

# Technical Memorandum

To: Gateway IRWMP Stakeholders  
From: Jennifer Lau, GEI Consultants, Inc.; Bill Bennett, PE, GEI Consultants, Inc.  
Date: July 24, 2012  
Re: Gateway Region Water Balance

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## Summary

This memorandum discusses the development and results of the Gateway IRWMP Region water balance. The water balance was performed using current and projected supply and demand data. The 2010 Urban Water Management Plans from water purveyors in the region were the primary sources of data, with any missing data supplemented by individual water purveyors or calculated data. Analysis of the water balance results revealed that the Gateway Region as a whole will have enough water to satisfy demand through 2030, with about 4% surplus during average years and about 2% surplus during drought conditions. On an individual basis, out of the 30 water purveyors included in the water balance nine water suppliers are expected to be in surplus, 15 water suppliers are expected to break even, and six water suppliers are expected to be in deficit a surplus in 2030. By comparing the individual water purveyors, opportunities can be identified for cooperation and coordination or new water projects.

## Introduction

This memorandum presents the current and future water supply and demand conditions for the Gateway Region. This was done in the form of a water balance by determining how much water is expected to be available or coming into the Gateway Region (supply), and how much water is expected to be used in the Region (demand). The difference between supply and demand is the surplus or deficit. The Gateway Region's water balance analyzes future water supply and demand for both average water year conditions and drought year conditions. Using this technique, a general picture can be formed of the Gateway Region's water needs as a whole for the present and into the future. In addition, the conditions of the water supplies and demands were analyzed for each water supplier within the Gateway Region, allowing for the identification of those water suppliers within the Gateway Region that may be expecting a shortage in future supply and those water suppliers that are in the position to assist when there is a water shortage, thus balancing the entire Gateway Region's water supply and demand volumes.

This memorandum reviews the sources of information, background relevant factors influencing the Gateway Region's water conditions, the water balance methodology and results and conclusions made from the analysis.

## Sources

The 2010 Urban Water Management Plans (UWMPs) for the water suppliers in the Gateway Region provided the primary sources of information used to develop the Gateway Region water balance. According to the Urban Water Management Planning Act (California Water Code §10610 et seq.), an UWMP is required to be prepared every five years by urban water suppliers who have either 3,000 or more connections or provide 3,000 acre-feet or more of water per year to their customers.

For the areas within the Gateway Region not included in an UWMP, information was provided by water suppliers via email or telephone correspondence or gathered from plans and reports produced by water suppliers, including infrastructure annual reports and groundwater replenishment reports. A list of sources is provided in Table 1.

**Table 1 – Gateway Region Water Balance Sources**

| <b>2010 Urban Water Management Plans</b>  |  |
|---|--|
| <ul style="list-style-type: none"> <li>• Bellflower-Somerset Mutual Water Company</li> <li>• California Water Service Company – East Los Angeles District</li> <li>• Central Basin Municipal Water District</li> <li>• City of Cerritos</li> <li>• City of Compton</li> <li>• City of Downey</li> <li>• City of Huntington Park</li> <li>• City of Lakewood</li> <li>• City of Lynwood</li> <li>• City of Monterey Park</li> <li>• City of Paramount</li> <li>• City of Santa Fe Springs</li> <li>• City of South Gate</li> </ul> | <ul style="list-style-type: none"> <li>• City of Vernon</li> <li>• City of Whittier</li> <li>• Golden State Water Company – Artesia</li> <li>• Golden State Water Company – Bell/Bell Gardens</li> <li>• Golden State Water Company – Florence-Graham</li> <li>• Golden State Water Company – Norwalk</li> <li>• Golden State Water Company – Southwest</li> <li>• Long Beach Water Department</li> <li>• Montebello Land and Water Company</li> <li>• Orchard Dale Water District</li> <li>• Park Water Company</li> <li>• Pico Rivera Water Authority</li> <li>• Pico Water District</li> <li>• Suburban Water District</li> </ul> |
| <b>Other Documents</b>  |  |
| <ul style="list-style-type: none"> <li>• City of Bellflower Municipal Water System 2011 Annual Report</li> <li>• Adopted 2012 RTP Growth Forecast, Southern California Association of Governments (SCAG)</li> <li>• Water Replenishment District of Southern California Monthly Production Summary (Acre-feet) for 2004-2010</li> <li>• Gateway Regional Water Conservation Alliance Report, Los Angeles Gateway Region Integrated Regional Water Management Authority, June 2011 (Gateway Alliance Report)</li> </ul>            |  |
| <b>Water Suppliers Contacted</b>  |  |
| <ul style="list-style-type: none"> <li>• Bellflower-Somerset Mutual Water Company</li> <li>• City of Bellflower</li> <li>• City of Compton</li> <li>• City of Downey</li> <li>• City of Huntington Park</li> <li>• City of La Habra Heights</li> <li>• City of Lakewood</li> <li>• City of Maywood</li> <li>• City of Paramount</li> </ul>  | <ul style="list-style-type: none"> <li>• City of Santa Fe Springs</li> <li>• City of Signal Hill</li> <li>• City of South Gate</li> <li>• City of Vernon</li> <li>• City of Whittier</li> <li>• Long Beach Water Department</li> <li>• Orchard Dale Water District</li> <li>• Pico Rivera Water Authority</li> <li>• City of Norwalk</li> </ul>  |

## Setting

There are a number of factors that influence water supply and demand in the Gateway Region, primarily climate and population. The Gateway Region lies in the Southern California Coastal Plain where the climate can be characterized as Mediterranean with cool, wet winters and warm, dry summers. The average maximum and minimum temperatures are 56.6°F and 77.6°F, respectively, and the average rainfall is about

14.5 inches per year. This combination of mild temperatures and low rainfall makes the area popular for residential uses.

The Gateway Region is also susceptible to droughts due to the low annual rainfall and the relatively high evapotranspiration (ETo) rate. Evapotranspiration is the water lost to the atmosphere by evaporation and transpiration and can occur on rivers and lakes, soil, snow, and plants. The average evapotranspiration for the Gateway Region is about 47.2 inches per year.

Table 2 shows the average annual temperatures, rainfall totals, and evapotranspiration totals collected from the 2010 UWMPs for the water suppliers within the Gateway Region.

