Moulton Niguel Water District

Water, Wastewater Capacity Fee and Water Demand Offset Fee Report

June 2016

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June 03, 2016

Mr. Drew Atwater
Water Resources Manager
Moulton Niguel Water District
27500 La Paz Road
Laguna Niguel, CA 92677

Subject: Water and Wastewater Capacity Fee and Water Demand Offset Fee Report

Dear Mr. Atwater:

Raftelis Financial Consultants, Inc. (RFC) is pleased to present this report on water and wastewater capacity fees and water demand offset fees to the Moulton Niguel Water District (District). Our recommendations are based on sound principles and defensible methodologies, and we are confident that our resulting fees are fair and equitable since the resulting fees are reflective of the current value and use of each system.

We have enjoyed the opportunity to assist you on this project. Should you have any questions or comments regarding this report, feel free to contact me at (626) 583-1894.

Sincerely,
RAFTELIS FINANCIAL CONSULTANTS, INC.

Sudhir Pardiwala
Executive Vice President

Steve Gagnon
Sr. Consultant

1. Executive Summary

This document outlines the purpose of capacity fees, as well as the methodologies and rationale behind implementing capacity fees. This executive summary provides a brief summary of these topics and the results of the study.

Economic and Legal Framework
Capacity fees are imposed on new customers connecting to the District's water, wastewater and recycled water systems. The purpose of a capacity fee is to charge new customers for the cost of the facilities required to provide service. Capacity fees reimburse existing customers for their past capital investment which existing customers have funded through payment of monthly fees which include capital costs and debt service payments. This way all customers have contributed to the construction costs of capital facilities.

The legal grounds for establishing capacity fees are established in Government Code Sections 66013, 66016, 66022, and 66023. Per Section 66013, capacity fees imposed by a city "shall not exceed the estimated reasonable cost of providing the service for which the fee or charge is imposed…"

Approach
There are several different methodologies to calculate capacity fees. The two that are most prevalent are the **buy-in** approach and the **incremental cost** approach. The buy-in approach is most appropriate for agencies that are already mostly built-out. It ensures that new customers pay the cost of the existing facilities. By contrast, the incremental cost approach is most appropriate for agencies anticipating construction of new facilities to meet new demand. The costs of the new facilities are distributed to customers based on their expected utilization of the new plant's capacity. Both methodologies ensure that "growth pays for growth."

RFC has utilized the buy-in approach to determine the capacity fees for the District since it does not anticipate expanding water and wastewater facilities for new users in the near term. Essentially new users are "buying-into" the current system as is. In other words, paying the replacement cost less depreciation recognizing system wear. We have used the capacity provided by the recycled water system which would help offset potable demand, and the replacement cost of the current recycled system to determine the water demand offset fee. The recycled system would need to be expanded to meet future demand and using the replacement cost of the current system provides a reasonable expansion cost.

Buy-in Approach Calculation
RFC first calculated the City's water, wastewater and recycled water system asset value using Replacement Cost Less Depreciation (RCLD) for water and wastewater assets and Replacement Cost (RC) for the recycled water system. To complete the system valuation, RFC added capital project costs identified for fiscal year ending 2017 and 2018 for each system. We then subtracted the outstanding debt principal and subtracted estimated developer contributed capital costs for the water and wastewater system.

We then divided the net asset value for each system by the equivalent meter units (EMUs) for water and wastewater and the historical three year average recycled water use for recycled water. The EMUs are calculated using the District's current meter counts and are multiplied by the hydraulic capacities from the American Water Works Association Manual M22, *Sizing Water Lines and Meter*s, and normalized using a 1" meter as the standard meter.

Table 1 shows the resulting water and wastewater capacity fees and water demand offset fee.

