

## Chapter 6. Comparison of Case Studies and Cross-cutting Issues

### Introduction

This chapter compares features of the three water agencies studied and identifies several issues of concern and cross-cutting issues. Summary features of the three agencies are presented in Table 1. LADWP is a municipal department of the City funded primarily by user fees. It is the largest municipal utility in the country and serves about 4 million people. It owns and manages the Los Angeles Aqueduct, which provides the City with its own imported water supply from the Owens Valley and Mono Lake. Currently, it buys over 50% of its water supply directly from MWD. CVWD is a special district retailer, funded by user fees, which supplies water to close to 200,000 people in the western part of San Bernardino County. It obtains close to 50% of its water from MWD through its water wholesaler, the Inland Empire Utility Agency. Its other water supply sources are groundwater (close to 40%) and surface water (7%). The Water Utility Department in Huntington Beach is a municipal department funded primarily through user fees, which provides services to about 191,000 people. It imports 32% of its water supply from the Municipal Water District of Orange County, its regional supplier, and relies on groundwater sources managed by the Orange County Water District for the remainder of its supplies (68%).

**Table 6.1 Comparison of Water Agency Features**

AGENCY FEATURES	WATER AGENCIES		
	LADWP	CVWD	HUNTINGTON BEACH
<b>TYPE OF INSTITUTION</b>	Municipal Dept. Retailer	Special District Retailer	Municipal Dept. Retailer
<b>RELATION TO MWD</b>	Purchases imported water directly from MWD; 2 <sup>nd</sup> largest MWD customer (after San Diego Co. Water Auth.)	Purchases imported water through an MWD wholesaler—the Inland Empire Utility Agency	Purchases imported water through an MWD wholesaler—the Municipal Water District of Orange County
<b>SIZE</b>	464 sq.mi.	47 sq. mi.	28 sq. mi.
<b>AREA POPULATION 2010</b>	3.81 million Actual	195,317 Actual	191,490 Actual
<b>PROJECTED POPULATION 2035</b>	4,467,560 (projected on a 4.1 million base at an annual growth rate of .4% )	223,855 (projected on a 199,225 population base at an annual growth rate of .5% through 2030, and .4% through 2035	219,690 (14.7% Growth over 25 years—they estimate a 7.3% growth rate over their 204K pop figure for 2010—would yield 13,788 more people)

AGENCY FEATURES	WATER AGENCIES		
	LADWP	CVWD	HUNTINGTON BEACH
<b>WATER SUPPLY PROFILE 2010</b>			
Total Use	546 TAF	58 TAF	29.5 TAF
MWD Imports	52 %	49%	32%
Groundwater	11%	40%	68%
Surface Water	0%	7%	0%
Other	36% LA Aqueduct 1% Recycled	4% Recycled	
<b>WATER SUPPLY PROFILE 2035</b>			
Total Use	710.8 TAF	66.7 TAF	34.66 TAF
MWD Imports	30%	43%	38%
Groundwater	22%	40%	62%
Surface Water	0%	6%	
Other	38% LA Aqueduct 4% Recycled 6% Transfers	11% Recycled	
<b>GROUNDWATER RIGHTS</b>	San Fernando Basin: 87,660 AFY Sylmar Basin: 3,405 AFY + 35% returned water Eagle Rock Basin: 100% of yield (185 AF in 2011) Central Basin: 15,000 AFY West Basin: 1,503 AFY	Chino Basin Fixed: 17,786 AFY Depending on recharge: 2,996 AFY Cucamonga Basin: 15,471 AFY	Varies by year, % of groundwater withdrawals set by OCWD
<b>SURFACE WATER RIGHTS</b>	Owens and Mono Lake but environmental protection issues may restrict increases in supply	Cucamonga Creek: 3.24 mgd Unquantified rights over Day/East Canyon, Deer Canyon, Lytle Creek, Smith Canyon Group, Golf course Tunnel.	None
<b>POPULATION GROWTH 2000-10</b>	3.7 million/ 3.8 million +2.7%	150,857/195.317 +29%	190,978/191,490 +0.3%
<b>LAND USE PROFILE</b>			
Single family	40%	27%	42%
Multi-family	11%	3%	17%
CII	18%	28%	26%
Parks & Open Space	13%	42%	10%
Agriculture		1%	1%

