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**SYSTEM DEMANDS**

This chapter describes the baseline (base daily per capita) water use, the interim and urban water use targets, water system demands, water demand projections, and the water use reduction plan.

### **3.1 BASELINES AND TARGETS**

The Urban Water Management Planning Act (UWMPA) requires that the Urban Water Management Plan (UWMP) identify a baseline water demand, urban water use target, and interim urban water use target for the City of Hanford (City).

Law

*10608.20 (e). An urban retail water supplier shall include in its urban water management plan due in 2010 the baseline daily per capita water use, urban water use target, interim urban water use target, and compliance daily per capita water use, along with the bases for determining those estimates, including references to supporting data*

The base daily per capita use is the first step in determining the City's various urban water use targets over the planning horizon. The current per capita use sets the "baseline" on which the urban and interim water use targets are determined. These targets are necessary to judge compliance with the 2020 use reductions set forth in the Water Conservation Bill of 2009.

The baselines are targets summarized in this section apply specifically to the City. The California Department of Water Resources (DWR) allows agencies to participate in regional alliances in which water use baselines and targets are determined regionally, provided certain criteria are met. The City has elected not to participate in such an alliance.

#### **3.1.1 Baseline Water Use**

The first step in developing the baseline water use for the City is determining the applicable range and years for which the baseline average will be calculated. The UWMPA stipulates an agency may use either a 10 or 15-year average to determine their baseline. If 10 percent of total urban retail water deliveries in 2008 were from recycled water, then the agency can use a 15-year average baseline if it chooses. Although the City does recycle its wastewater effluent on agricultural land through contracts with local farmers, the City does not currently use recycled water to offset urban retail water use. For this reason, a 10-year average was used for baseline determination. In addition to the 10-year baseline, a 5-year baseline is also calculated, which was used to establish the minimum criteria for the City's use reduction targets. A summary of the 2008 total and recycled water deliveries, 10-year baseline range, and 5-year baseline range is included in Table 3.1.

<b>Table 3.1 Base Daily Per Capita Water Use: 10 to 15-Year Range (Guidebook Table 13) 2010 Urban Water Management Plan City of Hanford</b>			
<b>Base</b>	<b>Parameter</b>	<b>Value</b>	<b>Units</b>
10 to 15-Year Base Period	2008 total water deliveries	12,741	AFY
	2008 total volume of delivered recycled water	0	AFY
	2008 recycled water as a percent of total deliveries	0.0%	Percent
	Number of years in base period	10	Years
	Year beginning base period range	1995	--
	Year ending base period range	2004	--
5-Year Base Period	Number of years in base period	5	Years
	Year beginning base period range	2006	--
	Year ending base period range	2010	--
<b>Note:</b> (1) "Guidebook Table X" refers to a specific table in the "Guidebook to Assist Urban Water Suppliers to Prepare a 2010 Urban Water Management Plan" by DWR.			

The data used to calculate the 10-year baseline is included in Table 3.2. The UWMPA requires a continuous range with the end of the range ending between December 31, 2004 and December 31, 2010 be used for the baseline determination. As shown in Table 3.2, the City's selected 10-year base period begins in year 1995 and ends in year 2004.

DWR allows agencies that meet certain criteria to deduct certain types of water use, such as recycled water use, industrial process water, and agricultural water. The City does meet the criteria for deduction of industrial process water from its gross water use, based on its status as a "disadvantaged community." However, at this time, the City has opted not to exclude industrial process water from its gross water use, because the per capita water use associated with industrial users is not significant enough to substantially benefit the City's per capita water use target. DWR allows that agencies may revise their per capita water use targets in the 2015 round of UWMPs. The City may reconsider the industrial process water exclusion at that point.

<b>Table 3.2 Base Daily Per Capita Water Use: 10-Year Range (Guidebook Table 14) 2010 Urban Water Management Plan City of Hanford</b>				
<b>Base Period Year<sup>(2)</sup></b>		<b>Distribution System Population</b>	<b>Daily System Gross Water Use (mgd)</b>	<b>Annual Daily Per Capita Water Use (gpcd)</b>
<b>Sequence</b>	<b>Calendar Year</b>			
1	1995	37,400	8.21	220
2	1996	38,150	8.32	218
3	1997	39,300	9.26	236
4	1998	39,900	7.77	195
5	1999	40,350	8.80	218
6	2000	41,450	8.59	207
7	2001	43,000	8.64	201
8	2002	45,300	9.37	207
9	2003	45,800	9.63	210
10	2004	47,800	10.02	210
<b>Base Daily Per Capita Water Use</b>				<b>212</b>
Notes:				
(1) "Guidebook Table X" refers to a specific table in the "Guidebook to Assist Urban Water Suppliers to Prepare a 2010 Urban Water Management Plan" by DWR.				
(2) Based on calendar year.				

The data used to calculate the 5-year baseline is included in Table 3.3. The UWMPA requires a continuous range with the end of the range ending between December 31, 2007 and December 31, 2010 be used for baseline determination. As shown in Table 3.3, the City's selected 5-year base period begins in year 2006 and ends in year 2010.

The City's historical water consumption for the period 1995 through 2010 is shown in Figure 3.1. This figure also depicts the selected 5-year and 10-year baseline values.