Table 1: Water and Wastewater Capacity Fees and Water Demand Offset Fee

Utillity	Capacity Fee
Water (1 inch meter)	$2,405
Wastewater (1 inch water meter)	$1,597
	Water Demand Offset Fee
Recycled Water	
Residential (per 1,000 Sq. Ft. of Irrigable Area)	$1,479
Non-Residential (per 1,000 Sq. Ft. of Irrigable Area)	$1,210

The proposed fees are higher than the current capacity fees – which are $700 each for the water and wastewater systems for new customers within the City of Laguna Niguel and $600 each for water and wastewater in other areas the District's serves. RFC does not have knowledge of how the prior capacity fees were derived. The District currently does not have a water demand offset fee and wants to implement the fee to provide equity through ensuring new customers pay to maintain the existing level of reliability in the system.

2. Introduction

The District engaged RFC to develop updated capacity fees for the water and wastewater systems and a water demand offset fee. Capacity fees are a one-time capital charges imposed on new customers that need to pay for the facilities needed to provide water and wastewater service. Water demand offset fees are required to provide water supply to meet the demands of new customers. Per California Government Code Section 66013, the fees "shall not exceed the reasonable cost of providing service." Therefore the fees need to reflect the estimated cost of existing or additional system capacity needed to serve them. Other common terms for capacity fees are connection fees, impact fees, system development charges, development impact fees, and capital facility charges.

The District's currently charges a capacity fee for connection to and therefore use of capacity in the water and wastewater systems. The fee is charged to new customers or those customers requesting additional capacity compared to their current allocated capacity. The current capacity fee is $700 each for the water and wastewater systems per dwelling unit within the City of Laguna Niguel. Outside the City of Laguna Niguel the current capacity fee is $600 each for the water and wastewater systems per dwelling unit. The District does not currently charge a water demand offset fee.

The current capacity fees were determined many years ago and do not reflect the current value of each utility and are calculated using equivalent dwelling units. The District desired to use the commonly used equivalent meters as a basis for charging capacity fees as this data was accurate and readily available. The proposed capacity fees reflect the current value of the water and wastewater systems, and the water demand fee represents the cost of acquiring new sources of water (the new water source being potable water that would be used for irrigation can now be used for others purposes as customers connect to the recycled water system). The proposed fees are based on the current system valuation as described in Section 4 providing the nexus required by California Government Code Section 66013.

3. Capacity Fee Economic and Legal Framework

For publicly owned utilities, capital facilities are often funded by existing customers through (monthly or bimonthly) rate and charge revenue. As new customers connect to the system, the excess capacity in the existing utility, funded by rate revenue from previous/existing customers, is available to new customers. Existing customers' investment in the existing system capacity allows newly connecting customers to take advantage of unused surplus capacity. Through the implementation of capacity fees, new customers repay the cost of existing system capacity they need to existing customers - so that existing customers are not subsidizing capital costs for new customers. This effectively puts new customers on par with existing customers regarding the capital costs to build the utility. In other words, the new users are buying into the existing system by repaying existing customers for their prior investment.

Economic Basis

The economic philosophy behind capacity fees is that water and wastewater capital facility costs should be paid for by those using the utility. In order to fairly distribute these costs, the capacity fee should reflect the cost to provide capacity to new users, and not unduly burden existing users. Accordingly, many utilities make this philosophy one of their primary guiding principles when developing their capacity fee structure.

The philosophy that those using the capacity should pay for the cost of capacity is often referred to as "growth-should-pay-for-growth." The principal is summarized in the American Water Works Association (AWWA) *Manual M1, Principles of Water Rates and Charges* in the Section on System Development Charges.

