

BIGHORN DESERT WATER AGENCY
WATER RATE STUDY
Financial Plan and Reserve Projections

Financial Plan & Reserve Summary

TABLE 1 : FINANCIAL PLAN AND SUMMARY OF REVENUE REQUIREMENTS

RATE REVENUE REQUIREMENTS SUMMARY ¹	Budget	Projected			
	FY 2020/21	FY 2021/22	FY 2022/23	FY 2023/24	FY 2024/25
Sources of Water Funds					
<i>Rate Revenue:</i>					
Water Sales Revenue Under Current Rates	\$ 1,618,617	\$ 1,618,617	\$ 1,618,617	\$ 1,618,617	\$ 1,618,617
Revenue from Rate Increases ²	10,791	98,412	167,093	238,521	312,807
Subtotal: Rate Revenue After Rate Increases	1,629,408	1,717,029	1,785,710	1,857,138	1,931,424
<i>Non-Rate Revenue:</i>					
Other Operating Revenue	\$ 60,001	\$ 60,001	\$ 60,001	\$ 60,001	\$ 60,001
Non-Operating Revenue	229,831	229,831	229,831	229,831	229,831
Interest Income ³	16,000	6,741	6,825	6,981	7,209
Subtotal: Non-Rate Revenue	305,832	296,573	296,657	296,813	297,041
Total Sources of Funds	\$ 1,935,240	\$ 2,013,602	\$ 2,082,367	\$ 2,153,952	\$ 2,228,465
Uses of Water Funds					
<i>Operating Expenses ⁴</i>					
Operating Administrative Expenses	\$ 854,710	\$ 890,584	\$ 925,153	\$ 961,173	\$ 996,638
Non-Operating Administrative Expenses	24,300	24,900	25,500	26,100	26,700
Operations Expense	786,005	806,600	827,600	849,300	871,800
Director Expense	45,100	46,500	48,000	49,500	51,000
Administration Projects	140,000	100,000	100,000	100,000	100,000
Subtotal: Operating Expenses	\$ 1,850,115	\$ 1,868,584	\$ 1,926,253	\$ 1,986,073	\$ 2,046,138
<i>Other Expenditures:</i>					
Existing Debt Service	\$ 25,000	\$ 25,000	\$ 25,000	\$ -	\$ -
New Debt Service	-	-	-	-	-
Rate-Funded Capital Expenses	-	-	52,665	-	-
Subtotal: Other Expenditures	\$ 25,000	\$ 25,000	\$ 77,665	\$ -	\$ -
Total Uses of Water Funds	\$ 1,875,115	\$ 1,893,584	\$ 2,003,918	\$ 1,986,073	\$ 2,046,138
Annual Surplus/(Deficit)	\$ 60,125	\$ 120,018	\$ 78,449	\$ 167,879	\$ 182,327
Net Revenue Req't. (Total Uses less Non-Rate Revenue)	\$ 1,569,283	\$ 1,597,011	\$ 1,707,261	\$ 1,689,260	\$ 1,749,097
Projected Annual Rate Revenue Adjustment	4.00%	4.00%	4.00%	4.00%	4.00%
Cumulative Increase from Annual Revenue Increases	4.00%	8.16%	12.49%	16.99%	21.67%
Debt Coverage After Rate Increase	3.40	5.80	6.24	N/A	N/A

- Revenue for FY 2019/20 through FY 2020/21 are from source files: Resolution No. 19R-03 Adopting the Agency Budget for FY 2019-20.pdf, and FY2020.21 Budget adopted 5 26 2020 20R-14.pdf
- Rate increases assume an implementation date of May 1, 2021 and then January 1st thereafter.
- Interest earnings for FY 2019/20 through FY 2020/21 from Agency budgets. For all other years, it is calculated based on historical LAIF returns.
- Expenses for FY 2019/20 through FY 2020/21 are from source files: Resolution No. 19R-03 Adopting the Agency Budget for FY 2019-20.pdf, and FY2020.21 Budget adopted 5 26 2020 20R-14.pdf

BIGHORN DESERT WATER AGENCY
WATER RATE STUDY
Financial Plan and Reserve Projections

Financial Plan & Reserve Summary

TABLE 2 : RESERVE FUND SUMMARY

SUMMARY OF CASH ACTIVITY UN-RESTRICTED RESERVES	Budget	Projected			
	FY 2020/21	FY 2021/22	FY 2022/23	FY 2023/24	FY 2024/25
Total Beginning Cash ^{1, 2, 3}	\$ 3,310,519				
Operating Reserve Fund (Current Customer Deposits)					
Beginning Reserve Balance ¹	\$ 856,666	\$ 912,385	\$ 921,493	\$ 949,933	\$ 979,433
Plus: Net Cash Flow (After Rate Increases)	60,125	120,018	78,449	167,879	182,327
Plus: Transfer of Debt Reserve Surplus	-	-	-	-	-
Less: Transfer Out to Emergency Contingencies Fund	-	-	-	-	-
Less: Transfer Out to Capital Replacement Reserve	(4,406)	(110,910)	(50,010)	(138,379)	(152,706)
Ending Operating Reserve Balance	\$ 912,385	\$ 921,493	\$ 949,933	\$ 979,433	\$ 1,009,054
Target Ending Balance (180-days of O&M) ²	\$ 912,385	\$ 921,493	\$ 949,933	\$ 979,433	\$ 1,009,054
Emergency Contingencies Reserve Fund					
Beginning Reserve Balance	\$ 200,000	\$ 200,000	\$ 200,000	\$ 200,000	\$ 200,000
Plus: Transfer of Operating Reserve Surplus	-	-	-	-	-
Less: Use of Reserves for Capital Projects	-	-	-	-	-
Ending Emergencies Contingencies Reserve Balance	\$ 200,000	\$ 200,000	\$ 200,000	\$ 200,000	\$ 200,000
Target Ending Balance Set by Board (\$200,000 minimum) ³	\$ 200,000	\$ 200,000	\$ 200,000	\$ 200,000	\$ 200,000
Replacement & Refurbishment Reserve Fund					
Beginning Reserve Balance	\$ 2,253,852	\$ 2,258,258	\$ 2,290,793	\$ 2,340,803	\$ 2,425,132
Plus: Transfer of Operating Reserve Surplus	4,406	110,910	50,010	138,379	152,706
Less: Use of Reserves for Capital Projects	-	(78,375)	-	(54,050)	-
Ending Capital Rehab & Replacement Reserve Balance	\$ 2,258,258	\$ 2,290,793	\$ 2,340,803	\$ 2,425,132	\$ 2,577,838
Target Ending Balance ⁴	\$ 2,033,750	\$ 2,086,438	\$ 2,118,390	\$ 2,151,935	\$ 2,181,602
Ending Balance	\$ 3,370,643	\$ 3,412,287	\$ 3,490,736	\$ 3,604,565	\$ 3,786,892
Minimum Target Ending Balance	\$ 3,146,135	\$ 3,207,931	\$ 3,268,323	\$ 3,331,368	\$ 3,390,656
Ending Surplus/(Deficit) Compared to Reserve Targets	\$ 224,508	\$ 204,356	\$ 222,413	\$ 273,197	\$ 396,236
Restricted Reserves:					
Bond Debt Service Reserve Fund					
Beginning Reserve Balance	\$ -	\$ -	\$ -	\$ -	\$ -
Plus: Reserve Funding from New Debt Obligations	-	-	-	-	-
Less: Transfer of Surplus to Operating Reserve	-	-	-	-	-
Ending Debt Reserve Balance	\$ -	\$ -	\$ -	\$ -	\$ -
Target Ending Balance	\$ -	\$ -	\$ -	\$ -	\$ -
Connection Fee Reserve					
Beginning Reserve Balance	\$ 12,780	\$ 25,586	\$ 38,417	\$ 51,274	\$ 64,156
Plus: Capital Impact Fee Revenue	12,780	12,780	12,780	12,780	12,780
Plus: Interest Revenue	26	51	77	103	128
Less: Use of Reserves for Capital Projects	-	-	-	-	-
Ending Connection Fee Fund Balance	\$ 25,586	\$ 38,417	\$ 51,274	\$ 64,156	\$ 77,064
Annual Interest Earnings Rate ⁵	0.20%	0.20%	0.20%	0.20%	0.20%

1. Beginning cash from Audited Financial Statements for 2019/20 source files: BHDVWA_FINAL-CAFR-FY2018.19-1.pdf, page 30, Note 2; Cash and Cash Equivalents.

Beginning balance for 2020/21 is per client email 9/7/2020.

2. Operating Reserve Target set to 180 days (or 6 months) of O&M expenses. Industry standard is 3 to 6 months.

3. Reserve target set by Agency Board. Source file: 16R-11 Establishing Criteria for Agency Financial Reserves.pdf

4. Replacement & Refurbishment Reserve target set to 10% of net assets, plus a \$1.5 million component for capital emergencies (increased by ENR CCI annually of 2.63%). Existing Board adopted policy is a \$300,000 minimum.

