CHAPTER 3 CIRCULATION AND INFRASTRUCTURE ELEMENT

INTRODUCTION

"Safe, convenient, and efficient movement of people and goods is crucial for the quality of life of residents and for the vitality of the local economy."
- City of Torrance Strategic Plan, 1999

The Circulation and Infrastructure Element plans for the efficient and effective movement of people and goods between destinations within Torrance and throughout the region. A well-planned circulation system is a high priority, given that Torrance plays a unique role in the geography of the South Bay Region. Torrance borders the cities of the Palos Verdes Peninsula and five other smaller communities. All of these cities' residents or professionals drive through Torrance to reach their destinations. Unlike most other cities, regional shopping, entertainment and employment centers in Torrance are not located directly near freeways. Commuters and visitors to the City must travel on surface streets to reach their destinations resulting in a high travel demand placed on the local street network. These unique characteristics of the City's land use and circulation systems are important considerations in the development of long-range plans for movement of people and goods. Torrance is a mature city, with land use patterns and the roadway system well established. Creative solutions, technology, right-of-way acquisition, and cooperation with adjacent cities are keys to addressing circulation issues and managing growth.

While the Circulation and Infrastructure Element recognizes that automobiles will remain the leading mode of transportation for most Torrance residents and visitors, the objectives and policies included in this Element also stress the importance accommodating and encouraging

alternatives to automobile travel. The provision of facilities for pedestrians and bicycles and a comprehensive transit system will ensure that non-automobile transportation is a convenient alternative.

In addition to planning for the City's long-term mobility needs, this Element also addresses the circulation of energy, water, sewage, storm drainage, and communications. Given the built-out, urban nature of the City and the age of infrastructure, providing and maintaining a superior infrastructure system is critical for the day-to-day functioning of the City.

PURPOSE AND SCOPE OF THE CIRCULATION AND INFRASTRUCTURE ELEMENT

The Circulation and Infrastructure Element focuses on planning for circulation and utility systems that will support land use densities and intensities. To meet this objective, the element identifies a transportation system capable of responding to growth occurring consistent with Land Use Element, and utility systems that provide the service levels Torrance residents and businesses expect. This element describes physical improvements needed to attain circulation objectives, and introduces other techniques (for example, restricted street parking, transportation systems management plans) that can be used to improve traffic flow. In addition to automobile circulation, the Circulation and Infrastructure Element addresses circulation of pedestrians, cyclists, and transit riders plus aviation services.

Under State law, circulation is broadly defined to include public utilities and similar infrastructure, such as telecommunications, since this infrastructure also supports the land use plan. Thus, this Element addresses:

- Responsiveness of the roadway system to the requirements of the land use plan
- Efficient use of transportation resources
- Provision of adequate parking
- Transportation demand management
- Visual quality of roadways
- Protection of neighborhoods from through traffic
- Public transit
- Bicycle transportation
- Utility Systems
- Energy delivery systems

- Telecommunications

RELATIONSHIP TO OTHER GENERAL PLAN ELEMENTS

General Plan law emphasizes coordination between the Circulation and Infrastructure Element and the Land Use Element. The future transportation conditions presented in this Element were established using the same projections and geographic distribution of population and economic activity used in the Land Use Element. In turn, the circulation system policies and improvements contribute to the achievement of the planned land use pattern.

The Community Resources Element identifies regional air quality and pollution, and examines mitigation programs that may influence transportation and circulation objectives. Coordination between these two elements balances circulation and mobility objectives with regional air quality improvement goals.

The Circulation and Infrastructure Element also has bearing on noise conditions, as presented in the Noise Element, since City streets and the airport represent the main sources of localized noise.

RELATIONSHIP TO OTHER PLANNING EFFORTS

The circulation system in Torrance is as part of a regional network, and regional, State, and federal transportation policies and programs affect local circulation planning. As mentioned in the Introduction, the General Plan is a foundation document for many other planning efforts. These efforts may include City plans and programs related to circulation and infrastructure such as the Capital Improvement Plan. The General Plan sets transportation policy for the next 15 to 20 years and as such, must remain relevant though changing local conditions. This necessitates a general approach as opposed to an approach based on details and statistics that may only be relevant in the short term. While many of the policies are derived from shorter-term plans and programs, the details of those programs are not included in their entirety in this Element. Instead, overarching policies are included and are intended to go hand-in-hand with current planning studies that should be maintained and updated to remain consistent with General Plan direction.

Regional plans also influence City policies. Because motor vehicle traffic contributes substantially to the region's air pollution problems, State-mandated regional programs have a placed a greater emphasis on linking transportation and land use planning to reduce automobile emissions and improve air quality. Political pressure to relieve regional traffic congestion problems also has resulted in State and regional mandates that affect local decisions. Legislation aimed at addressing regional air quality and congestion problems will require the City to take a more active role in meeting regional objectives during the planning period, or face direct regulation by outside agencies or loss of funding for local transportation system improvements. **Table CI-1** summarizes the programs and legislation at the different levels of government which influence local transportation planning efforts in Torrance. Related regional transportation plans and programs are discussed in further detail in the General Plan Introduction.

The overarching goal of the Circulation and Infrastructure Element is to provide a balanced transportation system that efficiently moves people and goods throughout the City and region and an infrastructure system that adequately supports the local economy and quality of life.

GOAL:

A balanced transportation system that provides for the safe, convenient, and efficient movement of people and goods throughout the city and region and an infrastructure system that supports the local economy and quality of life in Torrance.

1. BASELINE TRAFFIC CONDITIONS AND LEVEL OF SERVICE GOALS

1.1 MEASURING TRAFFIC FLOW

This Element uses several traffic engineering concepts to describe traffic conditions in Torrance. Level of Services (LOS) describes the efficiency and quality of traffic operations and is generally measured at intersections. Six categories of LOS – using letter designations A to F – describe traffic conditions, with LOS A representing excellent conditions and LOS F representing extreme congestion.

Two types of LOS descriptors are used in this Element which are based on two types of traffic analysis methodologies. The 2000 Highway Capacity Manual (HCM) analysis methodology is used to determine the operating LOS at an intersection based on stopped delays experienced by drivers at signalized and unsignalized intersections. These LOS range from LOS A (free-flow conditions) to LOS F (severe congestion conditions). The Intersection Capacity Utilization (ICU) analysis methodology describes the LOS (also from LOS A to LOS F) of signalized intersections based on a Volume-to-Capacity Ratio (V/C Ratio)

Table CI-1
Transportation, Land Use and Air Quality Planning

Planning Issue	Federal	State of California	SCAG	SCAQMD	LACMTA (Metro)	City of Torrance
Air Quality	▪ Clean Air Act ▪ Establish Ambient Air Quality Standards ▪ Require AQMP ▪ Set federal emission standards	▪ California Clean Air Act ▪ Establish State Ambient Air Quality Standards ▪ Require Clean Air Plan ▪ Set State Emission Standards	Participated in preparation of AQMP	▪ Lead preparation of AQMP ▪ Monitor air quality ▪ Regulate stationary sources and indirect sources	Congestion management program Mass transit	▪ Required by AQMP to adopt Air Quality Element of General Plan, ▪ Reg IV plan for City facilities
Growth Management			Prepare regional growth forecasts for AQMP, CMP		Review developments for CMP consistency	▪ Land Use Element ▪ CEQA process
Jobs/Housing Balance			Regional growth strategies			▪ Land Use Element ▪ CEQA Process ▪ Air Quality Element
Meeting Travel Demands	Fund mass transit and highway projects.	Collect and distribute gas tax funds for highway and transit projects.	▪ Prepare Regional Transportation Plan (RTP) ▪ Prepare Regional Transportation Improvement Program ▪ Prepare Regional Comprehensive Plan (RCP)		▪ Prepare CMP in accordance with Regional Transportation Plan ▪ Fund and operate mass transit ▪ County-wide Short-Range Transportation Plan (SRTP) ▪ County-wide Long-Range Transportation Plan (LRTP)	▪ Circulation and Infrastructure Element ▪ CIP ▪ Local modeling consistent with SCAG model ▪ Local Short-Range Transit Plan
Congestion Management	Fund mass transit and highway projects.	▪ Require CMPs ▪ Collect and distribute Prop 111 funds	Review CMP project for consistency with RTP.	▪ Consult on preparation of CMP to ensure compliance with AQMP. ▪ Maintain deficiency plan list for CMP improvements	▪ Set LOS and transit standards ▪ Develop trip reduction/TDM program ▪ Develop program for analysis of local land use decisions ▪ Prepare CIP ▪ Approve CMP facility improvements ▪ Monitor/certify local compliance	▪ Monitor attainment of LOS standards ▪ Implement TDM ordinance ▪ Adopt program to analyze impacts of land use decisions ▪ Annual deficiency plans for CMP
Parking Management				AQMP requires parking management in the Air Quality Element		Parking management in the Air Quality Element.

Key: AQMP: Air Quality Management Plan; CEQA: California Environmental Quality Act; CIP: Capital Improvements Program; CMP: Congestion Management Plan; LACTC: Los Angeles County Transportation Commission; LOS: Level of Service; SCAG: Southern California Association of Governments; SCAQMD: South Coast Air Quality Management District; TDM: Transportation Demand Management

Table CI-2 shows LOS levels and a description of expected traffic conditions for intersections based on both HCM and ICU study methodologies.

1.2 PERFORMANCE GOALS

Evaluating the ability of the circulation system to serve residents and businesses requires establishing suitable performance standards. The performance standards used to evaluate volumes and capacities on the roadway system are based on average daily roadway volumes and peak-hour intersection data. These performance standards establish a basis from which to evaluate the need to improve roadway facilities in response to increased traffic congestion.

The Citywide Traffic Study evaluated the levels of service of all signalized intersections, and forecast future traffic volumes associated with future development in the City and the surrounding region. The study was used to determine the desired level of service standards and to identify improvements needed to achieve performance goals. The City of Torrance target for intersection operation is an LOS D or better. The LOS D objective for the roadway system design reflects the City's desire to maintain stable traffic flow, realizing that peak-hour congestion may occur at locations near freeways or other locations with unusual traffic characteristics due to regional traffic flow.

