

WATER COST COMPARISON STUDY REPORT – 2015 ANALYSIS

Mesa Water District



October 2017
Raftelis Financial Consultants, Inc.





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October 17, 2017

Mr. Paul Shoenberger, P.E.
General Manager
Mesa Water District
1965 Placentia Avenue
Costa Mesa, CA 92627

Dear Mr. Shoenberger,

Raftelis Financial Consultants (Raftelis), Inc. is pleased to provide this Mesa Water District Cost Comparisons – 2015 Analysis (Report), which summarizes key methods for measuring the operational efficiency of water districts.

It has been a pleasure working with you, and we wish to express our thanks to you and District staff for the support provided throughout the course of this study.

Sincerely,

Raftelis Financial Consultants, Inc.

A handwritten signature in black ink, appearing to read 'Sanjay Gaur', with a long horizontal flourish extending to the right.

Sanjay Gaur
Vice President

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Abbreviations and Acronyms

Mesa Water	Mesa Water District
Raftelis	Raftelis Financial Consultants
hcf	Hundred cubic feet
Met	Metropolitan Water District of Southern California
DWR	California Department of Water Resources
MWDOC	Municipal Water District of Orange County
MNWD	Moulton Niguel Water District
IRWD	Irvine Ranch Water District
SMWD	Santa Margarita Water District
ETWD	El Toro Water District
TCWD	Trabuco Canyon Water District
SWD	Serrano Water District
YLWD	Yorba Linda Water District
LBCWD	Laguna Beach County Water District
SCWD	South Coast Water District
CSO	California State Controller's Office
PPH	Persons Per Household
GPD	Gallons Per Day
DOS	Days of Service
ETo	Evapotranspiration (inches of water)
DF	Drought Factor
ETAF	Evapotranspiration Adjustment Factor
LA	Landscape Area (sqf)
WY	Water Year

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Mesa Water District Cost Comparisons Report

1. Introduction

Mesa Water District (Mesa Water) commissioned Raftelis Financial Consultants (Raftelis) to develop a water cost comparison analysis to identify a methodology for measuring the operational efficiency of water districts. The Water Cost Comparison Report – 2015 Analysis (Report) is an update to the original 2009 analysis written in 2011. This is the seventh consecutive year Raftelis performed this study for the District.

The Report utilizes data from the California State Controller's Office (CSO) for Special Districts Water Enterprise - Revenues, Expenses and Changes in Fund Equity Database and Special Districts Long-Term Debt Database. The population data by water district is as of August, 2013 – the last update of the Municipal Water District of Orange County (MWDOC) Water Rates & Financial Information report. The report uses the California-Nevada Water Rate survey and in addition, Raftelis conducted a survey on the water rates for water district in Orange County for 2015. This Report summarizes background information regarding water rates and identifies parameters for measuring the efficiency of water districts.

In order to better measure the operational efficiency of water districts we amended the 2009 Report methodology by subtracting pass-through/resale and similar expenses from total expenditures. Since the CSO Database does not include a specific line item for expenses related to these types of water sales we assume the revenue from resales and other sales are a proxy for pass-through/resale expenses. This change is applied to all of the water districts included in the survey. Another amendment in the methodology is the exclusion of the defeased debt from the annual long-term debt service of the agencies included in the survey. Since these high payments result from financial policy decisions instead of changes in efficiency of the agencies, they are excluded in the survey.

2. Trends in Water Rates in California

Throughout California, water rates have been increased significantly in the past few years. Below are some of the factors which affect rate trends and are likely contributors to the rate increases:

- **Growing Infrastructure Needs:** Previously a significant portion of infrastructure replacement cost was funded through grants or general taxes; presently, there is a greater move towards using rates to meet these costs. In addition, it is likely that such repair and replacement will be more expensive than developing comparable new infrastructure in underdeveloped areas. Such a factor is a major driver of rate increases as repair and replacement becomes necessary.
- **State of Water:** Water year (WY) 2015 (October 1, 2014 – September 30, 2015) marked the fourth year of statewide drought for California. Water consumption was further affected by the mandatory 25 percent average cutback by the State Water Resources Control Board. Statewide average temperatures in 2015 were ranked as the highest ever based on the historical records. Water Year 2015 statewide snowpack water content was just 5 percent of the average amount. However, the precipitation varied as the Southeast experienced above average precipitation and the Coastal regions and the Northwest were drier than average. The California Department of Water Resources (DWR) announced that at end of 2015 the main state reservoirs hold only 54 percent of their historic average. However, DWR has increased State Water Project deliveries to 20 percent in water year 2015 after the record low five percent of requests in WY 2014. The prolonged drought and mandatory cutbacks as well as conservation measures significantly reduced the water sales and drove up the water costs. Therefore, many agencies faced difficulty recovering costs and pressure to increase water rates.

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- Increasing Regulatory Stringency: As the ability to measure water quality and technology for treating water improves, more stringent regulations regarding water will invariably follow. The need for utilities to spend greater resources to meet regulations will play a factor in driving rates higher.
- Decreasing per Capita Consumption: Decreased per capita consumption is likely to be driven by the use of higher water efficiency technology. In addition, conservation messages which have become prevalent in the last few years have started becoming internalized and more widely accepted due to strong public outreach, which contributes to decreasing per capita consumption as well.