BIGHORN DESERT WATER AGENCY
WATER RATE STUDY
Rate Adjustment Charts and Report Tables

CHART 1

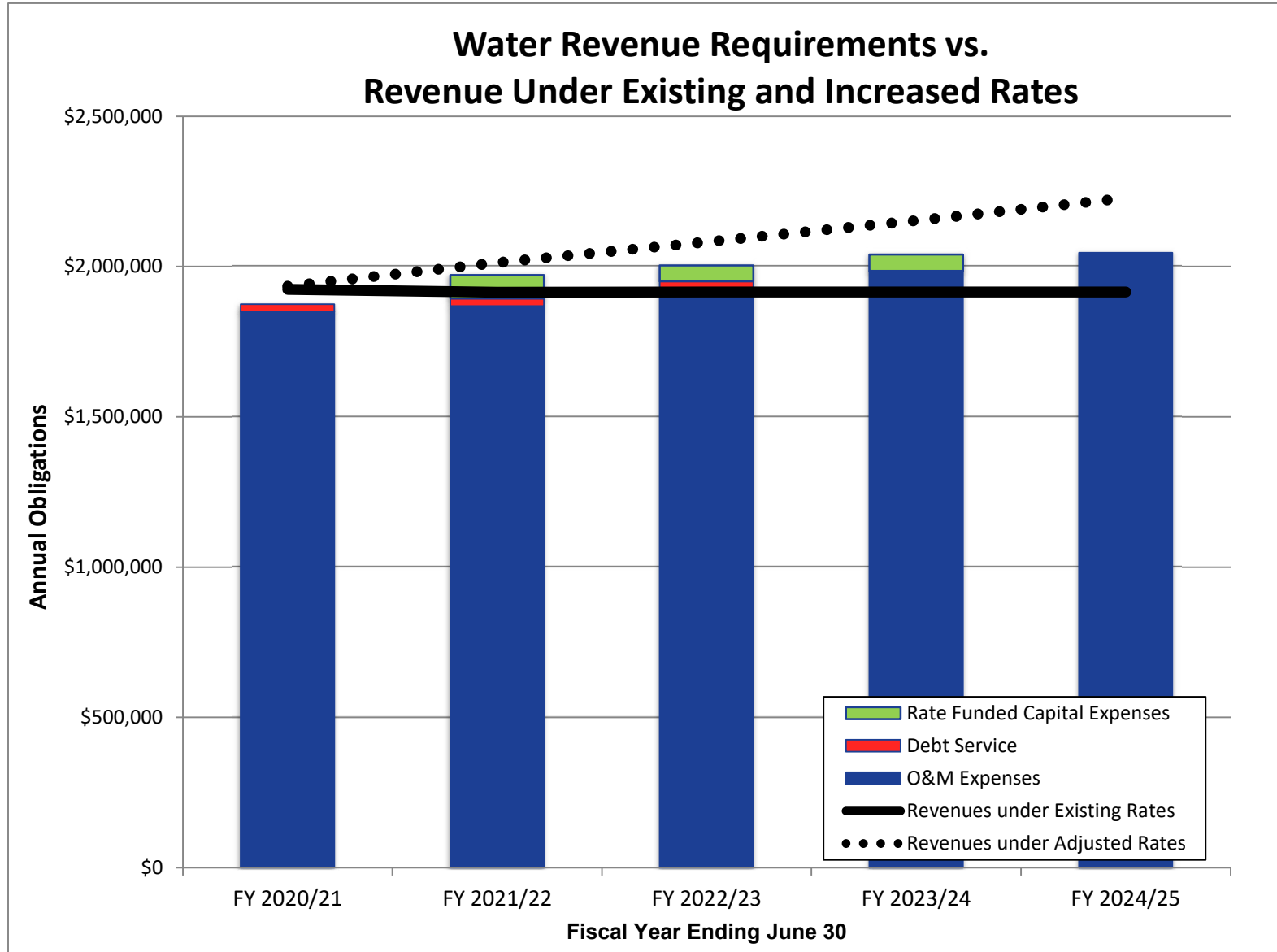


CHART 2

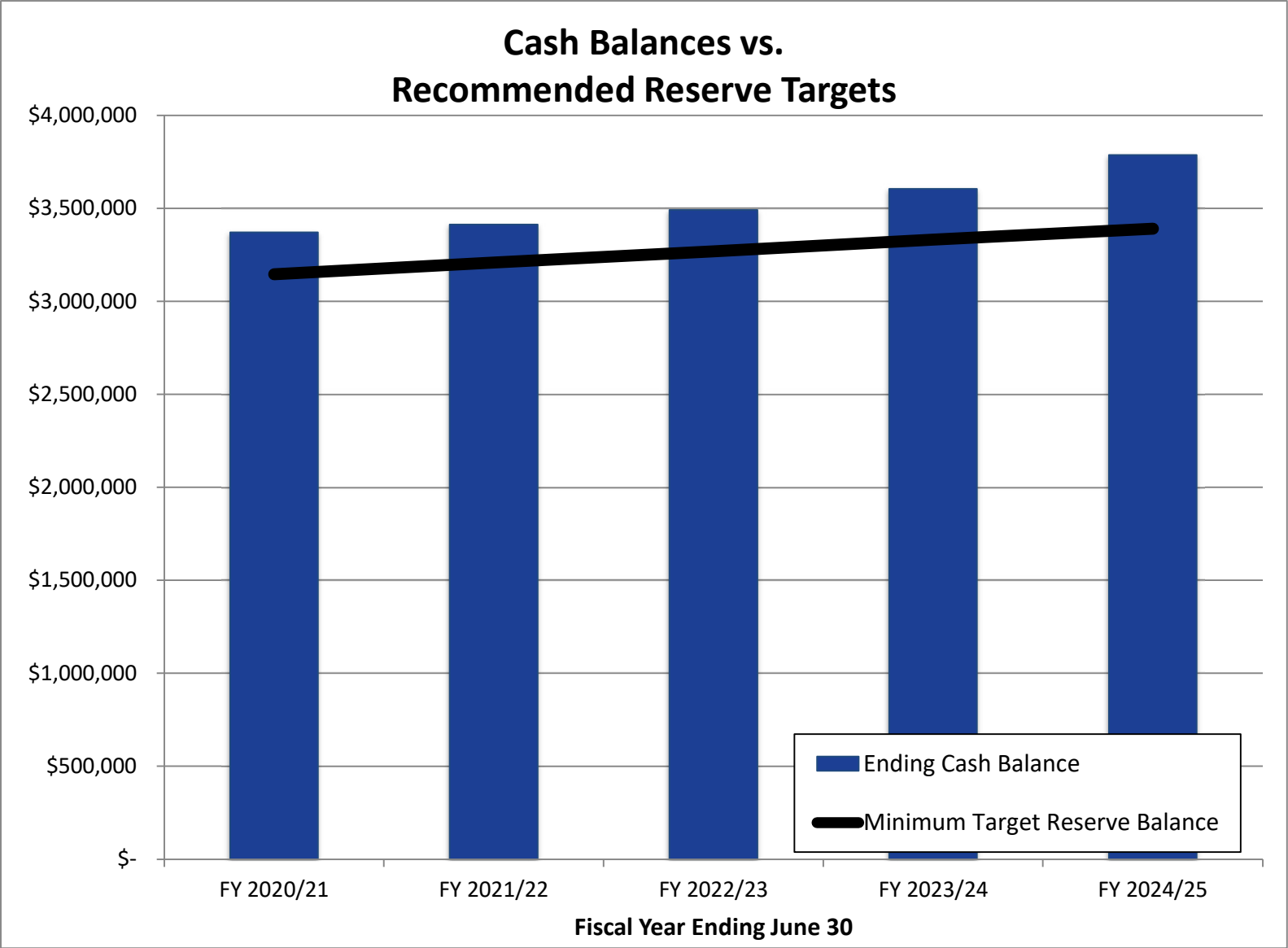
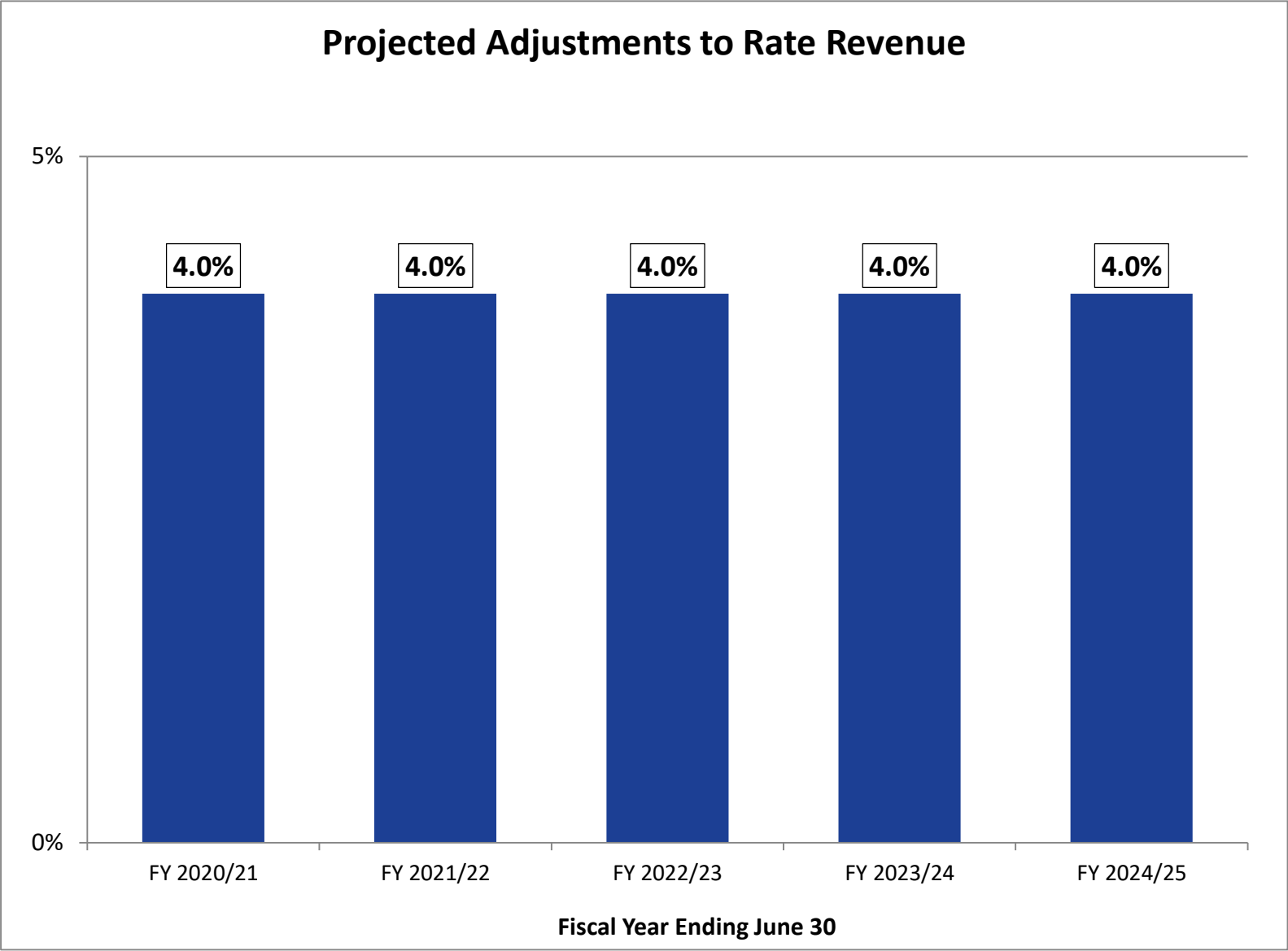


