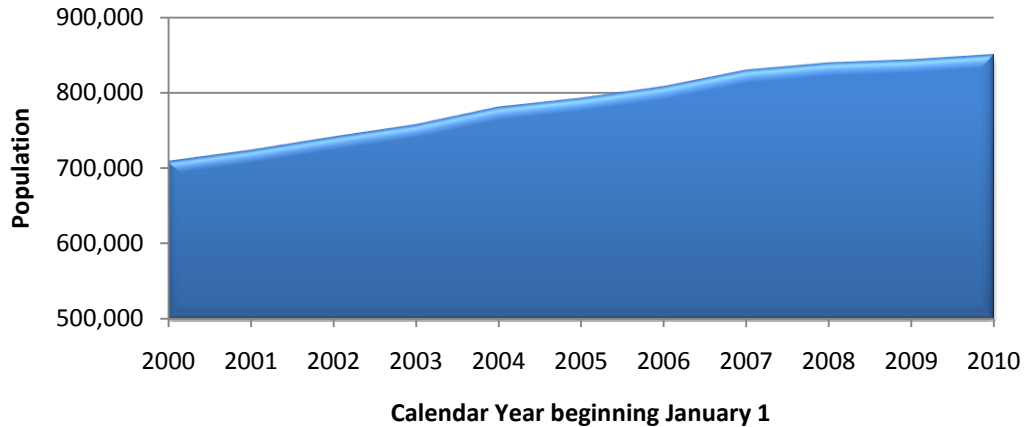


CHAPTER 2 – POPULATION, LAND USE & WATER USE TRENDS

2.1 PAST POPULATION

IEUA's service area experienced rapid growth over the past ten years (see Figure 2-1). In 2000, the population within the service area was approximately 700,000 people. By 2005, the area had grown to a population of about 800,000, and by 2010 to 850,000. This means that in ten years the population has grown at an average annual increase of 1.8%. Roughly 85% of this population growth (about 150,000 people) occurred between 2000 and 2007.

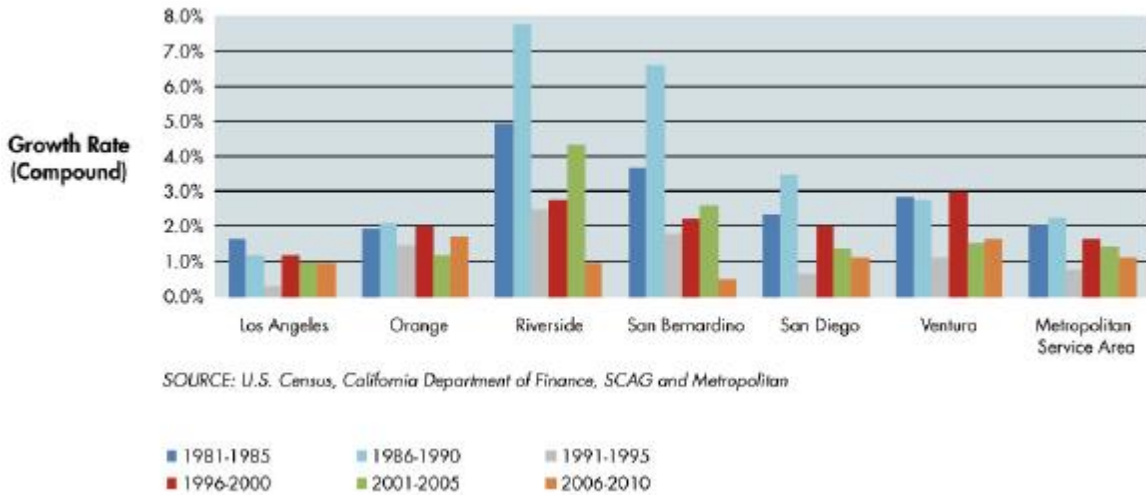
Figure 2-1
2000-2010 Population within IEUA's Service Area



Source: State of California, Department of Finance, E-4 Population Estimates for Cities, Counties and State, 2000 - 2010, with 2000 Benchmark. Sacramento, California, April 30, 2010.

Historically within MWD's service area, San Bernardino and Riverside Counties have increased at the fastest rates. However, the rate increases significantly dropped during 2006 – 2010, evidence of the effect of the housing bust and the economic recession of the late 2000's (Figure 2-2). IEUA's service area experienced one of the highest and one of the lowest growth rates within the past ten years. 2000 – 2007 being the high growth years averaged about 2.5%/year. 2008 – 2010 being the low growth years averaged about 0.5%/year.

Figure 2-2 – Average Annual Population Growth Rates in Metropolitan’s Service Area



The most populated cities within the IEUA service area are the cities of Fontana (190,356), Rancho Cucamonga (178,904), and Ontario, (174,536) as shown in Table 2-1. Over the past five years, the cities which experienced the most rapid annual growth were Fontana (15%), Montclair (6%) and Chino Hills (6%).

Table 2-1 – Historical Population by Member Agency

Agency	2000	2001	2002	2003	2004	2005
Chino	67,168	67,736	69,152	70,850	75,865	77,926
Chino Hills	66,787	68,545	71,394	73,211	76,584	77,699
Ontario	158,007	159,461	163,275	166,169	168,322	170,111
Upland	68,393	69,338	70,929	72,030	72,880	73,580
Rancho Cucamonga	127,743	133,092	139,904	149,175	157,346	163,880
Fontana	128,928	133,067	140,000	146,201	155,160	159,770
Montclair	33,049	33,431	34,065	34,406	34,810	35,474
Unincorporated	58,125	58,227	51,610	44,488	38,777	33,066
Total³	708,200	722,897	740,329	756,530	779,744	791,506

Agency	2006	2007	2008	2009	2010
Chino	79,795	81,165	82,481	84,053	84,742
Chino Hills	77,719	78,307	78,465	78,597	78,971
Ontario	170,567	171,911	172,608	172,908	174,536
Upland	73,860	74,823	74,668	74,914	76,106
Rancho Cucamonga	172,360	173,999	175,706	177,051	178,904
Fontana	164,933	180,809	187,324	188,712	190,356
Montclair	35,532	36,455	36,790	36,905	37,535

Unincorporated	32,053	31,040	30,026	29,013	28,000
Total³	806,819	828,509	838,068	842,153	849,150

Note: Population for the Unincorporated area for years 2005-2010 are estimates.

2.2 LAND USE TRENDS

In 1950, when IEUA was formed to distribute imported water supplies, the majority of the lands within its service area were used for field crops, citrus and vineyards. Urban areas constituted less than 8% of the total land use within the Chino Basin.

With its growing population, IEUA's service area has urbanized substantially since 1950. As shown in Figures 2-3 a-d, the agricultural lands located in the northern and central portions of the Chino Basin have been largely converted to residential, commercial and industrial uses. As of 2001, the total urban area within the Chino Basin had increased by 652% (from 12,300 acres to almost 80,000 acres) while agricultural lands (including dairies) had decreased by 51% (from 132,000 acres to 64,000 acres). Urban areas now constitute about 55% of the total land use within the Chino Basin.

