Ware Water System
Water Rate Evaluation

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DATE: February 2, 2021

1 Background

The Town of Ware owns and operates a public water system to provide drinking water to its residents and businesses. The water system is managed as an enterprise fund, which is an accounting (best) practice defined in Massachusetts General Law (MGL) c. 44, § 53F½, Enterprise funds provide financial separation between a utility and the municipality's General Fund by segregating the costs and revenue associated with the utility from the rest of the Town's budget. The utility related costs are then recovered from the utility's customers in the form of water and/or sewer bills.

The Ware water system provide services to about 2,350 user accounts and like most towns, Ware's customer base is predominately residential (92% by count, 65% by usage), this represents about 70% of the residential parcels in Town.

Ware's existing water rate structure consists of a base charge and a uniform usage charge, both are applied equally to all customers and all usage values. In terms of peer comparisons, the 2000 Tighe & Bond water rate survey of Massachusetts water suppliers showed that responding water systems were split about 50/50 between tiered and uniform water rates, by 2017 however, the ratio shifted to roughly 70/30 tiered versus uniform rate. Ware issues water bills on a quarterly basis which was 2017's the most common billing frequency (58%) and is appropriate for the size of the Ware water system.

2 Water Usage Evaluation

Seventy percent (70%) of Ware's user charge revenue is related directly to usage while approximately 30% is related to the base charge. Future revenue is estimated based upon projected usage, so it is important to evaluate water use trends. Source data used consists of account level water usage data (customers meters billing data) for calendar years 2016 through 2020 and ASR[1] data.

Figure 1 shows the historic and projected water use. The historic data was adjusted as follows:

Customer data – The water usage data showed that the total usage in Fiscal Year (FY) 19 was twice that of FY18. Closer examination of the customer level water usage data showed that there were three customers with usages that were many orders of magnitude higher than expected. Table 1 shows this data.

[1] Annual Statistical Report (ASR) is a collection of data submitted by every to the Massachusetts Department of Environmental Protection annually.

Table 1

FY19 Water Account Data Anomalies

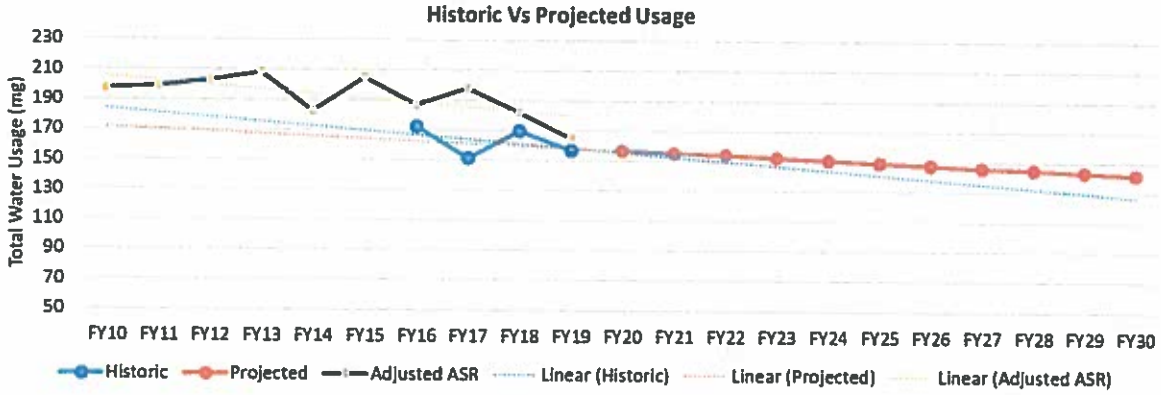
ACCOUNT	SERVICEADDRESS	Meter Size	WATERUSE	SEWERUSE	watersewer ratio
02-2520	237 WEST ST - IRRIGATION SYS	3	90,331	9,033,103	100 X
12-2613	4 1/2 CHURCH ST	1	1,877	6,701,722	3,570 X
12-2613	4 1/2 CHURCH ST	1	1,283	3,301,009	2,573 X
02-2520	237 WEST ST - IRRIGATION SYS	3	10,142	1,014,184	100 X

The Town bills sewer usage based upon water usage, therefore the sewer usage values shown in Table 1 represents the unadjusted water use value, the values in the water use column were adjusted by comparing previous water usage for the same billing period.

