DRAFT
JUNE 14, 2021

TECHNICAL MEMORANDUM: RATE IMPACT ANALYSIS

MICHAEL HANEMANN

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1. Introduction

This is my preliminary analysis of the impact on water rates if Fallbrook Public Utility District (FPUD) and/or Rainbow Municipal Water District (RMWD) change from being served by San Diego County Water Authority (SDCWA) to being served by Eastern Municipal Water District (EMWD) as the wholesale supplier of water.

The analysis is preliminary. It draws on multiple sources of publicly available data, not all of which are consistent. Information sources were prepared at different points in time, and they convey different information. Some report data by calendar year (CY); others by fiscal year (FY). Some are prospective – for example, an Approved Budget; others are retrospective – for example, a Comprehensive Annual Financial Report delivered retrospectively. In order to produce a consistent analysis, I have had to make assumptions and form estimates. These are all documented below. I would welcome corrections and suggestions following the June 14 meeting, which I will incorporate in a revised analysis to be presented at the July meeting.

The analysis presented here is a partial analysis: it deals with the impact of FPUD/RMWD exit from SDCWA on SDWA water rates. Also, for now, the analysis assumes that FPUD and RMWD *both* exit. The impact on FPUD and RMWD water rates requires an assessment of the finances and rate setting practices not only of FPUD and RMWD but also those of EMWD and the Metropolitan Water District of Southern California (MWD). That analysis will be presented at the July Committee Meeting, but it will follow the template developed here for SDCWA rate impacts.

2. Questions to be Addressed

To assess the impact on SDCWA water rates if FPUD and RMWD both exit SDCWA, one first needs to answer two questions:

(1) If FPUD and RMWD both exit the SDCWA service area, how does that affect the amount of revenue received annually by SDCWA? There are two components to this revenue: the volumetric payments (how does the volumetric revenue received by SDCWA change if it sells a unit more of water, or a unit less, to its member agencies?) and other fees and charges paid to SDCWA (how do those revenues change?).
(2) If FPUD and RMWD both exit the SDCWA service area, how does that affect the costs incurred by SDCWA to operate its water supply system? Some of those costs may be volumetric (what is the marginal cost to SDCWA to supply an additional unit more of water, or a unit less?) Some of the costs are non-volumetric.

Given answers to those questions, one can then address two more questions:

(3) If FPUD and RMWD both exit the SDCWA service area, how does that impact SDCWA's net revenue?
(4) If PFUD and RMWD both exit the SDCWA service area, how does the water rates and charges levied by SDCWA on the remaining agencies within its service area?

3. Fixed Costs As The Key Factor

One feature that makes the water industry distinctive as a business is the dominant role of fixed costs in water supply. Fixed costs are larger component of the total cost of water supply than for any other utility industry, including electricity, natural gas, and telephone.

If, contrary to reality, all water supply costs were what economists call variable costs, then a retail water supply agency could join, or leave, the service area of a wholesale water supply agency in a manner that is revenue neutral for the wholesale supplier.

In reality, however, the preponderance of water supply costs are fixed costs, as detailed for SDCWA in the analysis below. That changes the situation. This can be illustrated with a simple example involving MWD. Suppose SDCWA takes delivery of one acre-foot less of untreated water from MWD. For that water, SDCWA would have paid MWD (today) $243 as the Tier 1 supply rate, $373 as the system access rate and $161 as the system power rate, for a total payment of $777.[1] SDCWA saves an expenditure of $777 by receiving an acre-foot of water less from MWD, and MWD loses $777 of revenue.

MWD would also avoid some costs by delivering an acre-foot less to SDCWA, but certainly *less* than $777. For example, it would not actually avoid $373 in conveyance/ distribution costs since most of those are fixed costs which remain the same regardless of whether MWD delivers an acre-foot of water more, or less. Similarly, some quantum of the supply rate and of the system power rate reflects fixed costs that MWD does not avoid incurring when it delivers an acre-foot less to SDCWA.

Therefore, the change is not revenue neutral for MWD: it receives $777 less of revenue but its costs fall by *less* than $777.