CHART 3



BIGHORN DESERT WATER AGENCY
WATER RATE STUDY
Operating Revenue and Expenses

EXHIBIT 1

TABLE 3 : REVENUE FORECAST ¹

		Budget				
DESCRIPTION	Inflation Basis	2021	2022	2023	2024	2025
Operating Revenue						
Metered Water Sales	1	\$ 678,177	\$ 678,177	\$ 678,177	\$ 678,177	\$ 678,177
Basic Service Charge	1	940,440	940,440	940,440	940,440	940,440
Other Operating Income	1	60,000	60,000	60,000	60,000	60,000
Interest Income Unrestricted	See FP	16,000				
Water Sales from Ames	1	1	1	1	1	1
Subtotal		\$ 1,694,618	\$ 1,678,618	\$ 1,678,618	\$ 1,678,618	\$ 1,678,618
Non-Operating Revenue						
Stand-By Income W-1	1	\$ 65,000	\$ 65,000	\$ 65,000	\$ 65,000	\$ 65,000
Predicted Lien Receipts (DQ, Pen, Int)	1	28,500	28,500	28,500	28,500	28,500
Debt Service BDVWA ID "1"	1	1	1	1	1	1
Debt Service DV	1	-	-	-	-	-
General Tax Income (portion of 1%)	1	136,330	136,330	136,330	136,330	136,330
Subtotal		\$ 229,831	\$ 229,831	\$ 229,831	\$ 229,831	\$ 229,831
Non-Operating Revenue - New Connections						
Meter Connect Fees (SL Install Fees)	1	\$ 3,590	\$ 3,590	\$ 3,590	\$ 3,590	\$ 3,590
Basic Facilities Charge (Buy-In)	1	9,190	9,190	9,190	9,190	9,190
Subtotal		\$ 12,780	\$ 12,780	\$ 12,780	\$ 12,780	\$ 12,780
TOTAL: REVENUE		\$ 1,937,229	\$ 1,921,229	\$ 1,921,229	\$ 1,921,229	\$ 1,921,229

TABLE 4 : REVENUE SUMMARY

		Budget				
RATE REVENUE:						
Metered Water Sales		\$ 678,177	\$ 678,177	\$ 678,177	\$ 678,177	\$ 678,177
Basic Service Charge		940,440	940,440	940,440	940,440	940,440
OTHER REVENUE:						
Other Operating Revenue		\$ 60,001	\$ 60,001	\$ 60,001	\$ 60,001	\$ 60,001
Interest Income		16,000	-	-	-	-
Non-Operating Revenue		229,831	229,831	229,831	229,831	229,831
Non-Operating Revenue - New Connections		12,780	12,780	12,780	12,780	12,780
TOTAL: REVENUE		\$ 1,937,229	\$ 1,921,229	\$ 1,921,229	\$ 1,921,229	\$ 1,921,229

BIGHORN DESERT WATER AGENCY
WATER RATE STUDY
Operating Revenue and Expenses

EXHIBIT 1

TABLE 5 : OPERATING EXPENSE FORECAST ¹

		Budget				
DESCRIPTION	Inflation Basis	2021	2022	2023	2024	2025
Operating Administrative Expenses						
Administrative Compensation	2	\$ 307,871	\$ 318,000	\$ 328,500	\$ 339,300	\$ 350,500
Contractual Services - Auditor	2	21,165	21,900	22,600	23,300	24,100
Contractual Services - Legal	2	20,000	20,700	21,400	22,100	22,800
Legislative Affairs	4	10,000	10,200	10,400	10,600	10,800
PERS Contribution	3	39,079	41,400	43,900	46,500	49,300
PERS UAL ¹		60,921	67,284	71,053	75,073	77,138
Payroll Tax	2	15,703	16,200	16,700	17,300	17,900
Telephone & Fax	4	9,085	9,300	9,500	9,700	9,900
Mailing Expenses	4	1,500	1,500	1,500	1,500	1,500
Contractual Services - Other	2	78,500	81,100	83,800	86,600	89,500
Property/Liability Insurance	4	67,230	68,600	70,000	71,400	72,800
Workers Comp Insurance	4	12,606	12,900	13,200	13,500	13,800
Dues & Subscriptions & Annual Fees	4	17,850	18,200	18,600	19,000	19,400
Power/Propane - Office & Yards	6	8,200	8,500	8,800	9,100	9,400
Bad Debt Expense	7	1,500	1,500	1,500	1,500	1,500
Bad Debt Expense - Uncollected Liens	7	5,000	5,000	5,000	5,000	5,000
Office Supplies/Printing	4	8,500	8,700	8,900	9,100	9,300
Employee Benefits Insurance	3	155,000	164,300	174,200	184,700	195,800
Employee Education	4	15,000	15,300	15,600	15,900	16,200
Non-Operating Administrative Expenses						
Office Equipment Expense	4	\$ 10,000	\$ 10,200	\$ 10,400	\$ 10,600	\$ 10,800
Customer Relations	4	3,800	3,900	4,000	4,100	4,200
Other Administrative Expenses	4	7,500	7,700	7,900	8,100	8,300
Election Costs	4	2,500	2,600	2,700	2,800	2,900
Misc. Expenses	4	500	500	500	500	500
Operations Expense						
Operations Staff Compensation	2	\$ 326,155	\$ 336,900	\$ 348,000	\$ 359,500	\$ 371,400
Uniforms	4	6,750	6,900	7,000	7,100	7,200
Vehicle, Tractor, Equipment Expense	4	30,000	30,600	31,200	31,800	32,400
Vehicle Expense - Fuel	5	36,750	37,100	37,500	37,900	38,300
Field Materials and Supplies	4	75,000	76,500	78,000	79,600	81,200
Water Testing	4	12,000	12,200	12,400	12,600	12,900
Engineering	4	60,000	61,200	62,400	63,600	64,900
Water System Repairs	4	70,000	71,400	72,800	74,300	75,800
Excavation Permit Fees (CoSB)	4	500	500	500	500	500
Building Maintenance and Repair	4	15,500	15,800	16,100	16,400	16,700
Communications Expense	4	6,700	6,800	6,900	7,000	7,100
Disinfection Expense	4	15,000	15,300	15,600	15,900	16,200
Power - Wells, Booster Pumps	6	75,000	77,600	80,300	83,100	86,000
Other Operations Expense	4	11,650	11,900	12,100	12,300	12,500
Water Purchases	4	45,000	45,900	46,800	47,700	48,700
Sub-Total		\$ 1,665,015	\$ 1,722,084	\$ 1,778,253	\$ 1,836,573	\$ 1,895,138

BIGHORN DESERT WATER AGENCY
WATER RATE STUDY
Operating Revenue and Expenses

EXHIBIT 1

TABLE 6

Budget

DESCRIPTION	Inflation Basis	2021	2022	2023	2024	2025
Director Expense						
Director - McBride	2	\$ 9,020	\$ 9,300	\$ 9,600	\$ 9,900	\$ 10,200
Director - Corl-Lorono	2	9,020	9,300	9,600	9,900	10,200
Director - J. Burkhardt	2	9,020	9,300	9,600	9,900	10,200
Director - McKenzie	2	9,020	9,300	9,600	9,900	10,200
Director - Coulombe	2	9,020	9,300	9,600	9,900	10,200
Sub-Total		\$ 45,100	\$ 46,500	\$ 48,000	\$ 49,500	\$ 51,000

TABLE 7

Budget

DESCRIPTION	Inflation Basis	2021	2022	2023	2024	2025
Administration Projects (Approved April 2020)						
Rate and Fee Study	4	\$ 40,000	\$ -	\$ -	\$ -	\$ -
PARS TRUST FY 2020/21 Contribution (No. 2)	7	100,000	100,000	100,000	100,000	100,000
Sub-Total		\$ 140,000	\$ 100,000	\$ 100,000	\$ 100,000	\$ 100,000
GRAND TOTAL: WATER OPERATING EXPENSES		\$ 1,850,115	\$ 1,868,584	\$ 1,926,253	\$ 1,986,073	\$ 2,046,138

TABLE 8 : FORECASTING ASSUMPTIONS

INFLATION FACTORS ²	Inflation Basis	2021	2022	2023	2024	2025
Water Sales	1	0.00%	0.00%	0.00%	0.00%	0.00%
Salaries	2	3.30%	3.30%	3.30%	3.30%	3.30%
Benefits ³	3	6.00%	6.00%	6.00%	6.00%	6.00%
General Inflation ⁴	4	2.00%	2.00%	2.00%	2.00%	2.00%
Fuel ⁵	5	1.00%	1.00%	1.00%	1.00%	1.00%
Electricity	6	3.50%	3.50%	3.50%	3.50%	3.50%
No Escalation	7	0.00%	0.00%	0.00%	0.00%	0.00%

- Revenue and expenses for FY 2019/20 through FY 2020/21 are from source files: *Resolution No. 19R-03 Adopting the Agency Budget for FY 2019-20.pdf*, and *FY2020.21 Budget adopted 5 26 2020 20R-14.pdf*. PERS updated by Cindy September 9, 2020 in source file: *V2 9.8.20 BHDWA_Water Rate Model_09.08.20 -to client.xlsx*
- Inflation values follow 5-year average from US Bureau of Labor Statistics (BLS).
Website: <https://data.bls.gov/cgi-bin/surveymost?en+06>
- Benefits inflation set to 6% per Agency staff on September 9, 2020.
- Five-year average CPI for All Urban Consumers for the Los Angeles/Riverside/Orange County areas, per BLS.
- Average cost inflation for Fuel and Utilities for US City Average (2018-2020), per BLS.