ASR data was adjusted to Fiscal Year totals by summing monthly usage data which was then adjusted by the amount of Unaccounted for Water (UAW). Note that the 2019 UAW was 21.9% which was nearly twice the average for the previous five years. This may reflect the usage data anomalies described above.

Figure 2

Historic and Projected Water Usage



In reviewing customer water usage data, there appears to be a disparity between the two data sources in FY17, beyond that however there is strong correlation supporting a decline in water use. The data supports a 2.25% annual water usage decrease, however in discussing this with the Town an average decline of 1.0% was used to project water use starting in FY20. This is reflected in the orange line shown in Figure 1 from FY20 to FY30. A potential contributor to the decline in usage may be the due to the impacts of customers getting brown water due to the iron and manganese present in the Town's source water.

The summer to winter ratio[2] is a measure of seasonal increase in water usage. The summer/ winter ratio is influenced by several factors, generally weather is the biggest influencer, however for landlocked communities, this increase is typically due to outdoor irrigation and other discretionary summer water usage. The Town of Ware has an average summer to winter ratio of 1.2, representing a 20% increase in usage during the summer compared to winter months. A summer to winter ratio of 1.2 is similar to other landlocked communities without large seasonal population changes and is considered reasonable.

[2] The Massachusetts Department of Environmental Protection (MassDEP) defines summer as May – September and winter as November to March.

2.1 Water Withdrawal Limits

The Water Management Act (MGL c. 21G) adopted in 1986 regulates the amount of water that may be withdrawn from either surface or groundwater sources. Authorized usage is defined as registered, permitted, or both. Prior to January 1988, systems could establish or "register" their usage based upon their average water use from 1981-1985. Ware has 6 registered drinking water wells from which the Town can withdraw water. The total amount of water that may be withdrawn is defined by the Town's Water Management Act Permit combined with the volume that was registered at the time the Water Management Act was enacted.

Figure 2 shows Ware's actual annual daily average water withdrawal versus authorized annual daily average water withdrawal from 2009 to 2019.

Figure 2

Actual Withdrawal versus Authorized Withdrawals [million gallons per day(mgd)]

