile bikeway that runs along the Los Angeles River and through the Downtown Marina. The path connects to the Shoreline Pedestrian/Bicycle Path.

» The San Gabriel River Bike Trail: A 28-mile bikeway that runs along the San Gabriel River and through El Dorado Regional Park.

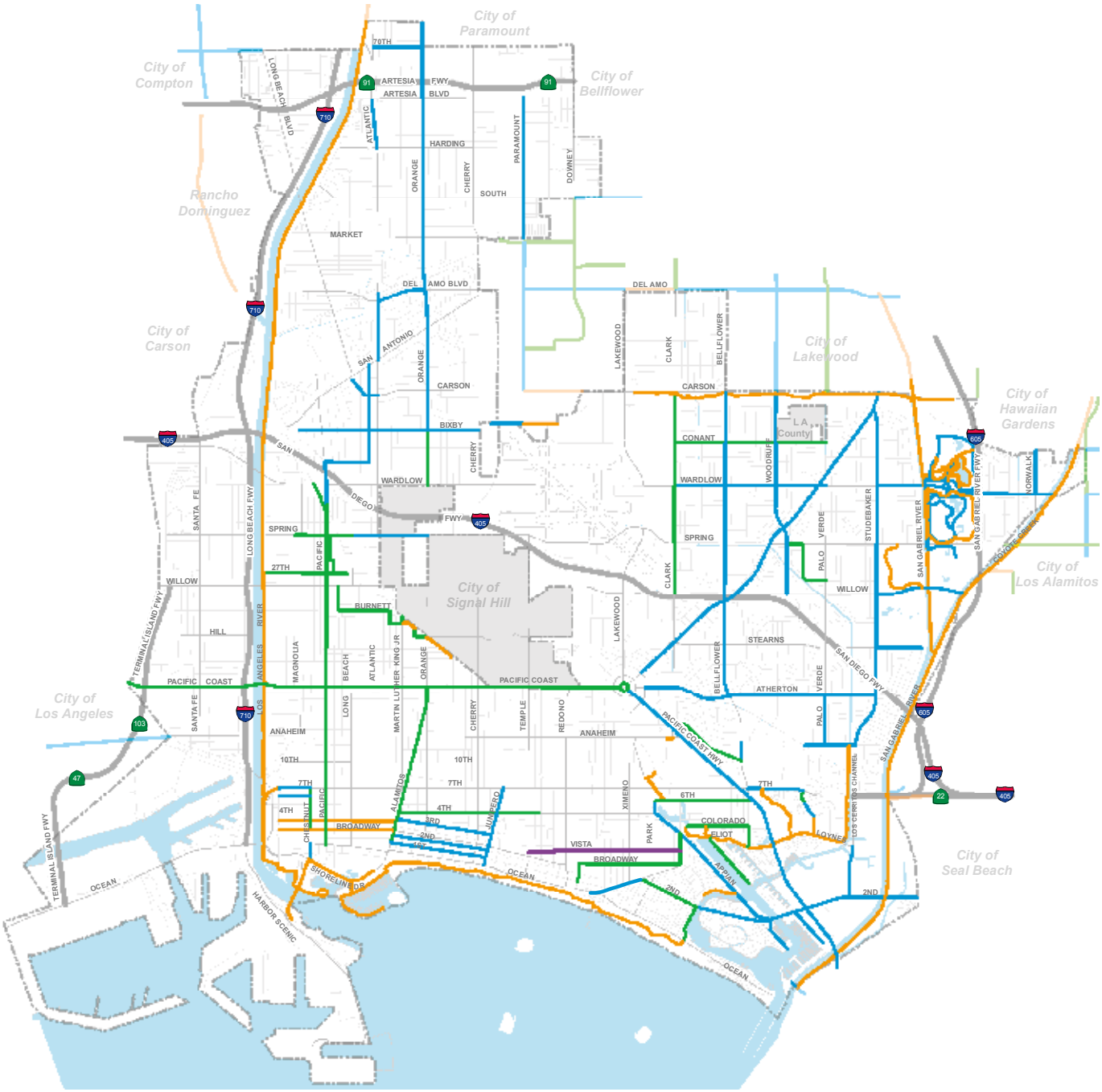
» The El Dorado Park Bike Path: A 4-mile bikeway that runs through the 450-acre scenic El Dorado Regional Park. It connects with the San Gabriel River Bike Trail at various locations.

» The Heartwell Park Bike Path: A 2.5-mile bikeway that runs through the 162-acre Heartwell Park and connects to the San Gabriel River Bike Trail and several Class 2 bike lanes.

The City of Long Beach Bicycle Master Plan establishes the long-term vision and development strategy for the City's bicycle network. The Master Plan is an important tool that will be used to implement this Mobility Element. This Mobility Element will provide the foundation for an update to the Bicycle Master Plan.

On a typical summer weekend, thousands of people use the Shoreline Pedestrian/Bicycle Path.

Map 3:
EXISTING BICYCLE NETWORK



Legend

Existing Bikeways

- Bike Boulevard
- Class I Bike Path/Protected Lanes
- Class II Bike Lane
- Class III Bike Route/Sharrows

Spotlight on Public Transit: Catching Momentum

Public transit plays a critical role in a multimodal transportation approach to planning our City's mobility strategies, as well as to linking our City with our region. Several transit agencies provide commuter rail, bus, shuttle, and paratransit services to the communities within Southern California.

The Advantages of Public Transit

According to the American Public Transit Association, public transit offers a variety of benefits for the economy, the environment, and quality of life.

Public Transit Improves Quality of Life

» Public transportation provides access to job opportunities for millions of Americans, as well as a means to get to work, go to school, visit friends, or go to a doctor's office.

» Eighty-three percent of older Americans say that public transit provides easy access to the things they need in everyday life.

» Public transportation is a vital link for the more than 51 million Americans with disabilities.

» When Americans use public transportation, they walk more. Walking increases fitness levels, leading to healthier citizens and less strain on the healthcare system.[16]

» Americans living in areas served by public transportation save 785 million hours in travel time and 640 million gallons of fuel annually, according to the most recent Texas Transportation Institute report on congestion. That means more time and money to spend on the things that matter most to you.

Public Transit Creates Jobs

» Every $1 billion invested in public transportation (capital and operations) creates and supports an average of 36,000 jobs.

» Seventy-four percent of government funding for transit is spent creating and supporting hundreds of thousands of private sector jobs.

» Public transportation is a $55 billion industry that employs more than 400,000 people.

Public Transit Builds Businesses

» Every $10 million in capital investment in public transportation can return up to $30 million in business sales alone.

Public Transit Saves Money

» An individual can save $10,000 annually by taking public transportation instead of driving and by living with one less car.

» A resident of Los Angeles County would save $907 monthly and $10,888 annually by taking transit, according to the American Public Transportation Association's "Transit Savings Report," a monthly publication.

Public Transit Is Energy Efficient

» Public transportation saves the United States the equivalent of 4.2 billion gallons of gasoline annually.

» Increased investment in public transportation is an investment in American energy independence and economic security.

Public Transit Is Good for the Environment

» Public transportation saves 37 million metric tons of carbon dioxide annually, equivalent to the emissions resulting from the electricity generated for the use of 4.9 million households (or every household in Washington, DC; New York City; Atlanta; Denver; and Los Angeles combined).

» Switching from a 20-mile roundtrip auto commute to public transportation decreases annual CO2 emissions by 4,800 pounds per year, equal to a 10% reduction in a two-car household's carbon footprint.

» Public transportation offers an immediate alternative for individuals seeking to reduce their energy use and carbon footprints. Taking public transportation far exceeds the combined benefits of using energy-efficient light bulbs, adjusting thermostats, weatherizing one's home, and replacing a refrigerator.

Overcoming Roadblocks: The First and Last Mile

Many commuters confront a barrier in their daily commute known as the first- or last-mile problem. This occurs when a commuter cannot easily or conveniently access the transit stop or station nearest to the starting point or final destination of their commute, due to distance, terrain, or pedestrian safety issues.

If the bus stop or train station is too far, if getting there is considered unsafe, inconvenient, or too time-consuming, most people will choose to drive rather than take public transit. Offering workable solutions, such as bicycling and shuttle services, that help people traverse this first or last mile increases the likelihood that residents will leave the car at home.

» Expanded public transit strategies coordinated with combining travel activity, land use development, and operational efficiencies can reduce greenhouse gases by 24%. The annual savings in vehicle costs to consumers will exceed the cost of enacting these strategies by as much as $112 billion nationally.

Long Beach Transit for Local Destinations

A municipal transit agency, Long Beach Transit (LBT) provides transit and demand-response services within the City of Long Beach and surrounding communities, as shown on Map 4. LBT operates two types of bus services, local service and a Downtown Passport circulator, within its 98-square-mile service area. Local service provided by LBT provides fixed-route service with frequent stops in the City of Long Beach and adjacent cities.

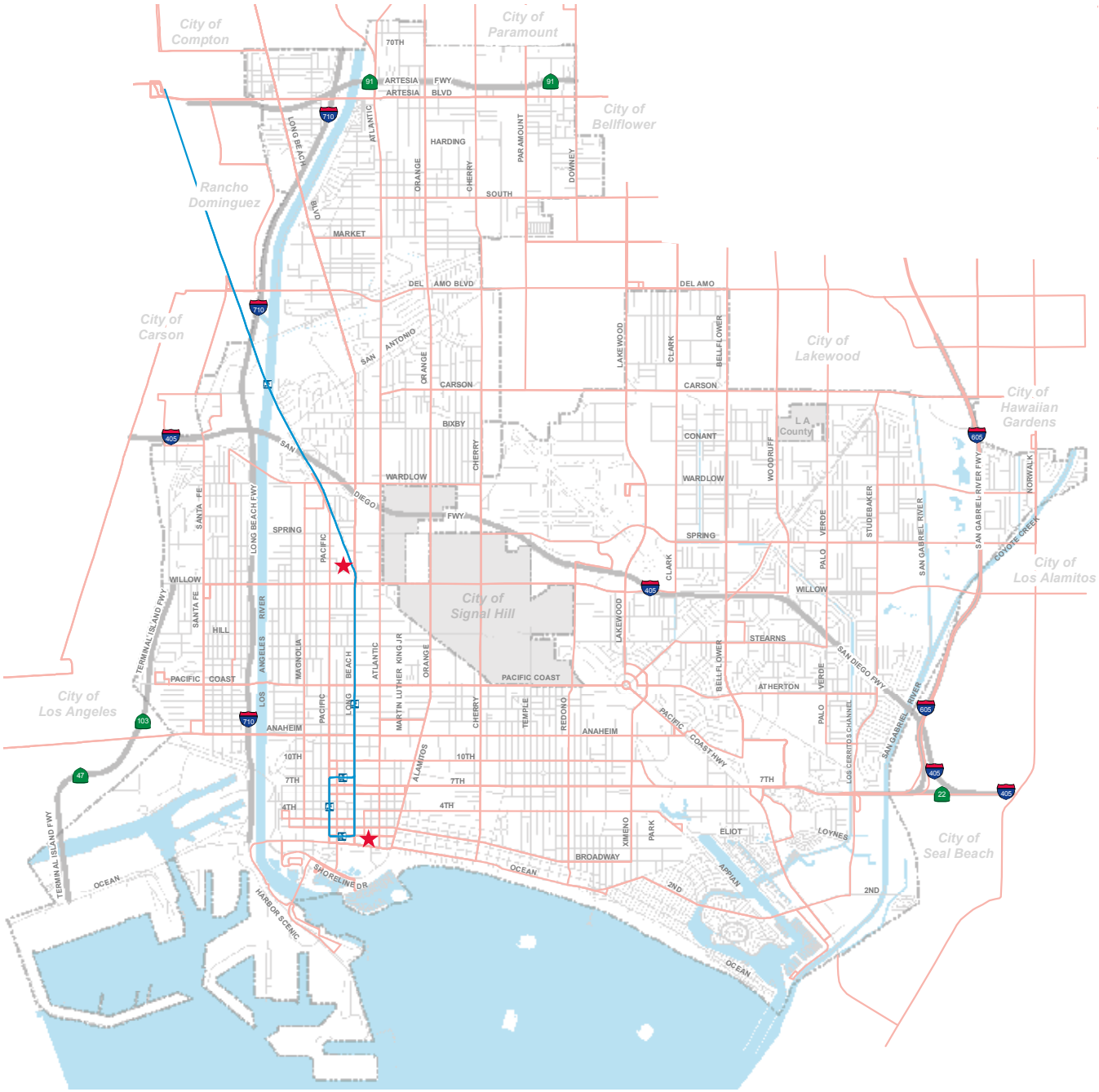
LBT's shuttle service, the Passport, provides service to many of Long Beach's popular Downtown attractions such as Shoreline Village, Pine Avenue, the Queen Mary, the Long Beach Aquarium, and Downtown Long Beach. The service is free.

LBT also provides a transportation service to mobility-impaired residents called Dial-A-Lift. Members of Dial-A-Lift use a local taxi company for curb-to-curb transportation, and fares are subsidized.

LBT isn't just limited to the road. During the summer, Long Beach Transit operates the AquaLink, a 68-foot catamaran that carries passengers between the Downtown Long Beach waterfront and the Alamitos Bay Landing, as well as a 49-passenger AquaBus water taxi service that visits marinas and docks along the Downtown waterfront.

In total — on road and on water — LBT operates 37 local service routes in the City of Long Beach, transporting millions of people to their destinations. In 2012, LBT served 28 million annual passengers for 86 million annual passenger miles with 182 buses and 14 demand-response vehicles. On average, LBT serves approximately 89,000 daily weekday boardings, 58,000 Saturday boardings, and 50,200 Sunday boardings.[17]

Map 4:
EXISTING LOCAL TRANSIT ROUTES



Legend

- Metro Rail Stations
- Metro Rail
- Bus Routes (includes LB Transit, Metro, and OCTA)
- Multimodal Hub

Metro Buses and Blue Line Keep Us Connected

For the City of Long Beach, regional transportation is operated by the Los Angeles County Metropolitan Transportation Authority, otherwise known as (Metro). On a regional scale, Metro operates five types of bus service: local service, limited-stop service, express service, shuttles and circulators, and rapid service, as well as passenger rail and transitway service in its 1,513-square-mile service area.

Within the City of Long Beach, Metro operates a limited number of local and express buses and the Metro Blue Line passenger rail. The majority of transit activity in the City of Long Beach is focused around the Long Beach Transit Gallery, located on 1st Street between Pine Avenue and Pacific Avenue in Downtown Long Beach. The Long Beach Transit Gallery serves as the southern terminus of the Metro Blue Line and is the main transit hub for bus connections to various Metro, Long Beach Transit, LADOT Commuter Express, and Torrance Transit bus routes.

Part of the Metro Rail Transit System that runs north-south from Los Angeles to Long Beach, the Metro Blue Line starts at 7th Street/Metro Center/Julian Dixon in Downtown Los Angeles and travels south via Long Beach Avenue, Willowbrook Avenue, and Long Beach Boulevard to its final destination at the Long Beach Transit Gallery. The Metro Blue Line operates Monday through Sunday, including all major holidays.

In 2010, Metro buses served 366 million annual passengers for 1.4 million annual passenger miles, and Metro rail served 46.4 million annual passengers for 333 million annual passenger miles.[18] System-wide, Metro buses serve an average of 1,176,000 daily weekday riders, 722,000 Saturday riders, and 495,000 Sunday riders, and Metro rail serves an average of 324,000 daily weekday riders, 193,000 Saturday riders, and 147,000 Sunday riders. The Metro Blue Line alone serves an average of 85,000 daily weekday riders, 61,000 Saturday riders, and 46,000 Sunday riders.[19]

Future Rail Projects

The most popular form of transportation in Southern California in the mid 1920s, the regional railway system — the Pacific Electric Railway — was the largest electric railway in the world. Then came World War II and the rising popularity of the automobile. Soon railway transportation took a backseat to the car.

Ironically, the ever-increasing numbers of automobiles congesting our roadways has led to a rebirth of rail transportation. Discontent with the daily stress and hassle of traffic, people are turning once again to the rails to get them to their destination.

This rebirth started in 1990, when Los Angeles County opened the Metro Blue Line to Long Beach, reestablishing rail transportation for our region. We've been slowly rebuilding our rail network ever since.[20]

Regional Connector Transit Corridor

As part of this rebuilding process, Metro is planning several rail projects that would improve connectivity within the region, as shown on Map 5. Several of these projects stand to benefit people who live and work in the City of Long Beach. The Regional Connector Transit project (Regional Connector) includes an additional 1.9-mile underground Light Rail Transit Line that will connect the Metro Gold Line to the Metro Blue Line and the Expo Line. Using this connector, passengers will be able to travel from Montclair to Long Beach and from East Los Angeles to Santa Monica on a 'one-seat' light rail ride. By providing continuous through service between these lines, the Regional Connector will improve access to both local and regional destinations, and greatly improve the connectivity of the transportation network for the region. Operations are planned to begin in 2019.[21]

Map 5:
LONG-RANGE REGIONAL TRANSIT PROJECTS

Legend

- Projects Under Consideration
- Projects Under Construction
- Existing Metro Lines and Stations
- Existing Metro Lines and Stations
- Metrolink & Amtrak

Harbor Subdivision

The second major project to positively affect Long Beach is the Harbor Subdivision, a historic single-track main line of the BNSF Railway. This 26-mile railway extending between the rail yards near Downtown Los Angeles and the Ports of Los Angeles and Long Beach was once the primary link between the two Ports and the transcontinental rail network. Today, rail traffic from the Ports primarily uses the Alameda Corridor to access the transcontinental rail yards, leaving the Harbor Subdivision relatively underutilized.

A study conducted by Metro examined the feasibility of turning the Harbor Subdivision into a transit corridor. The study examined the extension of the Green Line to Torrance, the creation of a completely new light rail transit line, and even the possibility of a maglev high-speed rail system. If constructed, the transit system along the Harbor Subdivision could be extended to Metro Blue Line at the Willow Station. This connection would provide more transportation choices to Long Beach residents and workers traveling to and from communities in southwest Los Angeles County.[22]

North/South Rail Corridor

Another possible rail project with promise is the North/South Rail Corridor, a light rail alternative to the SR-710 tunnel option connecting the I-710 terminus in Alhambra to SR-710 in Pasadena. The North/South Rail Corridor would provide transit service between the Port communities of Los Angeles and Long Beach and the Arroyo Verdugo subregion.[23]

High-Speed Rail

The State of California is also looking to rail as a way to address the growing statewide transportation demands. The California High-Speed Rail Authority is planning a high-speed rail network that will initially connect San Francisco to Los Angeles and Anaheim. Future improvements will extend the system to Sacramento and San Diego.

When constructed, trains will travel at speeds of up to 220 miles per hour, cutting the anticipated travel time between Los Angeles and San Francisco to under 2 hours and 40 minutes. The system, which will interconnect with other transportation networks, provides an environmentally friendly alternative to traveling by plane or car. What's more, the high-speed rail system will essentially create more choices for traveling between the State's major employment and population centers.

A high-speed rail system is planned for the State of California. The system will extend from San Francisco to Los Angeles, via the Central Valley. (Pictured: Eurostar)

Faster Bus Service, Fewer Stops

In looking at strategies for improving mobility across our City and region, planners are examining the advantages of Bus Rapid Transit (BRT) — a transit system that uses buses to provide faster, more efficient service than an ordinary bus line. Ordinary bus lines, which make frequent stops and are often delayed by roadway congestion, are often thought of as being slow. Bus Rapid Transit lines address these problems by reducing the number of stops, as well as spacing the stops further apart than ordinary bus lines. This allows the buses to travel at higher average speeds with fewer delays, getting riders to their destinations sooner.

Many Bus Rapid Transit lines also operate on dedicated bus-only lanes or busways for all or some of their routes. By removing the bus from regular vehicle traffic, Bus Rapid Transit systems can avoid delays caused by roadway congestion. Many systems additionally have high-quality bus stations with raised platforms, attractive seating areas and shelters, and advanced fare purchases. These enhancements allow riders to quickly enter and exit the bus, thereby increasing the overall speed of the bus line.

Essentially, the goal of Bus Rapid Transit systems is to provide the service quality of rail transit, without incurring the high costs of installing tracks and related infrastructure. Some systems even use buses that look like passenger rail cars to create a more favorable brand and image for the system.

Metro currently operates two Bus Rapid Transit lines: the Metro Orange Line and the Metro Silver Line. Several future lines are in the planning stages. Long Beach is not currently served by Bus Rapid Transit, but is studying future possible routes. Long Beach Transit does operate limited-stop service.

Technology improvements are being adopted by many Bus Rapid Transit systems as well as ordinary bus lines to enhance efficiencies. These improvements include signal technology that reduces bus delays at intersections by detecting oncoming buses and changing the traffic lights to give the buses more green lights and fewer yellow and red lights.

Several BRT and express bus projects are included in regional plans, with a portion of them falling within Long Beach's jurisdiction. Long Beach Transit has proposed eight corridors for consideration, including Artesia Boulevard, Del Amo Boulevard, Carson Street, Willow Street, 7th Street, Studebaker Road, Pioneer Boulevard, and Lakewood Boulevard.

Driverless Transit – From Science Fiction to Reality

Driverless vehicles seem to belong in science fiction movies set in the future. But driverless personal transit may be closer to becoming a reality than many of us might think.

Since the opening of the London Underground Victoria Line in 1967, railways and transit systems have become increasingly automated. Today, many transit systems operate with driverless technology, which reduces the operational costs of service. Take the recent Las Vegas Monorail, a privately-owned 3.7-mile transit service that provides access to hotels and casinos, and the Las Vegas Convention Center.[24]

Driverless technology is also being applied to personal rapid transit systems. These automated systems provide transportation to individuals or a small group of people in private cars or pods. Using motion-sensor technology, the automated systems move private cars at precisely controlled intervals and speeds, creating a high-capacity system. After boarding the cars, passengers enter their destination into the car's computer system and the private car moves on a direct and fixed route to the station.

Because the cars are small and private, they do not make regular stops at multiple stations within the system. Passengers can essentially bypass stops, making the trip to their destination faster and more convenient. Unlike public transit, passengers can also enjoy the convenience and comfort of being in their own private car.

Still sound like science fiction? This type of technology is already in use. Recently installed at London's Heathrow Airport, a personal rapid transit system called ULTra (Urban Light Transit) connects the airport's parking lots to Terminal 5. The zero-emission, battery-operated pods within the system can carry up to four passengers and their luggage. A central computer system ensures that pods are distributed at each station according to passenger demand. When waiting for passengers, the pods recharge at battery points.[25]

In the foreseeable future, driverless transit and personal rapid transit systems could be used to connect major transit stations and airports to destinations within the Southern California region and the City of Long Beach. These types of systems could help alleviate traffic, reducing vehicle miles traveled and greenhouse gas emissions while addressing the first and last mile problem of transit.

Spotlight on Parking: Right-Sizing the Supply

Concern around traffic conditions extends to vehicles that aren't in motion, as well. Vehicle parking has a profound impact not only on those drivers searching for spots, but on a wide range of areas critical to our City: the design of the built environment, the cost of development, housing affordability, the flow of traffic, and the community's overall quality of life.

Let's take a closer look at the parking situation in our City. Long Beach is served by public on-street parking, public off-street parking lots and garages, and private off-street parking lots and garages.

You'll find fewer off-street parking spaces in older commercial districts and residential neighborhoods that date back to an era when people drove fewer cars. As a result, demand for on-street parking in these areas is high.

London's Heathrow Airport pod is an on-demand and nonstop personal rapid transit that carries passengers traveling between the terminals and parking garages. The personal rapid transit addresses the need to move commuters in areas where the densities were too low to pay for the construction of a conventional light rail.

To expand the supply of parking, the City has constructed public parking lots and garages in older commercial districts such as Downtown Long Beach, as well as along the waterfront. Wherever on-street parking is in high demand, drivers can expect to pay for parking in public and private lots and garages.

Further compounding the demand of parking are limitations placed on parking spaces during certain times of the day. On some busy streets, for example, on-street parking may be eliminated or prohibited during commute hours to facilitate traffic flow. Restricting parking spaces during peak traffic times removes delays caused by cars backing in and pulling out of parking spaces. In the City of Long Beach, currently you'll find on-street parking restrictions on the following roadways:

Existing On-Street Parking Restrictions

- Lakewood Boulevard (Willow Street to Pacific Coast Highway).
- Carson Street (Clark Avenue to Los Coyotes Diagonal).
- Willow Street (Temple Avenue to Lakewood Boulevard, and Los Coyotes Diagonal to Palo Verde Avenue).
- Pacific Coast Highway (Oregon Avenue to Dawson Avenue).
- Alamitos Avenue (3rd Street to Ocean Boulevard).

In addition, several commercial and residential areas of the City have been identified as "parking impacted," as shown on Map 6.

These include:

- North Long Beach – Area bounded by Greenleaf Boulevard, Long Beach Boulevard, and the SR-91 and I-710 freeways;
- North Long Beach – Area bounded by South Street, Atlantic Avenue, Del Amo Boulevard, and the Los Angeles River;
- West Long Beach – Area bounded by the I-405 freeway, Santa Fe Avenue, Arlington Street, and Hesperian Avenue;
- Southwest Long Beach – Area loosely bounded by Burnett Street and Pacific Coast Highway, Clark Avenue, Termino Avenue, Ocean Boulevard, Daisy Avenue, and the Los Angeles River; and
- Various neighborhoods in southeast Long Beach, including Belmont Shore and Naples.

These areas have limited off-street parking facilities. What's more, some garages in these areas have been illegally converted to living spaces, further exacerbating parking problems. To address this issue, garage inspections are now required for housing units sold in parking impacted areas.

The City has implemented additional solutions to address parking problems in residential areas. These include residential streets with limited off-street parking and/or spillover parking from other nearby residential streets. To alleviate parking shortages in these areas, the City has created preferential parking districts that require parking permits. Currently, four preferential parking districts exist in the City, concentrated around Cal State Long Beach, the City Colleges, and the community theaters on Anaheim Street.

Maximizing Our Precious Parking Resources

Historically, parking problems have been addressed by building additional parking facilities. As land becomes limited and the cost of building parking facilities soars, this approach is becoming much less feasible. Rather than adding more parking, the City of Long Beach is working to better manage existing parking resources through a range of strategies:

» Sharing the parking facilities of businesses within a district.

» Dedicating the most convenient spaces for priority users.

» Providing parking access and information signs so that motorists can easily find available parking locations.

» Using pricing strategies to influence travel and parking behavior.

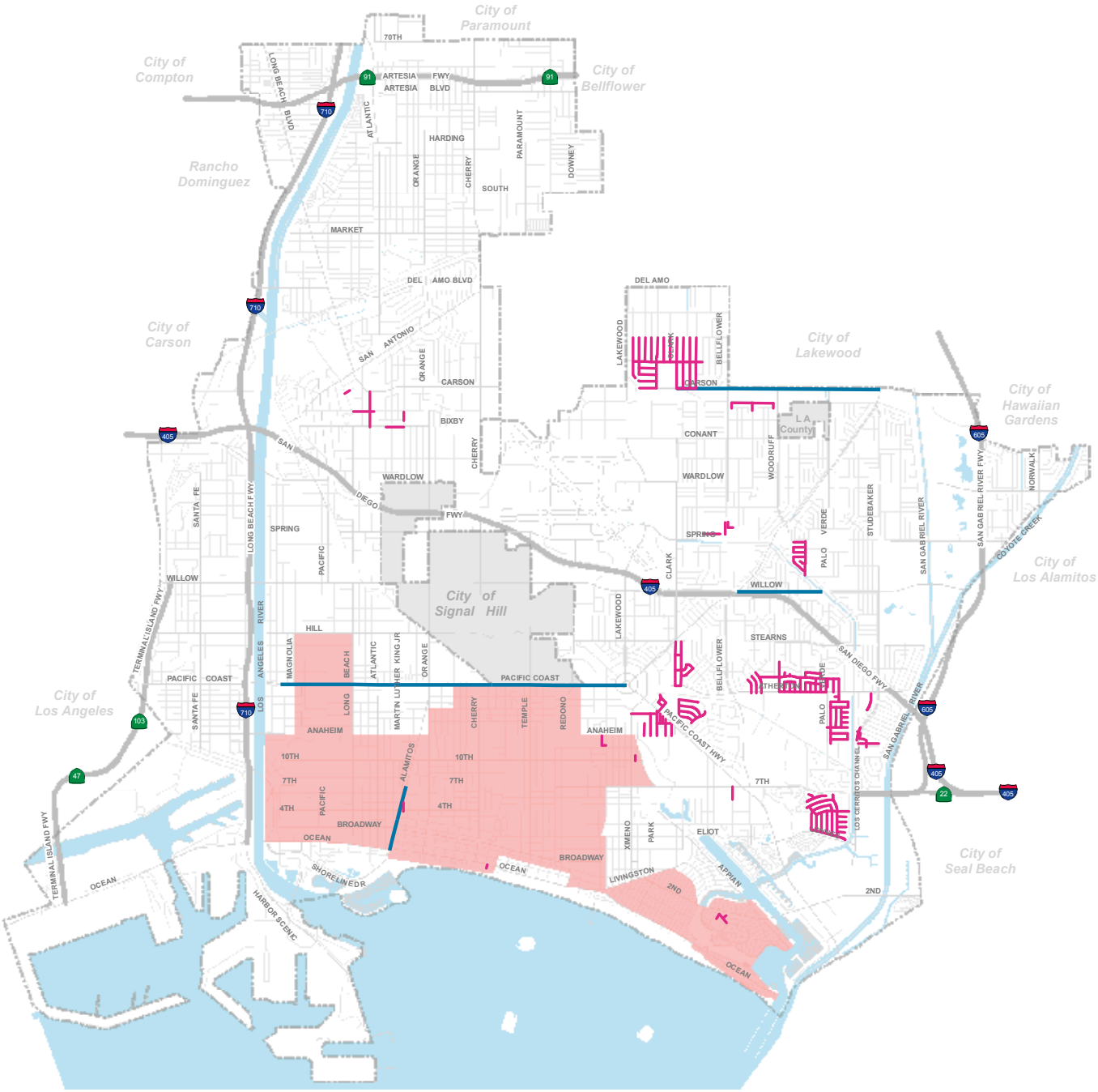
» Using valet parking systems.

» Using automated parking systems to reduce the amount of land needed to meet parking demands.

Partnerships between Long Beach Transit and business associations or other entities can provide transit passes to employees or other participants to use transit rather than driving, thereby leaving parking spaces for others, such as shoppers. This is underway at California State University, Long Beach (CSULB) and Belmont Shore.

As a result of these strategies, parking spaces attain a higher value and are used more efficiently. This leads to less demand on parking, as well as less need for parking spaces to serve particular areas. The City has already seen the success of these parking management strategies in several areas, including Downtown Long Beach and Belmont Shore.

Map 6:
EXISTING PARKING IMPACTED AREAS



Legend

- Parking Impacted Areas
- Peak Period Restrictions
- Preferential Parking Streets

Spotlight on Aviation: Lifting Our Local Economy

So far, we've discussed multiple modes of transportation, including automotive, pedestrian, bicycle, and public transit. For the next transportation mode, we must look not only forward but upward.

Aviation has been at the heart of Southern California's pioneering spirit since the very first planes took to the skies. Today, Southern California is served by several passenger airports, including Los Angeles International Airport, Bob Hope Airport, John Wayne Airport, and Ontario International Airport. Also located in the region are several airports that provide limited passenger airline services, including Palmdale Regional Airport, Palm Springs International Airport, and our very own Long Beach Airport.

People traveling to and from Long Beach are serviced by three main airports: Los Angeles International Airport (LAX), John Wayne Airport, and the Long Beach Airport. LAX, the largest airport in Southern California located approximately 17 miles northwest of Downtown Long Beach, provides domestic and international flights to destinations across California, the nation, and the world. John Wayne Airport, the second-largest airport in the region, is located approximately 20 miles southeast of Downtown Long Beach.

The Long Beach Airport, located northwest of the I-405 and SR-19 intersection, is well-situated halfway between the major business and tourist destinations of both Orange and Los Angeles Counties. Owned and operated by the City, the Long Beach Airport, as shown on Map 7, covers 1,166 acres and has five runways, the longest being 10,000 feet. One of the world's busiest airports in terms of general aviation activity, it is also a hub of corporate activity. The airport is included in the national plan of integrated airport systems for 2011-2015, which categorized it as a primary commercial service airport.

The Long Beach Airport is governed by one of the strictest noise ordinances in the United States that both limits airport noise and the number of commercial flights. With current noise levels allowing for 41 daily commercial flights and 25 commuter flights, only a handful of large commercial passenger and cargo carriers operate out of the airport (Jet Blue, US Airways, Skywest, Alaska, Delta, UPS, and FedEx).

Currently, over 200 businesses operate on airport property, including nearly 100 acres of mid-rise business park and hotel uses, several top-rate, fixed-base operators, and specialty aviation service companies. Several aerospace manufacturing companies also operate at the Long Beach Airport, including The Boeing Company (formerly McDonnell Douglas) and Gulfstream Aerospace.

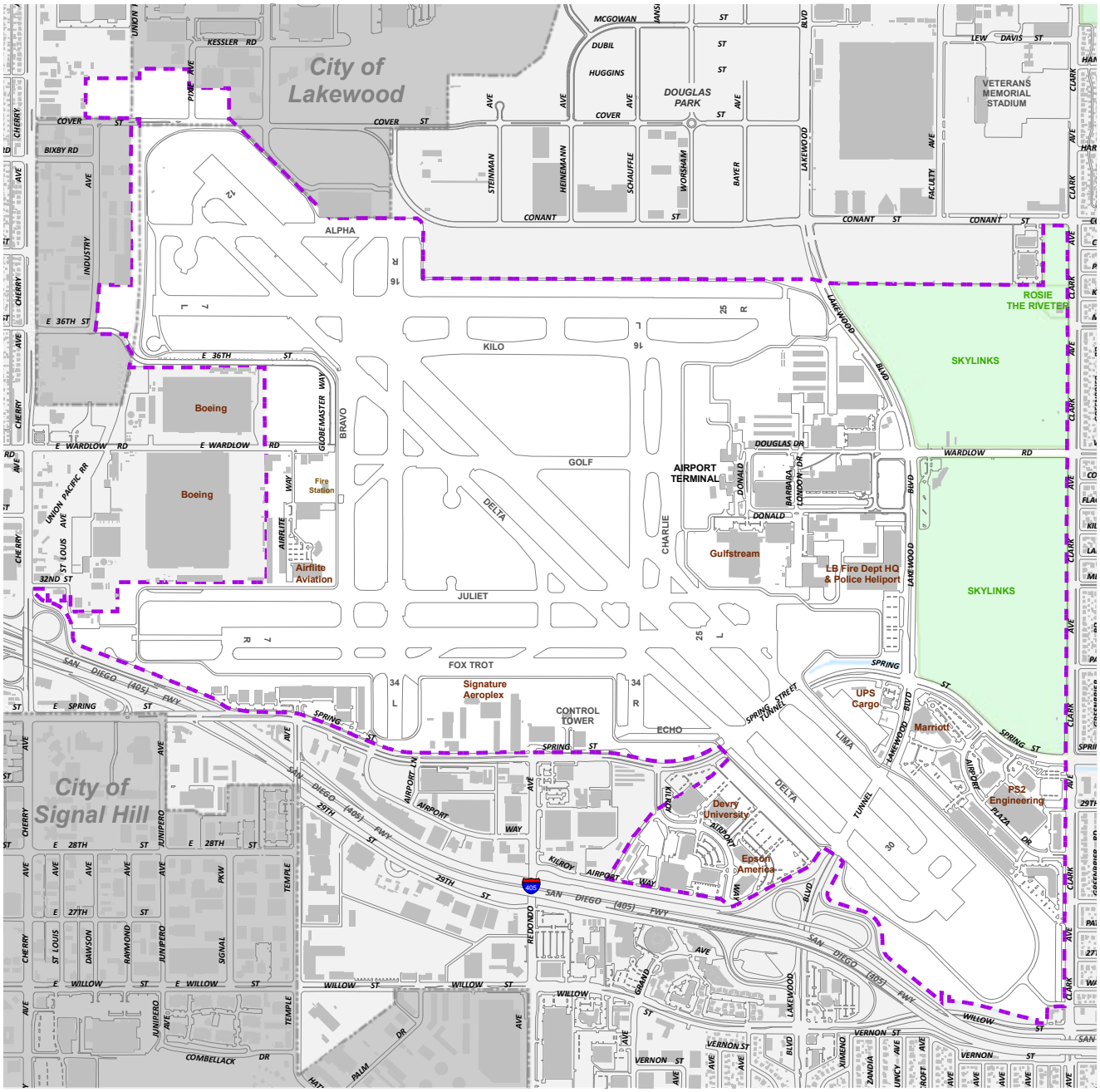
Minimizing Airport Impact

Required by State law, Airport Land Use Commissions (ALUC) coordinate planning for the areas surrounding public use airports. In Los Angeles County, the Regional Planning Commission acts as the ALUC that coordinates the airport planning of public agencies within the County, including the City of Long Beach.