In addition to the presence of fixed costs, another factor that could make the change not revenue neutral for MWD is the presence of fixed contractual purchase commitment. Suppose that MWD's system power rate of $161 is entirely a variable cost (i.e., it reflects just the actual cost of electricity in $/kWh multiplied by the particular amount of electricity (kWh) required for MWD to convey an acre-foot of water to SDCWA), but MWD has a contractual commitment to purchase 5,000 kWh of electricity from the State Water Project (SWP). For MWD, the $161

[1] MWD Biennial Budget FY 2020/21 and 2021/22, Table 14 (p. 51).

becomes, in effect a fixed cost, because MWD is committed to purchasing a fixed amount of kWh regardless of whether it actually needs that much electricity to convey water to SDCWA.

Purchase commitments turn costs into fixed costs.

And, however they arise, fixed costs are financially harmful to a supplier when its sales decline.

4. FPUD and RMWD Compared to Other SDCWA Member Agencies

FPUD and RMWD accounted for 1.7%[2] of the population served by SDCWA in FY 2020 and 8.1%[3] of the acreage in SDCWA's service area.[4] In FY2020, FPUD and RMWD together received 6.43%[5] of the water delivered by SDCWA in FY 2020 to member agencies, which represents a higher rate of usage per capita, but not per acre, than the average across all member agencies.

One third – 33.6%[6] -- of the water delivered by SDCWA to FPUD and RMWD in FY 2020 was for agricultural use, compared to the overall member agency average of 6.7%.[7] Agricultural use of SDCWA delivered water by FPUD and RMWD accounted for 32.0%[8] of total agricultural use by SDCWA member agencies. M&I use of SDCWA delivered water by FPUD and RMWD accounted for 4.58%[9] of total M&I use by SDCWA member agencies. Thus, agricultural use per capita of SDCWA delivered water in FPUD and RMWD is higher than in other member agencies, and M&I use per capita of SDCWA delivered water in FPUD and RMWD was also higher than in other member agencies.

[2] = 54,944/323,060.6.
[3] = 75,658/934,777.5.
[4] These and the following statistics are taken from the SDCWA Annual Report FY 2020, consulted online at sdcwa.org/annualreport/2020/diversification-and-operation/water-sources-and-uses.php on 6/11/2021.
[5] =22,278.9/346,430.9.
[6] = 7,483.8/22,278.9.
[7] = 23,370.3/346,430.9.
[8] = 7,483.8/23,370.3.
[9] = 14,795.1/323,060.6.

5. SDCWA Revenue Structure

SDCWA obtains revenue from water-related charges and from other sources. The water related charges are as follows:

TABLE 1 SDCWA WATER RATES AND CHARGES CY 2021		
	ITEM	
CHARGED TO MEMBER AGENCIES		
a	M&I Water supply rate ($/AF)	$940
b	Agricultural water supply rate ($/AF)	$777
c	Transportation rate ($/AF)	$150
d	Treatment rate ($/AF)	$295
e	Customer Service Charge - Total, all member agencies ($)	$25.6M
f	Storage Charge - Total, all member agencies ($)	$60.0M
g	Supply Reliability Charge - Total, all member agencies ($)	$38.84M
h	Infrastructure Access Charge ($/meter equivalent)	$4.24
CHARGED TO PROPERTIES IN SERVICE AREA		
i	Water Availability Standby Charge (per property in service area)	$10
j	Ad Valorem Property Tax	VARIES
k	System Capacity Charge per new meter less than 1" ($)	$5,301
l	Treatment Capacity Charge per new meter less than 1" ($)	$147

Some of the items are charged to member agencies (items a-h), and others are charged to properties in the SDCWA service area (i-l).

Depending on the item, charges to member agencies vary by acre-feet of water supplied each month (items a-d), by the individual agency's share of the acre-feet supplied to all member

agencies over a past three-year period (e,f) or five-year period (g), or by the number of individual meters served by the agency in the previous year (h).