1.3 BASELINE TRAFFIC STUDY

To better identify and address traffic issues in the City, and to serve as a foundation for transportation policies in this General Plan, the City of Torrance conducted a comprehensive Citywide Traffic Study between November 2004 and November 2007. The study evaluated 171 intersections in Torrance during the weekday a.m. peak hour, weekday mid-day peak hour, weekday p.m. peak hour, and weekend mid-day peak hour. Holiday season data were collected for 43 intersections and 16 roadways in December 2004 to analyze differences in traffic volumes between the holiday season and non-holiday season. Truck classification counts were conducted at 39 intersections to approximate truck traffic volumes in Torrance. Finally, a pass-through traffic analysis was performed along 11 arterial roadways to determine the percentage of traffic passing through the City.

The study examined traffic conditions under three scenarios:

- Existing conditions – 2005
- Near-term future - assumed trip generation of approved projects and ambient traffic growth
- Long-range future - assumed build-out of the City consistent with the General Plan Land Use Policy Map (Land Use Element, Section,

X) and horizon year 2030 conditions in the South Bay region in accordance with SCAG projections

Table CI-2
Level of Service Definitions

LOS	HCM		ICU	Description of Traffic Conditions
	Delays (second/vehicle)		Volume to Capacity Ratio (V/C Ratio)	
	Signalized Intersections	Unsignalized Intersections	Signalized Intersections	
A	≤10.0	≤10.0	≤0.60	Excellent operation. All approaches to the intersection appear quite open, turning movements are easily made, and nearly all drivers find freedom of operation.
B	>10.0 ≤20.0	>10.0 ≤15.0	>0.60 ≤0.70	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.
C	>20.0 ≤35.0	>15.0 ≤25.0	>0.70 ≤0.80	Good operation. Occasionally backups may develop behind turning vehicles. Most drivers feel somewhat restricted.
D	>35.0 ≤55.0	>25.0 ≤35.0	>0.80 ≤0.90	Fair operation. There are no long-standing traffic queues. This level is typically associated with design practice for peak periods.
E	>55.0 ≤80.0	>35.0 ≤50.0	>0.90 ≤1.00	Poor operation. Some long-standing vehicular queues develop on critical approaches.
F	>80.0	>50.0	>1.00	Forced flow. Represents jammed conditions. Backups from locations downstream or on the cross street may restrict or prevent movements of vehicles out of the intersection approach lanes. Potential for stop-and-go-type traffic flow.

City of Torrance Citywide Traffic Analysis, 2007; Institute of Transportation Engineers, Highway Capacity Manual, 2000

As the General Plan for the City has a horizon of 15 to 20 years, discussions in this Element will focus on long-range conditions. Intersection improvements recommended in the traffic study, however, include improvements for the near-term and long-range conditions. Including improvements for these two scenarios will assist the City in prioritizing improvements through its capital improvement process.

The Citywide Traffic Study determined that 122 of the 171 study intersections operate at or are forecast to operate at an acceptable LOS D or better during weekend and weekday morning, mid-day and evening peak hours. For intersections that operated at or are forecast to operate at a deficient LOS, recommended improvements to achieve acceptable LOS are included a part of the Circulation and Infrastructure Element Implementation Program (Appendix A) and summarized in Section 2.3.5 of this Element. A detailed list of study intersection and corresponding level of service for baseline and future conditions is included in Appendix X of the General Plan.

2. CIRCULATION PLAN

2.1 ROADWAY PLAN

The street system in Torrance serves two key functions: streets facilitate movement of people and goods, connect neighborhoods, and streets create statements of civic pride and beauty. While the primary purpose of the road network is to facilitate movement within and through Torrance, streets lend identity to our neighborhoods and business districts. To better understand the function identified in the Roadway Classification Map, a review of the City's roadway functional classifications is included below.

2.1.1 ROADWAY FUNCTIONAL CLASSIFICATIONS

Streets and highways are grouped into classes or systems according to the character of the service they are intended to provide. This grouping is called functional classification. This approach recognizes that individual roads and streets do not serve travel independent from the rest of the highway system. Rather, most travel involves movement via a network of roads, so it is necessary to determine how this travel can be channeled within the network in a logical and efficient manner. Functional classification can be applied in planning highway system development, determining the jurisdictional responsibility for particular systems, and in fiscal planning. Functional classification is also important in determining eligibility for federal funding.

In Torrance, the circulation network consists of six roadway categories, described below. **Figure CI-1** presents schematic cross-section standards for each type of roadway. Deviations from these standards may occur in cases where physical constraints and/or right-of-way limitations are present, and where preservation of neighborhood or community character dictates special treatment. Provision of bikeways and sidewalks may also affect the specific design of roadways. In addition, the median width of major and secondary arterials will vary according to the area being served, right-of-way constraints, and turn lane requirements.

Freeways

- San Diego Freeway (Interstate 405)

Freeways are limited-access, high-speed, divided roads included in the State and federal highway systems. Their purpose is to carry regional through traffic (traffic passing through Torrance without stopping). Access to the regional highway system for Torrance residents and visitors is provided at interchanges. The design, construction, and operation of freeways are under the jurisdiction of the California Department of Transportation (Caltrans). The San Diego Freeway (Interstate 405) is the only interstate freeway in the City of Torrance, with five local freeway exits: Hawthorne Boulevard, Redondo Beach Boulevard, Artesia Boulevard, Crenshaw Boulevard, and Western Avenue. Although Interstate 110 does not pass directly through the City, the freeway provides indirect access to Torrance via eight exits: Artesia Boulevard, Torrance Boulevard (via Hamilton Avenue), Carson Street, 223rd Street, Sepulveda Boulevard, and Pacific Coast Highway.

Principal Arterial

- Hawthorne Boulevard

Principal Arterials are capacity roadways that provide regional access. Direct access to adjacent parcels should be minimized to maximize speed and limit interference with flow. Hawthorne Boulevard, a divided roadway with four travel lanes in each direction over most of its length, is the only roadway designated as a Principal Arterial.

Figure CI-1: Road Cross Section Diagram

Figure CI-1
ROAD CROSS SECTION DIAGRAM

Major Arterial	▪ Redondo Beach Boulevard ▪ Artesia Boulevard ▪ 190th Street ▪ Torrance Boulevard ▪ Carson Street ▪ Sepulveda Boulevard ▪ Lomita Boulevard ▪ Pacific Coast Highway ▪ Prairie Avenue ▪ Crenshaw Boulevard ▪ Western Avenue.

Major Arterials link roadways to major corridors such as principal arterials. These arterials can accommodate trips and capacity at a lower level that Principal Arterials. Direct access to adjacent parcels should be minimized to maximize speed and limit interference with flow.

Minor Arterial	▪ 182nd Street ▪ Plaza Del Amo ▪ Anza Avenue ▪ Van Ness Avenue

Minor Arterials are intermediate-capacity roadways that provide local access to major commercial and industrial parcels, as well as some regional access. Minor Arterials normally have two travel lanes in each direction, may have central medians, and are used to bring together traffic from Collector roads.

Collector	▪ Spencer Street ▪ Emerald Street ▪ Henrietta Street ▪ Maricopa Street ▪ Maple Avenue ▪ 235th Street ▪ Newton Street ▪ Arlington Avenue ▪ Cabrillo Avenue

Collector streets are intermediate capacity roads that provide access between local streets and the arterial street system. Speeds are generally higher than on local streets, and on-street parking may be limited in some cases to provide smoother traffic flow. There are generally one or two moving lanes in each direction.

LOCAL STREETS

Local streets provide direct access to individual parcels and are not designed for through traffic. Rather, these streets should move traffic toward the nearest collector street. Therefore, speeds on Local Streets are relatively low, and on-street parking is usually permitted. Typically, Local Streets in Torrance are two-lane roadways without medians.

ROADWAY CLASSIFICATION MAP

The Torrance Roadway Classification Map (**Figure CI-2**) represents the City's planned roadway system. Like the Land Use Policy Map in the Land Use Element, this map provides the context for future decision-making on transportation-related issues. The Roadway Classification Map, in coordination with polices and plans related to alternative modes of transit, is designed to provide a transportation system in Torrance to accommodate projected needs and achieve circulation objectives.

The system plan is based on the level of development that may occur over the life of this General Plan. Because the actual level of development experienced over the horizon of the Circulation and Infrastructure Element may diverge somewhat from these assumptions, the plan will be periodically reviewed with a focus on the relationship between land development and its transportation impacts. The demands of specific development projects on nearby roadways and intersections may also result in the need for additional system improvements. Improvements to the circulation system should not be considered a complete list from meeting growth demands, but as a guideline to be amplified and modified over time as development takes place and system improvements are implemented.

As part of the 2007 update to this Element, the City:

- Re-designated Ocean Avenue (from PCH to Torrance Boulevard) from a Collector to a Local Street, and
- Re-designated Newton Street (from Calle Mayor to Hawthorne Boulevard) from a Collector to a Local Street.

Changes to Ocean Avenue and Newton Street are intended to protect the character of these residential areas by discouraging cut-through traffic and high speeds (intended for major corridors such as Hawthorne Boulevard and Pacific Coast Highway). These changes are also intended to facilitate speed enforcement efforts that will result in safer streets for local residents.

Insert CI-2 – Roadway Classification Map

2.2 REGIONAL CIRCULATION AND GOODS MOVEMENT

A network of freeways, railroads, and major highways connects Torrance to areas around the South Bay and throughout the Southern California region. The City depends on an efficient regional network to facilitate business activities, allow residents to commute to and from work, and handle normal day-to-day traffic.

Regional transportation planning and management requires cooperation and coordination among all the affected jurisdictions, such as local cities, counties, Caltrans, and the Los Angeles Metropolitan Transportation Authority (Metro). Working together, agencies can address the physical infrastructure needed to support regional demands and ensure that convenient alternative transportation modes allow for an integrated approach to addressing traffic problems.