The role of the ALUC extends beyond planning and includes protecting public health, safety, and welfare. The committee achieves this by ensuring the orderly expansion of airports and the adoption of land use measures that minimize public exposure to excessive noise and safety hazards within areas around public use airports. The ALUC is also concerned with airport activities that may adversely affect adjacent areas, as well as nearby land use that may interfere with airport operations. To that end, the ALUC is required to prepare and adopt a Comprehensive Land Use Plan (CLUP), review certain projects within the ALUC's planning boundaries as well as regulations of local agencies, and make recommendations based on these reviews.

One of the key projects under the purview of the ALUC is the Long Beach Airport improvements, guided by the Airport Master Plan. This Master Plan informs the long-term physical development of the airport to accommodate projected demand for commercial (passenger and cargo) and corporate general aviation.

Map 7:
LONG BEACH AIRPORT FACILITY



Legend

Airport Property

Helicopter Aviation and Heliports

In addition to Long Beach Airport, several heliports and helistops offer helicopter aviation services to the community of Long Beach. These helistops and heliports include:

» Kilroy Ac8-Long Beach Heliport

» Long Beach Memorial Medical Center Heliport

» Long Beach Port Heliport

» Queen Mary Heliport

» Queensway Bay Heliport

» St. Mary Medical Center Heliport

» VA Medical Center Heliport

» World Trade Center Heliport

Most heliports and helistops are provided for law enforcement and emergency medical transportation services. Others are used by private helicopter operators and helicopter tour services.

Spotlight on Marinas and Cruise Terminals: A Launching Point

For communities along the coast, maritime transportation must be considered in a multimodal transportation approach. Several coastal communities in Southern California offer marinas that support recreational boating and charter cruises. One of these communities, Long Beach, has several marinas and cruise terminals that enable people to sail to and from the City on privately owned boats and yachts, charter fishing boats, charter cruises, and commercial cruise lines. In addition, Long Beach Transit offers a public transit circulator called the Aqualink and Aquabus that traverses the coast. Maps 8 and 9 show the locations of the City's main marinas and cruise terminals, including:

» Catalina Landing

» The Long Beach Cruise Terminal

» Rainbow Harbor and Marina

» Shoreline Marina

» Alamitos Bay Marina

Long Beach serves as a launching point not only for recreational boaters, but also for major commercial cruise liners. Cruises attract thousands of tourists to the City on a weekly basis, many of whom partake in before- and after-cruise excursions in our City to enjoy the variety of tourist destinations here and close by.

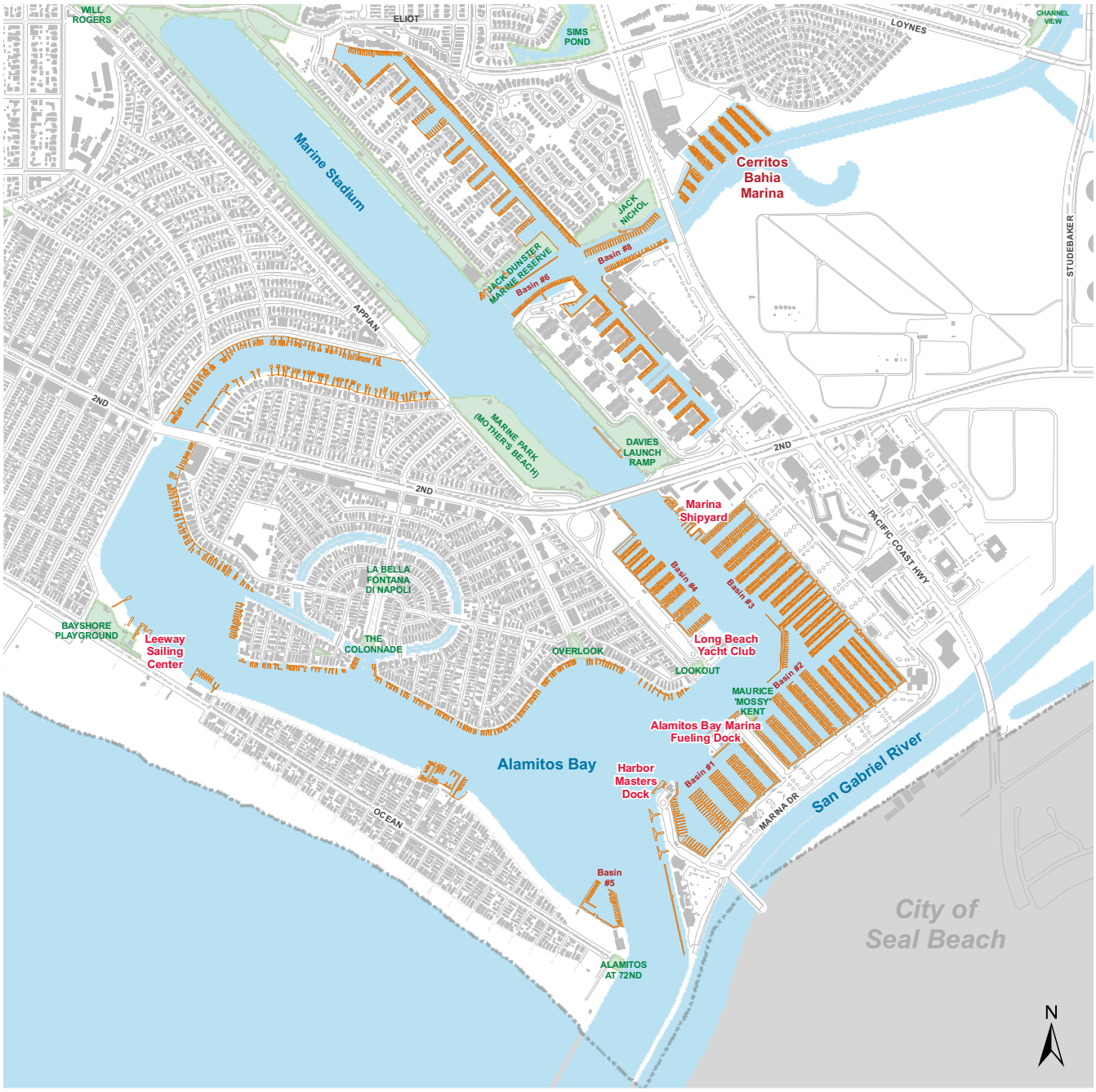
Long Beach offers two primary terminals that service cruises. The Catalina Landing commercial cruise terminal, located directly northwest of the Queensway Bridge, provides daily ferry service to the town of Avalon on Santa Catalina Island. Located at the end of Queens Highway adjacent to the permanently docked Queen Mary historic ship, the Long Beach Cruise Terminal is a major port for large commercial cruise lines, including Carnival Cruises, and is a terminal for cruises to the Mexican Riviera.

Thousands of residents and visitors enjoy Long Beach's many marinas and boat launches as well. Located east of Queens Way and south of Shoreline Drive, Downtown's Rainbow Harbor and Marina features 87 slips for commercial and recreational vessels, a 100-foot-long dock for day guests, 250 feet of day guest mooring, and twelve 150-foot docks for commercial vessels. Here, locals and visitors alike have access to a range of recreational opportunities, including whale watching tours, dinner cruises, private cruise charters, sport fishing trips, and boat and personal watercraft rentals.

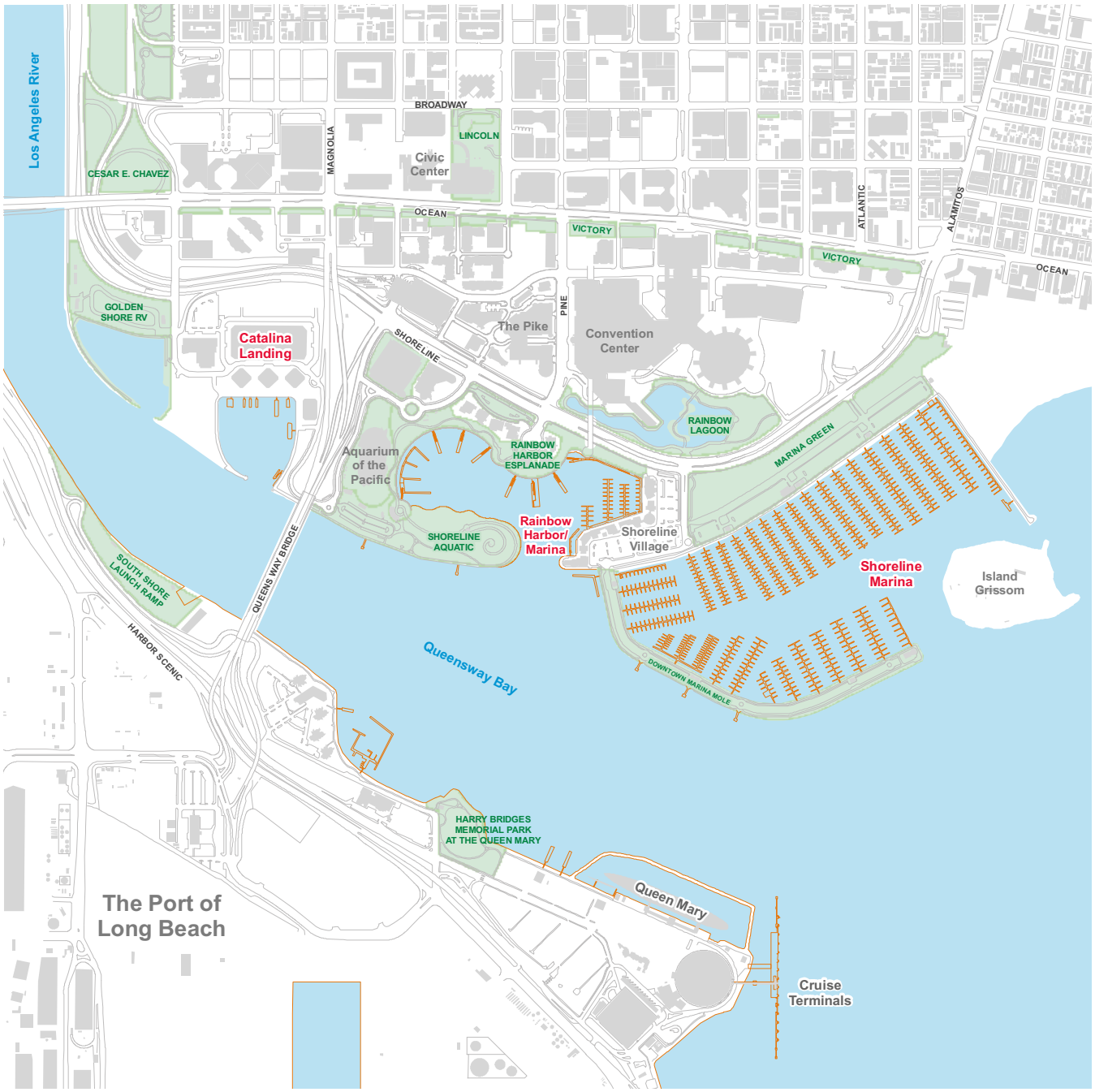
Shoreline Marina, located just east of Rainbow Harbor and Marina along Shoreline Drive, offers 1,764 slips for recreational boaters. And located in southeast Long Beach, just west of the mouth of the San Gabriel River, the Alamitos Bay Marina features 1,646 boat slips and Bahia Marina as well as several yacht clubs. The Long Beach marinas are operated under the jurisdiction of the Long Beach Marine Bureau of Parks, Recreation, and Marine Department.

Long Beach also has five public boat launches: Davies, Claremont, Granada, Marine Stadium, and South Shore. From these, water recreation enthusiasts launch an array of maritime vehicles from powerboats and jet skis, to sailboats and windsurfers, to skulls, catamarans, and kayaks.

Map 8:
ALAMITOS BAY MARINA



Map 9:
DOWNTOWN MARINA



DELIVERING THE GOODS ON MOBILITY

The Movement of Goods

So far in this Mobility Element, we've focused on the mobility of people — by automobile, foot, bicycle, public transit, air, and boat. One aspect we must also consider is the movement of goods. After all, Southern California is the nation's largest international trade gateway in the United States. This international trade is supported by maritime ports, air cargo facilities, railroads, warehouse and distribution centers, and truck routes spread across freeways, highways, and local streets throughout the region.

In 2010, the Los Angeles Customs District, which operates at the Los Angeles International Airport and the Ports of Los Angeles, Long Beach, and Hueneme, handled $336 billion worth of maritime cargo, and $78 billion worth of air cargo.[9] Moving this massive amount of goods as efficiently as possible is critical to getting people and businesses the products they need to maintain the nation's competitive edge in a global economy.

The Ports of Los Angeles and Long Beach currently handle 40% of all shipping containers entering the United States. Shipping demand at both Ports is projected to triple by the year 2035. This growth in demand presents significant economic opportunities for Southern California and the nation. At the same time, it also presents challenges. To accommodate the anticipated growth in demand, improvements will need to be made to our Port, highway, and rail infrastructure, as well as an expanded number of warehouses and distribution centers.

Creating short- and long-term solutions to these challenges, while mitigating environmental and community impacts will require major investments in infrastructure.[9] At the same time, balancing the needs of our Port and air cargo gateways with the needs of other users of the transportation system is critical.

Spotlight on the Port of Long Beach

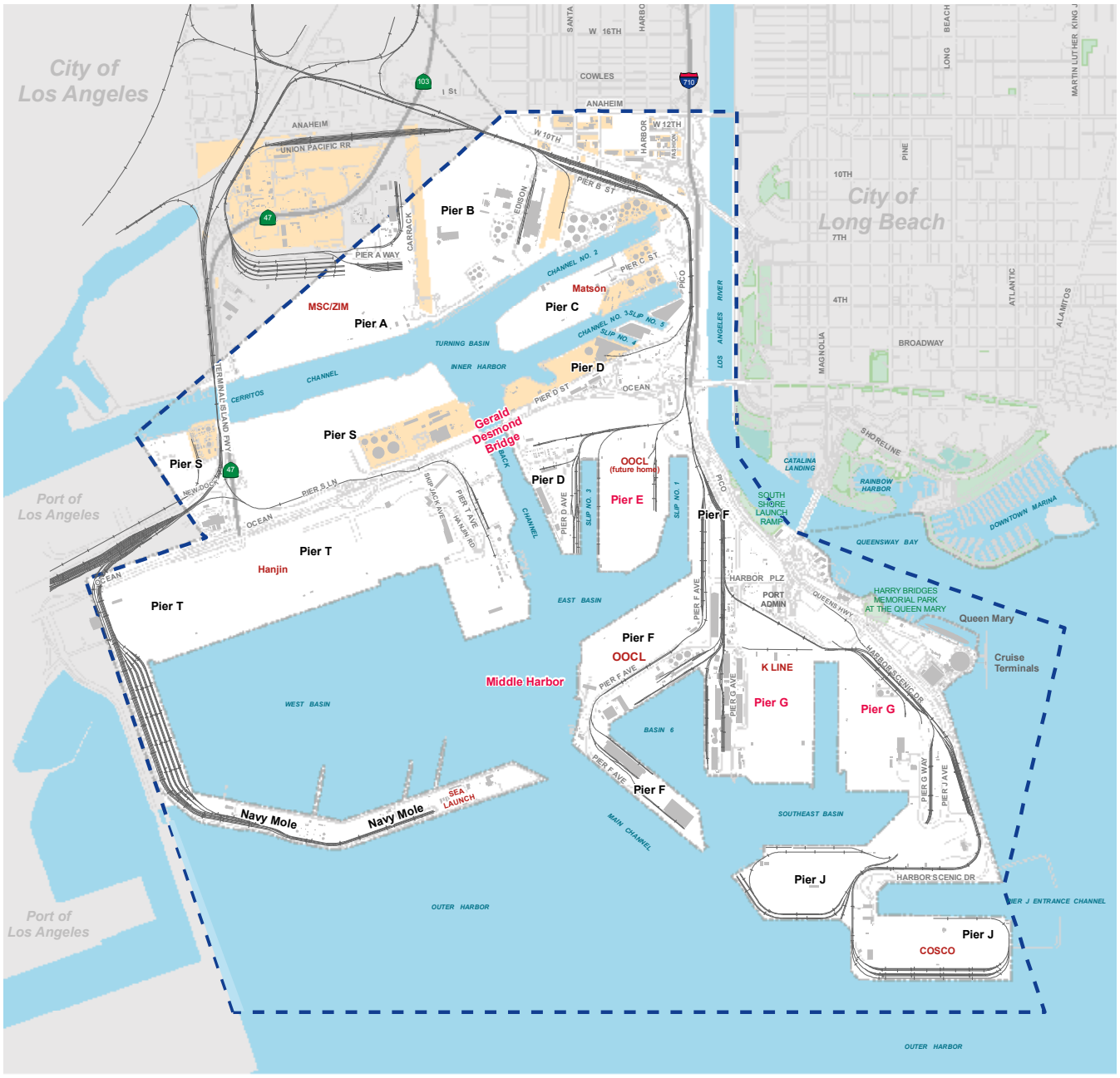
The Port of Long Beach is one of America's premier seaports and an industry leader in goods movement and environmental stewardship. Located in the southwest part of our City, the Port of Long Beach is also part of the larger San Pedro Bay which includes the adjacent but separate Port of Los Angeles, as shown on Map 10.

Trade valued annually at more than $155 billion moves through Long Beach, making it the second-busiest seaport in the United States. Everything from clothing and shoes to toys, furniture, and consumer electronics arrives at the Port before making its way to store shelves throughout the country. Specialized terminals also move petroleum, automobiles, cement, lumber, steel, and other products.[26]

A major economic force, the Port supports more than 30,000 jobs in Long Beach, 316,000 jobs throughout Southern California, and 1.4 million jobs throughout the United States. It generates about $16 billion in annual trade-related wages statewide.[26]

Gerald Desmond Bridge replacement.

Map 10:
PORT OF LONG BEACH



Legend

- Harbor District
- Private Property

In 2011, the Port handled:

» 6,061,085 containers (TEUs).

» Cargo valued at $155 billion.

» 76.6 million metric tons of cargo.

» On average, the equivalent of 16,600, 20-foot containers (TEUs) each day.

» 4,898 vessel calls.[26]

Fast Fact

The US Coast Guard operates one of the West Coast's busiest stations at the Port of Long Beach. This station's primary missions are search and rescue, maritime law enforcement, and homeland security. The unit has working relationships with many search and rescue agencies in the area, including the Los Angeles County Lifeguards, the Orange County Sheriffs, the Los Angeles City Fire Department, the Los Angeles City Lifeguards, and the Long Beach Fire Department. The unit also works with the Harbor Patrol, officers dedicated to security and public safety at the Port of Long Beach.[27]

Planning for the Port

The Long Beach Port Master Plan is a long-term planning document aimed at guiding future Port development and ensuring that projects in the Harbor District are consistent with the requirement of the California Coastal Act. The plan covers the Port of Long Beach Harbor District, an area that consists of nearly 3,000 acres of land and more than 4,600 acres of water. The Port Master Plan divides the Harbor District into 11 planning districts and identifies land and water uses permitted in each.[28]

Capital Improvement Program (CIP)

The next generation of cargo ships, twice the size of those that entered the global fleet only 15 years ago, are now calling at the Port of Long Beach. Larger ships are more cost-effective for ocean carriers and reduce the effect on the environment by decreasing diesel consumption.[29]

Long Beach is one of only a handful of Ports in North America capable of welcoming these larger ships, thanks to these vital features:

» Deep-Water Main Channel – one of the deepest on the continent at 76 feet.

» Deep-Water Terminals – water depths of 50 feet or more at five of the Port's six container terminals.

» Berths designed to handle vessels that can exceed 156,000 tons fully loaded.

» Cranes that can move containers stacked 180-feet high and 24 boxes wide.

In addition to the facilities that are now "big ship ready," over $4.5 billion in capital improvements are underway, increasing the Port of Long Beach's ability to receive the most efficient and environmentally sustainable ships in the future.[30] The ultimate goal of the Capital Improvement Program and planning processes at the Port are to improve efficiency and reduce the impact to the surrounding community, both of which help to improve mobility in the City.

Middle Harbor

Middle Harbor is a modernization of two aging shipping terminals into one state-of-the-art terminal that will add on-dock rail capacity, shore power hookups, and a new longer wharf to move twice the cargo with half the air pollution. The nine-year, $1.2 billion project will upgrade wharfs, water access, and storage areas, as well as add a greatly expanded on-dock rail yard. It will create about 14,000 permanent jobs in Southern California. In keeping with the Port's Green Port Policy and the San Pedro Bay Ports Clean Air Action Plan, the project will minimize or eliminate negative environmental impacts from shipping operations.

Pier G Modernization

The Pier G Modernization project is a multi-year renovation of the Intelligent Transportation Systems (ITS) container terminal. The Port has added a new terminal Administration and Operations Complex, new Maintenance and Repair Facility, and a new West Arrivals Building — all of which have earned a "gold" rating from the Leadership in Energy and Environmental Design Program of the U.S. Green Building Council. A new on-dock rail yard has also been completed, nearly doubling the terminal's capacity for on-dock rail. More than $470 million in improvements have been completed and still on the way are additional shore power facilities and container yard space.

Gerald Desmond Bridge Replacement

This project is a $1.1 billion effort to build a new bridge to span the Port's Back Channel. The new bridge will be higher to allow additional clearance for larger, more efficient cargo ships, and will also be wider, to ease the flow of cars and trucks that use the bridge. The new bridge will accommodate three lanes of traffic on each side, as opposed to the current Gerald Desmond's two lanes. Safety lanes will be added to mitigate delays from breakdowns and accidents and give emergency vehicles better access. In addition, clearance over the channel will rise from the current 155 feet to 205 feet, allowing larger, greener post-Panamax ships to enter the Port. The new bridge will include a bike and pedestrian facility.

Policy Initiatives

Green Port Policy

The Port is committed to improving the environment, as demonstrated by the Green Port Policy. Adopted by the Board of Harbor Commissioner in January 2005, this policy serves as a guide for decision making and established a framework for environmentally friendly Port operations. The policy's five guiding principles are:

» Protect the community from harmful environmental impacts of Port operations.

» Distinguish the Port as a leader in environmental stewardship and compliance.

» Promote sustainability.

» Employ best available technology to avoid or reduce environmental impacts.

» Engage and educate the community.

With a Green Port Policy guiding efforts to minimize or eliminate negative environmental impacts, the Port also is a catalyst for innovative environmental programs. Serving as a model for Ports around the world, the Port of Long Beach pioneered such programs as the Green Flag vessel speed reduction air quality program, Green Leases with environmental covenants, and the *San Pedro Bay Ports Clean Air Action Plan*. The Port is also moving aggressively to outfit its container terminals with shore power. Shore power allows docked ships to plug into land-based electric utility instead of burning diesel fuel to run their auxiliary engines, a source of pollution. By 2014, at least one berth at every container terminal will have shore power. By 2020, all container berths will have shore power.

Clean Air Action Plan

In 2006, the Ports of Long Beach and Los Angeles voluntarily created and approved the San Pedro Bay Ports Clean Air Action Plan. The CAAP, as it is known, provides the overall strategy for dramatically reducing air pollution emissions from Port-related cargo movement.

The Ports have released the 2010 CAAP Update, as a new, improved version of the CAAP. The Ports agreed from the start that the CAAP would be a "living" document that would undergo periodic reviews and updates. As the first in these planned updates, the 2010 CAAP Update includes long-term goals for reduction of cancer risk and air pollution from cargo movement at the Ports. These goals, also known as the San Pedro Bay Standards, establish more aggressive targets for the two-Port complex to reduce health risks and further improve air quality.

Community Engagement at the Port

Mitigation Grants

The Port of Long Beach has developed two Mitigation Grant Programs: one focused on schools and one on health centers. They serve as one element of the Port's efforts to lessen the effect of cumulative air pollution from Port development projects. Although the Port makes every effort to reduce air pollution at its source by employing the best available technologies, not all effects can be addressed with onsite mitigation measures alone. For this reason, the Mitigation Grant Programs are a mechanism by which the Board of Harbor Commissioners, at its discretion, can fund projects outside of Port boundaries to improve community health that might be affected by Port projects. In addition to funding projects aimed at reducing impacts associated with air quality, the grant programs also fund noise-reduction projects, such as double-paned windows and sound barriers.

Port and Rail Tours

During the months of June through October, the Port offers free boat and rail tours to the public to allow them to get a rare glimpse of the Port's operations, construction projects, and environmental initiatives. The one-hour narrated tours offer guests a view of cargo-moving operations and the Port's rail network in areas that are generally off limits to the public. Trains play a crucial role in Port operations, moving nearly 75% of imports shipped through the Port. Harbor tours run several times a month from May through October, while the Port's train tours are offered occasionally.

National Significance

It is important to note the various National Highway System (NHS) facilities located in the City's Harbor District. These include the Interstate Highway System, as well as other roads important to the nation's economy, defense, and mobility. Specifically, there is a Strategic Highway Network connector located within the Harbor District that could provide defense access, continuity, and emergency capabilities for defense purposes. Also worthy of note is the intermodal connector route, which provides access between major intermodal facilities.

Freight Rail

Southern California's rail system provides a critical connection between the largest Port complex in the country and producers and consumers throughout the United States. Over half of the international cargo arriving at the Port of Long Beach and Port of Los Angeles uses rail, including on-dock, near-dock, and off-dock rail facilities. Railroads also serve a myriad of domestic industries, providing a vital link in the regional supply chain and allowing shippers to move large volumes of goods over long distances and at a lower cost than trucking.

The Southern California region is served by two Class I freight railroads: Burlington Northern Santa Fe Railway (BNSF) and Union Pacific Railroad (UP). Both railroads operate on the Alameda Corridor, a 20-mile-long rail cargo expressway linking the Ports of Los Angeles and Long Beach to the transcontinental rail network near Downtown Los Angeles.

The UP also operates the UP San Pedro Branch Line, which goes from the Port of Long Beach through west/northwest Long Beach. The volume of rail traffic on this line dropped after the completion of the Alameda Corridor, but it is still used as an active spur line for the railroad.

Alameda Corridor

The project was built at a total cost of approximately $2.4 billion by the Alameda Corridor Transportation Authority (ACTA), a joint powers authority formed by the Cities and Ports of Los Angeles and Long Beach. Construction of the project began in 1997 and the Corridor began operations in 2002. Designed to improve the efficiency of transporting cargo from the Ports of Los Angeles and Long Beach to the rest of the nation, the Alameda Corridor's operation has also resulted in significant air emissions reduction and lessened the traffic impacts resulting from dramatic trade growth through the Ports over the past decades. The Corridor is a series of bridges, underpasses, overpasses, and street improvements that separate freight trains from street traffic and passenger trains, facilitating more efficient movement throughout the local transportation network. At the peak of the economic boom in 2006, an average of 55 trains per day used the Corridor. According to ACTA,

more than 13,000 tons of total emissions reduction have resulted from the consolidation of freight rail operations and the alleviation of traffic congestion at rail crossings in the Southland. The air quality benefits resulting from the Corridor's operation will continue to increase as usage of the Corridor grows, because trains generate significantly less pollution than the number of trucks needed to move an equivalent volume of cargo.

Intermodal Container Transfer Facility Modernization

The Intermodal Container Transfer Facility (ICTF) is a near-dock, international shipping facility serving multiple shipping lines. Located approximately five miles from the Ports of Los Angeles and Long Beach, the ICTF was constructed in 1986 at a cost of over $55 million by the ICTF Joint Powers Authority (JPA). The JPA is comprised of representatives from the Ports of Los Angeles and Long Beach, and is operated by Union Pacific Railroad (UP). UP pays the JPA a fee for each loaded or revenue empty container handled through the ICTF to repay the bond issued for the construction of the facility. There are two primary factors which allow the ICTF to handle larger volumes of containers efficiently: storage of trains and equipment, and the computerization of inventory. Near-dock rail facilities like ICTF allow more containers to be loaded onto trains, which in turn reduces the number of truck trips on local freeways.

Green Port Gateway

The Green Port Gateway project includes the realignment of railroad tracks and roadways near Ocean Boulevard and the addition of the Pier F Rail Support Yard to serve the future Middle Harbor terminal. The project will serve terminals in the Port's southeast area — Middle Harbor, Pier G, and Pier J. On-dock rail allows cargo containers to be rail-hauled directly to and from marine terminals, eliminating truck trips. The Port is pursuing greater use of on-dock rail because it improves competitiveness and efficiency, and reduces air pollution by taking trucks off the road.

Southern California International Gateway Project

The Southern California International Gateway site is currently used for cross docking and warehousing. There is a current proposal by Burlington Northern Santa Fe Railway to create a near-dock rail facility that would handle cargo containers up to a maximum capacity of 1.5 million lifts or 2.8 million TEUs. Major physical features of the proposed project include:

» Loading and storage tracks for trains.

» Electric-powered, rail-mounted gantry cranes.

» Container loading and storage areas.

» Administrative and maintenance facilities.

» Two new grade separations.

» Four new railroad bridges.

Commercial Vehicles (Trucks)

Trucks come in all sizes and purposes. They travel on freeways, highways, and local truck routes throughout the Southern California region to transport goods from maritime ports, airports, and warehouse distribution centers to businesses throughout the region and nation.

Trucking Goods to and From the Ports

Regional container truck traffic in Long Beach is primarily related to the movement of goods to and from the Ports of Los Angeles and Long Beach to warehouse and distribution centers located throughout the region. Generally, regional trucks access the Ports by using the I-710, I-110, SR-47, and SR-133 Freeways, and the Gerald Desmond, Vincent Thomas, and Schuyler Heim bridges. The I-710 in particular is a critical access route for Port-related truck travel in Long Beach. These trucks usually carry marine 40' containers, but sometimes carry other commodities such as fuel, break bulk, and automobiles.

Local Delivery

Local delivery trucks supply grocery stores, businesses, and provide online purchase delivery within the City. These trucks are not related to the Port, and occur to supply the daily needs of the City. These trucks use dedicated truck routes to provide shipping services to commercial and industrial businesses located in major industrial and commercial areas throughout Long Beach. "Through" truck trips, or those which do not stop for pickup or delivery in Long Beach, must only use the dedicated truck routes. Existing regional and local truck routes in the City of Long Beach are shown on Map 11.

Established throughout the City of Long Beach, truck routes direct trucks away from residential neighborhoods toward designated streets specifically designed and maintained to accommodate the weight of large trucks and commercial delivery vehicles. These truck routes create safer, quieter, and cleaner residential areas and reduce the cost of maintenance on streets that are not designed for sustained truck use.

I-710 Corridor Project

A vital transportation artery, the Long Beach Freeway (I-710) links the Ports of Long Beach and Los Angeles to major Southern California distribution centers and intermodal rail facilities. An essential component of the regional, statewide, and national transportation system, it serves both passenger and goods movement vehicles.

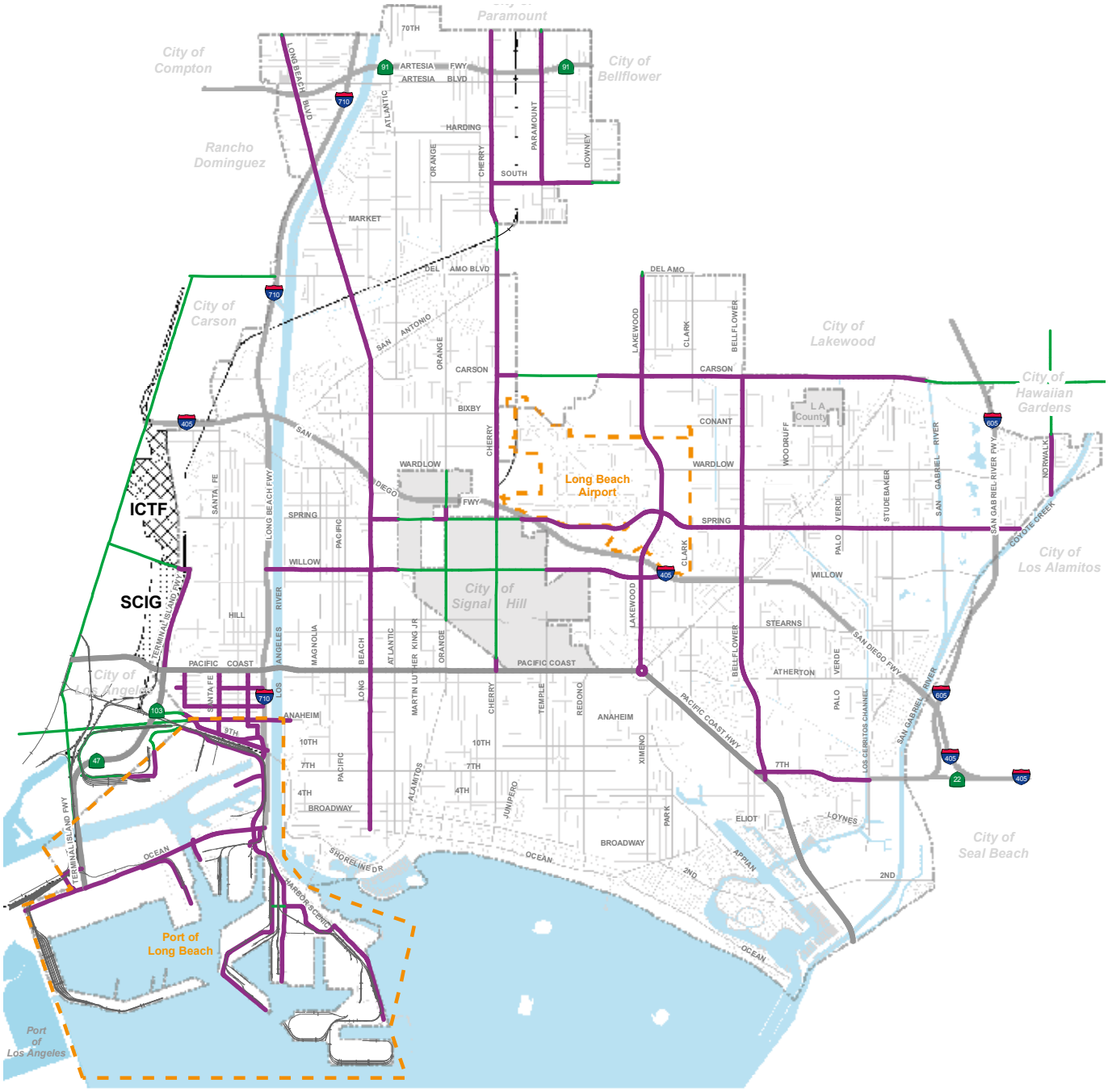
An Environmental Impact Report is currently being recirculated to analyze possible improvement alternatives for the I-710 corridor between the Ports of Long Beach and Los Angeles and the Pomona Freeway (SR-60). The project will generally include freeway widening, freight corridor, and arterial system improvements.