Based upon the 2015 California-Nevada Water Rate Survey, water rates in the Southern California region increased from an average of \$58.29 in 2013 to \$62.39 in 2015 per month,¹ an increase of approximately 7%. Water rates in the other California regions experienced varying degrees of rate increases: in the Northern Region, it was about 10% and the Central Coast region it was about 6%.

3. Water Rates Comparison for Counties within California

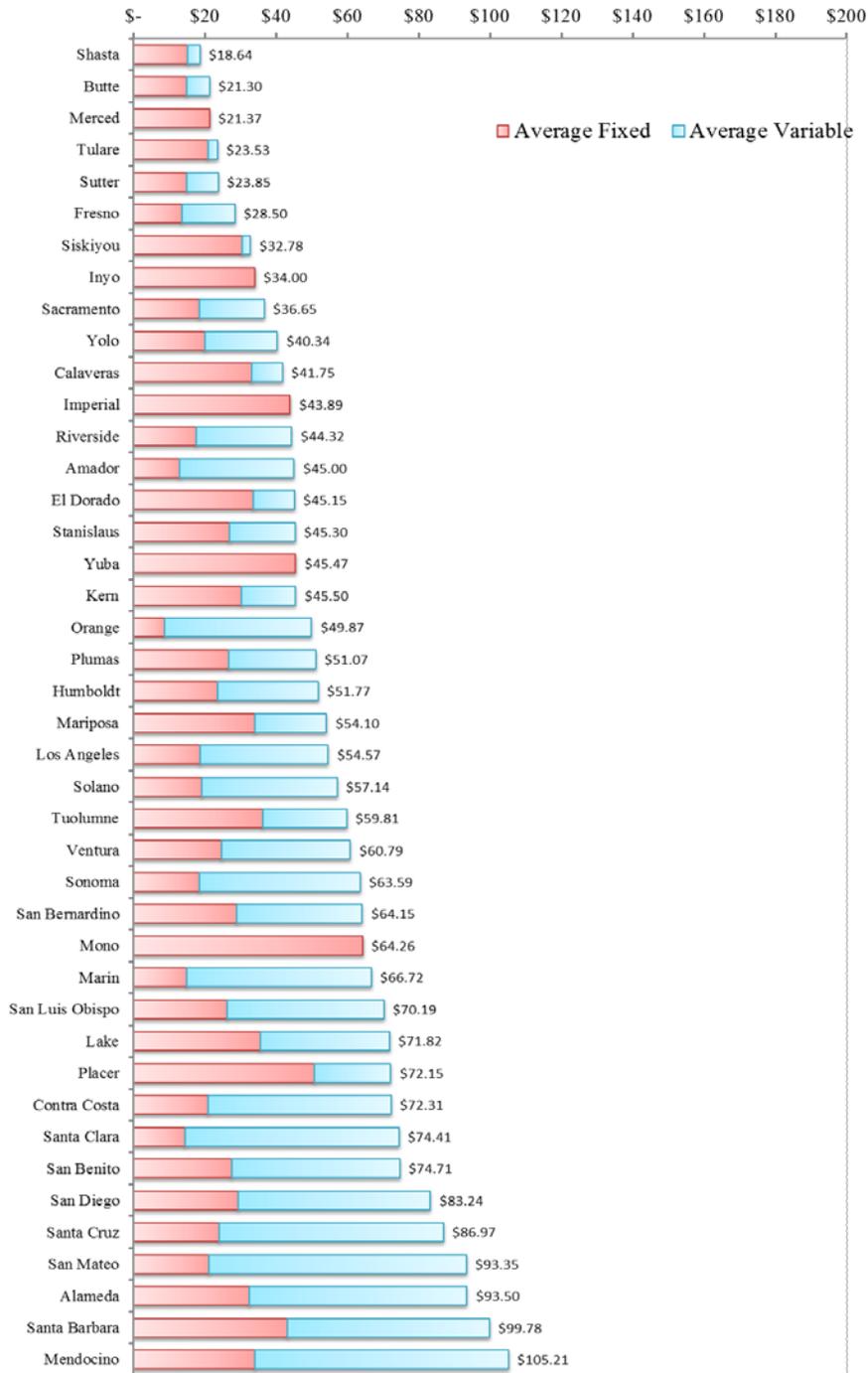
The California-Nevada Water Rate Survey provides a comparison of average county water rates for 42 different counties within California. The CA-NV Rate Survey is conducted every other year, with the most recent one being conducted in 2015. Of the 42 counties compared, Orange County has the 19th lowest average water rate (the survey assumes an average monthly usage of 15 hundred cubic feet (hcf) – equivalent to 11,220 gallons – when determining average variable costs). The survey suggests that Orange County is able to maintain lower water rates relative to other counties throughout California. The water rate comparisons can be seen in Figure 3-1 on the following page.

¹ These averages differ slightly from the overall reported average in each year because they only take into account agencies that responded to both surveys.