**Table 2 – Average Annual Climate Information for the Gateway Region**

| <b>Water Supplier</b>   | <b>ETo<br/>Inches</b> | <b>Rainfall<br/>Inches</b> | <b>Minimum Temperature<br/>°F</b> | <b>Maximum Temperature<br/>°F</b> |
|---|-----------------------|----------------------------|-----------------------------------|-----------------------------------|
| Bellflower-Somerset MWC   | 46.3                  | 16.02                      | 55.7                              | 79.1                              |
| CWSC - East Los Angeles   | 49.7                  | 14.8                       | 55.8                              | 74                                |
| Central Basin MWD   | 46.62                 | 15.38                      | 55.7                              | 79.1                              |
| City of Cerritos  | 46.3                  | 12.14                      | 54.8                              | 74.2                              |
| City of Compton   | 46.3                  | 14.86                      | 55.8                              | 74                                |
| City of Downey  | 46.3                  | 14.28                      | 55.7                              | 79.1                              |
| City of Huntington Park   | 51.8                  | 14.86                      | 55.8                              | 74                                |
| City of Lakewood  | 46.3                  | 13.73                      | 54.7                              | 74.3                              |
| City of Long Beach  | Not Given             | Not Given                  | Not Given                         | Not Given                         |
| City of Lynwood   | 49.7                  | 14                         | 55.9                              | 71.8                              |
| City of Montebello  | Not Given             | Not Given                  | Not Given                         | Not Given                         |
| City of Norwalk   | 46.3                  | 15.4                       | 69.4                              | 89.7                              |
| City of Orchard Dale  | Not Given             | 13                         | Not Given                         | Not Given                         |
| City of Paramount   | 46.3                  | 12.15                      | 54.7                              | 74.2                              |
| City of Santa Fe Springs  | 46.3                  | 15.4                       | 69.4                              | 89.7                              |
| City of South Gate  | 46.3                  | 14.34                      | 54.5                              | 83.1                              |
| City of Vernon  | -                     | 15.1                       | 48.3                              | 84.8                              |
| City of Whittier  | 55.1                  | 17.8                       | 54                                | 77                                |
| GSWC - Artesia  | 41.2                  | 11.89                      | 54.8                              | 74.2                              |
| GSWC - Bell/Bell Gardens  | 44.3                  | 14.55                      | 55.7                              | 79.1                              |
| GSWC - Florence-Graham  | 44.2                  | 14.77                      | 55.8                              | 74                                |
| GSWC - Norwalk  | 41.2                  | 14.55                      | 55.7                              | 79.1                              |
| GSWC - Southwest  | 41.2                  | 11.98                      | 55.3                              | 70.2                              |
| Park Water  | 46.3                  | 12.1                       | Not Given                         | 74                                |
| Pico Rivera Water Authority   | 49.7                  | 14.78                      | 58.6                              | 77.5                              |
| Pico Water District   | 49.7                  | 14.78                      | 58.6                              | 77.5                              |
| Suburban Water Systems  | 57.06                 | 14.47                      | Not Given                         | 79.3                              |
| <b>Gateway Region Average</b>   | <b>47.2</b>           | <b>14.29</b>               | <b>56.6</b>                       | <b>77.6</b>                       |
| <b>Notes:</b> <ol style="list-style-type: none"> <li>1. Climate values were collected from each water supplier's 2010 UWMP.</li> <li>2. MWC: Mutual Water Company</li> <li>3. CWSC: California Water Service Company</li> <li>4. MWD: Metropolitan Water District</li> <li>5. GSWC: Golden State Water Company</li> </ol> |                       |                            |                                   |                                   |

The Gateway Region is mostly built out and is not expected to experience significant growth in population. Between the years 2000 and 2010, the Gateway Region has grown about 0.4%, as seen in Table 3. Population forecasts reported in the UWMPs indicate a growth of about eight percent over the next 20 years ending in 2030 (Table 4).

**Table 3 – Historical Population for Cities in the Gateway Region**

| <b>City</b>      | <b>2000</b>      | <b>2010</b>      | <b>Change</b> | <b>Change, %</b> |
|------------------|------------------|------------------|---------------|------------------|
| Artesia          | 16,380           | 16,522           | 142           | 0.9              |
| Bell             | 36,664           | 35,477           | -1,187        | -3.2             |
| Bellflower       | 72,878           | 76,616           | 3,738         | 5.1              |
| Bell Gardens     | 44,054           | 42,072           | -1,982        | -4.5             |
| Cerritos         | 51,488           | 49,041           | -2,447        | -4.8             |
| Commerce         | 12,568           | 12,823           | 255           | 2.0              |
| Compton          | 93,493           | 96,455           | 2,962         | 3.2              |
| Cudahy           | 24,208           | 23,805           | -403          | -1.7             |
| Downey           | 107,323          | 111,772          | 4,449         | 4.1              |
| Hawaiian Gardens | 14,779           | 14,254           | -525          | -3.6             |
| Huntington Park  | 61,348           | 58,114           | -3,234        | -5.3             |
| La Habra Heights | 5,712            | 5,325            | -387          | -6.8             |
| Lakewood         | 79,345           | 80,048           | 703           | 0.9              |
| La Mirada        | 46,783           | 48,527           | 1,744         | 3.7              |
| Long Beach       | 461,522          | 462,257          | 735           | 0.2              |
| Lynwood          | 69,845           | 69,772           | -73           | -0.1             |
| Maywood          | 28,083           | 27,395           | -688          | -2.4             |
| Montebello       | 62,150           | 62,500           | 350           | 0.6              |
| Norwalk          | 104,323          | 105,549          | 1,226         | 1.2              |
| Orchard Dale     | 18,857           | 19,894           | 1,037         | 5.5              |
| Paramount        | 55,266           | 54,098           | -1,168        | -2.1             |
| Pico Rivera      | 63,428           | 62,942           | -486          | -0.8             |
| Santa Fe Springs | 17,438           | 18,199           | 761           | 4.4              |
| Signal Hill      | 9,333            | 11,016           | 1,683         | 18.0             |
| South Gate       | 96,375           | 94,396           | -1,979        | -2.1             |
| Vernon           | 91               | 112              | 21            | 23.1             |
| Whittier         | 83,680           | 85,331           | 1,651         | 2.0              |
| <b>Total</b>     | <b>1,737,414</b> | <b>1,744,312</b> | <b>6,898</b>  | <b>0.4</b>       |

**Notes:**

1. Orchard Dale population for 2000 calculated based on a 0.55% population growth as given in the Orchard Dale Water District 2010 UWMP