### 3.1.2 Target Water Use

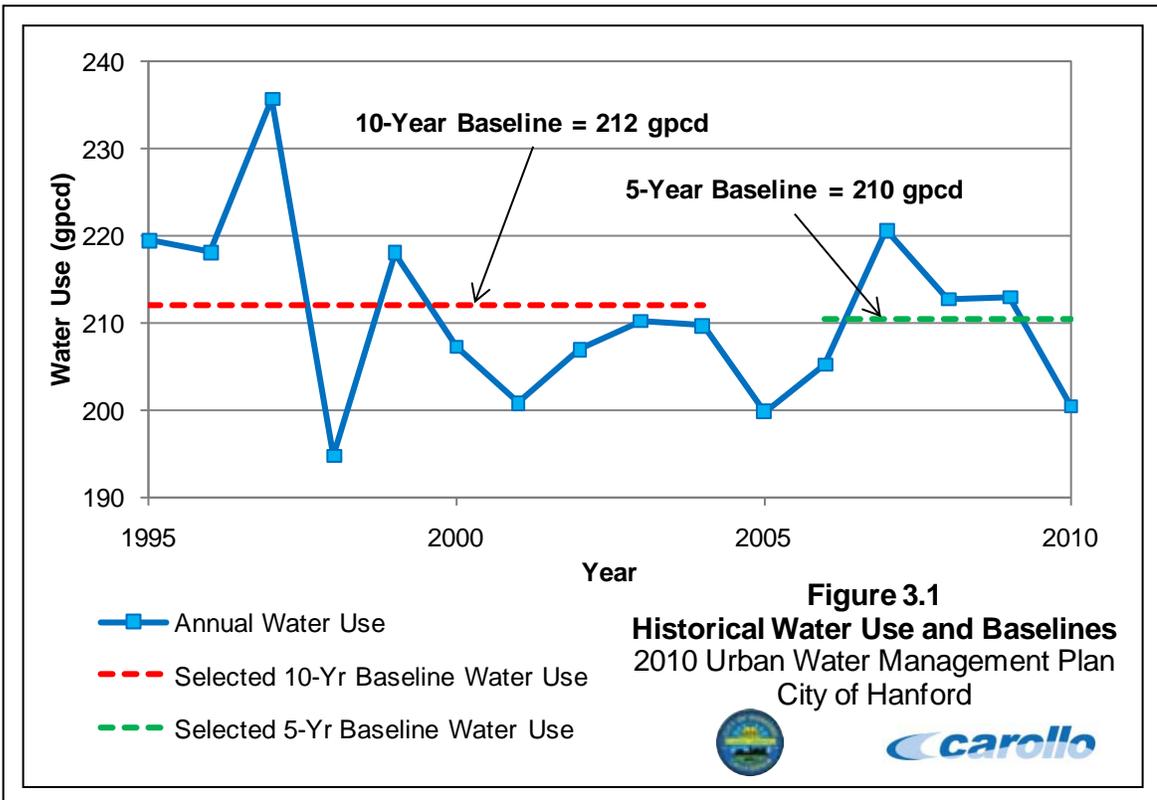
The Water Conservation Act of 2009 (SBx7-7) is the new law governing water conservation in California that was enacted November 2009. This law requires that all water suppliers increase water use efficiency with the overall goal to decrease per-capita consumption within the state by 20 percent. The bill required DWR to develop certain criteria, methods, and standard reporting forms through a public process that can be used by water suppliers to establish their baseline water use and determine their water conservation targets (the UWMPA requires urban water suppliers to determine the urban and interim water use targets for 2020 and 2015, respectively). DWR provided four different methods to establish water conservation targets. These four methods are summarized in this section.

**Table 3.3 Base Daily Per Capita Water Use: 5-Year Range (Guidebook Table 15)  
2010 Urban Water Management Plan  
City of Hanford**

Base Period Year <sup>(2)</sup>		Distribution System Population	Daily System Gross Water Use (gpd)	Annual Daily Per Capita Water Use (gpcd)
Sequence	Calendar Year			
1	2006	50,530	10.37	205
2	2007	52,330	11.54	221
3	2008	53,320	11.34	213
4	2009	53,620	11.42	213
5	2010	54,200	10.87	200
<b>Base Daily Per Capita Water Use</b>				<b>210</b>

Notes:

- (1) "Guidebook Table X" refers to a specific table in the "Guidebook to Assist Urban Water Suppliers to Prepare a 2010 Urban Water Management Plan" by DWR.
- (2) Based on calendar year.



### **3.1.2.1 Method 1 - Baseline Reduction Method**

The 2020 water conservation target of Method 1 is defined as a 20 percent reduction of average per-capita demand during the 10-year continuous baseline period. Based on the daily per capita use of 212 gallons per capita per day (gpcd) determined previously (Table 3.2), the target use for Method 1 is 170 gpcd. The 2015 interim water use target is simply the midpoint of the baseline and the 2020 water conservation target, or 191 gpcd for Method 1 in the City's case.

### **3.1.2.2 Method 2 - Efficiency Standard Method**

The 2020 water conservation target of this method is determined by calculating efficiency standards for indoor use separately from outdoor use for residential sectors, and an overall reduction of 10 percent for commercial, industrial, and institutional (CII) sectors. The aggregated total of the efficiency standards in each area is then used to create a conservation target.

Very few agencies within the State have the data necessary to determine a target water use using Method 2. For this reason, it is not feasible for the City to use this methodology. Specifically, the City lacks the detailed landscaped area estimates to calculate the landscaped area water use.

### **3.1.2.3 Method 3 - Hydrologic Region Method**

This method uses the ten regional urban water use targets for the state. Based on the water supplier's location within one of these regions, a static water use conservation target for 2020 is assigned.

A map showing the California hydrologic regions and 2020 conservation goals is included in the final 2010 UWMP Guidebook. In order to determine the target using Method 3, 95 percent of the region-specific conservation goal is calculated. Based on a 2020 target of 188 gpcd for the Tulare Lake region, the City's Method 3 target is 179 gpcd for 2020. The City's 2015 interim water use target for Method 3 is then calculated to be 196 gpcd.

### **3.1.2.4 Method 4 - BMP Based Method**

There was insufficient data to determine the Method 4 per capita water use target for the City's most advantageous 10-year baseline period (1995 to 2004). The most advantageous baseline period where data was available to calculate the Method 4 per capita water use target was years 2000 to 2009. The baseline per capita water use for this period was 209 gpcd.

Method 4 identifies water savings obtained through identified practices and subtracts them from the base daily per capita water use value identified for the water supplier. The water savings identified that can be used to reduce the base daily per capita water use value include:

- Indoor residential use savings;
- Commercial, industrial, and institutional (CII) savings;
- Landscape and water loss savings; and
- Metered savings.

A discussion of each of these components, and the calculated savings is included below.

- **Residential Indoor Savings.** Since indoor and outdoor water use is delivered through a single meter, an assumption of 70 gpcd has been provided by the DWR for standard residential indoor water use. To determine indoor residential savings, the draft provisional method outlines two methodologies. First, a best management practices (BMP) calculator has been developed to sum the savings for four conservation elements including single and multi-family residential housing toilets, residential washers, and showerheads. Due to insufficient data on the implementation of these water-saving measures, it will not be discussed further or used to assess indoor residential savings for the City. Therefore the City will use what has been termed the “default option” to determine these savings. Based on the provisional method, this default value is 15 gpcd.
- **Commercial, Industrial, and Institutional Savings.** Baseline CII water can be established for the City based on data provided in the City’s DWR Public Water Systems Statistics Sheet for years 2000 to 2009 (the Method 4 10-year baseline period). Based on this data, the baseline per capita CII water use for years 2000 to 2009 is 57 gpcd. The draft provisional method estimates a default value for CII savings of 10 percent. The CII water savings are therefore 6 gpcd.
- **Landscape and Water Loss Savings.** The landscape and water loss water use is determined by subtracting the default indoor water use of 70 gpcd and CII water use of 57 gpcd from the calculated year 2000 to 2009 base line per capita use (209 gpcd). Based on a baseline per capita water use of 209 gpcd, the landscape and water loss use is 82 gpcd. The draft provisional method estimates a default value for landscape and water loss savings of 21.6 percent. The landscape and water loss savings are therefore 18 gpcd.
- **Metered Savings.** Metered savings are considered in addition to the savings attributed to the three sectors previously discussed. Based on the draft provisional method, an estimate of 20 percent is used to determine the savings from full metering of the City’s connections. Based on a volume of 566 million gallons (MG) of deliveries to unmetered connections in 2004 (which is the methodology established by the DWR), the unmetered per capita use was 31 gpcd in 2004. Using the assumed savings outlined in the draft provisional method of 20 percent, savings from metering is calculated as 6 gpcd.