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Figure 3-1 Average Monthly Water Rates Comparison in 2015

Average Monthly Water Charges Comparison by Counties - 2015

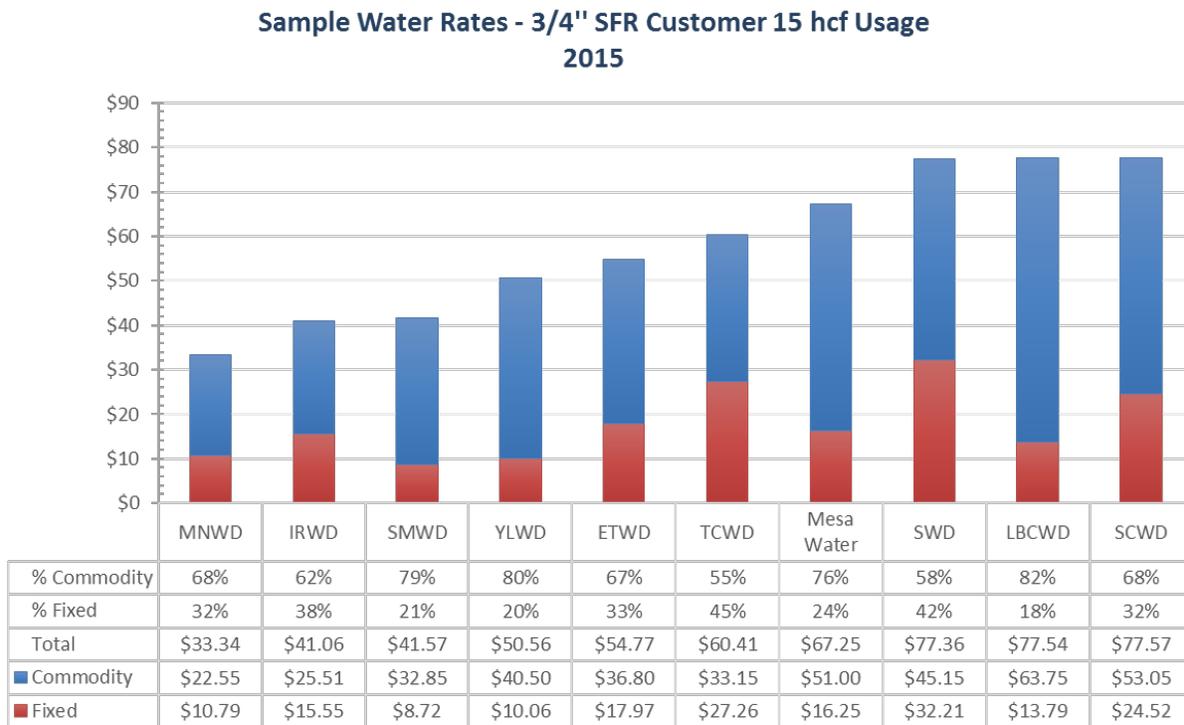


Source: 2015 California-Nevada Water Rate Survey

4. Water Rates as a Measure of Operational Efficiency

One approach to measure the operational efficiency of different water utilities is to compare water rates amongst agencies. Figure 4-1 below compares water rates between water districts within the Municipal Water District of Orange County (MWDOC). Raftelis conducted a thorough rate survey to collect the effective rates in FY 2015 and estimate the bill for each water utility included in the present cost comparison survey. The representative charges assume a single family residential customer using a 3/4" meter and an average monthly usage of 15 hcf per month. Of the surveyed agencies, three had uniform water rates, four had water budgets and the remaining three charged water consumption based on inclining block rates. Details on the effective dates and the assumptions underlying the water budgets by utility are presented in the appendix.

Figure 4-1 Raftelis Water Rate Survey 2015



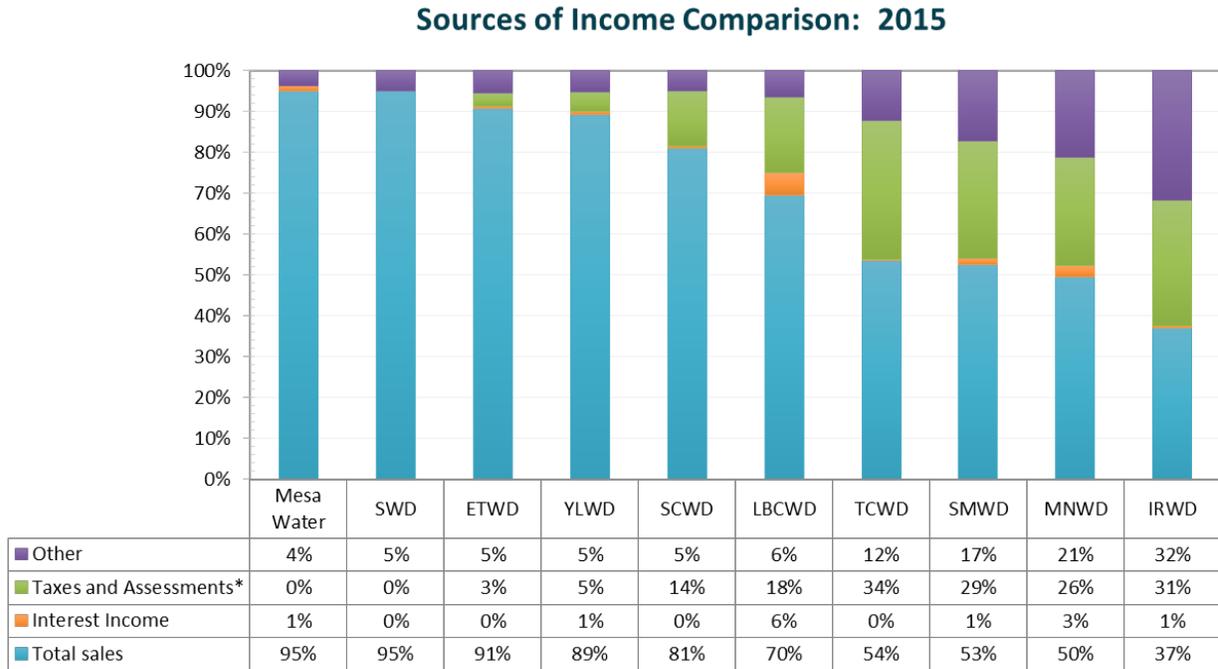
The challenge in using water rates as a measure of efficiency is that a wide range of factors have a significant effect on rates. These factors could include but are not limited to: size of the agency, geographic location, overall demand, customer constituency, level of treatment, additional funding (via grants or general fund subsidization), age of system, differences in water sources, and rate-setting methodology. For instance, many agencies have different sources of supply, such as groundwater, which possibly offsets an agency’s total water costs and thus affects their water rates. From Figure 4-1 above, we see that Moulton Niguel Water District (MNWD), Irvine Ranch Water District (IRWD), and Santa Margarita Water District (SMWD) offer the lowest total water rates, whereas Serrano Water District (SWD), Laguna Beach County Water District (LBCWD), and South Coast Water District (SCWD) offer the highest total water rates.