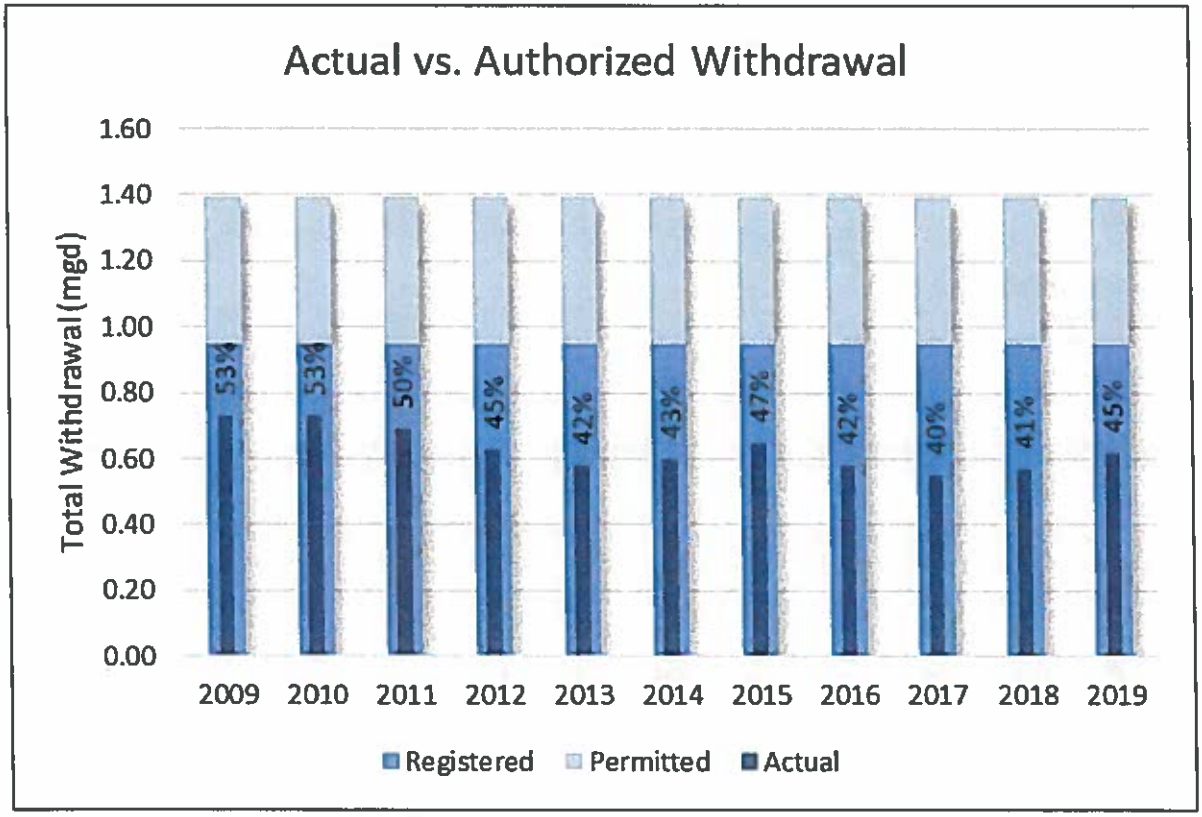


Figure 2 illustrates that the Town's actual water withdrawal has been hovering at less than half of their total water withdrawal capacity since 2012.

Ware's reported residential water use was 40 gallons per person per day in 2019 and averaged 45 over the last ten years which is significantly lower than the MassDEP's target maximum of 65 gallons per person per day. Based upon this, the low seasonal increase and the abundant water supply, there is not a compelling case for increasing water conservation beyond normal prudence.

3 Water Enterprise Fund Expenses

Expenses for a water system consist of operating expenses, debt service, and capital improvements plan costs.

3.1 Operating Expenses

While operating costs can be broken down into fixed (irrespective of water production) or variable (dependent on water volume produced), around 80% of a typical water utility's costs are in fact fixed costs. Table 2 shows a portion of Ware's water rate model dashboard containing the operating expenses.

Table 2

Ware Water Enterprise Operating Expenses

	Budget FY20	Budget FY21	Projected FY22	Projected FY23	Projected FY24	Projected FY25
Operating Expenses						
Salaries & Wages	$290,981	$310,653	$321,526	$332,779	$344,427	$356,481
Supplies	$166,200	$180,300	$186,611	$193,142	$199,902	$206,898
Other Expenses	$244,000	$225,042	$232,918	$391,070	$404,758	$418,924
Indirect Expenses	$102,934	$132,157	$136,782	$141,570	$146,525	$151,653
Subtotal	**$804,115**	**$848,152**	**$877,837**	**$1,058,561**	**$1,095,611**	**$1,133,957**
Delta Previous	$701,181	*5.5%*	*3.5%*	*20.6%*	*3.5%*	*3.5%*
Capital Expenses						
Capital Outlay			$0	$22,000	$22,000	$22,000
Existing Debt Service	$0	$113,726	$115,331	$112,059	$108,987	$105,808
New Debt Service	$0	$0	$0	$542,784	$796,476	$921,784
Subtotal	**$0**	**$113,726**	**$115,331**	**$676,843**	**$927,462**	**$1,049,592**
Delta Previous			*1.4%*	*486.9%*	*37.0%*	*13.2%*
TOTAL EXPENSES	**$804,115**	**$961,878**	**$993,168**	**$1,735,404**	**$2,023,073**	**$2,183,549**
Delta Previous	*-3.4%*	*19.6%*	*3.3%*	*74.7%*	*16.6%*	*7.9%*

FY22 is the first projected year and is based upon the FY21 operating budget and escalated annually by 3.5% to account for future cost increases. The indirect line item represents fringe benefits for employees while other expenses include licenses and purchase of services.