Legal Framework[1]

The District has authority to price and implement water and wastewater capacity fees and water demand offset fees. The most salient limitation on this authority is the requirement that recovery costs on new development bear a reasonable relationship to the needs and benefits brought about by the development. Courts have long used a standard of reasonableness to evaluate the legality of capacity fees. The basic statutory standards governing water and wastewater capacity fees are embodied by Government Code Sections 66013, 66016, 66022 and 66023. Government Code Section 66013, in particular, contains requirements specific to pricing water and wastewater capacity fees:

> *"Notwithstanding any other provision of law, when a local agency imposes fees for water connections or sewer connections, or imposes capacity charges, those fees or charges shall not exceed the estimated reasonable cost of providing the service for which the fee or charge is imposed, unless a question regarding the amount the fee or charge in excess of the estimated reasonable cost of providing the services or materials is submitted to, and approved by, a popular vote of two-thirds of those electors voting on the issue."*

[1] *RFC does not practice law nor does it provide legal advice. The above discussion is to provide a general review of apparent state institutional constraints and is labeled "legal framework" for literary convenience only. The City should consult with its counsel for clarification of any of the topics discussed in this section.*

Section 66013 also includes the following general requirements:

- Local agencies must follow a process set forth in the law, making certain determinations regarding the purpose and use of the fee; they must establish a nexus or relationship between a development project and the public improvement being financed with the fee.
- The capacity fee revenue must be segregated from the general fund in order to avoid commingling of capacity fees and the general fund.

4. Methodology

There are several methodologies for calculating capacity fees. The various approaches have evolved largely around the basis of changing public policy, legal requirements, and the unique and special circumstances of each local agency. However, there are three general approaches that are widely accepted for capacity fees. They are the "buy-in", "incremental-cost", and "hybrid" approaches.

Buy-In Method
The buy-in approach rests on the premise that new customers are entitled to service at the same price as existing customers. However, existing customers have already developed the facilities that will serve new customers, including the costs associated with financing those services. Under this approach, new customers pay an amount equal to the net investment made by existing users. The value of the net investment is divided by the current demand of the system –in the District's case the number of equivalent meters for water and wastewater[2] – to determine the new capacity fee.

For instance, if an existing system has 100 units of equivalent capacity[3] and a new customer desires one equivalent unit, then the new customer would pay 1/100th of the total existing system value. By paying the capacity fee, the new customer has bought into the existing system – thus the term buy-in for this methodology. The user has effectively acquired a financial position on par with existing customers and will face future capital challenges on equal financial footing with existing customers. This approach is suited for agencies that have capacity in their existing system and are essentially close to full build-out.

Incremental Cost Method
When new users connect to a utility system, they use either surplus capacity from the existing system, or they require construction of new capacity to accommodate their needs. Under the incremental-cost approach, new customers pay for the cost of additional capacity regardless of the value of past investments made by existing customers.

For instance, if it costs X dollars to provide 100 additional units of equivalent capacity and a new connector uses one of those equivalent units, then the new user would pay $X/100 to connect to the system. In other words, a new customer pays the incremental cost of capacity – thus the term incremental cost for this methodology. As with the equity buy-in approach, new connectors will

[2] For the recycled water system the divisor is the average of the past three year's recycled water use.
[3] Equivalent capacity for the District is defined as the capacity that would be used by a 1 inch water meter

effectively acquire a financial position that is on par with existing customers. This approach is best suited for growing communities where additional facilities are needed to accommodate growth.

Hybrid Method
In addition to the above two methodologies, there is also a hybrid approach which entails using aspects of both the incremental cost approach and the buy-in approach. This is appropriate when agencies have some existing reserve capacity available yet are also in the process of planning or building additional capacity. The fee produced by the hybrid approach recognizes that new customers benefit from both existing infrastructure and planned capital improvements.

5. Capacity Fee and Water Demand Offset Fee Calculation

Capacity Fee Methodology
The District elected to use the buy-in approach to calculate water and wastewater capacity fees since there is enough capacity in the water and wastewater systems. The buy-in approach takes the water and wastewater system value (separately) and divides by each system's current potential demand as represented by the total Equivalent Meter Units.