One of the challenges in comparing water rates in Orange County is that many agencies receive funding from non-rate revenue sources (such as property tax), which offsets the cost of delivering water and thus affects water rates. Figure 4-2 provides a breakdown of various revenues generated by each MWDOC water district through rates, investment income, property taxes, and other revenues. The three agencies that collect the highest percentage of

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revenue from rates are Mesa Water, SWD, and ETWD with 95%, 95%, and 91% revenue from rates respectively. The three agencies that collect the lowest percentage of revenue from rates are SWWD, MNWD and IRWD with 55%, 50% and 37% respectively.

Figure 4-2 Comparison of Revenue Sources for Water Districts in the MWDOC Service Area



Data Source: California State Controller’s Office, Special Districts Water Enterprise – Revenues, Expenses and Changes in Fund Equity Database

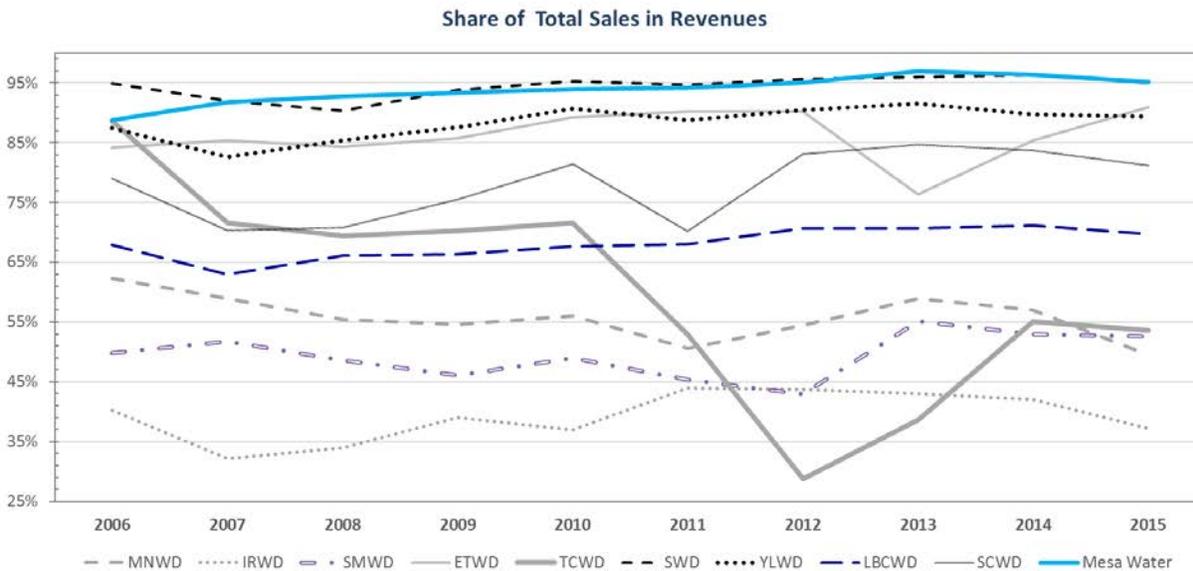
SMWD, MNWD and IRWD are able to offset a significant portion of revenues through property taxes (29%, 26% and 31%, respectively). Because of property tax revenue, these agencies are less dependent on water rates as a source of revenue; thus agencies with supplemental property tax revenue can maintain lower rates than agencies which are more heavily dependent on rates as a source of revenue, such as Mesa Water, which is almost entirely dependent on rates for its revenues. From the information above, we conclude that the percentage of total revenues recovered through water rates has a significant impact on increasing or decreasing total rates within MWDOC agencies; to say that more efficient utilities have lower water rates would neglect this consideration.