3.2 Capital Improvement Plan (CIP)

The need for capital improvements is by far the single biggest driver behind water rate increases and Ware is no exception. The Capital Improvement Module of the water rate model includes $26,000,000 worth of capital improvement projects that were either taken from the 2016 Water Master Plan prepared by Wright-Pierce or information from the Town.

Table 3

Ware Water Capital Improvement Plan

Capital Improvement Planner

ID	System	Description	Funding source	Interest Rate	Estimated Cost	Cost Year	Escalated Cost	Start Year	Term
1	Treatment	Water Filtration Plant	USDA	1.750%	$13,276,000	2023	$ 13,280,000	2023	40
2	Source	Dismal Swamp Well Generator + Well #4	Debt	4.5%	$500,000	2016	$ 620,000	2023	10
3	Distribution	Hydrant Replacement (5 per year)	Rate	–	$175,000	2016	$ 220,000	2023	10
4	Storage	Anderson Road Water Tank Rehabilitation	Debt	4.5%	$1,400,000	2020	$ 1,580,000	2024	20
5	Storage	Church St WST Water Tank Rehabilitation	Debt	4.5%	$1,400,000	2020	$ 1,630,000	2025	20
6	Distribution	Water Main Replacement #1-12" DI (~3,600LF)	Debt	4.5%	$1,520,000	2020	$ 1,720,000	2024	20
7	Distribution	Water Main Replacement #2-8" DI (~5,860LF)	Debt	4.5%	$2,000,000	2020	$ 2,390,000	2026	20
8	Distribution	Water Main Replacement #3-8" DI (~5,860LF)	Debt	4.5%	$2,100,000	2020	$ 2,670,000	2026	20
			Total		$22,371,000		$ 24,110,000		

The cost of the new filtration plant of about $13,300,000 shown above includes engineering cost and contingency and represents about half of the total CIP costs. The filtration plant is assumed to be funded using a United States Department of Agriculture (USDA) rural development loan with a reduced interest rates of 1.75% and a 40-year loan payback term. The estimated annual debt service for the water filtration plant is $465,000.

The remainder of the projects within the CIP, with the exception of the hydrant replacements, are assumed to be funded through municipal bonds or other debt instruments with an assumed interest rate of 4.5%. These projects were assumed to be debt funded because the individual project costs are the same order of magnitude as the total projected budgets which would require rate increases to be double or more to cover the cost. Additional funding options could be explored by the Town if desired.

4 Water Enterprise Fund Revenue

Revenue for a water enterprise comes primarily from user rates with non-rate revenue coming from liens and penalties due to non-payment of water bills, interest on investments, and miscellaneous fees and charges. About 90% of Ware's water revenue is from user rates and base charges.

4.1 Rate Evaluation

Ware's current water rates consist of a base fee and a usage fee which are billed quarterly. Based upon the results of the usage evaluation and discussion with the Town, the alternatives selected for evaluation were based upon a varying degree of cost share of the anticipated water filtration plant annual debt service ($465,000) from the general fund rather than different water rate structures. The proforma for each alternative is shown below. In each scenario, rates are adjusted to maintain a fund balance of at least 20% of operating costs and to favor multiyear increases over one sudden rate increase.

Due to proactive rate increases in the past few years, the water enterprise has a robust fund balance, therefore all scenarios reflect a combination of balanced rate increases and reserve spend down.

The Alternatives reviewed were:

- Alternative A – Water Filtration Plant 100% Funded by Water Rates with no General Fund Contribution
- Alternative B – Water Filtration Plant 75% Funded by Water Rates and 25% Funded by General Fund Contribution
- Alternative C – Water Filtration Plant 50% Funded by Water Rates and 50% Funded by General Fund Contribution

