

# CHAPTER 4.0: PAST, CURRENT, AND PROJECTED WATER DEMANDS

## 4.1 WATER USE BY CUSTOMER TYPE

### 4.1.1 Water Use by Class

Past, current, and projected water use will be employed in this chapter to anticipate future water demands for the City of La Habra. Figure 4.1 – 1: Consumption Sectors demonstrates the water use by class and percentage of use. The information detailed below is provided to supplement information regarding past, current, and projected total water use to create predictions by customer type. It can be seen that, in general, residential customers use 86 percent of the total water usage, commercial and industrial customers use 12 percent, and public facilities utilize 2 percent.

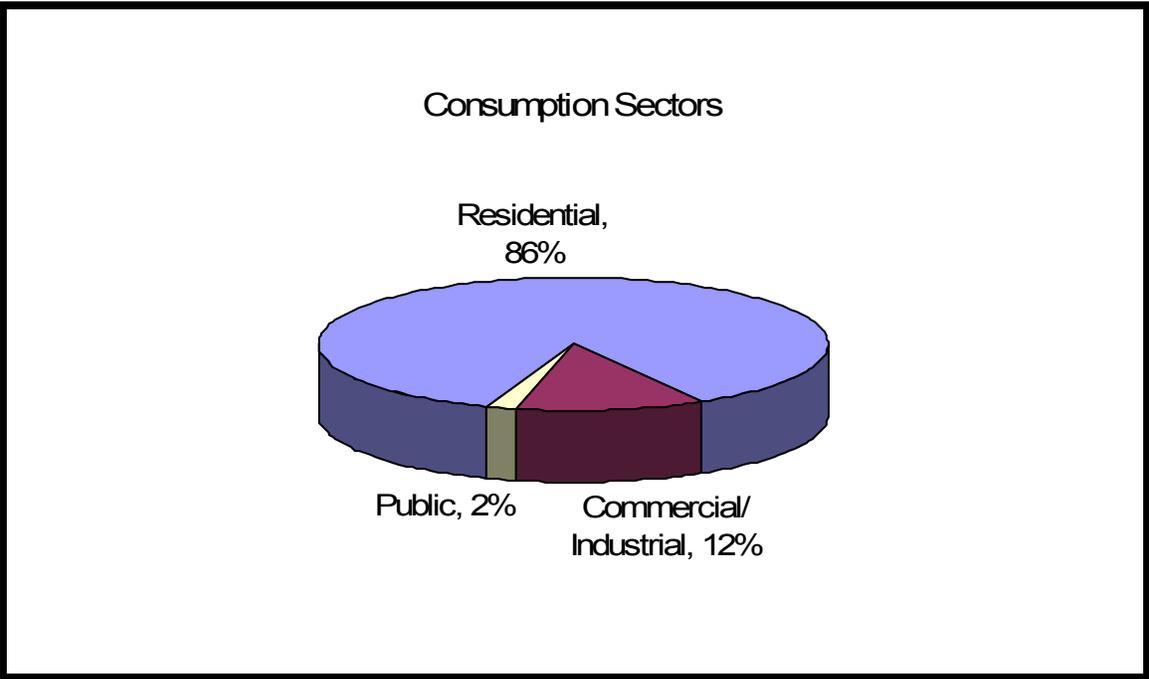


Figure 4.1 – 1: Consumption Sectors

### 4.1.2 Residential Water Consumption

Of the 86 percent of total water consumed by residents, the end use is broken down by both internal (indoor) and total (residential sector) use in Table 4.1 – 1: Residential Water Consumption below. Representative portions are illustrated in Figure 4.1 – 2: Internal Residential Use and Figure 4.1 – 3: Total Residential Use.