Utility System Valuation Methodology
RFC and District staff chose Replacement Cost Less Depreciation (RCLD) to value the water and wastewater systems. RCLD is commonly used and often preferred to alternative methods such as Original Cost Less Depreciation (OCLD), Original Cost (OC), and Replacement Cost (RC) because of its defensibility. In most cases – barring, for example, instances of water and wastewater systems that have depreciated significantly due to lack of replacement and repair – RCLD is more defensible because the replacement cost: 1) is inflation-adjusted and thus recovers the cost of replacing that capacity in current dollars; and 2) accounts for depreciation and thus addresses the fact that the system is not new and equipment and facilities have depreciated in value.

In addition to the investments made to maintain the existing system infrastructure, the District has also made significant investments to provide long-term supply reliability for its customers. To ensure that future development does not reduce the reliability that current customers have funded, the District plans to expand the recycled water system so that the existing potable water used for irrigation can be converted to recycled water therefore freeing up potable water. Because recycled water use will be expanded to maintain its reliability, the incremental cost method is appropriate. The replacement cost of the District's existing recycled water system provides a good estimate of the expansion costs for a recycled water system of a similar size to the current system. For the recycled water system, RFC and District staff chose Replacement Cost (RC) to value the recycled water system since the replacement cost represents the estimated cost to construct a system (of the same size and materials) today. The District would like to charge a water demand offset fee – which is similar to a capacity fee in which the incremental cost of additional water supply is isolated and divided by the marginal capacity. We are using a surrogate for the incremental cost of additional recycled water supply by using the current replacement cost of the recycled water system.

Utility System Value

Pipelines (Lines 1 and 2 in Table 4)

The District provided a pipeline database which included year of installation, pipeline material, diameter and length. RFC valued each segment using estimated replacement cost – which is a function of the material and diameter of the pipe. We obtained the replacement costs by diameter and material from the District's October 2003 Replacement Planning Model (RPM). The 2003 replacement costs from the RPM were adjusted for inflation using the 20 City Engineering News Record Construction Cost Index (ENR – CCI)[4]. RFC subtracted accumulated depreciation[5] for each pipe segment - which is a function of the pipe's age and useful life – to yield the RCLD for each pipe segment. Table 2 shows the assumed useful life for each type of pipeline material[6]. Note that the useful lives for recycled water pipe is not shown since we did not subtract depreciation for recycled water assets.

Table 2: Water and Wastewater Pipeline Useful Lives by Material

Pipeline Material	Water - Useful Life (Years)	Wastewater - Useful Life (Years)
Asbestos Cement	100	75
Polyvinyl Chloride - Pressure	75	75
Concrete Cylinder Pipe	100	NA
Cast Iron	100	75
Cement Mortar Lined & Coated	100	100
Ductile Iron	100	75
High Density Polyethylene	75	75
Other	100	75
Steel	100	75
Permastrand	NA	75
Reinforced Concrete Pipe	NA	75
PVC - Gravity	NA	75
Vitrified Clay Pipe	NA	75

Treatment Plant and Administrative Assets (Lines 3 and 4 in Table 4)

The District provided original cost records for water, wastewater and recycled water plant assets and administrative assets (buildings, file servers, telephone system etc.) from the District's October 2003 RPM. RFC adjusted each asset's original cost using the 20 City ENR-CCI so that it reflects the replacement cost of the asset today. For water and wastewater (only), we then subtracted accumulated depreciation to yield the RCLD for each asset. Depreciation is a function of the asset's age and useful life. Table 3 shows the assumed useful life for the types of assets shown in the District's Replacement Planning Model.

[4] The 20 City Engineering News Record Construction Cost Index surveys construction cost inflation for 20 cities in the United States and creates one index reflecting the average increase in the 20 cities.
[5] Depreciation was calculated assuming the straight line depreciation method
[6] Useful lives were taken from the District's Brown and Caldwell Replacement Planning Model

Table 3: Asset Useful Lives

Asset Type	Useful Life (Years)
Building	60
Computer Equipment	4
Chlorine Generator Systems	15
Communication Equipment	7
General Equipment	10
Plant Instrumentation and Control	10
Intertie Equipment	50
Large Generators	25
Non-office Structures	75
O&M Support Equipment	12
Pumps	25
Plant Process Equipment	20
Reservoir Covers and Lines	20
Reservoirs - Concrete	100
Reservoirs - Steel	75
Transportation Equipment	8
Variable Frequency Drives	10
Valves (Large)	40