2.2.1 FREIGHT AND GOODS TRANSPORTATION

An important aspect of a multimodal regional economy is the movement of goods and merchandise. This is particularly critical in the Los Angeles area, where cargo makes its way to and from local ports via highway and rail links. However, commercial traffic has the potential to impede movements of other traffic and adversely affect adjacent land uses. Torrance has designated its one Principal Arterial – Hawthorne Boulevard – and most Major Arterials in the City as truck routes, illustrated in **Figure CI-3** and consistent with the City's Truck Route Ordinance (Torrance Municipal Code Division 6, Chapter 1, Article 9). These routes have been designated because these roadways are designed or constructed to accommodate large vehicles, and the adjacent land uses require truck accessibility to deliver goods. The truck route system provides access to all areas of the City, as is intended for both local deliveries and through trucks. Frequent on-street stops by trucks for deliveries during the peak travel hours significantly affects the operation of roadways and can increase congestion. The City requires adequate parking and loading areas for all new developments.

Projections of sustained economic growth for the region include increases in cargo tonnage at ports and rail links, which translates into more heavy trucks and commercial vehicles on area highways and local arterials. In particular, the Alameda Consolidated Transportation Corridor operates as a major regional freight-carrying link. The Alameda Corridor, opened in 2002, is a 20-mile-long rail cargo expressway linking the ports of Long Beach and Los Angeles to the transcontinental rail network near downtown Los Angeles. The City's east-west arterials and the San Diego Freeway provide access to that transportation corridor to support warehousing and industry in Torrance, which depends on the harbor area for transportation of raw materials or finished products.

Figure CI-3 Insert Truck Route and Rail Lines Map

The Citywide Traffic Study estimated the proportion of truck traffic along designated truck routes. Roads carrying the highest proportion of truck traffic along segments designated as truck routes include 190th Street (18 to 24 percent), Carson Street (15 to 29 percent), Anza Avenue (22 to 30 percent), Hawthorne Boulevard (13 to 25 percent), and Crenshaw Boulevard (18 to 25 percent). These high truck traffic areas correspond to industrial and commercial activity areas where freight and goods movement is necessary to sustain the economic viability of businesses. Overall, mobility of goods is a critical component of a healthy economy, and local governments need to do their share to ensure this mobility. A goal of the Circulation and Infrastructure Element is to accommodate this increased movement of goods to and throughout the region. The City's commitment to providing for the safe and efficient movement of freight and goods through the City includes the following policies:

- Facilitating commercial vehicle traffic through Torrance while minimizing adverse impacts
- Regulating off-street truck parking
- Minimizing intrusions of commercial vehicles into residential neighborhoods
- Enforcing the use of truck routes
- Regulating the operation of commercial vehicles to minimize conflicts with surrounding land uses
- Supporting regional efforts to provide rail service to local industries
- Regulate the parking of oversized vehicles and trailers[1]

2.2.2 RAILROADS AND COMMUTER RAIL SERVICE

Torrance's industrial districts are served by rail lines of Union Pacific (formerly Southern Pacific) and the Burlington Northern and Santa Fe Railways, or BNSF (formerly Atchison, Topeka and Santa Fe, or AT&SF). These lines actively transport and deliver goods and materials throughout the region. However, the Union Pacific Company is considering the potential abandonment of the portion of its Torrance Branch within the City. The BNSF rail lines that run through Torrance will continue to serve businesses and will help supplement the Alameda Corridor route. In addition, the BNSF will have consolidated much of the freight-carrying operations of its Harbor Subdivision into the Alameda Consolidated Transportation Corridor. Therefore, use of existing right-of-way within Torrance is anticipated to diminish. The City will work with regional

[1] The City's Oversized Vehicles and Trailers Ordinance, Division 6, Chapter 1, Article 12 of the Torrance Municipal Code, defines oversized vehicles as those vehicles that exceed twenty (20) feet in length, seven (7) feet in width, or eight (8) feet in height and do not include pickup trucks or sport utility vehicles, which are less than twenty-five (25) feet in length and eighty-two (82) inches in height. Trailers include trailers, semitrailers, camp trailers (including tent trailers), unmounted campers, or trailer coaches or fifth-wheel travel trailer, as defined in Section 324 of the California Vehicle Code

agencies to promote the rail connections within the Alameda Corridor. The BNSF does not anticipate abandonment of this branch line since it will still provide access to the Alameda Corridor for local freight handling.

Although the industrial base of Torrance will move toward less intensive industrial activities, many businesses will continue to rely on moving freight by rail. Land use policy supports these uses by designating areas for new industrial development in proximity to rail freight facilities, which will minimize impact on adjacent land uses and at-grade railroad crossings. Where possible, the City will encourage industries to share rail facilities to eliminate duplications. To reduce congestion on arterial streets, elimination of at-grade crossings of major streets is a continued objective.

2.2.3 COMMUTER RAIL

Torrance is not served directly by intercity passenger rail and no regional plans have been developed for such service. Torrance Transit provides service to Union Station in Downtown Los Angeles for people who use intercity rail transportation.

2.2.4 LIGHT RAIL

The Los Angeles Metro light rail system extends into the South Bay via the Green Line, with the nearest station located at Marine Avenue in Redondo Beach. Torrance Transit provides service to several Green Line stations, as well as the Artesia Blue Line station. Metro's long-range plans do not include extension of the Green Line any farther south, but Metro may pursue Green Line extension directly to Los Angeles International Airport. The City will continue to participate with regional and other local governments to plan and advocate light rail and other high¬-capacity transit services for the South Bay, and to ensure that Torrance Transit continues to provide links desired by residents.

2.2.5 CALTRANS FACILITIES

In addition to its freeway oversight responsibilities, Caltrans also maintains four state highways through Torrance. Hawthorne Boulevard north of Pacific Coast Highway (SR 107), Western Avenue (SR 213), and Pacific Coast Highway (SR 1) are all owned and maintained by Caltrans. This circumstance requires that the City work through Caltrans for any planned efficiency or aesthetic improvements to these roadways.

2.2.6 LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY (METRO)

The Los Angeles County Metropolitan Transportation Authority (Metro) administers the Los Angeles County Congestion Management Plan (CMP). The CMP identifies and establishes a system for monitoring regional

transportation facilities. This information is used to link local land use decisions with their impacts on regional transportation and air quality, and to develop partnerships among transportation decision-makers on devising appropriate transportation solutions that include all mode of travel. The City of Torrance, along with other local jurisdictions, is required to participate in the CMP to receive its portion of State gas tax revenue. The City has maintained its compliance with the CMP since its creation 1999 and receives close to $900,000 annually in gas tax funds. CMP highways and arterials transportation system includes Pacific Coast Highway, Sepulveda Boulevard, Artesia Boulevard, and I-405.

2.3 REGIONAL CIRCULATION OBJECTIVES AND POLICIES

In addition to providing local residents access to the regional network, City infrastructure must also accommodate regional through traffic originating in other communities.

OBJECTIVE CI.1:	**A regional circulation system that meets the needs of commercial and industrial businesses, facilitates efficient movement of goods, and integrates well with the regional transportation network with minimum adverse effects on Torrance's residential neighborhoods**
Policy CI.1.1:	Coordinate regional transportation planning efforts with adjacent communities, regional councils of governments, and regional transportation agencies
Policy CI.1.2:	Cooperate with surrounding cities, regional transportation agencies, and other responsible agencies to provide efficient traffic management along major arterial roadways traversing Torrance
Policy CI.1.3:	Facilitate commercial vehicle traffic through Torrance while minimizing adverse impacts by regulating truck parking regulations, minimizing intrusions into neighborhoods, and enforcing the use of truck routes
Policy CI.1.4:	Regulate the operation of commercial vehicles to minimize conflicts with surrounding land uses and to optimize vehicular and pedestrian mobility
Policy CI.1.5:	Support the continued availability of rail service to local industrial businesses in a manner that minimizes conflicts with surrounding land uses and the local street network

2.4 LOCAL CIRCULATION

As described above, the local roadway system is comprised of Freeways, Principal Arterials, Major Arterials, Minor Arterials, Collectors, and Local Streets. Each roadway group serves a different purpose by carrying local or regional traffic and thus, speed limits and parking requirements vary accordingly. Planning safe and efficient roadways includes consideration of

the intensity of use and condition of roadways. Streets must be periodically repaired and rehabilitated to maintain performance.

2.4.1 COORDINATION WITH THE LAND USE PLAN

Circulation and land use in Torrance are closely connected. For example, different land uses generate various trip demands which influence the capacity and service levels of Torrance's street system. The Circulation and Infrastructure Element responds by planning for transportation services and routes that will meet the demands of current and future development. The City will coordinate all future freeway and transportation corridor improvements and public transportation initiatives with land use planning policies established in the Land Use Element. Additionally, all land use planning will coordinate with future development and/or realignment of the public transportation system.

All elements of the General Plan are interrelated to a degree, and certain goals and policies of each element may also address issues that are the major subjects of other elements. The Circulation and Infrastructure Element relates most closely to the Land Use Element

The City recognizes and will promote strategies that address traffic generated by new development. To offset development impacts on the City's circulation infrastructure, the City has enacted development impact fees. These fees are assessed on new development to ensure that new development funds its fair share of the cost to accommodate an increased demand on infrastructure and services necessitated by that development. New development does not pay for infrastructure and service gaps created by growth in general, only the growth attributed to that specific development.[2] The City has approved a development impact fee to cover the cost of improvements to the street network, undergrounding of utilities, and sewer and storm drain improvements.

2.4.2 PARKING

Adequate off-street parking and effective regulation of on-street parking are significant concerns throughout the City. Although parking is typically considered a separate issue from vehicle circulation, the presence of on-street parking has a direct effect on roadway capacity. In addition, off-street parking deficiencies can cause vehicles to re-circulate on a public street in search for parking, which also increases traffic volumes and congestion by reducing capacity for through traffic. Therefore, adequate off-street parking is necessary for a healthy business environment, to allow arterial streets to be used for efficient movement of traffic, and to prevent parking problems from spilling over onto adjacent properties and residential streets.