A summary of the Method 4 water use target calculation procedure is shown on Figure 3.2. The City's 2020 target water use is calculated as the baseline water use minus the total savings (residential indoor, CII, landscape and water loss, and meter savings). In the City's case, the total water savings accounts for 45 gpcd, which equates to a 2020 target water use of 164 gpcd in 2020, and a corresponding interim water use target for Method 4 of 187 gpcd in 2015. A summary of baseline water use by sector and individual savings calculated using Method 4 is included in Table 3.4.

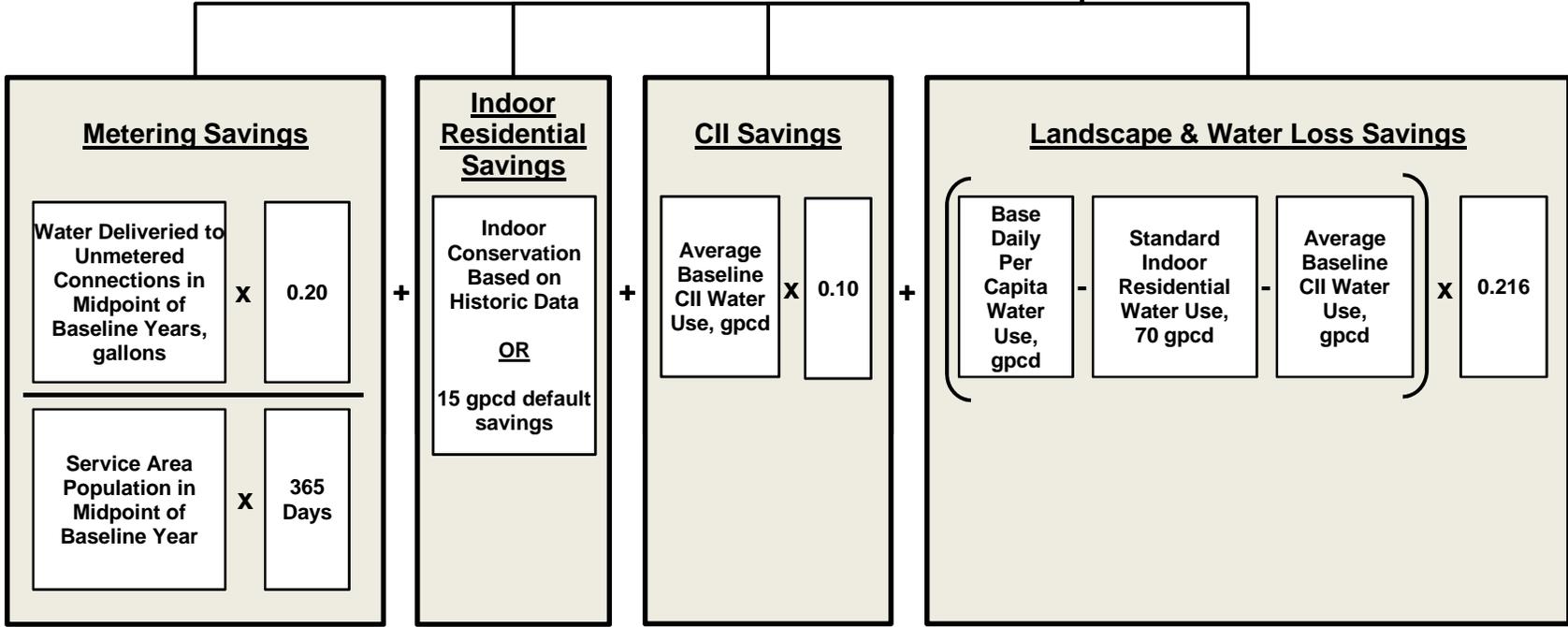
<b>Table 3.4 Method 4 Target Determination Summary 2010 Urban Water Management Plan City of Hanford</b>	
<b>Per Capita Water Use (gpcd)</b>	
<b>Baseline Water Use</b>	
Residential Indoor <sup>(1)</sup>	70
CII	57
Landscape/Water Loss <sup>(2)</sup>	82
<u>Total</u>	<u>209</u>
<b>Water Savings</b>	
Residential Indoor <sup>(3)</sup>	15
CII <sup>(4)</sup>	6
Landscape/Water Loss <sup>(5)</sup>	18
Metered Savings <sup>(6)</sup>	6
<u>Total</u>	<u>45</u>
<b>Method 4 2020 Target Water Use</b>	<b>164</b>
<b>Method 4 Interim 2015 Target Water Use</b>	<b>187</b>
Notes:	
(1) Standard value based on guidelines in provisional Method 4.	
(2) Landscape/Water Loss = Total Baseline Water Use - Residential Indoor Water Use - CII Water Use	
(3) Standard value based on guidelines in draft provisional Method 4.	
(4) CII water savings of 10 percent based on guidelines in provisional Method 4.	
(5) Landscape/water loss savings of 21.6 percent based on guidelines in provisional Method 4.	
(6) Metered savings of 20 percent based on guidelines in provisional Method 4.	

### **3.1.2.5 Minimum Water Use Reduction Requirement**

The final step in determining the applicability of the water use target for the City is to confirm the water use targets meet the minimum reduction requirements as defined by the DWR.