Table 4.1 – 1: Residential Water Consumption		
	Internal Residential Use	Total Residential Use
Toilet	42.0%	24.0%
Bath/Shower	30.0%	18.5%
Laundry	14.0%	8.0%
Dishwashing	6.0%	3.5%
Faucet	4.0%	2.0%
Cooking	4.0%	2.0%
Landscape/Outside	N/A	42.0%

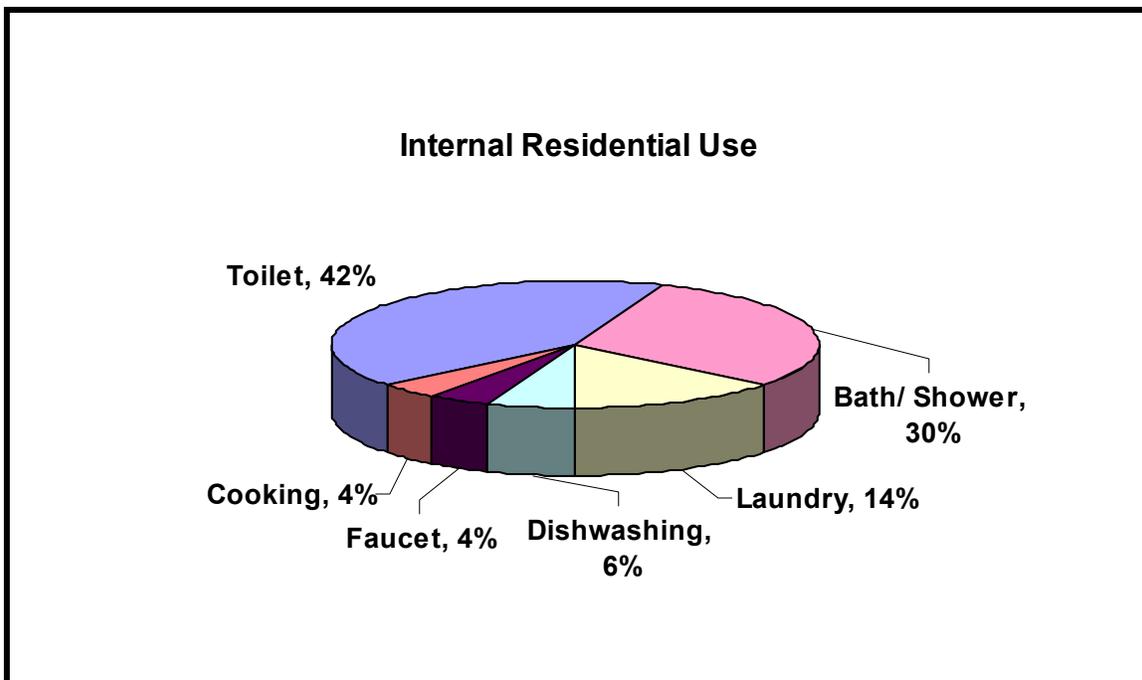


Figure 4.1 – 2: Internal Residential Use

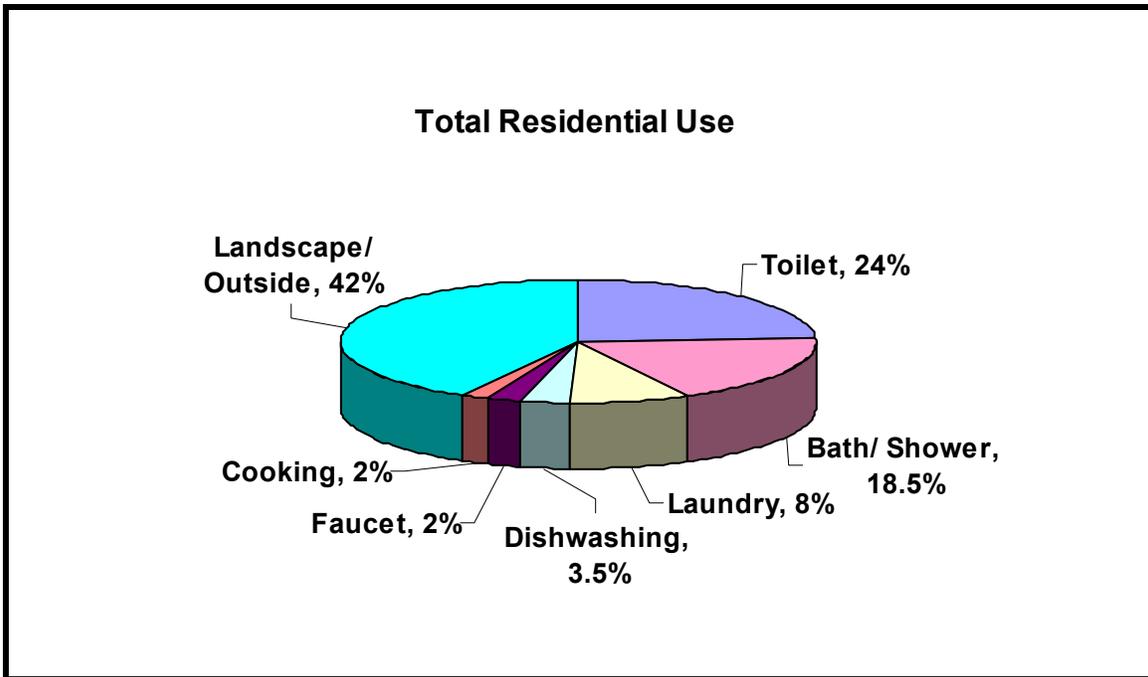


Figure 4.1 – 3: Total Residential Use

#### 4.1.3 Residential Water Consumption by End Use

Within residential water demands, approximately 58 percent of the total (86 percent) is interior use with the remaining 42 percent utilized for landscape irrigation and other outside uses. It should be specifically noted however, that as land prices increase, residential lot sizes decrease, types of residential dwellings change (i.e. town homes), and population densities increase. As a result, the ratio of water used internally to water used externally in residential areas may change substantially, as well as decrease in total.

## 4.2 WATER DEMAND AND PER – CAPITA TRENDS

Water Demand in general is affected by population density, water use efficiency, health of the economy, climatic factors, and variations over time based on the characteristic behavior of the public. In addition, water demand is influenced by land use (i.e., industrial, commercial, and residential).