[2] "The amount of transportation impact fees collected pursuant to this chapter shall be limited to the cost of transportation impact mitigation attributable to new development. The amount of transportation impact fees collected shall not include the cost of transportation impact mitigation measures made necessary by existing development." Torrance Municipal Code. Division 2, Chapter 9, Article 1, Section 29.1.1.E

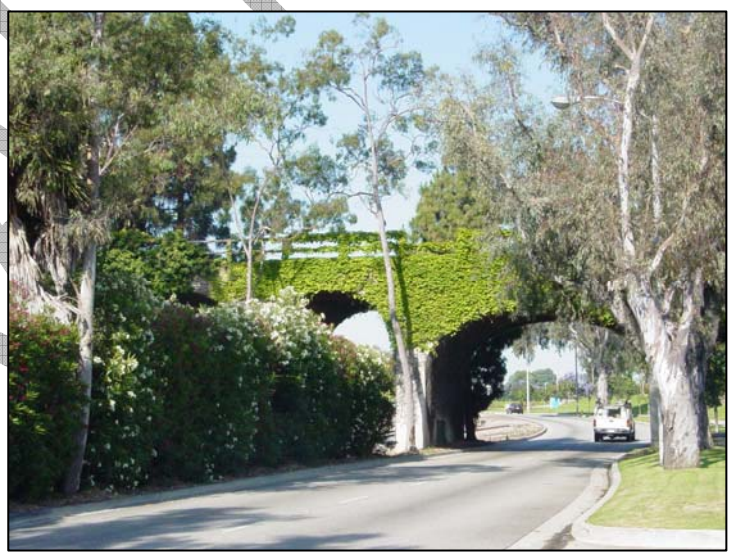
The Torrance Municipal Code requires that parking be provided for all uses on a site. These regulations apply to all new developments and may be applied to existing uses that are modified or expanded. The City will continue to enforce these provisions.

Parking is an issue that will become more critical to the City as traffic volumes increase and on-street parking conflicts with the movement of vehicles. Because of the importance of on-street parking to many existing businesses, removal of parking must be coordinated with provision of off-street parking in areas where existing off-street parking is inadequate and businesses depend on street parking.

The City will analyze and develop parking standards consistent with community needs. For retail, service, and residential trips, sufficient on-site parking will be required to prevent parking problems from spilling over to adjacent properties and public streets.

2.4.3 ROADWAY AESTHETICS

Major streets serve as gateways to the City and contribute significantly to the character of the neighborhood through which they traverse. Coordinated street landscaping and improvements enhance main business corridors, soften the transition between commercial and residential areas, and create pleasant residential neighborhoods. Streetscape aesthetics cover a wide variety of features, and include lighting, signage, street trees, landscaping (street and road median plantings), and gateways that help mark the entry into the City. These topics are discussed in detail in the Community Resources Element.



City entryways affect the way visitors see the community and are the "welcome home" points for returning residents.

Streetscapes also include amenities such as bus shelters, bicycle parking, benches, and trash receptacles. All of these features benefit pedestrians, transit riders, and motorists, and contribute to the ambiance of Torrance.

The City will identify corridors and gateways in Torrance for future streetscape improvements and beautification. The beautification plans will ensure that aesthetic improvements will create a safe and pleasant experience for not only motorists, but also for pedestrians and transit riders. This may include sidewalk improvements, new lighting, bus shelters,

and transit signage. Torrance Transit is committed to increasing the number of bus shelters throughout the City.

2.4.4 DEVELOPMENT IMPACTS

In recognition of the relationship between projected new development, needed transportation and other infrastructure improvements, and estimated costs of improvement, the Torrance City Council approved and adopted a Development Impact Fee (DIF) program in August 2005. The costs of improvements funded by fees are fairly apportioned to new development relative to the benefits conferred to new development or the need created by new development. The DIF is a one-time cost to developers, not other than a tax or special assessment fee. The DIF is applied to pay a portion of the costs identified for public facilities used for transportation services, the undergrounding of utilities, sewer and storm drain facilities. The City will continue monitor whether the impact fee program should be expanded.

Hawthorne Boulevard: Economic development depends in part upon the ability of the circulation system to efficiently deliver goods and employees to destinations within and outside of Torrance.

2.4.5 ADDRESSING LOCAL CONGESTION

A well-designed local roadway system is the foundation of Torrance's multi-modal circulation network. Roadways provide primary travel routes for automobiles, and form the backbone of Torrance's pedestrian, transit, truck, and bicycle options. Traffic congestion is an important local roadway concern in Torrance, and the City uses several approaches to alleviating congestion on local streets. The approaches include traffic management and demand reduction in addition to physical improvements.

TRANSPORTATION DEMAND MANAGEMENT/ INTELLIGENT TRANSPORTATION SYSTEMS (ITS)

To reduce travel demand and improve the efficiency of the circulation system, the City has implemented a Transportation Demand Management (TDM) program and Intelligent Transportation Systems (ITS). These programs serve as alternatives to physical expansion of transportation facilities that comes at a substantial economic cost and disruption.

TDM programs are designed to reduce demand for transportation by making more efficient use of existing transportation facilities through various means such as the use of transit. TDM seeks to increase the

carrying capacity of roadways and transit systems, and in so doing, not increase the number of trips that are made. Activities such as ridesharing, riding the bus, walking, bicycling, or telecommuting are examples of TDM strategies that enable trip purposes to be accomplished while reducing the number of vehicle trips used to do so.

TDM objectives are accomplished through the Land Use Element policies that encourage site and building design which reduce or better distribute travel demand and encourage the use of development design and amenities that support transit and other alternative forms of transportation, including bicycling and walking. The Community Resources Element encourages the use of City-sponsored transportation, ride-sharing, and the Torrance Transit System by community residents for transportation to local recreational and community facilities.

To further local trip reduction goals and comply with regional congestion and air quality programs, the City has adopted a Transportation Demand Management (TDM) Ordinance. Ordinance No. 3371 requires new non-residential development of commercial, retail, or industrial developments encompassing more than 25,000 square feet to incorporate transportation strategies, some of which include bicycle storage facilities, preferred parking for carpools, and transit information. The City must review all new development applications to ensure these types of facilities are included as feasible.

ITS refers to using advanced technologies to enhance the operation and management of a transportation system. ITS provides the technology to enable people to make smart travel choices. One very effective approach the City has undertaken to improving traffic flow is signal synchronization, which is a coordinated set of timing plans for a group of signals on an arterial road that creates smoother traffic flow. The goal is to allow cars and buses to move through the City with the fewest stops at intersections, while minimizing delay for the side street.

The City of Torrance has a ridesharing incentive program for City employees. The "Catch A Ride" (CAR) Program is designed to reward employee contributions to improve air quality and reduce traffic congestion and promotes the use of alternate forms of transportation to solo driving.

ITS signal synchronization can provide seamless travel across jurisdictional boundaries and reduce traffic congestion using improved signal operation, monitoring, and control real-time traveler information. Motorists thereby have the ability to change their travel route in response to traffic conditions. In addition ITS can improve circulation issues by helping the City more efficiently identify and fix traffic signal malfunctions, detect and manage chain-reaction incidents on freeways and arterials, improve traffic control during the holiday season and planned events, and increase interjurisdictional coordination.

The City has extensively studied traffic during the holiday season in the vicinity of Del Amo Fashion Center. Holiday weekend traffic volumes around Del Amo Fashion Center can increase by as much as 79 percent relative to non-holiday periods. Significant areas of weekend holiday traffic

around the Fashion Center include Madrona Avenue south of Fashion Way, Del Amo Circle north of Carson Street, Plaza Del Amo near Del Amo Circle East, and Center Way just east of Hawthorne Boulevard. To alleviate traffic congestion during the holiday season, the Del Amo Fashion Center puts into effect internal circulation improvements such as on-site traffic control barriers to improve the internal flow, personnel to direct vehicular and pedestrian traffic within the parking lot at certain high-flow areas, and utilizing a shuttle system and off-site parking for employees to increase parking for patrons. To augment these measures, Torrance limits construction activities that require lane closures or blockages along major roadways starting the Monday of Thanksgiving week to the first week of January to minimize overall delays. Increased traffic flows during the holiday season may also be improved based on the improvements along Hawthorne Boulevard (at Carson Street, Torrance Boulevard, and Sepulveda Boulevard) included in **Table CI-4**.

PHYSICAL SYSTEM IMPROVEMENTS

Not all system needs can be met by reductions in demand. Over time, the City will need to undertake targeted physical improvements to the road network to maintain desired levels of service.

The Citywide Traffic Study confirmed that overall, traffic in Torrance flows efficiently and LOS objectives are attainable. Of the 171 study intersections, 120 (70 percent) were confirmed to function or forecast to function at acceptable levels of service (LOS D or better) during peak and off-peak weekday and weekend study periods for existing, near-term, and long-term conditions. Where deficiencies (LOS F) are anticipated, physical system improvements have been identified and incorporated into this Element.

Planned physical improvements are listed in **Table CI-3** and **Table CI-4**. Table CI-3 identifies improvements initiated prior to 2007 and planned to be completed by 2010. Table C-4 sets forth other needed improvements, differentiating between near-term and long-range as a means to help prioritize system enhancements. Near-term generally means prior to 2015, although timing will depend upon actual demand, based on traffic volume increases. Together with demand reduction, these key improvements are expected to provide acceptable future traffic conditions in a cost-effective manner. Additional focused improvements may also be warranted as a result of specific projects.

Table CI-3
Roadway Improvements
To be Accomplished Prior to 2010

Project	Scheduled Improvement	Action/Timing
Del Amo Boulevard extension from Maple Avenue to Crenshaw Boulevard as a four-lane divided Arterial	Four-lane divided Arterial	Construction is anticipated to begin in April 2009 based on available funding.
Plaza Del Amo/223rd Street from Crenshaw Boulevard to Western Avenue	Four-lane divided Arterial	A portion of Plaza Del Amo/223 street from Western side has been completed. CEQA review required prior to initiation.
190th Street	Widen/restripe to six lanes between Anza Avenue and Western Avenue	▪ 190th between Western and van Ness has been widened and will be striped to six lanes. ▪ 190th between Van Ness and Crenshaw needs widening. ▪ 190th between Crenshaw to Prairie (residential) parking has to be eliminated. ▪ Prairie to Hawthorne and Hawthorne to Anza will be a combination of both widening and parking elimination.
Crenshaw Boulevard	Restripe to six lanes between 182nd Street and Redondo Beach Boulevard (north City limits). Widen to eight lanes between 190th Street and 1-405	Complete by 20__
Hawthorne Boulevard	Widen/ restripe to six lanes from Pacific Coast Highway to the south City limits	Hawthorne Boulevard south of Pacific Coast Highway has been striped to six lanes. Eliminate parking in curb lane.
Pacific Coast Highway	Widen/ restripe to six lanes from Ocean Avenue to the east City limit	From Rolling Hills Way to Crenshaw widening has been completed. Balance to be accomplished.