If FPUD and RMWD leave SDCWA's service area, SDCWA's revenue from each item in the table will be reduced.

For each acre-foot less of water supplied by SDCWA, it foregoes $1,090 (= 940 + 150) if the water is untreated and delivered by a member agency for M&I use, and $1,385 (= 1,090 + 295) if it is treated.

If the water is delivered for agricultural use, SDCWA charges a member agency only $927 (= 777 + 150) if the water is untreated, and $1,222 (= 927 + 295) if it is treated. In doing this, SDCWA is reducing the commodity supply rate for water for agricultural use from the standard level of $940 to a rate of $777, which corresponds to MWD's Tier 1 rate for untreated water. In exchange for receiving the lower supply rate, agricultural customers of a member agency receive a less reliable water supply with a higher likelihood of being cut back in the event of shortage than M&I customers.[10]

The volumetric rates (a-d) represent the most highly variable sources of revenue for SDCWA. The least variable sources of revenue are the Water Availability Standby Charge and the ad valorem property tax (items i and j).[11]

Intermediate in variability are items (e - h). These are fixed annual charges to member agencies designed to cover specific types of fixed costs incurred in connection with SDCWA's supply system.

The oldest is the Customer Service Charge (e), which is set to cover fixed costs (i.e., costs that do not vary in proportion with the volume of water delivered) that are necessary to support SDCWA functions, to develop policies and to implement system-wide programs.

The Storage Charge is a fixed charge introduced to recover costs associated with SDCWA's Emergency Storage Program (ESP) and Carryover Storage Program (CSP). Initiated in 1989, the ESP is a system of reservoirs, pipelines and other facilities designed to store and move water around the county in the event of an interruption in imported water deliveries (from MWD, originally). Initiated in 2002, the CSP involves the development of additional operational flexibility and additional storage (both above and below ground) so as to allow SDCWA to

[10] This reflects the lower supply reliability of water obtained by SDCWA from MWD as compared to SDCWA's own sources (Colorado River and desalination). In the event of a shortage, SDCWA deliveries to member agencies for agricultural customers are cut back by the same percentage that MWD cuts its deliveries.

[11] The capacity charges (items k and l) are a one-time fee collected whenever a water delivery system is expanded to include new development.

accept additional deliveries of water during periods of greater availability (e.g., wet years) to be carried over for distribution during periods of shortage (e.g., dry years).

The Customer Service and Storage Charges are calculated in the following manner.[12] The calculation starts with the determination of an *Aggregate Revenue Requirement*. The Aggregate Revenue Requirement (ARR) is calculated on an annual basis as follows:

ARR = Operating Expenditures budgeted for SDCWA's 10 operating departments

plus Projected Debt Service (long-and short-term debt)

plus Departmental equipment purchase and replacement

plus Cost recovery for certain miscellaneous items

plus Contributions required to maintain funds in accord with SDCWA Board financial policies replacement

minus Certain Offsetting Revenues (including projected revenues from the Infrastructure Access Charge, the System Capacity and Treatment Capacity Charges, the Water Availability Standby Charge, property taxes, interest earnings and certain miscellaneous revenue items).

The individual line items comprising the ARR are each allocated among five functional categories: (i) customer service; (ii) storage; (iii) water supply; (iv) transportation; and (v) treatment.

The total of all the ARR line items allocated to (i), customer service, constitutes the total amount of the Customer Service Charge ($25.6M in the table above). This is divided up among the member agencies based on a rolling average of each agency's share of the total amount of M&I plus agricultural water purchased by all agencies from SDCWA over the past three years.

The total of all the ARR line items allocated to (ii), storage, constitutes the total amount of the Storage Charge ($60.0M in the table above). This total is similarly is divided up among the member agencies based on a rolling average of each agency's share of the total amount of water purchased by all agencies from SDCWA over the past three years. In this calculation, however, only deliveries of water M&I use are considered, not those for agricultural use.