Air Cargo

Long Beach Airport

In 2008, 2.4 million tons of cargo was transported through Southern California's major airports, including Los Angeles International, Ontario International, John Wayne Airport, Bob Hope Airport, Long Beach Airport, Burbank Airport, and Palm Springs International. The bulk of the region's air cargo — over 75% (1.8 million tons) — was handled by Los Angeles International Airport. Long Beach Airport only accommodated 1.9% of the region's total airport cargo (46,263 tons) in 2008. While it is an important general aviation airport, Long Beach airport is currently not a major port for the movement of goods.[31]

Map 11:
EXISTING TRUCK ROUTES



Legend

Truck Routes

- State Facility
- Other Cities
- Long Beach

MAINTAINING THE FLOW OF RESOURCES

Resource Mobility

The circulation element of a General Plan covers not only the transportation plan; it also addresses all community systems that move people, goods, energy, water, and communications.

These include vital water, energy, and communication resources that move throughout the region via a complex network of infrastructure and utility lines. Local and regional government agencies and public and private utility companies build and maintain the infrastructure systems, generally provided within street rights-of-way and dedicated utility corridors.

Water, Wastewater, and Stormwater Resources

The Long Beach Water Department provides water services to the City of Long Beach. As part of this role, the department oversees the construction and maintenance of a large network of water storage facilities and water infrastructure lines that deliver potable water to residents and businesses.

The Long Beach Water Department operates and maintains nearly 765 miles of sanitary sewer lines that deliver over 40 million gallons of wastewater each day to treatment facilities operated by the Los Angeles County Sanitation Districts. The facilities, located on the north and south sides of the City of Long Beach, pump treated wastewater into the Pacific Ocean or use it to recharge the groundwater basin, or recycle it and use it to irrigate parks, golf courses, cemeteries, and athletic fields.[32]

The Department of Public Works Stormwater/Environmental Compliance Division is responsible for maintaining the City's storm drain system and monitoring stormwater quality. The department maintains a network of detention and filtration facilities, as well as stormwater lines that transport stormwater from streets, building, parking lots, and landscaped areas to larger drainage ways and culverts, creeks, the Los Angeles River, the San Gabriel River, and ultimately, the Pacific Ocean.

Electricity, Natural Gas, and Crude Oil Resources

Southern California Edison provides electrical services to several Southern California communities, including the City of Long Beach. Southern California Edison owns and maintains a network of power lines throughout the community.

Several large power generation plants are located in Long Beach. The AES Los Alamitos and Haynes Generating Station power plants are located at the far southeast corner of the City, and the Southeast Resource Recovery Facility is located at the Port of Long Beach. AES Los Alamitos is a 2,000-megawatt natural gas-fueled power plant, located off the San Gabriel River between 7th and 2nd Streets, provides electricity to surrounding communities and the region. The Los Angeles Department of Water & Power (LADWP) operates the Haynes Generating Station. This facility is a natural gas and steam power plant located across the San Gabriel River from AES Los Alamitos. The Southeast Resource Recovery Facility, located on Terminal Island, serves the City of Long Beach and the Sanitation Districts of Los Angeles County. The facility processes municipal solid waste to generate energy, with enough power to meet the needs of approximately 35,000 homes.

A municipal utility owned and operated by the City of Long Beach, the Long Beach Gas & Oil Department provides natural gas service to approximately 500,000 residents and businesses in Long Beach and Signal Hill. Natural gas is delivered to residents and businesses through a network of over 1,800 miles of pipelines built and maintained by the Engineering and Construction Bureau. This Bureau also designs and installs new natural gas pipelines, monitors gas pressure, flow, and quality, and provides response to gas pipeline emergencies.[33]

The City of Long Beach is the only municipal government in California that manages oil operations. Through Long Beach Gas & Oil, the City operates the Wilmington Oil Field and has various financial interests in smaller oil fields throughout the City, including the Signal Hill East and West Units, Recreation Park, and Marine Stadium. Since

establishing oil operations, the City of Long Beach has generated over $450 million for local investment and over $4.25 billion for the State of California.[33]

Because of the ongoing oil extraction and refining activities in and near the City of Long Beach, a number of oil pipelines traverse the City. These pipelines provide a way to transport oil within and through the City in lieu of truck or rail transportation.

Communication Resources

Communication resources include Internet, cable television, satellite television, telephone, and cellular phone services provided to our City's residents.

» Telephone Services: Local telephone service is provided by Verizon. Long distance service is available from a variety of carriers.

» Cable Television Services: Satellite television services are provided by a number of service providers.

» Internet Services: City residents and businesses have many options when choosing an Internet service provider. These include companies that provide dial-up service as well as high-speed DSL and fiber-optics or cable-modem services offered through Verizon and Charter Communications.

» Cellular Phone Services: A variety of cell service providers are available to Long Beach residents and businesses.

City residents and commercial customers have access to a variety of plans and services made available by each of the telecommunication providers serving Long Beach.

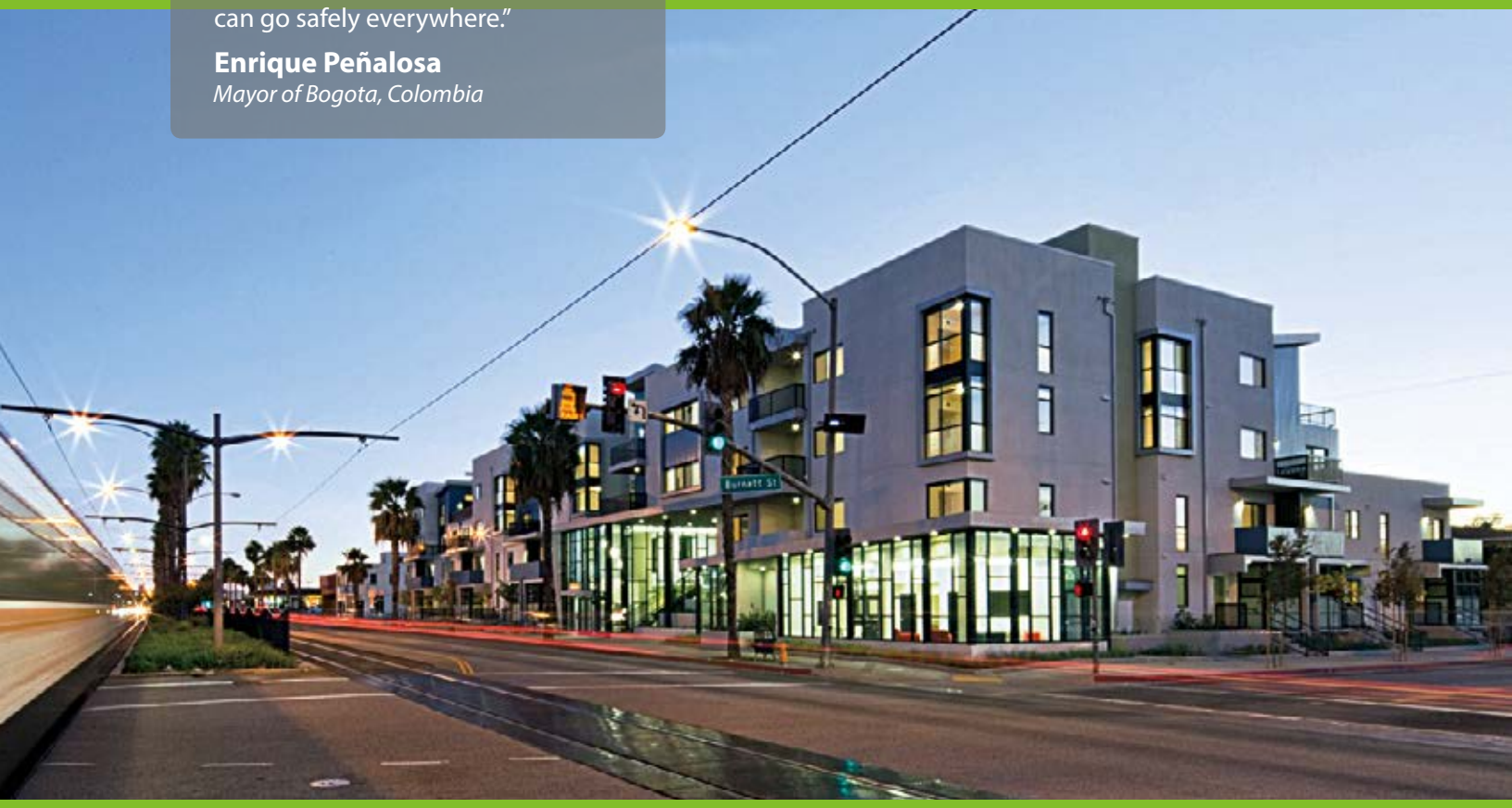
Salud Park, Paramount.

Mobility Plan:
Keeping Our City on the Move

4

"If we're going to talk about transport, I would say that the great city is not the one that has highways, but one where a child on a tricycle or bicycle can go safely everywhere."

Enrique Peñalosa
Mayor of Bogota, Colombia



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Mobility Plan:
Keeping Our City on the Move

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THE MOBILITY OF PEOPLE: ON FOOT, ON BICYCLES, IN VEHICLES, AND VIA TRANSIT

In this section, we'll take a closer look at how the City plans to keep our people, goods, and resources moving with maximum efficiency and minimum impact to our traffic flow, environment, and quality of life. Subsections include:

» The Mobility of People

» The Mobility of Goods

» The Mobility of Resources

Hundreds of thousands of people live, work, play, and travel through the City of Long Beach every day. To improve the mobility of people across our City, we are implementing three goals:

1) Create a safe, efficient, balanced, and multimodal mobility network.

2) Maintain and enhance air, ground, and water transportation capacity.

3) Lead the region by example with innovative and experimental practices.

In the pages that follow, we'll provide background discussion for these goals and their related policies. To learn more about the implementation related to each goal, turn to Section 5 of this report.

Goal No. 1: Create an Efficient, Balanced, Multimodal Mobility Network

Long Beach is a built-out city with a developed transportation network. As the population grows, opportunities for constructing new streets and acquiring additional rights-of-way for street widening to accommodate additional vehicles are limited. As a result, future strategies must be aimed at improving the existing mobility network. A more efficient, balanced, and multimodal mobility network means more convenient and affordable transportation choices for people in our City.

To create an efficient, balanced, and multimodal mobility network, the City plans to:

1) Establish a network of complete streets that complement the related place types.
2) Reconfigure streets to emphasize modal priorities.
3) Strategically improve congested intersections and corridors.
4) Establish a more flexible level of service approach to traffic analysis and improvements.
5) Reduce the environmental impacts of the transportation system.
6) Manage the supply of parking.

Let's examine each of the above strategies in closer detail.

Spotlight on Streets

The overarching purpose of this Mobility Element is to create a balanced mobility system comprised of complete streets that serve all people regardless of age, ability, or choice of transportation — by foot, on bicycle, in a vehicle, or using public transit. The City recognizes that, due to their current function within the local and regional transportation system, some streets will be required to carry large volumes of cars or trucks. At the same time, we also recognize opportunities to redesign other streets to accommodate and attract more pedestrian, transit, and bicycle traffic.

Integrating Our Streets

As part of this Mobility Element, the City proposes a context-sensitive street classification system that addresses how a street interfaces with adjacent land uses and buildings, as well as how the street will serve to mobilize people, including pedestrians, bicyclists, transit riders, and drivers (see Table 4). Both environment and function are important considerations when creating seamless connections between multiple transportation modes.

By using a context-sensitive approach, the City contextually addresses the function of the street, the character and design of the surrounding neighborhood or district, and the needs of all mobility users. This approach lends itself to a more balanced mobility system, one that supports the integration of mobility, land use, and urban design considerations. Last but not least, context-sensitive street classification opens up transportation options to people, allowing them to make the best choice for local and regional trips.

Creating Context-Sensitive Designs

Context-sensitive projects attempt to meet the needs of the users, the neighboring communities, and the surrounding environment. To accomplish this, context-sensitive projects that are sensitive to their settings require careful planning, consideration of different perspectives, and customized designs that accommodate different environments. Context-sensitive designs use a collaborative, interdisciplinary approach that includes early involvement of key stakeholders to ensure that transportation projects are not only moving safely and efficiently, but are also in harmony with the natural, social, economic, and cultural environment.[34]

Compared to context-sensitive design, conventional roadway design sets defined standards for minimum lane width, design speed, and minimum parking supply among other road features. These fairly strict design standards can sometimes impede mobility management efforts, including strategies aimed at traffic calming, streetscape improvements, new urbanism, pedestrian improvements,

and bicycle improvements. Context-sensitive design, on the other hand, allows for greater flexibility in order to prioritize people movement, not auto movement. This can result in narrower lanes, lower design speeds, and special features that help create a more balanced and efficient transportation system while meeting community land use objectives.[35]

The success of context-sensitive design relies on early and continuous public outreach and engagement, flexibility in exploring new solutions, and an openness to new ideas. Community members should be enlisted to help identify local and regional problems and solutions that better meet and balance the needs of all stakeholders. By involving the public early in the process, mobility planners can help reduce expensive and time-consuming reworking of projects later on, leading to more efficient project development.

Six Attributes of Successful Context-Sensitive Design

1) Emphasize safety and balance mobility, community, and environmental goals in all projects.
2) Involve the public and affected agencies early and continuously.
3) Use an interdisciplinary team tailored to project needs.
4) Address all modes of travel.
5) Apply flexibility inherent in design standards.
6) Incorporate aesthetics as an integral part of good design.[34]

Reclassifying Our Streets to Be More Context-Sensitive

With all the potential benefits of context-sensitive design, is it feasible for the City of Long Beach to adopt such an approach? Let's take a closer look. Traditionally, Long Beach has designated its streets as regional corridors, arterials, collectors, and local streets. In this Mobility Element, we recommend refining the street-classification using context-sensitive design elements. In some cases, this includes changing the designation/classification of particular streets to better reflect their actual function.

The new nomenclature for street types included in this Mobility Element signify the shift to a new context-sensitive street classification approach. For example, "boulevards" were not included in the City's 1991 Mobility Element. The City has since added this street classification to better reflect roadways in the City characterized by medium speeds, a balanced multimodal function, wide sidewalks, and more intensive land use oriented to the street.

Roadways that have been reclassified as boulevards still maintain many of the same design features that they held as regional corridors and/or arterials, with slight modifications to possible transit and traffic operations, and compatible land uses.

For a comprehensive list of the street typology criteria associated with each functional classification, please see Table 5. The criteria listed there reflect a combination of quantitative and subjective measures, and is intended as a guideline. Not all criteria need to be met in order to designate a particular functional class.

Table 4: Context-Sensitive Street Classification System Definitions

Regional Corridor	Designed for intraregional and intercommunity mobility, these corridors emphasize traffic movement and include signalized pedestrian crossings. The adjacent land uses should provide continuous mixed-use and commercial land uses with adequate off-street parking to minimize dependency on on-street parking.
Boulevard	Characterized by a long-distance, medium-speed corridor that traverses an urbanized area, boulevards consist of four or fewer vehicle travel lanes, a balanced multimodal function, landscaped medians, on-street parking, narrower travel lanes, more intensive land use oriented to the street, and wide sidewalks. Buildings uniformly line the edges. Multiway boulevards, a variation of the boulevard characteristic of post war neighborhoods, contain a central roadway for through-traffic and parallel roadways for access to abutting property parking, and pedestrian and bicycle facilities. Parallel roadways are separated from the through-lane by curbed, landscaped islands that may also provide transit stops and pedestrian facilities.
Major Avenue	A major avenue serves as the major route for the movement of traffic within the City as well as a connector to neighboring cities. Most traffic using a major avenue will end the trip within the City (as opposed to through-traffic). As such, design treatment and traffic operation should give preference to this type of traffic. Long corridors with typically four or more lanes, avenues may be high-transit ridership corridors. Goods movement is typically limited to local routes and deliveries.
Minor Avenue	A minor avenue provides for the movement of traffic to neighborhood activity centers and serves as a route between neighborhoods. Avenues serve as a primary bicycle route and may serve local transit routes as well.
Neighborhood Connector	A neighborhood connector street serves trips generated in surrounding or adjacent neighborhoods, and should discourage through-trips that do not end within the neighborhood. Goods movement is restricted to local deliveries only.
Local Street	Local streets primarily provide access to individual residential parcels. The streets are generally two lanes with on-street parking, tree planting strips, and sidewalks. Traffic on a local street should have a trip end on that street, or on a connecting local street, or to a connector.

This context-sensitive street classification plan for the City of Long Beach designates all streets within Long Beach as one of the following street types:

- Regional Corridor
- Boulevard
- Major Avenue
- Minor Avenue
- Neighborhood Connector
- Local Street

Here we've included general descriptions for the street types. Specific street design treatments and details vary based on the function, context, and desired character of each street. Table 5 addresses the following topics:

- Functional purpose.
- Design criteria.
- Special landscape treatments.
- City entrance improvements.
- Possible traffic operations.

Table 5: Street Typology Design Criteria

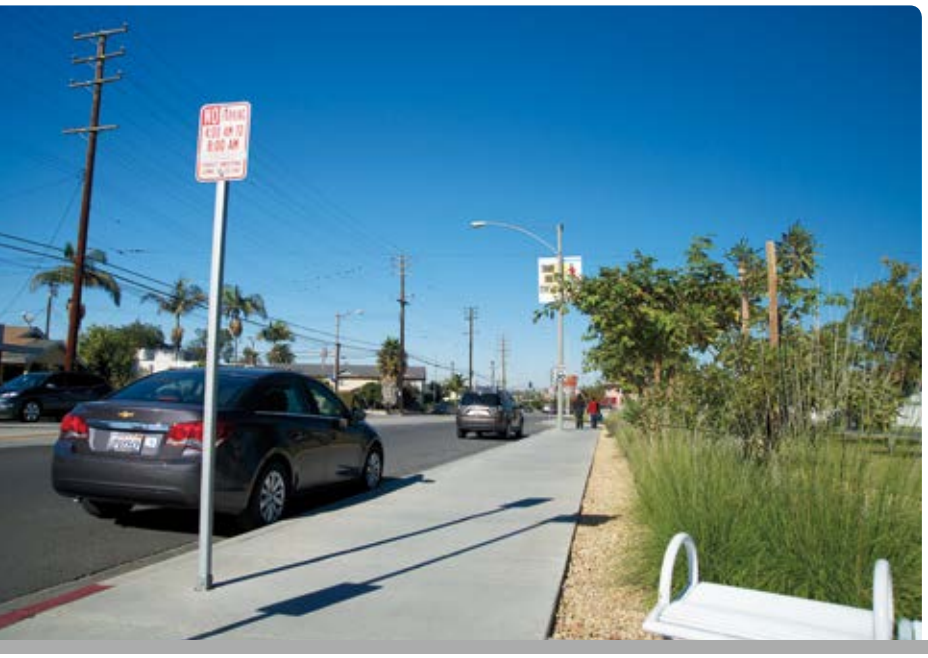
	Regional Corridor	Boulevard	Major Avenue	Minor Avenue	Neighborhood Connector	Local Street
Functional Purpose						
Regional Traffic (travel between subregions)	Primary	Secondary	Secondary	Discouraged	Discouraged	Discouraged
Subregional Traffic (travel within Long Beach subregion)	Primary	Secondary	Secondary	Discouraged	Discouraged	Discouraged
City Traffic (travel between neighborhoods/activity centers)	Secondary	Primary	Primary	Secondary	Discouraged	Discouraged
Neighborhood Traffic (link between local streets and major traffic carriers)	Incidental	Incidental	Incidental	Primary	Primary	Discouraged
Local Traffic (trip end on street or on connecting local street)	Incidental	Incidental	Secondary	Secondary	Secondary	Primary
Design Criteria						
Right-of-Way Width	100'	80'-100'	100'	80'	60'	56'
Roadway Width	84'	80'	80'	54'-60'	40'	36'-40'
Number of Lanes	4-8	4-8	4-6	2-4	2-4	2
Desirable Sidewalk Width	10'	10'-13'	10'	10'	6'	6'
Parkway	6'	6'	6'	6'	6'	6'
Maximum Allowable Peak-Hour Level of Service	D	D	D	C	C	–
Traffic Circle					Selective	Selective
Left-Turn Pocket/Right-Turn Pocket	■	■	■	■	Desired	
Special Width Requirements		Long Beach Boulevard, Alamitos Avenue, and Ocean Boulevard west of Alamitos shall have a right-of-way width of 106' or more to provide for landscaped medians.	One-way streets shall have a right-of-way width of 80' with a roadway width of 56'; Redondo Avenue between Broadway and Pacific Coast Highway shall maintain a right-of-way width of 80'; Anaheim Street, east of Pacific Avenue, shall maintain a right-of-way width of 70'.	Broadway, Fourth Street, and Tenth Street shall maintain a right-of-way width of 70'.		
Special Landscape Treatments	Optional	Desirable	Optional	Optional	Optional	
City Entrance Improvements	■	■	■			
Possible Traffic Operations						
Traffic Calming					■	■
Signal Synchronization	■	■	■	■		
Peak-Hour Parking Restrictions Allowed	Considered	Possible	Possible			
Scenic Route	Possible	Likely	Optional			
Turn Restrictions	■	■	■	■		

Streets That Serve Us All

As shown on Map 12, streets in our City — regardless of type — should be designed in a way that accommodates all modes of travel. In this Mobility Element, we're taking the concept of complete streets even further with an additional layer of standards that emphasize and prioritize specific travel modes on particular street corridors.

This layered approach creates a network of streets prioritized for one or more modes of travel:

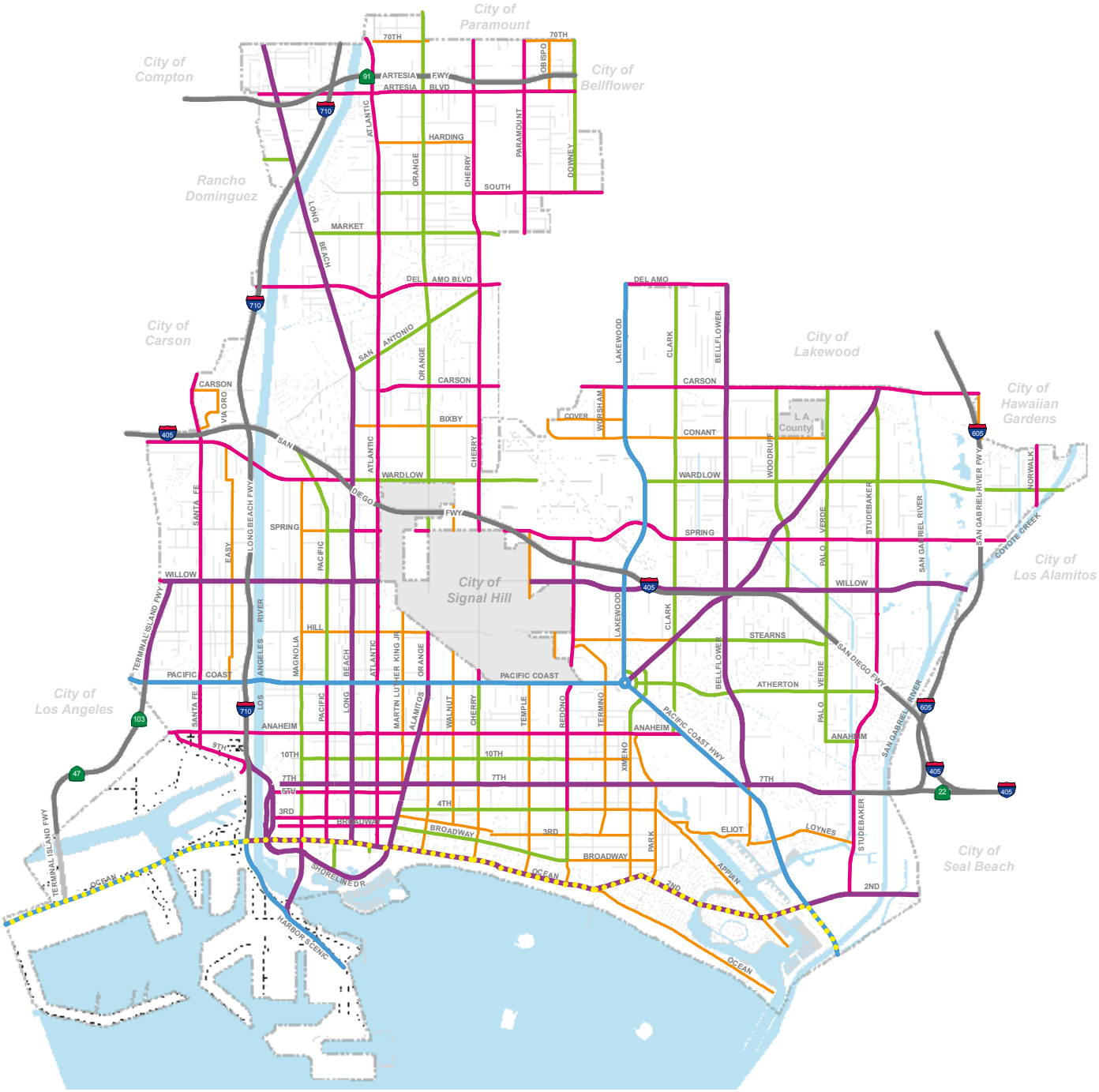
» Walking
» Bicycling
» Riding transit
» Driving automobiles
» Driving trucks



Both of the street sections show a boulevard street classification, however, they are designed differently based on the context-sensitive classification system that takes adjacent land use and roadway function into account.

The upper street section is in a suburban context in which automobile travel is a priority. The lower street section is in an urban context in which walking, bicycling, and transit are the priority. Without the flexibility of the context-sensitive approach, these locations would have the same street design.

Map 12:
CONTEXT-SENSITIVE STREET CLASSIFICATION SYSTEM



Legend

Classifications

- Freeway
- Regional Corridor
- Boulevard
- Major Avenue
- Minor Avenue
- Neighborhood Connector
- Scenic Route
- Local Street
- Port-Related Street

In the following sections, we describe the proposed networks for each of these transportation modes with the exception of trucking which is described later in Section 4 under *The Mobility of Goods: Keeping Goods on the Go*.

Spotlight on Walking

Enhancing the mobility of people includes making it easier, safer, and more enjoyable for those people to walk to their destinations. In the City of Long Beach, pedestrian traffic is largely concentrated in pedestrian corridors around several key areas, including these areas shown on Map 13:

- The Pike at Rainbow Harbor
- Shoreline Village
- The Long Beach Transit Gallery
- Naples
- Belmont Shore
- California State University Long Beach
- The Blue Line Transit Corridor
- Bixby Knolls

Other pedestrian-priority areas within the City include the restaurants and businesses around the Long Beach traffic circle, and various segments of Atlantic Boulevard, Wrigley Village, Anaheim Street, 1st Street, 4th Street, and Carson Street, among others.

In these areas shown on Map 13, pedestrians should take priority. To accomplish this, the City plans to place importance on capital and operational improvements that promote pedestrian travel that is safe and enjoyable.

Steps to Pedestrian Safety

Pedestrian safety has always been and will continue to be the City's highest priority in street design. For those pedestrian-priority areas already deemed walkable, the City will continue to maintain and improve the street design with additional enhancements. At the same time, the City plans to improve other areas not yet established as walkable to enhance the pedestrian experience and encourage more walking. Over time, these areas will become more walkable districts.

Enhancing the Pedestrian Experience

To improve pedestrian safety and comfort by providing safe and comfortable sidewalks and ample opportunities to safely cross the street, enhancing the pedestrian realm, pedestrian-priority areas, both existing and emerging, the City plans to add significant pedestrian amenities, including street trees, pedestrian streetlights, benches, trash and recycle receptacles, intersection bulb-outs, bollards, outdoor dining, enhanced crosswalks, and landscaped planters. Building design and land uses that reinforce an active pedestrian realm will also be emphasized in these areas, as directed by the Land Use and Urban Design Elements.

Citywide Walking

By establishing priority areas, the City is by no means de-emphasizing pedestrian improvements in other locations. Indeed, this Mobility Element seeks to make walking safe and pleasurable in all areas of Long Beach so that everyone — especially children, the elderly, and people with disabilities — have a viable and safe way to travel.

By making Citywide pedestrian improvements and by promoting land uses and building designs that encourage pedestrian activities, we can help make walking a truly viable means of transportation, recreation, and exercise. As an added bonus, research shows that a more walkable city also contributes to the overall quality of life, and sense of community within a neighborhood.

This Mobility Element recommends the development of a Pedestrian Master Plan that details future improvements for the pedestrian environment, including the pedestrian-priority areas. Additional direction for pedestrian improvements in specific areas of the City may also be provided in the City's neighborhood and community plans.

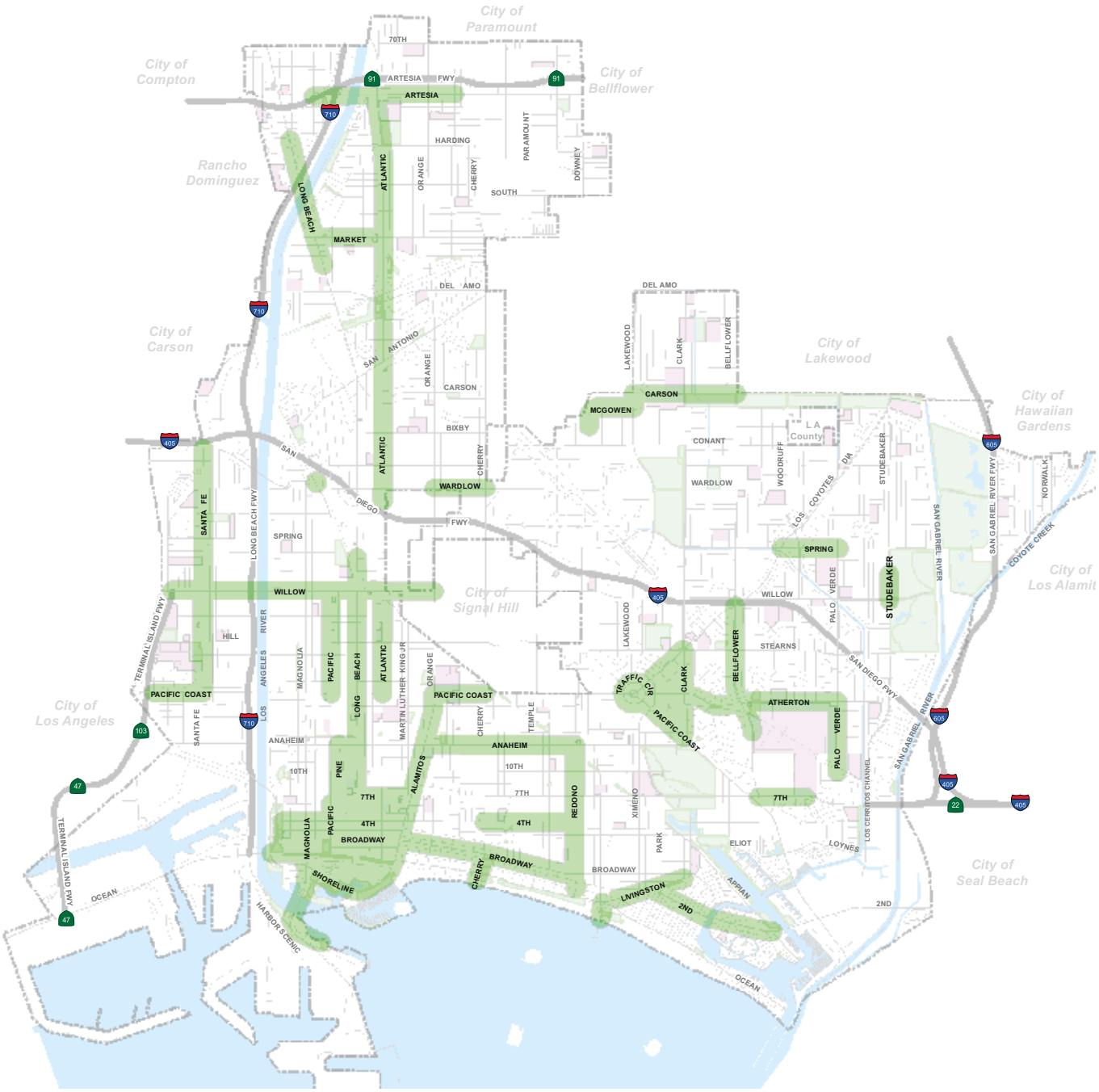
From Pavement to Plazas

Streets and other public rights-of-way make up over 20% of the City's land area. Long Beach has its share of excessively wide streets that contain large zones of wasted space, especially at intersections with lower traffic volume. The "Pavement to Plazas" concept seeks to temporarily reclaim these unused swaths of roadway and turn them into small public plazas. Reclaiming this wasted space is a fairly simple process: paint or treat the asphalt, place protective barriers along the periphery, install moveable planters, tables, and chairs — and suddenly you have an attractive, safe gathering space for people to enjoy.

Transforming these dead zones into parklets is also relatively easy to do. Small spaces for people to relax, drink a cup of coffee, eat a meal, and enjoy the city around them; parklets are created by building a platform in the parking lane of a street. This continues the grade of the sidewalk out into the parking lane. On the platform, benches, planters, landscaping, bike parking, and café tables and chairs all come together to provide a welcoming new public space.

Making these changes does not typically require large outlays of capital. And the benefits far outweigh the costs: better street life, additional space for businesses, more green space to filter stormwater pollution, and more enjoyment for the people who live and work nearby.

Map 13:
PEDESTRIAN-PRIORITY AREAS



Legend

- Pedestrian-Priority Area
- School
- Park

Safe Routes to School

Implementation of strategies to reduce cut-through traffic will also help protect residential neighborhoods and enhance pedestrian safety around schools, churches, community centers, and parks. Of particular concern are the safety hazards posed by vehicles to school-aged children and other residents during the peak drop-off and pickup hours. The City will work with local school districts to identify safe routes to all schools, establish safe drop-off and pickup zones and encourage walking or bicycling as safe alternatives to driving children to school.