### 4.2.1 Historic Water Demand

The average daily per capita demand is a useful measure for evaluating the historic water demands in connection with population and planning projections. Table 4.2 – 1: Historic Per Capita Water Consumption displays the historic gallons per capita day (GPCD) water demand for La Habra for fiscal years from 1990 to present. The per capita consumption amount represents the overall average water use, including residential, commercial, and public uses as well as any losses within the water distribution system.

Table 4.2 – 1: Historic Per Capita Water Consumption			
Fiscal Year Ending in June of	Population	Acre–Feet Per Year	Gallons Per Capita Day Water Use
1991	51,266	9,190	160
1992	51,426	8,349	145
1993	51,986	8,763	150
1994	52,722	9,222	156
1995	53,557	9,375	156
1996	53,980	10,089	167
1997	54,257	10,487	173
1998	54,727	9,525	155
1999	55,133	9,996	162
2000	55,805	11,196	179
2001	58,974	10,613	161
2002	59,895	11,210	167

Table 4.2 – 1: Historic Per Capita Water Consumption			
Fiscal Year Ending in June of	Population	Acre–Feet Per Year	Gallons Per Capita Day Water Use
2003	60,641	10,791	159
2004	61,152	11,063	161
2005	61,454	10,417	151
<b>Average</b>			<b>160</b>

Historically, per capita consumption rates in fully developed areas tend to increase at a low annual growth rate. As shown in Figure 4.2 – 1: Historic GPCD as a Function of Population, the annual per capita demand has generally decreased. This decrease can be attributed to the implementation of long–term water use efficiency measures, temporal, and economic factors.