The totals of all the ARR line items allocated to (iii) water supply, (iv) transportation, and (v) treatment are averaged over the amounts of water projected to be sold and then incorporated

[12] This description is derived from Carollo, *San Diego County Water Authority Cost of Service Study. CY 2021 Rates and Charges*, Draft, May 2020.

in the determination of the volumetric rates for, respectively, M&I water supply, transportation, and treatment.

Introduced in 1998, the Infrastructure Access Charge (IAC) was added by the SDCWA Board for the purpose of reducing short-run variability in SDCWA revenues due to fluctuations in volumetric sales. The IAC raises the amount of fixed expenditures recovered through fixed charges with the goal of generating a minimum 25 percentage ratio of fixed revenues to fixed expenditures. The annual IAC is calculated as follows:

IAC Baseline = Projected Annual Debt Service

plus Projected Depreciation

plus 0.8 * (Operating Expenditures of the 10 operating departments)

plus Some miscellaneous other costs.

The assumption implicit in this formula for the IAC Baseline is that 80% of forecast O&M costs are fixed costs.

The annual IAC target amount is calculated as:

IAC = 0.25 * (1.1 * Baseline)

minus Offset for revenue from Water Availability Standby Charge and property taxes.

This formula produced an IAC amount of about $47M, which was then divided up among the member agencies based on each agency's share of the total number of meter equivalents in the SDCWA service area to total meter equivalents to produce the value of $4.24 per meter equivalent shown in the table above.[13]

The Supply Reliability Charge was introduced in 2016 in order to recover a portion of the costs of water from the Carlsbad Desalination Plant and the IID transfer. The charge is set equal to 25% of the difference in the supply cost of a given amount of water obtained from those two reliable sources versus the same amount of water purchased at the MWD Tier 1 rate. For CY 2021, this charge was based on a quantum of 247,000 AF obtained from the Carslbad Desalination Plant and IID versus from MWD. That produced the charge revenue target of $38.84M shown in the table. This is divided up among the member agencies based on a rolling average of each agency's share of the total amount of M&I water purchased by all agencies from SDCWA over the past five years.

[13] The total number of meter equivalents for CY 2021 was 927,934.

Table 2 presents an estimate of how much revenue these various water-related rates and charges generated for SDCWA in FY 2020.

TABLE 2							
SDCWA WATER SALES FY20 ADOPTED BUDGET*				SDCWA WATER SALES FY20 ACTUAL**			
ITEM	VOLUME (AF)	REVENUE ($)	Unit vaiue ($/AF)	ITEM	VOLUME (AF)**	REVENUE ($)***	Percent
COMMODITY				COMMODITY			
Melded Supply Rate	369,662	$338,899,318		Melded Supply Rate	323,061		
Melded Treatment Rate	157,302	$43,679,404		Melded Treatment Rate	129,363		
Transportation Rate	408,524	$52,875,767		Transportation Rate			
TSAWR	38,862	$35,627,048		TSAWR	23,370		
Subtotal Commodity	408,524	$471,081,537	$1,153	Subtotal Commodity***	346,431	$399,480,197	75.9%
FIXED				FIXED			
Storage Charge		$65,000,000		Storage Charge		$65,000,000	
Customer Service Charge		$25,600,000		Customer Service Charge		$25,600,000	
Supply Reliability Charge		$33,815,000		Supply Reliability Charge		$33,815,000	
Subtotal Fixed		$124,415,000		Subtotal Fixed		$124,415,000	23.6%
Subtotal Water Authority		$595,496,537		Subtotal Water Authority			
PASS THROUGHS		$39,598,690		PASS THROUGHS		$39,598,690	
ADJUSTMENTS		($2,523,408)		ADJUSTMENTS***		$2,290,287	0.4%
TOTAL WATER SALES		$632,571,819		TOTAL WATER SALES**		$565,784,174	
				TOTAL (excluding PassThroughs)***		$526,185,484	100.0%
SOURCES							
* SDCWA Adopted Budget FY 2021 & 2022, Table 4, p.28.							
**SDCWA Comprehensive Annual Financial Report FY 2020, pp. 79, 109.							
*** My estimate/assumption							

The table uses data reported in SDCWA's Adopted FY 2020 Budget and its FY 2020 CAFR, and is supplemented by some additional assumptions on my part. While the Adopted Budget provides a detailed breakdown of the individual components of water sales revenue, the CAFR aggregates most of these components into a single category, "water sales." Table 2 uses data from the Adopted Budget to make an estimate of the breakdown that underlies the actual water sales data reported in the CAFR.