**Table 4 – Gateway Region UWMP Population Forecasts**

| <b>Water Supplier</b>  | <b>2010</b>      | <b>2030</b>      | <b>Change</b>  | <b>Percent Change</b> |
|--|------------------|------------------|----------------|-----------------------|
| Bellflower-Somerset MWC  | 46,000           | 46,920           | 920            | 2.0                   |
| CWSC - East Los Angeles District   | 150,890          | 153,380          | 2,490          | 1.7                   |
| City of Cerritos   | 54,546           | 55,495           | 949            | 1.7                   |
| City of Compton  | 81,963           | 93,336           | 11,373         | 13.9                  |
| City of Downey   | 110,457          | 121,084          | 10,627         | 9.6                   |
| City of Huntington Park  | 64,219           | 70,370           | 6,151          | 9.6                   |
| City of Lakewood   | 80,048           | 84,430           | 4,382          | 5.5                   |
| City of Lynwood  | 65,965           | 72,665           | 6,700          | 10.2                  |
| City of Norwalk  | 18,361           | 19,031           | 670            | 3.6                   |
| City of Paramount  | 57,989           | 63,844           | 5,855          | 10.1                  |
| City of Santa Fe Springs   | 18,199           | 27,303           | 9,104          | 50.0                  |
| City of South Gate   | 102,832          | 115,199          | 12,367         | 12.0                  |
| City of Vernon   | 100              | 104              | 4              | 4.0                   |
| City of Whittier   | 48,200           | 50,500           | 2,300          | 4.8                   |
| GSWC - Artesia   | 52,974           | 54,553           | 1,579          | 3.0                   |
| GSWC - Bell/Bell Gardens   | 69,119           | 70,511           | 1,392          | 2.0                   |
| GSWC - Florence-Graham   | 62,451           | 68,438           | 5,987          | 9.6                   |
| GSWC - Norwalk   | 43,683           | 46,899           | 3,216          | 7.4                   |
| GSWC - Southwest   | 271,861          | 303,858          | 31,997         | 11.8                  |
| Long Beach Water Department  | 462,257          | 498,686          | 36,429         | 7.9                   |
| Montebello Land and Water Company  | 32,219           | 33,425           | 1,206          | 3.7                   |
| Orchard Dale Water District  | 19,894           | 21,415           | 1,521          | 7.6                   |
| Park Water Company   | 128,193          | 145,331          | 17,138         | 13.4                  |
| Pico Rivera Water Authority  | 39,002           | 42,963           | 3,961          | 10.2                  |
| Pico Water District  | 24,011           | 26,867           | 2,856          | 11.9                  |
| Suburban Water Systems   | 115,000          | 115,300          | 300            | 0.3                   |
| <b>Total</b>   | <b>2,220,433</b> | <b>2,401,907</b> | <b>181,474</b> | <b>8.2</b>            |
| <b>Notes:</b><br>1. MWC: Mutual Water Company<br>2. CWSC: California Water Service Company<br>3. MWD: Metropolitan Water District<br>4. GSWC: Golden State Water Company |                  |                  |                |                       |

### Senate Bill X7-7: Water Conservation Act of 2009

The Senate Bill X7-7 (SBX7-7), the Water Conservation Act of 2009 (Act) was signed into law November 2009. This legislation set a goal of achieving a 20 percent statewide reduction in urban per capita water use and requires urban retail water suppliers to set 2020 Urban Water Use Targets to meet that goal.

Commonly referred to as the 20X2020 Plan, the Act identifies the methodologies, water use targets and reporting requirements that apply to urban water suppliers. It directed the California Department of Water Resources (DWR) to develop technical methodologies and criteria to ensure the consistent implementation of the Act, and to provide guidance to urban retail water suppliers in developing baseline water use and compliance water use targets. Each urban retail water supplier must include the following information in their UWMPs, beginning in their submittal for 2010:

- Baseline Daily Per Capita Water Use (Baseline)
- 2020 Urban Water Use Target (2020 Target)
- 2015 Interim Urban Water Use Target (2015 Interim Target)

According to Sections 10608.20(a)(1) and 10608.28 of the California Water Code, urban retail water suppliers may plan, comply, and report the above information on a regional basis, an individual basis, or both.

The Gateway Regional Alliance was formed by participating water suppliers within the Gateway Region to examine the Region's compliance with the SBX7-7 Water Conservation Act of 2009 (SBX7-7). The results were reported in the *Gateway Regional Water Conservation Alliance Report* (Los Angeles Gateway Region Integrated Regional Water Management Authority, June 2011) and will be used in the analysis of the water balance.

## Methodology

### Data Collected

Data collected for all water suppliers was based on the information available in UWMPs. The information consisted of total yearly water demand and total yearly water supply volumes for the water suppliers within the Gateway Region. This data included current year (2010) and future years through 2030 for an average year and the third year in a multiple-dry year period. The DWR *Guidebook to Assist Urban Water Suppliers to Prepare a 2010 Urban Water Management Plan* (Guidebook) defines these periods:

- Average year period: a year or an averaged range of years in the historical sequence that most closely represents median runoff levels and patterns. It is defined as the median runoff over the previous 30 years or more. This median is recalculated every 10 years.
- Multiple-dry year period: generally considered to be the lowest average runoff for a consecutive multiple year period (three years or more) for a watershed since 1903. For example, 1928-1934 and 1987-1992 were the two multi-year periods of lowest average runoff during the 20th century in the Central Valley basin. Suppliers should determine this for each watershed from which they receive supplies.

For the purposes of the Gateway Region water balance, drought year conditions are defined as the third year during a multiple-dry year period or the worst case scenario water shortage.

Additional information collected included:

- Water demand volumes by use, i.e. residential, commercial, industrial, institutional, landscape, recycled uses.
- Water supply sources and the volume of water per source, i.e. groundwater, water purchased from a wholesaler, recycled water
- City population projections produced by the Southern California Association of Governments (SCAG)
- Daily per capita baselines and conservation goals calculated by the water suppliers according to SBX7-7.

### Data Review

Data collected from the 2010 UWMPs were reviewed for consistency and accuracy. This consisted of:

- Restricting the water balance period to 2010-2030. Some UWMPs provided data and projections from the 2010 through 2035, however as both 2005 and 2035 were optional according to the DWR Guidebook, not all water suppliers provided projections for 2035.

Therefore, the time period for the water balance extends from 2010 through 2030, for which all UWMPs provided data.

- Including recycled water demand in the total demand volume, when applicable.
- Including unaccounted for system losses in the total demand volume, when applicable.
- Spot-checking that totals and units are correct. In cases of discrepancies, published totals were used over calculations of data by water use.
- Verifying that all projections included current and expected conservation efforts.