The structure of revenues over a long period of time suggests that property tax revenues provide some financial comfort to water agencies allowing them to keep lower rates. The 10-year graph below (Figure 4-3) shows that rate revenues as percent of total revenues remained roughly unchanged, with the exception of TCWD. In TCWD, special assessment revenues were generated in 2012-2014² and in 2015 the property assessment revenues were increased. This implies that TCWD will likely retain a relatively low share of rate revenues. In Mesa Water District, water rate revenues have remained the single largest source of income throughout the period, while IRWD continues to rely heavily on property tax and assessment revenues.

² Those are revenues for payments of bonds related to Mello-Roose and Mark-Roose bond acts.

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Figure 4-3 Share of Sales Revenues in Total Revenues



Data Source: California State Controller’s Office, Special Districts Water Enterprise – Revenues, Expenses and Changes in Fund Equity Database

5. Total Expenditures per Capita as a Measure of Operational Efficiency

An alternative to using rates to measure the operational efficiency of a district is to consider the Total Expenditures per Capita. Although using Total Expenditures per Capita shares many of the same challenges present when using water rates (such as size of the agency, geographic location, sources of supply) using Total Expenditures per Capita allows us to avoid the significant difficulties presented through non-rate revenues, and thus is a viable methodology for measuring operational efficiency.

6. Water Cost Comparisons Results

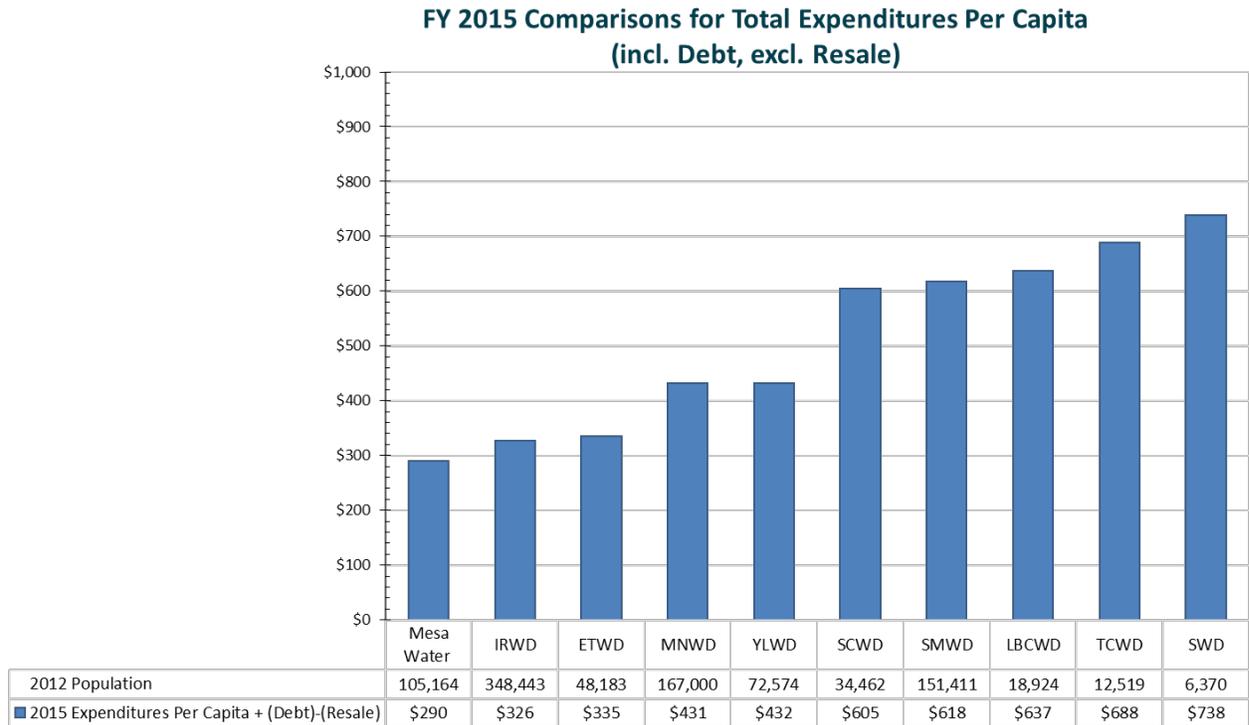
Figure 6-1 compares total expenditures per capita for various water districts within MWDOC. Total expenditure levels were collected using data³ from the California State Controller’s Office, Special Districts Water Enterprise – Revenues, Expenses and Change in Fund Equity Database and long-term principal debt payments⁴ come from Special Districts Long-term Debt Database.

³ In order to eliminate the expenses which are not directly related to providing water to the district’s population, total expenditure levels are reduced by expenses related to pass-through and similar water sales. Since the database does not include those type of expenses we used revenue from “Sales for Resale” and revenue from “All Other Sales”.

⁴ Defeased debt is not included in the long-term principal debt payments.