Both the Adopted Budget and the CAFR include under water sales some revenues received by SDCWA that are really pass-through items. The first group is Readiness-to-Serve (RTS) Charges and Capacity Charges levied on properties within MWD's service. SDCWA member agencies collect these revenue from their customers, and pass them on to SDCWA; SDCWA then passes them on to MWD. These amounts were projected at $13,460,080 (RTS) and $8,140,735 (Capacity Charges) for FY 2020. The other item arises from the fact that two SDCWA member agencies – Carslbad and Vallecitos Water Districts – received 6,000 AF of desalinated water from the Carlsbad Plant. The cost attributed to this water is projected at $17,998,875. The two water districts reimburse SDCWA for this cost. I have grouped all these amounts in the category

"Pass Throughs " and I assume that the actual dollar amounts turned out to be identical to those in the approved budget.

In the table, I assume that the various fixed charges allocated by SDCWA to member agencies in the approved budget were actually received as planned.

The actual sales of water by SDCWA to member agencies in FY 2020 turned out to be a bit lower than had been projected in the approved budget. The FY 2020 CAFR reports the actual sales, but does not isolate the revenue earned through those sales. To estimate this, I took the overall average revenue per acre-foot delivered by SDCWA to member agencies, as projected in the approved budget, and applied it to the overall amount of water actually delivered.

Making these assumptions, the total figure I develop for actual water sales is within 1% of the value reported in the CAFR. I calibrated the total actual water sales to the value reported in the CAFR and added the error to the "Adjustments" item.

The breakdown of actual water sales shown in the table (setting aside pass throughs) indicates that almost 76% of the water sales revenue received by SDCWA in FY 2020 was from volumetric rates, and therefore vulnerable to fluctuations as the quantity of water delivered by SDCWA varies.

Table 3 supplements this information by including other sources of revenue received by SDCWA in FY 2020 besides what the CAFR labels "water sales".

Excluding the pass throughs and certain other items,[14] SDCWA's total revenue from all sources in FY 2020 was $639.3 M. Revenue from volumetric charges (item a in the table) accounted for 62.5% of this total.

In addition to the commodity charges revenue (a), SDCWA receives from other water-related items, including b, c, d, e and. Total revenue received by SDCWA from items a – f in FY 2020 amounted to $605.5M, accounting for 94.7% of SDCWA's revenue in FY 2020.

If FPUD and RMWD leave SDCWA's service area, SDCWA's revenue from each of these items will be reduced to some degree, unless existing rates and charge schedules are altered.

[14] He main other item of revenue excluded is Contributions in Aid of Capital Improvement Program (CIP).

TABLE 3 SDCWA REVENUES FY 2020 ACTUAL*			
	ITEM	**$ Thousands**	**Percent**
	WATER RELATED		
a	Commodity Rates**	$399,480	62.5%
b	Fixed Charges**	$124,415	19.5%
c	Infrastructure Access Charge*	$36,942	5.8%
d	Availability Standby Charge*	$11,164	1.7%
e	Capacity Charges*	$17,983	2.8%
	Subtotal	$589,984	92.3%
	WATER PASSTHROUGHS**	$39,599	
	OTHER REVENUE & INCOME*		
f	Property Taxes & In-lieu Charges	$15,526	2.4%
	Investment Income	$6,789	1.1%
	Hydroelectric Revenue	$3,192	0.5%
	All Other Income/Revenue	$23,831	3.7%
	Subtotal	$49,338	7.7%
	TOTAL	**$678,921**	
	TOTAL (excluding Water Passthroughs)	**$639,322**	100.0%
	SOURCES:		
	*SDCWA Comprehensive Annual Financial Report FY 2020, pp. 79, 110.		
	** Table 2 above		

6. Reduction in SDCWA Revenue Under Current Rates

For the purpose of a simplified, I calculate the reduction in SDCWA revenue that would occur if both FPUD and RMWD had exited the SDCWA service area in FY 2020 under the rate structure applicable in CY 2021. The result is shown in Table 4.