Figure 2-3 a. 1990 Land Use in the Chino Basin Area

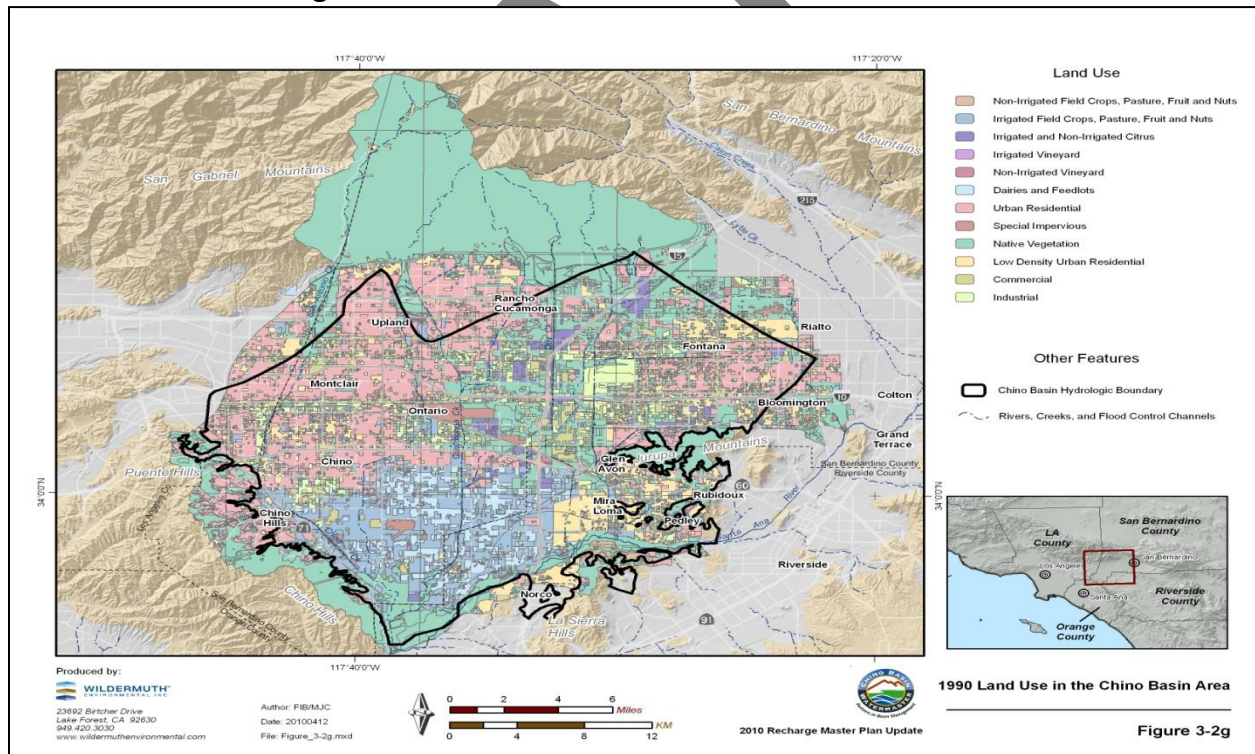


Figure 2-3 b. 2000 Land Use in the Chino Basin Area

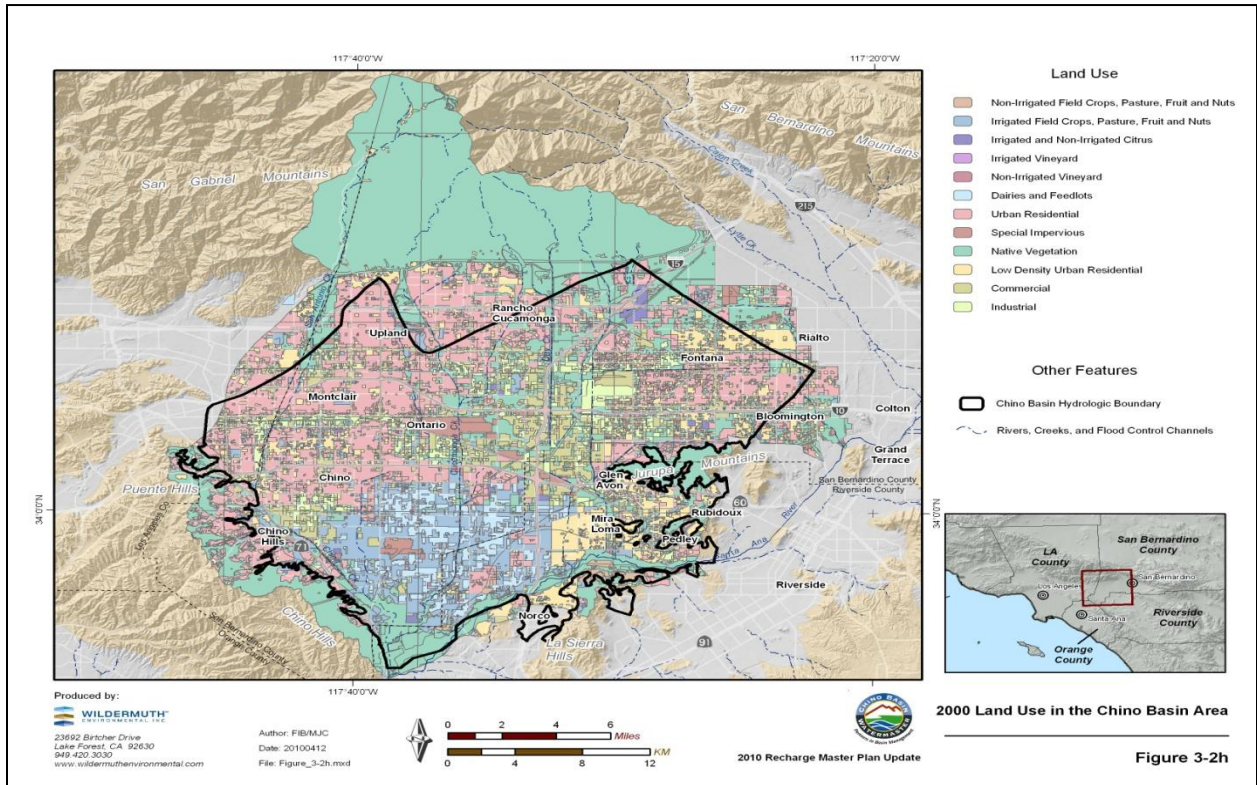


Figure 2-3 c. 2006 Land Use in the Chino Basin Area

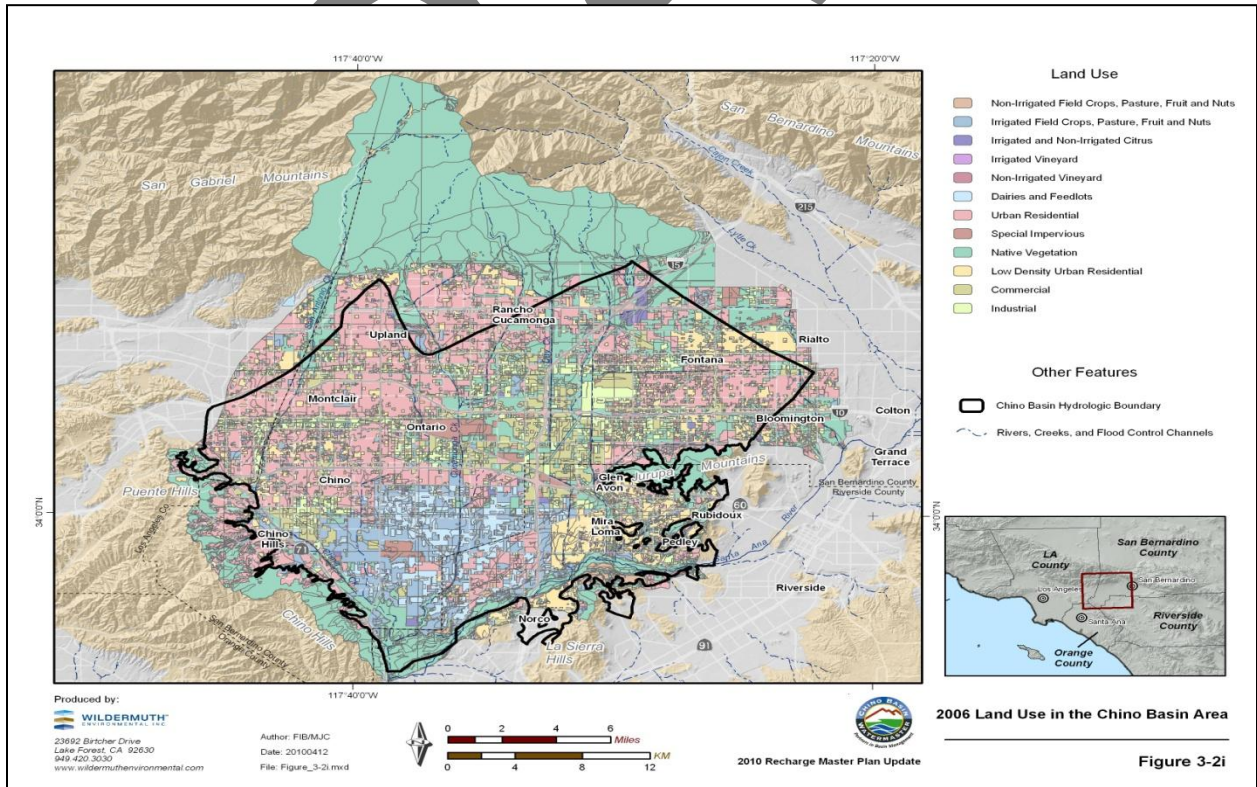
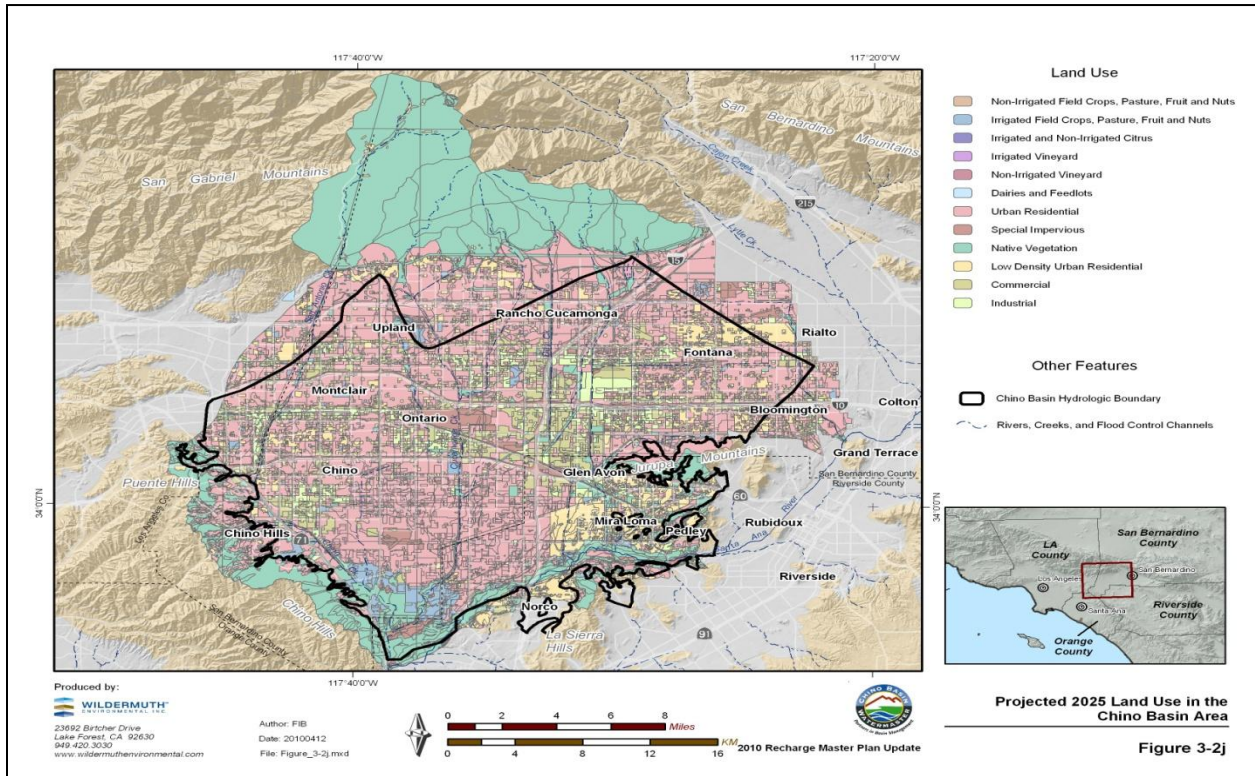


Figure 2-3 d. 2025 Projected Land Use in the Chino Basin Area



Anticipating the continued growth within IEUA’s service area, the cities of Ontario and Chino have annexed dairy and other agricultural lands within the southern portion of the Chino Basin with the expectation that these areas will convert to urban uses. Similar annexations of unincorporated lands within the northern basin, particularly in the foothill areas adjacent to the cities of Rancho Cucamonga and Fontana are taking place. Many of these areas will become master planned communities, with predominantly single family, multi-family and commercial land uses.

Development in the southern most portion of the Chino Basin will be constrained by the Prado Basin flood plain. Lands below the 566 foot elevation are expected to remain in agriculture, open space or other land uses that are compatible with a potential 100 year flood on the Santa Ana River. While many of the region’s dairies are transferring to other areas of the State or County, a portion of this industry is expected to remain in the Chino Basin.