4.1.1 Alternative A – Water Filtration Plant 100% Funded by Water Rates with no General Fund Contribution

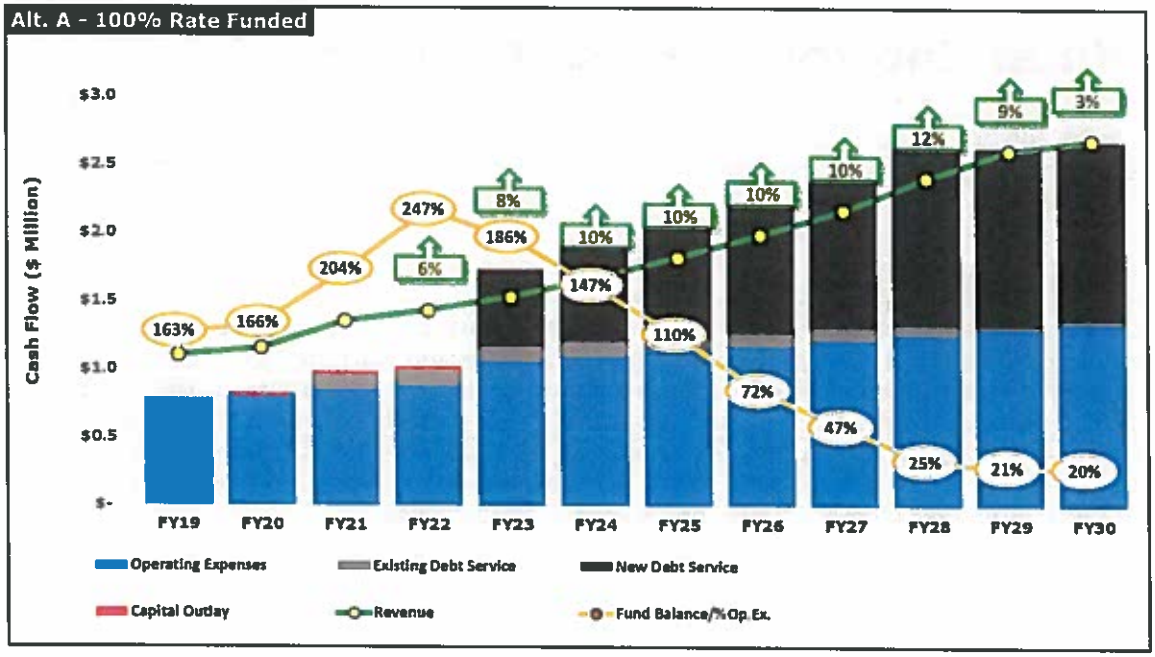
Table 4

Water Rate Model Alterative A – 5 Years of Projected Revenue

	FY20	FY21	FY22	FY23	FY24	FY25
Revenue		*Rate Increase*	6%	8%	10%	10%
Rate Revenue	$ 1,052,917	$ 1,200,123	$ 1,264,347	$ 1,357,201	$ 1,483,918	$ 1,622,538
Non Rate Revenue	$ 102,355	$ 152,941	$ 168,815	$ 175,740	$ 185,753	$ 199,418
Total Revenue	$ 1,155,272	$ 1,353,064	$ 1,433,162	$ 1,532,941	$ 1,669,671	$ 1,821,955
Delta previous (Rate Revenue)		*14.0%*	*5.4%*	*7.3%*	*9.3%*	*9.3%*
Net Revenue	$ 351,157	$ 391,186	$ 439,994	$ (202,463)	$ (353,402)	$ (361,593)
Fund Balance	$1,335,780	$1,726,966	$2,166,960	$1,964,497	$1,611,095	$1,249,502
(as % OpEx)	166%	204%	247%	186%	147%	110%