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Figure 6-1 Comparison of Total Expenditures per Capita for Water Districts in the MWDOC Service Area

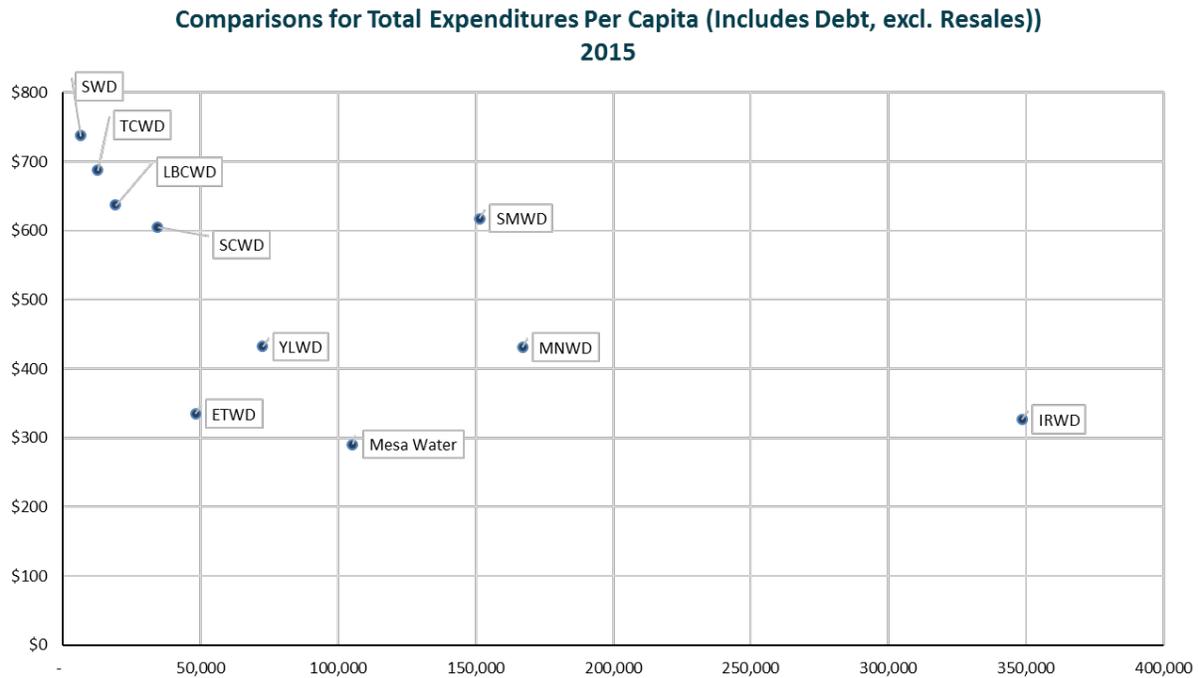


Data Sources: California State Controller’s Office, Special Districts Water Enterprise – Long-Term Debt Database
 California State Controller’s Office, Special Districts Water Enterprise – Revenues, Expenses and Changes in Fund Database
 Special District Population Data – Municipal Water District of Orange County (MWDOC) Survey (as of Aug 2013), "Orange County Water Suppliers: Water Rates and Financial Information"

From Figure 6-1, we conclude that population size has a significant influence on total expenditures per capita for each water district. We used the latest available population data (as of 2012) from the MWDOC Survey since it was discontinued in 2013. We do not expect significant changes in the population from 2012 to 2015. IRWD has the largest population of all the MWDOC agencies included in the survey (348,443 in 2012) and is able to provide some of the lowest total expenditures per capita. Further, Serrano Water District (SWD) and Trabuco Canyon Water District (TCWD) have the smallest population size (6,370 and 12,519 in 2012 respectively) and consequently have the highest total expenditure per capita. Figure 6-1 shows that, from a cost per capita basis, Mesa Water is able to provide the most cost efficient water service among the water districts in Orange County. From the results, it is possible to conclude that larger agencies, including Mesa Water, benefit from economies of scale and thus provide more efficient service, and as a result are able to drive down their total expenditures per capita. These conclusions are borne out by the data in Figure 6-2 on the following page. There is a clear trend in agencies with lower population sizes of having higher expenditures per capita.

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Figure 6-2 Comparison of Total Expenditures per Capita for Water Districts in the MWDOC Service Area including debt