Spotlight on Bicycling

More frequently and consistently here in Long Beach, pedestrians and motor vehicles are sharing the streets with bicyclists. Now we're working to make sure our network of streets considers the needs of bicycle users more comprehensively.

Map 14 shows the City's proposed bicycle-priority corridors. As shown, improvements for each street corridor will include the addition of Class III bicycle routes, Class II bike lanes, Class I bike paths, or bicycle boulevards (Class III routes with enhanced roadway features). The completed network will encourage people of all ages and abilities to ride bicycles for their daily needs. By giving people a safe and convenient way to access transit corridors, the enhanced network will also encourage increased transit ridership.

Bicycles Welcome

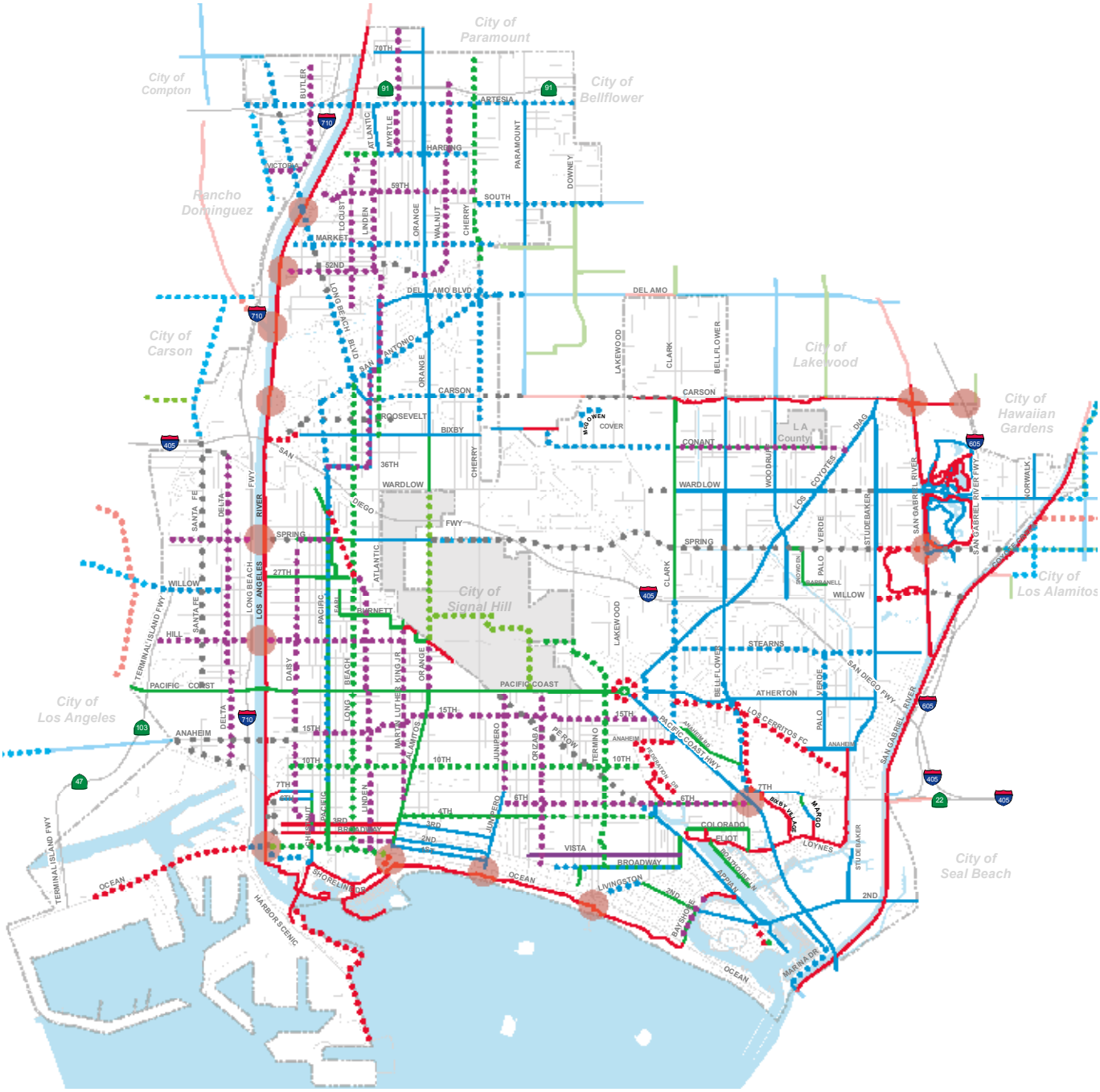
As stated in the previous section of this Mobility Element, the City of Long Beach is striving to become the most bicycle-friendly city in America. Like walking, it is a nonpolluting and sustainable form of transportation, promotes exercise, improves public health, and offers a range of societal benefits.

With its regional and local bicycle network, relatively flat topography, pleasant climate, and highly connected grid system of streets, bicycling provides a very viable alternative to driving in Long Beach. Here in our City, the average length of a trip taken by any transportation mode is five miles. When traveled by car, these five-mile trips generate a relatively high amount of air pollution.

With the proper cycling infrastructure and secure bicycle storage available at destinations, many of these five-mile vehicle trips within Long Beach could be replaced by a 30-minute bicycle ride. Our goal is to create the network that encourages this to happen.

Traffic diverters on bicycle boulevards optimize bicycle throughput and discourage cut-through motor-vehicle traffic.

Map 14:
BICYCLE PLAN



Legend

Existing	Bikeways	Proposed
	Bike Boulevard	
	Class I Bikeway/Protected Lanes	
	Class II Bikeway	
	Class III Bikeway/Sharrows	
	To Be Determined	
	Bike Bridge/Access Improvement	

The City will continue to use its Bicycle Master Plan as the primary tool to implement improvements to the bicycle network. Additional details for bicycle improvements in specific areas of the City are also provided in the City's community plans and Bicycle Master Plan.

Building More Bicycle Boulevards

Similar to a Class III bike lane, a bicycle boulevard provides an enhanced bicycling experience by minimizing stop signs while providing features that discourage motor vehicle speeding and cut-through traffic. Each bicycle boulevard, however, has a unique set of features depending on the street characteristics, the desires of the surrounding residents and businesses, and the amount of funding available.

As shown on Map 14, a key component of the new approach for bicycling in Long Beach is a network of bike boulevards.

Bicycles as the Best Solution

In the previous section, we introduced the concept of the first- or last-mile problem: the challenge commuters face when the starting or ending point of their commute cannot be conveniently accessed from the nearest transit stop or station. Main causes for this problem include perceived distance, inaccessible terrain, or pedestrian safety issues.

Due to low population density and long transit headways, transit routes in suburban and medium-density areas are particularly plagued by the first- or last-mile problem. Bicycling offers a viable solution around this problem for these areas by dramatically expanding access to transit. What's more, bicycles can be carried on buses and trains so that they can be used at opposite ends of the trip to reach the final destination.

The benefits of bicycle-transit integration exceed accessibility and convenience. These two modes of transportation can work together to deliver environmental and health benefits for communities, while mitigating congestion issues.

To leverage bicycles as an effective solution to the first- and last-mile problems, communities must have certain key elements in place: a complete and safe bicycle network, adequate space for bikes on buses and trains, and secure bicycle parking at stations and destinations. The City of Long Beach is working to put each of these critical components in place.

Bike boxes are intended to reduce car-bike conflicts, increase cyclist visibility, and provide bicyclists with a head start when the light turns green.

Ranking Bicycle-Friendly Communities

Across the nation, bicycle-friendly towns share a common goal: to improve the quality of life for individuals and families by promoting bicycling. They also share a common ranking system defined by the Bicycle-Friendly Community Program. Developed to evaluate the bicycle infrastructure and programs of communities, this program assigns rankings of Platinum, Gold, Silver, or Bronze to communities based on criteria known as the 5 Es:

» Engineering » Education » Encouragement » Enforcement » Evaluation and Planning

Engineering

This refers to the actual bicycle infrastructure built to promote bicycling in the community: accommodation of bicyclists on public roads and the existence of both well-designed bike lanes and multiuse paths in the community.

Education

Communities' efforts to educate bicyclists and motorists are considered in their ranking. Education includes teaching bicyclists of all ages how to ride safely on multiuse paths and congested city streets, as well as teaching motorists how to share the road safely with bicyclists.

The following aspects are evaluated: the availability of bicycling education for adults and children, the number of League Cycling Instructors in the community, and ways that safety information is distributed to both bicyclists and motorists in the community, including bike maps and tip sheets.

Encouragement

This category concentrates on how the community promotes and encourages bicycling. Good promotional measures include "Bike Month" and "Bike to Work Week" events, as well as community bike maps, route finding signage, community bike rides, commuter incentive programs, and the presence of a Safe Routes to School Program.

Additional strategies and initiatives designed to promote bicycling or a bicycling culture may include: off-road facilities, BMX parks, velodromes, and the availability of both road and mountain bicycling clubs.

Enforcement

The enforcement category measures the connections between the bicycling and law enforcement communities. Areas examined include: the presence of a law enforcement liaison who interfaces with the bicycling community; the bicycle divisions of the law enforcement or public safety communities; use of targeted enforcement to encourage bicyclists and motorists to share the road safely; and the existence of bicycling-related laws such as penalties for failing to yield to a bicyclist while turning or penalties for motorists that "door" bicyclists.

Evaluation and Planning

As part of the ranking process, the program evaluates communities' current programs and future bicycle plans. Criteria measured include the amount of bicycling taking place in the community, the crash and fatality rates, and ways that the community works to improve these numbers.

How Does Long Beach Rank?

The City of Long Beach is currently designated as a Silver Level Bicycle-Friendly Community, the third-highest ranking level in the program. Portland, Ore., is the largest city in the nation with a Platinum rating.[36]

Taking Transit to the Next Level

Transit plays, and will continue to play, a critical role in the City's overall transportation system. In the City of Long Beach, planners face limited opportunities to widen streets and intersections to accommodate more vehicles. As such, transit will have an increasing role in the mobility of people living and working in the City. Transit also provides mobility for all people who — regardless of age, income, ability, or preference — do not have access to a car.

One of the primary goals of this Mobility Plan is the increased use of transit as a more viable option for both work and nonwork trips. Accomplishing this goal will require an improved transit system capable of providing faster and more frequent trips while maintaining safe, clean, and dependable service. As Long Beach Transit and the City continues to enhance public transit, we must prioritize these activities, particularly when it comes to improvements and investments made in street design that take into account transit transportation.

In Long Beach, certain transit routes are more critical than others. Different types of transit services require different strategies to ensure an effective integration with other modes of transportation. In order to ensure street design that remains sensitive to the needs of transit, the City must develop clear, site-specific guidance for the different transit corridors throughout Long Beach.

Prioritizing Transit Corridors and Projects

Map 15 shows the proposed transit-priority streets, including primary transit streets and secondary transit streets. The backbone of the City's transit system, primary transit streets provide regional connections, serve a high volume of riders, and offer frequent service with transit headways of 15 minutes or less during peak hours. On these streets, transit will be given priority over autos. Here we take a closer look at some of the improvements that can be made to enhance transit service on transit-prioritized streets.

Signal Prioritization: To promote faster service on buses and trains, signal prioritization should be a top action item — even if these changes affect the level of service for automobiles in these areas.

Providing an inviting and comfortable environment at transit stops enhances the pedestrian experience.

Transit-Only Lanes: Queue jumps or exclusive transit lanes, such as dedicated bus-only lanes. The removal of on-street parking may be required to accommodate these lanes.

Transit Amenities: Superior transit amenities — such as high-quality shelters, real-time transit arrival information, and benches — should be provided at all stops on these streets.

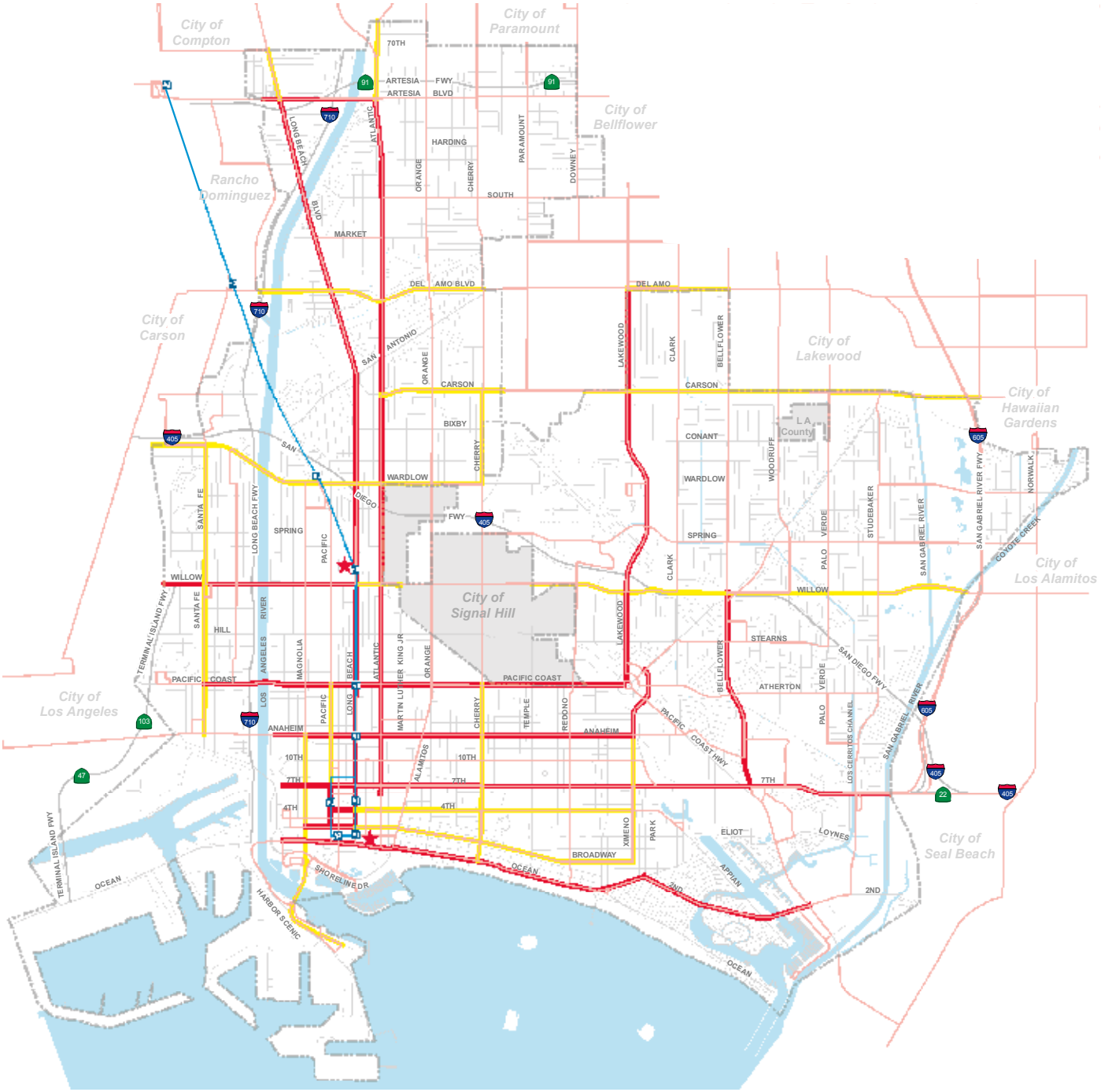
Bicycle Accommodations: Bicycle connections and bicycle storage facilities at the major stops create a seamless link between the bike and transit network. Enhanced transit-bicycle integration will make transit stops far more accessible than the typical half-mile walking radius.

Pedestrian Experience: On these primary transit streets, a high priority must be also be given to enhancing the pedestrian experience, in the design of both streets and buildings. For more information on policies regarding street and building design, please reference the City's Urban Design Element.

Secondary Transit Streets

With lower overall ridership than primary transit streets, secondary transit streets provide for local and neighborhood transit service without physical priority treatments, such as exclusive transit lanes or transit signal priority. The transit routes on these streets are expected to have peak-hour transit headways of 20 minutes or greater. When available, on-street parking will be prohibited on these transit streets during peak commute hours to minimize disruptions to bus and vehicle traffic flow.

Map 15:
TRANSIT-PRIORITY STREETS



Legend

Transit Route Classification

- Secondary
- Primary
- Multimodal Hub
- Metro Rail Stations
- Metro Rail
- Bus Routes (includes LB Transit, Metro, and OCTA)

Transit-Oriented Development (TOD)

Transit-Oriented Development (TOD) supports higher-intensity uses along transit-supported corridors, in Downtown and near transit stations, particularly at Metro Blue Line stations on Long Beach Boulevard. Transit can become an effective alternative to the automobile if appropriate services and amenities are incorporated into the design of TOD projects. By enabling transit riders to accomplish multiple errands within their commute, the City can help public conveyances become a more viable and convenient transportation option. This will allow more people to live and work within walking distance of transit facilities, saving them the cost of buying a vehicle and facilitating better air quality and health outcomes as well.

Streetcars Make a Comeback

In our quest to resolve Long Beach's current and future transportation issues, the City may do well to look to our past. Long Beach once had a well-developed network of electric street car lines. In fact, in 1927 over 30 miles of tracks connected our City's neighborhoods and districts. After World War II, the lines were dismantled and gradually replaced by bus transit.

As the projected population of Long Beach is expected to increase, streetcars or other high-capacity people movers may offer a viable option to meet transportation needs. Primary transit streets with high ridership that connect to employment centers and tourist destinations would be the favored candidates for streetcar or people-mover systems. It's interesting how concepts from the past can also inspire ideas for the future.

Create Active Neighborhoods and Healthy Residents

Long Beach is a city made up of many unique neighborhoods. Each neighborhood has its own history and characteristics. Not only are neighborhoods places to sleep, but they provide for the daily needs of modern life, from local shopping areas offering stores and personal services, to our open spaces, streets and sidewalks, libraries, schools, and fire stations — they are all a part of our local neighborhoods. Unfortunately, some of our neighborhoods are lacking components of a "complete neighborhood" or they have been saddled with incompatible or obsolete developments. This principle establishes making each neighborhood complete by improving the urban fabric to ensure that daily destinations are within a walkable or bikeable distance, blight is minimized, and residents have access to healthy foods and safe places to create and congregate. This principle is designed to better shape infill developments so that they are only placed where infrastructure can sustainably support them and their scale and character will be made compatible with the surrounding environment. Moreover, community members identified having access to nutritious food and reducing blighting influences and unhealthy activities as important, particularly to young people, in achieving a healthier population.

Driving Efficiencies

While placing an emphasis on a multimodal system, the City recognizes that the majority of travel miles within Long Beach will be done inside automobiles. Our City's streets will still need to consider other transportation modes, but they should also be designed to efficiently move cars between neighborhoods, local and regional destinations, and freeways and highways. Left-turn lanes, right-turn pockets, standards that limit the location of driveway, and on-street parking limitations — these and other design features will be needed to facilitate vehicle flow on those corridors where automobiles are the primary mode of transportation.

Auto-priority street corridors should be designed and managed to provide shorter vehicle travel times than parallel avenues or neighborhood streets. Where necessary, Neighborhood Traffic Calming measures employed on residential streets will discourage people from driving through neighborhoods, thereby minimizing disruption, and creating a safer, more pleasant environment for residents.

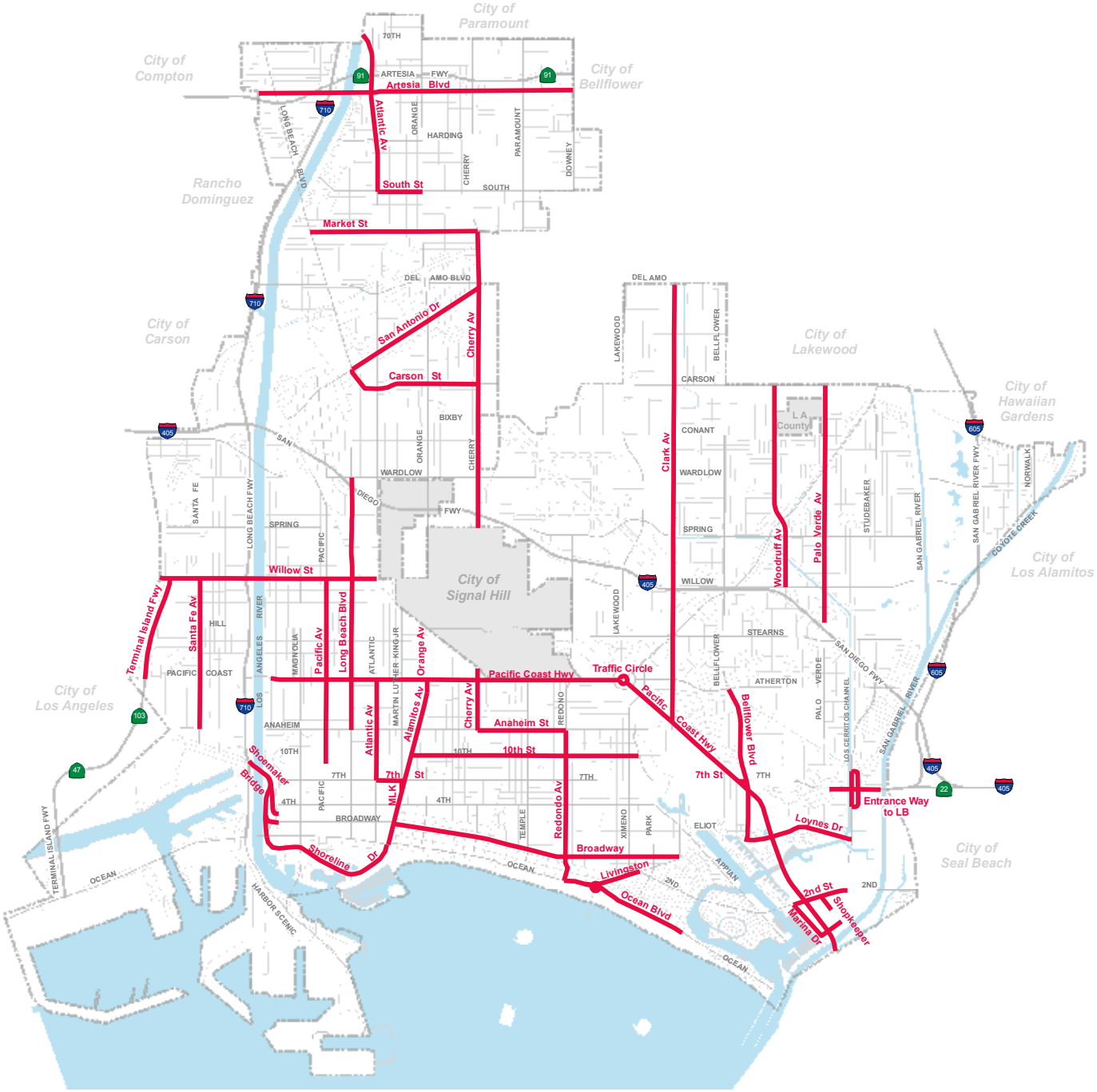
How Corridors Become Complete Streets

To create complete streets that meet the needs of all multimode transportation users, the City must make certain modifications to existing streets. These modifications will allow streets to better accommodate the City's planned network of pedestrian, bicycling, and transit-priority street corridors.

Enhancing a street corridor for one mode of transportation may have to come at the expense of another mode of transportation. For example, adding a bicycle lane or widening a sidewalk for pedestrians may require narrower or fewer travel lanes for vehicles. These compromises are needed to create a balanced transportation system that provides high-quality through-routes for each mode of travel.

Certain streets in Long Beach with excess vehicle capacity may be better suited for street redesign to better accommodate the needs of pedestrians, bicyclists, and transit riders. By reducing the width or number of travel and parking lanes, selected streets can be reconfigured to accommodate a variety of improvements, such as wider sidewalks with trees, bike paths or lanes, dedicated transit lanes, and landscaped medians or curb extensions that make the streets more attractive and usable. Map 16 illustrates those streets that have potential for new character-changing features.

Map 16:
OPPORTUNITY FOR STREET CHARACTER CHANGE



Legend

- Opportunity for Street Character Change

In this section, we discuss the City's key strategies and goals in enhancing the Mobility of People.

Mobility of People (MOP) Policies

STRATEGY No. 1: Establish a network of complete streets that complements the related street type.

» MOP Policy 1-1: To improve the performance and visual appearance of Long Beach's streets, design streets holistically using the "complete streets approach" which considers walking, those with mobility constraints, bicyclists, public transit users, and various other modes of mobility in parallel.

» MOP Policy 1-2: Where streets are too narrow to accommodate all modes of travel, consider parallel routes working together to accommodate all modes in a "complete corridors" strategy.

» MOP Policy 1-3: Improve auto-oriented streets (such as Pacific Coast Highway and Lakewood Boulevard) so pedestrians using the stores or services can walk comfortably and feel safer navigating the busy thoroughfare, regardless of their point of origin — from the surrounding neighborhoods or via transit.

» MOP Policy 1-4: Allow for flexible use of public rights-of-way to accommodate all users of the street system, while maintaining safety standards.

» MOP Policy 1-5: Recognize the important function of alleys in the transportation network. Consider alleys, especially continuous alleys, a valuable resource for pedestrian connectivity, access to abutting properties for loading and unloading, locate utilities, and store/dispose of waste.

» MOP Policy 1-6: Involve citizens in transportation planning and project design decisions for improving the City's "complete streets" and bicycle and pedestrian networks.

» MOP Policy 1-7: Maintain all roadways, paths, and sidewalks in a good state of repair.

» MOP Policy 1-8: Acquire public rights-of-way dedication and improvements as development occurs, as shown on Table 5: Street Typology Design Criteria, except when a lesser right-of-way will avoid significant social, neighborhood, or environmental impacts and perform the same traffic movement function. Additional public street rights-of-way, beyond that designated on Table 5, may be required in specific locations to facilitate left-turn lanes, bus pullouts, and right-turn lanes in order to provide additional capacity at some intersections. Public rights-of-way dedication can also be used for complete streets enhancements.

» MOP Policy 1-9: Increase mode shift of transit, pedestrians, and bicycles.

» MOP Policy 1-10: Encourage innovative and/or private transit-related systems to address discrete transit problems.

» MOP Policy 1-11: Continue to assist Long Beach Transit in implementing a comprehensive, Citywide transit service that meets future needs.

» MOP Policy 1-12: Encourage large employers to provide transit subsidies, bicycle facilities, alternative work schedules, ridesharing, telecommuting and work-at-home programs, employee education, and preferential parking for carpools/vanpools.

» MOP Policy 1-13: Increase multimodal access to major employers and educational institutions, including Long Beach Community College.

» MOP Policy 1-14: Use universal design techniques to accommodate pedestrians of all ages and abilities and ensure compliance with the Americans with Disabilities Act.

» MOP Policy 1-15: Pursue programs that reduce vehicle speeds and cut-through traffic on local streets.

» MOP Policy 1-16: Integrate all planning and development policies and strategies into the annual development of the Capital Improvement Program (CIP) to ensure projects are programmed in a cost-efficient manner.

» MOP Policy 1-17: Develop land use policies that focus development potential in locations best served by transit.

» MOP Policy 1-18: Focus development densities for residential and nonresidential land uses around the eight Metro Blue Line stations within City boundaries.

STRATEGY No. 2: Reconfigure streets to emphasize their modal priorities.

- MOP Policy 2-1: Design streets to have a specific role and identity that contributes to the neighborhood's character, while supporting specific functional requirements.
- MOP Policy 2-2: Design the character and scale of the street to support its street type and place-type designation and overlay networks (for example, create a bike boulevard or bicycle-friendly retail district, transit street, or green street).
- MOP Policy 2-3: Maintain all transit vehicles, stops, and centers in a clean, safe, and attractive condition.
- MOP Policy 2-4: Provide transit centers at major activity centers and develop linkages, including express transit service, between the centers and Downtown.
- MOP Policy 2-5: Clarify transit routing and make transit information, including arrival times, available at all transit centers, bus stops, on all buses, and on light rail trains.
- MOP Policy 2-6: Ensure high-quality, on-street access to transit stops and stations.
- MOP Policy 2-7: Treat streets as an important part of the public open space system, and integral part of the City's urban forest.
- MOP Policy 2-8: Provide distinctive design treatments for streets with important Citywide functions.
- MOP Policy 2-9: Identify streets or street segments where special design treatments are desired to achieve community goals.
- MOP Policy 2-10: Support the temporary closure of streets for community and commercial activity that encourages residents to see their streets as public spaces and promote biking and walking in the City.
- MOP Policy 2-11: Consider every street in Long Beach as a street that bicyclists and pedestrians will use.
- MOP Policy 2-12: Identify and analyze roadways where it may be possible to preserve the level of service while eliminating a vehicle travel lane to create a bike lane, or adding width to the curb lane for a new or improved bike lane.
- MOP Policy 2-13: Continue to use innovative designs to expand and enhance the bikeway network and increase public safety.
- MOP Policy 2-14: Regularly update the Bicycle Master Plan to maintain a comprehensive plan to vigorously expand bicycle facilities throughout Long Beach to create a full network of connected, safe, and attractive bikeways and supporting facilities for both transportation and recreation.
- MOP Policy 2-15: Ensure that all new development is consistent with the applicable provisions of the Bicycle Master Plan.
- MOP Policy 2-16: Close gaps in the existing bikeway system.
- MOP Policy 2-17: Ensure safe, convenient, and adequate, on- and off-street bicycle parking facilities to accommodate and encourage residents to cycle for commuting and daily needs.
- MOP Policy 2-18: Provide adequate sidewalk widths and clear path of travel as determined by street type classification, adjoining land uses, and expected pedestrian usage.
- MOP Policy 2-19: Where feasible, widen sidewalks to improve the pedestrian environment by providing space for necessary infrastructure, amenities, and streetscape improvements.
- MOP Policy 2-20: Preserve the ability and opportunity to transform any abandoned and underused railroad right-of-way for the movement of other modes.
- MOP Policy 2-21: Designate a system of bicycle boulevards with increased amenities and safety features such as bicycle detectors at signalized intersections.
- MOP Policy 2-22: Pursue the development of streetcar lines in areas for targeted development intensification and to connect major destinations.
- MOP Policy 2-23: Expand green color pavement at selected bike facilities to alert motorists and bicyclists of conflict areas and share the right-of-way with bicyclists.
- MOP Policy 2-24: Facilitate convenient and timely transfers between various travel modes. Emphasis should be on transfers between alternative transportation modes that minimize the need for use of single-occupant vehicles.

Social Transportation and Collaborative Consumption

In 2010 according to the US Census, 76.6% of commuters drove alone to work. Filling those seats has enormous potential to improve the economy, the environment, and our overall well-being. A solution to this transportation inefficiency lays in shifting the transportation paradigm from ownership to access.

With new advances in mobile technologies and network computing, the ability of people to participate in organized sharing, trading, and renting access to transportation resources on a regional scale has never been greater. This marketplace of sharing is frequently referred to as collaborative consumption. With the success of firms like Netflix, Craigslist, and couchsurfing, collaborative consumption has gained widespread popularity.

The efficiencies and widespread benefits of sharing transportation resources can have a significant effect on reducing the regional carbon footprint, reducing transportation costs, and building a stronger sense of community.

Transportation-related forms of collaborative consumption include:

Bikeshare: The central concept of this system is to provide free or affordable access to bicycles for short-distance trips in an urban area as an alternative to motorized public transportation or private vehicles, thereby reducing traffic congestion, noise, and air pollution.

Carshare: Carsharing is a model of car rental where people rent cars for short periods of time, often by the hour. The idle capacity of cars is put to use through technology that makes sharing cars fast, easy, convenient, and cost-effective. Each shared car eliminates 5 to 20 cars from circulation.

Carpooling: Carpooling is the sharing of car journeys so that more than one person travels in a car. By having more people use one vehicle, carpooling reduces each person's travel costs. In addition, carpooling is a more environmentally friendly and sustainable way to travel since sharing journeys reduces carbon emissions, traffic congestion on the roads, and the need for parking spaces.

New forms of carpooling exist today which leverage new technology platforms. Jitneys are flexible carpooling that expand the idea of ad-hoc carpooling by designating formal locations for travelers to join carpools. Real-time ridesharing allows people to arrange ad-hoc rides on very short notice, through the use of smartphone applications or the Internet. Passengers are simply picked up at their current location.

Slugging is a form of ad-hoc, informal carpooling between strangers. No money changes hands, but a mutual benefit still exists between the driver and passenger(s) making the practice worthwhile.

SoLoMo (Social Local Mobile) websites harness your existing social media profile to match drivers and passengers with a similar origin and destination. This social transportation leverages our virtual communities into the physical world, to bring our online experiences offline.

Increasing Our Transportation Intelligence

Automobile travel will be the dominant form of travel for the foreseeable future. Because Long Beach is nearly fully developed, the City offers limited opportunities for new streets and street widening projects. To compensate for this, more strategic street improvements will be needed to improve existing capacity and function, while maintaining high safety standards.

The City does not envision any major roadway widening or new roads. There are, however, a number of critical infrastructure enhancements that must be completed to maintain safety and adequate operating conditions on the current roadway system. Many of those enhancements, such as added turn lanes at intersections and improved traffic signals, will also enhance other modes of transportation such as bicycling and transit. See Section 5 (*Implementation Strategies and Projects*) for details on the infrastructure enhancements the City plans to make.

Finding the Cure for Congestion

Along with plans to make physical improvements to corridors and intersections, the City of Long Beach currently employs Intelligent Transportation Systems (ITS) management techniques to make our roadways more efficient. These types of systems use technology to collect real-time traffic and parking data. This data is then used to make adjustments to traffic signals or to provide information to drivers through real-time electronic signs along the roadway or through the car's navigation system, so they can make adjustments to their travel routes.

Various ITS components are currently deployed as well as planned throughout the City of Long Beach. Table 6 provides a list of the existing and proposed corridors where ITS improvements have already been implemented or are planned within the City of Long Beach.

ITS Working for a Region's Mobility

Regional Integration of ITS, or RIITS, is a communication network covering the entire Southern California region designed to help manage the regional transportation system. RIITS supports the real-time exchange of information between freeway, traffic, transit, and emergency service agencies. In an effort to achieve regional mobility, safety, and sustainability goals, RIITS strives to deliver multimodal transportation information services through a flexible platform.

By allowing partner agencies across the region to share real-time data, RIITS works to improve operational efficiencies, reduce congestion, improve transit performance, increase freight mobility, support incident management, and enhance sustainability. Ultimately, RIITS should be an effective tool in combating the region's future mobility challenges.

RIITS provides a wealth of critical information and flexible ways to access that information. It allows for simultaneous views of freeway and arterial congestion data, freeway cameras, travel time estimates, incident information, and other data to assess current conditions on the transportation system. Detailed information is available for ramp meters, traffic signals, and vehicle volume and speed to aid coordination of agency operations. This information is used by airport, port, and transit operators to evaluate accessibility and identify less congested corridors.

Access to information also facilitates the use of transit by providing real-time information on bus arrival times at transit stops to customers via their mobile devices. It allows passengers to remain longer in their homes or workplace until right before the bus arrives. Hence transit riders can plan their travel more efficiently.