Figure 3

Water Rate Model Alterative A Proforma



4.1.2 Alternative B – Water Filtration Plant 75% Funded by Water Rates and 25% Funded by General Fund Contribution

Table 5

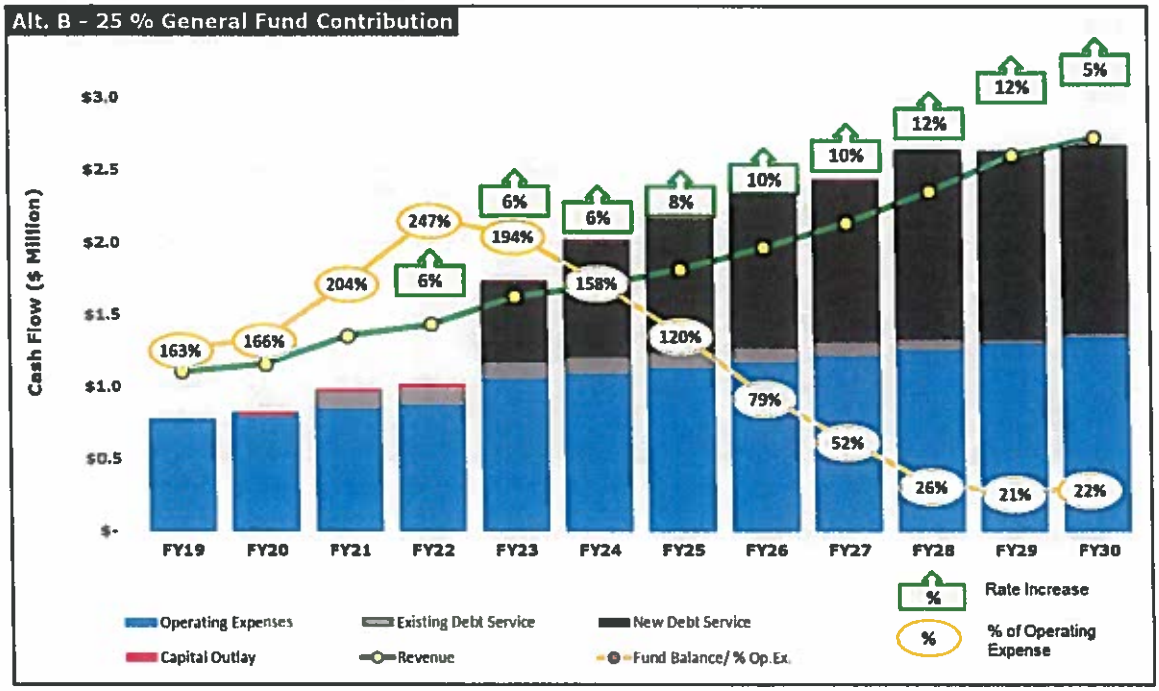
Water Rate Model Alterative B – 5 Years of Projected Revenue

Revenue - Alt. B	FY20	FY21	FY22	FY23	FY24	FY25
			6%	6%	6%	8%
Rate Revenue	$ 1,052,917	$ 1,200,123	$ 1,264,347	$ 1,332,068	$ 1,403,476	$ 1,506,680
Non Rate Revenue	$ 102,355	$ 152,941	$ 168,815	$ 175,740	$ 183,043	$ 190,743
GF Contribution				$ 116,107	$ 116,107	$ 116,107
Total Revenue	$ 1,155,272	$ 1,353,064	$ 1,433,162	$ 1,623,915	$ 1,702,627	$ 1,813,531
delta previous		*$ 147,206*	*$ 64,225*	*$ 67,720*	*$ 71,409*	*$ 103,204*
Grant or GF Subsidy =	*25%*					

Net Revenue (Revenue-Expense)	$ 351,157	$ 391,186	$ 439,994	$ (111,489)	$ (320,446)	$ (370,018)
Retained Earnings Balance	$1,335,780	$1,726,966	$2,166,960	$2,055,471	$1,735,025	$1,365,007
(as % OpEx)	166%	204%	247%	194%	158%	120%