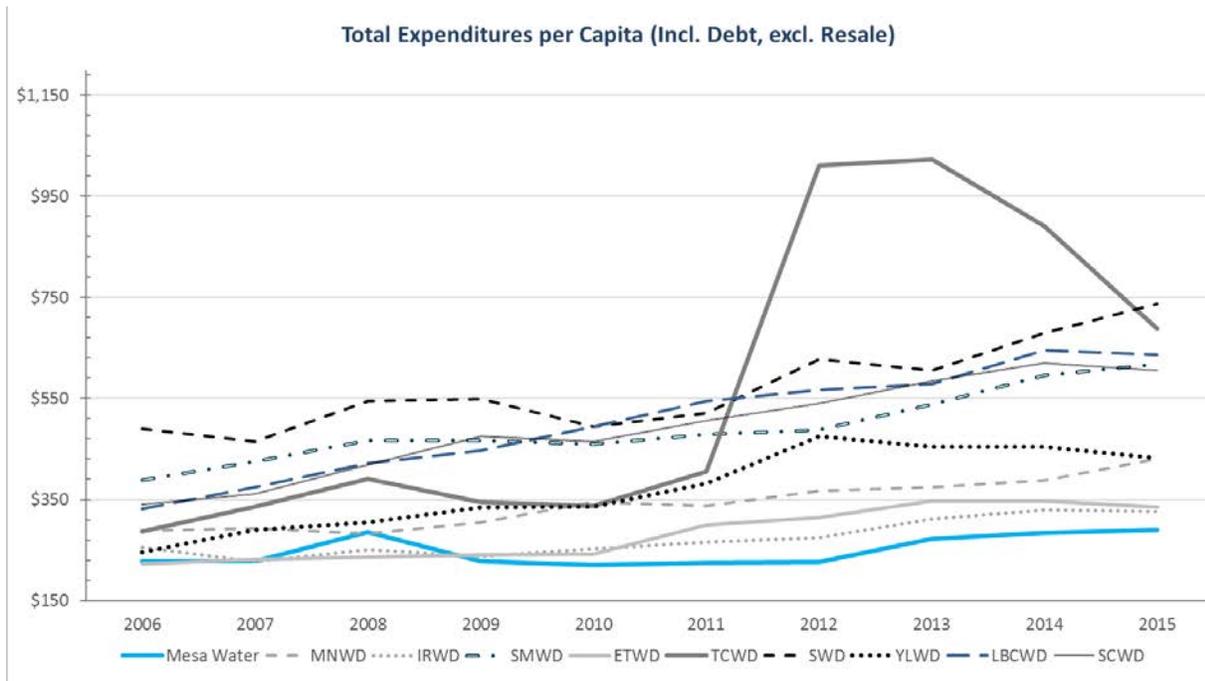


Data Sources: California State Controller's Office, Special Districts Water Enterprise – Long-Term Debt Database
 California State Controller's Office, Special Districts Water Enterprise – Revenues, Expenses and Changes in Fund Database
 Special District Population Data – Municipal Water District of Orange County (MWDOC) Survey (as of Aug 2013), "Orange County Water Suppliers: Water Rates and Financial Information"

Information on expenditures over a ten-year period is indicative of the efforts made by the water agencies to keep their expenses low (Figure 6-3). The jump in the TCWD series is due to principal debt payments in 2012-2014 period. Mesa Water has retained its position among the agencies with the lowest expenses per capita throughout the survey period. The ten-year cumulative increase of this indicator for Mesa Water is only 27%, the lowest in the group. Only IRWD has a comparable cumulative increase of 28%, while all other water agencies posted growth of more than 50%. The highest increases of 139% and 92% were registered for TCWD and LBWD, respectively. Although SWD has the highest expenses per capita, its 10-year increase was only 51%.

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Figure 6-3 Total Expenditure per Capita 2006 - 2015



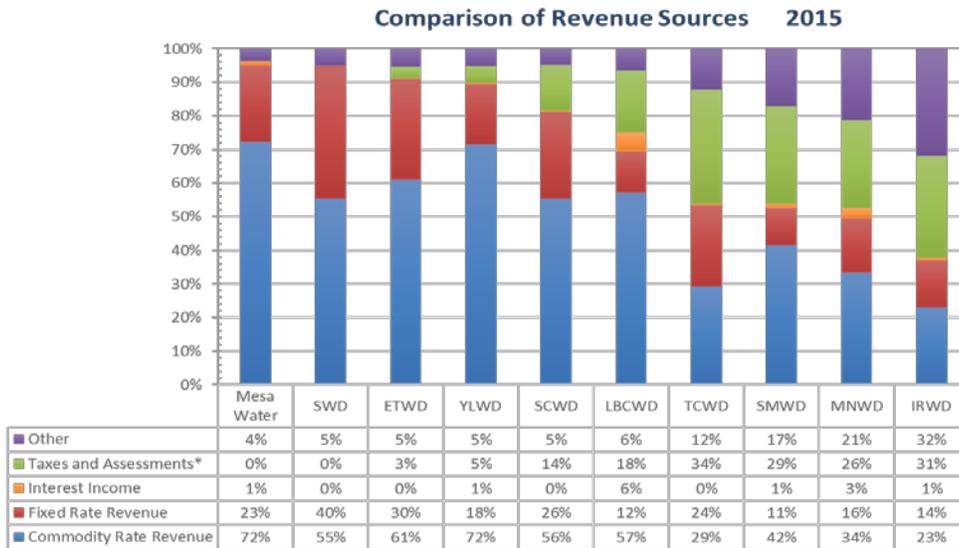
7. Value of Water and Water Conservation

The need to educate customers regarding the value of water and to promote water conservation in Southern California is critical. The conventional wisdom is that Southern California will be facing periodical drought conditions; given such challenges, water agencies need to educate customers on the value of water to promote greater conservation. One simple and proven way to achieve this is by collecting a significant portion of total revenue from commodity rates. A higher percentage of revenue from commodity rates is more likely to motivate customers to educate themselves on the cost of pumping, treating and delivering water while promoting water conservation.

The California State Controller’s Office (CSO) – Revenues, Expenses and Changes in Fund Equity Database provides operating and non-operating revenues and expenses. Figure 4-1 includes a percentage breakdown of the total sample water bill into its fixed and commodity components. By taking these fixed and commodity component percentages and multiplying them by the percentage of revenues generated by rates given in Figure 4-2, it is possible to obtain an estimate for the percentage of total water district revenues generated from fixed and commodity component of rates. Such an estimate is based on the assumption that the majority of rates for each water district are collected from SFR customers with ¾” meters, with a monthly usage of 15 hcf (which tends to hold true for most water districts). The estimated results are shown in Figure 7-1 below.