2.3 FUTURE POPULATION, EMPLOYMENT AND HOUSING

Population

The population within IEUA’s service area is expected to continue to grow over the next twenty-five years, however, when the expected growth actual occurs will depend on how long the current economic recession lasts. The projected population for the area in 2035 is

1,181,975 people (Table 2-2). This represents an increase of almost 350,000 people over the next twenty-five years, with an average annual growth rate of about 1.5%.

Table 2.2 – 2000-2035 Actual & Projected Population by Communities within IEUA’s Service Area

	2000	2005	2010	2015	2020	2025	2030	2035
CHINO	67,168	77,926	84,742	90,737	106,053	121,369	136,686	136,686
CHINO HILLS	66,787	77,699	78,971	81,916	83,636	85,284	86,784	88,284
MONTE VISTA WATER DISTRICT	45,454	49,164	51,471	54,784	57,942	61,045	64,046	66,933
ONTARIO	158,394	172,408	174,536	213,839	246,304	277,799	318,035	358,270
UPLAND	70,393	73,235	76,106	75,200	75,300	75,400	75,500	76,600
RANCHO CUCAMONGA	127,743	163,880	178,904	180,600	183,400	186,300	189,100	192,000
FONTANA	128,928	159,770	190,356	195,373	211,105	226,186	242,344	258,503
SAN ANTONIO	3,238	3,238	3,281	4,290	4,413	4,586	4,600	4,700
Total	668,105	777,320	838,367	896,739	968,153	1,037,969	1,117,096	1,181,975

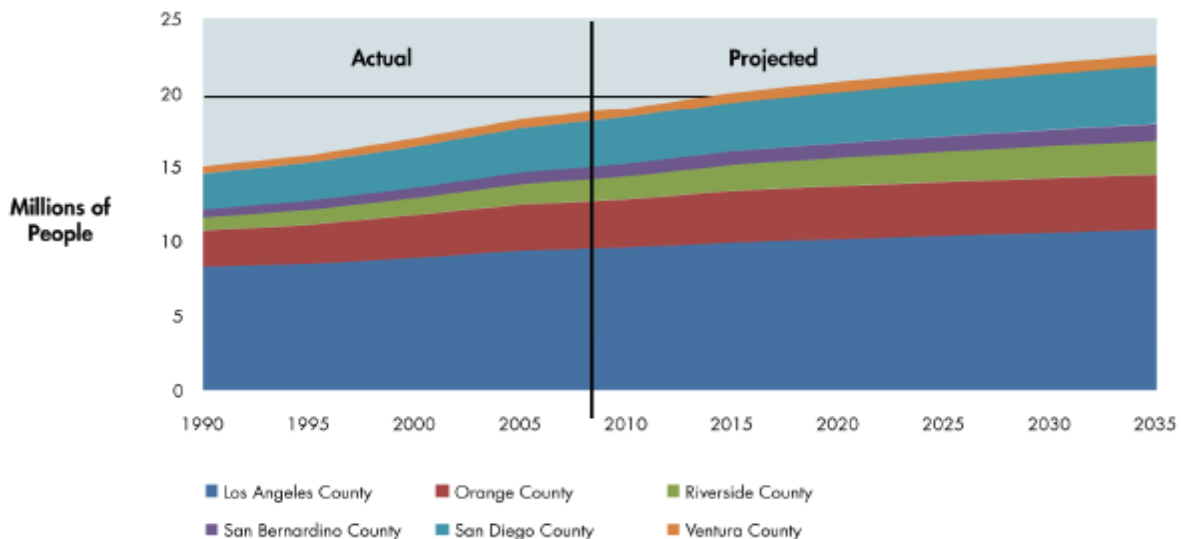
¹Data sources from local agencies UWMPs and Department of Finance data.

²Monte Vista Water District serves Montclair, portions of unincorporated San Bernardino County & the City of Chino.

³Only Rancho Cucamonga populations are shown. CVWD also serves portions of Upland, Ontario, and Fontana; this population is represented under the cities of Upland, Ontario & Fontana.

According to SCAG and SANBAG estimates, the population in MWD’s service area will reach 18.9 million in 2010, 21.4 million in 2025, and 22.5 million by 2035 (Figure 2-4). While Los Angeles County leads in total population, the inland areas of Riverside and San Bernardino counties are projected to grow at the fastest rates over the next ten years. Generally speaking, however, annual growth rates will slow for all counties between 2010 and 2035. In part this is due to changing patterns of migration. It also reflects the effects of the recession of the late 2000’s and the ongoing restructuring of the Southern California economy (MWD’s 2010 RUWMP).

Figure 2-4 Actual and Projected Population (MWD’s 2010 RUWMP)



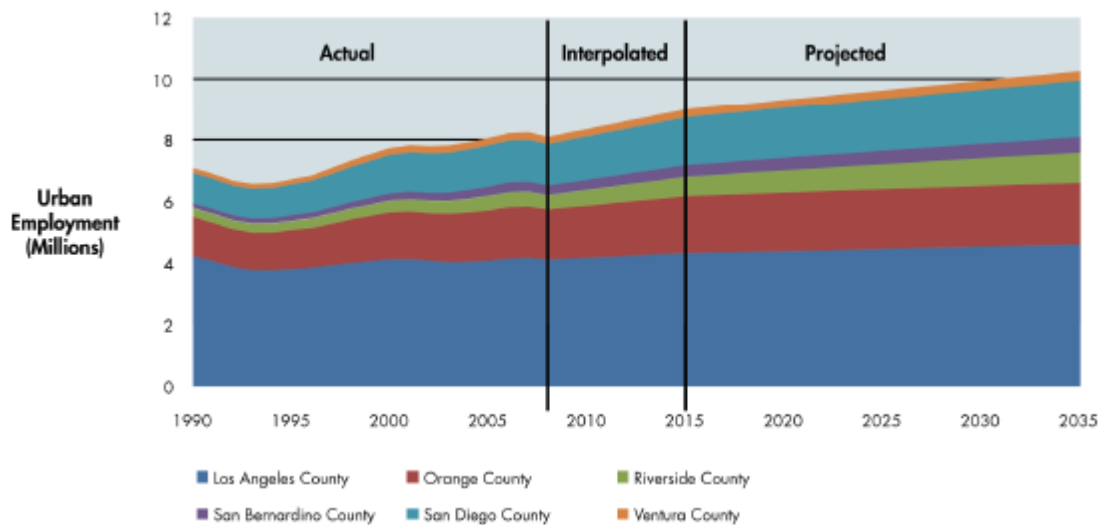
Employment

Economic trends are important drivers of water demand. MWD and IEUA capture economic trends by tracking regional employment growth and the changing mix of industries comprising the Southern California economy.