I use the delivery levels for FPUD and RMWD in FY 2020, which amounted to 7,484 AF for agricultural use and 14, 795 AF for M&I use. The resulting loss of SCDWA revenue from volumetric charges amounts to $29.6 M.

With respect to the Customer Service, Storage and Supply Reliability Charges, I use the CY 2021 schedule of monthly member agency fixed charges as posted on the SDCWA web site. On an annual basis, the reduction in SDCWA's revenue from these charges amounts to $7.2M.

TABLE 4 REDUCTION IN SDCWA ANNUAL REVENUE IF FPUD & RMWD EXIT

Item	Unit Rate	Quantity Change (AF)	Agency Share	Revenue Reduction ($)
M&I Water supply				
Water Supply	$940	14,795		$13,907,300
Transportation	$150	14,795		$2,219,250
Treatment	$295	14,795		$4,364,525
Ag Water supply				
Supply	$777	7,484		$5,815,068
Transportation	$150	7,484		$1,122,600
Treatment	$295	7,484		$2,207,780
Subtotal - volumetric charges				$29,636,523
Customer Service Charge*	$136,361/mo			$1,632,516
Storage Charge*	$212,651/mo			$2,551,812
Supply Reliability Charge*	$136,361/mo			$1,636,332
Infrastructure Access*	$112,415/mo			$1,348,980
Subtotal - charges				$7,169,640
Property Taxes				
Availability Standby Charge				
System Capacity Charge				
Treatment Capacity Charge				
TOTAL				$36,806,163

* https://www.sdcwa.org/member-agencies/rate-allocation/ Consulted 6-7-2021

In addition, there would be some loss of property tax revenue and in revenues from the Water Availability Standby Charges and the Capacity Charges for which I do not yet have information.

In summary, if FPUD and RMWD had both exited the SDCWA service area in FY 2020, with everything else the same, I estimate that this would have reduced SDCWA's revenue by $36.8 M plus other amounts associated with reduced property tax revenue, Water Availability Standby Charge revenue, and Capacity Charges revenues.

7. SDCWA Cost Structure

In the case of expenses, and particularly water supply related expenses, while SDCWA's Adopted Budget for FY 2020 & FY 2021 provide considerable detail, the CAFR for FY 2020 offers almost no detail.[15] It is not possible, therefore, to combine those two data sources into a single consistent analysis of the structure of SDCWA's costs in the way done for SDCWA's revenues in Tables 2 and 3. Consequently, for the equivalents of Tables 2 and 3 covering SDCWA expenses, I can have only data in FY 2020 Adopted Budget.

Table 5 presents the breakdown of FY 2020 water supply expenses as found in the Adopted Budget, omitting the funds received from member agencies for the RTS and Capacity Charges and passed through by SDCWA to MWD.[16] The Adopted Budget assumed that SDCWA would deliver a total of 408,524 AF to member agencies in FY 2020, and would have a total expenditure for water supply (included MWD's RTS and Capacity Charges) amounting to $518,502,779. However, the CAFR for FY 2020 reports that SDCWA actually had a total expenditure for water supply of $449,752,096, which is 13.2% lower than the amount in the Adopted Budget.

Table 6 goes on to present the *other* expenditures incurred by SDCWA in FY 2020, besides the water supply expenses itemized in Table 5, as detailed in the Adopted Budget. The take-home from the table is that – at least in the Adopted Budget – water supply expenses accounted for 61.7% of SDCWA's total annual expenditure in FY 2020.

All of the non-water supply expenditures in Table 6 represent fixed costs as opposed to variable costs (i.e., they represent expenditures that would not have been avoided if had SDCWA delivered less water to member agencies). In addition, some of the water supply expenses itemized in Table 5 also represent fixed costs rather than variable costs.