Capital Improvement Projects (Line 5 in Table 4)
Capital improvement projects (CIP) for fiscal years ending 2016 and 2017 were included in the valuation of the water and wastewater systems as the fees will be implemented in FY 17. The CIP is shown in line 5 of Table 4. The CIP for water and wastewater includes Districtwide CIP that was allocated to each utility in proportion to the value of the utilities. In other words, since water's assets comprise 38% of the total value of all three utilities (water, wastewater and recycled), we allocated 38% of the District wide CIP to the water utility.

Deductions (Lines 9 and 10 in Table 4)
RFC deducted the outstanding debt principal in line 9 of Table 4 since debt service is typically recovered through rates and charges. Including debt principal would double charge customers – once through the capacity fee and once through monthly rates and charges. RFC and District Staff also elected to subtract real estate developer contributed assets for the water and wastewater utilities in line 10. Contributed assets can be subtracted from the utility valuation since the District's Rules and Regulations require developers to build and dedicate facilities to connect to the existing system. RFC estimated the value of contributed assets, by assuming that all pipelines equal to or smaller than 8 inches were installed by real estate developers. We did not subtract pipelines of 8 inches or less for the water demand offset fee since we are using the estimated construction cost (replacement cost) of the total recycled water system as a surrogate for the incremental cost of the next 7,760 acre feet of capacity (line 14). Table 4 shows the final utility system valuations after deductions in line 12.

Table 4 – Summary of Net Assets Value

Line No.	Valuation Component (A)	Water - Replacement Cost Less Depreciation (B)	Wastewater - Replacement Cost Less Depreciation (C)	Recycled Water - Replacment Cost (D)
1	Pipelines <= 8"	$217,331,195	$257,919,330	$62,633,637
2	Pipelines > 8"	$215,380,109	$81,404,695	$105,512,459
3	Plant Assets (up to 2003)	$35,442,508	$4,695,981	$53,114,143
4	Admin Assets (up to 2003)	$878,268	$1,027,489	$1,042,023
5	CIP[1]	$22,833,461	$33,887,627	$6,581,144
6	Each Utility's Portion of Districtwide CIP	$6,384,489	$7,251,978	$3,286,167
7	**Subtotal Assets**	**$498,250,030**	**$386,187,100**	**$232,169,572**
8	Less:			
9	Outstanding Debt	$78,989,750	$5,455,300	$11,505,550
10	Less Pipe with diameter <= 8"	$217,331,195	$257,919,330	$0
11	**Subtotal Deductions**	**$296,320,945**	**$263,374,630**	**$11,505,550**
12	**Total Water System Valuation**	**$201,929,085**	**$122,812,470**	**$220,664,022**
13	**Equivalent Meters**	**83,968**	**76,878**	
14	**Reycled Water Sales (Acre Feet)**			**7,760**
15	**Capacity Fee per Equivalent Meter / Demand Offset Fee per Acre Foot**	**$2,405**	**$1,597**	**$28,437**

[1] Includes "Regional Projects" for Water

Capacity Fee Calculations (Line 15 in Table 4)

For water and wastewater, we calculate the capacity fee, for 5/8", ¾" and 1" meters, shown in line 15 of Table 4, by dividing each system's value (line 12) by the number of equivalent meters (line 13). The capacity fee for larger meters is derived in Table 6.

For recycled water, we divide the system's value (line 12) by recycled water sales[7] in acre feet[8] (line 14). Note however that the demand offset shown is per acre foot – the actual fee charged to customers, based on irrigated area, is derived in Table 7.