Table CI-4
Near-Term and Long-Range Improvements

Street	Cross Street	Improvement	
		Near-Term	**Long-Range**
Anza Avenue	Sepulveda Blvd.	Widen eastbound Sepulveda approach, adding one through lane. Acquire 12 feet of right-of-way on eastbound Sepulveda approach and departure.	
		Widen northbound Anza Avenue approach, adding one left-turn lane. Acquire 12 feet of right-of-way on northbound Anza Avenue approach and departure.	
			Widen southbound Anza Avenue, adding one left-turn lane. Acquire 12 feet of right-of-way.
Crenshaw Blvd.	190th Street	Widen northbound Crenshaw Blvd approach, adding one left-turn lane. Acquire 12 feet of right-of-way on the northbound Crenshaw Blvd approach and departure.	
		Widen southbound Crenshaw Blvd approach, adding one left-turn lane. Acquire 12 feet of right-of-way on the southbound Crenshaw Blvd approach and departure.	
		Widen eastbound 190th Street approach, adding one left-turn lane . Acquire 12 feet of right-of-way on the eastbound 190th Street approach and departure.	
		Widen westbound 190th Street approach, adding one through lane. Acquire 12 feet of right-of-way on the westbound 190th Street approach and departure.	
	Del Amo Blvd.	Re-stripe westbound Del Amo Blvd approach, converting a shared left-turn/through lane to an exclusively through lane.	
		Modify traffic signal phasing to permit left-turn phasing.	
	Lomita Blvd.	Modify northbound Crenshaw Blvd right-turn lane to be a free right-turn lane with acceleration lane on Lomita Blvd. Acquire 12 feet of right-of-way on the northbound Crenshaw Blvd approach.	
		Widen the southbound Crenshaw Blvd approach, adding one left-turn lane. Acquire 12 feet of right-of-way on the southbound Crenshaw Blvd departure.	
		Widen the eastbound Lomita Blvd approach, adding one through lane. Acquire 24 feet of right-of-way on the eastbound Lomita Blvd departure.	
	Pacific Coast Highway	Modify northbound Crenshaw Blvd traffic signal phasing.	
		Widen the southbound Crenshaw Blvd approach, adding one left-turn lane. Acquire 12 feet of right-of-way on southbound Crenshaw Blvd approach and departure.	
		Widen eastbound Pacific Coast Highway approach, adding one through lane. Acquire 12 feet of right of-way on eastbound Pacific Coast Highway approach and departure.	

Table CI-4
Near-Term and Long-Range Improvements

Street	Cross Street	Improvement	
		Near-Term	Long-Range
	Skypark Drive-Amsler Avenue	Modify eastbound Skypark Drive signal phasing.	
	Torrance Blvd.	Widen the eastbound Torrance Blvd approach, adding one through lane. Acquire 12 feet of right-of-way on the eastbound Torrance Blvd approach and departure.	
Hawthorne Blvd.	Carson Street	Widen southbound Hawthorne Blvd approach, adding one left-turn lane. Acquire 12 feet of right-of-way on the southbound Hawthorne Blvd approach.	
		Widen eastbound Carson Street approach, adding one through lane. Acquire 12 feet of right-of-way on the eastbound Carson Street approach and departure.	
		Modify westbound Carson Street traffic signal phasing.	
	Del Amo Blvd.	Widen eastbound Del Amo Blvd approach, adding one through lane. Acquire 12 feet of right-of-way on the eastbound Del Amo Blvd approach and departure.	
	Lomita Blvd.	Modify westbound Lomita Blvd traffic signal phasing.	
	Pacific Coast Highway	Widen eastbound Pacific Coast Highway approach, adding one through lane. Acquire 12 feet of right of-way on eastbound Pacific Coast Highway approach and departure.	
		Widen westbound Pacific Coast Highway approach, adding one through lane. Acquire 12 feet of right of-way on westbound Pacific Coast Highway approach and departure.	

Table CI-4
Near-Term and Long-Range Improvements

Street	Cross Street	Improvement	
		Near-Term	**Long-Range**
	Redondo Beach Blvd.		Widen westbound Redondo Beach Blvd approach, adding one left-turn lane. Acquire 12 feet of right-of-way on westbound Redondo Beach Blvd approach and departure.
	Sepulveda Blvd.	Modify the northbound Hawthorne Blvd traffic signal phasing.	
		Widen westbound Sepulveda Blvd approach, adding one left-turn lane. Acquire 12 feet of right-of way on the westbound Sepulveda approach and departure.	
	Torrance Blvd.	Widen eastbound Torrance Blvd approach, adding one through lane. Acquire 12 feet of right-of-way on the eastbound Torrance Blvd approach and departure.	
		Modify eastbound Torrance Blvd traffic signal phasing	
		Widen westbound Torrance Blvd approach, adding two through lanes, and converting the existing shared through/right-turn lane to a right-turn lane. Acquire 24 feet of right-of-way on the westbound Torrance Blvd approach and departure.	
I-405 southbound ramps	Artesia Blvd.		Widen the I-405 southbound off-ramp at Artesia Blvd, adding one right-turn lane. This may require coordination with Caltrans.
Inglewood Avenue	190th Street	Modify northbound and southbound traffic signal phasing.	
		Widen eastbound 190th St approach, adding one left-turn lane. Acquire 12 feet of right-of-way on the eastbound 190th Street approach and departure.	
Prairie Avenue	190th Street	Modify northbound Prairie Avenue traffic signal phasing.	

Table CI-4
Near-Term and Long-Range Improvements

Street	Cross Street	Improvement	
		Near-Term	**Long-Range**
	Del Amo Blvd.	Widen westbound Del Amo Blvd approach, adding one through lane. Acquire 12 feet of right-of-way on the westbound Del Amo Blvd approach and departure.	
	Redondo Beach Blvd.	Widen northbound Prairie Ave approach, adding one left-turn lane. Acquire 12 feet of right-of-way on the northbound Prairie Ave approach and departure.	
		Widen southbound Prairie Ave approach, adding one left-turn lane. Acquire 12 feet of right-of-way on the southbound Prairie Ave approach and departure.	
			Widen eastbound Redondo Beach Blvd approach, adding one left-turn lane. Acquire 12 feet of right-of-way on eastbound Redondo Beach Blvd approach and departure.
Van Ness Ave	Del Amo Blvd.	Widen eastbound Del Amo Blvd approach, adding one through lane. Acquire 12 feet of right-of way on eastbound Del Amo Blvd approach and departure.	
Western Avenue	220th Street	Widen eastbound 220th Street approach, adding one right-turn lane. Acquire 12 feet of right-of way on eastbound 220th St approach and departure.	
		Widen westbound 220th Street approach, adding one right-turn lane. Acquire 12 feet of right-of way on westbound 220th St approach and departure.	
	Del Amo Blvd.	Widen eastbound Del Amo Blvd approach, adding one left-turn lane and one through lane. Acquire 24 feet of right-of way on eastbound Del Amo Blvd approach.	
		Widen westbound Del Amo Blvd approach, adding one left turn lane, one through lane, and one right-turn lane. Acquire 36 feet of right-of way on westbound Del Amo Blvd approach and departure.	
	Sepulveda Blvd.	Widen northbound Western Avenue approach, adding one through lane. Acquire 12 feet of right-of way on northbound Western Ave approach and departure.	

Table CI-4
Near-Term and Long-Range Improvements

Street	Cross Street	Improvement	
		Near-Term	**Long-Range**
		Modify northbound Western Avenue traffic signal phasing.	
		Widen southbound Western Avenue approach, adding one through lane. Acquire 12 feet of right-of way on southbound Western Ave approach and departure.	
		Modify southbound Western Avenue traffic signal phasing.	
		Widen eastbound Sepulveda Blvd approach, adding one left-turn lane. Acquire 12 feet of right-of way on eastbound Sepulveda Blvd approach and departure.	
		Widen westbound Sepulveda Blvd approach, adding one left-turn lane. Acquire 12 feet of right-of way on westbound Sepulveda approach and departure.	

2.5 LOCAL CIRCULATION OBJECTIVES AND POLICIES

To provide an effective and efficient local circulation system, objectives and policies stress the need to coordinate circulation planning closely with land use planning and expected levels of development. Reducing the number of trips that originate through transportation demand strategies will continue to help improve circulation in the City and will be prioritized. Traffic originating from school activity and regional shopping centers will be mitigated, and residential impacts such as parking and traffic intrusions will be minimized.