Table 6: Existing and Proposed ITS Corridors

Existing/ Proposed	Street	From	To
North/South Corridors			
Existing	San Francisco Avenue	17th Street	Anaheim Street
Existing	Long Beach Boulevard	Del Amo Boulevard	Carson Street
Existing	Long Beach Boulevard	Anaheim Street	Ocean Boulevard
Existing	Atlantic Avenue	SR-91 WB Ramps	Spring Street
Existing	Atlantic Avenue	Columbia Street	Willow Street
Proposed	Atlantic Avenue	Willow Street	Ocean Boulevard
Proposed	Alamitos Avenue	6th Street	Ocean Boulevard
Existing	Walnut Avenue	Wardlow Road	S/o Wardlow Road
Existing	Cherry Avenue	68th Street	Anaheim Street
Existing	Lakewood Boulevard	SR-91 WB Ramps	Stearns Street
Existing	Clark Avenue	Arbor Road	Lew Davis Street
Existing	Clark Avenue	Conant Street	Wardlow Road
Existing	Bellflower Boulevard	SR-91 WB Ramps	B/w 29th Street and 28th Street
Existing	Bellflower Boulevard	27th Street	Los Coyotes Diagonal
East/West Corridors			
Existing	68th Street	Cherry Avenue	W/o UP Railroad
Existing	Del Amo Boulevard	Pacific Avenue	Long Beach Boulevard
Existing	Del Amo Boulevard	W/o Atlantic	E/o I-605
Existing	Carson Street	Long Beach Boulevard	E/o I-605
Existing	Wardlow Road	Walnut Avenue	Cherry Avenue
Existing	Wardlow Road	Clark Avenue	Bellflower Boulevard
Existing	Spring Street	Atlantic Avenue	Temple Avenue
Proposed	Spring Street	Cherry Avenue	SE/o Redondo Avenue
Existing	Spring Street	Redondo Avenue	E/o I-605
Existing	Willow Street	Atlantic Avenue	I-605 SB Exit
Existing	Anaheim Street	San Francisco Avenue	Cherry Avenue
Proposed	Ocean Boulevard	Biona Court	Livingston Drive
Proposed	Livingston Drive	Ocean Boulevard	2nd Street
Proposed	Shoreline Drive	Golden Shore	Alamitos Avenue

ITS Project Spotlight: Douglas Park Area-Wide Adaptive Signal Control

Implemented in late 2010 in partnership with Caltrans, the Douglas Park Area-Wide Adaptive Signal Control project established a communications infrastructure for signal corridors in Bellflower, Signal Hill, and Long Beach — all of which are tied into the overall network. Signal controls have been implemented on numerous corridors, with several more in the process of being implemented. As part of the project, the City of Long Beach will construct a traffic management center from which to monitor and maintain the signal system.

ITS Project Spotlight: LA County Traffic Signal Synchronization Program

To help improve mobility on congested local highways and streets, the Los Angeles County Board of Supervisors instituted the Countywide Traffic Signal Synchronization Program (TSSP). The program was launched in 1988, and has since been used by the County's Department of Public Works (DPW), with the technical and financial assistance of numerous cities, the State of California Department of Transportation, and the Los Angeles County Metropolitan Transportation Authority.

Since the TSSP's implementation, the County's DPW has implemented innovative, low-cost operational improvements to the network of traffic signals on the major streets throughout Los Angeles County. A typical TSSP project might involve:

- Upgrading all the traffic signals along a route to keep the signals synchronized.
- Placing vehicle detectors in the pavement.
- Coordinating the timing of the signals between successive intersections.
- Automatically adjusting the traffic signals to facilitate the movement of vehicles through the intersections.

Redefining Level of Service

In Section 3 of this Mobility Plan, we introduced the concept of level of service, which refers to a system of evaluating the performance of roadway segments and intersections. Similar to elementary school grades, the level of service of a roadway segment or intersection can range from A (best conditions with free-flowing traffic) to F (worst conditions with heavy congestion, back-ups, and travel delays). Historically, the City of Long Beach has had a policy to maintain a level of service of D or better on all street segments and intersections.

In Section 3 we also discussed the limitations inherent in the conventional level of service evaluation system, which can discourage strategic infill development and degrade the quality of pedestrian, bicycle, and transit networks. Because conventional level of service places a priority on vehicular transportation, this system of evaluation sometimes leads to roadway improvements that make walking, bicycling, and transit ridership less safe, less convenient, and less enjoyable.

To counter these problems, the City of Long Beach is reviewing a more flexible approach to traffic level of service. While vehicle congestion relief remains a key goal of the City, the degree of acceptable vehicle congestion can and should vary in different locations based on the function of the roadway and the desired character of the neighborhood or district.

For example, on street segments where automobile travel is not emphasized, or where intersection or roadway widening is not practical, the City may accept levels of service below the City standard of D in exchange for pedestrian, bicycle, and/or transit improvements. This flexible approach will help the City create a more balanced multimodal transportation system that supports appropriate infill projects and transit-oriented development strategies.

When it comes to designing the specific infrastructure projects, decisions that require balancing the benefits and impacts for multiple modes of transportation should be made at the community plan or project level.

This element introduces a new method for evaluating performance of the circulation system, a Multimodal Level of Service (MMLOS), which considers all modes of travel: vehicle, transit, bicycle, and pedestrian. Instead of evaluating vehicle movement only, as with the traditional LOS method, the MMLOS method will consider the performance of each mode of travel when assigning a letter (A through F) to a certain intersection or road segment. The City is committed to adopt a MMLOS standard for measuring traffic impacts in the near future but acknowledges that full implementation of that standard is dependent upon forthcoming industry guidelines. Traditional approaches to traffic impact evaluation will continue to be applied, as required by the California Environmental Quality Act (CEQA), but may be supplemented by multimodal level of service techniques, as needed or desired.

Moving Toward Cleaner Air

In developing this Mobility Plan, much consideration has been given not only to improving our communities and neighborhoods but also our natural environment. Mobile sources in the United States account for about 30% to 40% of greenhouse gas emissions — more than two-thirds of which comes from vehicles. Oil, fluids, exhaust, and sediment from automobiles also degrade stormwater quality and marine habitats in streams, rivers, and the ocean.

Strategies to reduce greenhouse gas emissions and improve regional water quality work best when enacted at the regional, State, and federal levels. However, at the City level we can enact a number of strategies to encourage positive changes in driving behavior. These strategies can work to reduce single-occupancy vehicle trips, relieve congestion, reduce vehicle miles traveled, lower greenhouse gas emissions, and improve stormwater quality.

The City of Long Beach proposes a three-pronged approach to promote positive driver behavior and reduce our impact on the environment.

Promote the Use of Neighborhood Electric Vehicles (NEVs)

A battery-powered NEV is capable of traveling 25 to 35 miles per hour. Although prohibited by law to operate on roads with speed limits exceeding 35 miles per hour, NEVs provide a viable transportation option for residents and businesses that take short, local trips throughout the City. Using NEVs in place of automobiles for trips helps reduce greenhouse gas emissions.

NEVs can also be used in areas where parking is limited, such as older residential neighborhoods. The City will consider updates to the zoning code to provide incentives that encourage NEV ownership. These incentives could include: 1) Reduced parking requirements, 2) Smaller parking space dimension standards for NEVs, 3) Preferential and/or free parking for NEVs, and 4) Free charging stations in parking facilities.

Manage Traffic Demands

Transportation Demand Management (TDM) is a system of strategies and policies designed to reduce travel demand by reducing the number of single-occupancy vehicle trips during peak commute hours. Walking, biking, or taking transit is a key component of TDM programs which include:

» Employee incentives to walk, bicycle, or take transit to work, such as free or subsidized transit passes.

Neighborhood Electric Vehicles are low-speed vehicles that are a great alternative for driving in and around neighborhoods and campuses.

» Facilitating carpool or vanpool programs for employees.

» Offering shuttle services between transit stations and businesses.

» Offering flexible work hours to employees so they can avoid peak commute hours.

» Providing employees the option to telecommute to avoid trips to work.

» Giving preferential parking spaces to carpools or vanpools.

» Providing bicycle-friendly facilities at destinations and employment areas, including secure bike storage areas and showers.

» Providing bikes or car-share services at work to allow people to leave their car at home on days when they have to run offsite errands or travel to offsite meetings.

» Providing free taxi rides home to employees if they have to unexpectedly work late when convenient transit services are no longer available.

The City of Long Beach will continue to implement TDM practices to mitigate traffic and air quality effects related to development projects.

Encourage Car-Share Programs

Car-sharing programs allow households to live with fewer or even zero vehicles. Car-share program participants often choose to walk, bicycle, and ride transit for short, local trips, and commute via car to and from work. Most car-share programs have hybrid or fuel-efficient vehicles, which can help reduce greenhouse gas emissions when a car trip is necessary.

The City of Long Beach plans to support the development of car-share programs by: 1) Promoting the use of car-share programs at strategic locations such as Cal State Long Beach and in the Downtown area, 2) Encouraging large housing developments to manage car-share programs, 3) Considering updates to the zoning code to provide incentives, and 4) Including reduced parking requirements and preferential and/or free parking for car-share vehicles.

STRATEGY No. 3: Strategically improve congested intersections and corridors.

» MOP Policy 3-1: Make strategic improvements to intersections and corridors to improve the flow of vehicle traffic.

» MOP Policy 3-2: Design and manage Long Beach's streets to support public health and safety.

» MOP Policy 3-3: Manage the primary automobile corridors so that they provide shorter travel times than parallel avenues or neighborhood streets.

» MOP Policy 3-4: Ensure that all interchange reconfiguration projects, grade separation improvements, and bridge widening projects are designed and implemented in a manner that provides positive benefit to the pedestrian and bicycle circulation.

STRATEGY No. 4: Establish a more flexible level of service approach to traffic analysis and improvements.

» MOP Policy 4-1: Consider effects on overall mobility and various travel modes when evaluating transportation impacts of new developments or infrastructure projects.

» MOP Policy 4-2: Support reevaluation of the City's Level of Service (LOS) policies for motor vehicle circulation to ensure efficient traffic flow and balance multimodal mobility goals.

» MOP Policy 4-3: Develop a new Multimodal Level of Service (MMLOS) methodology that includes the following components:

– Emphasis on pedestrian and bicycle access and circulation.

– Maintenance of appropriate emergency vehicle access and response time.

– Support for reduced vehicle miles traveled.

– Considers, but does not deem, auto congestion in Downtown or Long Beach Boulevard TOD district to be an impact.

STRATEGY No. 5: Reduce the environmental impacts of the transportation system.

» MOP Policy 5-1: Incorporate "green infrastructure" design and similar low impact development principles for stormwater management and landscaping in streets.

» MOP Policy 5-2: Reduce vehicle miles traveled (VMT) and vehicle trips through the use of alternative modes of transportation and TDM.

» MOP Policy 5-3: Encourage the use of low- or no-emission vehicles to reduce pollution.

» MOP Policy 5-4: Promote car-sharing and Neighborhood Electric Vehicle ownership as an important means to reduce traffic congestion.

» MOP Policy 5-5: Sustain the recent improvements in air quality and achieve further significant progress in such improvements to meet State and federal mandates.

» MOP Policy 5-6: Support the development of a network of public and private alternative fuel vehicle charging/fueling stations Citywide.

Parking Improvements

So far in this section of the Mobility Element, we've focused on modes of transportation on the move. Now we turn our attention toward managing vehicles once they've come to a stop. The management and regulation of parking, both on- and off-street, is a key priority for the City of Long Beach. Effective parking management and regulation plays a part in achieving a variety of goals, including:

» Community development.

» Housing affordability.

» Walkability.

» Improved air quality.

» Enhanced urban design.

» Congestion relief.

By managing and regulating parking, the City can also resolve neighborhood-specific parking issues. For example, the lack of off-street parking in older neighborhoods prompts drivers to recirculate on streets, increasing traffic volume in these areas. Through effective parking management and regulation, these types of problems can be reduced.

This Mobility Element introduces the broad policies that will serve as the foundation for more detailed parking solutions tailored to meet the needs of specific neighborhoods, districts, and developments in the City. In the context of enhancing mobility, parking and transportation functions are addressed through an integrated approach. What's more, the goals for parking and transportation strategies are guided by the larger goals and objectives of the neighborhood or district affected. Neighborhood and community plans can be used to establish specific parking solutions for each area.

Powerful Tool for Managing Parking

Each parking space added to a typical multifamily residential unit increases the price of that unit by about 20%, while decreasing the number of units that can be built by roughly the same amount. Households that give up ownership of one vehicle can typically qualify for an additional $100,000 to $150,000 mortgage loan or save about $650 a month (in 2008 dollars).

Within each neighborhood and district, the availability of parking may be managed with a wide range of tools:

» Establishing new preferential parking districts.

» Adjusting supply and demand by restricting access to parking through special permits.

» Implementing shared or public parking systems.

» Offering unbundled parking to ensure that all parking is efficiently used.

» Providing alternative transportation systems that are more attractive than driving.

» Allowing parking to be used on a first-come, first-served basis.

» Implementing pricing strategies that influence driving behavior and people's choice of parking locations.

In pedestrian-priority areas, such as Downtown Long Beach, the City is emphasizing park-once districts that encourage walking once employees or visitors have parked for the day.

Park Once for Multiuse Areas

In order for the park-once approach to effectively encourage walking, planners must pay attention to the strategic placement and pricing of shared or public parking.

Parking facilities (on-street and off-street, private, and public) are located and designed to put most visitors within a comfortable walking distance of their destinations. Parking for areas with many activities make more efficient use of the land than parking provided for an individual business with a single activity. One way to use space and transportation infrastructure more efficiently is by establishing a public or shared supply of parking within a park-once pedestrian area.

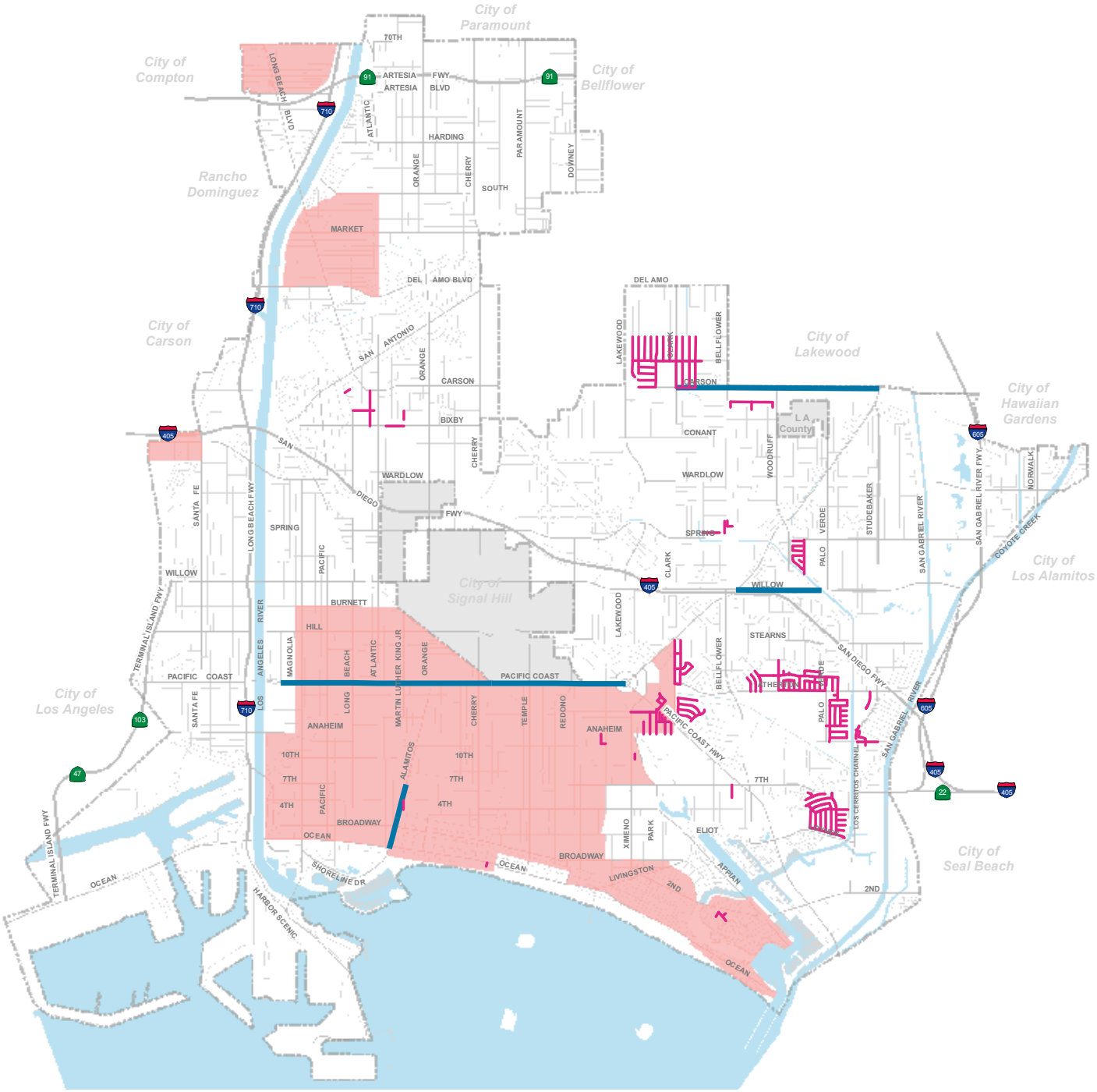
Preventing Parking Impacts

Several commercial and residential areas of the City have been identified as "parking impacted," as shown on Map 17. Causes for this impaction include limited off-street parking facilities (older building with legally nonconforming parking spaces or nonpermitted conversion to a different use).

This Mobility Element encourages neighborhoods, districts, and new developments to provide innovative parking solutions. Introduced in recent years, new parking technologies dramatically reduce the space requirements of parking. Parking lifts and elevators, when incorporated into new developments, consume less floor area and can more easily be located at the interior of a site, reducing the negative presence of parking on street environments.

Parking lots should incorporate a variety of environmentally preferable features, including a minimized footprint and/or impervious surfaces, stormwater best management practices (BMPs), and alternative parking surface materials.

Map 17:
PARKING IMPACTED AREAS



Legend

- Parking Impacted Areas
- Peak Period Restrictions
- Preferential Parking Districts

Shared parking between adjacent uses can also reduce the number of parking spaces required to adequately serve land uses. In a shared parking situation, residents in a neighborhood are allowed to lease surplus parking from adjacent commercial properties at night, when commercial businesses are closed. To unburden commercial property owners of added liability or management costs, the City may serve as a third-party parking manager for shared-parking arrangements.

Unbundled Parking

Unbundling refers to parking that is rented or sold separately, rather than automatically included with building space. For example, rather than renting an apartment with two parking spaces for $1,000 per month, the apartment by itself could rent for $800 per month, plus $100 per month for each parking space. This way, occupants only pay for parking they need. This unbundling of parking spaces from apartments helps to distribute the cost of producing parking more equitably, while making renters aware of the true cost of parking.

STRATEGY No. 6: Manage the supply of parking.

» MOP Policy 6-1: Match parking policies to land use and mobility goals.

» MOP Policy 6-2: Dedicate a portion of parking revenue to be invested back into the districts in which they are generated. If parking revenues are used for projects in a commercial district that make the area more attractive and enjoyable, the increased visitation generates additional parking revenues for reinvestment.

» MOP Policy 6-3: Where appropriate, encourage the conversion of on-street parking space for expanded sidewalk widths or landscaping.

» MOP Policy 6-4: Continue to limit on-street parking along auto-priority corridors during peak commute hours.

» MOP Policy 6-5: Embrace innovative parking solutions that reduce the required space needed for parking, such as automated parking lifts and elevators.

» MOP Policy 6-6: Regulate and manage the supply of parking so that it remains reasonably available when and where it is needed.

» MOP Policy 6-7: Support using parking supply and pricing as a strategy to encourage use of nonautomobile modes where feasible.

» MOP Policy 6-8: Where applicable, encourage users to park once to meet all of their travel needs within the City.

» MOP Policy 6-9: Encourage shared parking among various tenants and adjacent uses.

» MOP Policy 6-10: Encourage neighborhood parking lots and shared parking with commercial uses to address parking problems in residential neighborhoods with a low off-street parking supply.

» MOP Policy 6-11: Encourage the use of transit, carpooling, and walking to reduce the need for parking.

» MOP Policy 6-12: Promote transit-oriented development with reduced parking requirements around appropriate transit hubs and stations to facilitate the use of available transit services.

» MOP Policy 6-13: Consider reducing parking requirements for mixed-use developments, for developments providing shared parking or a comprehensive Transportation Demand Management (TDM) Program, or developments located near major transit hubs.

» MOP Policy 6-14: Design parking structures to be attractive, pleasant to use, and integrate into the overall urban landscape. Parking facilities should be designed to promote good internal circulation and provide multiple entry, exit, and reversible lanes.

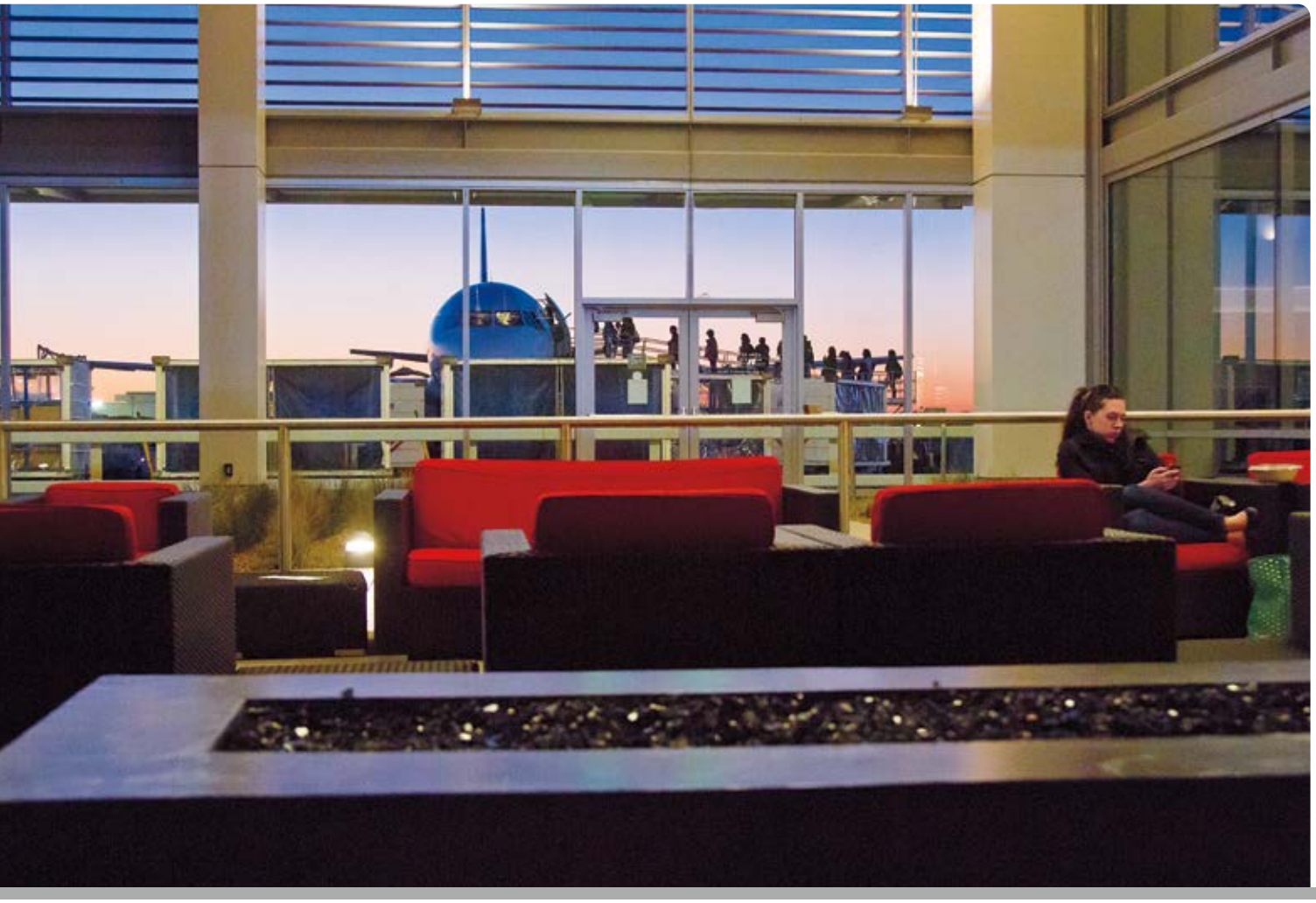
» MOP Policy 6-15: Encourage and provide incentives for commercial, office, and industrial development to provide preferred parking for carpools, vanpools, electric vehicles, and flex cars.

Goal No. 2: Maintain and Enhance Air, Water, and Ground Transportation Capacity

Spotlight on Air Transportation

Long Beach Airport provides an important transportation and economic development function for the City of Long Beach as well as for the region. Owned and operated by the City of Long Beach, the airport serves as a secondary commercial airport for Los Angeles County. In addition to the airport, several heliports and helistops are located within the City of Long Beach. These primarily serve law enforcement, emergency service providers, and commercial tour providers.

The City of Long Beach will continue to support general and commercial aviation, while protecting surrounding uses and promoting efficient ground connections to airport facilities. The City's Airport Master Plan will serve as a guide for the long-term physical development of the airport, and to accommodate projected commercial (passenger and cargo) and corporate general aviation operations within the parameters of the Airport Noise Ordinance.



STRATEGY No. 7: Promote general and commercial aviation facilities with convenient ground transportation access.

» MOP Policy 7-1: Maintain and enhance general and commercial aviation at Long Beach Airport (LGB) while mitigating impacts on residents and businesses.

» MOP Policy 7-2: Participate in the development and implementation of long-range regional plans that address regional commercial air carrier capacity and the integration of multimodal ground connections to the regional aviation system.

» MOP Policy 7-3: Promote airline service which meets the present and future air transportation needs of residents and the business community, and which minimizes impacts on the surrounding community through the Airport Noise Ordinance.

» MOP Policy 7-4: Implement capital improvements to Long Beach Airport as identified in the Airport Master Plan.

» MOP Policy 7-5: Regulate development in the vicinity of airports in accordance with Federal Aviation Administration regulations to maintain the airspace required for the safe operation of these facilities.

» MOP Policy 7-6: Promote efficient ground connections to the Long Beach Airport, including increased bicycle and transit connections.

» MOP Policy 7-7: Implement the Long Beach Green Airport Program promoting a sustainable operation.

Spotlight on Water Transportation

The City values the recreational and economic importance of its marinas and cruise terminals, which attract thousands of residents and visitors, not to mention tourism-related revenue, to our waterfront destinations. The City supports efforts to maintain and improve its marinas and cruise terminals, ensuring that Long Beach remains a boating destination and port for major cruises in the future.

STRATEGY No. 8: Provide attractive marinas and marine terminals that encourage people to travel to and from Long Beach by private boats and yachts, commercial charter ships and cruises, and public transportation.

» MOP Policy 8-1: Maintain and enhance marinas and cruise terminals to attract people to the Long Beach waterfront.

» MOP Policy 8-2: Continue to promote public transit and ground transportation services between hotels, airports, marinas, piers, and cruise terminals.

» MOP Policy 8-3: Explore opportunities to expand water-based transit services to connect major waterfront destinations, as well as neighborhoods and districts along the shoreline.

Spotlight on Ground Transportation

Private transportation services — such as taxis, airport shuttles, and hotel shuttles — provide an important community service that aids in the mobility of people, especially visitors and tourists. By encouraging and promoting these services to out-of-town visitors, we can reduce the use and presence of rental cars on our roadways, thereby increasing the efficiency of the roadway network.

Encouraging local residents to take advantage of private transportation services can also help minimize vehicle trips and reduce parking demand at various destinations throughout the City. The City also encourages nonmotorized transportation services, such as pedi-cabs, bicycle rentals, and Segway rentals, which have demonstrated success in Downtown and beachfront environments.

STRATEGY No. 9: Increased use of private transportation services between airports, hotels, and local and regional destinations.

» MOP Policy 9-1: Promote the use of private transportation services in travel publications promoting Long Beach.

» MOP Policy 9-2: Encourage conferences to promote private transportation services between airports and conference hotels.

» MOP Policy 9-3: Encourage nonmotorized transportation services, such as pedi-cabs, bicycle, and other nonmotorized vehicle rentals.

Goal No. 3: Lead the Region by Example With Innovative and Experimental Practices

The City of Long Beach recognizes the importance of a regional approach to transportation planning and coordination. The City will continue to participate in and lead efforts that improve the regional mobility of people. While the automobile will continue to be the main form of regional transportation in the foreseeable future, the City recognizes the vital role of regional transit in creating an efficient transportation system. The major regional transit projects that will benefit the City include the Regional Connector Transit project and a future transit line on the Harbor Subdivision. The City will continue to coordinate and collaborate with local and regional transportation agencies to improve regional highways and regional transit systems.

The City of Long Beach recognizes that transportation is constantly evolving and changing. New concepts and technologies will be developed in the future to aid in the mobility of people. This Mobility Element supports future transportation innovations that increase mobility, reduce environmental impacts, and increase quality of life.

STRATEGY No. 10: Be a leader in regional cooperation on transportation issues.

» MOP Policy 10-1: Initiate and support efforts to coordinate capital improvements, transit services, and TDM Programs with surrounding jurisdictions.

» MOP Policy 10-2: Improve linkages with other transit systems and support an integrated regional transit system throughout Southern California.

» MOP Policy 10-3: Support efforts to establish a national bike route system.

» MOP Policy 10-4: Cooperate with regional agencies and Caltrans to inform the public of area-wide transportation initiatives, and actively participate in area-wide planning studies and interagency initiatives to improve transportation services.

» MOP Policy 10-5: Work with local and regional agencies to implement a regional bikeway and/or alternative energy vehicle system that connects the cities and planned California coastal trails.

STRATEGY No. 11: Adapt mobility strategies and programs based on new concepts and technologies that reduce environmental impacts and increase quality of life.

» MOP Policy 11-1: Provide training to staff to ensure that they have knowledge of innovative mobility strategies, programs, and technologies.

» MOP Policy 11-2: Embrace a culture of innovation and creativity.

» MOP Policy 11-3: When new transportation methods emerge, such as personal mobility devices and personal rapid transit systems, explore the feasibility of integrating these methods into the existing mobility system.

» MOP Policy 11-4: Evaluate transportation programs and projects on a periodic basis to determine their effectiveness and make modifications as necessary.

THE MOBILITY OF GOODS: KEEPING GOODS ON THE GO

So far in this section, we've focused on strategies for enhancing the mobility of people on our streets, on foot, and on bicycles. Along with people, this Mobility Element strives to improve the local and regional mobility of goods by implementing a three-pronged approach:

» Coordinate with local and regional transportation agencies.

» Improve Citywide freight-related infrastructure, especially on-dock rail facilities.

» Reduce the effects of delivery trucks in neighborhoods.

In the following pages, we take a closer look at the key strategies and policies the City plans to put into place to support these strategies. This section describes the key components of the above strategies. Implementation measures and projects are provided in Section 5 of this Mobility Element.

Coordinate With Local and Regional Transportation Agencies

Cargo ships, trucks, trains, and planes transport the goods that fuel the economic engine of Southern California. By 2030, the total movement of goods through Southern California is projected to increase dramatically, further burdening the region's already strained transportation infrastructure.

To prepare for this increase in goods movement, the Southern California Association of Governments (SCAG), Caltrans, the Ports of Los Angeles and Long Beach, BNSF and UP Railroads, and several cities and transportation agencies throughout the region have joined forces. Their shared goal: to increase Port, rail, and highway capacity. Proposed activities to accomplish this goal include:

» Improving roadway access to airports and maritime ports to ease goods movement-related traffic congestion.

» Researching zero-emission technology and elevated truck lanes and implement these strategies (where feasible) to relieve congestion and improve safety.

» Constructing intermodal transfer yards and distribution facilities.

» Installing additional railway tracks, grade separations, and freight corridors.

The City serves as a center for international trade and commerce. We are committed to maintaining this status while improving the quality of life in our neighborhoods. To do so, the City recognizes the importance of regional cooperation and coordination. Here we share our City's specific Mobility of Goods goals and our collaborative approach to achieving them.

Improve Citywide Freight-Related Infrastructure, Especially On-Dock Rail Facilities

The Ports of Los Angeles and Long Beach are ideally positioned to serve the country's growing demand for international trade. To accommodate future demand, both Ports are carefully planning infrastructure improvements that also minimize impacts to surrounding communities. Because of their high potential effects on local neighborhoods, landside transportation connections to the Ports remain a priority for infrastructure improvement projects.

Currently, the Port of Long Beach's rail infrastructure is deemed insufficient to accommodate projected container volumes. Without rail infrastructure improvements, more containers will be shipped by truck 5 to 20 miles away from the Port to near- and off-dock rail yards. The result would be more truck trips on freeways and major arterials near the Port — creating more traffic and more greenhouse gas emissions.

To address this concern, the Port of Long Beach in collaboration with the Port of Los Angeles developed the San Pedro Bay Ports Rail Study. The study identifies several rail improvements within the Port boundaries aimed at supporting the demand for direct intermodal rail connections outside the Ports. Implementing these improvements will be a primary focus of the Port of Long Beach.

Port rail improvements are implemented with the goal of reducing Port-related truck traffic since 60% of the goods traveling through the Port originate or end up in the Southern California region. However, improvements in truck transportation are equally important. Caltrans continues to explore opportunities to improve regional truck access to and from the Ports of Los Angeles and Long Beach. The City will continue to work closely with Caltrans on all potential freeway improvement projects to assess all possible impacts and benefits to the City. Collaboratively, we will also identify strategies for modernizing and improving the interchange system with the City's arterial network while mitigating the impact.

Fast Fact

Each train loaded on-dock at the Port of Long Beach eliminates up to 750 truck trips from local freeways. One container ship entering the Port generates as much as five trains' worth of intermodal cargo. By using on-dock rail, the Port can potentially eliminate 3,750 truck trips for every vessel call.

Greener Ports, Cleaner Air

The Port of Long Beach led the charge with implementing a Clean Trucks Program. The City will build on this innovative program by replacing more trucks with train trips to move goods to and from the Ports.

Providing freight-train access to the Ports also offers several environmental benefits. Trains are almost four times more fuel efficient than trucks on a ton-mile basis. The U.S. Environmental Protection Agency estimates that for every ton-mile, a typical truck today emits roughly three times more nitrogen oxides and particulates than a locomotive.

Routing Trucks Away From Neighborhoods

Earlier in Section 3, we discussed how truck traffic accessing the Ports generally uses regional corridors like the I-710 and I-110 Freeways. Local delivery trucks, which are not Port-related, use many of the City's roadways to make deliveries. These trips are necessary to meet the daily needs of the City, and would occur regardless of having a Port nearby. The City has designated truck routes, as shown on Map 18, primarily to provide access to commercial and industrial areas to serve the needs of local delivery trucks.

The City designates trucks routes aimed at reducing the impact of through-truck traffic on neighborhoods, and increasing the quality of life for the people who live there. Generally, truck routes have wider lanes and larger curb radii, and serve major industrial and commercial areas. Trucks are prohibited from nontruck routes unless they are entering or exiting a property for business purposes or storage by the most direct route.