Unfortunately, regional job growth has slowed again in response to the current economic recession that began in 2007. Southern California suffered more than most regions during this period due to the combination of housing and economic declines occurring during the post-2007 period. Within MWD's service area, employment growth is likely to occur unevenly across the six counties. Over the twenty-five year period between 2010 and 2035, the greatest employment increases are expected to occur in Riverside, San Diego and Los Angeles Counties. However, relative to existing employment, Riverside and San Bernardino Counties are expected to have the highest growth rate for employment (MWD's 2010 RUWMP).

Figure 2-5 summarizes the projected employment growth in each of MWD's six counties. MWD's overall service area is expected to increase by approximately 23% over the next twenty-five years. In comparison, San Bernardino County is expected to increase by over 52% over the same twenty-five year period.

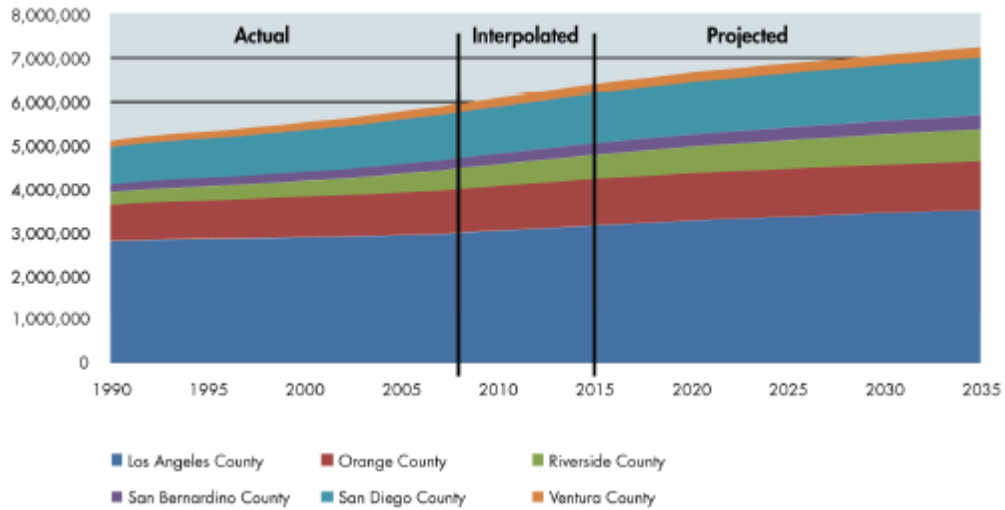
Figure 2-5 Actual and Projected Urban Employment (MWD's 2010 RUWMP)



Residential Housing

Southern California regional planning agencies have forecast residential housing growth in all parts of the MWD service area. The total occupied housing stock is expected to increase more than 19% between 2010 and 2035. In comparison, San Bernardino County is expected to increase by approximately 34% during the same period (Figure 2-6). The effect of economic recessions can clearly be seen over time in conjunction with the fall in housing construction, the most recent occurring in 2007.

Figure 2-6 Actual and Projected Households (MWD's 2010 RUWMP)

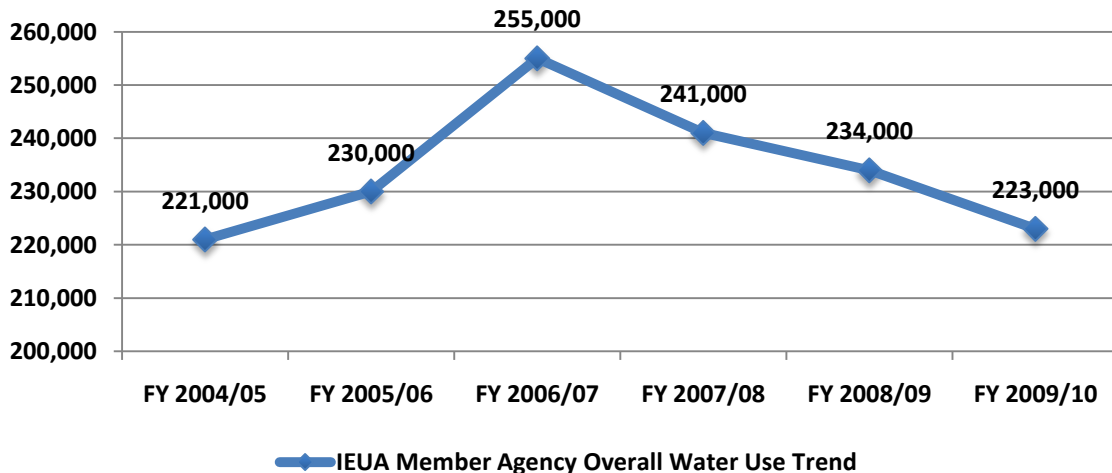


2.4 WATER USE TRENDS

Current Water Demand Trends in the IEUA Service Area

For a third year in a row, water use by the IEUA member agencies has significantly declined. IEUA's member agencies overall water use has decreased approximately 32,000 acre-feet since FY 2006/07 (Figure 2-7). This can be largely attributed to IEUA and its member agencies' public education, water use efficiency programs, ordinance enforcement and the economic downturn.

Figure 2-7 IEUA Member Agency Overall Water Use Trend



The continuing downward trend in overall water use is an excellent indicator of how well the IEUA member agencies have responded to the current water supply challenges including Judge Wanger's Delta Decision which significantly restricted diversions from the Delta, the Governor's declaration of a Statewide Water Emergency, MWD's implementation of a Water Supply

Allocation Plan, MWD's call for stored water under the Chino Basin Dry Year Yield (DYY) Program and MWD's call for both voluntary conservation and implementation of mandatory water conservation ordinances.

In response to these growing water supply challenges, IEUA and its member agencies' have made aggressive efforts to diversify and maximize local resources and water conservation. These efforts have better prepared the service area to cope with the current imported water supply constraints.

- IEUA member agencies continued to implement MWD's water conservation ordinance requirement;
- IEUA member agencies continued to implement mandatory water use restrictions and activated their water supply shortage contingency plans (Water Reduction Stages), consistent with the IEUA Regional Urban Water Management Plan;
- IEUA member agencies successfully complied with MWD's Water Supply Allocation Plan by reducing demands by more than 35,000 AF below that of what was required;
- Over the DYY Program's twelve month period (May 2009 – April 2010) IEUA DYY Program participating agencies successfully pumped 31,047 AF (over 100% of IEUA's obligation of 31,000 AF) from the groundwater storage account and reduced their direct deliveries of imported water by 37,321 AF (over 100% of IEUA's obligation of 31,000 AF);
- The IEUA Recycled Water Program expanded its connected demand to over 32,000 acre-feet/year. IEUA and its member agencies also increased the recycled water usage by over 8,500 acre-feet (over 50%), giving a total of over 24,500 acre-feet in FY 2009/2010 (this includes direct reuse and recharge); and
- The Chino Desalters also continued to maximize production, as they produced just over 25,000 acre-feet, of which IEUA member agencies used approximately 15,000 acre-feet.