AGENCY FEATURES	WATER AGENCIES					
	LADWP		CVWD		HUNTINGTON BEACH	
<b>WATER USE PROFILE</b> by Use & TAF delivered	No. of Accounts 695K	Amount Delivered 652 TAF	No. of Accounts 49,1K	Amount Delivered 52 TAF	No. of Accounts 52.4K	Amount Delivered 28.9 TAF
Total	69%	38%	92%	55%	84.3%	48%
Single Family	18%	28%	(Single & Multi)	8%	7.9%	21%
Multi-Family	10%	17%		33% CII	4.4%	12%
Commercial	1%	4%	1%		0.6%	2%
Industrial	1%	7%	1%		1.1%	0.5%
Institutional	0%	0%	3%	3%	1.8%	9%
Dedicated Irrig.	0%	1%	3%	1%		2%
Recycled	NA	6%		4%		9%
Unaccounted						
<b>GPCPD</b> 2000	159		299		165	
2005	139		258		145	
2010	128		215		124	
<b>20 X2020 TARGET</b>	138 gpcpd		228 gpcpd		137 gpdpc	
<b>CONSERVATION EFFORTS</b>						
MWD	Full use		Full Use		Full Use	
REG	N.A.		General information		Ordinances, rebates on	
WHOLESALE	Since early 1990s,		about outdoor irrigation		rain barrels, encourages	
OWN	through city ordinances,		potential, education,		gray-water reuse	
	conservation rates,		tiered rates and			
	rebate programs		ordinances			
<b>INDIRECT SATURATION INDICATOR</b>						
% of households moved in the current dwelling after 2000 in 2010:	67.2%		71.3%		54.3%	
<b>MAJOR SECTORS WITH CONSERVATION POTENTIAL</b>	Outdoor irrigation Residential, Indoor and Outdoor CII		Outdoor irrigation Residential, CII Indoor and Outdoor		CII Indoor and Outdoor	
<b>PRICING</b>	2-tier system with adequate price differentials per tier; each tier has different water allotments for single family, multifamily and CII; however, water allotments for single family residential vary with lot size		4 tier system with small difference per tier only for residential and non residential customers and service charge. Tiers and service charge vary according to meter size.		Flat rate and service charge	

AGENCY FEATURES	WATER AGENCIES		
	LADWP	CVWD	HUNTINGTON BEACH
<b>PLANS TO INCREASE SUPPLY</b> Recycling Groundwater recapture Stormwater recharge Desalination	\$600 M \$940 M with US EPA \$110M No	Maximize groundwater usage in accord with watermaster and regional wholesaler and increase use of recycled water.	Not applicable. OCWD is regional water agency that manages groundwater, and recycling. The County imported water wholesaler is MWDOC
<b>FISCAL CONDITION</b>	Good credit rating but new capital projects may require increases in water prices	Good credit rating, but decline of water revenues has impacted the district's fiscal health	Good credit rating with risks related to decline of revenues.
<b>LAST INCREASE IN WATER RATES</b>	2012-2014	2012 - 2014	October 2011
<b>EASE OF INCREASING PRICES</b>	Complicated due to municipal politics	Less difficult for special districts	
<b>CLIMATE CHANGE PLANS</b>	Ambitious plan, including investment in recycling, groundwater, and additional conservation	Relies on MWD plans to address impacts on imported water; identifies surface water source as vulnerable, but no plans to mitigate impacts, instead 2035 plans increase reliance on surface water source	Recognizes that City is vulnerable to climate change, but has no mitigation plans and relies on MWD and OCWD. Instead its projections for water supply in 2035 increase reliance on imported water from current 32% to 38%

### Scale and Institutional Differences

Both CVWD and Huntington Beach have comparable populations, but CVWD serves an area almost twice as large as Huntington Beach. The difference in scale between LADWP and these two agencies is great. LADWP serves an area almost ten times the area of CVWD, and a population 19 times as large as CVWD or Huntington Beach. The water agencies also differ in power and prestige. LADWP has a direct connection and much power within the MWD leadership, with a legendary history of importing its own water through the Los Angeles Aqueduct. In Huntington Beach, the Water Utility is integrated within a larger utility department and is at a second remove from MWD, importing its water through its wholesaler (WDOC), and obtaining its groundwater also through an intermediary special district (OCWD). CVWD is a special water retail district, one of eight clients of its wholesaler. As indicated, reliance on imported water from the State Water Project varies from a high of 52% for LADWP, to a low of

32% for Huntington Beach. Note an important point difference between municipal water agencies and special districts. Municipal agencies, as part of municipal government, can have more influence on the adoption of local land use and building regulations to conserve water. For example, municipal water agencies can influence their city councils to adopt higher level of water conservation measures for new construction through municipal adoption of more stringent voluntary Tier standards than those required by CALGreen Building Standards.