BIGHORN DESERT WATER AGENCY
WATER RATE STUDY
Capital Improvement Plan Expenditures

EXHIBIT 2

TABLE 9 : CAPITAL FUNDING SUMMARY

CAPITAL FUNDING FORECAST	Budget	Projected			
Funding Sources:	FY 2020/21	FY 2021/22	FY 2022/23	FY 2023/24	FY 2024/25
Grants ¹	\$ 430,030	\$ 194,970	\$ -	\$ -	\$ -
Use of Capacity Fee Reserves	-	-	-	-	-
SRF Loan Funding	-	-	-	-	-
Use of New Revenue Bond Proceeds	-	-	-	-	-
Use of Capital Rehabilitation and Replacement Reserve	-	78,375	-	54,050	-
Rate Revenue	-	-	52,665	-	-
Total Sources of Capital Funds	\$ 430,030	\$ 273,345	\$ 52,665	\$ 54,050	\$ -
Uses of Capital Funds:					
Total Project Costs	\$ 430,030	\$ 273,345	\$ 52,665	\$ 54,050	\$ -
Capital Funding Surplus (Deficiency)	\$ -	\$ -	\$ -	\$ -	\$ -
Bank Loan	\$ -	\$ -	\$ -	\$ -	\$ -
New Revenue Bond Proceeds	\$ -	\$ -	\$ -	\$ -	\$ -

1. Grant Funding is per page 14 of the Agency's 2020/21 budget (file: *FY2020.21 Budget adopted 5 26 2020 20R-14.pdf*).

BIGHORN DESERT WATER AGENCY
WATER RATE STUDY
Capital Improvement Plan Expenditures

EXHIBIT 2

CAPITAL IMPROVEMENT PROGRAM

TABLE 10 : CAPITAL IMPROVEMENT PROGRAM COSTS (IN CURRENT-YEAR DOLLARS) ¹

Avg. Life Yrs.	Project Description	2021	2022	2023	2024	2025
Refurbish and Replacement Projects						
15	Well 4 Rehab	\$ 39,425				
15	Well 6 Rehab					
8	Well 7 Rehab	34,030				
8	Well 8 Rehab					
8	Well 9 Rehab					
15	Well 10 Rehab					
15	Well GMW1		24,900			
15	Well GMW2					
15	Well GMW3					
15	Well 13					
15	Pump Well 3	60,575				
15	Pump Well 4	100,000				
15	Pump Well 6					
8	Pump Well 7					
8	Pump Well 8					
8	Pump Well 9					
8	Pump Well 10					
8	Pump Well GMW1		41,440			
15	Pump Well GMW2					
8	Pump Well GMW3					
8	Pump Well 13					
30	New Replacement Well for BH or DV					
7	JV Booster Station Upgrade - VFD's/Pressure Vessels		15,000			
	New Storage Tank					
20	Customer Meter w/ Box & Shutoff, Complete					
20	Utility Billing Software Replacement					
75	Loop Charles Rd.					
75	Shop Building Upgrades - storage and work space		50,000			
20	Replace Generator - 90 KW mobile					
20	Dump truck		85,000			
15	Replace Tractor					
9	Replace Fleet Vehicles (avg life)		50,000	50,000	50,000	
Distribution System Projects						
75	Distribution Valve, 6" avg, both water systems 50%	\$ -	\$ -	\$ -	\$ -	\$ -
75	Fire Hydrants, both water systems 50%	-	-	-	-	-
75	Pipe w/sand bedding, 6" avg. ID Goat Mtn	-	-	-	-	-
75	Pipe w/sand bedding, 6" avg. BDVWA					
Operations Capital Projects (from 2020/21 Budget) ²						
	Water Storage Tank Recoating (B1, B2), May 26, 2020	81,000	-	-	-	-
	Water Storage Tank Recoating (B1, B2), Feb. 2020	80,000	-	-	-	-
	C-Booster Station Upgrades	35,000	-	-	-	-
Total: CIP Program Costs (Current-Year Dollars)		\$ 430,030	\$ 266,340	\$ 50,000	\$ 50,000	\$ -

BIGHORN DESERT WATER AGENCY
WATER RATE STUDY
Capital Improvement Plan Expenditures

EXHIBIT 2

TABLE 11 : CAPITAL IMPROVEMENT PROGRAM COSTS (IN FUTURE-YEAR DOLLARS) ¹

Project Description	2021	2022	2023	2024	2025
Refurbish and Replacement Projects					
15 Well 4 Rehab	\$ 39,425	\$ -	\$ -	\$ -	\$ -
15 Well 6 Rehab	-	-	-	-	-
8 Well 7 Rehab	34,030	-	-	-	-
8 Well 8 Rehab	-	-	-	-	-
8 Well 9 Rehab	-	-	-	-	-
15 Well 10 Rehab	-	-	-	-	-
15 Well GMW1	-	25,555	-	-	-
15 Well GMW2	-	-	-	-	-
15 Well GMW3	-	-	-	-	-
15 Well 13	-	-	-	-	-
15 Pump Well 3	60,575	-	-	-	-
15 Pump Well 4	100,000	-	-	-	-
15 Pump Well 6	-	-	-	-	-
8 Pump Well 7	-	-	-	-	-
8 Pump Well 8	-	-	-	-	-
8 Pump Well 9	-	-	-	-	-
8 Pump Well 10	-	-	-	-	-
8 Pump Well GMW1	-	42,530	-	-	-
15 Pump Well GMW2	-	-	-	-	-
8 Pump Well GMW3	-	-	-	-	-
8 Pump Well 13	-	-	-	-	-
30 New Replacement Well for BH or DV	-	-	-	-	-
7 JV Booster Station Upgrade - VFD's/Pressure Vessels	-	15,395	-	-	-
-- New Storage Tank	-	-	-	-	-
20 Customer Meter w/ Box & Shutoff, Complete	-	-	-	-	-
20 Utility Billing Software Replacement	-	-	-	-	-
75 Loop Charles Rd.	-	-	-	-	-
75 Shop Building Upgrades - storage and work space	-	51,315	-	-	-
20 Replace Generator - 90 KW mobile	-	-	-	-	-
20 Dump truck	-	87,236	-	-	-
15 Replace Tractor	-	-	-	-	-
9 Replace Fleet Vehicles (avg life)	-	51,315	52,665	54,050	-
Distribution System Projects	-	-	-	-	-
75 Distribution Valve, 6" avg, both water systems 50%	-	-	-	-	-
75 Fire Hydrants, both water systems 50%	-	-	-	-	-
75 Pipe w/sand bedding, 6" avg. ID Goat Mtn	-	-	-	-	-
75 Pipe w/sand bedding, 6" avg. BDVWA	-	-	-	-	-
Operations Capital Projects (from 2020/21 Budget)2	-	-	-	-	-
-- Water Storage Tank Recoating (B1, B2), May 26, 2020	81,000	-	-	-	-
-- Water Storage Tank Recoating (B1, B2), Feb. 2020	80,000	-	-	-	-
-- C-Booster Station Upgrades	35,000	-	-	-	-
Total: CIP Program Costs (Future-Year Dollars)	\$ 430,030	\$ 273,345	\$ 52,665	\$ 54,050	\$ -

BIGHORN DESERT WATER AGENCY
WATER RATE STUDY
Capital Improvement Plan Expenditures

EXHIBIT 2

TABLE 12 : FORECASTING ASSUMPTIONS

Economic Variables	2021	2022	2023	2024	2025
Annual Construction Cost Inflation, Per Engineering News Record ³	0.00%	2.63%	2.63%	2.63%	2.63%
Cumulative Construction Cost Multiplier from 2020	1.00	1.03	1.05	1.08	1.11

1. Estimated capital improvement project costs found in source files: *BDVWA Replacement Refurbishment CIP and Min Rate Gen 5 1 2017.xlsx*
Cindy and Marina confirmed updated costs in source file: *CIP Estimates through 2035-36 V2.xlsx*
2. Operations Capital projects are per page 14 of the Agency's 2020/21 budget (file: *FY2020.21 Budget adopted 5 26 2020 20R-14.pdf*).
3. Construction inflator is based on the most current 10 year average of the Engineering News-Record Construction Cost Index.
Source: www.enr.com/economics (August 2010 to August 2020).

BIGHORN DESERT WATER AGENCY
WATER RATE STUDY
Debt Service

EXHIBIT 3

TABLE 13

AGENCY DEBT OBLIGATIONS					
Annual Repayment Schedules:	FY 2020/21	FY 2021/22	FY 2022/23	FY 2023/24	FY 2024/25
<u>Desert View Water Revenue Bonds</u> ¹					
Principal Payment	\$ -	\$ -	\$ -	\$ -	\$ -
Interest Payment	-	-	-	-	-
Subtotal: Annual Debt Service	\$ -	\$ -	\$ -	\$ -	\$ -
Coverage Requirement (\$-Amnt above annual payment)	100%	100%	100%	100%	100%
Reserve Requirement (total fund balance)	\$ -	\$ -	\$ -	\$ -	\$ -
<u>MWA Pipeline Debt</u>					
Principal Payment ²	\$ 25,000	\$ 25,000	\$ 25,000	\$ -	\$ -
Interest Payment	-	-	-	-	-
Subtotal: Annual Debt Service	\$ 25,000	\$ 25,000	\$ 25,000	\$ -	\$ -
Coverage Requirement (\$-Amnt above annual payment)	100%	100%	100%	100%	100%
Reserve Requirement (total fund balance)	\$ -	\$ -	\$ -	\$ -	\$ -

1. Water revenue bonds due to mature in 2020. Source file: *Resolution No. 19R-03 Adopting the Agency Budget for FY 2019-20.pdf, page 8.*

2. Per Agency staff, this is in all likelihood going to be reimbursed with a grant. Leaving in model as a conservative approach.