Currently, mainly non-Port-related trucks use multiple neighborhood streets to transport goods to and from commercial and industrial properties in some areas. The new, enhanced truck route system will reduce nonlocal truck traffic on streets they should not be using. Proposed regional and local truck routes in the City of Long Beach include (excluding State facilities): 1) Redondo Avenue (Pacific Coast Highway to 7th Street), 2) Studebaker Road (Carson Street to 2nd Street), 3) Artesia Boulevard (within City limits), and 4) 2nd Street (Pacific Coast Highway to eastern City limits).

STRATEGY No. 12: Be a leading collaborator on transportation issues related to the regional mobility of goods.

» MOG Policy 12-1: Maintain Long Beach as the hub for regional goods movement and as a gateway to national and international suppliers and markets while mitigating impacts of goods movement on the local community.

» MOG Policy 12-2: Participate in the development and implementation of long-range regional plans. This includes plans that address regional commercial air carrier capacity to accommodate forecasted air cargo demands. Plans also include the integration of freight trucking connections to the regional aviation system.

» MOG Policy 12-3: Coordinate with Caltrans to ensure that regional highway improvements aid in the movement of goods from the Ports of Long Beach and Los Angeles, while also mitigating impacts to Long Beach neighborhoods and the environment.

» MOG Policy 12-4: Coordinate with the BNSF and UP railroads to ensure that rail infrastructure at the Port of Long Beach appropriately meets existing and future cargo demands.

» MOG Policy 12-5: Coordinate with the Coast Guard and other law enforcement agencies to ensure the safety and security of the Port of Long Beach.

STRATEGY No. 13: Develop freight-related improvements consistent with the regional transportation network.

» MOG Policy 13-1: Identify street improvements along designated truck routes that enhance freight mobility on major truck corridors and reduce impacts of freight on the community.

» MOG Policy 13-2: Reduce truck congestion and parking impacts on city streets.

» MOG Policy 13-3: Minimize potential conflicts between trucks and pedestrian, bicycle, transit, and vehicle access and circulation on streets with truck travel.

» MOG Policy 13-4: Implement measures to minimize the impacts of truck traffic, deliveries, and staging in residential and mixed-use neighborhoods.

» MOG Policy 13-5: Design freight loading and unloading for new or rehabilitated industrial and commercial developments to occur off of public streets whenever and wherever feasible.

» MOG Policy 13-6: Investigate opportunities for business owners to schedule deliveries at off-peak periods.

» MOG Policy 13-7: Minimize the effects of truck traffic during peak times of the day on local streets and the 710 Freeway.

» MOG Policy 13-8: Support infrastructure improvements and use of emerging technologies that will facilitate the clearance, timely movement, and security of domestic and international trade. This includes facilities for the efficient intermodal transfer of goods between truck, rail, marine, and air transportation modes.

» MOG Policy 13-9: Provide for the efficient circulation of truck and rail traffic within the Port and on the regional transportation network.

» MOG Policy 13-10: Maintain and enhance rail access to freight facilities.

» MOG Policy 13-11: Support the Port in implementing the Port Master Plan.

STRATEGY No. 14: Reduce the air quality impacts of freight transportation and Port-related traffic.

» MOG Policy 14-1: Provide for the efficient, clean, and safe movement of goods to support commerce and industry.

» MOG Policy 14-2: Adopt and enforce truck routes to minimize the impacts of truck emissions on the community.

» MOG Policy 14-3: Reduce congestion on freeways and designated truck routes.

» MOG Policy 14-4: Encourage ridesharing activities within the Harbor District to reduce vehicle miles traveled (VMT) and parking space requirements in compliance with the South Coast Air Quality Management District requirements.

STRATEGY No. 15: Mitigate the impacts of increased freight transportation.

» MOG Policy 15-1: Support programs and projects that reduce conflicts between trucks and autos on freeways such as dedicated freight corridors separating heavy trucks from autos.

» MOG Policy 15-2: Minimize conflicts between trucks and other modes, especially bicycles and pedestrians.

» MOG Policy 15-3: Consider pickup and delivery activities associated with various land uses when approving new development, implementing projects, and improving highways, streets, and bridges.

» MOG Policy 15-4: Consider the expansion of on-street loading areas through removal of curb parking in established industrial areas where off-street loading facilities are insufficient.

» MOG Policy 15-5: Work with the State legislature to create a law allowing cities and counties to establish separate and different regulations for both regional trucking routes and local delivery routes.

» MOG Policy 15-6: Limit the intrusion of commercial truck traffic on City streets by directing truck traffic to major arterials and enforcing related regulations on local streets.

» MOG Policy 15-7: Promote and enforce use of the local delivery truck route network.

» MOG Policy 15-8: Improve signage on designated truck routes to reduce truck traffic on neighborhood streets.

» MOG Policy 15-9: De-emphasize the Terminal Island Freeway as a truck route and increase neighborhood connectivity.

» MOG Policy 15-10: Support programs that reduce truck traffic on I-710 during peak commute hours, such as the Port's PierPass Program.

» MOG Policy 15-11: Continue to work with Metro on the I-710 Corridor Project to assess the possible impacts and benefits to the City.

» MOG Policy 15-12: Vigorously support increased east-west pedestrian and bicycle connectivity related to the I-710 Corridor Project, including streetscape improvements and new pedestrian and bicycle facilities.

STRATEGY No. 16: Provide infrastructure for an efficient and modern seaport complex and promote innovative solutions for the environment.

» MOG Policy 16-1: Improve the efficiency of existing Port land and facilities.

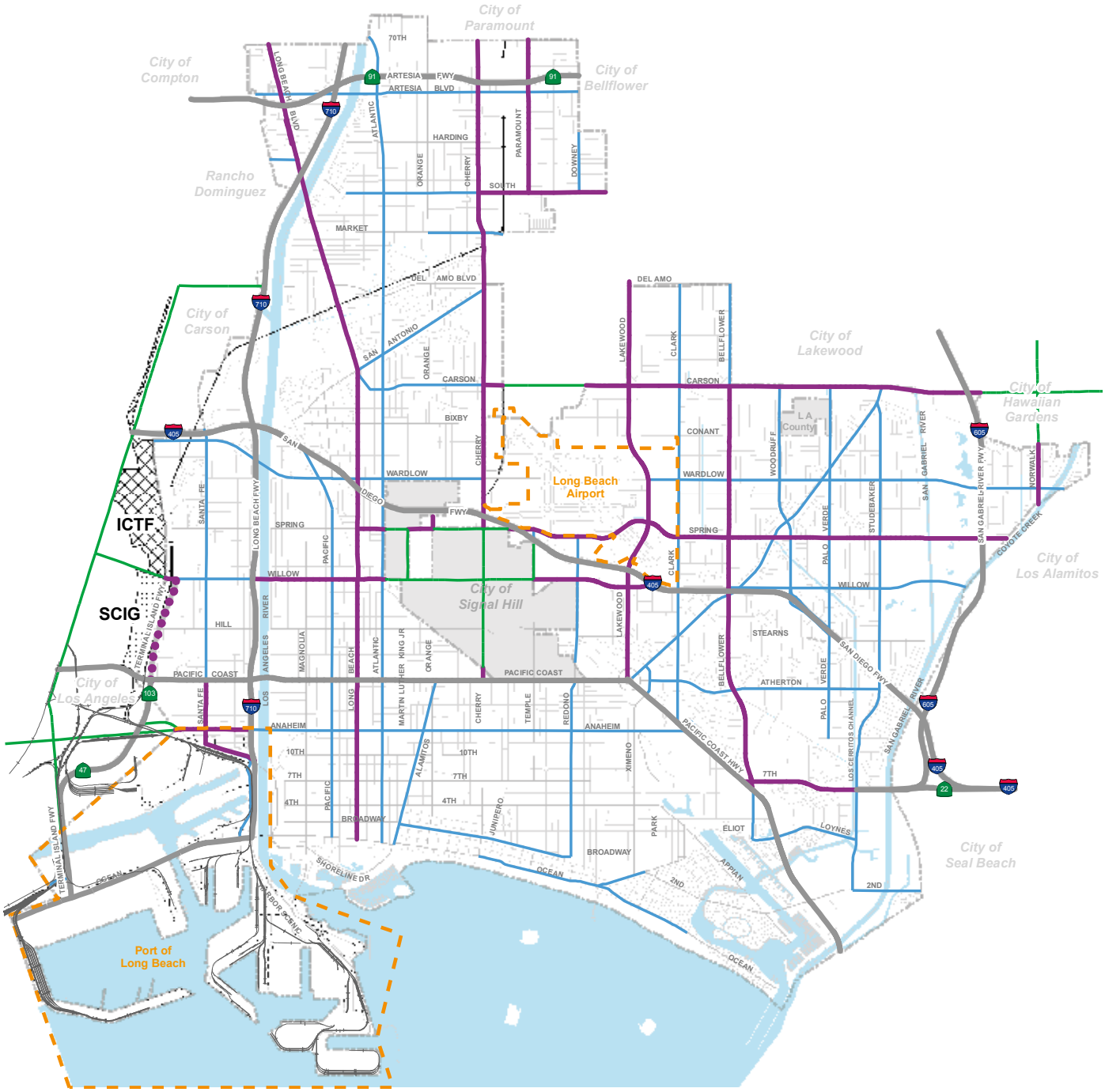
» MOG Policy 16-2: Promote responsible Port redevelopment that accommodates changes in trade and logistics trends.

» MOG Policy 16-3: Utilize design guidelines and physical branding opportunities to create a more attractive Harbor District.

» MOG Policy 16-4: Implement innovative and environmentally responsible solutions for local and regional infrastructure needs.

» MOG Policy 16-5: Collaborate with all levels of transportation agencies to influence State and national goods movement policy. Develop partnerships to advocate for project prioritization and explore funding partnerships.

Map 18:
DESIGNATED TRUCK ROUTES



Legend

Truck Route

- Regional
- Recommended for Removal
- State Facility
- Other Cities

Local Delivery

- Appropriate Path of Travel
- Port-Related Streets

THE MOBILITY OF RESOURCES: DELIVERING SERVICE CITYWIDE

Water, energy, communications. These resources are vital to the continued growth and success of the City of Long Beach. This Mobility Plan includes strategies for improving the mobility of critical resources across our City and to the businesses and people who rely on them every day.

Improving the local and regional mobility of resources requires ongoing maintenance of and improvements to the existing infrastructure systems that deliver reliable service to residents and businesses. At the same time, we must also look at ways of reducing environmental impacts. Here we introduce the City's key strategy for enhancing the mobilization of resources, as well as the individual goals and policies entailed in this strategy. Related implementation strategies and projects are provided in Section 5.

Maintain and Improve Existing Infrastructure Systems

As a built-out City, the City of Long Beach has in place a well-developed network of infrastructure and utilities. Map 19 shows the general locations of the major regional infrastructure facilities in the City. As projected population growth is expected to be fairly limited, the City does not anticipate major new improvements to our infrastructure and utility systems.

Long Beach will, however, continue to work with regional and local utility agencies and departments to ensure that residents and businesses continue to enjoy access to a safe and dependable network of infrastructure and utilities. Maintenance and improvements to the existing systems will continue to be a priority for the City.

The City of Long Beach will also explore infrastructure and utility projects designed to reduce environmental impacts. These projects may include:

» Installing solar collectors to create a clean source of onsite energy while reducing the demand placed on the regional power grid.

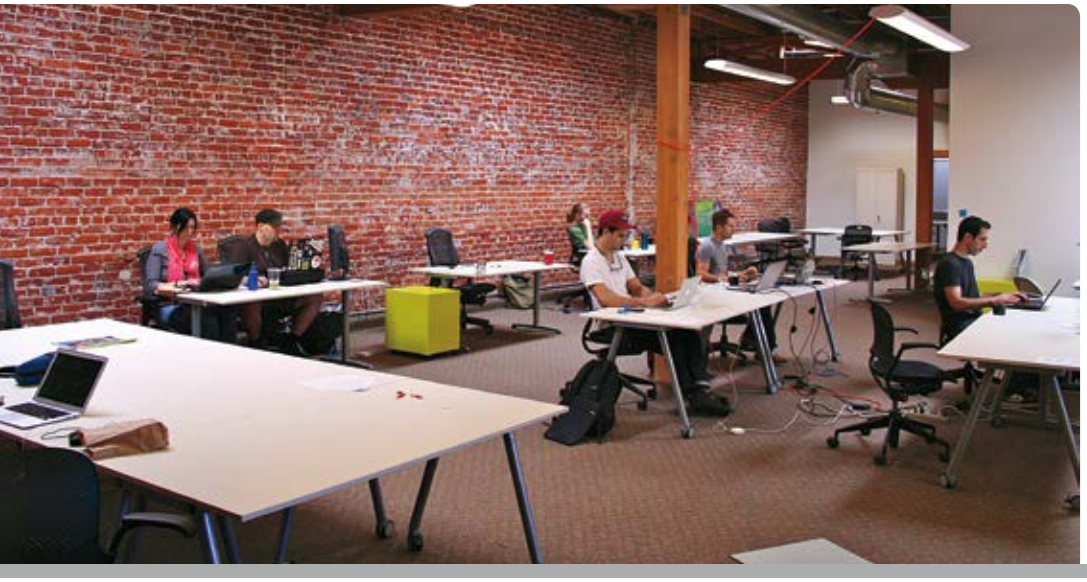
» Exploring the feasibility of small wind turbines.

» Improving stormwater quality by implementing low-impact development techniques in development projects and streetscape improvements.

» Expanding the availability of recycled water and the use of onsite graywater systems to recharge the groundwater basin and irrigate landscaped areas.

» Expanding wireless networks and telecommunication infrastructure to encourage telecommuting and reduce vehicle miles traveled.

» Reduce impermeable surfaces where possible with increased parkways, landscape medians, and other sustainable infrastructure.



Telecommuting centers offer the ability to work close to home while reducing vehicle miles traveled.

Mobility of Resources Goals

STRATEGY No. 17: Provide a safe and secure network of oil and natural gas pipelines.

» MOR Policy 17-1: Continue to maintain the highest safety standards in pipeline monitoring and maintenance.

» MOR Policy 17-2: Maintain and improve the network of oil and natural gas pipelines to efficiently move resources from extraction points to refineries.

STRATEGY No. 18: Promote an electrical utility system that is less dependent on regional power plants and embraces local energy development through the use of solar and wind technologies.

» MOR Policy 18-1: Encourage residents and businesses to install solar and wind power systems.

» MOR Policy 18-2: Promote tax incentives and rebate programs for solar and wind energy systems.

STRATEGY No. 19: Promote well-maintained water, wastewater, and stormwater infrastructure systems that serve the demands of existing and future residents and businesses while mitigating environmental impacts.

» MOR Policy 19-1: Plan for and provide appropriate levels and types of infrastructure based on the desired character of each neighborhood or district.

» MOR Policy 19-2: Ensure that development is appropriate and in scale with current and planned infrastructure capabilities.

» MOR Policy 19-3: Promote water-efficient fixtures and appliances to reduce water demand.

» MOR Policy 19-4: Expand the use of water recycling and graywater systems to treat and recycle wastewater and to further reduce water demand related to irrigation of landscaped areas.

» MOR Policy 19-5: Implement low-impact development techniques to reduce and improve the quality of stormwater runoff.

STRATEGY No. 20: Provide for a robust telecommunication system that meets the needs of residents and businesses, promotes economic development, and encourages telecommuting.

» MOR Policy 20-1: Encourage efforts to expand broadband technologies, wireless networks, and other infrastructure improvements to provide high-quality telecommunication services for the Long Beach community. City efforts should include parks and other public facilities, public transit, and eventually universal access.

» MOR Policy 20-2: Retain and attract new businesses to the City through the maintenance of a robust telecommunications system.

» MOR Policy 20-3: Maintain and update telecommunications infrastructure at a rate that supports the implementation of quickly evolving technology.

Map 19:
MAJOR REGIONAL INFRASTRUCTURE FACILITIES

Legend

- Flood Control
- Rail
- Electric Transmission

5

Implementation Strategies and Projects:

Putting Our Mobility Plan Into Action

"Any city for better or worse is constantly undergoing physical changes brought about by natural, social, or economic forces. These changes are inevitable. If they are anticipated and fitted into a logical pattern and relationship to each other, the city will improve. Conversely, if changes are permitted to occur without following a plan there are bound to be conflicts and waste.

In itself, the Master Plan cannot improve or change the city in the slightest degree. Only when its proposals and recommendations are translated into action resulting in physical improvements such as streets and highways, residences, stores, factories, parks, and other amenities will the true value of the plan become evident."

Werner Ruchti
City of Long Beach Director of Planning (1943-1963)
Los Angeles County Public Works Engineer (1930-1943)

5

Implementation Strategies and Projects:

Putting Our Mobility Plan Into Action

- Strategies to Mobilize People 115
  - » Integrating Multimodal Level of Service..... 115
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- Strategies to Mobilize Goods..... 126

STRATEGIES TO MOBILIZE PEOPLE

In this section of the Mobility Element, we address the proposed strategies and projects aimed at implementing a plan for the enhanced mobility of people and goods across our City and beyond.

To achieve the goals and advance the policies related to the mobility of people introduced in this Mobility Element, the City of Long Beach will implement multiple-pronged initiatives. These initiatives include adopting a multimodal approach to transportation planning that accounts not only for automobiles, but also for pedestrians, bicyclists, transit, aviation, and maritime transportation.

Integrating Multimodal Level of Service

Many jurisdictions are reviewing an integrated approach to multimodal transportation planning. Rather than simply developing isolated plans for each individual mode — automobile, pedestrian, bicycle, and transit — this method evaluates the trade-offs among the modes as part of a more integrated strategy for transportation planning and decision making.

However, the City proposes to adopt the relatively new concept of multimodal level of service that has not yet been widely established as a level of service measurement. To that end, we turn to the Highway Capacity Manual (HCM), which provides a good starting point as we evolve level of service standards to better accommodate and integrate multiple modes of transportation. Following is a brief overview of the methodology implemented in the 2010 HCM to conduct multimodal level of service analysis.

2010 Highway Capacity Manual (HCM): Analyzing Individual System Elements

The 2010 HCM provides tools to help us measure the performance of the individual elements that make up a multimodal transportation system. It also provides us guidance on how to combine those individual elements to evaluate larger portions of the system.

For an overview of the various system elements and their proposed analysis methodologies, take a look at Table 7. Here you'll see the service measure(s) used to determine level of service for each mode operating on each system element, and the HCM performance measure that can be used to aggregate results to the system level.

Some combinations of system elements and travel modes merge several performance measures into a single traveler-perception model used to generate a level of service score. The components of traveler-perception models used in the HCM are also listed in Table 8.

Table 7: HCM Service Measures by System Element and Mode

System Element	Service Measurement(s)				Systems Analysis Measure
	Automobile	Pedestrian	Bicycle	Transit	
Two-Lane Highway	Speed	N/A	LOS Score*	N/A	Speed
Urban Street Facility	Speed	LOS Score*	LOS Score*	LOS Score*	Speed
Urban Street Segment	Speed	LOS Score*	LOS Score*	LOS Score*	Speed
Signalized Intersection	Delay	LOS Score*	LOS Score*	LOS Score*	Delay
Two-Way Stop	Delay	Delay	N/A	LOS Score*	Delay
All-Way Stop	Delay	N/A	N/A	LOS Score*	Delay
Roundabout	Delay	N/A	N/A	LOS Score*	Delay
Interchange Ramp Terminal	Delay	N/A	N/A	N/A	Delay
Off-Street Pedestrian-Bicycle Facility	N/A	Space, Events†	LOS Score*	LOS Score*	Speed

*See Table 8 for LOS Score Components.
†Events are situations where pedestrians meet bicyclists.

Table 8: Components of Traveler-Perception Models Used in the HCM

System Element	Mode	Model Components
Multilane and Two-Lane Highways	Bicycle	Pavement quality, perceived separation from motor vehicles, motor vehicle volume, and speed
Urban Street Facility	Automobile	Weighted average of segment automobile LOS scores
	Pedestrian	Urban street segment and signalized intersection pedestrian LOS scores, midblock crossing difficulty
	Bicycle	Urban street segment and signalized intersection bicycle LOS scores, driveway conflicts
	Transit	Weighted average of segment transit LOS scores
Urban Street Segment	Automobile	Stops per mile, left-turn lane presence
	Pedestrian	Pedestrian density, sidewalk width, perceived separation from motor vehicles, motor vehicle volume, and speed
	Bicycle	Perceived separation from motor vehicles, pavement quality, motor vehicle volume, and speed
	Transit	Service frequency, perceived speed, pedestrian LOS
Signalized Intersections	Pedestrian	Street crossing delay, pedestrian exposure to turning vehicle conflicts, crossing distance
	Bicycle	Perceived separation from motor vehicles, crossing distance
Off-Street Pedestrian-Bicycle Facility	Bicycle	Average meetings/minute, active passings/minute, path width, centerline presence, delayed passings

Assessing a Transportation System: It Starts With Delays

When analyzing the performance of a transportation system, we begin by looking at the estimated delay at the point, segment, facility, and subsystem levels.

» Point delays: These happen as a result of traffic control devices such as traffic signals and stop signs.

» Segment delays: These occur when a point delay (for example, a delay caused by a stop sign) combines with other delays incurred within the segment or roadway.

» Facility delays: Segment delays are added together to determine facility delay estimates. The sum of the facility estimates yields subsystem delay estimates.

» Subsystem delays: Subsystem estimates of delay can be combined into total system estimates, but typically the results of each subsystem are reported separately.

» Mean delays: Mean delays for each subsystem are then computed by dividing the total person-hours of delay by the total number of trips on the subsystem.

System Performance Measurements: Measuring Multiple Aspects

To assess the performance of a complete transportation system, we must look at multiple factors. These include:

» Quality of service: The number of person-miles and person-hours provided by the system.

» Intensity of congestion: The amount of congestion users of the system experience.

» Duration of congestion: Number of hours that congestion persists.

» Extent of congestion: The physical length of the congested system.

» Variability: The day-to-day variation in congestion.

» Accessibility: The percentage of the populace able to complete a selected trip within a specified time.

Why Consider a Multimodal Level of Service?

Conducting a multimodal level of service analysis of existing roadway segments would allow the City of Long Beach to identify system deficiencies that impact all travel modes. Adopting a multimodal level of service would also enable to City to:

» Test various multimodal goals/strategies tailored to individual corridors, applying different performance criteria based on the facilities' intended purpose and function.

» Compare different travel modes at the same relative scale based on user perception.

» Quantify the relative benefits and disadvantages of roadway cross-section standards and design modifications.[37]

Assessing the Impact on Residential Streets

The City has historically reviewed residential neighborhood traffic intrusion issues as they arise and worked with affected residents to develop solutions. As our City's commercial center continues to develop, we must also look at the impact of this growth — and the accompanying increase in traffic — on our local residential street. Certain commercial projects that may push additional traffic into residential areas may necessitate a residential street impact analysis.

This type of analysis enables us to determine the potential for new locations of cut-through traffic that can negatively affect a residential street. As part of the analysis, cut-through trips are measured as vehicles that bypass a congested arterial or intersection and opt instead to travel along a residential street. Implementing traffic-calming measures may be able to offset any anticipated impacts.

Selecting Residential Streets for Analysis

When selecting residential street segments for analysis during the traffic study scoping process, all of the following conditions must be present:

» The proposed project is a nonresidential development.

» The arterial is sufficiently congested, such that motorists traveling on the arterial may opt to divert to a parallel route through a residential street. The congestion level of the arterial can be determined based on the estimated level of service under project conditions of the study intersection(s).

» The project is estimated to add a significant amount of traffic to the congested arterial that can potentially shift to an alternative route.

» The local residential street(s) provides motorists with a viable alternative route.

A local residential street is deemed significantly impacted based on an increase in the projected average daily traffic (ADT) volumes:

Projected Average Daily Traffic With Project (Final ADT)	Project-Related Increase in ADT
0 to 999	16% or more of final ADT
1,000 or more	12% or more of final ADT
2,000 or more	10% or more of final ADT
3,000 or more	8% or more of final ADT

Major Capital Improvement Program (CIP)

The General Plan is not an implementation tool; however, the Mobility Element is unique, such that it provides a road map for the Department of Public Works for funding decisions. State law requires a General Plan consistency finding for the Capital Improvement Program (CIP) is approved by City Council.

The proposed capital projects listed in the Mobility Element are based on current and future needs as well as the recommendations made by citizen input in the planning process and projects carried forward from the 1991 Transportation Element. These projects are conceived to alleviate deficiencies in our facilities and accommodate current and future growth.

As shown on Map 20, these improvements fall into a variety of travel modes — including: Pedestrian and Bikes, beautification, Multimode, Transit, Auto, and Goods Movement — throughout the City. Table 9 lists 52 revenue-constrained transportation improvement projects and estimated costs. The total preliminary costs for these roadway improvements are $344.05 million. These projects are identified to a potential method to implement the goals and policies contained in this Mobility Element. Each project will be evaluated on its merit and subject to a separate entitlement process, including California Environmental Quality Act (CEQA) review and community engagement.

Another important category of improvements are measures to enhance intersection operations at critical intersection locations. Intersections are the primary bottleneck points in the transportation system since the capacity of the system must be shared at intersections, and operational breakdowns can result if too much travel demand occurs as compared to the designed capacity of the intersections. Often simple measures such as the addition of a lane for turning traffic can significantly enhance intersection operations. A series of critical intersection locations has been identified and are candidates for improvements proposed as part of the Mobility Element.

Table 9: Capital Projects Under Consideration

	Project	Description	Travel Mode	Cost
Mobility of People				
1	Hill Street Bike & Pedestrian Bridge	This project will provide a link between Wrigley and West Long Beach by constructing a bicycle and pedestrian bridge over the Los Angeles River and I-710 Freeway at Hill Street.	Ped/Bike	7m
2	Dominguez Gap Bike & Pedestrian Bridge	This project will construct a new bike and pedestrian bridge over Los Angeles River to connect the Los Angeles River Bike Trail to the Compton Creek Bike Path to significantly help minimize the use of Del Amo Boulevard as the only route over the Creek.	Ped/Bike	7m
3	Delta Avenue Bike Boulevard	Design and construct new bike boulevard generally traversing Delta Avenue.	Ped/Bike	1m
4	15th Street Bike Boulevard	Design and construct new bike boulevard generally traversing 15th Street Corridor.	Ped/Bike	1.5m
5	Del Mar Greenbelt	Design and construct greenway along Blue Line public right-of-way between Metro Willow and Wardlow Stations, including walking and biking paths.	Ped/Bike	3.5m
6	Alamitos Ave/Ocean Blvd Beach Bike Path Access Improvements	Design and construct bicycle and pedestrian tunnel connecting Lime Avenue to the beach bike path.	Ped/Bike	1.5m
7	Jergins Pedestrian Tunnel	This project includes the restoration and activation of the Jergins Tunnel. The tunnel is a pedestrian subway constructed in 1927 to connect the Pike amusement park and shoreline to upper Pine Avenue.	Ped/Bike	3m
8	Willmore City Courts and Ways	Design and implement pedestrian enhancements and sustainable practice for Willmore City Courts and Ways to improve pedestrian safety and connectivity.	Ped/Bike	2m
9	2nd Street/Studebaker Streetscape Enhancements	This project will include 2nd Street bike and pedestrian enhancements from Pacific Coast Highway to easterly City boundary, including construction of sidewalk and landscaping median.	Enhance	2.7m
10	Pine Avenue Streetscape Enhancement	Design and implement "complete street" improvements on Pine Avenue with sustainable design features, including pedestrian and bike improvements and stormwater planters.	Enhance	10m
11	Atlantic Avenue Streetscape Enhancement	Design and implement the visual environment on Atlantic Avenue for all modes of travel. Enhancements include: shade trees, pedestrian-scale light, and decorative crosswalk treatments, between Market Street and Artesia Boulevard.	Enhance	17.5m
12	Santa Fe Avenue Streetscape Enhancements	Design and implement streetscape enhancements on Santa Fe Avenue from Pacific Coast Highway to Wardlow.	Enhance	5m
13	Market Street Enhanced Pedestrian Access	Design and implement "complete street" improvements on Market Street from Long Beach Boulevard to Cherry Avenue, including bike improvements and sidewalk widening and sustainable design features.	Ped/Bike	5m
14	Wardlow Road Corridor Improvements	Design and implement corridor improvements on Wardlow Road between Long Beach Boulevard and Cherry Avenue, including freeway ramp access configuration, sidewalk improvements, and signal system upgrades.	Multimodal	1.7m
15	4th Street Corridor Improvements	This project includes the construction of bulb-outs and new signalized pedestrian crossing on 4th Street between Alamitos Avenue and Redondo Avenue.	Multimodal	3.5m
16	"De-Freeway" Terminal Island Freeway	The Terminal Island Freeway Transition Plan would define the community's vision for a future for the City-owned right-of-way that no longer carries freight trucks, but instead becomes a neighborhood-scale multimodal transportation corridor with contributing public amenities. As part of the plan, the designated truck route would end at the Pacific Coast Highway interchange. Goods movement currently using the last mile of the Terminal Island Freeway would be shifted to the Alameda Corridor (State Route 47) less than a mile away.	Multimodal	20m

Table 9: Capital Projects Under Consideration (continued)

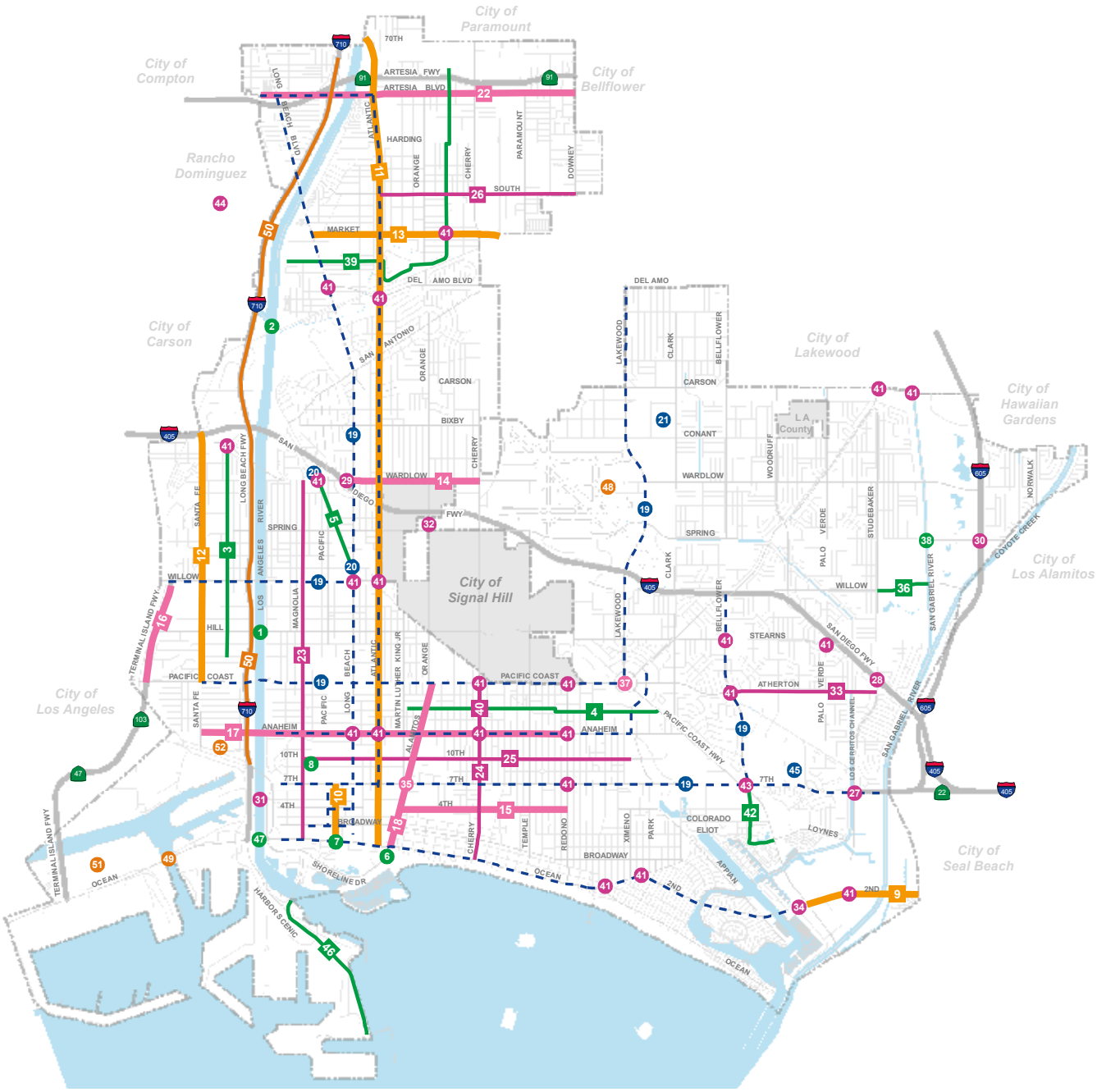
Project		Description	Travel Mode	Cost
Mobility of People (continued)				
17	Anaheim Street Corridor Improvements	This project includes signal upgrades, synchronization communications for all modes, streetscape, and pedestrian amenities.	Multimodal	5m
18	Alamitos Ave Corridor Improvements	This project may include eliminating parking on Alamitos Avenue from Ocean Boulevard to 7th Street, and reconfigure street with bike lane and streetscape amenities, bus improvements, left-turn pockets, complete utility undergrounding northward, and strategic widening from Ocean Boulevard to Pacific Coast Highway.	Multimodal	3m
19	Primary Transit Corridors Implementation	Add amenities to existing stops along primary transit corridors that could include solar powered nonadvertising bus stop shelters and freestanding benches, security lighting, trash receptacles, and crosswalk enhancements. Bus Rapid Transit or high-capacity transit service investments are also anticipated.	Transit	5m
20	Metro Blue Line Willow and Wardlow Station Park and Ride	Develop increased vehicle capacity at Metro Blue Line Station Park-and-Ride facility to encourage ridesharing, transit use, and multimodal connectivity.	Transit	10m
21	Northeast Long Beach Transit Hub	Identify and develop transit hub to provide transit linkage to high-speed rail stations, airport area, CSULB, and improving regional transit operations.	Transit	1m
22	Artesia Boulevard Complete Street Improvements	Artesia Boulevard improvements, including adaptive/synchronized signals and complete street features.	Multimodal	4m
23	Magnolia Avenue Signal Improvements	Magnolia Avenue signal upgrades, including video detection, signal coordination, and wireless communications, from Wardlow Road to Ocean Boulevard.	Auto	2m
24	Cherry Avenue Signal Improvements	Cherry Avenue signal improvements from Pacific Coast Highway to Ocean Boulevard.	Auto	1.2m
25	10th Street Signal Improvements	Signal upgrades and synchronize communications for all modes between Magnolia Avenue and Park Avenue.	Auto	3m
26	South Street Signal Improvements	South Street signal improvements from Atlantic Avenue to eastern City boundary.	Auto	2.5m
27	Studebaker Road and 7th Street Freeway Entrance	This project includes dual roundabouts to simplify movements at freeway entrance and add sidewalk/bike route.	Auto	4m
28	Studebaker Road and I-405 Ramps	This project includes configuring Studebaker Road and I-405 ramps to reduce neighborhood intrusion, improve access, and provide cross-traffic control as needed.	Auto	750k
29	Long Beach Boulevard/Wardlow Road and I-405 Ramps	This project includes ramp reconfiguration to improve connections to Long Beach Boulevard and reduce congestion at Pacific Place and Wardlow.	Auto	5m
30	Spring Street and I-605 Ramps	This project includes adding ramps at Spring Street and I-605 to reduce neighborhood intrusion, improve access, and provide cross-traffic control as needed.	Auto	15m
31	I-710 Freeway Terminus Realignment	This project proposes the realignment of Shoreline Drive to expand Cesar Chavez Park and off-ramp changes to Broadway, Third, Sixth, and Seventh Streets. This project also includes bike and pedestrian access across the Los Angeles River.	Auto	80m
32	Orange Street and I-405 Ramps	This project includes reconfiguring Orange Street and I-405 ramps to provide cross-traffic control and simplify connections.	Auto	1.5m
33	Atherton Street Signal Improvements	This project includes adaptive traffic signal improvements to better accommodate school/event traffic near CSULB.	Auto	2m
34	Second Street and Pacific Coast Highway Enhanced Connectivity	This project may include enhanced connectivity of Shopkeeper Road and Marina Drive to improve left-turn movements and add priority intersection improvements to offer bypass to Second Street and Pacific Coast Highway intersection. Any new enhanced connectivity will avoid impacts to the wetlands.	Auto	5m

Table 9: Capital Projects Under Consideration (continued)

	Project	Description	Travel Mode	Cost
Mobility of People (continued)				
35	Alamitos Park Project	This project includes the reconfiguring intersections to improve safety and traffic flow, extend two-way 7th Street westward at least one block.	Multimodal	3m
36	Willow Street Bike Facility	This project includes a Class I facility on Willow Street between Studebaker Road and the San Gabriel River.	Bike/Ped	2m
37	Pacific Coast Highway Traffic Circle Redesign	This project includes reducing radius of Traffic Circle, improving approaches, improving pedestrian safety, adding crossings at outer circle and other locations, and work with Caltrans on regional bicycle facility.	Multimodal	2m
38	Spring Street Bridge at San Gabriel River Widening	This project includes bridge widening to improve pedestrian and bike access.	Bike/Ped	1.2m
39	Walnut Avenue Bike Boulevard	Design and construct new bike boulevard generally traversing Walnut Avenue and 52nd Street.	Bike/Ped	2m
40	Cherry Avenue Widening	This project includes widening Cherry Avenue from PCH to Anaheim Street. Traffic improvement, including spot widening, from Anaheim Street to PCH.	Auto	2m
41	Multiple Intersection Improvements	The project includes new multiple-turn pocket improvements and signal improvements to increase peak-hour throughput.	Auto	35m
42	Bellflower Blvd Livable Street	This project includes "road diet" to provide new bike lane and landscaped median.	Bike/Ped	6m
43	PCH/7th Street/Bellflower Grade Separation	This project includes grade separation at the "Iron Triangle," including the closure of Bellflower SB, to simplify movements.	Auto	25m
44	Rancho Dominguez Annexation Improvements	This project includes upgrading traffic signals, interconnect communication facilities, and other miscellaneous improvements.	Auto	13m
45	CSULB Transit Hub	Identify and develop transit hub to provide transit linkage to high-speed rail stations, airport area, CSULB, and improving regional transit operations.	Transit	n/a
46	South Waterfront Bike Path	The Pier J Bike/Pedestrian Path will provide a safe travel route from the existing Queensway Bridge Class 1 Path, on a waterfront route on Pier J in the Port.	Bike/Ped	n/a
47	Ocean Blvd Bike Bridge	This project would connect the Gerald Desmond Bridge bike facility to Downtown.	Bike/Ped	n/a
Mobility of Goods				
48	Airport Terminal Improvements	This project includes repairs and improvements of runways, taxiways, taxi lanes, and airfield access roads.	Goods	30m
49	Gerald Desmond Bridge Replacement	This project includes the replacement of the deteriorating five-lane Gerald Desmond Bridge with a new six-lane, cable-stayed bridge with bike facility. This project also includes reconfiguring freeway and arterial interchanges approaching the bridge and bike facility connection to Ocean Boulevard.	Goods	1.1b
50	I-710 Freeway Reconfiguration	The scope of this project would likely include improving six key interchanges with east-west freeways as well as other major arterials between Ocean Blvd and SR-60.	Goods	40b
51	Pier S	The development of the last major vacant land in the entire San Pedro Bay Ports complex. This 160-acre parcel on Terminal Island would become a cargo shipping facility.	Goods	n/a
52	On-dock Rail Support Facility at Pier B	This proposal would expand the existing Pier B rail yard to serve a projected increase in Port rail traffic. The project would remove or realign West 9th Street between I-710 Freeway and the border of Long Beach and Los Angeles.	Goods	n/a

Note: The projects are not listed in priority order.
Please refer to the Port's website www.polb.com for a full list of current projects.