To confirm the target, the 5-year average baseline previously determined (Table 3.3) is used. In order to meet the minimum criteria, the chosen use 2020 target must fall below 95 percent of the 5-year baseline, which for the City is 200 gpcd.

$$\text{Urban Water Use Target (2020)} = \text{Baseline Daily Per Capita Water Use} - \text{Total Savings}$$



**Figure 3.2**  
**Method 4 Target Water Use**  
**Calculation Procedure**  
 2010 Urban Water Management Plan



### 3.1.3 Summary of Baseline and Water Use Targets

Based on the water use targets calculated using the developed methodologies, the City's selected water use target for 2020 is 179 gpcd. Based on the 10-year baseline of 212 gpcd, the 2015 interim water use target is 196 gpcd. This target was determined using Method 3 (Section 3.1.2.3). According to the DWR guidelines, this target is valid since it is less than the target confirmation criteria of 200 gpcd (Section 3.1.2.5).

A summary of the baselines, use targets determined based on the four methods, and the selected use target and interim target are summarized in Table 3.5.

<b>Table 3.5 Baseline and Targets Summary 2010 Urban Water Management Plan City of Hanford</b>								
<b>Baselines (gpcd)</b>		<b>Target Determination Methods (gpcd)</b>				<b>Minimum Reduction Requirement<sup>(4)</sup> (gpcd)</b>	<b>Target<sup>(5)</sup> (gpcd)</b>	<b>Interim Target<sup>(6)</sup> (gpcd)</b>
<b>10-Year<sup>(1)</sup></b>	<b>5-Year<sup>(2)</sup></b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4<sup>(3)</sup></b>			
212	210	170	n/a	179	164	200	179	196

Notes:

- (1) 10-Year Baseline Years: 1995 to 2004
- (2) 5-Year Baseline Years: 2006 to 2010
- (3) 10-Year Baseline Years for Method 4: 2000 to 2009
- (4) Minimum criterion for the Urban Water Use Target is defined as the 95 of the 5-year base daily per capita water use (0.95\*210 gpcd).
- (5) Urban Water Use Target determined using Method 3.
- (6) Interim Urban Water Use Target defined as the average of the 10-year base per capita water use and Urban Water Use Target.

### 3.2 WATER DEMANDS

The UWMPA requires that the UWMP identify the quantity of water supplied to the agency's customers including a breakdown by user classification.

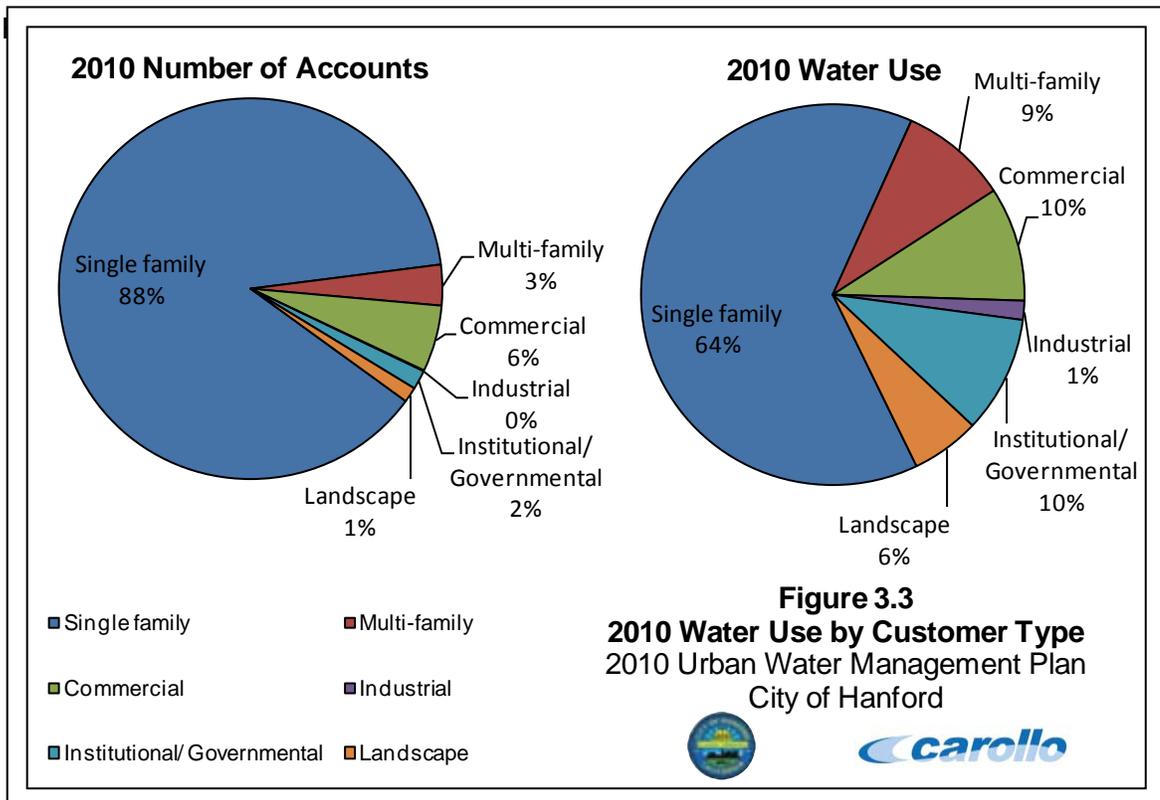
Law

*10631 (e) (1). Quantify, to the extent records are available, past and current water use, and projected water use (over the same five-year increments described in subdivision (a)), identifying the uses among water use sectors including, but not necessarily limited to, all of the- following uses: (A) Single-family residential; (B) Multifamily; (C) Commercial; (D) Industrial; (E) Institutional and governmental; (F) Landscape; (G) Sales to other agencies; (H) Saline water intrusion barriers, groundwater recharge, or conjunctive use, or any combination thereof; and (I) Agricultural.*

*10631 (e) (2). The water use projections shall be in the same 5-year increments to 20 years or as far as data is available.*

10631.1 (a). The water use projections required by Section 10631 shall include projected water use for single-family and multifamily residential housing needed for lower income households, as defined in Section 50079.5 of the Health and Safety Code, as identified in the housing element of any city, county, or city and county in the service area of the supplier.

The City’s water customers include residential and CII groups. Though historically single-family residential and duplex dwellings were on a flat rate without meters, a City ordinance passed in 1976 dictated the installation of meters on all new customers. The City also meters all commercial and industrial users. Figure 3.3 shows the current year 2010 distribution of users along with the distribution of water use.



### 3.2.1 Historical Water Use

The City provides potable water service to its residential, and CII customers within its service area. In 2010, the City produced 3,966 MG or 12,170 acre-feet (af), which is equivalent to 10.9 million gallons per day (mgd) of water servicing a population of approximately 54,200. Table 3.6 lists the historical monthly and annual water production from 1995 to 2010.