TABLE 14 : EXISTING ANNUAL DEBT OBLIGATIONS TO BE SATISFIED BY WATER RATES

Existing Annual Debt Service	\$ 25,000	\$ 25,000	\$ 25,000	\$ -	\$ -
Existing Annual Coverage Requirement	100%	100%	100%	100%	100%
Existing Debt Reserve Target	\$ -	\$ -	\$ -	\$ -	\$ -

BIGHORN DESERT WATER AGENCY
WATER RATE STUDY
Cost of Service Analysis

Function & Classification

TABLE 15

Classification of Expenses											
Budget Categories	Total Revenue Requirements	Commodity	Additional Supply	Capacity	Customer	Fire Protection	Basis of Classification				
	FY 2020/21	(COM)	(ADD SUP)	(CAP)	(CA)	(FP)	COM	ADD SUP	CAP	CA	FP
Operating Administrative Expenses											
Administrative Compensation	\$ 307,871	\$ 92,361	\$ -	\$ 184,676	\$ 30,787	\$ 46	30.0%	0.0%	60.0%	10.0%	0.02%
Contractual Services - Auditor	\$ 21,165	\$ 6,350	\$ -	\$ 12,696	\$ 2,117	\$ 3	30.0%	0.0%	60.0%	10.0%	0.02%
Contractual Services - Legal	\$ 20,000	\$ 6,000	\$ -	\$ 11,997	\$ 2,000	\$ 3	30.0%	0.0%	60.0%	10.0%	0.02%
Legislative Affairs	\$ 10,000	\$ 3,000	\$ -	\$ 5,998	\$ 1,000	\$ 2	30.0%	0.0%	60.0%	10.0%	0.02%
PERS Contribution	\$ 39,079	\$ 11,724	\$ -	\$ 23,442	\$ 3,908	\$ 6	30.0%	0.0%	60.0%	10.0%	0.02%
PERS UAL	\$ 60,921	\$ 18,276	\$ -	\$ 36,543	\$ 6,092	\$ 9	30.0%	0.0%	60.0%	10.0%	0.02%
Payroll Tax	\$ 15,703	\$ 4,711	\$ -	\$ 9,419	\$ 1,570	\$ 2	30.0%	0.0%	60.0%	10.0%	0.02%
Telephone & Fax	\$ 9,085	\$ 2,726	\$ -	\$ 5,450	\$ 909	\$ 1	30.0%	0.0%	60.0%	10.0%	0.02%
Mailing Expenses	\$ 1,500	\$ -	\$ -	\$ -	\$ 1,500	\$ -	0.0%	0.0%	0.0%	100.0%	0.0%
Contractual Services - Other	\$ 78,500	\$ 23,550	\$ -	\$ 47,088	\$ 7,850	\$ 12	30.0%	0.0%	60.0%	10.0%	0.02%
Property/Liability Insurance	\$ 67,230	\$ 20,169	\$ -	\$ 40,328	\$ 6,723	\$ 10	30.0%	0.0%	60.0%	10.0%	0.02%
Workers Comp Insurance	\$ 12,606	\$ 3,782	\$ -	\$ 7,562	\$ 1,261	\$ 2	30.0%	0.0%	60.0%	10.0%	0.02%
Dues & Subscriptions & Annual Fees	\$ 17,850	\$ 5,355	\$ -	\$ 10,707	\$ 1,785	\$ 3	30.0%	0.0%	60.0%	10.0%	0.02%
Power/Propane - Office & Yards	\$ 8,200	\$ 2,460	\$ -	\$ 4,919	\$ 820	\$ 1	30.0%	0.0%	60.0%	10.0%	0.02%
Bad Debt Expense	\$ 1,500	\$ 450	\$ -	\$ 900	\$ 150	\$ 0	30.0%	0.0%	60.0%	10.0%	0.02%
Bad Debt Expense - Uncollected Liens	\$ 5,000	\$ 1,500	\$ -	\$ 2,999	\$ 500	\$ 1	30.0%	0.0%	60.0%	10.0%	0.02%
Office Supplies/Printing	\$ 8,500	\$ 2,550	\$ -	\$ 5,099	\$ 850	\$ 1	30.0%	0.0%	60.0%	10.0%	0.02%
Employee Benefits Insurance	\$ 155,000	\$ 46,500	\$ -	\$ 92,977	\$ 15,500	\$ 23	30.0%	0.0%	60.0%	10.0%	0.02%
Employee Education	\$ 15,000	\$ 4,500	\$ -	\$ 8,998	\$ 1,500	\$ 2	30.0%	0.0%	60.0%	10.0%	0.02%
Non-Operating Administrative Expenses											
Office Equipment Expense	\$ 10,000	\$ 3,000	\$ -	\$ 5,998	\$ 1,000	\$ 2	30.0%	0.0%	60.0%	10.0%	0.02%
Customer Relations	\$ 3,800	\$ -	\$ -	\$ -	\$ 3,800	\$ -	0.0%	0.0%	0.0%	100.0%	0.0%
Other Administrative Expenses	\$ 7,500	\$ 2,250	\$ -	\$ 4,499	\$ 750	\$ 1	30.0%	0.0%	60.0%	10.0%	0.02%
Election Costs	\$ 2,500	\$ 750	\$ -	\$ 1,500	\$ 250	\$ 0	30.0%	0.0%	60.0%	10.0%	0.02%
Misc. Expenses	\$ 500	\$ 150	\$ -	\$ 300	\$ 50	\$ 0	30.0%	0.0%	60.0%	10.0%	0.02%
Sub-Total	\$ 879,010	\$ 262,113	\$ -	\$ 524,095	\$ 92,671	\$ 131	29.8%	0.0%	59.6%	10.5%	0.01%

BIGHORN DESERT WATER AGENCY
WATER RATE STUDY
Cost of Service Analysis

Function & Classification

TABLE 16

Classification of Expenses, continued											
Budget Categories	Total Revenue Requirements	Commodity	Additional Supply	Capacity	Customer	Fire Protection	Basis of Classification				
	FY 2020/21	(COM)	(ADD SUP)	(CAP)	(CA)	(FP)	COM	ADD SUP	CAP	CA	FP
Operations Expense											
Operations Staff Compensation	\$ 326,155	\$ 97,847	\$ -	\$ 195,644	\$ 32,616	\$ 49	30.0%	0.0%	60.0%	10.0%	0.02%
Uniforms	\$ 6,750	\$ 2,025	\$ -	\$ 4,049	\$ 675	\$ 1	30.0%	0.0%	60.0%	10.0%	0.02%
Vehicle, Tractor, Equipment Expense	\$ 30,000	\$ 9,000	\$ -	\$ 17,995	\$ 3,000	\$ 5	30.0%	0.0%	60.0%	10.0%	0.02%
Vehicle Expense - Fuel	\$ 36,750	\$ 11,025	\$ -	\$ 22,044	\$ 3,675	\$ 6	30.0%	0.0%	60.0%	10.0%	0.02%
Field Materials and Supplies	\$ 75,000	\$ 22,500	\$ -	\$ 44,989	\$ 7,500	\$ 11	30.0%	0.0%	60.0%	10.0%	0.02%
Water Testing	\$ 12,000	\$ 12,000	\$ -	\$ -	\$ -	\$ -	100.0%	0.0%	0.0%	0.0%	0.0%
Engineering	\$ 60,000	\$ 18,000	\$ -	\$ 35,991	\$ 6,000	\$ 9	30.0%	0.0%	60.0%	10.0%	0.02%
Water System Repairs	\$ 70,000	\$ 21,000	\$ -	\$ 41,989	\$ 7,000	\$ 11	30.0%	0.0%	60.0%	10.0%	0.02%
Excavation Permit Fees (CoSB)	\$ 500	\$ 150	\$ -	\$ 300	\$ 50	\$ 0	30.0%	0.0%	60.0%	10.0%	0.02%
Building Maintenance and Repair	\$ 15,500	\$ 4,650	\$ -	\$ 9,298	\$ 1,550	\$ 2	30.0%	0.0%	60.0%	10.0%	0.02%
Communications Expense	\$ 6,700	\$ -	\$ -	\$ -	\$ 6,700	\$ -	0.0%	0.0%	0.0%	100.0%	0.0%
Disinfection Expense	\$ 15,000	\$ 15,000	\$ -	\$ -	\$ -	\$ -	100.0%	0.0%	0.0%	0.0%	0.0%
Power - Wells, Booster Pumps	\$ 75,000	\$ 75,000	\$ -	\$ -	\$ -	\$ -	100.0%	0.0%	0.0%	0.0%	0.0%
Other Operations Expense	\$ 11,650	\$ 3,495	\$ -	\$ 6,988	\$ 1,165	\$ 2	30.0%	0.0%	60.0%	10.0%	0.02%
Water Purchases	\$ 45,000	\$ -	\$ 45,000	\$ -	\$ -	\$ -	0.0%	100.0%	0.0%	0.0%	0.0%
Director Expense											
Director - McBride	\$ 9,020	\$ -	\$ -	\$ -	\$ 9,020	\$ -	0.0%	0.0%	0.0%	100.0%	0.0%
Director - Corl-Lorono	\$ 9,020	\$ -	\$ -	\$ -	\$ 9,020	\$ -	0.0%	0.0%	0.0%	100.0%	0.0%
Director - J. Burkhart	\$ 9,020	\$ -	\$ -	\$ -	\$ 9,020	\$ -	0.0%	0.0%	0.0%	100.0%	0.0%
Director - McKenzie	\$ 9,020	\$ -	\$ -	\$ -	\$ 9,020	\$ -	0.0%	0.0%	0.0%	100.0%	0.0%
Director - Coulombe	\$ 9,020	\$ -	\$ -	\$ -	\$ 9,020	\$ -	0.0%	0.0%	0.0%	100.0%	0.0%
Administration Projects (Approved April 2020)											
Rate and Fee Study	\$ 40,000	\$ 12,000	\$ -	\$ 23,994	\$ 4,000	\$ 6	30.0%	0.0%	60.0%	10.0%	0.02%
PARS TRUST FY 2020/21 Contribution (No. 2)	\$ 100,000	\$ 30,000	\$ -	\$ 59,985	\$ 10,000	\$ 15	30.0%	0.0%	60.0%	10.0%	0.02%
Sub-Total	\$ 971,105	\$ 333,692	\$ 45,000	\$ 463,267	\$ 129,031	\$ 116	34.4%	4.6%	47.7%	13.3%	0.0%
Total Operating Expense	\$ 1,850,115	\$ 595,805	\$ 45,000	\$ 987,362	\$ 221,702	\$ 247	32.2%	2.4%	53.4%	12.0%	0.0%