Table 5 shows the derivation of equivalent meters. The District provided total meter counts by meter size. RFC determined the number of equivalent meters by multiplying each meter size by American Water Works Association hydraulic capacity factors which equate the potential flow through larger size meters compared to the District's standard meter of 1 inch. The hydraulic capacity factors are shown in Table 5 along with the resulting total equivalent meters in line 12 of Table 5 and restated in line 13 of Table 4. The wastewater equivalent meters differ from the water equivalent meters because the wastewater equivalent meters exclude irrigation and no-sewer accounts.

[7] We used the average of the last three years
[8] An acre foot is equal to the volume of water that would cover an acre with a depth of 1 foot, or 43,560 cubic feet.

Table 5 – Equivalent Meter Derivation

Line No.	Meter Size	AWWA Hydraulic Capacity Factor	Water Meter Count	Wastewater Meter Count	Water Equivalent Meters	Wastewater Equivalent Meters
1	5/8"	1.0	114	3	114	3
2	3/4"	1.0	36,167	35,947	36,167	35,947
3	1"	1.0	11,923	11,569	11,923	11,569
4	1.5"	2.0	864	496	1,728	992
5	2"	3.2	3,727	2,087	11,926	6,678
6	2.5"	5.1	29	29	148	148
7	3"	7.0	82	68	574	476
8	4"	12.6	160	148	2,016	1,865
9	6"	28.0	318	317	8,904	8,876
10	8"	48.0	188	185	9,024	8,880
11	10"	76.0	19	19	1,444	1,444
12			**53,591**	**50,868**	**83,968**	**76,878**

Table 6 shows the water and wastewater capacity fees for all meter sizes which we determined by multiplying the fee for the 1 inch meter by the AWWA hydraulic capacity factor for each meter size.

Table 6 – Water Capacity Fees by Meter Size

Meter Size	AWWA Hydraulic Capacity Factor	Water Capacity Fee	Wastewater Capacity Fee
5/8"	1.0	$2,405	$1,597
3/4"	1.0	$2,405	$1,597
1"	1.0	$2,405	$1,597
1.5"	2.0	$4,810	$3,195
2"	3.2	$7,695	$5,112
2.5"	5.1	$12,265	$8,147
3"	7.0	$16,834	$11,182
4"	12.6	$30,301	$20,128
6"	28.0	$67,335	$44,730
8"	48.0	$115,432	$76,680
10"	76.0	$182,767	$121,410

The water demand offset fee is based on releasing potable demand currently used for irrigation and is calculated by estimating the efficient irrigation demand of new customers. Table 7 shows the final calculation per 1,000 square feet of irrigated area in line 6. We derive the fee by multiplying the per acre foot cost in line 15 of Table 4 by line 4 in Table 7 and divide by line 5 to get the proper units. The fee is different for Residential and Non-Residential customers due to the different evapotranspiration factors from the 2016 Model Water Efficient Landscape Ordinance (MWELO). Evapotranspiration factors account for the amount and type of plants (water wise plants) as well as the type of irrigation

systems used (efficient irrigation systems) consistent with the California Department of Water Resource's MWELO.

Table 7 – Recycled Water Demand Offset Fee Calculation

Line No.		Residential	Non-Residential
1	Square Feet of Landscape Area	1,000	1,000
2	Model Water Efficient Landscape Ordinance Evapotranspiration Factor	0.55	0.45
3	Average Evapotranspiration for Moulton Niguel Service Area (feet)[1]	4.1	4.1
4	Water Demand (cubic feet / year / 1,000 sq. ft.)[2]	2,266	1,854
5	Cubic feet per Acre Foot	43,560	43,560
6	**Water Demand Offset Fee per 1,000 Square Feet of Irrigated Area**	**$1,479**	**$1,210**

[1] The total evapotranspiration is based on the average annual evapotranspiration across all 118 micro-zones within the District's service area.

[2] Water demand in line 4 is based on line 1 multiplied by line 2 multiplied by line 3. Additional digits beyond the tenths are the cause of the difference.