Table 3.7 and Table 3.8 summarizes the historical number of connections and associated annual water use by customer type for year 2005 and 2010, respectively.

<b>Table 3.6 Historic Monthly Water Production (1995 - 2010) 2010 Urban Water Management Plan City of Hanford</b>																	
Year	Monthly Water Production (MG)												Annual Water Production			Population	
	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Total Annual (MG)	Average Monthly (MG)	Average Daily (mgd)	Population <sup>(1)</sup>	Per Capita Consumption (gpcd)
1995	138	126	146	205	257	346	401	389	325	280	211	173	2,997	249.7	8.2	37,400	220
1996	150	127	161	222	330	385	419	403	323	240	144	143	3,046	253.8	8.3	38,150	218
1997	131	127	205	271	385	406	438	423	374	295	169	159	3,382	281.8	9.3	39,300	236
1998	149	122	162	168	233	291	392	394	343	262	170	150	2,836	236.3	7.8	39,900	195
1999	144	128	172	210	341	386	423	401	349	289	190	178	3,211	267.6	8.8	40,350	218
2000	154	135	167	247	328	404	420	412	330	230	163	156	3,144	262.0	8.6	41,450	207
2001	144	126	168	205	369	418	411	418	342	274	155	123	3,152	262.7	8.6	43,000	201
2002	123	134	181	277	393	436	473	442	350	283	178	152	3,422	285.2	9.4	45,300	207
2003	153	139	206	221	340	440	496	454	390	326	191	158	3,514	292.8	9.6	45,800	210
2004	144	130	213	323	442	460	506	487	400	266	149	150	3,669	305.7	10.0	47,800	210
2005	153	144	171	253	333	435	522	487	388	314	238	176	3,614	301.2	9.9	49,550	200
2006	170	179	178	193	376	459	496	473	427	350	280	202	3,784	315.3	10.4	50,530	205
2007	195	170	278	336	466	535	560	535	417	311	225	188	4,213	351.1	11.5	52,330	221
2008	176	166	253	345	439	472	523	524	449	375	241	187	4,152	346.0	11.3	53,320	213
2009	177	167	257	367	445	479	561	522	456	319	223	196	4,168	347.4	11.4	53,620	213
2010	171	159	214	251	360	501	561	530	458	361	224	177	3,966	330.5	10.9	54,200	200

Notes:  
 1. Source: California Department of Finance Population Estimates.

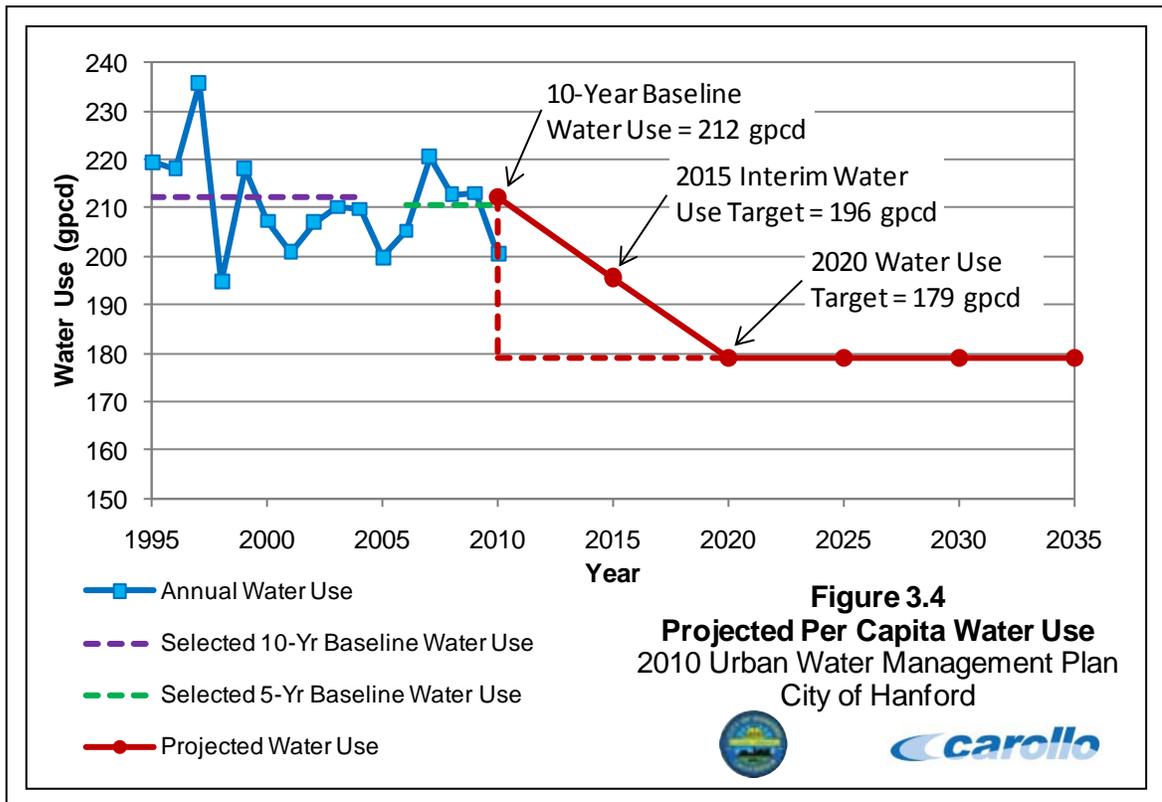
<b>Table 3.7 Water Deliveries – Actual, 2005 (Guidebook Table 3) 2010 Urban Water Management Plan City of Hanford</b>					
<b>Water Use Sectors</b>	<b>2005</b>				
	<b>Metered</b>		<b>Not Metered</b>		<b>Total Deliveries<sup>(2)</sup> (AFY)</b>
	<b># of accounts<sup>(2)</sup></b>	<b>Deliveries<sup>(2)</sup> (AFY)</b>	<b># of accounts<sup>(2)</sup></b>	<b>Deliveries<sup>(3)</sup> (AFY)</b>	
Single Family Residential	10,532	5,617	2,575	1,383	7,000
Multi-Family Residential	466	895	61	118	1,013
Commercial	867	1141	0	0	1,141
Industrial	13	313	0	0	313
Institutional/Governmental	179	924	45	234	1,158
Landscape	134	460	2	7	467
Agriculture	0	0	0	0	0
Other	0	0	0	0	0
<b>Total</b>	<b>12,191</b>	<b>9,350</b>	<b>2,683</b>	<b>1,742</b>	<b>11,092</b>
Notes:					
(1) "Guidebook Table X" refers to a specific table in the "Guidebook to Assist Urban Water Suppliers to Prepare a 2010 Urban Water Management Plan" by DWR.					
(2) Source: 2005 DWR Public Water System Statistics.					
(3) Unmetered deliveries are estimated by water use sector using the unit deliveries for metered customers, and then scaled to match the unmetered water deliveries (total deliveries - metered deliveries). System losses cannot be reliably differentiated from unmetered deliveries to paying customers. For this reason, Unmetered deliveries include system losses.					