To ensure adequate water supplies in the future, IEUA and its member agencies will continue to make aggressive efforts to diversify and maximize local resources and water conservation.

- In coordination with Chino Basin Watermaster, IEUA and its member agencies updated the Chino Basin Recharge Master Plan, summarizing the projected water demands and required recharge facilities and replenishment water needed to meet those demands;
- IEUA and its member agencies developed a Long Term Regional Water Use Efficiency Plan that provides the guidance needed for the development of new cost-effective water use efficiency programs;
- IEUA and its member agencies will continue working towards completing its Recycled Water Three Year Business Plan, which will give IEUA the ability to deliver 50,000 AFY of recycled water; and
- IEUA and its member agencies will continue working towards completing the Phase III expansion of the Chino Desalters, which will increase capacity from 24,600 AFY to 40,000 AFY.

Within the Chino Basin, there are several other key planning documents that use water demand and growth projections to determine when capital improvement projects will be required. For example, IEUA's Ten-Year Capital Improvement Plan and the Chino Basin Groundwater Recharge Master Plan Update both depend on accurate demand projections to develop "trigger-points" for any necessary capital improvement projects.

Urban growth projections and the water demand projections should be developed carefully based on current economic trends and the ongoing efforts within the Chino Basin to reduce potable demand, which is consistent with SB X7-7 and Metropolitan's regional water use efficiency programs. This will ensure that IEUA's 2010 UWMP is consistent with the Metropolitan Integrated Resource Plan (IRP) update, Chino Basin Recharge Master Plan Update and annual Ten-Year Capital Improvement Plan (TYCIP) projected growth and water demand projections.

IEUA staff, as a part of the Chino Basin DYY performance requirements and the Metropolitan Water Supply Allocation Plan (WSAP), is required to document all water use within the IEUA service area (plus the City of Pomona and Jurupa Community Services District).

Below is a summary of the current conditions that have caused more than a 15% (32,000 AF) decrease in overall demand in the IEUA region since FY 2006/07 (the City of Pomona, Jurupa Community Services District and all of Southern California have experienced similar decreases in demand).

- In FY 2006/07 the highest water demand recorded in the IEUA region occurred;
 - It was the hottest/driest year on record;
 - It was the last year there was substantial growth in the Chino Basin;
 - Judge Wanger's Delta decision had not taken effect yet; and
 - It was the year before IEUA's Recycled Water Three Year Business plan was developed and adopted (2007), which resulted in the rapid conversion of potable landscape demands to recycled water landscape demands.
- Since 2007, the economic recession has dramatically caused a slowdown of the housing market which is causing delays in projected new water connections, thus delaying the need for additional water supplies;
- Increased direct reuse of recycled water have reduced demands on "potable supplies" about 10%;
 - Direct reuse of recycled water has increased by almost 6,000 AF since 2007;
- Since 2007, the water use efficiency programs being developed and implemented in response to the continued dry conditions have amassed over 4,500 AF of lifetime savings to date, as well as helped reduce current demand;
- Judge Wanger's Delta decision and its impact on Metropolitan imported supplies;
 - Metropolitan has implemented three consecutive calls on the DYY Program, which will result in the total withdrawal of all water in the DYY storage account (approximately 88,000 AF);

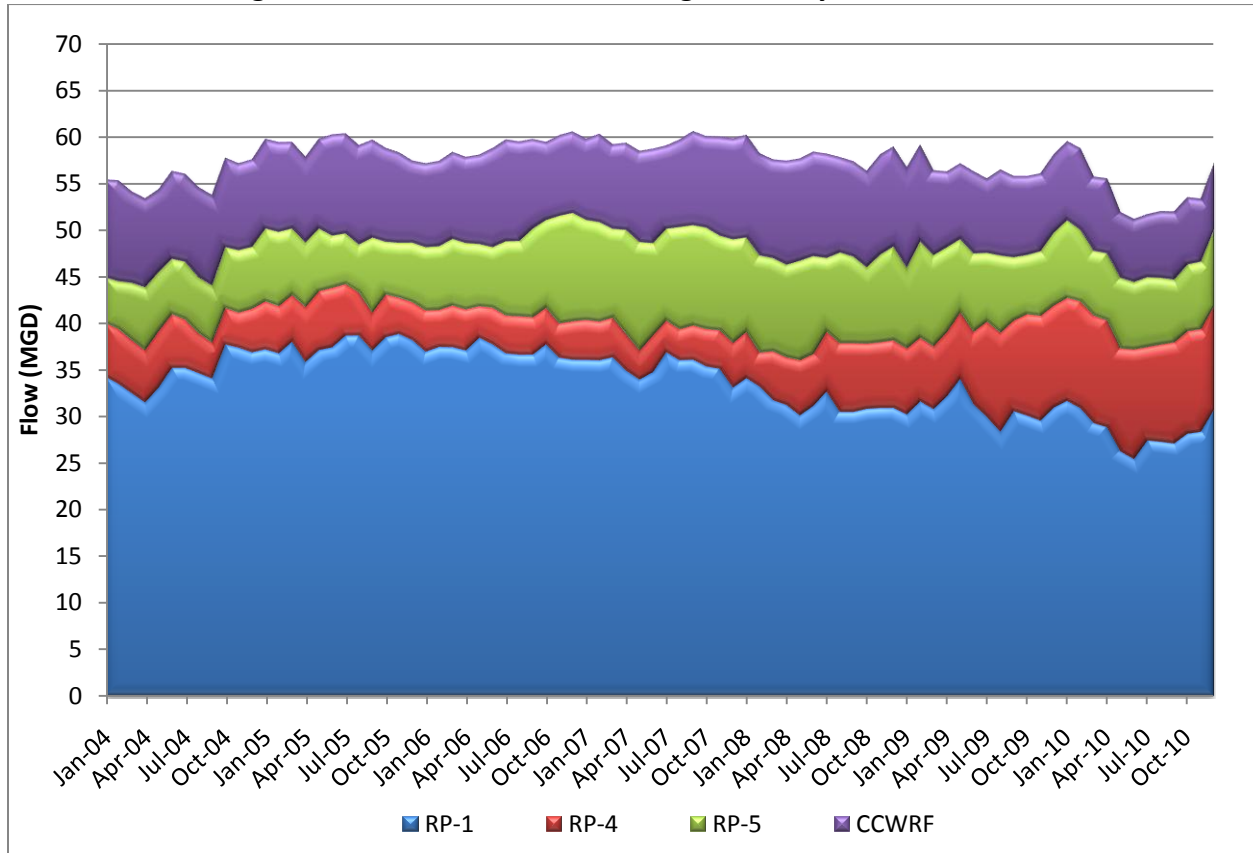
- Metropolitan has implemented two consecutive years of the Water Supply Allocation Plan;
- The Governor's call for a 20% statewide reduction in water use by 2020 has caused;
 - Enhanced conservation messaging, statewide;
 - Lead to the development and implementation of increased water use efficiency programs, such as the Department of Water Resources 20% by 2020 water use efficiency initiative, the State Water Resources Control Boards consideration of regulatory conservation programs and legislation such as SB X7-7;
 - Lead to the development and implementation of drought and landscape ordinances;

Overall water use is down throughout Southern California. In general, retail agencies are reporting that water demand has been reduced during the past few years between 10-20% (Note: LADWP reports that its water use is the lowest in over 31 years, even though it has added over 1 million new residents). Most water utilities attribute reduced demand to three key factors: economic recession, the active implementation water use efficiency programs and the drought message to the public.