To analyze water reliability, the supply by source and total demand for the third year of the multiple-dry year period was used. While all the UWMPs included water reliability data according to the Guidebook, data came in varying levels of detail. When there was not sufficient data, water suppliers were contacted to request the data or for guidance on how to estimate the data. If no guidance was received, the following assumptions were made to complete the data:

- Groundwater supply was maintained at existing rights. Carryover and exceedence provisions were not included unless specified in the UWMP or by the water supplier.
- Recycled water supply was omitted unless specified in the UWMP or by the water supplier that recycled water is considered a reliable source.
- When specified as a reliable source, imported water was used to make up the difference between total supply and groundwater.
- The worst-case scenario water supply and demand volumes were used when given in lieu of the third year in a multiple-dry year period and considered equivalent.

The reviewed data for each UWMP was entered into a spreadsheet. Table 5 is an example of a UWMP's reviewed data.

**Table 5 – Example UWMP Data**

| Water Supplier 1             | 2010 | 2015 | 2020 | 2025 | 2030 |
|------------------------------|------|------|------|------|------|
| Average Supply               |      |      |      |      |      |
| Source 1                     | #### | #### | #### | #### | #### |
| Source 2                     | #### | #### | #### | #### | #### |
| Total                        | #### | #### | #### | #### | #### |
| Average Demand               |      |      |      |      |      |
| Use 1                        | #### | #### | #### | #### | #### |
| Use 2                        | #### | #### | #### | #### | #### |
| Total                        | #### | #### | #### | #### | #### |
| Average Year Surplus/Deficit | #### | #### | #### | #### | #### |
|                              | 2010 | 2015 | 2020 | 2025 | 2030 |
| Drought Year Supply          |      |      |      |      |      |
| Source 1                     |      | #### | #### | #### | #### |
| Source 2                     |      | #### | #### | #### | #### |
| Total                        |      | #### | #### | #### | #### |
| Drought Year Demand Total    |      | #### | #### | #### | #### |
| Drought Year Surplus/Deficit |      | #### | #### | #### | #### |

## Completing Missing Water Supplier Data

Efforts were taken to collect the data in Table 5 for every water supplier within the Gateway Region, including for those water suppliers with an UWMP and those not required to have an UWMP. When further information was needed from a water supplier, they were contacted and requested to provide as much of the data in Table 5 as was available. The water suppliers contacted to fill in missing data can be found in Table 1.

To fill in some or all of the predicted future water supplies and demand methods were developed for some purveyor areas: Bellflower-Somerset Mutual Water Company, the City of Bellflower, the City of La Habra Heights, the City of Maywood, and the City of Norwalk. Depending on the amount of data available, the models ranged in complexity from simple linear interpolation to needing additional data and calculations. More complex work relied on information from UWMPs and other documents for neighboring areas within the Gateway Region and used the following parameters:

1. Percentage of volumes of water supply by source.
2. Percentage of volumes of water demand by use.
3. Per capita water use, using values either from the Gateway Alliance Report or calculated using historical data.

Additional data from the Metropolitan Water District's and Central Basin Municipal Water District's 2010 UWMPs were also used in predicting future water supply and demand. Table 6 summarizes the methods used to fill in the missing data.

**Table 6 – Methods Used to Complete Missing Data**

| Water Supplier                           | Missing Data   | Solution  |
|--|--|---|
| Bellflower-Somerset Mutual Water Company | <ul style="list-style-type: none"> <li>Drought supply</li> <li>Drought demand</li> </ul>   | <ul style="list-style-type: none"> <li>Guidance given in 2010 UWMP: <ul style="list-style-type: none"> <li>10% reduction in imported water supply compounded per year of drought.</li> <li>10% total reduction in demand.</li> </ul> </li> </ul>  |
| City of Bellflower                       | <ul style="list-style-type: none"> <li>Average supply for 2015-2025</li> <li>Average demand for 2015-2025</li> <li>Drought supply</li> <li>Drought demand</li> </ul> | <ul style="list-style-type: none"> <li>Linear interpolation using average year data for 2010 and 2030.</li> <li>According to water purveyor, average reduction in demand of 10 ac-ft/year during drought conditions.</li> </ul>   |
| City of La Habra Heights                 | <ul style="list-style-type: none"> <li>Drought demand</li> </ul>   | <ul style="list-style-type: none"> <li>Assumed 5% increase in demand during droughts, according to assumptions used by other UWMPs in region.</li> </ul>  |
| City of Maywood                          | <ul style="list-style-type: none"> <li>Average supply</li> <li>Average demand</li> <li>Drought supply</li> <li>Drought demand</li> </ul>                             | <ul style="list-style-type: none"> <li>Applied City of Huntington Park per capita water use to Maywood total population for average demand.</li> <li>Average supply based on CBMWD 2010 UWMP and Response to Public Comments from the March 5, 2011 Public Hearing on the Results of Maywood Water Quality Assessment.</li> <li>Drought supply assumed constant.</li> <li>Assumed 5% increase in demand during droughts, according to assumptions used by other UWMPs in region.</li> </ul> |
| City of Norwalk                          | <ul style="list-style-type: none"> <li>Drought demand</li> </ul>   | <ul style="list-style-type: none"> <li>Assumed 5% increase in demand during droughts, according to assumptions used by other UWMPs in region.</li> </ul>  |



## Results

The following cities within the Gateway Region were included in the water balance (See Figure 1):

- |                    |                    |                              |
|--------------------|--------------------|------------------------------|
| • Artesia          | • Huntington Park  | • Orchard Dale               |
| • Bell             | • La Habra Heights | • Paramount                  |
| • Bell Gardens     | • La Mirada        | • Pico Rivera                |
| • Bellflower       | • Lakewood         | • Santa Fe Springs           |
| • Cerritos         | • Long Beach       | • Signal Hill                |
| • Commerce         | • Lynwood          | • South Gate                 |
| • Compton          | • Maywood          | • Vernon                     |
| • Cudahy           | • Montebello       | • Whittier                   |
| • Downey           | • Monterey Park    | • Some Los Angeles<br>County |
| • Hawaiian Gardens | • Norwalk          | Unincorporated               |