<b>Table 3.8 Water Deliveries – Actual, 2010 (Guidebook Table 4) 2010 Urban Water Management Plan City of Hanford</b>					
<b>Water Use Sectors</b>	<b>2010</b>				
	<b>Metered</b>		<b>Not Metered</b>		<b>Total Deliveries<sup>(2)</sup> (AFY)</b>
	<b># of accounts<sup>(2)</sup></b>	<b>Deliveries<sup>(2)</sup> (AFY)</b>	<b># of accounts<sup>(2)</sup></b>	<b>Deliveries<sup>(3)</sup> (AFY)</b>	
Single Family Residential	11,427	5,866	2,430	1,919	7,785
Multi-Family Residential	484	934	59	175	1,109
Commercial	880	1,174	0	0	1,174
Industrial	15	196	0	0	196
Institutional/Governmental	228	1,016	27	185	1,201
Landscape	200	694	2	11	705
Agriculture	0	0	0	0	0
Other	0	0	0	0	0
<b>Total</b>	<b>13,234</b>	<b>9,881</b>	<b>2,518</b>	<b>2,290</b>	<b>12,171</b>
Notes:					
(1) "Guidebook Table X" refers to a specific table in the "Guidebook to Assist Urban Water Suppliers to Prepare a 2010 Urban Water Management Plan" by DWR.					
(2) Source: 2010 DWR Public Water System Statistics.					
(3) Unmetered deliveries include system losses.					

### 3.2.2 Per Capita Consumption

The per capita consumption rate, coupled with the population forecasts provided in Chapter 2, is used for estimating the City's future water requirements, evaluating the adequacy of the supply source, and determining storage needs. The consumption rate is applied to the projected population to yield future water requirements.

From 1995 to 2010, the consumption rate in the City has ranged between a low of 195 gpcd in 1998 and a high of 236 gpcd in 1997. As noted in Section 3.1.1, the City's selected 10-year baseline water use was calculated to be 212 gpcd. Figure 3.4 illustrates the projected per capita water use reduction to meet the City's 2020 water use target.



### 3.2.3 Water Demand Projections

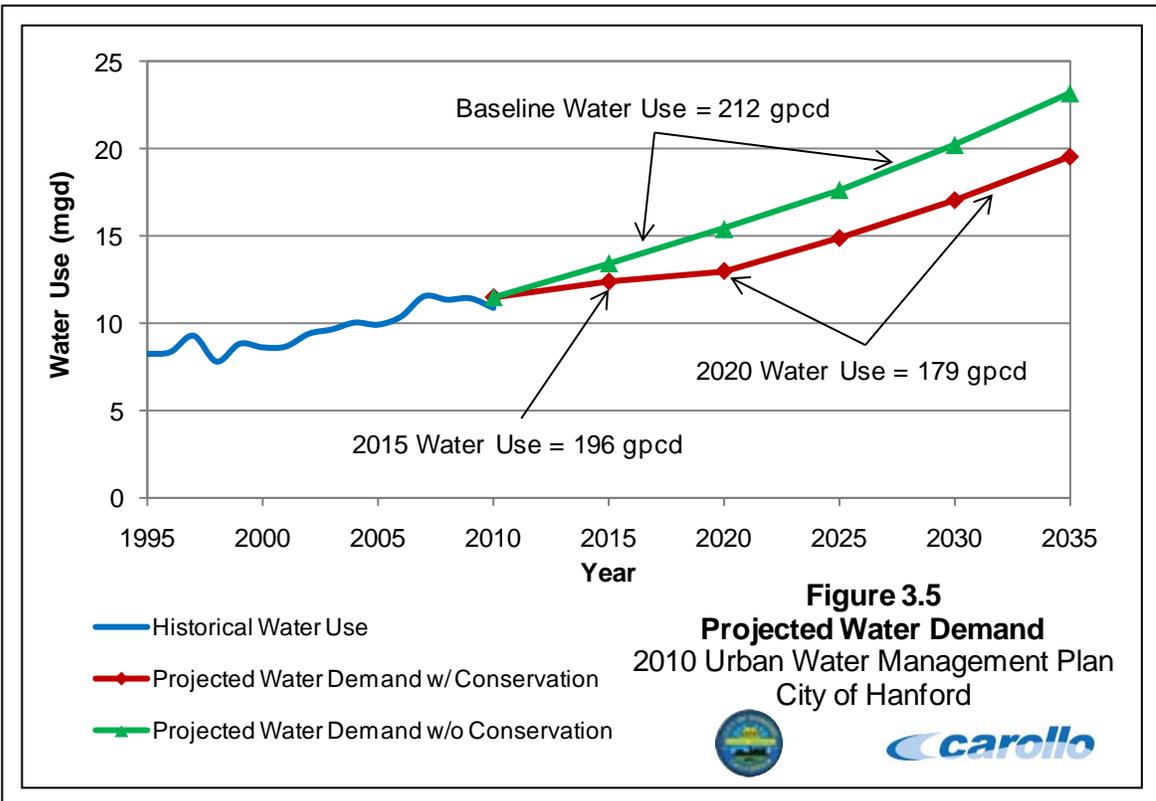
The projected annual water demands for year 2015 were developed by multiplying the projected 2015 population by the City's 2015 interim water use target (196 gpcd). The projected annual water demands for year 2020 and beyond were developed by multiplying the projected population by the City's 2020 water use target (179 gpcd).

Table 3.9 summarizes the projected water demands to meet the City's 2020 water use target. Also included for reference in Table 3.9 is the projected water demand based on the selected 10-year baseline water use. As shown in this table, by meeting its target per capita water use, the City could reduce its year 2035 water use from 23.2 mgd (25,991 AFY) to

19.6 mgd (21,934 AFY). Figure 3.5 provides a graphical representation of the information presented in Table 3.9.