One other key data trend that clearly demonstrates lowering retail potable water demands are influent wastewater flows to IEUA's treatment plants (identified in IEUA's FY 2010/11 TYCIP), which indicates that indoor potable water demands are trending down, not up, when taken into consideration with the addition of new development. This data has corroborated with a survey of other wastewater agencies (EMWD, OCSD, LACSD). Effectiveness in recent conservation efforts can be seen on regional wastewater flow trends. In the Chino Basin, IEUA has experienced a reduction in overall wastewater flows, effectively reducing the average daily flow at all the facilities (Figure 2-8).

Other Southern California agencies have observed similar trends in wastewater treatment influent flows. Los Angeles County and Orange County, which are built-out areas, are actually experiencing declines in wastewater flows.

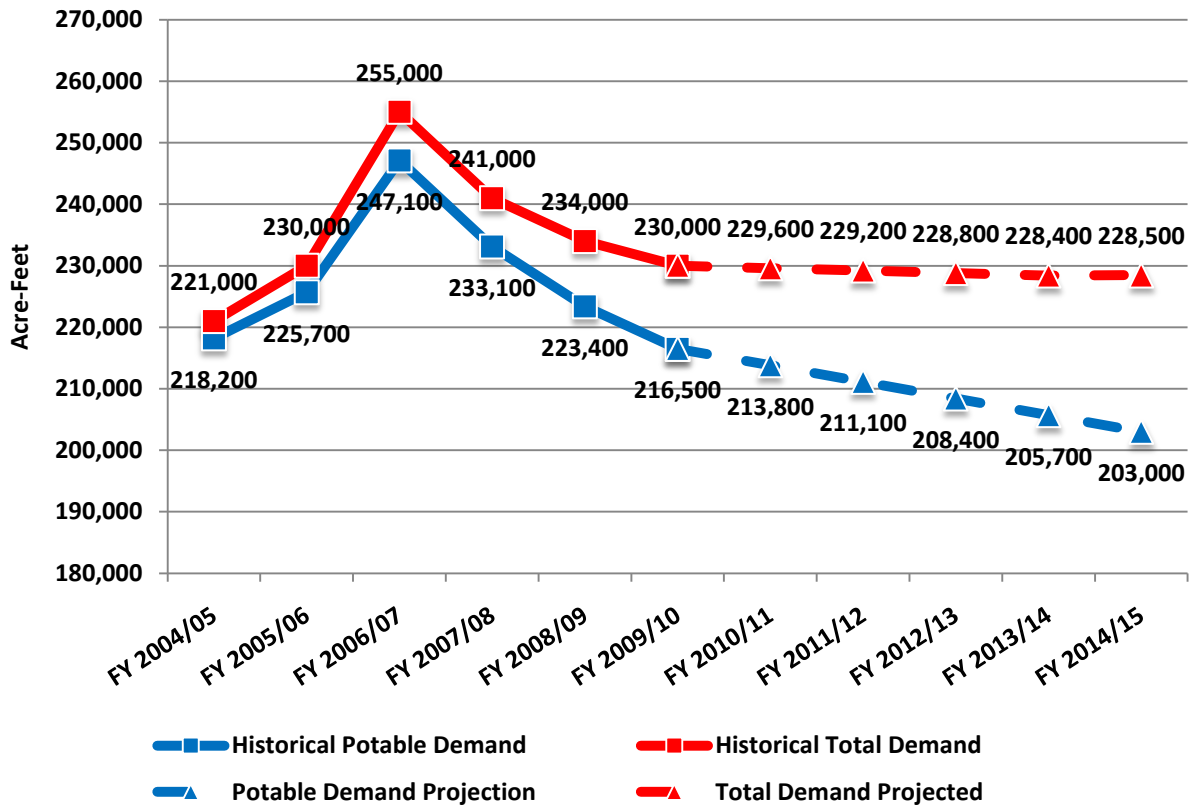
Figure 2-8. IEUA's Historical Average Monthly Influent Flows



Near-Term Demand Projections in the IEUA Service Area

Based on the current demand trends and conditions, IEUA prepared near-term demand projections. Figure 2-9 shows the actual demands within the IEUA service area over the past five years and near-term demand projections for the next five years based upon current demand trends and conditions.

Figure 2-9. Historical Demands & Alternative Demand Projections



The near-term demand projections, in Figure 2-9, show overall water demands “flat-lining” over the next five years. However, potable demands are shown to be decreasing over the next five years by 6-7% due to the increase in recycled water and the current trends mentioned previously. The alternative near-term demand projections are based on the following assumptions:

- Desalter water remains constant at 15,000 AFY, with an increase of 3,500 AFY in 2014 for the City of Ontario from the CDA Phase II Expansion;
- Surface water purchases/pumping remains constant at 30,100 AF;
- Other groundwater basin pumping remains constant at 31,700 AF;
- Recycled water direct reuse increases from 13,500 AF to 25,500 AF (this does not include recycled water delivered to Reliant (1,000 AF), San Bernardino County (1,500 AF) or IEUA (3,500 AF) giving a total of approximately 31,000 AF of direct reuse in 2015)
- Imported water purchases are essentially flat-lined due to Metropolitan’s implemented Water Supply Allocation Plan (Level 2), which means IEUA can expect approximately 68,000 AF of purchases each year as retail agencies are hesitate to “leave any water on the table” due to the uncertain future of imported water availability; and
- As a result of the above assumptions, Chino Basin groundwater pumping decreases from 77,000 AF to 60,000 AF.