### **Single Family Residential Uses and Water Demand**

Residential uses dominate water demand in the three agencies studied. The amount of water delivered for residential uses varies from 63% for CVWD, 66% for LADWP and 69% for Huntington Beach. Single family households are especially important for estimating future water demand and the potential for conservation. CVWD has the highest percentage of single family residential accounts of the 3 agencies studied 55%, compared to LADWP's 38% and Huntington Beach's 48%. It also has a greater percentage of low density areas. For example, 27% of Rancho Cucamonga's<sup>1</sup> total territory is zoned for single family residential. Of this area, 39% is zoned for very low density, from .1 to 2 dwelling units per acre, 43% for low density, from 2-4 dwelling units per acre, and 18% for medium low density from 4-8 units per acre (Rancho Cucamonga 2012; 2010, p. LU-37).<sup>2</sup> The number of dwelling units per acre or residential density is an important factor in determining outdoor water use (Shandas and Parandvash 2010; Renwick and Green 2000). In general, the larger the lot, or the lower the density, the greater the outdoor water use. Thus, because of the larger lot zoning prevalent in its service area, CVWD has a greater challenge reducing total water use compared to both LADWP and Huntington Beach. On the other hand, its future potential for reducing its per capita use by reducing residential outdoor use will be significant beyond 2020 as outdoor irrigation devices become more efficient and cheaper, and as CALGreen requirements and local landscape ordinances conforming to the State's Model Landscape Ordinance reduce water consumption in new development.

In general, low density development is a major driver of urban water demand. Urban densities, however, are not exogenous drivers, but are the subject of public policy through urban planning and management. A closer integration of urban water management planning and urban planning could provide increased opportunities for water conservation in urban areas.

### **Water Use Trends and 20 x 2020 Targets**

The per capita water use of the three agencies studied dropped over the past five years as a result of the recession and a very wet 2010 year. In establishing their baselines for determining their 20 x 2020 targets, the agencies took advantage of the opportunity to use methods that would

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<sup>1</sup> Rancho Cucamonga makes up most of the CVWD's service area.

<sup>2</sup> This is in contrast to Huntington Beach's zoning, which has primarily one zoning designation for low density, Residential Low Density, where the maximum density allowed is 7 dwelling units per acre (Huntington Beach 2010). The next zoning designation in Huntington Beach is geared to duplexes, townhouses, etc., Residential Medium Density, which allows up to 15 dwelling units per acre.

reduce their per capita 20 x 2020 target for water conservation. SB7x7 allowed 4 different methods to estimate the base year, Method 1 (the most widely used) is too generous. Under this method, the agencies could use the 10 year average of the more convenient 10 years between 1995 and 2010. Agencies appear to have chosen the set of years when water usage was higher to minimize their effort in meeting the target. Had the agencies used 10 year continuous periods that included more recent years, their conservation targets would have been more ambitious. However, in fairness, 2007-2010 were likely years of very low water usage due to the recession. As the economy picks up, by 2020, water customers may return to higher per capita water use. But from the historical records of all the agencies, over the past 15 years, water use, with smaller dips and rises, seems to be steadily declining. This decline is likely influenced by the conservation efforts of water agencies and to the water efficient plumbing and appliance standards implemented since 1994. If these longer trends in water conservation continue then the easy targets set by the agencies will most likely be met and exceeded.

### **Plans for Water Augmentation**

The institutional structure, and the extent of direct or indirect management of resources are important factors in explaining the differences in planned water supply initiatives. LADWP manages directly its own imported water supplies through the Los Angeles Aqueduct and has great influence on its groundwater supplies, and can directly enter into agreements with its sister agency, Los Angeles Sanitation Department for recycling efforts. As a result, it has an ambitious plan for increasing its own water resources and decreasing reliance on MWD by 2035. CVWD, with its own water rights and surface water resource, has plans for a reservoir to increase its surface water yield, and for two new wells to increase its groundwater yield. It does rely on IUEA (its water retailer) plans for increased use of recycled water, and stormwater capture, to decrease its reliance on imported water reliance in the future. Huntington Beach relies on two intermediary agencies to manage imports and groundwater. Its 2010 plan includes a greater reliance on imported waters by 2035.