BIGHORN DESERT WATER AGENCY
WATER RATE STUDY
Cost of Service Analysis

Function & Classification

TABLE 17

Classification of Expenses, continued											
Budget Categories	Total Revenue Requirements	Commodity	Additional Supply	Capacity	Customer	Fire Protection	Basis of Classification				
	FY 2020/21	(COM)	(ADD SUP)	(CAP)	(CA)	(FP)	COM	ADD SUP	CAP	CA	FP
Debt Service Payments											
Existing Debt Service	\$ 25,000	\$ -	\$ -	\$ 25,000	\$ -	\$ -	0.0%	0.0%	100.0%	0.0%	0.0%
New Debt Service	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	0.0%	0.0%	100.0%	0.0%	0.0%
Total Debt Service Payments	\$ 25,000	\$ -	\$ -	\$ 25,000	\$ -	\$ -	0.0%	0.0%	100.0%	0.0%	0.0%
Capital Expenditures											
Rate Funded Capital Expenses	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	0.0%	0.0%	100.0%	0.0%	0.0%
TOTAL REVENUE REQUIREMENTS	\$ 1,875,115	\$ 595,805	\$ 45,000	\$ 1,012,362	\$ 221,702	\$ 247	31.8%	2.4%	54.0%	11.8%	0.0%
Less: Non-Rate Revenues											
Operating Revenue											
Metered Water Sales											
Basic Service Charge											
Other Operating Income	\$ (60,000)	\$ (19,533)	\$ -	\$ (33,190)	\$ (7,268)	\$ (8)	32.6%	0.0%	55.3%	12.1%	0.0%
Interest Income Unrestricted	\$ (16,000)	\$ (5,209)	\$ -	\$ (8,851)	\$ (1,938)	\$ (2)	32.6%	0.0%	55.3%	12.1%	0.0%
Water Sales from Ames	\$ (1)	\$ (0)	\$ -	\$ (1)	\$ (0)	\$ (0)	32.6%	0.0%	55.3%	12.1%	0.0%
Non-Operating Revenue											
Stand-By Income W-1	\$ (65,000)	\$ (21,161)	\$ -	\$ (35,956)	\$ (7,874)	\$ (9)	32.6%	0.0%	55.3%	12.1%	0.0%
Predicted Lien Receipts (DQ, Pen, Int)	\$ (28,500)	\$ (9,278)	\$ -	\$ (15,765)	\$ (3,453)	\$ (4)	32.6%	0.0%	55.3%	12.1%	0.0%
Debt Service BDVWA ID "1"	\$ (1)	\$ (0)	\$ -	\$ (1)	\$ (0)	\$ (0)	32.6%	0.0%	55.3%	12.1%	0.0%
Debt Service DV	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	32.6%	0.0%	55.3%	12.1%	0.0%
General Tax Income (portion of 1%)	\$ (136,330)	\$ (44,383)	\$ -	\$ (75,413)	\$ (16,515)	\$ (18)	32.6%	0.0%	55.3%	12.1%	0.0%
Non-Operating Revenue - New Connections											
Meter Connect Fees (SL Install Fees)											
Basic Facilities Charge (Buy-In)											
NET REVENUE REQUIREMENTS	\$ 1,569,283	\$ 496,239	\$ 45,000	\$ 843,185	\$ 184,653	\$ 206					
<i>Allocation of Revenue Requirements</i>	<i>100.0%</i>	<i>31.6%</i>	<i>2.9%</i>	<i>53.7%</i>	<i>11.8%</i>	<i>0.0%</i>					

TABLE 18

Classification of Expenses, continued						
Adjustments to Classification of Expenses						
Adjustment for Current Rate Level:	Total	COM	ADD SUP	CAP	CA	FP
FY 2020/21 Target Rate Rev. After Rate Increases	\$ 1,683,362					
Projected Rate Revenue at Current Rates	\$ 1,618,617					
FY 2020/21 Projected Rate Increase	4.0%					
Adjusted Net Revenue Req'ts	\$ 1,683,362	\$ 532,313	\$ 48,271	\$ 904,480	\$ 198,076	\$ 221
<i>Percent of Revenue</i>	<i>100.0%</i>	<i>31.6%</i>	<i>2.9%</i>	<i>53.7%</i>	<i>11.8%</i>	<i>0.0%</i>

BIGHORN DESERT WATER AGENCY
WATER RATE STUDY
Water Cost of Service Analysis

Allocation Factors

TABLE 19

Development of the COMMODITY Allocation Factor			Average Monthly Statistics			Average Bi-Monthly Statistics		
Customer Class	Volume (hcf) ¹	Percent of Total Volume	Winter	Annual	Summer	Winter	Annual	Summer
Residential	173,074	84.4%	4	6	9	8	12	17
Residential + Backflow	2,971	1.4%	9	14	18	18	28	36
Agriculture	8,593	4.2%	1	31	75	2	62	150
Agriculture + Residence	7,704	3.8%	7	24	48	15	48	95
Bulk Water	10,563	5.2%	4	7	11	7	15	23
Commercial	448	0.2%	4	7	14	8	15	29
Commercial + Backflow	856	0.4%	12	18	27	24	36	53
Fire Meter	-	0.0%	-	-	-	-	-	-
Institutional - Fire Dept.	9	0.0%	-	1	3	-	2	7
Institutional + Backflow	839	0.4%	13	35	86	27	70	172
Total	205,057	100%						

1. Consumption is from September 2019 through August 2020. BDVWA charges monthly rates, but bills customers bi-monthly.
Source files: *CUSTOMER BILLING DATA 09.18.2020.xlsx*

Commodity Related Costs: *These costs are associated with the total consumption (flow) of water over a specified period of time (e.g. annual).*

BIGHORN DESERT WATER AGENCY
WATER RATE STUDY
Water Cost of Service Analysis

Allocation Factors

TABLE 20

Development of the CAPACITY (MAX MONTH) Allocation Factor				
Customer Class	Average Bi-Monthly Use (hcf)	Peak Bi-Monthly Use (hcf) ¹	Peaking Factor	Max 2-Month Capacity Factor
Residential	28,846	43,629	1.51	81.1%
Residential + Backflow	495	652	1.32	1.2%
Agriculture	1,432	3,461	2.42	6.4%
Agriculture + Residence	1,284	2,572	2.00	4.8%
Bulk Water	1,760	2,760	1.57	5.1%
Commercial	75	144	1.92	0.3%
Commercial + Backflow	143	213	1.49	0.4%
Institutional - Fire Dept.	2	7	4.33	0.0%
Institutional + Backflow	140	344	2.46	0.6%
Total	34,176	53,782		100%
Fire Meter	0	0	0.00	0.0%

1. Based on peak monthly data (peak day data not available).

Capacity Related Costs: *Costs associated with the maximum demand required at one the maximum size of facilities required to meet this demand.*

BIGHORN DESERT WATER AGENCY
WATER RATE STUDY
Water Cost of Service Analysis

Allocation Factors

TABLE 21

Development of the CUSTOMER Allocation Factor		
Customer Class	Number of Meters ¹	Percent of Total
Residential	2,504	92.5%
Residential + Backflow	18	0.7%
Agriculture	23	0.8%
Agriculture + Residence	27	1.0%
Bulk Water	121	4.5%
Commercial	5	0.2%
Commercial + Backflow	4	0.1%
Fire Meter	2	0.1%
Institutional - Fire Dept.	1	0.0%
Institutional + Backflow	2	0.1%
Total	2,707	100.0%

1. Meter Count is from July/August 2020. BHDVWA charges monthly rates, but bills bi-monthly.

Source files: *CUSTOMER BILLING DATA 09.18.2020.xlsx*

Customer Related Costs : Costs associated with having a customer on the water system. These costs vary with the addition or deletion of customers on the system. Examples: Meter-reading, Postage and billing.

BIGHORN DESERT WATER AGENCY
WATER RATE STUDY
Water Cost of Service Analysis/Rate Design

TABLE 22

Meter Size	Standard Meters ¹		Fire Service Meters ²	
	Meter Capacity (gpm)	Equivalency to 1 inch	Meter Capacity (gpm)	Equivalency to 1 inch
	<u>Displacement Meters</u>		<u>Displacement Meters</u>	
3/4 inch	30	1.00	30	1.00
1 inch	50	1.00	50	1.00
1.5 inch	100	2.00	100	2.00
2 inch	160	3.20	160	3.20
	<u>Compound Class I Meters</u>		<u>Fire Service Type II</u>	
3 inch	320	6.40	350	7.00
4 inch	500	10.00	700	14.00
6 inch	1,000	20.00	1,600	32.00
8 inch	1,600	32.00	2,800	56.00

1. Meter flow rates are from AWWA M-1 Table B-1.

2. Fire Service meter flow rates are from AWWA M-6 Table 5-3.

TABLE 23 : ALLOCATION OF WATER REVENUE REQUIREMENTS

Functional Category	COSA Results		Proposed Rates	
	Unadjusted Net Revenue Requirements (2020-21) 68% Fixed / 32% Variable		Adjusted Net Revenue Requirements (2020-21) 60% Fixed / 40% Variable	
Commodity - Related Costs	\$ 532,313	31.6%	\$ 532,313	31.6%
Additional Supply Costs	\$ 48,271	2.9%	\$ 48,271	2.9%
Capacity - Related Costs (volumetric share)	\$ -	0.0%	\$ 92,760	5.5%
Capacity - Related Costs (fixed share)	\$ 904,480	53.7%	\$ 811,720	48.2%
Customer - Related Costs	\$ 198,076	11.8%	\$ 198,076	11.8%
Fire Protection - Related Costs	\$ 221	0.0%	\$ 221	0.0%
Total	\$ 1,683,362	100%	\$ 1,683,362	100%

BIGHORN DESERT WATER AGENCY
WATER RATE STUDY
Water Cost of Service Analysis/Rate Design

TABLE 24 : ALLOCATION OF ADJUSTED NET REVENUE REQUIREMENTS - FY 2020/21

Proposed Rates - Net Revenue Requirements (60% Fixed / 40% Variable)								
Customer Classes	Classification Components						Cost of Service Net Rev. Req'ts	% of COS Net Revenue Req'ts
	Commodity-Related Costs	Additional Supply Costs	Capacity-Related Costs Volumetric Share	Capacity-Related Costs Fixed Share	Customer-Related Costs	Fire Protection-Related Costs		
Residential	\$ 449,288		\$ 75,249	\$ 658,483	\$ 183,222	\$ -	\$1,366,243	81.2%
Residential + Backflow	7,713		1,124	9,836	1,317	-	19,990	1.2%
Agriculture	22,307	Direct	5,970	52,239	1,683	-	82,199	4.9%
Agriculture + Residence	19,998	Allocation	4,437	38,825	1,976	-	65,236	3.9%
Bulk Water	27,420	Made based	4,761	41,661	8,854	-	82,696	4.9%
Commercial	1,164	on Tiered	248	2,167	366	-	3,944	0.2%
Commercial + Backflow	2,222	Water	368	3,216	293	-	6,098	0.4%
Fire Meter	-	Usage	-	-	146	221	367	0.0%
Institutional - Fire Dept.	24		12	101	73	-	210	0.0%
Institutional + Backflow	2,177		593	5,190	146	-	8,107	0.5%
Total Net Revenue Requirement	\$ 532,313	\$ 48,271	\$ 92,760	\$ 811,720	\$ 198,076	\$ 221	\$1,683,362	97%