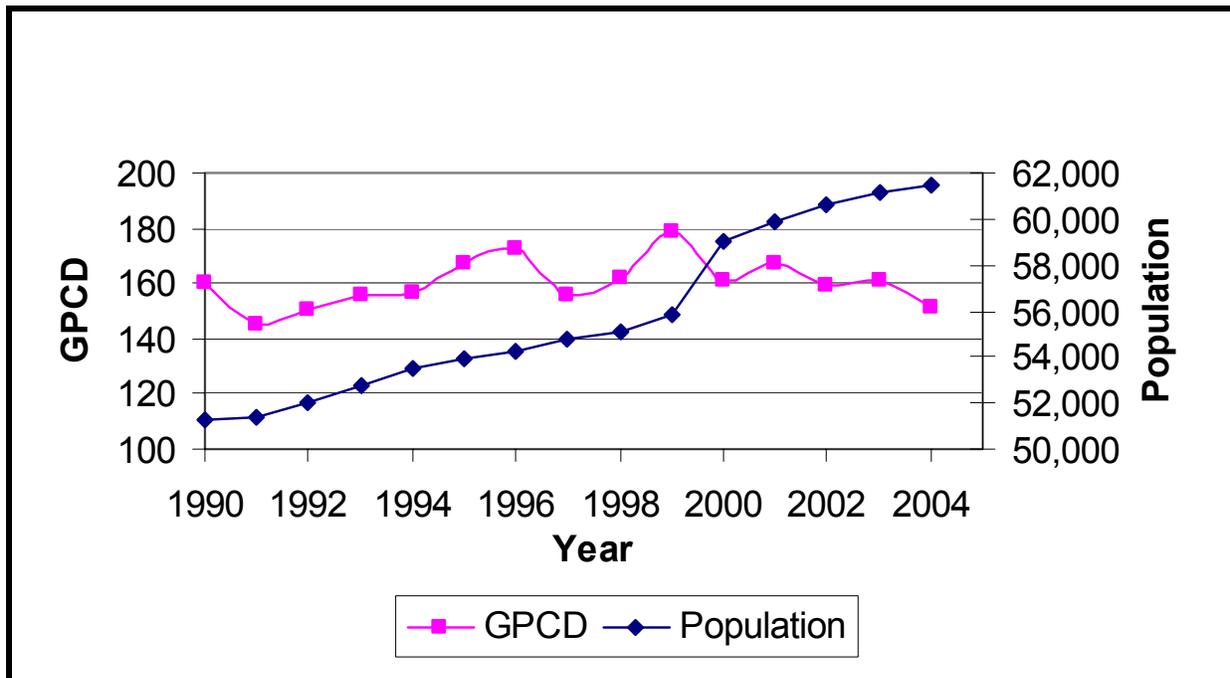


Figure 4.2 – 1: Historic GPCD as a Function of Population

A severe economic recession (from 1991 to 1995) and several years of greater than average rainfall resulted in a sharp reduction in per capita water use. This was also a time in which

many defense related and aerospace industries left the Southern California region. Furthermore, in 1991 the region saw significant water conservation savings as a result of a massive public education/information campaign on the impact of the drought. During this period (1991 to 1995), per capita use averaged about 152 GPCD for La Habra. The dip in per capita use around 1997 was due to an El Nino rain event. The implementation of long-term water use efficiency measures is credited with reducing per capita use, presently averaging around 160 GPCD.

#### 4.2.2 Projected Water Demand

Summarized in Table 4.2 – 2: Projected Per Capita Water Consumption are projected values for water consumption in measures of both gallons per day (GPD) and acre-feet per year (AFY). While historical data for La Habra was recorded in terms of the fiscal year, projections for this UWMP are provided for the calendar year to ensure consistency with regional plans. Projections were prepared based on a population projection study prepared by California State University, Fullerton (available in Appendix I), and the average gallons per capita day water use calculated in Table 4.2 – 1: Historic Per Capita Water Consumption.

Table 4.2 – 2: Projected Per Capita Water Consumption			
Year	Population	Gallons Per Day	Acre Feet Per Year
2005	62,496	10,011,639	11,213
2010	65,773	10,536,603	11,801
2015	67,256	10,774,175	12,067
2020	68,055	10,902,172	12,210
2025	68,481	10,970,415	12,287
2030	68,576	10,985,634	12,304

Figure 4.2 – 2: Projected Water Use as a Function of Population demonstrates the dependence of water consumption projections on population increases. Discrepancies may appear to exist between the historic trends featured in Figure 4.2 – 1: Historic GPCD as a Function of Population and the projected values. This is attributed to variances in weather, water conservation, and economic stability, which were not factored into the projections.