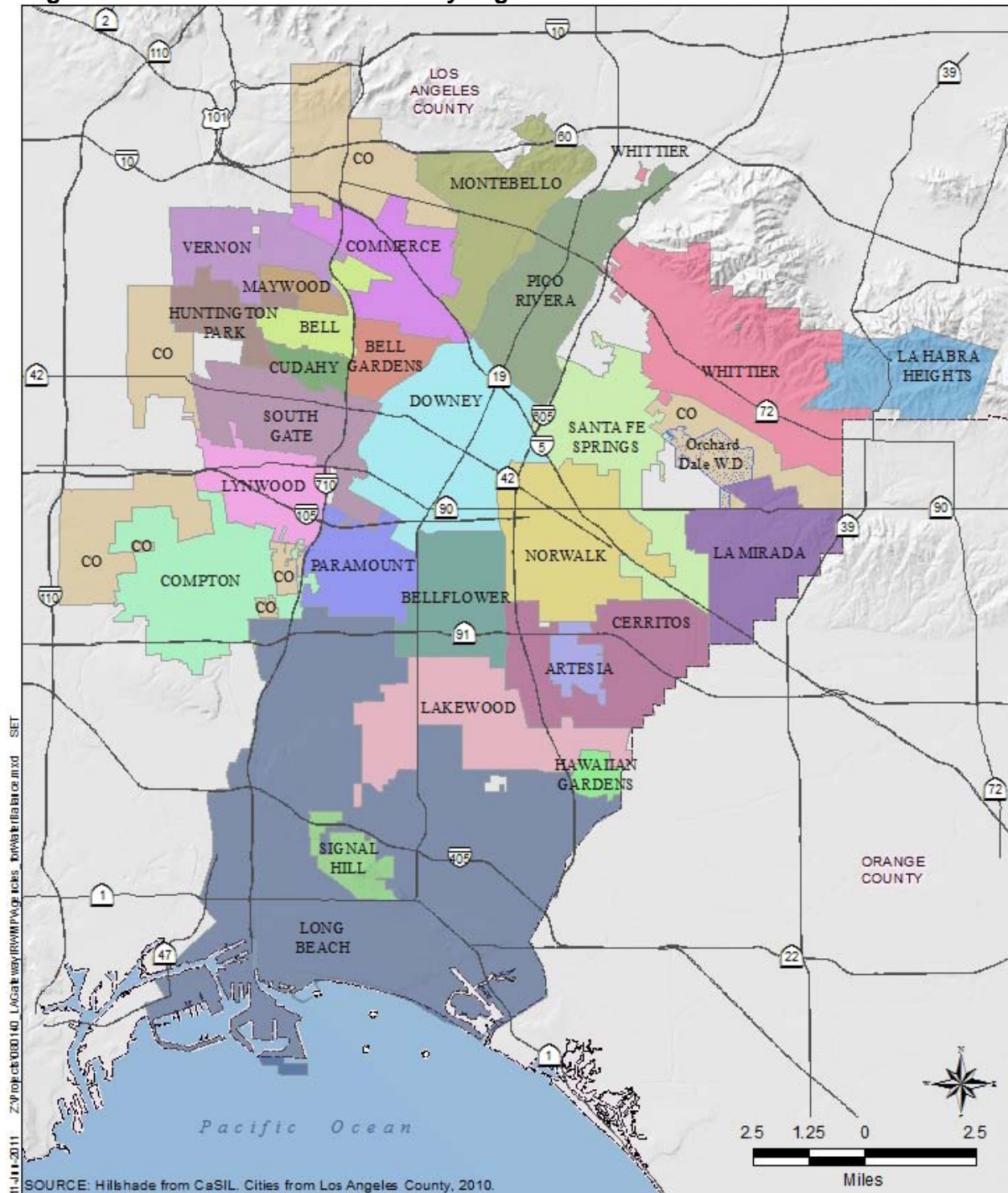
Portions of the unincorporated areas within the Gateway Region were also included in the water balance where information was available.

According to the water balance, the region should expect to meet water demand through 2030 for average water year and drought conditions. Figure 2 compares the expected average and drought conditions supplies and demands for 2015-2030, and the following sections will discuss the analysis of the water balance in further detail.

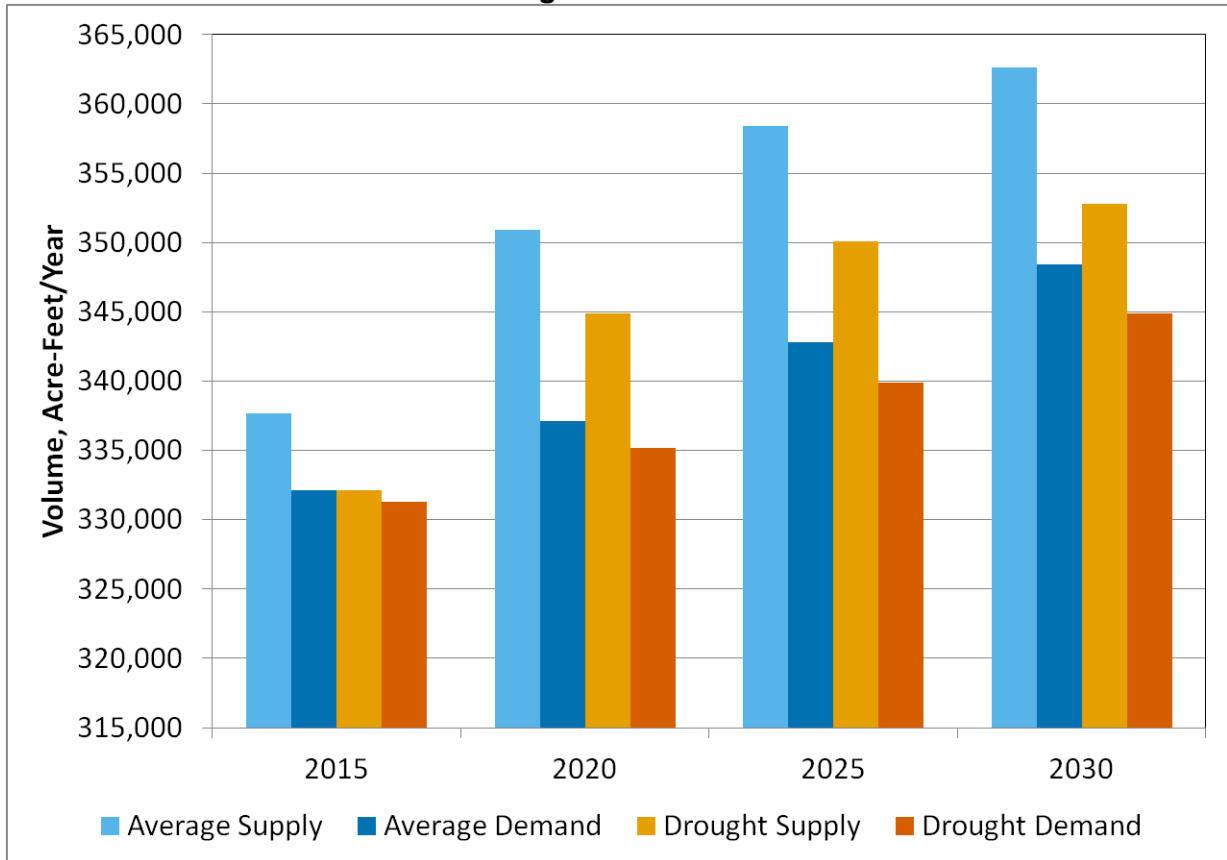
### **Water Supply and Demand during Average Year Conditions**