The case of Huntington Beach illustrates the advantages of intermediary agencies in water supply. Small cities, such as Huntington Beach, clearly benefit from the centralized and professional management of a common groundwater resource by the OCWD. The OCWD determines, on a yearly basis, the safe groundwater yield of the aquifer and apportions the yield among the agencies sharing the water rights. The OCWD has also the resources across the county to develop and manage storm water capture and recycling projects that will benefit the aquifer and the agencies that share the common resource. MWDOC, as the imported water wholesaler is in charge of developing effective water conservation strategies for its member agencies, and can capture economies of scale in administering such programs for its members. It also provides the type of powerful representation on the MWD Board that single municipalities or special districts could not attain. On the other hand, our study of Huntington Beach indicates some shortcomings in its water conservation plans and programs, which suggest the potential disadvantages of its complex institutional setting. For one, Huntington Beach lacks an inclining

block conservation pricing policy. Instead, it relies on a uniform pricing scheme. Second, its UWMP, confident that it will be able to attain its 20 x 2020 target, does not identify new municipal efforts to conserve water or identify specific plans by its intermediary agencies that could reduce its reliance on imported water, and yet its plans call for a significant increase in imported water from MWD by 2035. This suggests that municipal utilities without direct water supply responsibilities may become complacent about conservation.

## **Water Pricing**

LADWP has a robust conservation pricing system, with adequate differential in the pricing of its tier system. However, the inclusion of lot size in the budget allotment for single families provides a partial mixed signal. CVWD's tier system does not have enough of a price differential among the tiers to constitute an effective water conservation pricing system. Huntington Beach applies a uniform rate to all customers, lacking an inclining block rate altogether.

As MWD increased its prices, and as water demand declined due to the recession, combined with the year 2010 being an exceptionally wet year (which reduced the agencies' revenues), the agencies increased their water rates in 2010 or 2011. In order to finance new capital investments for planned additions to their supply sources, LADWP and CVWD may have to increase prices again to maintain high credit ratings. This may be more difficult for water agencies in municipal governments. Although water agencies within municipal governments are mainly funded through user fees and rely on revenue bonds for capital financing, instead of General Obligation Bonds backed by property taxes, increasing water rates can become a contested political issue, as in the case of LADWP. Thus, special districts such as CVWD, although its Board members are elected, do not face the same political spotlight that municipal utilities do, and increasing water rates to fund capital facilities may be more politically feasible for such agencies.

A water agency that adopts a conservation water pricing system can often face the conundrum of a loss of revenues when the pricing scheme succeeds in reducing water consumption, which in turn decreases the revenue base for the agency. For example, CVWD's 2012 budget (p. 5) discusses how the effect of lower demand has made it difficult for the agency to project future revenues and resulted in layoffs of agency. In general, revenue losses due to lower demand, whether caused by recession, lower growth rates than expected, or conservation efforts could discourage agencies from conservation efforts. There is a substantial literature that discusses the potential effect of conservation programs on water agency revenues and identifies ways to address this issue (Beecher et al. 1994; Sanders, Smolen, and Adams 2012). LADWP's conservation pricing system is a good model for other water agencies ((Hall 2009). CUWCC also provides a technical handbook on designing, evaluating and implementing conservation rate structures (Chestnutt 1999).

## **Climate Change**

From a review of the agency UWM plans, only the LADWP plan appears to take climate change seriously and is making an effort to understand the impacts of climate change on the availability of imported water for the State Water Project and the Colorado River Aqueduct. The smaller agencies rely on MWD projections and do not appear concerned with the impacts of climate change in their service area. This increases the dependency of these agencies on MWD.

## **Findings**

### ***Policy Issues Emerging from the Comparison***

- The influence of institutional structure on the range of conservation strategies available for direct implementation to the agencies;
- Single-family residential districts, especially low-density, because of their outdoor water use, are major drivers of urban water demand. Conservation opportunities could be increased through more integrated urban water management plans and urban planning.
- 20 x 2020 targets are likely to be met by water agencies due to the favorable targets set by the agencies, and to the federal water efficiency standards implemented since 1994, and more recent State building standards and landscape regulations for new construction.
- Plans for augmenting water supplies vary by agency and depend on the institutional structure and scale of the agency.
- Water conservation pricing varies among the agencies from robust inclining block structures, to uniform rate. The issue of increasing water prices and the potential effect of conservation on agency revenues may be a concern for some agencies, which may become heightened in the future.
- The incorporation of climate change concerns in agency plans varies by agency, raising concerns about the increasing future vulnerability of smaller agencies to climate change.

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