

## **Section 3:**

### **Community Profile**

#### **Why Plan for Natural Hazards in City of Carson?**

Natural hazards impact citizens, property, the environment, and the economy of City of Carson. Earthquakes, flooding, and windstorms have exposed City of Carson residents and businesses to the financial and emotional costs of recovering after natural disasters. The risk associated with natural hazards increases as more people move to areas affected by natural hazards.

Even in those communities that are essentially “built-out” i.e., have little or no vacant land remaining for development; population density continues to increase when low density housing is replaced with medium and high density development projects.

The inevitability of natural hazards, and the growing population and activity within the City create an urgent need to develop strategies, coordinate resources, and increase public awareness to reduce risk and prevent loss from future natural hazard events. Identifying the risks posed by natural hazards, and developing strategies to reduce the impact of a hazard event can assist in protecting life and property of citizens and communities. Local residents and businesses can work together with the City to create a natural hazards mitigation plan that addresses the potential impacts of hazard events.

#### **Geography and the Environment**

City of Carson has an area of 20.1 square miles and is located in south-central Los Angeles County.

The elevation of the City of Carson is 37 feet. As stated in the General Plan, the City of Carson is located in the northern section of the Los Angeles Basin. The Dominguez Hills and the Dominguez Gap are located within the city. The Dominguez Hills range from 20 to 195 feet above sea level. The Dominguez Channel is 1.6 miles wide at its narrowest point and 7 miles long.

#### **Community Profile**

Although the City of Carson has a rich history, the area comprising the City of Carson was only incorporated in 1968.

As stated in the City’s General Plan, the City is served by the Artesia Freeway (SR-91) to the north, the Harbor Freeway (I-110) to the west and the San Diego Freeway (I-405).

The Union Pacific, southern Pacific, and BNSF railroads traverse the city with tracks north-south. Passenger transportation is provided by the Metro Green and Blue Lines.

## **Major Rivers**

According to the City's General Plan, the Dominguez Channel runs northwest to southeast through the center of the City of Carson. The Dominguez Channel is part of the Los Angeles River Flood Control System which makes it vulnerable when the Los Angeles River Floods. The area surrounding the Dominguez Channel is designated as a 100-year flood zone.

## **Climate**

Temperatures in the City of Carson range from an average of 56 degrees in the winter months to 70 degrees in the summer months. However the temperatures can vary over a wide range, particularly when the Santa Ana winds blow, bringing higher temperatures and very low humidity.

Rainfall in the city averages 11.8 inches of rain per year. But the term "average" means very little in this region as the annual rainfall during this time period has ranged from only 4.35 inches in 2001-2002 to 38.2 inches in 1883-1884.

Furthermore, actual rainfall in Southern California tends to fall in large amounts during sporadic and often heavy storms rather than consistently over storms at somewhat regular intervals. In short, rainfall in Southern California might be characterized as feast or famine within a single year. Because the metropolitan basin is largely built out, water originating in higher elevation communities can have a sudden impact on adjoining communities that have a lower elevation.

## **Minerals and Soils**

The characteristics of the minerals and soils present in City of Carson indicate that potential types of hazards that may occur. Rock hardness and soil characteristics can determine whether or not an area will be prone to geologic hazards such as earthquakes, liquefaction and landslides.

According to the General Plan, soil in the City of Carson consists of holocene age alluvial deposits consisting of poorly consolidated sand, silt, clay, and gravel. Overall, the soil ranges from sand to clay loam soil types.

## **Other Significant Geologic Features**

City of Carson, like most of the Los Angeles Basin, lie over the area of one or more known earthquake faults, and potentially many more unknown faults, particularly so-called lateral or blind thrust faults.

As identified in the City's General Plan, the major faults that have the potential to affect the greater Los Angeles Basin, and therefore the City of Carson are the:

- Avalon-Compton
- San Andreas

Palos Verdes  
Whittier  
Santa Monica

The Los Angeles Basin has a history of powerful and relatively frequent earthquakes, dating back to the powerful 8.0+ San Andreas earthquake of 1857 which did substantial damage to the relatively few buildings that existed at the time. Paleoseismological research indicates that large (8.0+) earthquakes occur on the San Andreas fault at intervals between 45 and 332 years with an average interval of 140 years<sup>1</sup>. Other lesser faults have also caused very damaging earthquakes since 1857. Notable earthquakes include the Long Beach earthquake of 1933, the San Fernando Earthquake of 1971, the 1987 Whittier Earthquake and the 1994 Northridge Earthquake.

In addition, many areas in the Los Angeles Basin have sandy soils that are subject to liquefaction. The City of Carson has liquefaction zones and is discussed in Section 5: Earthquake.

### **Population and Demographics**

City of Carson has a population of about 89,730 in an area of 20.1 square miles. The increase of people living in City of Carson creates more community exposure, and changes how agencies prepare for and respond to natural hazards. For example, more people living on the urban fringe can increase risk of fire. Wildfire has an increased chance of starting due to human activities in the urban/rural interface, and has the potential to injure more people and cause more property damage. But an urban/wildland fire is not the only exposure to the City of Carson. In the 1987 publication, Fire Following Earthquake issued by the All Industry Research Advisory Council, Charles Scawthorn explains how a post-earthquake urban conflagration would develop. The conflagration would be started by fires resulting from earthquake damage, but made much worse by the loss of pressure in the fire mains, caused by either lack of electricity to power water pumps, and /or loss of water pressure resulting from broken fire mains. Furthermore, increased density can affect risk. For example, narrower streets are more difficult for emergency service vehicles to navigate, the higher ratio of residents to emergency responders affects response times, and homes located closer together increase the chances of fires spreading.