Current water supplies for the Gateway Region consists of groundwater, imported water, and recycled water. As a whole, the Gateway Region is heavily dependent on groundwater, with a majority of the water suppliers receiving most, if not all, of their supply from groundwater. Of total current supplies for the Gateway Region, 66.7% is groundwater, 28.8% is imported water, 4.4% is recycled water, and less than 1% of the water can be classified as other, which includes sources such as banked groundwater. Forecasting to 2030, the average water supply distribution will remain essentially the same, with a small increase in recycled water use. See Figure 3 for a comparison in current and future water supplies.

**Figure 1 – Cities Included in the Gateway Region Water Balance**



**Figure 2 – Summary of Expected Supply and Demand in the Gateway Region for Average and Drought Conditions**



**Figure 3 – Average Year Water Supplies for the Gateway Region**

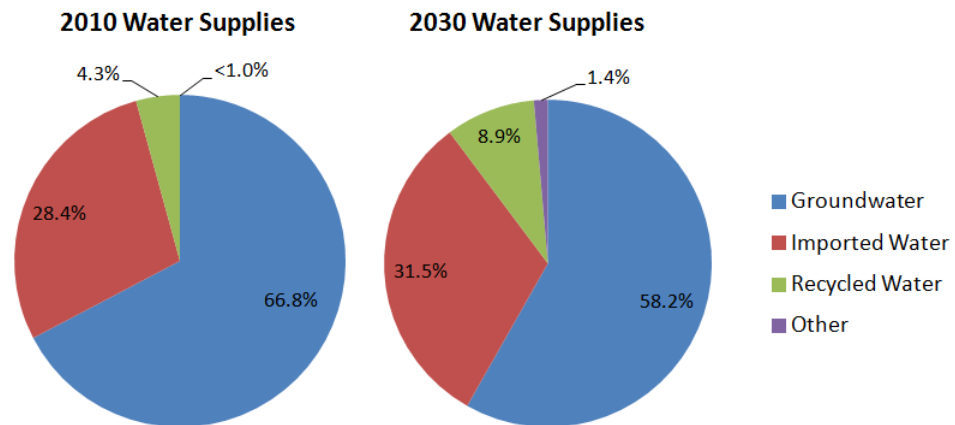


Table 7 shows the supply and demand totals for average water years for 2010, 2020, and 2030. The Gateway Region will have sufficient water supply through 2030 based on average water years. Current water supplies are about 292,800 ac-ft/year, 4,300 ac-ft/year above what is demanded. This surplus is forecasted to increase by the year 2020 to about 13,800 ac-ft/year, and will continue to increase through 2030, with an expected surplus of about 14,200 ac-ft/year.

The increase in average year surplus can be attributed to the assumptions made by the water suppliers in their UWMPs:

- The water service area is fully built-out and water demands will increase only due to redevelopment within current development limits.
- Conservation measures, including programs and policies will be fully implemented.
- Capital improvement projects involving water use efficiency and water supply will be completed.
- Recycled water projects will be completed.
- Recycled water will gradually replace potable water for uses such as landscaping and irrigation.

#### **Water Supply and Demand during Drought Conditions**

During drought conditions, the Gateway Region is expected to have sufficient water supply through 2030 (Table 8). In 2015 the Gateway Region is forecasted to have an available water supply during drought conditions of 332,200 ac-ft/year, about 800 ac-ft/year more than demanded. This surplus is expected to increase through 2030 to about 7,900 ac-ft/year, an excess of about 3% of demand.

The expected water supply for drought conditions for the year 2030 is about 20,700 ac-ft/year greater than the expected water supply for normal water years for the year 2030. The increase in drought water supply can be attributed to the assumptions used in some suppliers' 2010 Urban Water Management Plan. The drought conditions assumptions from the UWMPs include the same assumptions as for average year conditions as well as these additional considerations:

- Current and future recycled water projects will be operating at 100% capacity in response to drought conditions.
- Current groundwater supplies are stable enough for water suppliers to withdraw 100% of their water right during drought conditions.
- Central Basin Judgment allows for 20% carryover and 10% exceedence provisions for groundwater.
- Wholesale providers will have enough supply during drought conditions for water suppliers to provide 100% contracted water.