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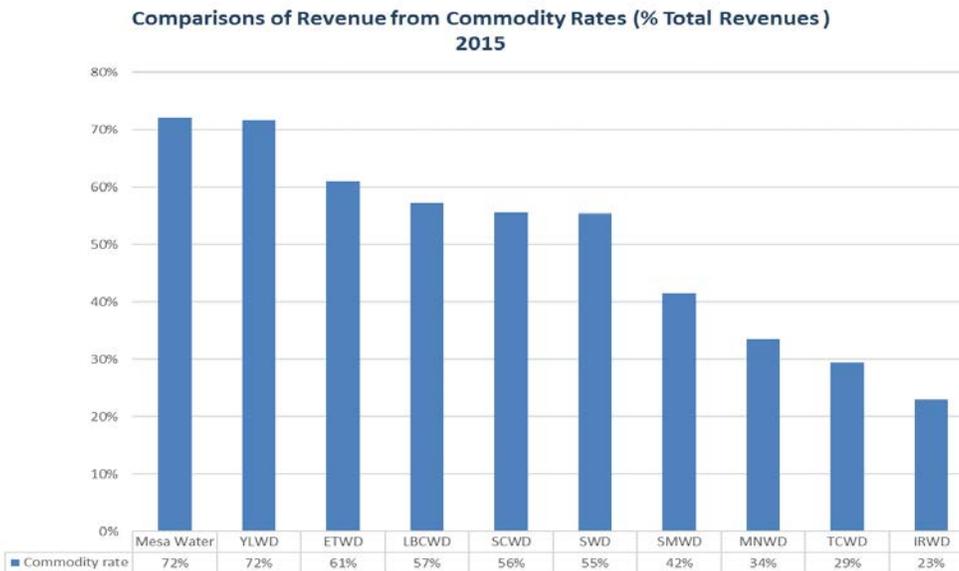
Figure 7-1 Comparison of Revenue Sources for Water Districts in the MWDOC Service Area (Includes Separation of Rates into Fixed and Commodity Components).



Data Sources: California State Controller's Office, Special Districts Water Enterprise – Revenue, Expenses and Changes in Fund Equity Database For Rate Structure – MWDOC Survey (as of Aug 2013).

Figure 7-2 takes only the commodity revenue portion (blue bars in Figure 7-1 above) and shows it separately, ranked from greatest to least.

Figure 7-2 Comparison of Revenue from Commodity Rates, as a Percentage of Total Revenues.



Data Sources: California State Controller's Office, Special Districts Water Enterprise – Revenues, Expenses and Changes in Fund Equity Database For Rate Structure – MWDOC Survey, discontinued in 2013

Agencies such as MNWD, TCWD, and IRWD are able to collect only a small portion of total revenues through commodity rates (only 34%, 29%, and 23% of total revenues generated through commodity rates, respectively) due to the fact they collect a significant portion of revenues through fixed charges, property tax and other

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revenue. Such agencies will continue to receive these sources of revenue irrespective of demand and thus maintain greater revenue stability; however, the commodity rates for these agencies are less likely to educate customers about the value of water and less likely to promote water conservation.

On the other hand, agencies such as Mesa Water, YLWD and ETWD are highly dependent on commodity rates for revenue (72%, 72% and 61% of total revenue generated through commodity rates, respectively). While these agencies are exposed to greater fluctuations in revenue due to the fact that commodity rates are directly dependent on water sales, these agencies are also achieving the goal of promoting the value of water and conservation. These rate structures, which are highly dependent on commodity rates for total revenues, send a strong “price signal” to their customers about the value of water.

8. Limitations of the Study

A key limitation of the study is that the conclusions drawn in the cost comparison analysis are strictly based on data availability. The SCO data does not collect data for capital expenditures of water districts but they are implicitly included in total operating expenses through the long-term interest payments. In addition, agencies may have higher total expenditures as a result of capital expenditures financed by cash also known as PAYGO. Lastly, an agency’s total expenditures may be low due to the inadequate funding of repair and replacement costs, which would not reflect operational efficiency. It is recommended that this study should be updated on an annual basis to determine trends.

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APPENDIX

Rate Survey Assumption 2015

Abbreviations

PPH: Persons Per Household

GPD: Gallons Per Day

DOS: Days of Service

ETo: Evapotranspiration (inches of water)

DF: Drought Factor

ETAF: Evapotranspiration Adjustment Factor

LA: Landscape Area (sqf)

MNWD - Rates effective Apr/2015; Water Budget PPH=3, GPD=60, DOS=31, ETo =4.2, DF =0, ETAF =0.7, LA=4000

IRWD - Rates effective Jul/2014; Water Budget PPH=4, GPD=50, DOS=31, ETo =4.2, DF =1, ETAF =0.75, LA=1300

SMWD - Rates effective Mar/2015; Inclining Block

YLWD - Rates effective Jul/2014; Uniform Rate

ETWD - Rates effective Jul/2014; Water Budget PPH=4, GPD=55, DOS=31, ETo =4.2, DF =0.5, ETAF =0.8, LA=4000

TCWD - Rates effective Jan/2015; Inclining Block

Mesa Water - Rates effective Jan/2015; Uniform Rate

SWD - Rates effective Aug/2014; Uniform Rate

LBCWD - Rates effective Nov/2014; Water Budget PPH=3, GPD=60, DOS=62, ETo =4.2, DF =0.7, ETAF =0.8, LA=4000

SCWD - Rates effective Jul/2014; Inclining Block