BIGHORN DESERT WATER AGENCY
WATER RATE STUDY
Water Cost of Service Analysis/Rate Design

TABLE 25 : CALCULATION OF BI-MONTHLY FIXED METER SERVICE CHARGES FOR FY 2020/21

Proposed Rates - Net Revenue Requirements (60% Fixed / 40% Variable)								
Number of Meters by Class and Size ¹	3/4 inch	1 inch	1 1/2 inch	2 inch	3 inch	4 inch	6 inch	Total
Residential	1,628	875	-	1	-	-	-	2,504
Residential + Backflow	7	11	-	-	-	-	-	18
Agriculture	6	17	-	-	-	-	-	23
Agriculture + Residence	12	15	-	-	-	-	-	27
Commercial	3	2	-	-	-	-	-	5
Commercial + Backflow	3	1	-	-	-	-	-	4
Institutional - Fire Dept.	-	1	-	-	-	-	-	1
Institutional + Backflow	1	-	-	1	-	-	-	2
Total Meters/Accounts	1,660	922	-	2	-	-	-	2,584
<i>Hydraulic Capacity Factor ²</i>	<i>1.00</i>	<i>1.00</i>	<i>2.00</i>	<i>3.20</i>	<i>6.40</i>	<i>10.00</i>	<i>20.00</i>	
Total Equivalent Meters	1,660	922	-	6	-	-	-	2,588
Bi-Monthly Fixed Service Charges								
Customer Costs (\$/Acct/2 months) ³	\$12.20	\$12.20	\$12.20	\$12.20	\$12.20	\$12.20	\$12.20	
Capacity Costs (\$/Acct/2 months) ⁴	\$49.58	\$49.58	\$99.17	\$158.67	\$317.34	\$495.84	\$991.68	
Total Bi-Monthly Meter Charge	\$61.78	\$61.78	\$111.36	\$170.86	\$329.53	\$508.03	\$1,003.87	
Annual Fixed Costs Allocated to Bi-Monthly Meter Charges								
Customer Costs	\$ 189,076							
Capacity Costs	770,058							
Total Fixed Meter Costs	\$ 959,134							
Annual Revenue from Bi-Monthly Meter Charges								
Customer Charges	\$ 121,465	\$ 67,464	\$ -	\$ 146	\$ -	\$ -	\$ -	\$ 189,076
Capacity Charges	493,856	274,298	-	1,904	-	-	-	\$ 770,058
Total Revenue from Bi-Monthly Meter Charges	\$ 615,321	\$ 341,763	\$ -	\$ 2,050	\$ -	\$ -	\$ -	\$ 959,134

1. Number of meters by size and customer class for July-August 2020.

Source file for meters and consumption: CUSTOMER BILLING DATA 09.18.2020.xlsx

2. Source file: AWWA Manual M1, "Principles of Water Rates, Fees, and Charges", Table B-1.

3. Customer costs are allocated to each customer by dividing the total customer costs by the total number of customers.

4. Capacity costs are allocated by meter size and the hydraulic capacity of the meter.

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TABLE 26 : CALCULATION OF BI-MONTHLY FIXED METER SERVICE CHARGES FOR FY 2020/21

Proposed Rates - Net Revenue Requirements (60% Fixed / 40% Variable)								
Number of Meters by Class and Size ¹	3/4 inch	1 inch	2 inch	3 inch	4 inch	6 inch	8 inch	Total
Fire Protection - Related Costs	-	2	-	-	-	-	-	2
Total Meters/Accounts	-	2	-	-	-	-	-	2
<i>Hydraulic Capacity Factor ²</i>	1.00	1.00	3.20	7.00	14.00	32.00	56.00	
Total Equivalent Meters	-	2	-	-	-	-	-	2
Bi-Monthly Fixed Service Charges								
Customer Costs (\$/Acct/2 months) ³	\$12.20	\$12.20	\$12.20	\$12.20	\$12.20	\$12.20	\$12.20	
Capacity Costs (\$/Acct/2 months) ⁴	\$18.42	\$18.42	\$58.95	\$128.95	\$257.89	\$589.47	\$1,031.56	
Total Bi-Monthly Meter Charge	\$30.62	\$30.62	\$71.14	\$141.14	\$270.09	\$601.66	\$1,043.76	
Annual Fixed Costs Allocated to Bi-Monthly Meter Charges								
Customer Costs	\$ 146							
Fire Protection Costs	221							
Total Fixed Meter Costs	\$ 367							
Annual Revenue from Bi-Monthly Meter Charges								
Customer Charges	\$ -	\$ 146	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 146
Capacity Charges	-	221	-	-	-	-	-	221
Total Revenue from Bi-Monthly Meter Charges	\$ -	\$ 367	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 367

1. Number of meters by size and customer class for July-August 2020.

Source file for meters and consumption: CUSTOMER BILLING DATA 09.18.2020.xlsx

2. Source file: AWWA Manual M6, "Water Meters - Selection, Installation, Testing and Maintenance", Table 5-3.

3. Customer costs are allocated to each customer by dividing the total customer costs by the total number of customers.

4. Capacity costs are allocated by meter size and the hydraulic capacity of the meter.

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Proposed Volume Charges

PROPOSED VOLUMETRIC CHARGES FOR FY 2020/21

TABLE 27

Proposed Rates - Net Revenue Requirements (60% Fixed / 40% Variable)								
Customer Classes	Water Consumption (hcf/yr.) ¹	Commodity Assigned Costs	Capacity Assigned Costs	Additional Supply Costs ²	Fixed Costs to Recover from Vol. Charges	Target Rev. Req't from Vol. Charges	Cost Per Unit of Water (\$/hcf)	Volumetric Rates (\$/hcf)
Residential	173,074	\$ 449,288	\$ 75,249	<i>Allocated based on water supply costs.</i>	\$ -	\$ 524,537	\$3.03	\$3.03
Residential + Backflow	2,971	7,713	1,124		-	8,837	\$2.97	
Agriculture	8,593	22,307	5,970		-	28,277	\$3.29	
Agriculture + Residence	7,704	19,998	4,437		-	24,435	\$3.17	
Bulk Water	10,563	27,420	4,761		50,515	82,696	\$7.83	\$7.83
Commercial	448	1,164	248	898	-	2,310	\$5.15	\$3.58
Commercial + Backflow	856	2,222	368		-	2,589	\$3.03	
Fire Meter	0	-	-		-	-	N/A	
Institutional - Fire Dept.	9	24	12		-	36	\$3.84	
Institutional + Backflow	839	2,177	593		-	2,770	\$3.30	
Total	205,057	\$ 532,313	\$ 92,760	\$ 898	\$ 50,515	\$ 676,487		

1. Consumption by customer class for July-August 2020.

Source file for meters and consumption: CUSTOMER BILLING DATA 09.18.2020.xlsx

2. Additional water supply costs for Residential and Agriculture customers shown in Table 29.

TABLE 28: PROPOSED TIER BREAKPOINTS

Water Supply Allocation	Based on # of Parcels	Based on # of Accounts
Total Water Allocation 2020	908 acre feet	908 acre feet
Total Customer Base	5,286 total parcels	2,707 total active accounts
Water Allocated to Each Customer Annual	0.17 acre feet/parcel/year	0.34 acre feet/parcel/year
Conversion to Hundred Cubic Feet	74.8 hcf	146.1 hcf
HCF Bi-Monthly Allocation Per Customer	12.5 hcf	24.4 hcf
Bi-Monthly Tier 1 Water	13.00 hcf	25.00 hcf
Total Water Allocation in hcf	395,524	

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Proposed Volume Charges

TABLE 29: ADDITIONAL WATER SUPPLY COSTS

Cost Per Unit for State Water Project Water	Ag+Res	Non-Res	Total
Total Cost for Additional Water Supply (70 AF)	\$47,373.11	\$898.16	\$48,271.27 Total Cost
Cost per Acre Foot	\$689.59		\$689.59 per AF
Cost per HCF	\$1.58		\$1.58 per hcf

TABLE 30: TIERED WATER RATES

Proposed Rates - Net Revenue Requirements (60% Fixed / 40% Variable)						
Customer Classes	Est. Water Consumption (hcf/yr.)	% of Consumption in Tier	Base Rate	Plus Additional Supply Cost	Cost Per Unit of Water (\$/hcf)	Estimated Revenue
Residential						
Tier 1	124,215	70%	\$3.03	\$0.00	\$3.03	\$ 376,341
Tier 2	53,094	30%	\$3.03	\$1.58	\$4.61	\$ 244,914
Agriculture						
Tier 1	4,052	26%	\$3.23	\$0.00	\$3.23	\$ 13,106
Tier 2	11,649	74%	\$3.23	\$1.58	\$4.82	\$ 56,120
Total	193,010					\$ 690,481