OBJECTIVE CI.2:	**A coordinated street network that complements and supports the planned level of development, as expressed in the Land Use Element**
Policy CI-2.1:	Require that all circulation improvements conform to the Roadway Classification Map (Figure CI-2)
Policy CI.2.2:	Establish and maintain a complete set of Public Works Street Standards applicable to construction or enhancements of the City's streets. The City may accept different standards for roadways in older developed areas of the City which do not meet present day standards, or under other special circumstances
Policy CI.2.3:	Maintain an up-to-date Capital Improvement Program or Action Plan that is consistent with this Element and provides for the improvement and long-term maintenance of local roadways
Policy CI.2.4:	Coordinate land use planning with planned future roadway and freeway improvements to ensure that the circulation system can accommodate proposed new development
Policy CI.2.5:	Require developers to provide roadway system improvements consistent with this Element
Policy CI.2.6:	Continue to measure and monitor circulation system capacity, and identify circulation system deficiencies through the City's Traffic Modeling Program
Policy CI.2.7:	Consistent with Land Use Policy LU.11.4, establish corridor plans along major roads and continually assess traffic and infrastructure conditions

OBJECTIVE CI.3:	**To maintain a Level of Service D or better at intersections within the City**
Policy CI-3.1:	Pursue trip reduction and transportation systems management measures to reduce and limit congestion at intersections and along streets throughout the City
Policy CI.3.2:	Monitor the capacity of critical intersections throughout the City

Policy CI.3.3:	Interconnect traffic signals and perform similar Intelligent Transportation System (ITS) improvements to maximize the smooth progression of traffic flows and to minimize delay and stop-and-go conditions
Policy CI.3.4:	Encourage the use of regional rail, buses, bicycling, carpools, and vanpools for work trips to relieve regional traffic congestion
Policy CI.3.5:	Encourage site and building design that reduces automobile trips and parking space demand
Policy CI.3.6:	Implement the near-term future and long-range future recommended improvements set forth in this Element

OBJECTIVE CI.4:	**To provide a safe, efficient, and comprehensive circulation system that serves local needs, meets forecasted demands, and reduces traffic impacts on neighborhoods**
Policy CI-4.1:	Protect residential neighborhoods from cut-through traffic by enhancing the capacity of Arterials and Collectors, improving signage, guiding traffic away from residential areas, and employing appropriate traffic-calming methods based on identified needs
Policy CI.4.2:	Restrict on-street parking, where feasible, during peak hours on Arterial roadways to improve traffic flow
Policy CI.4.3:	Increase average vehicle ridership through the implementation of transportation demand management programs
Policy CI.4.4:	Apply creative traffic management approaches to address congestion in areas with unique problems, particularly near schools, businesses with drive-through access, and locations where businesses interface with residential areas
Policy CI.4.5:	Coordinate with the Torrance Unified School District to explore the establishment of drop-off zones at schools where school children can be safely dropped off and picked up while reducing traffic congestion at peak hours
Policy CI.4.6:	Require the equitable sharing between the public and private sector of the full fair-share cost of improvements needed to mitigate traffic impacts
Policy CI.4.7:	Consider all alternatives for increasing street capacity before widening is pursued for streets that immediately serve residential neighborhoods
Policy CI.4.8:	Establish a system for residents and businesses to receive real-time traffic information to help plan travel routes accordingly

OBJECTIVE CI.5:	**To meet the parking needs of businesses, residents, and visitors**

Policy CI-5.1:	Require new development to accommodate project-generated parking demand on site
Policy CI.5.2:	Review the parking standards contained in the City's Zoning Ordinance, and modify standards as needed to reduce neighborhood parking intrusions and to provide the most appropriate parking standards in commercial zones
Policy CI.5.3:	Expand parking opportunities by encouraging the use of public parking lots and exploring the use of multiple-story parking structures
Policy CI.5.4:	Coordinate trash pick-up and street sweeping activities to reduce parking conflicts
Policy CI.5.5:	Explore opportunities to maximize the required number of parking spaces per housing unit

OBJECTIVE CI.6:	**To enhance the visual quality of the City's roadway system and thereby contribute to a high-quality visual image of Torrance**
Policy CI-6.1:	Establish corridor beautification plans along major roads and entry points into the City consistent with the policies in the Land Use Element
Policy CI.6.2:	Provide for the consistent use of street trees along all sidewalks, parkways, and property frontages
Policy CI.6.3:	Prohibit new billboard signs along arterial and secondary roadways, and encourage the removal of existing billboard signs

3. ALTERNATIVES TO THE AUTOMOBILE

According to the 2000 U.S. Census, 5,419 workers (or eight percent of the population) in Torrance age 16 years and older commute to work without a car. These include people who used public transportation, walked to work or utilized other means, and people that work from home. Several transportation options are available in Torrance, including public transit and facilities for pedestrians and cyclists. Bicycling, walking, and using public transit play increasingly significant roles as sustainable alternatives to the automobile. The City facilitates the use of automobile alternatives by providing and maintaining facilities for these modes of travel. Vehicular traffic must be accommodated but should not be allowed to dominate land use and transportation decisions.

Well-maintained sidewalks and lighting are key factors that make downtown Torrance pedestrian friendly

3.1 PEDESTRIANS

Walkability, access, and connections are essential components of a circulation plan that accommodates pedestrians. Walkability includes wide sidewalks, safe street crossings, minimizing obstructions along sidewalks, features that encourage cautious driving, and a pleasant and safe walking environment. Walkways, well-designed pedestrian crossings, and pathways allow people to travel easily from one destination to another. Pedestrian connections should be provided primarily to and from activity centers such as schools, community centers, civic facilities, major commercial areas, and transit centers. Dedicated pedestrian paths can provide access between residential and activity areas, especially if streets do not connect. Handicapped access strategies should also be incorporated into all street and pathway plans. Walkways and other public spaces should be well lighted and open to public view.

Throughout Torrance, the City has developed sidewalks and paths that connect residential neighborhoods to public facilities, parks, schools, and major commercial areas. The City will continue to develop and encourage facilities that enhance pedestrian access through and around the more congested areas of the City. Curb cuts into commercial and retail sites will be combined where practical to enhance the safety of pedestrian mobility on sidewalks, as well as within a site. Internal circulation that considers pedestrian movement will be a required component of all new and renovated site designs. On streets served by bus routes, walking distances from bus stops to adjacent land uses will be minimized. There should be at least one walk link between the sidewalk and any building on a site.

From a transit perspective, it is especially critical to integrate pedestrian access into the design of shopping centers, schools, parks, transit stops, libraries, community facilities, and employment centers/work sites. Through implementation of Land Use Element policies and site design review, pedestrian access will be facilitated by encouraging smaller commercial and retail setbacks from streets, integrating walkways, and placing parking away from the street fronting the site.

An important consideration in making any site pedestrian friendly is the inclusion of facilities for disabled access. Any walkway should contain adequate width to accommodate wheelchairs and other mobility enhancements.

3.2 TRAILS

Trails are multi-purpose pathways located in parks or along major roadways or drainage channels. Single-purpose and multi-purpose trails enhance community mobility and provide opportunities for recreation and exercise. A well-defined, interconnected trail system can also reduce dependence on the automobile for short local trips. The South Bay Bike Trail is a 22-mile

paved bath that runs from Will Rogers State Beach in the north and ends at Torrance Beach. This trail is shared by bicyclists, joggers, and pedestrians. Consistent with the Community Resources Element, re-use or dual use of abandoned railroad and Southern California Edison right-of way will be explored as potential resources for expanding trails and open space facilities.

3.3 TRANSIT

Promoting the use of transit within, to, and from Torrance is a sustainable practice that reduces the number of vehicles on the road and the amount of fossil fuels consumed by commuters. By using transit, we reduce traffic congestion, reduce the need for costly roadway improvement projects, improve air quality, and encourage a healthier population. Also, many Torrance residents cannot drive or choose not to drive. Pre-teen and teenage youth, the elderly, and disabled persons rely on public transit to go shopping, visit doctors, and attend community activities and events.

In addition to alleviating traffic congestion and improving mobility and transportation options, transit also can expand job accessibility in Torrance and help revitalize commercial districts and activity centers. Public transportation in Torrance consists of fixed-route bus service and demand responsive shuttles. The City is exploring opportunities establish a central transit station in Torrance, with options focused on a central location that will serve as hub for many bus lines. This transit terminal is envisioned as a multi-agency terminal that may be funded by federal dollars and matching funds.

3.3.1 TORRANCE TRANSIT

The Torrance Transit System provides a general purpose fixed-route bus system as well as demand responsive services for seniors and the disabled. The fixed-route service area includes all of Torrance, with routes going into Los Angeles via Gardena and Hawthorne, one route going into downtown Long Beach, and another serving the Metro Blue Line station in Compton. Torrance Transit also serves Union Station in downtown Los Angeles.

Torrance Transit has operated weekday service on fixed-routes continuously since 1940. Torrance Transit bus service has stops at major destinations throughout the City, including Del Amo Fashion Center, Torrance Civic Center, Madrona Marsh Preserve, and Downtown Torrance. Three of the routes (Routes 5, 7 and 9) provide service within the City. Five routes provide regional connections to Los Angeles (Routes 1 and 2), Long Beach (Route 3), Metro Blue Line Artesia Station (Route 6) and the Los Angeles International Airport (Route 8). Torrance Transit also operates midday shuttle services connecting major worksites to retail, restaurant, and commercial sites in the Del Amo Fashion Center and Torrance

Downtown areas. All of the routes, except Route 6, offer Saturday service, with more limited Sunday service.

Figure CI-4: Torrance Transit Route

Route 3, which traverses the City along Torrance Boulevard and Carson Street, accounts for half of total Torrance Transit ridership. The route connects to the Del Amo Fashion Center and the Long Beach Transit Center, which significantly contribute to the total number of boardings.[3] Route 8 and 1 have the next highest level of ridership, as these routes connect major destination such as Del Amo Fashion Center, the Galleria at South Bay, California State University – Dominguez Hills, and Harbor UCLA Medical Center. Overall 40 percent of weekday boardings occur during the mid-day period.

The Torrance Transit system offers connection to Metro regional transit facilities as well as connections to transit systems in the cities of Gardena, Rancho Pals Verdes, and Carson

According to the 2003 Los Angeles County Short Range Transportation Plan, which focuses on the phasing of transportation improvements through 2009, improvements to Torrance Transit include service coordination improvements, facility modifications, ITS enhancements, and a universal fare system.[4] The agency also plans on adding new bus technology such as automated locators utilizing Geographic Positioning System (GPS) technology, Estimated Time of Arrival (ETA) service, establishing rapid routes, new fare boxes, and SMART card technology. By utilizing new bus technology, Torrance Transit can provide residents with more efficient and convenient bus service.

Torrance Transit also offers specialized transit services to South Bay residents. The Torrance Community Transit Service provides taxi service (Senior Taxi and Dial-A-Taxi service) to disabled and senior residents. This service enables seniors and disabled residents to be conveniently picked up and taken to locations throughout Torrance. This important service for senior and disabled residents has operated as an on-demand taxi service since October of 2004.

3.3.2 METRO TRANSIT SERVICES

Metro operates several bus lines that service Torrance, including Lines 210, 211, 232, and 444. Bus lines 210, 211, and 232 are all north and south local buses. Line 210 runs between Hollywood and Redondo Beach, line 211 runs between Inglewood and Redondo Beach via Torrance, and 232 runs between Long Beach and the Los Angeles International Airport via

[3] "Torrance Transit System Line-by-Line Analysis", prepared by Transportation Management & Design, Inc. Final Draft January 31, 2006.