[15] The relevant item, called "cost of sales" in the CAFR, is not disaggregated in any way.
[16] These amount to $21,600,815 in the Approved Budget.

TABLE 5 SDCWA WATER SUPPLY EXPENSES FY20 ADOPTED BUDGET				
	ITEM	VOLUME (AF)	EXPENDITURE ($)	Unit cost ($/AF)
	MWD SUPPLIES			
a	Full Service Untreated Water	73,212	$54,106,572	$739
b	Untreated TSAWR	38,862	$28,860,673	$743
	Subtotal MWD	112,074	$82,967,245	
	QSA SUPPLIES			
c	IID	176,250	$118,570,000	$673
d	All-American & Coachella Canals	78,200	$1,133,150	$14
e	MWD Wheeling Cost	254,450	$119,183,750	$468
f	QSA Mitigation		$4,711,000	
	Subtotal QSA	254,450	$243,597,900	$957
g	**CARSLBAD DESAL PLANT**	42,000	$97,933,920	$2,332
	TOTAL SUPPLY	408,524		
	TREATMENT			
h	MWD	31,681	$10,119,883	$319
i	SDCWA	67,621	$19,171,185	$284
j	Helix	16,000	$2,000,000	$125
k	Carlsbad Desal Plant	42,000	$11,672,640	$278
	Subtotal Treatment	157,302	$42,963,708	$273
	ADJUSTMENTS			
l	TSAWR Supply Credit	38,862	$6,766,375	$174
m	Groundwater Storage Facility Costs		$505,361	
n	Reclamation Credits SDCWA	17,208	$2,976,960	$173
o	Evaporation & Seepage	9,996	$7,427,028	
p	Other		$1,000,000	
	Subtotal Adjustments		$18,675,724	
	WATER SUPPLY EXPENSES		$486,138,497	
	SOURCE: SDCWA Adopted Budget FY 2021 & 2022, Table 4, p.29.			

TABLE 6 SDCWA EXPENDITURES FY20 ADOPTED BUDGET		
ITEM	**$ Thousands**	**Percent**
Water Supply Expenses	$486,138	61.7%
Operating Departments*	$54,252	6.9%
Debt Service*	$148,716	18.9%
CIP Expenditures*	$81,111	10.3%
Equipment Replacements*	$3,012	0.4%
Grant Expenditures*	$13,162	1.7%
Other Expenditures*	$1,944	0.2%
TOTAL	**$788,335**	100.0%
* FY20 obtained by halving FY20 & 21 amount in Table 1.		
SOURCE: SDCWA Adopted Budget FY 2021 & 2022, Table 1, p.26.		

A simplistic calculation would note that SDCWA actually delivered 62,093 AF less than planned in FY 2020, and it had an actual expenditure of $68,750,684 less than planned. Dividing one number by the other suggests an avoided supply cost of about 1,107/AF. However, a less simplistic analysis of this question is provided in the next section.

8. Impact on SDCWA Costs

If SDCWA had not delivered 22,279 AF to FPUD and RMWD in FY 2020, how much lower would its total cost of operation have been?

Of all the cost items in Table 6, the reductions would most likely be associated only with the first item, water supply expenses, and not with any other item.

The water supply costs, itemized in Table 5, cover (i) obtaining water from a source, (ii) conveying it to a member agency, and (iii) treating it to meet drinking water quality standards.

Starting with the transportation rate, (ii), the rate proposed by Carollo for transportation in CY 2021 was $164/AF; the rate actually adopted by the SDCWA Board was $150/AF. Carollo's estimate was intended to cover the revenue requirement for the transportation function, which was then reduced by a proposed draw from reserves. Without knowing any of the details, I will use the transportation rate of $164/AF as my estimate of the savings to SDCWA from transporting one acre-foot less to a member agency such as FPUD or RMWD.

With regard to the treatment cost, (iii), Carollo proposed a treatment rate of $295/AF, and the SDCWA Board adopted that rate.