**Table 7 – Average Year Supply and Demand Balance for the Gateway Region, ac-ft/year**

| Water Supplier   | 2010            |                 |               | 2020            |                 |                | 2030            |                 |                |
|--|-----------------|-----------------|---------------|-----------------|-----------------|----------------|-----------------|-----------------|----------------|
|  | Supply          | Demand          | Difference    | Supply          | Demand          | Difference     | Supply          | Demand          | Difference     |
| Bellflower-Somerset MWC  | +5,400          | +6,900          | -1,500        | +5,900          | +7,100          | -1,200         | +6,000          | +7,400          | -1,400         |
| CWSC - East Los Angeles District   | +17,500         | +16,600         | +900          | +18,900         | +19,400         | -500           | +19,100         | +19,600         | -500           |
| City of Bellflower   | +700            | +700            | 0             | +700            | +700            | 0              | +700            | +700            | 0              |
| City of Cerritos   | +11,500         | +9,600          | +1,900        | +13,900         | +12,100         | +1,800         | +14,300         | +12,200         | +2,100         |
| City of Compton  | +8,900          | +8,900          | 0             | +9,800          | +9,800          | 0              | +10,500         | +10,500         | 0              |
| City of Downey   | +17,000         | +17,000         | 0             | +18,100         | +18,100         | 0              | +18,800         | +18,800         | 0              |
| City of Huntington Park  | +4,900          | +4,900          | 0             | +6,100          | +6,100          | 0              | +6,400          | +6,400          | 0              |
| City of La Habra Heights   | +2,900          | +2,800          | +100          | +2,900          | +2,800          | +100           | +2,900          | +2,800          | +100           |
| City of Lakewood   | +9,600          | +10,000         | -400          | +11,800         | +10,600         | +1,200         | +11,800         | +10,600         | +1,200         |
| City of Lynwood  | +5,600          | +5,800          | -200          | +9,100          | +7,200          | +1,900         | +9,700          | +7,600          | +2,100         |
| City of Maywood  | +3,400          | +2,400          | +1,000        | +2,400          | +2,400          | 0              | +2,400          | +2,400          | 0              |
| City of Norwalk  | +2,300          | +2,300          | 0             | +2,800          | +2,800          | 0              | +3,300          | +3,300          | 0              |
| City of Paramount  | +7,100          | +6,700          | +400          | +9,500          | +7,800          | +1,700         | +9,700          | +8,200          | +1,500         |
| City of Santa Fe Springs   | +6,700          | +6,300          | +400          | +7,600          | +6,600          | +1,000         | +9,100          | +7,500          | +1,600         |
| City of Signal Hill  | +1,900          | +1,900          | 0             | +2,100          | +2,100          | 0              | +2,200          | +2,200          | 0              |
| City of South Gate   | +8,400          | +8,400          | 0             | +11,900         | +12,100         | -200           | +12,600         | +12,800         | -200           |
| City of Vernon   | +8,900          | +8,900          | 0             | +21,700         | +13,800         | +7,900         | +21,800         | +13,800         | +8,000         |
| City of Whittier   | +7,400          | +7,400          | 0             | +8,000          | +8,000          | 0              | +8,200          | +8,200          | 0              |
| GSWC – Artesia   | +5,600          | +5,600          | 0             | +6,900          | +6,900          | 0              | +7,000          | +7,000          | 0              |
| GSWC – Bell/Bell Gardens   | +5,300          | +5,300          | 0             | +6,300          | +6,300          | 0              | +6,400          | +6,400          | 0              |
| GSWC – Florence-Graham   | +5,200          | +5,200          | 0             | +6,100          | +6,100          | 0              | +6,500          | +6,500          | 0              |
| GSWC – Norwalk   | +5,000          | +5,000          | 0             | +6,600          | +6,600          | 0              | +6,800          | +6,800          | 0              |
| GSWC – Southwest   | +29,900         | +29,900         | 0             | +38,900         | +38,900         | 0              | +40,300         | +40,300         | 0              |
| Long Beach Water Department  | +63,400         | +63,400         | 0             | +68,800         | +68,800         | 0              | +70,700         | +70,700         | 0              |
| Montebello Land and Water Company  | +3,400          | +3,400          | 0             | +3,700          | +3,700          | 0              | +3,700          | +3,700          | 0              |
| Orchard Dale Water District  | +2,200          | +2,000          | +200          | +2,500          | +2,200          | +300           | +2,600          | +2,300          | +300           |
| Park Water Company   | +11,200         | +11,200         | 0             | +15,600         | +15,600         | 0              | +16,500         | +16,600         | -100           |
| Pico Rivera Water Authority  | +5,000          | +5,500          | -500          | +5,800          | +6,000          | -200           | +5,800          | +6,300          | -500           |
| Pico Water District  | +3,000          | +3,300          | -300          | +3,600          | +4,000          | -400           | +3,800          | +4,200          | -400           |
| Suburban Water Systems   | +23,500         | +21,200         | +2,300        | +23,000         | +22,600         | +400           | +23,000         | +22,600         | +400           |
| <b>Total</b>   | <b>+292,800</b> | <b>+288,500</b> | <b>+4,300</b> | <b>+351,000</b> | <b>+337,200</b> | <b>+13,800</b> | <b>+362,600</b> | <b>+348,400</b> | <b>+14,200</b> |
| <b>Notes:</b> <ol style="list-style-type: none"> <li>1. Volumes were rounded to the nearest 100 ac-ft/year.</li> <li>2. MWC: Mutual Water Company</li> <li>3. CWSC: California Water Service Company</li> <li>4. GSWC: Golden State Water Company</li> </ol> |                 |                 |               |                 |                 |                |                 |                 |                |

**Table 8 – Drought Conditions Supply and Demand Balance for the Gateway Region, ac-ft/year**

| Water Supplier   | 2015            |                 |             | 2030            |                 |               |
|--|-----------------|-----------------|-------------|-----------------|-----------------|---------------|
|  | Supply          | Demand          | Difference  | Supply          | Demand          | Difference    |
| Bellflower-Somerset MWC  | +4,800          | +5,300          | -500        | +4,900          | +5,400          | -500          |
| CWSC – East Los Angeles District   | +17,800         | +17,800         | 0           | +18,100         | +18,100         | 0             |
| City of Bellflower   | +700            | +700            | 0           | +600            | +600            | 0             |
| City of Cerritos   | +13,900         | +13,500         | +400        | +15,000         | +13,900         | +1,100        |
| City of Compton  | +8,200          | +9,600          | -1,400      | +8,800          | +10,600         | -1,800        |
| City of Downey   | +19,600         | +19,600         | 0           | +20,400         | +20,400         | 0             |
| City of Huntington Park  | +5,900          | +6,300          | -400        | +6,300          | +6,700          | -400          |
| City of La Habra Heights   | +2,900          | +3,000          | -100        | +2,900          | +3,000          | -100          |
| City of Lakewood   | +10,400         | +9,900          | +500        | +10,400         | +10,600         | -200          |
| City of Lynwood  | +7,300          | +7,300          | 0           | +7,900          | +7,800          | +100          |
| City of Maywood  | +2,400          | +2,500          | -100        | +2,400          | +2,500          | -100          |
| City of Norwalk  | +2,100          | +2,700          | -600        | +2,500          | +3,500          | -1,000        |
| City of Paramount  | +8,700          | +8,200          | +500        | +9,000          | +8,600          | +400          |
| City of Santa Fe Springs   | +5,500          | +4,600          | +900        | +5,500          | +6,000          | -500          |
| City of Signal Hill  | +2,000          | +1,900          | +100        | +2,000          | +2,000          | 0             |
| City of South Gate   | +11,600         | +11,600         | 0           | +12,600         | +12,600         | 0             |
| City of Vernon   | +15,000         | +13,800         | +1,200      | +21,600         | +13,800         | +7,800        |
| City of Whittier   | +8,000          | +8,000          | 0           | +8,700          | +8,700          | 0             |
| GSWC – Artesia   | +6,800          | +6,800          | 0           | +7,000          | +7,000          | 0             |
| GSWC – Bell/Bell Gardens   | +6,300          | +6,300          | 0           | +6,400          | +6,400          | 0             |
| GSWC – Florence-Graham   | +5,900          | +5,900          | 0           | +6,500          | +6,500          | 0             |
| GSWC – Norwalk   | +6,500          | +6,500          | 0           | +6,800          | +6,800          | 0             |
| GSWC – Southwest   | +38,100         | +38,100         | 0           | +40,300         | +40,300         | 0             |
| Long Beach Water Department  | +67,600         | +67,600         | 0           | +70,700         | +70,700         | 0             |
| Montebello Land and Water Company  | +3,300          | +3,400          | -100        | +3,400          | +2,600          | +800          |
| Orchard Dale Water District  | +2,500          | +2,200          | +300        | +2,600          | +2,300          | +300          |
| Park Water Company   | +15,600         | +15,600         | 0           | +17,100         | +17,100         | 0             |
| Pico River Water Authority   | +5,700          | +5,500          | +200        | +5,800          | +5,700          | +100          |
| Pico Water District  | +3,600          | +3,700          | -100        | +3,600          | +3,800          | -200          |
| Suburban Water Systems   | +23,500         | +23,500         | 0           | +23,000         | +20,900         | +2,100        |
| <b>Totals</b>  | <b>+332,200</b> | <b>+331,400</b> | <b>+800</b> | <b>+352,800</b> | <b>+344,900</b> | <b>+7,900</b> |
| <b>Notes:</b> <ol style="list-style-type: none"> <li>1. Volumes were rounded to the nearest 100 ac-ft/year.</li> <li>2. MWC: Mutual Water Company</li> <li>3. CWSC: California Water Service Company</li> <li>4. GSWC: Golden State Water Company</li> </ol> |                 |                 |             |                 |                 |               |