Annual Update

The District could update their water and wastewater system capacity fees annually. The easiest way to do this would be to multiply the yearly change in the Engineering News-Record Construction Cost Index (ENR-CCI), which tracks changes in construction costs. For example if the ENR –CCI for FYE 2018 is 6% higher than the ENR-CCI for FYE 2016, then the District could increase the capacity fees by 6%. This method of escalating the City's system capacity fees should be used for no more than four to five years. After four to five years, RFC recommends that the District update the fees based on the updated valuation of the District's infrastructure and new planned facilities that would be contained in an updated system plan or capital improvement plan. Note that the asset values were calculated using the 20-City CCI of 11,223 for 2016.

6. Capacity Fee Comparison

RFC researched the capacity fees for surrounding agencies as a point of comparison. Note that the capacity fees for each agency are dependent on a number of factors including but not limited to the capacity fee methodology used, system age, topography, and number of customer connections. Figures 1 and 2 show a comparison of water and wastewater capacity fees, respectively. Note that Santa Margarita Water District collects a capital related charge through property tax bills to recover General Obligation Bond debt service which may contribute to its low capacity fee.

Figure 1 – Water Capacity Fee Survey

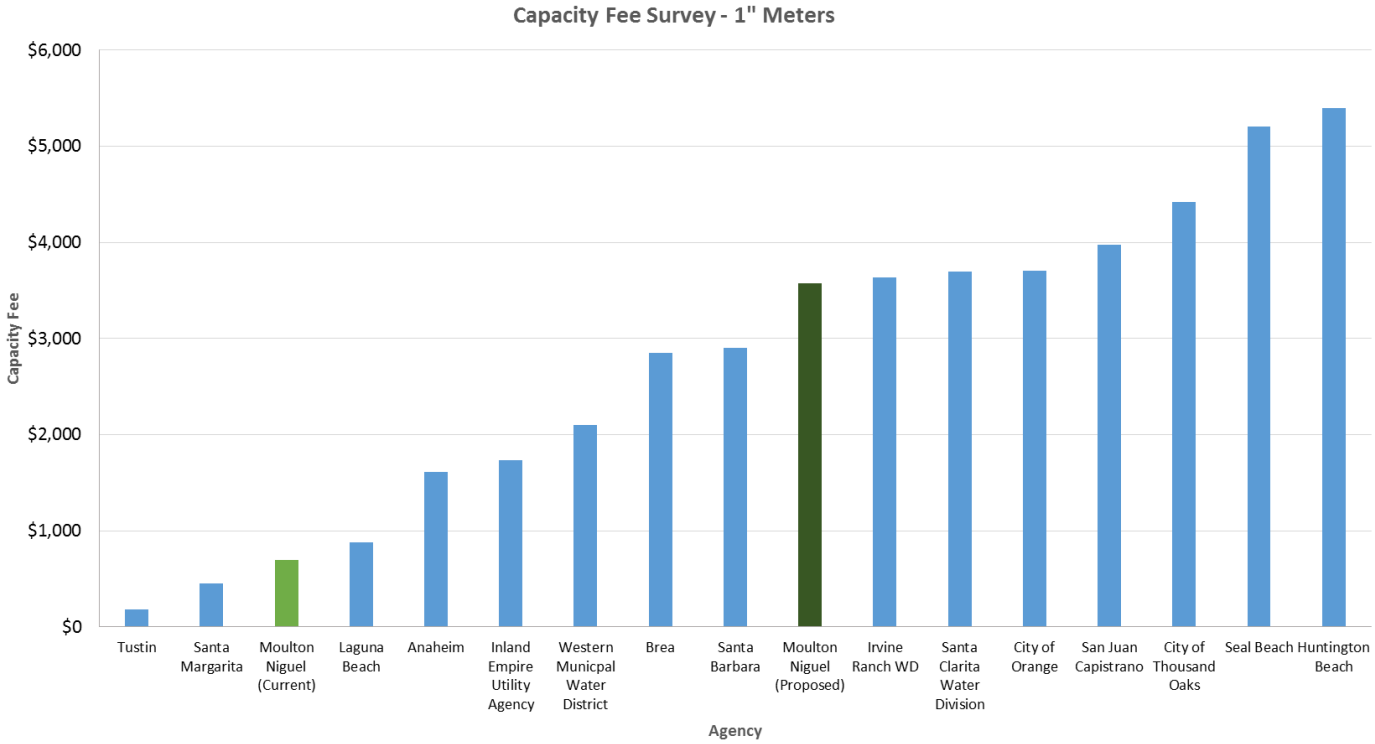
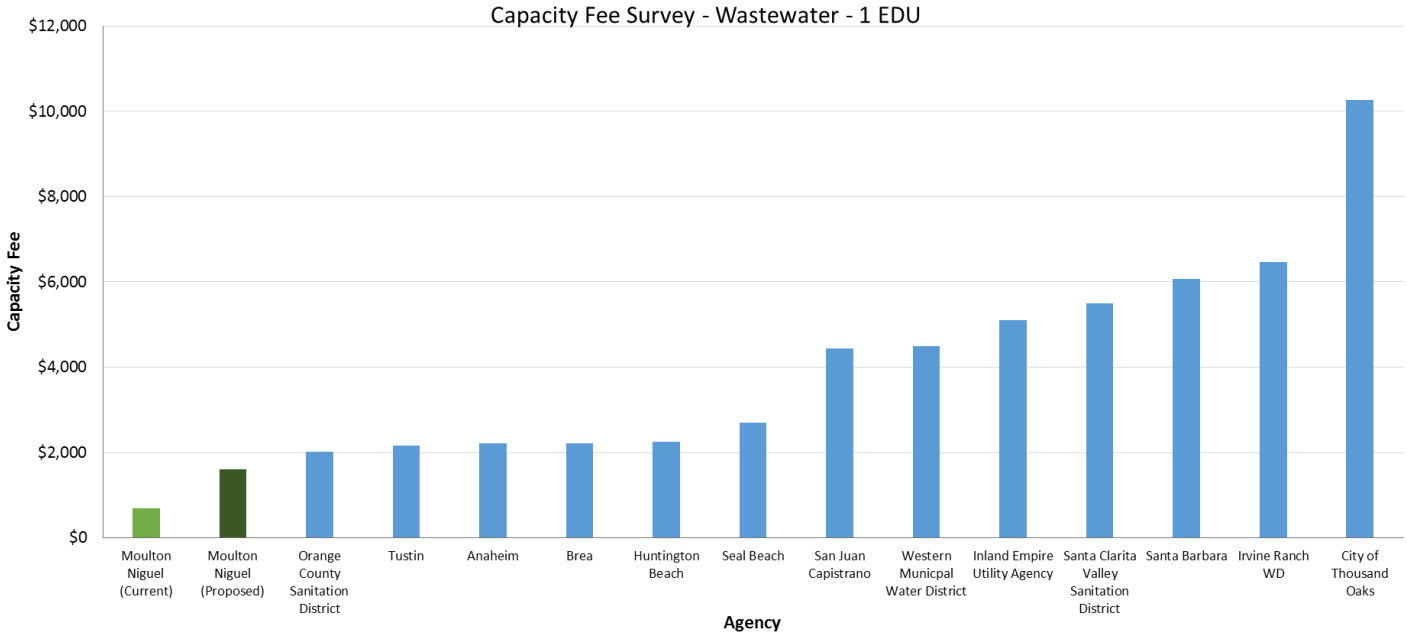


Figure 2- Wastewater Capacity Fee Survey



7. Conclusion

RFC recommends that the District implement water and wastewater capacity fees and water demand offset fees that are reflective of the cost of providing service to new customers as shown in this report. The proposed water and wastewater fees are based on the cost to "buy-in" to these utilities so that new customers are on par with the past investment made by existing customers. The water demand offset fee is based on our estimate to procure incremental recycled water capacity which will help offset potable water demand.