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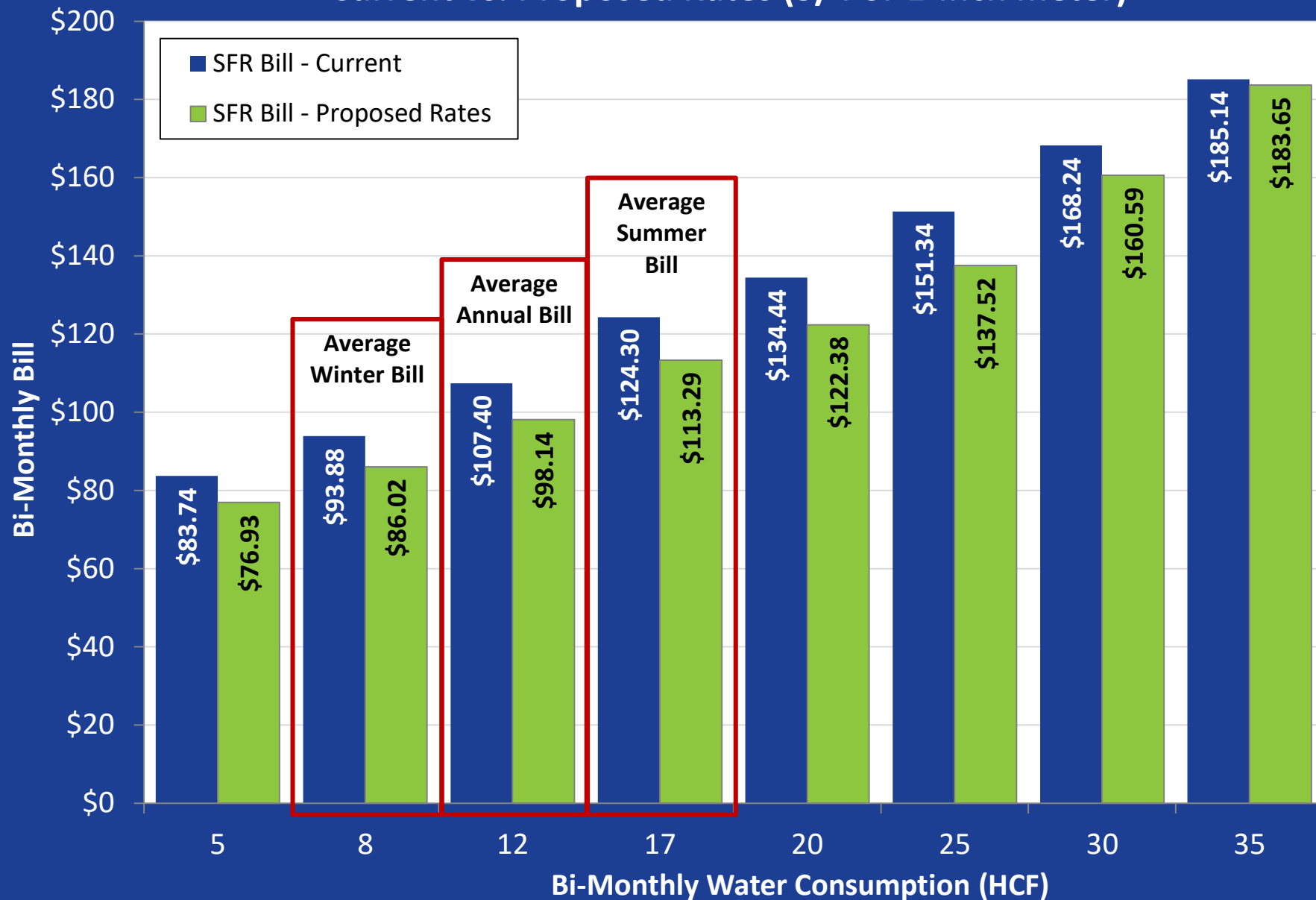
Current & Proposed Rates

CURRENT VS. PROPOSED WATER RATES:

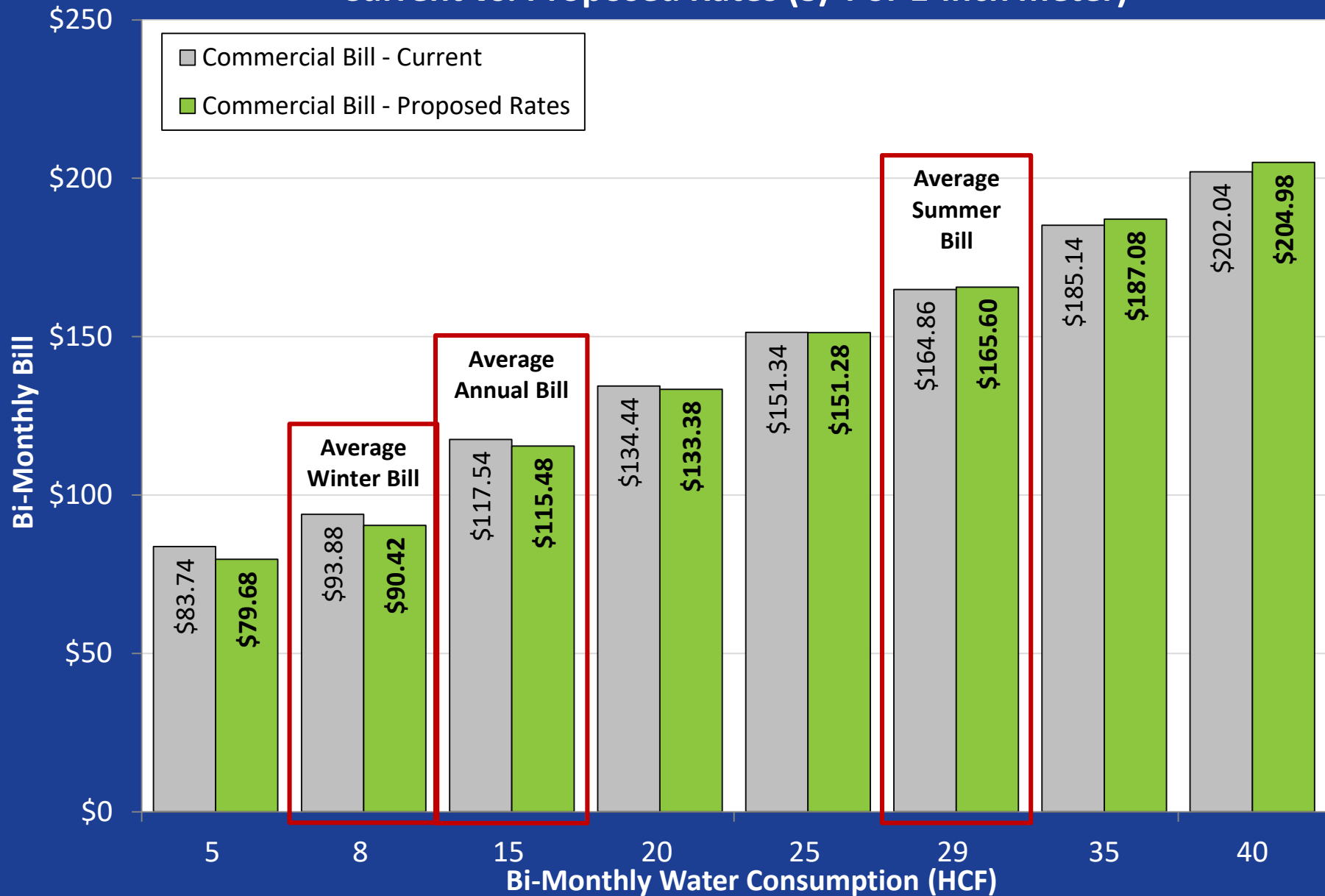
TABLE 31

Proposed Rates - Net Revenue Requirements (60% Fixed / 40% Variable)						
Water Rate Schedule	Current Rates	Proposed Rates				
		FY 2020/21	FY 2021/22	FY 2022/23	FY 2023/24	FY 2024/25
Projected Increase in Rate Revenue per Financial Plan:		4.00%	4.00%	4.00%	4.00%	4.00%
Fixed Meter Charges						
Bi-Monthly Fixed Service Charges:						
3/4 inch	\$66.84	\$61.78	\$64.25	\$66.82	\$69.49	\$72.27
1 inch	\$66.84	\$61.78	\$64.25	\$66.82	\$69.49	\$72.27
1.5 inch	\$66.84	\$111.36	\$115.81	\$120.44	\$125.26	\$130.27
2 inch	\$66.84	\$170.86	\$177.69	\$184.80	\$192.19	\$199.88
3 inch	\$66.84	\$329.53	\$342.71	\$356.42	\$370.68	\$385.51
4 inch	--	\$508.03	\$528.35	\$549.48	\$571.46	\$594.32
6 inch	--	\$1,003.87	\$1,044.02	\$1,085.78	\$1,129.21	\$1,174.38
Bi-Monthly Fire Service Charges:						
3/4 inch	\$16.00	\$30.62	\$31.84	\$33.11	\$34.43	\$35.81
1 inch	\$16.00	\$30.62	\$31.84	\$33.11	\$34.43	\$35.81
2 inch	\$16.00	\$71.14	\$73.99	\$76.95	\$80.03	\$83.23
3 inch	\$34.43	\$141.14	\$146.79	\$152.66	\$158.77	\$165.12
4 inch	\$57.38	\$270.09	\$280.89	\$292.13	\$303.82	\$315.97
6 inch	\$114.75	\$601.66	\$625.73	\$650.76	\$676.79	\$703.86
8 inch	\$183.60	\$1,043.76	\$1,085.51	\$1,128.93	\$1,174.09	\$1,221.05
Commodity Charges						
Rate per hcf of Water Consumed:						
Bulk Meters	\$9.57	\$7.83	\$8.14	\$8.47	\$8.81	\$9.16
Commercial, Institutional, Fire & Other	\$3.38	\$3.58	\$3.72	\$3.87	\$4.02	\$4.18
Residential, 3/4" and 1" Meters	\$3.38	--	--	--	--	--
Tiered Rate - Residential Customers:						
Proposed Break						
Tier 1 0-25 hcf	\$3.38	\$3.03	\$3.15	\$3.28	\$3.41	\$3.55
Tier 2 26+ hcf	\$3.38	\$4.61	\$4.80	\$4.99	\$5.19	\$5.40
Tiered Rate - Agriculture Customers:						
Proposed Break						
Tier 1 0-25 hcf	\$3.38	\$3.23	\$3.36	\$3.49	\$3.63	\$3.78
Tier 2 26+ hcf	\$3.38	\$4.82	\$5.01	\$5.21	\$5.42	\$5.64

Residential Water Bill Comparison Current vs. Proposed Rates (3/4 or 1-inch meter)



Commercial Water Bill Comparison Current vs. Proposed Rates (3/4 or 1-inch meter)



Water Rate Comparison
Regional Water Rate Comparison