The remaining issue is the marginal cost to SDCWA of obtaining an incremental unit of water to deliver to member agencies. Conceptually, water delivered by SDCWA to FPUD and RMWD could have been obtained by SDCWA from one or another of four sources: (a) the Colorado River via SDCWA's QSA agreement with IID; (b) the Colorado River via SDCWA's lining of the All-American Canal and the Coachella Canal; (c) water made available to SDCWA from the Carlsbad Desalination Plant; or (d) water obtained by from the Colorado River or the State Water Project.

This year (CY 2021) water from MWD is available to SDCWA at a Tier 1 cost of $777/AF.

According to a presentation by SDCWA, water from IID and the AAC and CC lining is available this year to SDWCA at a melded cost of $1,028/AF.[17]

The cost to SDCWA this year of desalinated water from the Carlsbad plant is $2,752/AF.

[17] Kara Mathews, Presentation to SDCWA Board of Directors, Water Transfer Implementation Update, January 28, 2021. The $1,028 cost breaks down into MWD's system access rate of $346/AF plus its power rate of $161/AF plus SDCWA's melded rate of $494/AF for the combination of IID and canal lining water. The QSA price for IID water in 2021 is $694/AF. If the IID water constitutes about 70% of the volume of water obtained by SDCWA from IID plus canal lining, that implies a cost to SDCWA for canal lining water of about $40/AF.

If the only consideration for SDCWA was these costs, the "loading order" for SDCWA to deliver water to its member agencies would be: (1) First deliver the largest possible amount of water that can be obtained by SDCWA from MWD, since this is the lowest cost source. (2) Then deliver all the water that can be obtained by SDCWA from the Colorado River via IID and canal lining. (3) Only if demands on SDCWA cannot be met by (1) and (2), then deliver water obtained from the Carlsbad Desalination Plant.

However, there are some other considerations.

In order to obtain the QSA water from IID, SDCWA had to make a commitment to purchase a volume of water amounting – next year forward – to 200,000 AF/yr. It has a similar commitment of 77,700 AF/yr with the canal lining water. And it has a commitment with Poseidon to pay for 42,000 AF/yr of water from the Carlsbad Plant.

Given these commitments, SDCWA's actual "loading order" is to first deliver water from the Colorado River via IID and canal lining and from the Carlsbad Plant and, if demands on SDCWA cannot be met by those sources, then take water from MWD. In other words, given its commitments, it pays SDCWA to take water from MWD only when the amount it has to deliver exceeds 319,700 AF.

Table 7 summarizes the situation.

TABLE 7 WATER SOURCES AND COSTS

Water source	Minimum Quantity (AF)	Unit Cost ($/AF)
IID	277,700	$1,028
Carlsbad Desal	42,000	$2,752
MWD	na	$777

Given that SDCWA actually delivered 346,431AF to member agencies in FY 2020, had FPUD and RMWD not been part of the SDCWA service area that year, leading SDCWA to deliver 22,279 AF less, this would have been water otherwise obtained from MWD at a unit cost of $777/AF.

Table 8 shows the expenditures that would have been avoided by SDCWA in FY 2020 if FPUD and RMWD had not been part of its service area.

TABLE 8 EXPENDITURE FOREGONE BY SDCWA	
Water acquisition cost ($/AF)	$777
Transportation cost ($/AF)	$164
Treatment cost ($/AF)	$295
TOTAL	**$1,236**
22,279 af @ $1,236	$27,536,844

Had FPUD and RMWD not been part of the SDCWA service area in FY 2020, SDCWA would have avoided water supply expenditures of $27.5M. However, as noted above, it would have foregone revenue of $36.8M plus lost property taxes, Availability Standby Charge and Capacity Charge revenues from properties in the FPUD and RMWD service areas.

Thus, under this scenario, SDCWA would have lost at least $9.3M in net revenue.

9. Next Steps in the Analysis

- Correct any errors in analysis presented today.
- Translate impact on SDCWA net revenue to impact on SDCWA rates and charges.
- Analyze rate impact on FPUD and RMWD.