Map 20:
CAPITAL PROJECTS UNDER CONSIDERATION



Legend

- Auto
- Auto
- Goods Movement
- Goods Movement
- Beautification
- Multimode
- Multimode
- Bicycle & Pedestrian
- Bicycle & Pedestrian
- Transit
- Transit Class

Mobility of People (MOP) Implementation Measures (IM)

Pedestrians and Bicycles

- MOP IM-1: Develop a street design standards manual to reflect the new street typologies that incorporate the concept of complete streets.
- MOP IM-2: Routinely incorporate complete streets features into all street redesign and repaving projects.
- MOP IM-3: Provide neighborhood and business groups the opportunity to review preliminary plans for major street improvements included in this plan before final design and implementation.
- MOP IM-4: Develop a Citywide Pedestrian Master Plan that establishes a basic inventory of pedestrian infrastructure, comprehensively prioritizes pedestrian improvements, furthers the intent of the place-type designations, makes connections to other modes of travel, promotes public health, and connects with open space features.
- MOP IM-5: Create walking loops with stepping-stone mile markers and other supportive features to support active living.
- MOP IM-6: Continue to implement programs to promote pedestrian safety through outreach to both pedestrians and motorists.
- MOP IM-7: Create separated lanes for pedestrians and cyclists for the entire length of the beach path.
- MOP IM-8: Use Neighborhood Traffic Control techniques when excessive vehicle speed, excessive volume, or pedestrian/vehicle safety concerns warrant them.
- MOP IM-9: Implement midblock crossings and traffic calming as needed in the more suburban locations of the City where larger blocks and wider streets inhibit pedestrians.
- MOP IM-10: Design safer streets by using traffic-calming techniques (such as roundabouts and sidewalk extensions) and by providing more frequent and innovative crosswalks, pedestrian signals, and clearly marked bicycle lanes.
- MOP IM-11: Continuously implement new technology to improve the pedestrian environment.
- MOP IM-12: Actively seek funding to implement the Pedestrian and Bicycle Master Plans.
- MOP IM-13: Implement a Citywide bikeshare program.
- MOP IM-14: Develop an on-street bike parking (ie, bike corrals) program, including standards and procedures.
- MOP IM-15: Strengthen existing development standards for bike parking at new commercial and multifamily developments.
- MOP IM-16: Implement the City's Metro Blue Line Bicycle and Pedestrian Access Plan.
- MOP IM-17: Address bicycle safety and access in the design and maintenance of all street projects.
- MOP IM-18: Whenever capital improvement projects are constructed at intersections, vehicle actuation should detect bicycles.
- MOP IM-19: Identify and analyze locations with a high number of bicycle crashes and implement appropriate engineering, education, enforcement, and countermeasures.
- MOP IM-20: Use "sharrow" marking on all existing and proposed Class III facilities, as feasible.
- MOP IM-21: Institutionalize the Bicycle-Friendly Business Districts and Bike Saturday campaign in Long Beach.
- MOP IM-22: Continue to conduct annual bike counts, walk audits, and other data collection and analysis related to bicycle facilities for program evaluation and to support grant-making efforts.
- MOP IM-23: Develop a policy for retrofitting existing automobile parking spaces for bike parking at existing commercial and multifamily developments.
- MOP IM-24: Coordinate and collaborate with local school districts to provide enhanced, safer bicycle and pedestrian connections to school facilities throughout Long Beach.
- MOP IM-25: Continue to upgrade the City's designation as a bike-friendly city to Platinum status.
- MOP IM-26: Participate in and support Citywide events to promote bicycling, such as National Car-Free Day, Bike-to-Work Day, Bike Saturday, and Park[ing] Day, women on bikes, and bike buddy.
- MOP IM-27: Pilot an "individualized marketing campaign" to help residents to choose safe, convenient routes to replace automobile trips with bicycling and transit trips.

- MOP IM-28: Actively support ciclovias (ie, bike festivals) and other "open street" activities in Long Beach.
- MOP IM-29: Continue to support the Bikestation and encourage the development of small-scale bike-transit hubs throughout the City of Long Beach.
- MOP IM-30: Ensure that all planning processes, such as neighborhood and specific plans, identify areas where pedestrian, bike, and transit improvements can be made, such as new connections, increased sidewalk width, improved crosswalks, improved lighting, and new street furniture.
- MOP IM-31: Continue to strengthen the marketing and promotion of nonautomobile transportation to residents, employees, and visitors.
- MOP IM-32: Routinely integrate the financing, design, and construction of pedestrian facilities with street projects. Build pedestrian improvements at the same time as improvements for vehicular circulation.
- MOP IM-33: Continue to implement pedestrian streetscape designs, especially on streets with projected excess vehicle capacity, to reduce either the number of travel lanes or the roadway width, and use the available public rights-of-way to provide wider sidewalks, bicycle lanes, transit amenities, or landscaping.
- MOP IM-34: Convert electricity transmission corridors to parks, as resources and leases become available.
- MOP IM-35: Establish Rails to Trails Program to repurpose, share, or reconfigure surplus rights-of-way to greenbelts with bicycles and pedestrian facilities.
- MOP IM-36: Establish a Pavement to Plazas Program to realign irregular intersections and repurpose surplus public rights-of-way for public space.

Transit

» MOP IM-37: Actively support and assist Long Beach Transit in the implementation of design guidelines for bus shelters and other bus stop amenities.

» MOP IM-38: Include Long Beach Transit early in the City's Site Plan Review process to ensure transit facilities are well integrated into the development project.

» MOP IM-39: Actively support and assist Long Beach Transit's development of a strategic action plan for future transit service.

» MOP IM-40: Actively support and assist Long Beach Transit's expansion of real-time transit information at bus shelters and expand smart phone applications and other new technology.

» MOP IM-41: Actively support and assist Long Beach Transit's establishment of mini-transit hubs throughout the City that provide multimodal connectivity.

» MOP IM-42: Establish interagency transit hubs and Park and Rides in northern half of the City.

» MOP IM-43: Actively support and assist Metro to expand the existing Park and Ride facilities at Metro Blue Line stations.

» MOP IM-44: Actively support Long Beach Transit's efforts to expand the Universal Access Pass Program to major employers and business districts.

» MOP IM-45: Continue to explore the feasibility of bus rapid transit and a streetcar system in Long Beach.

» MOP IM-46: Continue to implement transit-priority traffic signals.

» MOP IM-47: Investigate the feasibility of establishing a street car or other type of personal rapid transit system in Long Beach. This system is proposed as a long-term community asset that will enhance nonautomobile connectivity between neighborhoods; bus, rail, and water transit hubs; and the Downtown core.

» MOP IM-48: As a pilot program, apply interim MMLOS standards for development proposals Downtown.

» MOP IM-49: Actively promote and develop plans for the extension of the Metro Green Line Station to the Blue Line Willow Station to increase regional connectivity.

» MOP IM-50: Review all capital improvement projects to ensure improvements located on existing and planned bus routes include modification of street, curb, and sidewalk configurations to allow for easier and more efficient bus operation and improved passenger access and safety while maintaining overall pedestrian and bicycle safety and convenience.

Funding and Administration

» MOP IM-51: Ensure that the City's Transportation Impact Fee Program provides adequate funding for necessary transportation improvements that will benefit all travel modes, while also incentivizing development that is less dependent on expensive, new transportation infrastructure.

» MOP IM-52: Review and, if necessary, update the City's Transportation Impact Fee Program to ensure that funding is provided for necessary transportation improvements that will benefit all travel modes.

» MOP IM-53: Integrate financing and implementation of pedestrian, bicycle, and transit improvement projects with other related street modifications projects.

» MOP IM-54: Participate with local, regional, State and federal agencies, and other organizations.

Automobiles

» MOP IM-55: Support the casual carpool system by enhancing existing facilities and amenities. If necessary, the carpool facilities should be reconfigured or relocated to equally convenient locations.

» MOP IM-56: When industry best practice has been established, adopt a Multimodal Level of Service (MMLOS) standard.

» MOP IM-57: Develop a program to regularly evaluate traffic collision data. Identify top collision locations for automobiles, bicycles, and pedestrians, and develop appropriate countermeasures.

» MOP IM-58: Develop street and alley vacation guidelines.

Parking

» MOP IM-59: Create a mechanism to adjust the pricing and hours of availability and turnover of on-street parking consistent with the cost of parking garages and demand.

» MOP IM-60: Revise current parking space requirements to reflect shared parking and park-once policies.

» MOP IM-61: Enhance and continue to implement the Neighborhood Parking Program that provides residents access to available commercial spaces.

» MOP IM-62: Revise parking space dimension regulations to allow for multiple parking stall sizes to accommodate all vehicle types (eg, smart cars, motorcycles, large SUVs, and other personal mobility vehicles).

» MOP IM-63: Develop regulations to unbundle the cost of parking from the cost of housing for new multifamily projects.

» MOP IM-64: Work with local school districts to establish joint use and shared parking arrangements with schools.

» MOP IM-65: Facilitate the creation of parking improvement districts to promote shared parking facilities using City streets and public parking structures. This will reduce or eliminate the parking required by a single development or business to facilitate adaptive reuse, redevelopment, and reinvestment. Parking improvement districts must include a program and funding to implement sustainable design features to reduce the impact parking facilities have on the environment.

Aviation

» MOP IM-66: Maintain and enhance General and Commercial Aviation at Long Beach Airport (LGB).

STRATEGIES TO MOBILIZE GOODS

As a major gateway for goods coming in and out of our region, the City of Long Beach must also implement strategies designed to improve the movement of these goods. Recommended strategies for enhanced mobility of goods (MOG) are as follows.

» MOG IM-1: Adopt and enforce truck routes to minimize impacts of truck emissions on the community.

» MOG IM-2: Identify street improvements along designated truck routes that improve freight mobility on major track corridors and reduce impacts of freight on the community.

» MOG IM-3: Support programs and projects that reduce conflicts between trucks and autos on freeways, such as dedicated freight corridors separating heavy trucks from autos.

» MOG IM-4: As part of the project development review process, ensure that adequate off-street loading areas in new, large commercial, industrial, and residential developments are provided. In addition, we should ensure that these areas do not conflict with adjacent uses, or with automobile, pedestrian, bicycle, or transit access and circulation.

» MOG IM-5: Consider pickup and delivery activities associated with various land uses when approving new development, implementing projects, and improving highways, streets, and bridges, including but not limited to, providing loading zones for multifamily, mixed-use, and commercial developments, curb radii at intersections and driveways that accommodate truck turns, and lane widths that accommodate trucks.

» MOG IM-6: Encourage the expansion of on-street loading areas through removal of curb parking in established industrial areas where off-street loading facilities are insufficient.

» MOG IM-7: Implement the Port of Long Beach Master Plan.

» MOG IM-8: Support programs that reduce truck traffic on I-710 during peak commute hours, such as the Port's PierPass Program.

» MOG IM-9: Develop partnerships within the City, the region, the State, and the nation to advocate for project prioritization and timely funding to improve and maintain freight infrastructure, and explore funding partnerships.

» MOG IM-10: Maintain consistency between local, regional, State, and federal freight-related policies.

» MOG IM-11: Identify emerging cargo container freight transportation issues and work with affected stakeholder groups, including the California Freight Advisory Committee. Provide regular opportunities for communication between the City, the freight community, other affected communities, and other agencies and stakeholders.

» MOG IM-12: Rehabilitate Long Beach Airport airfield pavement, including repairs and improvements of runways, taxi lanes, and airfield access road. Local agencies to ensure that Port infrastructure projects are sited and designed to minimize their impacts on local residents and businesses.

» MOG IM-13: Enhance the existing terminal building for security and passenger comfort, safety, or convenience.

6

Funding and Administration:

Finding the Resources to Fund Mobility Improvements

"Do the difficult things while they are easy and do the great things while they are small. A journey of a thousand miles must begin with a single step."

Lao Tzu
Philosopher of ancient China

6

Funding and Administration:

Finding the Resources to Fund Mobility Improvements

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CAPITAL IMPROVEMENT PROGRAM (CIP): ADDRESSING OUR IMMEDIATE FUNDING NEEDS

Identifying the strategies to enhance the mobility of people, goods, and resources in our City is a key step toward reaching our goals. Equally important, however, is identifying the funding resources and opportunities that will allow us to implement the strategies outlined in the previous pages. In the final section of the Mobility Element we focus on funding initiatives that will help us move our vision of a mobile City toward reality.

The City's short-range, strategic capital investment program, the Capital Improvement Program (CIP), represents, identifies, and covers two types of expenditures:

» Strategic improvements to the City's existing infrastructure.

» One-time projects designed to address important community needs.

The improvement projects identified within this Mobility Element have been programmed to meet the funding and future construction criteria of the CIP, allowing this program to serve as their main administration and funding tool.

In identifying funding strategies for a range of mobility improvements, the City will follow general guidelines addressed in this section. Aimed at the financing and implementation of public transportation facilities, these guidelines identify future funding resources for the City should the need arise for these elements.

FUNDING STRATEGIES AND SOURCES

Transportation Mitigation Program (TMP) Fees

The City of Long Beach has an established Transportation Mitigation Program (TMP) used to fund various transportation improvement projects throughout the City. This fee program is designed to help mitigate the impact of development on the City's transportation system. Developer fees must be used to pay for development impacts only and cannot be used to fund improvements for existing congestion problems, nor for transportation impacts caused by through-trips that pass through the City without stopping.

The Transportation Mitigation Program fee is assessed on the following types of development projects in the City:

» Commercial (Citywide fee and Downtown Central Business District fee): Fees for industrial, office, and retail developments are assessed per square foot; movie developments are assessed per seat.

» Residential: Residential and senior citizen developments are assessed per unit.

Typical TMP-funded improvements include but are not limited to the following:

» Traffic signals and traffic signal upgrades.

» Pedestrian crossing improvements.

» Traffic management improvements.

» Traffic flow and safety improvements.

» Intersection widening.

» Other capacity-enhancing projects.

» Speed monitoring signs.

» Enhanced transit facilities.

» Other types of transportation improvements.

Adopted via Ordinance No. C-6824 in 1990, the TMP provides annual reports that summarize the status of TMP implementation and provide details on development, capital improvement, and financial activity related to the program.

The goal of the City of Long Beach TMP is to provide a quantified basis for the legal imposition of developer fees, compliant with Government Code 66000. Government Code Sections 66000-66011 were enacted by the California legislature in 1989, following their 1987 passage of the Mitigation Fee Act (AB 1600) "Nexus Legislation."

To impose a transportation improvement developer fee, the City was required to complete a Nexus Study that accomplished the following:

1) Identify the purpose of the fee.
2) Identify the use for the fee, including identifying the transportation improvement facilities and programs to be financed.
3) Show a reasonable relationship (Nexus) between the fee's use and the type of development projects anticipated to occur in Long Beach.
4) Show a reasonable relationship between the transportation facility to be constructed/program to be implemented and the type of development.
5) Determine the appropriate fee amount and work with City staff to refine the fee program.

Because the City fee was established many years ago, the fees being collected have fallen below most comparable fee programs in California. As a result, Long Beach is not collecting adequate fees to mitigate transportation impacts as compared with other jurisdictions.

For this reason, the City should undertake a Nexus Study to update the program information and justify amended/updated transportation mitigation fees. This study should include:

» Updates on future areas of congestion.

» Information on the portion of the congestion caused by new development.

» Estimated costs of appropriate mitigation measures.

» Assessment of a new fee structure for future development.

Infrastructure Financing District

Certain communities have established Special Districts as separate taxing entities to fund transportation improvements. These districts are somewhat similar to other special taxing districts, such as assessment districts.

A Special District is legally formed by a majority of willing participants who pledge an annual tax increment to the district used to fund and construct transportation facilities. The districts are often formed by creative boundaries, drawn to include as many supporting participants as possible.

Bonds

Bonds are frequently used for the financing and construction of transportation facilities in advantageous locations where full funding is not available from existing sources. Bonds provide a viable funding option for facilities that generate a revenue stream.

While assured by the general obligation of the community, bonds are more frequently guaranteed by revenue from special tax districts, user fees, and other funds generated by the facility itself. The stronger and more reliable the revenue source, the better the bond rating.

Joint Development Projects

Joint development projects include a wide variety of public/private partnerships used to develop transportation facilities. Applications can include:

» Private construction of facilities, followed by dedication of facilities to the authority for operation and maintenance as a multiuse facility.

» Co-financing of facilities, which provides more funding than private development. Funding is provided through supplemental public financing. Construction for the Metro Gold Line Del Mar Station was largely funded through joint development. For that project, the County worked with private developers who planned to build near the rail lines. These developers were paid to build more parking spaces in exchange for allowing transit users to park in those spaces.

The co-financing approach is normally done on a case-by-case basis and involves negotiations between the private development and the community. However, the community typically designates plans and goals that indicate when and how this approach should be applied.

In-Lieu Fees

In-lieu fees can be collected by a municipality in lieu of providing privately constructed facilities in conjunction with development projects. In-lieu contributions must reflect the actual costs of any future land acquisition or construction of facilities. The fee is paid to the City or a district in lieu of provision of facilities onsite for the construction costs plus any cost of land.

User Fees

User fees are paid by individuals who ride transit or park and pay for the use of the parking spaces at transit or other transportation facilities.

Federal and State Grants

A variety of federal and State grants are made available to local agencies to fund transportation and infrastructure improvements.

Community Development Block Grant

A significant number of transportation facilities have been provided or improved through the use of Federal Community Development Block Grant (CDBG) funds, an attractive source of outside funding. To determine whether CDBG funds are the best option for a project, we must look at several factors:

» The ability to attract funds.

» Competing uses.

» Requirements for following federal rules for usage, including environmental procedures that apply to clearing of land.

Tidelands

The City is the State's trustee of the tidelands within the boundaries of the City of Long Beach for statewide public purposes, including the development of commerce, navigation, fisheries, and recreation. The Port of Long Beach operates on State tidelands, which have been transferred to the City for the express purpose of operating a municipal Port. The Port revenues, as well as those generated by oil production within the City, are governed by the State Tidelands Trust limitations on revenue expenditures for only on maritime commerce, navigation, marine recreation, and fisheries. Specifically for transportation-related improvements, permitted uses of revenues from tidelands include establishment of highways, streets, bridges, parking facilities, transportation, and utility facilities.

Cap-and-Trade Auction Proceeds

Through the Global Warming Solutions Act of 2006, AB 32, California has established a target to reduce greenhouse gas (GHG) emissions to 1990 levels by the year 2020. In 2007, the California Air Resources Board (ARB) designated 427-million metric tons of carbon dioxide equivalent (MMTCO2E) of greenhouse gases as "the statewide level of greenhouse gas emissions in 1990 to serve as the emissions limit to be achieved by 2020." Pursuant to AB 32, the ARB developed its "Scoping Plan" which sets forth emissions reduction strategies to meet the AB 32 goals. The Cap-and-Trade Program is one of several measures for GHG emissions reduction set forth in the ARB Scoping Plan.

The "cap" limits the total amount of GHG emissions that can be released by regulated entities such as power companies, factories, and certain other large facilities. The market for buying and selling emissions allowances comprises the "trade" aspect of the Cap-and-Trade Program. Regulated entities may purchase emissions allowances from other entities or reduce emissions. A regulated entity that is "clean running" may sell allowances that it does not need to other entities.

It is projected that billions of dollars are expected to be generated from the sale, allocation, and trading of "emissions allowances" under cap-and-trade. GHG emissions reduction in the Transportation Sector is included as a top priority but is not limited to the following project categories: 1) Improved maintenance of existing infrastructure, 2) Coordination of transportation and land use, 3) Transit-oriented development, 4) Zero- and near-zero emission vehicles and equipment, 5) Inclusion of local air districts, 6) Zero and near-zero freight transportation, and 7) Affordable housing near transit.

Appendix 7

In great cities, spaces as well as places are designed and built: walking, witnessing, being in public, are as much part of the design and purpose as is being inside to eat, sleep, make shoes or love or music. The word citizen has to do with cities, and the ideal city is organized around citizenship — around participation in public life.

Rebecca Solnit
Wanderlust: A History of Walking

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GLOSSARY

Advanced Traffic Management Systems (ATMS): ATMS uses a variety of means to more efficiently manage traffic. It can include roadside sensors, ramp metering, high occupancy vehicle (HOV) lanes, and synchronized traffic signals that respond to traffic flows.

Air Quality Management District (AQMD): A regional agency which adopts and enforces regulations to achieve and maintain State and federal air quality standards.

Air Quality Management Plan (AQMP): A plan for attaining State air quality as required by the California Clean Air Act of 1988. The plans are adopted by air quality districts and subject to approval by the California Air Resources Board.

Air Resources Board (ARB): The State agency, (aka, CARB in California) responsible for adopting State air quality standards, establishing emission standards for new cars sold in the State, and overseeing activities of regional and local air pollution control agencies.

Alley: A vehicular way located at the rear of lots providing a location for utility easements and access to service areas, parking, and outbuildings.

Alternative Fuels: Low-polluting fuels which are used to propel a vehicle instead of high-sulfur diesel or gasoline. Examples include methanol, ethanol, propane or compressed natural gas, liquid natural gas, low-sulfur or "clean" diesel, and electricity.

American Association of State Highway and Transportation Officials (AASHTO): An interest group based in Washington, D.C., that is involved in transportation-related research, advocacy, and technical assistance.

Americans with Disabilities Act (ADA): Federal civil rights legislation for disabled persons passed in 1990. As it pertains to transportation, public transportation, and public facilities such as sidewalks, features must be designed per ADA standards to provide access for disabled persons.

Amtrak: Operated by the National Railroad Passenger Corporation, this rail system was created by the Rail Passenger Service Act of 1970 (Public Law 91-518, 84 Stat. 1327) and given the responsibility for the operation of intercity (as distinct from suburban) passenger trains between points designated by the Secretary of Transportation.

At-Grade Crossing: An intersection of traveled ways — eg, highways, rail lines, or walkways — at the same vertical elevation.

Avenue: A thoroughfare of high vehicular capacity and low to moderate speed, acting as a short distance connector between urban centers, and usually equipped with a landscaped median.

Average Annual Daily Traffic (AADT): The total traffic for a year divided by 365.

Average Daily Traffic (ADT): The total traffic volume during a given period divided by the number of days in that period. Current ADT volumes can be determined by collecting traffic counts for two or more 24-hour periods. Where only periodic traffic counts are taken, ADT volume can be established by applying correction factors, eg, for season or day of week. For roadways having traffic in two directions, the ADT includes traffic in both directions unless specified otherwise.

Average Vehicle Occupancy (AVO): The average number of persons occupying a passenger vehicle along a roadway segment, intersection, or area are monitored during a specified time period. For purposes of the California Clean Air Act, passenger vehicles include autos, light-duty trucks, passenger vans, buses, passenger rail vehicles, and motorcycles.

Average Vehicle Ridership (AVR): The number of employees who report to a worksite divided by the number of vehicles driven by those employees, typically averaged over an established time period. This calculation includes crediting vehicle trip reductions from telecommuting, compressed work weeks, and nonmotorized transportation.

Average Weekday Daily Traffic (AWDT): The total traffic for an average weekday. An average weekday is a representative weekday computed as the mathematical average of several typical weekdays selected at random throughout the year. A typical weekday has no anomaly such as heavy traffic due to a special public event or light traffic due to inclement weather. Average Saturday, Sunday, and holiday traffic are determined the same way.

Bicycle Boulevard: A low-speed street that prioritizes bicycle travel over other modes, though also allows local vehicle traffic.

Bicycle Lanes: Commonly referred to as Class II facilities established within the paved area of roadways for the preferential use of bicycles. Bike lane stripes are intended to promote an orderly flow of traffic by establishing specific lines of demarcation between areas reserved for bicycles and lanes to be occupied by motor vehicles.

Bicycle Locker: An enclosed storage facility designed to temporarily house and secure a bicycle.

Bicycle Paths: Commonly referred to as Class I facilities with exclusive right-of-way, with cross flows by motorists minimized.

Bicycle Rack: A nonenclosed rack designed for parking and securing a bicycle.

Bicycle Routes: Commonly referred to as Class III facilities, designated Bicycle Routes do not provide an exclusive lane for bicycles. These facilities are established by placing Bike Route signs along the roadways to provide awareness to drivers that bicyclists may be more common on the route.

Bicycle Shed: An area that is centered on a common destination. Its size is related to average cycling distances for the applicable community type.

Bicycle Treatments: Typically on-street bicycling improvement strategies, such as signed bicycle routes or striped bicycle lanes; on-street bicycle lanes can also be buffered, separated, colored, or otherwise made distinct from general travel lanes.

Biofuel: A type of fuel whose energy is derived from biological carbon fixation. Biofuels include fuels derived from biomass conversion, as well as solid biomass, liquid fuels, and various biogases.

Block: The aggregate of private lots, passages, alleys, and rear lanes, circumscribed by thoroughfares.

Bus (Motor Bus): A rubber-tired, self-propelled, manually steered vehicle with fuel supply carried onboard the vehicle. Types include advanced-design, articulated, charter, circulator, double-deck, express, feeder, intercity, medium-size, new look, sightseeing, small, standard-size, subscription, suburban, transit, and van.

Bus, Articulated: A bus, usually 55 feet or more in length, with two connected passenger compartments that bend at the connecting point when the bus turns a corner.

Bus, Circulator: A bus serving an area confined to a specific locale, such as a downtown area or suburban neighborhood with connections to major traffic corridors.

Bus Lane: A street or highway lane intended primarily for buses, either all day or during specified periods, but sometimes also used by carpools meeting the requirements set out in traffic laws.

Bus Rapid Transit (BRT): Bus Rapid Transit can be defined as a flexible, rubber-tired, rapid-transit mode that combines stations, vehicles, services, running ways, and Intelligent Transportation System (ITS) elements into an integrated system with a strong positive identity that evokes a unique image. BRT applications are designed to be appropriate to the market they serve and their physical surroundings, and they can be incrementally implemented in a variety of environments. In brief, BRT is an integrated system of facilities, services, and amenities that collectively improves the speed, reliability, and identity of bus transit. BRT, in many respects, is a rubber-tired, light rail transit (LRT) bus with greater operating flexibility and potentially lower capital and operating costs.

Bus Shelter: A building or other structure constructed near a bus stop for the convenience of waiting passengers to provide seating and protection from the weather.

Bus Stop: A place where passengers can board or alight from the bus, usually identified by a sign.

Busway: Exclusive freeway lane for buses and carpools.

California Department of Transportation (Caltrans): State agency responsible for the design, construction, maintenance, and operation of the California State Freeway and Highway System as well as that portion of the Interstate Highway System within the State's boundaries.

California Environmental Quality Act (CEQA): A statute that requires all jurisdictions in the State of California to evaluate the extent of environmental impact due to a proposed development or project.

California Transportation Commission (CTC): A body appointed by the Governor and confirmed by the Legislature that reviews Regional Transportation Improvement Programs (RTIPs) and the Proposed State Transportation Improvement Program (PSTIP). The CTC makes funding allocations and has financial oversight over the major programs authorized by Propositions 111 and 108. Its nine members are appointed by the Governor.

Capacity: A transportation facility's ability to accommodate a moving stream of people or vehicles in a given time period.

Capital Costs: Costs of long-term assets such as property, infrastructure, buildings, vehicles, etc.

Capital Improvement Program (CIP): The CIP is a mechanism for prioritizing and funding City-sponsored projects with an estimated cost that exceeds $50,000. Typical CIP projects include construction/reconstruction of street, water, and sewer systems; technology infrastructure; and public parks, libraries, community centers, etc. The program also includes streetscape projects, installation of street lights and traffic signals, and the City's Neighborhood Traffic Management Program.

Capital Revenues: Monies dedicated for new projects to cover one-time costs, such as construction of roads, transit lines, and facilities, or purchase of buses and rail cars.

Carpool: An arrangement where two or more people share the use and cost of privately owned automobiles in traveling to and from prearranged destinations together.

Clean Air Act (CAA): Federal legislation that requires each State with areas that have not met federal air quality standards to prepare a State Implementation Plan (SIP). The sweeping 1990 amendments to the CAA established new air quality requirements for the development of metropolitan transportation plans and programs. The California Clean Air Act (CCAA) sets even tougher State goals.

Collector Road: A thoroughfare that provides a less highly developed level of service at a lower speed for shorter distances than a Major Avenue, by collecting traffic from local roads and connecting them with arterials. Collectors specifically balance vehicle mobility and land access.

Commuter: A person who travels regularly between home and work or school.

Complete Streets: A policy for the design and operation of thoroughfares enabling safe access for all users. By adopting a complete streets policy, communities direct their transportation planners and engineers to routinely design and operate the entire right-of-way to enable safe access for all users, regardless of age, ability, or mode of transportation.

Compressed Natural Gas (CNG): A clean-burning alternative fuel for vehicles.

Conformity: A process in which transportation plans and spending programs are reviewed to ensure that they are consistent with federal clean air requirements. Transportation projects collectively must not worsen air quality. Conformity ensures that the planning for highway and transit systems, as a whole and over the long-term, is consistent with the State air quality plans for attaining and maintaining health-based air quality standards. Conformity is determined by Metropolitan Planning Organizations (MPOs) and the U.S. Department of Transportation (U.S. DOT) and is based on whether transportation plans and programs meet the provisions of a State Implementation Plan.

Congestion Management Agency (CMA): The agency responsible for developing the Congestion Management Program and coordinating and monitoring its implementation.

Congestion Management Program (CMP): A legislatively required, countywide program linking transportation, land use, and air quality planning in order to mitigate the effects of congestion.

Congestion Pricing: The concept of charging a toll that varies by the amount of congestion on a transportation facility, usually on a freeway during rush hour.

Connectivity: The number of publicly accessible street intersections per square mile, including intersections of streets with dedicated alleys and transit rights-of-way, and intersections of streets with nonmotorized rights-of-way. If one must both enter and exit an area through the same intersection, such an intersection and any intersections beyond that point are not counted; intersections leading only to culs-de-sac are also not counted.

Context-Sensitive Solutions (CSS): The planning, design, and implementation of transportation infrastructure and facilities that are in scale and character with surrounding land uses in a way that minimizes negative transportation effects and provides value to adjacent land uses through design, aesthetics, and other techniques.

Contraflow Lane: Reserved lane for buses on which the direction of bus traffic is opposite to the flow of traffic on the other lanes.

Corridor: A lineal geographic system incorporating transportation and/or greenway trajectories. A transportation corridor may be a lineal transect zone.

Council of Governments (COG): A voluntary organization of local governments that strives for comprehensive, regional planning.

Crime Prevention Through Environmental Design (CPTED): A multidisciplinary approach to deterring criminal behavior through environmental design. CPTED strategies rely upon the ability to influence offender decisions that precede criminal acts.

Cross Docking: Cargo transfer from one mode of transportation to another mode.