<b>Table 3.9 Projected Water Demands 2010 Urban Water Management Plan City of Hanford</b>					
<b>Year</b>	<b>Distribution System Population</b>	<b>Projected Water Use (mgd)</b>			
		<b>w/ Conservation<sup>(1)</sup></b>		<b>w/o Conservation<sup>(2)</sup></b>	
		<b>(mgd)</b>	<b>(AFY)</b>	<b>(mgd)</b>	<b>(AFY)</b>
2015	54,200	12.4	13,886	13.4	15,062
2020	63,395	13.0	14,563	15.4	17,257
2025	72,633	14.9	16,690	17.7	19,777
2030	83,239	17.1	19,131	20.2	22,670
2035	95,416	19.6	21,934	23.2	25,991

Notes:  
 (1) Demand projections with conservation are based on the City's per capita water use targets for 2015 and 2020.  
 (2) Demand projections without conservation are based on the City's selected 10-year baseline water use.



The projected connections and water demands for each sector from years 2015 to 2035 are summarized in Table 3.10 through Table 3.12. To project the number of connections per sector, it was assumed that the number of connections will grow consistently with the projected water demands.

<b>Table 3.10 Water Deliveries – Projected, 2015 (Guidebook Table 5) 2010 Urban Water Management Plan City of Hanford</b>					
<b>Water Use Sectors</b>	<b>2015</b>				<b>Total Deliveries (AFY)</b>
	<b>Metered</b>		<b>Not Metered</b>		
	<b># of accounts</b>	<b>Deliveries (AFY)</b>	<b># of accounts</b>	<b>Deliveries<sup>(2)</sup> (AFY)</b>	
Single Family Residential	14,588	7,604	1,620	1,279	<b>8,883</b>
Multi-Family Residential	596	1,149	39	117	<b>1,266</b>
Commercial	1,029	1,340	0	0	<b>1,340</b>
Industrial	18	224	0	0	<b>224</b>
Institutional/Governmental	280	1,247	18	123	<b>1,370</b>
Landscape	235	797	1	7	<b>804</b>
Agriculture	0	0	0	0	<b>0</b>
Other	0	0	0	0	<b>0</b>
<b>Total</b>	<b>16,746</b>	<b>12,360</b>	<b>1,679</b>	<b>1,526</b>	<b>13,886</b>

Notes:  
 (1) "Guidebook Table X" refers to a specific table in the "Guidebook to Assist Urban Water Suppliers to Prepare a 2010 Urban Water Management Plan" by DWR.  
 (2) Unmetered deliveries include system losses.

<b>Table 3.11 Water Deliveries – Projected, 2020 (Guidebook Table 6) 2010 Urban Water Management Plan City of Hanford</b>					
<b>Water Use Sectors</b>	<b>2020</b>				<b>Total Deliveries (AFY)</b>
	<b>Metered</b>		<b>Not Metered</b>		
	<b># of accounts</b>	<b>Deliveries (AFY)</b>	<b># of accounts</b>	<b>Deliveries<sup>(2)</sup> (AFY)</b>	
Single Family Residential	17,760	8,676	810	640	<b>9,316</b>
Multi-Family Residential	708	1,269	20	58	<b>1,327</b>
Commercial	1,179	1,405	0	0	<b>1,405</b>
Industrial	20	235	0	0	<b>235</b>
Institutional/Governmental	333	1,375	9	62	<b>1,437</b>
Landscape	270	840	1	4	<b>843</b>
Agriculture	0	0	0	0	<b>0</b>
Other	0	0	0	0	<b>0</b>
<b>Total</b>	<b>20,270</b>	<b>13,800</b>	<b>839</b>	<b>763</b>	<b>14,563</b>

Notes:  
 (1) "Guidebook Table X" refers to a specific table in the "Guidebook to Assist Urban Water Suppliers to Prepare a 2010 Urban Water Management Plan" by DWR.  
 (2) Unmetered deliveries include system losses.

<b>Table 3.12 Water Deliveries – Projected 2025, 2030, 2035 (Guidebook Table 7) 2010 Urban Water Management Plan City of Hanford</b>						
<b>Water Use Sectors</b>	<b>2025</b>		<b>2030</b>		<b>2035 - Optional</b>	
	<b>Metered</b>		<b>Metered</b>		<b>Metered</b>	
	<b># of accounts</b>	<b>Deliveries (AFY)</b>	<b># of accounts</b>	<b>Deliveries (AFY)</b>	<b># of accounts</b>	<b>Deliveries (AFY)</b>
Single Family Residential	21,281	10,676	24,394	12,238	27,968	14,031
Multi-Family Residential	834	1,521	956	1,744	1,096	1,999
Commercial	1,351	1,610	1,549	1,846	1,776	2,117
Industrial	23	269	26	309	30	354
Institutional /Governmental	392	1,647	449	1,887	515	2,164
Landscape Irrigation	310	966	356	1,108	408	1,270
Agriculture	0	0	0	0	0	0
Other	0	0	0	0	0	0
<b>Total</b>	<b>24,192</b>	<b>16,690</b>	<b>27,730</b>	<b>19,131</b>	<b>31,793</b>	<b>21,934</b>

Notes:  
(1) "Guidebook Table X" refers to a specific table in the "Guidebook to Assist Urban Water Suppliers to Prepare a 2010 Urban Water Management Plan" by DWR.  
(2) Water delivery projections include system losses.

### 3.2.3.1 Sales to Other Agencies

To date, the City has made no sales to other agencies, nor does the City anticipate any in the future (Table 3.13).

<b>Table 3.13 Sales to Other Water Agencies (Guidebook Table 9) 2010 Urban Water Management Plan City of Hanford</b>							
<b>Agency</b>	<b>Water Use (AFY)</b>						
	<b>2005</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>	<b>2035</b>
None	0	0	0	0	0	0	0
<b>Total, AFY</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

Note:  
(1) "Guidebook Table X" refers to a specific table in the "Guidebook to Assist Urban Water Suppliers to Prepare of 2010 Urban Water Management Plan" by DWR.

### 3.2.3.2 Other Water Demands

Additional water uses and losses in the City's service area are presented in Table 3.14 below.

<b>Table 3.14 Additional Water Uses and Losses (Guidebook Table 10) 2010 Urban Water Management Plan City of Hanford</b>							
<b>Water Use<sup>(2)</sup></b>	<b>2005</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>	<b>2035</b>
Saline Barriers	0	0	0	0	0	0	0
Groundwater Recharge	0	0	0	0	0	0	0
Conjunctive Use	0	0	0	0	0	0	0
Raw Water	0	0	0	0	0	0	0
Recycled Water	0	0	0	0	0	0	0
System Losses <sup>(3)</sup>	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0
<b>Total, AFY</b>	<b>0</b>						
Notes:							
(1) "Guidebook Table X" refers to a specific table in the "Guidebook to Assist Urban Water Suppliers to Prepare of 2010 Urban Water Management Plan" by DWR.							
(2) Any water accounted for in Guidebook Tables 3 through 7 are not included in this table.							
(3) System losses are accounted for in Guidebook Tables 3 through 7.							