[4] 2003 Short Range Transportation Plan for Los Angeles County, Los Angeles County Metropolitan Transportation Authority, page 12.

Sepulveda Boulevard. Line 444 is a freeway express bus that connects downtown Los Angeles to Rancho Palos Verdes. The bus stop at Hawthorne Boulevard and Artesia Boulevard has the highest number of boardings and alightings than any of the other stops along this arterial.

3.3.3 MUNICIPAL AREA EXPRESS (MAX)

MAX, the Municipal Area Express, is a commuter bus service that runs during the peak morning and afternoon commuting hours serving South Bay residents. The Torrance Transit System acts as the lead agency for MAX. The service offers three routes through the South Bay, and Line 3 provides commuting service between Torrance and San Pedro. The service has 11 stops in the City, all of which are located along Crenshaw Boulevard. Each participating city contributes money, usually Proposition A or Proposition C Local Return dollars, to fund MAX's operating and capital costs. These contributions are supplemented by fare revenues and grant monies from Metro.

3.3.4 OTHER TRANSIT PROVIDERS

Gardena Transit Route 2 services Torrance and runs along the western edge of the City along Western Avenue. Route 2 has 20 bus stops along approximately four miles of Western Avenue in Torrance. Route 1 can be accessed just outside the City near Redondo Beach Boulevard and Western Avenue. The Palos Verdes Peninsula Transit Authority (PVPTA) operates two fixed bus routes that service the southwestern corner of Torrance along Palos Verdes Boulevard. Route 225 operates on weekdays and Route 226 operates on weekends, and run along Palos Verdes Drive northbound and southbound, respectively. The City of Redondo Beach operates Beach Cities Transit and offers services in the southwestern part of the City. Route 104 connects Del Mao Fashion Center with Torrance South High School (via Calle Mayor) and travels along the coastline in Redondo Beach. Torrance Transit also offers connection with the Carson Circuit transit system which provides service throughout Carson.

3.4 BICYCLES

Bicycle travel offers many benefits. For some people, it can be more cost-effective than driving. Bicycling promotes good health. Cycling also proves helpful for our air quality, since bicycles do not emit fumes. Because Torrance's weather and topography are both conducive to cycling, it can be a year-round activity.

Torrance has a Bicycle Master Plan (BMP) that provides a framework for future investments in public and private bicycle facilities and education. The Master Plan establishes three bikeway classifications:

Class 1 Bikeway	Class II Bike Lane	Class III Bike Route
Off-road routes: located along designated multi-use trails or obsolete rail lines, the bikeways are separated from streets	On-road routes: located along arterial roadways, they are delineated by painted stripes and other features	On-road routes: shared use with pedestrians or motor vehicle traffic, they provide a route that is signed but not striped

The Master Plan illustrates existing and proposed bikeways and designates places for public bicycle parking. These are located at public parks, libraries, and the Civic Center. Through the development review process, the City of Torrance regularly evaluates implementation of new Class I, II, and III bikeways. The City also encourages bicycling as an alternative mode of transportation through Ordinance No. 3371, Transportation Demand Management (TDM).

Metro has published a comprehensive guide for bicycle commuters and recreational bikers detailing 1,252 miles of bike paths, on-street bike lanes and designated bike routes in Los Angeles County. In cooperation with the City's efforts to promote bicycle commuting, all Torrance Transit buses are equipped with bicycle racks. The City of Torrance continuously seeks funding opportunities for augmenting bikeway facilities and promoting bicycle commuting. **Figure CI-5** shows the location of existing and proposed bikeways, as well as connections to regional facilities.

3.5 ALTERNATIVES TO THE AUTOMOBILE OBJECTIVES AND POLICIES

Torrance will continue to coordinate efforts to improve alternative mobility services and facilities, while providing residents with a wider range of alternatives to the automobile. The City will continue to support and encourage safe and convenient ways for transit riders, pedestrians, and bicyclists to move throughout Torrance.

OBJECTIVE CI.7:	**To expand and optimize use of local and regional bus and other transit systems**
Policy CI-7.1:	Maintain and expand a public relations and information awareness program to promote transit use
Policy CI.7.2:	Coordinate transit planning with regional and county planning agencies to maximize local and regional services
Policy CI.7.3:	Support and encourage the use of public transit for local trips, trips to major employment and commercial centers, and connections to regional transportation transfer points
Policy CI.7.4:	Establish a transit center in the City

Policy CI.7.5:	Enhance and encourage the provision of attractive and appropriate transit amenities, including shaded bus stops, to facilitate use of public transportation

Figure CI-5: Bike Map

Policy CI.7.6:	Make new updates to bus technology, which may include automated locator system utilizing Global Positioning Systems (GPS), Expected Time of Arrival (ETA) service, new fare boxes, and SMART card technology
Policy CI.7.7:	Work with the Los Angeles County Metropolitan Transportation Authority to expand Metro Rapid bus service into Torrance
Policy CI.7.8:	Require developers to incorporate facilities for transit and other alternative modes of transportation, such as park-and-ride lots, bus terminals, and bus turnouts in the design of major developments
Policy CI.7.9:	Support light rail usage by providing connection and creating efficient transfer opportunities through the Torrance Transit System
Policy CI.7.10:	Implement signal prioritization to support public transit and provide more efficient transit services
Policy CI.7.11:	Explore opportunities to maximize transit resources using smaller buses for less-traveled routes or shorter trips

OBJECTIVE CI.8:	**To maintain a comprehensive system of pedestrian pathways and bicycle routes that provide viable options to travel by automobile**
Policy CI-8.1:	Provide and maintain safe, efficient, and convenient pedestrian pathways that offer access to major activity centers, recreation facilities, schools, community facilities, and transit stops
Policy CI.8.2:	Promote walking throughout the community by installing sidewalks where they are missing and making improvements to existing sidewalks when needed for safety purposes. Particular attention will be given to sidewalk improvements near schools and activity centers
Policy CI.8.3:	Require that new residential developments provide pedestrian gateways or similar outlets to abutting roadways and sidewalks
Policy CI.8.4:	Provide and maintain a comprehensive system of bicycle lanes to meet the needs of cyclists traveling to all destinations within the City consistent with the Bicycle Master Plan
Policy CI.8.5:	Promote the provision of reasonable and secure bicycle storage and shower and locker facilities at major commercial developments and employment centers
Policy CI.8.6:	Encourage cyclists to use routes that allow for safe cycling
Policy CI.8.7:	Promote bicycle safety through educational programs designed for both bicyclists and drivers

Policy CI.8.8:	Seek county, State, federal, and private sector assistance to help finance development of bicycle facilities
Policy CI.8.9:	Promote the use of compact electric or similar powered vehicles for local trips

3.6 TORRANCE AIRPORT

Torrance Municipal Airport (Zamperini Field) is a general purpose aviation facility located in the southern portion of the City. The airport has two runways which are capable of handling aircraft up to 20,000 pounds per wheel. The runway's length and weight capacity make it ideal for general aviation. However, it is not recommended for air carrier type aircrafts.[5] The City limits based aircraft to 825 airplanes. Based aircraft does not include transient aircraft which visit the field for a brief time, and which may be parked or tied down at a fixed based operation site. Some types of aircraft are banned from the airport because they are incapable of meeting the City's stringent noise ordinance.

The majority of airplanes using Torrance Airport are light, single-, sometimes twin-engine models, used mainly for recreational purposes, limited in size and seating capacity (usually 2 to 8 seats)

The airport property encompasses 500 acres. One hundred forty acres are leased at commercial rates for non-aeronautical purposes. A total of 360 acres are dedicated to aeronautical use. As a policy matter, the City has determined that the airport will not expand its operations. The airport will continue its general aviation status and will not expand services into commercial operations. Safety issues and land use issues related to the airport are discussed in more detail in the Safety Element and the Land Use Element, respectively.

4. UTILITY SYSTEMS

Although often invisible, public utility infrastructure comprises an essential physical support system that enables us to live healthy, productive lives. These include reliable water supply systems, effective sewage collection and treatment facilities, stormwater control, and energy and telecommunication systems. In Torrance, the City maintains a portion of the water distribution system and local sewage collection and storm drain systems. Water supplies are purchased from wholesale providers, and the City is responsible for storage and distribution. The City maintains the local sewage collection lines which feed into regional lines maintained by the Los Angeles County Sanitation Districts. City-owned storm drains direct runoff into major County flood channels under the jurisdiction of the Los Angeles County Flood Control District.

[5] City of Torrance website. http://www.ci.torrance.ca.us

4.1 WATER SYSTEM

Protection of water supply and water quality is imperative for the health and quality life of Torrance residents, businesses, and visitors.

4.1.1 WATER SUPPLIERS

Two water agencies provide drinking water to Torrance residents and businesses: the Torrance Municipal Water Department (TMWD) and the Rancho Dominguez and Hermosa-Redondo Districts of the California Water Service Company (CWS). Services area boundaries are shown in **Figure CI-6**. TMWP serves about 78 percent of Torrance residents and businesses, conducting water quality maintenance and monitoring and operation of the water system distribution system. TMWP also deals with agencies such as the State Health Department of Health Services regarding water quality matters. TMWP is a direct member agency of the Metropolitan Water District (MWD), which provides over 88 percent of the City's potable water supply. Water sources from the MWD include imported water from the Colorado River Aqueduct and from the State Water Project via the California Aqueduct, as well as groundwater from district wells. Additional water sources include groundwater (including desalinated water) purchased from the Water Replenishment District of Southern California and recycled water purchased from the West Basin Municipal Water District. In addition to the Yukon Tank, which is the one active above-ground water storage tank in the City, TMWD maintains the Walteria and Ben Haggot reservoirs.

Because the Southern California region is a region of natural water deficiency in relation to local consumption, water conservation is paramount. The City's Urban Water Management Plan sets forth strategies the City pursues to ensure water service reliability during normal, dry, or multiple dry years. Like other communities in Southern California, Torrance will face additional water resource challenges in the future. Conservation strategies include water recycling, groundwater recovery, desalination, surface water storage, and in-region groundwater conjunctive use.