The City of Carson is experiencing a great deal of in-fill building, which is increasing the population density creating greater service loads on the built infrastructure, including roads, water supply, sewer services and storm drains.

Natural hazards do not discriminate, but the impacts in terms of vulnerability and the ability to recover vary greatly among the population. According to Peggy Stahl of the Federal Emergency Management Agency (FEMA) Preparedness, Training, and Exercise

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<sup>1</sup> Peacock, Simon M.,  
<http://aamc.geo.lsa.umich.edu/eduQuakes/EQpredLab/EQprediction.peacock.html>

Directorate, 80% of the disaster burden falls on the public, and within that number, a disproportionate burden is placed upon special needs groups: women, children, minorities, and the poor.<sup>2</sup>

According to the 2000 census figures, the demographic make up of the city is as follows:

	City of Carson
Hispanic or Latino	34.9%
African American	25.4%
Asian	22.3%
White	12%
Native Hawaiian or Pacific Islander	3%

The ethnic and cultural diversity suggests a need to address multi-cultural needs and services.

The percentage of citizens living in poverty in the City of Carson is about 9.3% according to the 2000 Census. Of those, 10.9% are under 18 years old, and 8.6% are over 65.

Vulnerable populations, including seniors, disabled citizens, women, and children, as well as those people living in poverty, may be disproportionately impacted by natural hazards.

Examining the reach of hazard mitigation policies to special needs populations may assist in increasing access to services and programs. FEMA's Office of Equal Rights addresses this need by suggesting that agencies and organizations planning for natural disasters identify special needs populations, make recovery centers more accessible, and review practices and procedures to remedy any discrimination in relief application or assistance.

The cost of natural hazards recovery can place an unequal financial responsibility on the general population when only a small proportion may benefit from governmental funds used to rebuild private structures. Discussions about natural hazards that include local citizen groups, insurance companies, and other public and private sector organizations can help ensure that all members of the population are a part of the decision-making processes.

### **Land and Development**

Development in Southern California from the earliest days was a cycle of boom and bust. The Second World War however dramatically changed that cycle. Military personnel and defense workers came to Southern California to fill the logistical needs created by the

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<sup>2</sup> [www.fema.gov](http://www.fema.gov)

war effort. The available housing was rapidly exhausted and existing commercial centers proved inadequate for the influx of people. Immediately after the war, construction began on the freeway system, and the face of Southern California was forever changed. Home developments and shopping centers sprung up everywhere and within a few decades the central basin of Los Angeles County was virtually built out. This pushed new development further and further away from the urban center.

The City of Carson General Plan addresses the use and development of private land, including residential and commercial areas. This plan is one of the City's most important tools in addressing environmental challenges including transportation and air quality; growth management; conservation of natural resources; clean water and open spaces.

The environment of most Los Angeles County cities is nearly identical with that of their immediate neighbors and the transition from one incorporated municipality to another is seamless to most people. Seamless too are the exposures to the natural hazards that affect all of Southern California.

### **Housing and Community Development**

	<b>City of Carson</b>
<b>Development Type</b> (Source: City General Plan)	
Heavy Industry	4000.2 acres
Low Density Residential	2432.9 acres
Light Industry	1496.6 acres
<b>Housing Type</b>	
1 unit detached	69.8%
Mobile homes	9.8%
1 unit attached	9.0%
<b>Housing Statistics</b>	
Total Available Housing Units	25,306 units
Owner-Occupied Housing	77.9%
Average Household Size	3.57 persons
Median Home Value	\$183,200

### **Employment and Industry**

	<b>City of Carson</b>
<b>Principal Employment Activities</b>	
Sales and Office Occupations	31.0%
Management (professional	26.8%

and related occupations)	
Production, Transportation, and Material Moving	20%
Service Occupations	14.4%
Construction	7.7%
<b>Major Industries</b>	
Education, Health & Social Services	21.0%
Manufacturing	19.0%
Retail Trade	11.3%
Transportation, Warehousing, and Utilities	9.5%
Professional, Scientific, Management, Administrative, and Waste Management Services	8.4%

Mitigation activities are needed at the business level to ensure the safety and welfare of workers and limit damage to industrial infrastructure. Employees are highly mobile, commuting from surrounding areas to industrial and business centers. This creates a greater dependency on roads, communications, accessibility and emergency plans to reunite people with their families. Before a natural hazard event, large and small businesses can develop strategies to prepare for natural hazards, respond efficiently, and prevent loss of life and property.

### **Transportation and Commuting Patterns**

Private automobiles are the dominant means of transportation in Southern California and in the City of Carson. According to the City’s General Plan, public Transportation in the City of Carson is provided by Carson Circuit, Torrance Transit, and the Los Angeles County Metropolitan Transportation Authority Bus Service. Additionally, there is limited service from Long Beach Transit and Gardena Municipal Bus Lines.

According to the 2000 Census, the City has a population of 89,730. The mean travel time to work for the residents of the City of Carson is 26.6 minutes.

As stated in the City’s General Plan, the City is served by the Artesia Freeway (SR-91) to the north, the Harbor Freeway (I-110) to the west and the San Diego Freeway (I-405).

Localized flooding can render roads unusable. A severe winter storm has the potential to disrupt the daily driving routine of hundreds of thousands of people. Natural hazards can disrupt automobile traffic and shut down local and regional transit systems.