Demand Responsive: Nonfixed-route service utilizing vans or buses with passengers boarding and alighting at prearranged times at any location within the system's service area. Also called "Dial-A-Ride" (DAR).

Discretionary Riders: Riders who choose to ride transit though they have other travel options.

Drayage: Transportation of freight (often containers from rail yard or seaports) by truck typically over a relatively short distance to an intermediate or final destination; may also refer to a charge for pickup/delivery of goods moving short distances (eg, from marine terminal to warehouse). Originally, the term *dray* referred to a cart, usually three-sided, used to haul goods.

Drought-Tolerant: Adapted to arid or drought conditions.

Environmental Impact Report (EIR): A report prepared pursuant to CEQA that analyzes the extent of environmental impacts expected to be caused by a proposed development or project.

Ethanol: An alternative fuel; a liquid alcohol fuel with vapor heavier than air; produced from agricultural products such as corn, grain, and sugar cane.

Exclusive Right-of-Way: A highway or other facility that can only be used by buses or other transit vehicles.

Federal Highway Administration (FHWA): The federal agency, part of the U.S. Department of Transportation, charged with funding and regulating the nation's roadways, freeways, and highways.

Fixed Guideway Rail Transit: Any transit service that uses exclusive or controlled rights-of-way or rails, entirely or in part. The term includes heavy rail, commuter rail, and light rail.

Fixed Guideway System: A system of vehicles that can operate only on its own guideway constructed for that purpose (eg, rapid rail, light rail). Federal usage in funding legislation also includes exclusive right-of-way bus operations, trolley coaches, and ferryboats as "fixed guideway" transit.

Fixed-Route Service: Services provided on a repetitive, fixed-schedule basis along a specific route with vehicles stopping to pickup and deliver passengers to specific locations; each fixed-route trip serves the same origins and destinations, such as rail and bus; unlike demand-responsive taxicabs and vanpool services.

Fuel-Efficient Traffic Signal Management (FETSIM): State-provided financial fuel for local traffic signal coordination projects.

Goods Movement: The processes and activities involved in picking up, moving, and delivering products or raw materials from points of origin (or producers) to points of delivery or use (or consumers). Goods movement relies on transportation, financial, and information systems that involve global, international, national, interstate, statewide, regional, and local networks.

Grade Separation: A crossing of two forms of transportation paths (eg, light rail tracks and a highway) at different levels to permit unconstrained operation.

Greenhouse Gas (GHG): Gases that trap heat in the atmosphere and thus potentially influence climate change, such as carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride.

Headway: A measurement of the distance/time between vehicles in a transit system. It is most commonly measured as the distance from the tip of one vehicle to the tip of the next one behind it, expressed as the time it will take for the trailing vehicle to cover that distance. A "shorter" headway signifies a more frequent service.

High Occupancy Toll Lane (HOT Lane): A lane of freeway reserved for the use of vehicles with more than one passenger, including buses, taxis, carpools, motorcycles, electric vehicles, as well as single-occupant vehicles that pay a predetermined toll.

High Occupancy Vehicle (HOV): Any transportation vehicle carrying more than one person for travel purposes. This may include an automobile, bus, train, etc.

High Occupancy Vehicle Lane (HOV Lane): A lane of freeway reserved for the use of vehicles with more than one passenger, including buses, taxis, carpools, motorcycles, and electric vehicles.

Highway: A rural and suburban thoroughfare of high vehicular speed and capacity. This type is allocated to the more rural transect zones (T1, T2, and T3).

Highway Capacity Manual (HCM): Published by the Transportation Research Board (latest edition in 2000), the HCM is the primary tool for the design and operation analysis of highway facilities in the United States. The HCM presents methodologies for analyzing the performance (see Level of Service) of transportation systems such as freeways, arterials, transit, and pedestrian facilities.

Impact Fee: A cost imposed on new development to fund public facility improvements required by new development and ease fiscal burdens on localities.

Incident Management: Systematical monitoring of traffic flow on transportation systems that provides useful information for identifying and responding to traffic incidents.

Infrastructure: The basic facilities, such as roads, public buildings (schools, libraries, fire stations), utilities (water, sewer, electric, gas), and communications systems on which the continuance and growth of a community depends. Infrastructure is needed to sustain industrial residential, commercial, and all other land use activities.

Intelligent Transportation Systems (ITS): The use of technology-based strategies to improve transportation operations and performance.

Intermodal: The term "mode" represents one method of transportation, such as automobile, transit, ship, bicycle, or walking. Intermodal refers specifically to transportation trips using one or more modes.

Intermodal facility: This type of facility is designed for more than one type of transportation, such as the loading and unloading of containers from trucks to trains, and from trains to trucks.

Intermodal Surface Transportation Efficiency Act (ISTEA): Landmark federal legislation signed into law in 1991 that initiated broad changes in the way transportation decisions are made. ISTEA emphasized diversity and balance of modes, as well as the preservation of existing systems before construction of new facilities. ISTEA expired in 1997, and much of its program structure was carried forward in successor federal legislation (see TEA-21 and Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users [SAFETEA-LU]).

Interregional Transportation Improvements Program (ITIP): One of the State funding programs also known as "State Choice." It is a statewide discretionary program which utilizes 25% of the State transportation improvement funds and is authorized by the California Transportation Commission (CTC). Fifteen percent of the funds are used for two programs: 1) Intercity rail (minimum 2.25%); and 2) Interregional roads outside urban areas (12.75% maximum). Ten percent of the funds are subject to the California North/South split and can be used in each of those areas as determined by the CTC.

Intersection Capacity Utilization (ICU): A method for calculating the level of traffic congestion (see Level of Service) at an intersection.

ISTEA, TEA-21, SAFETEA-LU: Iterations of federal transportation funding authorization and legislation which provides funding and regulations for transportation planning and projects; SAFETEA-LU is the current version.

Jitney: Also known as a share taxi. A mode of transportation that falls between private transportation and conventional bus public transportation, often with a fixed or semi-fixed route, but with the added convenience of stopping anywhere to pickup or drop off passengers and not having fixed time schedules.

Kiss-and-Ride: A place where commuters are driven and dropped off at a station to board a public transportation vehicle.

Level of Service (LOS): A measure of congestion and performance, typically on an A through F scale; a very congested freeway, for example, would have a "low" level of service (such as LOS F); LOS can also be applied to transit, bicycle, and pedestrian travel modes.

Life-Cycle Maintenance Costs: The concept that transportation infrastructure maintenance occurs throughout its useful life; for example, a street rebuilt every 15 years will still need regular maintenance during that time.

Light Rail: A form of urban rail public transportation that generally has a lower capacity and lower speed than heavy rail and Metro systems, but higher capacity and higher speed than traditional street-running tram systems. The term is typically used to refer to rail systems with rapid transit-style features that usually use electric rail cars operating mostly in private rights-of-way separated from other traffic but sometimes, if necessary, mixed with other traffic in city streets.

Light Rail Transit (LRT): Fixed guideway transportation mode that typically operates on city streets and draws its electric power from overhead wires; includes streetcars, trolley cars, and tramways. Differs from heavy rail, which has a separated right-of-way and includes commuter and intercity rail, in that it has lighter passenger capacity per hour and more closely spaced stops.

Liquefied Natural Gas (LNG): An alternative fuel; a natural gas cooled to below its boiling point of -260 degrees Fahrenheit so that it becomes a liquid; stored in a vacuum bottle-type container at very low temperatures and under moderate pressure. LNG vapor is lighter than air.

Livable: Pleasant and convenient to inhabit, preferably without the need for a vehicle to meet daily needs.

Load Factor: The ratio of passengers actually carried versus the total passenger capacity of a vehicle.

Local Road: A thoroughfare that primarily provides access to land with little or no through movement.

Methanol: An alternative fuel; a liquid alcohol fuel with vapor heavier than air; primarily produced from natural gas.

Metrolink: The regional commuter rail system connecting Los Angeles, Orange, Riverside, Ventura, San Bernardino, and San Diego counties. It was established and is operated under the authority of the Southern California Regional Rail Authority (SCRRA) using contracted service providers. Currently, Amtrak is contracted to operate the system.

Metropolitan Planning Organization (MPO): A federally mandated and federally funded transportation policymaking organization that is made up of representatives from local government and governmental transportation authorities.

Mobility Index: Measures the ability of a region's transportation systems (all modes) to move people. Higher indices are reached by transportation projects and systems that move people in either fewer vehicles or faster, or both. This index therefore is calculated by the product of aggregate average vehicle occupancy and aggregate speed of the entire region's transportation trips.

Mode: A mode is a method of travel. While many more modes exist in real life, MMLOS method focuses on only four modes of personal travel: auto driver, bus passenger, bicycle rider, and pedestrian.

Mode Share: Indicates the share of a transportation mode utilized by people for their transportation trips as compared to other modes and all of a region's transportation trips as a whole.

Mode Split: A term which compares the usage of various forms of transportation. Frequently used to describe the percentage of people using private automobiles as opposed to the percentage using public transportation.

Model: An analytical tool (often mathematical) used by transportation planners to assist in making forecasts of land use, economic activity, or travel activity, and their effects on the quality of resources such as land, air, and water.

Multimodal: The combination of several travel modes within a single corridor or facility; also refers to the ability to choose among several travel modes.

National Highway System (NHS): An approximately 155,000-mile network called for in the Intermodal Surface Transportation Efficiency Act to provide an interconnected system of principal routes to serve major travel destinations and population centers.

Off-Peak Period: Periods of the day when travel activity is generally lower. Also called "base period."

Paratransit: Flexible forms of transportation services that are not confined to a fixed route. Usually used to provide service for people with disabilities in compliance with the Americans with Disabilities Act of 1990 (ADA).

Park-and-Ride Lot: Designated parking areas for automobile drivers who then board transit vehicles from these locations.

Paseo: A pedestrian connector that passes between buildings to provide shortcuts through long blocks and connect rear parking areas to frontages.

Passenger Miles Traveled (PMT): The aggregate number of miles traveled by each passenger for each trip on a transportation mode such as transit.

Peak Oil: The notion that we have passed the point of peak global oil production and are entering into a period of steady decline in petroleum.

Peak Period (Rush Hours): The period during which the maximum amount of travel occurs. It may be specified as the morning (a.m.), or afternoon, or evening (p.m.) peak.

Pedestrian Shed: An area that is centered on a common destination. Its size is related to average walking distances for the applicable community type.

Plaza: A civic space type designed for civic purposes and commercial activities in the more urban transect zones, generally paved and spatially defined by building frontages.

Propane: An alternative fuel; a liquid petroleum gas (LPG), with vapor heavier than air, which is stored under moderate pressure; produced as a byproduct of natural gas and oil production.

Public Transportation: Transportation by bus, rail, or other conveyance, either publicly or privately owned, which provides general or special service to the public on a regular and continuing basis. Also known as "mass transportation," "mass transit," and "transit."

Queue Jump Lanes: Special lanes at intersections that allow buses to bypass vehicle stacking at red lights (known as queues) to improve their on-time performance and "time competitiveness" with auto travel.

Rail, Commuter: A local and regional passenger train with operations between a central city, its suburbs, and/or another central city. It may be either locomotive-hauled or self-propelled, and is characterized by multitrip tickets, specific station-to-station fares, railroad employment practices, and usually only one or two stations in the central business district. Also known as "suburban rail."

Rail, Heavy: An electric railway with the capacity for a "heavy volume" of traffic and characterized by exclusive rights-of-way, multicar trains, high-speed and rapid acceleration, sophisticated signaling, and high-platform loading. Also known as "rapid rail."

Rail, High-Speed (HSR): A rail transportation system with exclusive rights-of-way which serves densely traveled corridors at speeds of 124 miles per hour (200 km/h) and greater.

Rail, Light (LRT): An electric railway with a "light-volume" traffic capacity compared to heavy rail. Light rail may use shared or exclusive rights-of-way, high- or low-platform loading, and multicar trains or single cars. Also known as "streetcar," "trolley car," and "tramway."

Rail Yard: A complex series of railroad tracks used for storing, sorting, loading/unloading, and repairing railroad cars and/or locomotives. Rail yards also serve as a site where containers of goods are transferred onto trucks or trains.

Rapid Transit: Rail or motorbus transit service operating completely separate from all modes of transportation on an exclusive right-of-way.

Regional Improvement Program: One of the State funding programs, it is also known as "Regional Choice." Project selection is done by the Metro and submitted to the California Transportation Commission for approval. Seventy-five percent of State transportation improvement funds are programmed through the Regional Improvement Program. These funds may be used for capital projects including highways, arterials, guideways, rail projects, bikeways, transportation enhancements, Transportation System Management (TSM), and TDM activities.

Regional Statistical Area (RSA): An aggregation of census tracts for the purpose of subregional demographic and transportation analysis within the Southern California Association of Governments (SCAG) area.

Regional Transportation Improvement Program (RTIP): A list of proposed countywide highway and transportation projects which identifies funding sources, construction, and timing schedules. In Los Angeles County, it is submitted to the Southern California Association of Governments (SCAG), and incorporates projects identified in the County Transportation Improvement Program (TIP). Each County's transportation commission in California prepares an RTIP and submits it to the salient Metropolitan Planning Organization (MPO). The RTIP has a six-year planning period and is updated every other year.

Regional Transportation Plan (RTP): A comprehensive 20-year plan for the region, updated every four years by the Southern California Association of Governments. The RTP includes goals, objectives, and policies; and recommends specific transportation improvements.

Regional Transportation Planning Agency (RTPA): A State-designated agency responsible for preparing the RTP and RTIP; administering Transportation Development Act (TDA); and other tasks.

Reverse Commuting: Movement in a direction opposite the main flow of traffic, such as from the central city to a suburb during the morning peak period.

Ridership: The number of rides taken by people using a public transportation system in a given time period.

Ridesharing: Two or more persons traveling by any mode, including but not limited to: automobile, vanpool, bus, taxi, jitney, and public transit.

Right-of-Way (ROW): The strip of land dedicated to public use for pedestrian and vehicular movement, which may also accommodate public utilities. This strip of land is either publicly owned or subject to an easement for right-of-way purposes benefiting the general public.

Route Miles: The total number of miles included in a fixed-route transit system network.

Shared-Use Path: A wide pathway, separated from the street, that is used for both walking and bicycling.

Sharrow: Shared-lane marking, per the Manual of Uniform Traffic Control Devices (MUTCD).

Shed: In transportation planning, an area of influence or importance for access and travel using a specific mode, such as a transit shed along a transit route; there are general travel sheds, as well as transit, bicycle, and pedestrian sheds.

Shuttle: A public or private vehicle that travels back and forth over a particular route, especially a short route or one that provides connections between transportation systems, employment centers, etc.

Signal Prioritization: An Intelligent Transportation Systems (ITS) technique that extends the "green time" at traffic signals for approaching buses to improve their on-time performance and "time-competitiveness" with auto travel.

Single-Occupant Vehicle (SOV): A vehicle with only one occupant. Also known as a "drive alone."

Southern California Association of Governments (SCAG): The Metropolitan Planning Organization (MPO) (designated by the federal government) for Ventura, Los Angeles, Orange, San Bernardino, Riverside, and Imperial counties that is responsible for preparing the RTIP and the RTP. SCAG also prepares land use and transportation control measures for Air Quality Management Plans (AQMPs).

Standard Pedestrian Shed: A pedestrian shed that is an average 1/4-mile radius or 1,320 feet, about the distance of a 5-minute walk at a leisurely pace. See Pedestrian Shed.

State Implementation Plan (SIP): Metropolitan areas prepare local and regional SIPs showing steps they plan to take to meet federal air quality standards (outlined in the CAA). Several SIPs make up the statewide plan for cleaning up the air.

State Transportation Improvement Program (STIP): A program of projects that covers a 5- to 7-year span, is updated every two years, and determines the transportation projects that will be funded by the State.

Stormwater: Water that originates during precipitation events. Stormwater that does not soak into the ground becomes surface runoff, which either flows directly into surface waterways or is channeled into storm sewers, which eventually discharge to surface waters.

Street: A local urban thoroughfare of low speed and capacity.

Streetcar: A passenger rail vehicle which runs on tracks along public urban streets and also sometimes on separate rights-of-way.

Surface Transportation Program (STP): One of the key highway funding programs in TEA-21. STP monies may be spent on mass transit, pedestrian, and bicycle facilities as well as on roads and highways. It is intended for use by states and cities for congestion relief in urban areas. Congress annually appropriates funding for this program.

Transfer Center: A fixed location where passengers transfer from one route or vehicle to another.

Transit-Oriented Development (TOD): A transit-oriented development (TOD) is a mixed-use residential and commercial area designed to maximize access to public transport, and often incorporates features to encourage transit ridership.

Transportation Control Measure (TCM): A strategy to reduce traffic volumes and congestion in order to decrease auto emissions and resulting air pollution. Examples of TCMs include incident management, new or increased transit service, or a program to promote carpools and vanpools.

Transportation Demand Management (TDM): Techniques intended to promote actions that decrease vehicle trips and vehicle miles traveled by changing SOV trip behavior. TDM generally refers to policies, programs, and actions that are designed to increase the use of HOVs, transit, nonmotorized trips such as bicycling and walking, and SOV trip elimination by telecommuting and transportation/land use policies.

Transportation Equity ACT for the 21st Century (TEA-21): Passed by Congress in 1998, TEA-21 retained and expanded many of the programs created in 1991 under the Intermodal Surface Transportation Equity Act (ISTEA). The law reauthorized federal surface transportation programs for six years (1998-2003), and significantly increased overall funding for transportation. Its successor is SAFETEA-LU.

Transportation Impact Analysis (TIA): A traffic study undertaken usually to forecast the effects of a development project on the affected transportation system, including trip generation forecasting. The CMP specifies additional TIA requirements when a project meets certain traffic generation thresholds, including effects on public transportation. These requirements are detailed in Appendix D of the 2010 CMP document.

Transportation Improvement Program (TIP): The MPO's multi-year listing by timeframe of transportation projects and services for funding and construction; similar to STIP.

Transportation Management Association/Organization (TMA/O): Private, nonprofit, member-controlled organizations that provide transportation services in a particular area, such as a commercial district, mall, medical center, or industrial park. TMAs allow small employers to provide commute trip reduction services comparable to those offered by large companies.

Transportation System Management (TSM): That part of the urban transportation process undertaken to improve the efficiency of the existing transportation system. The intent is to make better use of the existing transportation system by using short-term, low-capital transportation improvements that generally cost less and can be implemented more quickly than system development actions.

Trip Reduction Ordinance (TRO): This regulation is to limit the number of SOV users in order to stanch polluting emissions. Aimed at employers, TROs have been enacted by local governments in response to CMP requirements, which vary from county to county.

Trucks: Any of a broad range of motorized vehicles used to transport freight. In intermodal transport, freight is often carried by tractor-trailers; the tractor is the front part, including the cab, and the trailer is the detachable wheeled chassis behind the tractor on which the container is placed. Tractor-trailers with a semitrailer, trailer, or both, and four or more axles may be known as "semis" or "18-wheelers."

Twenty-Foot Equivalent Unit (TEU): A standardized transportation (often maritime) industry measurement used when counting cargo containers of varying lengths. Used as an approximate measure for describing a ship's cargo-carrying capacity, or a shipping terminal's cargo-handling capacity. A standard forty-foot (40 x 8 x 8 feet) container equals two TEUs (each 20 x 8 x 8 feet). Ships can carry about 4,500 to 15,000 TEUs. Trains can carry about 240 TEUs; trucks only carry one or two TEUs.

Value Pricing: The concept of assessing higher prices for using certain transportation facilities during the most congested times of the day, in the same way that airlines offer off-peak discounts and hotel rooms cost more during prime tourist seasons. Also known as congestion pricing and peak-period pricing, examples of this concept include higher bridge tolls during peak periods or charging single-occupant vehicles that want to use carpool lanes.

Vanpool: An arrangement in which a group of passengers share the use and cost of a van traveling to and from prearranged destinations together.

Variable Fuel Vehicle (VFV): Also known as "Flexible Vehicle." This kind of vehicle can run on gasoline along with less-polluting alternative fuels such as CNG.

Vehicle Hours Traveled (VHT): The total vehicle hours expended traveling on the roadway network in a specified area during a specified time period.

Vehicle Miles Traveled (VMT): Refers to vehicle miles traveled and is a standard measure of transportation activity.

Vehicle Occupancy: The number of people aboard a vehicle at a given time; also known as auto or automobile occupancy when the reference is to automobile travel only.

Vehicle Service Hours (VSH): The total hours of revenue service operated by transit service vehicles. This does not include Deadhead hours.

Vehicle Service Miles (VSM): The total miles traveled by transit service vehicles while in revenue service. This does not include Deadhead mileage.

Vehicle Trip: A one-way movement of a vehicle between two points.

Volume-to-Capacity (V/C) Ratio: The relationship between the number of vehicle trips operating on a transportation facility versus the number of vehicle trips that can be accommodated by that facility.

Walkable: An adjective applied to communities and neighborhoods that are sized to permit pedestrian access to the entire area. Generally, pedestrians will be comfortable walking distances that they can cover in 5 to 15 minutes. In this amount of time, a pedestrian can cover between one-quarter and one-half mile, sometimes further.

Walkingshed: The one-quarter to one-half mile distance that can be covered comfortably by a pedestrian in a 5- to 15-minute walk.

Table 10: Current Level of Service (LOS) Grades for 88 Long Beach Intersections

#	Intersection	AM Peak Hour		PM Peak Hour	
		V/C	LOS	V/C	LOS
1	Magnolia Ave & Ocean Blvd	0.848	D	0.744	C
2	Pacific Ave & 7th St	0.677	B	0.525	A
3	Pacific Ave & 6th St	0.415	A	0.630	B
4	Pacific Ave & 3rd St	0.532	A	0.387	A
5	Pacific Ave & Broadway	0.360	A	0.699	B
6	Pacific Ave & Ocean Blvd	0.814	D	0.713	C
7	Long Beach Blvd & 7th St	0.730	C	0.550	A
8	Long Beach Blvd & 6th St	0.455	A	0.614	B
9	Long Beach Blvd & 3rd St	0.512	A	0.382	A
10	Long Beach Blvd & Broadway	0.315	A	0.613	B
11	Long Beach Blvd & Ocean Blvd	0.723	C	0.632	B
12	Atlantic Ave & 7th St	0.762	C	0.521	A
13	Atlantic Ave & 6th St	0.458	A	0.559	A
14	Atlantic Ave & 3rd St	0.487	A	0.356	A
15	Atlantic Ave & Broadway	0.261	A	0.604	B
16	Atlantic Ave & Ocean Blvd	0.649	B	0.607	B
17	**Alamitos Ave & 7th St**	**0.902**	**E**	0.759	C
18	Alamitos Ave & 6th St	0.368	A	0.436	A
19	**Alamitos Ave & 3rd St**	**1.048**	**F**	0.659	B
20	**Alamitos Ave & Broadway**	0.900	D	**0.945**	**E**
21	**Alamitos Ave/Shoreline Ave & Ocean Blvd**	**1.107**	**F**	**1.040**	**F**
22	Long Beach Blvd & Anaheim St	0.527	A	0.685	B
23	Long Beach Blvd & Pacific Coast Hwy	0.694	B	0.797	C
24	Long Beach Blvd & Willow St	0.694	B	0.756	C
25	Long Beach Blvd & Spring St	0.570	A	0.709	C
26	Long Beach Blvd & Wardlow Rd	0.837	D	0.827	D
27	Long Beach Blvd & San Antonio	0.482	A	0.773	C
28	Long Beach Blvd & Del Amo Blvd	0.799	C	0.833	D
29	Long Beach Blvd & Market St	0.581	A	0.878	D
30	**Long Beach Blvd & Artesia Blvd**	0.712	C	**1.027**	**F**
31	Pacific Ave & Anaheim St	0.614	B	0.706	C
32	Pacific Ave & Pacific Coast Hwy	0.663	B	0.636	B
33	Santa Fe Ave & Anaheim St	0.557	A	0.669	B
34	**Santa Fe Ave & Pacific Coast Hwy**	**0.990**	**E**	**0.942**	**E**
35	Santa Fe Ave & Willow St	0.751	C	0.851	D
36	Terminal Island Fwy & Willow St	0.390	A	0.500	A
37	**Santa Fe Ave & Wardlow Rd**	0.799	C	**0.910**	**E**
38	Atlantic Ave & Anaheim St	0.647	B	0.818	D
39	Atlantic Ave & Pacific Coast Hwy	0.603	B	0.758	C
40	Atlantic Ave & Willow St	0.681	B	0.890	D
41	**Atlantic Ave & Del Amo Blvd**	0.808	D	**0.986**	**E**
42	Atlantic Ave & South St	0.451	A	0.785	C
43	**Atlantic Ave & Artesia Blvd**	0.744	C	**0.976**	**E**
44	**Alamitos Ave & Anaheim St**	0.636	B	**0.914**	**E**
45	Orange Ave & Pacific Coast Hwy	0.608	B	0.793	C
46	Orange Ave & Wardlow Rd	0.708	C	0.773	C
47	Cherry Ave & 7th St	0.686	B	0.801	D
48	Cherry Ave & Pacific Coast Hwy	0.805	D	0.896	D
49	**Cherry Ave & Wardlow Rd**	0.766	C	**0.948**	**E**
50	Cherry Ave & Carson St	0.544	A	0.706	C
51	**Cherry Ave & Del Amo Blvd**	0.742	C	**0.960**	**E**
52	Cherry Ave & Market St	0.708	C	0.742	C
53	**Cherry Ave & Artesia Blvd**	**0.916**	**E**	**1.020**	**F**
54	**Paramount Blvd & Artesia Blvd**	0.764	C	**0.932**	**E**
55	Paramount Blvd & South St	0.580	A	0.787	C
56	**Redondo Ave & Ocean Blvd**	0.867	D	**0.916**	**E**
57	Redondo Ave & 3rd St	0.552	A	0.629	B
58	**Redondo Ave & 7th St**	**0.913**	**E**	0.877	D
59	Redondo Ave & Anaheim St	0.769	C	0.833	D
60	Redondo Ave & Pacific Coast Hwy	0.733	C	0.855	D
61	Redondo Ave & Willow St	0.698	B	0.895	D
62	Redondo Ave & Spring St	0.646	B	0.769	C
63	**Lakewood Blvd & Del Amo Blvd**	0.825	D	**1.103**	**F**
64	Lakewood Blvd & Carson St	0.646	B	0.685	B
65	Lakewood Blvd & Spring St	0.764	C	0.763	C
66	Lakewood Blvd & Willow St	0.779	C	0.768	C
67	Ximeno Ave & 4th St	0.594	A	0.719	C
68	Ximeno Ave & 7th St	0.690	B	0.807	D
69	**Livingston Dr & 2nd St**	0.843	D	**0.948**	**E**
70	Park Ave & 4th St	0.599	A	0.724	C
71	Park Ave & 7th St	0.808	D	0.873	D
72	Pacific Coast Hwy & Ximeno Ave	0.573	A	0.698	B
73	Pacific Coast Hwy & 7th St	0.873	D	0.835	D
74	**Pacific Coast Hwy & Anaheim St**	0.736	C	**0.922**	**E**
75	**Bellflower Blvd & Carson St**	0.727	C	**0.950**	**E**
76	Bellflower Blvd & Spring St	0.788	C	0.861	D
77	Bellflower Blvd & Los Coyotes	0.642	B	0.771	C
78	Bellflower Blvd & Atherton St	0.609	B	0.775	C
79	Bellflower Blvd & 7th St	0.863	D	0.838	D
80	Los Coyotes Diagonal & Spring St	0.663	B	0.801	D
81	Palo Verde Ave & Wardlow Rd	0.412	A	0.597	A
82	Palo Verde Ave & Atherton St	0.518	A	0.718	C
83	**Los Coyotes Diagonal & Carson St**	0.658	B	**1.018**	**F**
84	Studebaker Rd & Spring St	0.593	A	0.724	C
85	Studebaker Rd & Willow St	0.563	A	0.715	C
86	Studebaker Rd & 2nd St	0.746	C	0.887	D
87	**Pacific Coast Hwy & 2nd St**	0.871	D	**1.053**	**F**
88	Bellflower Blvd & Pacific Coast Hwy	0.553	A	0.684	B

Table 11: Projected 2035 Level of Service (LOS) Grades for 88 Long Beach Intersections

#	Intersection	AM Peak Hour		PM Peak Hour	
		V/C	LOS	V/C	LOS
1	Magnolia Ave & Ocean Blvd	0.859	D	0.758	C
2	Pacific Ave & 7th St	0.712	C	0.608	B
3	Pacific Ave & 6th St	0.440	A	0.700	B
4	Pacific Ave & 3rd St	0.548	A	0.446	A
5	Pacific Ave & Broadway	0.371	A	0.781	C
6	Pacific Ave & Ocean Blvd	0.828	D	0.738	C
7	Long Beach Blvd & 7th St	0.762	C	0.586	A
8	Long Beach Blvd & 6th St	0.485	A	0.671	B
9	Long Beach Blvd & 3rd St	0.533	A	0.425	A
10	Long Beach Blvd & Broadway	0.328	A	0.665	B
11	Long Beach Blvd & Ocean Blvd	0.747	C	0.659	B
12	Atlantic Ave & 7th St	0.865	D	0.577	A
13	Atlantic Ave & 6th St	0.514	A	0.608	B
14	Atlantic Ave & 3rd St	0.513	A	0.406	A
15	Atlantic Ave & Broadway	0.290	A	0.666	B
16	Atlantic Ave & Ocean Blvd	0.668	B	0.636	B
17	**Alamitos Ave & 7th St**	**0.930**	**E**	0.814	D
18	Alamitos Ave & 6th St	0.406	A	0.475	A
19	**Alamitos Ave & 3rd St**	**1.099**	**F**	0.717	C
20	**Alamitos Ave & Broadway**	**0.954**	**E**	**1.012**	**F**
21	**Alamitos Ave/Shoreline Ave & Ocean Blvd**	**1.128**	**F**	**1.076**	**F**
22	Long Beach Blvd & Anaheim St	0.565	A	0.723	C
23	Long Beach Blvd & Pacific Coast Hwy	0.754	C	0.847	D
24	Long Beach Blvd & Willow St	0.746	C	0.805	D
25	Long Beach Blvd & Spring St	0.616	B	0.760	C
26	Long Beach Blvd & Wardlow Rd	0.884	D	0.854	D
27	Long Beach Blvd & San Antonio	0.513	A	0.881	D
28	Long Beach Blvd & Del Amo Blvd	0.853	D	0.893	D
29	**Long Beach Blvd & Market St**	0.627	B	**0.943**	**E**
30	**Long Beach Blvd & Artesia Blvd**	0.755	C	**1.100**	**F**
31	Pacific Ave & Anaheim St	0.673	B	0.783	C
32	Pacific Ave & Pacific Coast Hwy	0.750	C	0.700	B
33	Santa Fe Ave & Anaheim St	0.657	B	0.776	C
34	**Santa Fe Ave & Pacific Coast Hwy**	**1.153**	**F**	**1.018**	**F**
35	**Santa Fe Ave & Willow St**	0.817	D	**0.905**	**E**
36	Terminal Island Fwy & Willow St	0.397	A	0.518	A
37	**Santa Fe Ave & Wardlow Rd**	0.837	D	**0.959**	**E**
38	Atlantic Ave & Anaheim St	0.708	C	0.885	D
39	Atlantic Ave & Pacific Coast Hwy	0.683	B	0.816	D
40	**Atlantic Ave & Willow St**	0.766	C	**0.945**	**E**
41	**Atlantic Ave & Del Amo Blvd**	0.877	D	**1.086**	**F**
42	Atlantic Ave & South St	0.496	A	0.853	D
43	**Atlantic Ave & Artesia Blvd**	0.813	D	**1.078**	**F**
44	**Alamitos Ave & Anaheim St**	0.687	B	**0.963**	**E**
45	Orange Ave & Pacific Coast Hwy	0.654	B	0.839	D
46	Orange Ave & Wardlow Rd	0.755	C	0.845	D
47	Cherry Ave & 7th St	0.717	C	0.869	D
48	**Cherry Ave & Pacific Coast Hwy**	**0.906**	**E**	**1.048**	**F**
49	**Cherry Ave & Wardlow Rd**	0.818	D	**1.019**	**F**
50	Cherry Ave & Carson St	0.576	A	0.754	C
51	**Cherry Ave & Del Amo Blvd**	0.791	C	**1.032**	**F**
52	Cherry Ave & Market St	0.771	C	0.806	D
53	**Cherry Ave & Artesia Blvd**	**0.987**	**E**	**1.091**	**F**
54	**Paramount Blvd & Artesia Blvd**	0.830	D	**1.002**	**F**
55	Paramount Blvd & South St	0.646	B	0.888	D
56	**Redondo Ave & Ocean Blvd**	**0.901**	**E**	**0.941**	**E**
57	Redondo Ave & 3rd St	0.581	A	0.735	C
58	**Redondo Ave & 7th St**	**0.960**	**E**	**0.934**	**E**
59	**Redondo Ave & Anaheim St**	0.828	D	**0.904**	**E**
60	**Redondo Ave & Pacific Coast Hwy**	0.806	D	**0.947**	**E**
61	**Redondo Ave & Willow St**	0.744	C	**0.930**	**E**
62	Redondo Ave & Spring St	0.794	C	0.791	C
63	**Lakewood Blvd & Del Amo Blvd**	0.857	D	**1.172**	**F**
64	Lakewood Blvd & Carson St	0.678	B	0.737	C
65	Lakewood Blvd & Spring St	0.836	D	0.813	D
66	Lakewood Blvd & Willow St	0.812	D	0.817	D
67	Ximeno Ave & 4th St	0.712	C	0.793	C
68	Ximeno Ave & 7th St	0.735	C	0.866	D
69	**Livingston Dr & 2nd St**	0.861	D	**0.991**	**E**
70	Park Ave & 4th St	0.619	B	0.757	C
71	**Park Ave & 7th St**	0.835	D	**0.907**	**E**
72	Pacific Coast Hwy & Ximeno Ave	0.627	B	0.731	C
73	Pacific Coast Hwy & 7th St	0.891	D	0.863	D
74	**Pacific Coast Hwy & Anaheim St**	0.766	C	**0.980**	**E**
75	**Bellflower Blvd & Carson St**	0.759	C	**0.995**	**E**
76	**Bellflower Blvd & Spring St**	0.855	D	**0.938**	**E**
77	Bellflower Blvd & Los Coyotes	0.698	B	0.819	D
78	Bellflower Blvd & Atherton St	0.690	B	0.886	D
79	Bellflower Blvd & 7th St	0.886	D	0.876	D
80	Los Coyotes Diagonal & Spring St	0.711	C	0.872	D
81	Palo Verde Ave & Wardlow Rd	0.459	A	0.656	B
82	Palo Verde Ave & Atherton St	0.585	A	0.806	D
83	**Los Coyotes Diagonal & Carson St**	0.688	B	**1.080**	**F**
84	Studebaker Rd & Spring St	0.661	B	0.835	D
85	Studebaker Rd & Willow St	0.602	B	0.763	C
86	**Studebaker Rd & 2nd St**	0.761	C	**0.903**	**E**
87	**Pacific Coast Hwy & 2nd St**	0.895	D	**1.092**	**F**
88	Bellflower Blvd & Pacific Coast Hwy	0.579	A	0.751	C

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