The City plans to build additional wells and to improve supply facilities that transfer imported water from the MWD to Torrance. To meet future water system needs, the City also plans a series of modernization projects that may include the installation of remote sensing and monitoring stations to help detect water leaks and breakages. The City uses reclaimed water for industrial processes and irrigation, which frees up potable water sources for domestic needs.

Additional information on water resources can be found in the Safety Element, which addresses issues related to fire prevention and suppression requirements for water supply and water flows, and in the Community Resources Element, which addresses water conservation, the use of recycled or reclaimed water, and the prevention of storm pollutants in the City's water supply.

Figure CI-6: Water Service Providers

4.2 SEWER SYSTEM

The Public Works Department maintains local sewer and storm drain systems. The Sanitation Districts of Los Angeles County (LACSD) is the regional agency responsible for the collection and treatment of wastewater. This includes the construction, operation, and maintenance of sanitation facilities used to collect, treat, recycle, and dispose wastewater. Torrance lies within Sanitation District No. 5. The two nearest wastewater treatment facilities to Torrance are the Joint Water Pollution Control Plant (JWPCP) in Carson and the Long Beach Water Reclamation Plant. The JWPCP is one of the largest wastewater treatment facilities in the world, and treats approximately 320 million gallons of wastewater a day. The Long Beach Water Reclamation Plant treats approximately 25 million gallons of wastewater a day. About five million gallons of the treated water is reused for irrigation purposes.

As an older city, Torrance has many sewer lines requiring repair or replacement due to failing pipes and joints. The City has identified several areas, such as downtown Torrance, as having deficient sewage collection capabilities due to age and limited line capacity. The Public Works Department has a proactive program to remediate conditions in downtown, including repairs in place by the insertion of a plastic liner within existing sewer lines. The City's Capital Improvement Program includes planned improvements to all areas identified as having system deficiencies. The City will also continue to identify anticipated deficiencies in the system over time.

4.3 STORM DRAINS

Storm water is rainwater plus anything the rain carries along with it. For example, in urban areas, rain from roofs or collected on paved areas is carried away through a system of gutters, pipes, and culverts. Storm water runoff flows directly into the City's storm drain system via street gutters and other inlets, and this flow in turn discharges into County flood control channels, which ultimately drain to the Pacific Ocean. Two important issues for storm drain management are to ensure adequate capacity necessary to collect and carry storm water to avoid flooding, and to reduce pollutant loads in storm water as a regional effort to improve water quality discharged into rivers and

"No Dumping" signs are a reminder that rain water picks up everything on the streets and gutters, which eventually washes into the ocean.

the Pacific Ocean.

In urbanized areas such as Torrance, vegetation and top soil have been replaced by a high percentage of impervious surfaces such as buildings, roads, sidewalks, and parking lots. Urban storm water run-off occurs when rainfall that would have been absorbed by groundcover or soil drains into storm drain facilities. In areas with extensive impervious surface coverage, the runoff can contain significant contaminants, and this polluted water drains from the collection/control facilities into regional channels and ultimately, the Pacific Ocean.

The management of storm drain and flood control facilities in Torrance, like sewer system management, is a cooperative City/County effort. The Los Angeles County Flood Control District provides for the planning, development, operation and maintenance of flood control facilities on a County-wide basis. The City is responsible for providing drainage from developments in the City and ensuring that storm drains properly feed into the regional system.

Upgrades to storm drains may be necessary as undeveloped parcels are converted to urban uses, particularly in areas where flood-related problems occur. The Department of Public Works maintains a master plan of drainage, last updated in 1997, that identifies system deficiencies. The City does not maintain a storm drain Capital Improvement Program but has identified priority improvements:

- Vista Montana Storm Drain Replacement – from Via Tortugas to Via Mesa
- Yukon Pump Station Rehabilitation
- Maple Avenue/235th Street Storm Drain - rehabilitate existing corrugated metal pipes - from Sepulveda Boulevard to Benner Avenue
- Alley south of 182nd Street - install new storm drain from Hawthorne Boulevard to Regina Avenue
- Redondo Beach Service Road east of Crenshaw Boulevard - install new storm drain

To help control runoff and pursuant to requirements established by the State Regional Water Quality Control Board, Los Angeles Region, individual projects may be required to provide on-site storm water retention and treatment prior to discharge into the local and then regional systems. The federal Water Pollution Control Act prohibits the discharge of any pollutant to navigable waters from a point source unless the discharge is authorized by a National Pollutant Discharge Elimination System (NPDES) permit. In Torrance, NPDES permits are issued by the California Regional Water Quality Control Board, Los Angeles Region as part of its Storm Water Program. The City has obtained funding for an upgrade to the Storm Drain Master Plan to coordinate future drainage improvements with recent

NPDES requirements. NPDES and storm water runoff is discussed in detail in the Water Conservation and Quality section of the Community Resources Element (Section 3.3.2)

4.4 ENERGY UTILITIES AND TELECOMMUNICATIONS

Energy and telecommunications systems are essential to perform most of our day-to-day activities. Natural gas and electricity provide heat and light and power our appliances. Through telephone lines, fiber optic cables, and the air waves, we connect with each other for business, for school, and with our friends and family.

4.4.1 ENERGY UTILITIES

In Torrance, the Southern California Gas Company and Southern California Edison Company provide natural gas and electric power services, respectively. These service providers install and maintain mainline systems throughout the City. Generally, the distribution systems adequately serve local customers, and the companies provide upgrades over time as needed to meet changing demands. A broader issue of concern is increased use of nonrenewable resources and providers ability over time to meet regional demands. Resource conservation issues are addressed in the Community Resources Element.

4.4.2 TELECOMMUNICATIONS

Telecommunications includes media and technologies, including radio, fiber optics, television, telephone, data communication, and computer networking. The advancement of telecommunications has changed dramatically with the use of the Internet, wireless networking, portable computers, cell phones, global positioning systems (GPS), and other technological advancements. Increasingly, campuses, business complexes, hotels, and coffee houses offer wireless connections. In the years to come, technology will continue to advance, and the nature of telecommunications will continue to evolve.

Considerable growth in the flow of information in telecommunication systems is expected in the future. Fortunately, much of the increase is expected to occur through better utilization of existing facilities, which will require relatively limited physical expansion beyond the established infrastructure. Substantial investments may be made in upgrading wire systems to optical fiber and in upgrading central facilities to handle higher capacities. Providing high-capacity data and video links may be important in reducing vehicle trips by increasing the potential for telecommuting and teleconferencing and allowing more people to work from home.

Continued growth will, however, require expansion to the existing network to serve new development. As with the electrical system, the City actively pursues its policy of undergrounding these utilities. The City recognizes the benefits to be achieved by requiring all new utilities to be placed underground and to retrofit existing aboveground systems, where possible, in association with new construction. Often, undergrounding of these telecommunication systems can be coordinated with Southern California Edison undergrounding activities. The City utilizes residential and non-residential undergrounding impact fees to further this goal.

4.4.3 OIL AND GAS PIPELINES

Torrance was founded as an oil community and had thousands of oil wells and oil derricks scattered throughout the City. Although the number of oil wells and associated infrastructure have decreased dramatically with centralization of extraction activities, wells and pumps remain at scattered locations. Oil recovery operations continue because a considerable portion of the City overlies oil- and gas-bearing strata that are part of the Torrance Oil Field, and higher prices for oil crude throughout the world make production economically viable. The field extends from the Redondo Beach offshore area on the northwest to the Wilmington Oil Fields on the southeast.

As a major oil-producing region, Torrance was once dotted with thousands of oil wells and oil derricks. The Mobil refinery in the north end of the City, established in 1929, is still responsible for producing much of Southern California's gasoline supply.

A complex network of pipelines transports petroleum products through the City and region, with activities concentrated in the central and northern part of Torrance. Shipping lines are typically larger lines leading from tanks to the refinery, and are generally operated under high pressure. Because of the potential hazards associated with high-pressure lines, these pressurized lines are regulated by the State Fire Marshal. Shipping lines are generally located parallel to major arterials, railroad rights-of-way, and the Southern California Edison easement. Field distribution lines, lead lines, and tank-to-tank lines are typically small lines (two inches to four inches in diameter) that transport product from the wells to the tanks and from tank to tank. These lines are operated at low pressure and are maintained by individual operators. The City anticipates that substantial recovery operations will continue over time, with changes to existing facilities and pipelines occurring as the industry adjusts to demands and new recovery methods. Additionally, new field distribution and tank-to-tank lines may be necessary to accommodate new operations or to replace older deficient lines.

The major area of potential of environmental concern related to oil and gas lines is oil spills, which can occur adjacent to wells, at a storage tank, due to broken pipes, and during operation and maintenance. A secondary concern is explosions from gas plants and pressurized facilities. The City has strict regulations for crude oil production site cleanup. The Safety Element addresses hazards associated with the City's oil operations and abandoned oil wells.

4.5 INFRASTRUCTURE OBJECTIVES AND POLICIES

Improvements to the City's circulation system are necessary to accommodate land use changes over time pursuant to the Land Use Element. Similarly, infrastructure must respond to and guide change if City residents are to be provided with a high level of urban services.

OBJECTIVE CI.9:	**Infrastructure systems that support current and future development**
Policy CI-9.1:	Require that developers, prior to issuance of building permits, demonstrate that adequate infrastructure exists or will be provided to serve proposed development and not diminish services to existing uses
Policy CI.9.2:	Evaluate the capacity and condition of the water, sewer, and storm drainage systems on a regular basis to assess each system's ability to meet changes in demand and to determine system deficiencies
Policy CI.9.3:	Ensure that public infrastructure is upgraded and installed in a timely manner to meet usage requirements, maximize cost efficiency, and minimize construction impacts on the community
Policy CI.9.4:	Require that new development assume the full fair-share costs of construction and expansion of water, sewer, and storm drain system improvements necessitated by that development
Policy CI.9.5:	Require that private infrastructure be built to public standards, including water lines, sewers, storm drains, and paving materials, and that private maintenance programs comply with City standards and schedules
Policy CI.9.6:	Support the installation of new technological infrastructure throughout the City, including broadband, fiber optics, wireless, and other developing technologies
Policy CI.9.7:	Pursue the undergrounding of overhead utilities