The key drivers that support the assumptions listed above are as follows:

- The projections provided by the retail agencies are planned on being used for various purposes, such as their 2010 UWMP's and General Plans. These Plans have very distinct and different purposes and may not align appropriately with the purpose of the Chino Basin Groundwater Recharge Master Plan Update;
- The projections provided by the retail agencies do not appear to take into account the current demand trends;
- There are no signs that the economic recession will result in significant new residential or commercial development in the next few years (references: John Husing, Building Industry Association, IEUA's Retail Agencies);
- MWD rate increases will cause a decrease in demand;
- Direct reuse of recycled water is expected to reach 30,000 – 40,000 AF in the next five years;
- State Water Project supplies will be restricted and continue to be uncertain over the next decade;
- Metropolitan's implementation of the Water Supply Allocation Plan will occur often until a solution in the Delta is developed;
- SB X7-7 is law and will require retail agencies to reduce demands by 10% by 2015 and by 20% by 2020;
- IEUA and the retail agencies recently completed a Long-Term Water Use Efficiency Plan, which recommends numerous indoor and outdoor programs that will further decrease demands (approximately 1,000 AFY);
- IEUA and retail agencies have adopted Landscape Ordinances that will further decrease demands;

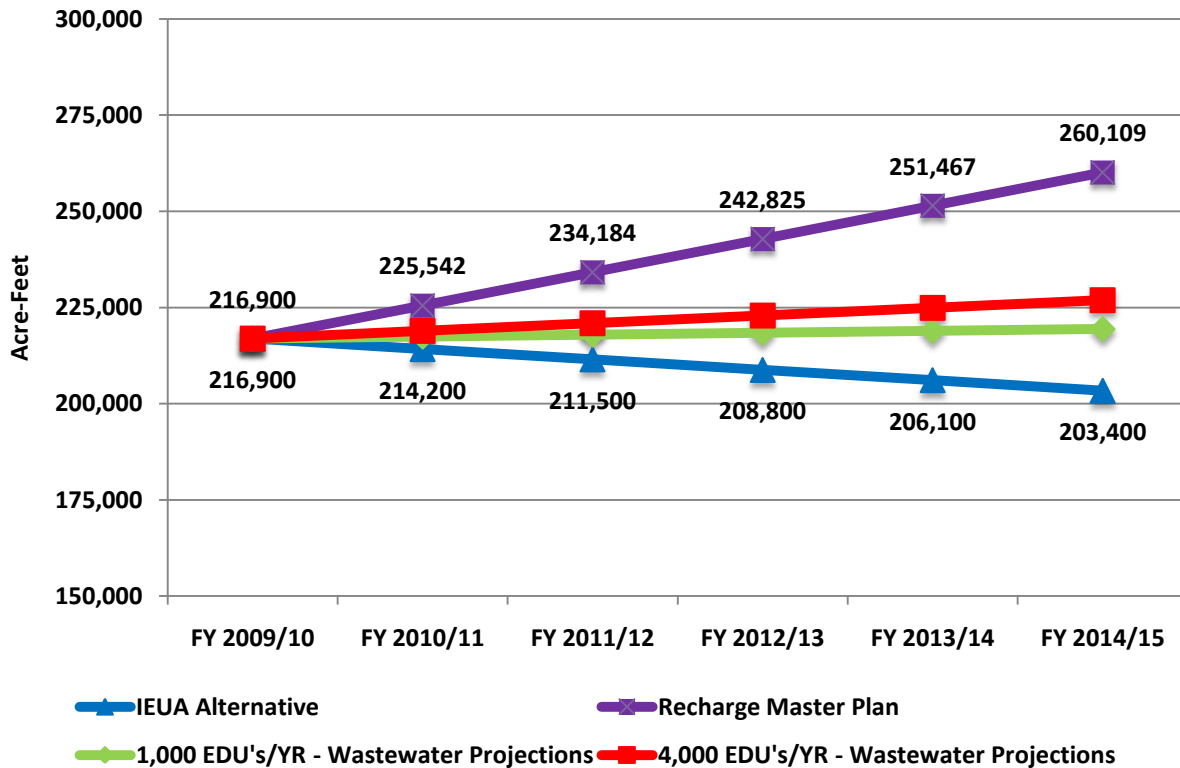
Understanding that these alternative near-term projections are based on assumptions, a sensitivity analysis was also done to estimate a range of possible demand projections. The goal of this sensitivity analysis is to give decision makers a broader range of realistic demand projections to help aid in making expensive decisions on capital improvement projects. This analysis will also be included in the Chino Basin Groundwater Recharge Master Plan Update.

The sensitivity analysis developed included four demand projections, as shown in Figure 2-10. The first demand projection is the alternative near-term demand projections, previously discussed (blue). The second demand projection is the projections used in the Wildermuth Environmental Inc. modeling effort for the Chino Basin Groundwater Recharge Master Plan (purple). The third and fourth demand projections are based on the wastewater projections developed by IEUA and the member agencies (green and red respectively). These wastewater projections represent the range of projected growth that IEUA and the retail agencies believe will occur in the next five years.

These projections were chosen for this sensitivity analysis because: they reflect the current economic and growth trends; they are included in the IEUA FY 2010/11 TYCIP (which was

approved and adopted by the IEUA Board and the Regional Tech Committee); and most importantly these projections are done on an annual basis and is a key component to help accurately identify when wastewater capital improvement projects are needed.

Figure 2-10 Alternative Near-Term Projected Potable Demand Sensitivity Analysis



2.5 PER CAPITA WATER USE

One measure of water efficiency is to estimate the average gallons of water used each day by each individual (gallons per capita daily, GPCD). It is important to note that per capita water use does not necessarily accurately reflect the amount of water actually used by an individual because the estimate includes all categories of urban water use, encompassing residential, commercial, industrial, fire suppression, and distribution system losses. Thus, differences among communities, such as the percentage of residential and non-residential water uses, number and types of housing units, types of businesses, average number of people per household, average lots sizes, income level and climate, can all impact the average amount of water used per capita.

Within MWD's service area, the inland counties of Riverside and San Bernardino account for the greatest levels of M&I per capita water use while the coastal plain counties show lower M&I per capita water use. For example, the overall MWD service area GPCD for 2010 was

approximately 170 GPCD (MWD’s 2010 UWMP). In comparison, the IEUA service area was substantially higher at 215 GPCD (Figure 2-3).

Figure 2-3 IEUA Historical GPCD

Year	Population	Total Demand	Recycled Water Usage	Potable Demand	GPCD
1995	637,000	175,663	4,687	170,976	240
1996	651,040	195,845	3,212	192,633	264
1997	665,080	199,293	2,884	196,409	264
1998	679,120	173,671	1,950	171,721	226
1999	693,160	194,121	3,647	190,474	245
2000	708,200	223,973	6,030	217,943	275
2001	722,897	206,865	3,797	203,068	251
2002	740,329	214,520	4,442	210,078	253
2003	756,530	221,312	4,498	216,814	256
2004	779,744	218,786	5,408	213,378	244
2005	791,506	212,531	5,396	207,135	234
2006	806,819	230,911	8,847	222,064	246
2007	828,509	255,280	13,029	242,251	261
2008	838,068	241,931	13,493	228,438	243
2009	842,153	233,799	13,360	220,439	234
2010	849,150	222,000	17,298	204,702	215

1 Population data is from the Department of Finance.

2 Demands do not include Agricultural demands.

3 Demands come from IEUA member agencies.

(Chapter 4, Water Use Efficiency, goes into detail of how IEUA and its member agencies will comply with new legislation, such as SB X 7-7.)