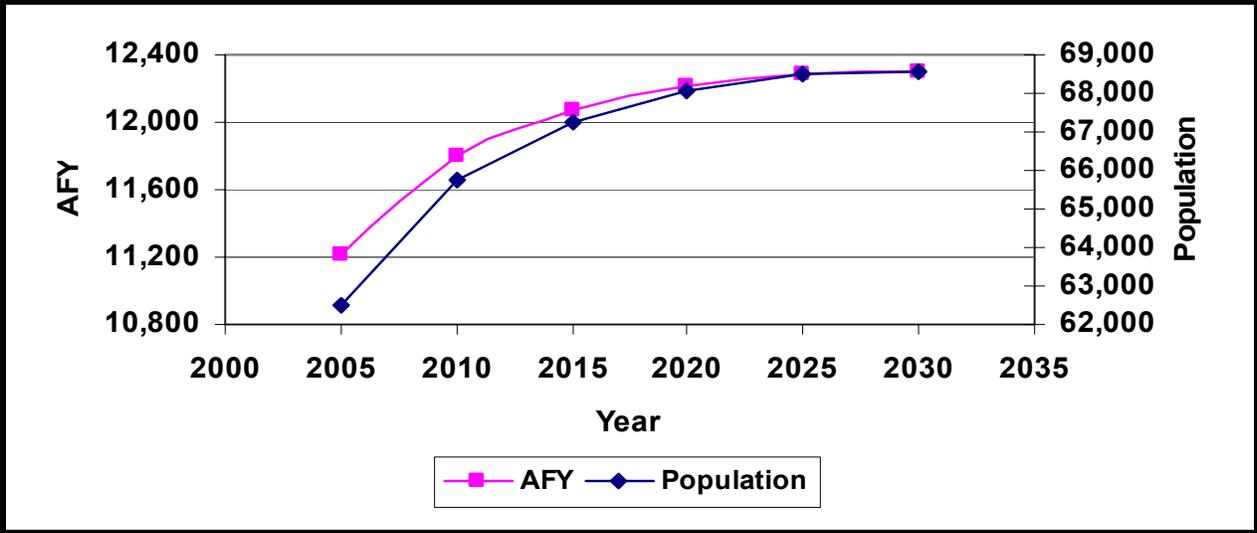


Figure 4.2 – 2: Projected Water Use as a Function of Population

## 4.3 PAST, CURRENT AND PROJECTED WATER DEMANDS

### 4.3.1 Water Use by Customer Type

Table 4.3 – 1: Past, Current, and Projected Water Deliveries below illustrates water deliveries for the City of La Habra. Since La Habra’s billing system does not provide water consumption data based on customer classification, La Habra groups all water usage under the Municipal and Industrial category.

The total metered deliveries varies slightly from the projected per capita water consumption calculations (Table 4.2-2: Projected Per Capita Water Consumption) due to the variances incorporated into the “Water Balance Model” developed by MWDOC. The regional calculations are based on fiscal year projections (using 40% demand during winter months and 60% demand during summer months) and a combination of 83 years of historical hydrology (from 1922 to 2004) to develop estimates of water supply and demand in Orange County over the 25-year planning horizon. Completing the supply and demand calculations on a regional level enables the development of realistic projections. While historical data for La Habra was recorded in terms of the calendar year, projections for this UWMP are provided for the fiscal year to ensure consistency with regional plans. As a result, the demand projections provided in the following table are utilized for the subsequent reliability analysis.