### Comparison of Individual Water Purveyors

In addition to analyzing the region as a whole, the water balance in relation to the individual water purveyors was examined. Examining Tables 7 and 8 for individual water supply and demand revealed these considerations:

- For an average year in 2030:
  - 9 water suppliers in surplus with a total surplus of about 31,500 ac-ft/year
  - 15 water suppliers break even
  - 6 water suppliers in deficit with a total deficit of about 3,100 ac-ft/year
- For drought year conditions in 2030:
  - 8 water suppliers in surplus with a total surplus of 20,600 ac-ft/year
  - 13 water suppliers break even
  - 9 water suppliers in deficit with a total deficit of 4,800 ac-ft/year

## Conclusions

Overall, the Gateway Region will have enough water supply to satisfy average and drought conditions demands through 2030. Some individual water suppliers are expected to be in deficit, most will be in surplus or will break even. Therefore, water suppliers should increase cooperation and coordination with each other and enhance or establish emergency water supply interconnections. Table 9 shows the interconnection of each water supplier listed in the 2010 UWMPs or other sources.

**Table 9 – Interconnections within the Gateway Region**

| Water Supplier   | Supply-Demand Difference in 2030, ac-ft/year (Average/Drought) | Interconnected Agencies  |
|--|--|--|
| Bellflower-Somerset MWC  | -1,400 / -500  | Park Water Company, Bellflower Home Garden Water Company, Bellflower MWS   |
| California Water Service Company - East Los Angeles District   | -500 / 0   | Montebello Land and Water Company, South Montebello Irrigation District, City of Montebello                        |
| City of Bellflower   | 0 / 0  |  |
| City of Cerritos   | +2,100 / +1,100  | City of Santa Fe Springs   |
| City of Compton  | 0 / -1,800   | CBMWD, MWD   |
| City of Downey   | 0 / 0  | Bellflower-Somerset MWC, City of South Gate, GSWC, City of Bellflower, City of Santa Fe Springs, City of Paramount |
| City of Huntington Park  | 0 / -400   | CBMWD  |
| City of La Habra Heights   | +100 / -100  |  |
| City of Lakewood   | +1,200 / -200  | GSWC, City of Cerritos, Long Beach Water Department  |
| City of Lynwood  | +2,100 / +100  | City of Compton, City of South Gate  |
| City of Maywood  | 0 / -100   | City of Huntington Park, Southern California Water Company   |
| City of Norwalk  | 0 / -1,000   | Park Water Company, City of Santa Fe Springs, City of Cerritos, GSWC   |
| City of Paramount  | +1,500 / +400  | Long Beach Water Department, City of Downey, GSWC  |
| City of Santa Fe Springs   | +1,600 / -500  | City of Cerritos   |
| City of Signal Hill  | 0 / 0  |  |
| City of South Gate   | -200 / 0   | City of Downey, City of Lynwood, City of Huntington Park, Walnut Park Mutual Water Company, GSWC – Hollydale       |
| City of Vernon   | +8,000 / +7,800  |  |
| City of Whittier   | 0 / 0  | City of Pico Rivera, City of Santa Fe Springs, California Domestic Water Company, SGVWC, Suburban Water Systems    |
| GSWC - Artesia   | 0 / 0  | City of Cerritos, City of Lakewood   |
| GSWC - Bell/Bell Gardens   | 0 / 0  | City of Huntington Park, Maywood Mutual Water Company #3   |
| GSWC - Florence-Graham   | 0 / 0  | City of Huntington Park  |
| GSWC - Norwalk   | 0 / 0  | Suburban Water Company, City of Norwalk, City of Santa Fe Springs  |
| GSWC - Southwest   | 0 / 0  | City of Inglewood, Hawthorne, Park Water Company   |
| Long Beach Water Department  | 0 / 0  |  |
| Montebello Land and Water Company  | 0 / +800   |  |
| Orchard Dale Water District  | +300 / +300  | Suburban Water Company   |
| Park Water Company   | -100 / 0   |  |
| Pico Rivera Water Authority  | -500 / +100  | City of Whittier, SGVWC  |
| Pico Water District  | 0 / -200   |  |
| Suburban Water Systems   | +400 / +2,100  | City of Whittier, SGVWC, La Habra Heights County Water District  |
| <b>Notes:</b> <ol style="list-style-type: none"> <li>1. Bellflower-Somerset MWC: Bellflower-Somerset Mutual Water Company</li> <li>2. Bellflower MWS: Bellflower Municipal Water System</li> <li>3. CBMWD: Central Basin Municipal Water District</li> <li>4. MWD: Metropolitan Water District</li> <li>5. GSWC: Golden State Water Company</li> <li>6. SGVWC: San Gabriel Valley Water Company</li> </ol> |  |  |