### 3.2.3.3 Total Water Demand Projections

The City's total average annual demands are presented in Table 3.15 below.

<b>Table 3.15 Total Water Use (Guidebook Table 11) 2010 Urban Water Management Plan City of Hanford</b>							
<b>Water Use</b>	<b>Water Use (AFY)</b>						
	<b>2005</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>	<b>2035</b>
Total water deliveries	11,091	12,170	13,886	14,563	16,690	19,131	21,934
Sales to other water agencies	0	0	0	0	0	0	0
Additional water uses and losses <sup>(2)</sup>	0	0	0	0	0	0	0
<b>Total, AFY</b>	<b>11,091</b>	<b>12,170</b>	<b>13,886</b>	<b>14,563</b>	<b>16,690</b>	<b>19,131</b>	<b>21,934</b>
Notes:							
(1) "Guidebook Table X" refers to a specific table in the "Guidebook to Assist Urban Water Suppliers to Prepare of 2010 Urban Water Management Plan" by DWR.							
(2) System losses are accounted for in Table 3.10 to Table 3.12.							

As discussed in the previous sections, the City does not have any plans for delivering urban water for uses other than municipal type uses (e.g., residential, and CII, etc.). For this

reason, there should be no obstacles to the City providing the demand projections presented in Table 3.15 from a technical or economic perspective.

### 3.2.4 Wholesale Water Demand Projections

The UWMP requires retail water agencies that receive wholesale water to report the projected water demand data that was sent to each wholesale agency from which it receives water.

Law

*10631 (k). Urban water suppliers that rely upon a wholesale agency for a source of water shall provide the wholesale agency with water use projections from that agency for that source of water in five-year increments to 20 years or as far as data is available. The wholesale agency shall provide information to the urban water supplier for inclusion in the urban water supplier's plan that identifies and quantifies, to the extent practicable, the existing and planned sources of water as required by subdivision (b), available from the wholesale agency to the urban water supplier over the same five-year increments, and during various water-year types in accordance with subdivision (c). An urban water supplier may rely upon water supply information provided by the wholesale agency in fulfilling the plan informational requirements of subdivisions (b) and (c).*

The City does not currently receive water from a wholesale water agency, nor does it have any plans to do so in the future (Table 3.16).

<b>Table 3.16 Retail Agency Demand Projections Provided to Wholesale Suppliers (Guidebook Table 12) 2010 Urban Water Management Plan City of Hanford</b>							
Wholesaler	Contracted Volume (AFY)	Water Use (AFY)					
		2010	2015	2020	2025	2030	2035
None	n/a	0	0	0	0	0	0
<b>Total</b>	<b>n/a</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
Note: (1) "Guidebook Table X" refers to a specific table in the "Guidebook to Assist Urban Water Suppliers to Prepare of 2010 Urban Water Management Plan" by DWR.							

### 3.2.5 Lower Income Water Demand Projections

Section 10631.1 (a) of the California Water Code requires that retail urban water suppliers include projected water use for lower income single family and multifamily households. Section 50079.5 of the Health and Safety Code defines lower income households as 8 percent of the median income, adjusted for family size.

Table 3.17 projects water demands associated with lower income water users through year 2035. These estimates were generated based on the Kings County 2009 - 2014 Housing Element, which includes lower income household information for the City of Hanford, and

<b>Table 3.17 Low Income Projected Water Demands (Guidebook Table 8) 2010 Urban Water Management Plan City of Hanford</b>					
<b>Low Income Water Demands</b>	<b>Water Use (AFY)</b>				
	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>	<b>2035</b>
Single Family Residential	3,637	3,836	4,417	5,085	5,851
Multi-Family Residential	518	547	629	725	834
<b>Total, AFY</b>	<b>4,156</b>	<b>4,382</b>	<b>5,047</b>	<b>5,809</b>	<b>6,685</b>
Note: (1) "Guidebook Table X" refers to a specific table in the "Guidebook to Assist Urban Water Suppliers to Prepare of 2010 Urban Water Management Plan" by DWR.					

are the City's best estimate of lower income water use at this point. It should be noted that the lower income demand projections presented in Table 3.17 are included in the total water use projections provided in Table 3.10 through Table 3.15.

### 3.3 WATER USE REDUCTION PLAN

The UWMPA requires that retail water agencies develop an implementation plan for compliance with the SBx7-7 water use targets.

Law

*10608.36. Urban wholesale water suppliers shall include in the urban water management plans . . . an assessment of their present and proposed future measures, programs, and policies to help achieve the water use reductions required by this part.*  
*10608.26. Urban retail water suppliers are to prepare a plan for implementing the Water Conservation Bill of 2009 requirements and conduct a public meeting which includes consideration of economic impacts.*

The water conservation targets discussed in Section 3.1.2 will represent a significant effort to reach. As will be discussed in Chapter 6, the savings associated with the demand management measures (DMMs) that the City is currently implementing will likely result in a reduction of water use. In addition, the City plans to implement a residential water survey program (DMM 1), which will result in an additional water savings for the City.

To achieve the necessary amount of water conservation to meet the 2020 per capita water use target, the City should consider the following measures, depending on the actual amount of water savings required:

- **Water Metering.** The City should continue to retrofit existing unmetered water connections with water meters. Installation of water meters on previously unmetered connections will typically result in a significant reduction in water use for these connections. A reasonable goal would be to retrofit all unmetered connections by year 2020, however, State law allows the City until 2025 to become fully metered.

- **Implement Additional DMMs.** If additional per capita water use reductions are necessary after unmetered connections are retrofitted, then the City could consider prioritizing its efforts towards implementing or expanding DMM programs to result in large conservation gains. As discussed in Chapter 6, one DMM that could be promising is DMM 3 - System Water Audits, Leak Detection, and Repair. Currently, the City has partially implemented this DMM. The City could consider the full implementation of this DMM if deemed necessary to help the City meet its 2020 per capita water use target. Other DMMs could also be considered as needed.
- **Adjust Water Rates.** If the above actions do not result in sufficient water savings to meet the 2020 per capita water use target, the City could also consider adjusting its water rates in order to encourage additional conservation. This would likely include the implementation of a tiered water rate structure, in which customers are charged a base rate per 100 cubic foot up to a specified amount. Water use in excess of that amount would be billed at a higher rate.