Table 4.3 – 1: Past, Current, and Projected Water Deliveries			
Year	Metered Deliveries Per Water Use Sector (AFY)		Total Metered Deliveries (AFY)
	Municipal & Industrial	Agricultural	
Fiscal Year Ending in June of 2000	11,196	0	11,196
2005	11,272	0	11,272
2010	11,825	0	11,825
2015	12,077	0	12,077
2020	12,213	0	12,213
2025	12,284	0	12,284
2030	12,299	0	12,299

Note: the number of accounts is not available and unmetered deliveries are zero

### 4.3.2 Sales to Other Agencies

Historically, the City of La Habra does not sell water to other agencies. However, the City has emergency interconnections with the City of Brea, CDWC, and the Southwest Suburban System and will supply water to these agencies under existing mutual aid agreements.

### 4.3.3 Additional Water Uses and Losses

The current billing system utilized by the City of La Habra accounts for additional water uses and losses as part of the water demand featured in Table 4.3 – 1: Past, Current, and Projected Water Deliveries, however; unaccounted for water losses average approximately 5% of the total water use (as calculated in the 2002 City of La Habra Water Master Plan).

### 4.3.4 Total Water Use

The total water demand calculated throughout this chapter, including unaccounted for system losses, is summarized in Table 4.3 – 2: Total Water Use (AFY) and Figure 4.3 – 1: Past, Current, and Projected Water Deliveries below.

Table 4.3 – 2: Total Water Use (AFY)							
Water Use	Fiscal Year Ending in June of 2000	2005	2010	2015	2020	2025	2030
Total from Table 4.3 – 1	11,196	11,272	11,825	12,077	12,213	12,284	12,299

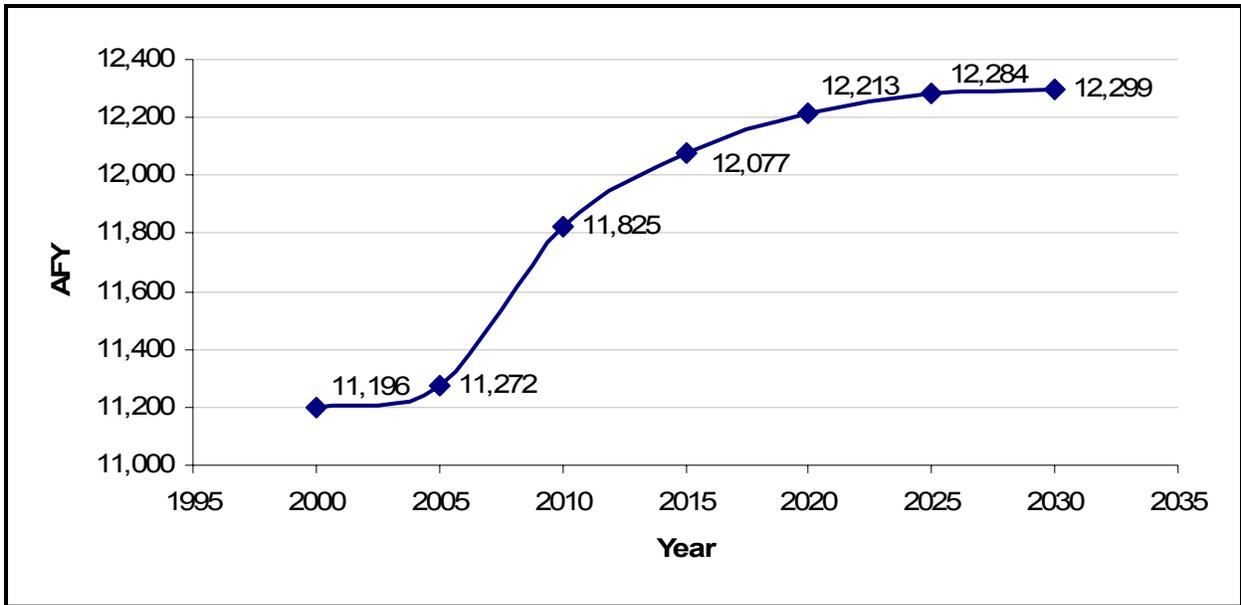


Figure 4.3 – 1: Past, Current, and Projected Water Deliveries