Figure 4

Water Rate Model Alterative B Proforma



4.1.3 Alternative C - Water Filtration Plant 50% Funded by Water Rates and 50% Funded by General Fund Contribution

Table 6

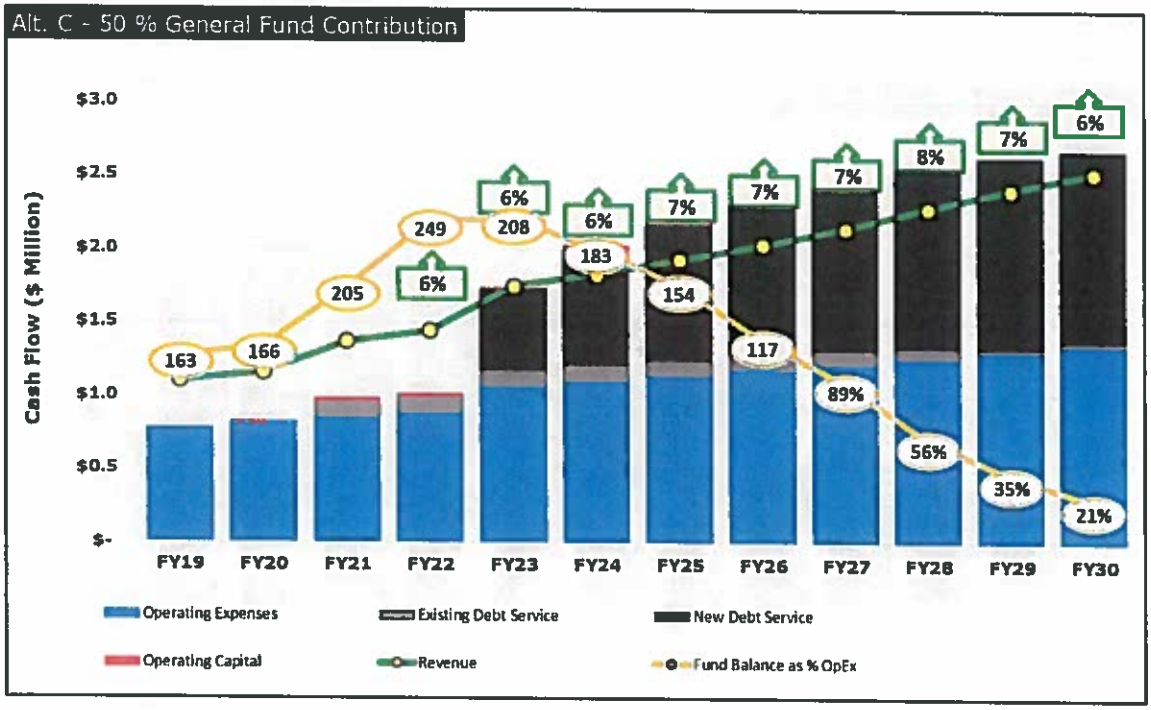
Water Rate Model Alterative C – 5 Years of Projected Revenue

Revenue - Alt C	FY20	FY21	FY22	FY23	FY24	FY25
			6%	6%	6%	7%
Total Rate Revenue	$ 1,052,917	$ 1,200,123	$ 1,264,347	$ 1,332,068	$ 1,403,476	$ 1,492,730
Non-Rate Revenue	$ 102,355	$ 168,815	$ 175,740	$ 183,043	$ 190,743	$ 200,368
GF Contribution				$ 232,215	$ 232,215	$ 232,215
Total Revenue	$ 1,155,272	$ 1,368,937	$ 1,440,088	$ 1,747,325	$ 1,826,434	$ 1,925,312
delta previous		*$ 147,206*	*$ 64,225*	*$ 67,720*	*$ 71,409*	*$ 89,253*
Grant or GF Subsidy =	*50%*					

Net Revenue (Revenue-Expense)	$ 351,157	$ 407,060	$ 446,920	$ 11,921	$ (196,639)	$ (258,237)
Retained Earnings Balance	$1,335,780	$1,742,840	$2,189,760	$2,201,681	$2,005,042	$1,746,805
Retained Earnings as Percent of O	166%	205%	249%	208%	183%	154%

Figure 5

Water Rate Model Alterative C Proforma



Note that under this scenario, additional rate increases will be required beyond FY30.

4.1.4 Water Rates

The projected water rates under each scenario are shown below. The "Existing Rate - Do Nothing" scenario is shown only to provide the historic rate increases and is not a viable alternative.

Table 7

Proposed Rate Increases

Existing Rates - Do Nothing

Rate Increase	Base Charge	4%	6%									
	Consumption	12%	10%									
Description	Type	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30
Base Charge	Quarterly Fee	$34.00	$36.00	$36.00	$36.00	$36.00	$36.00	$36.00	$36.00	$36.00	$36.00	$36.00
Consumption	Usage	$5.20	$5.75	$5.75	$5.75	$5.75	$5.75	$5.75	$5.75	$5.75	$5.75	$5.75

Alt. A - 100% Rate Funded

	Rate Increase			6%	8%	10%	10%	10%	10%	12%	9%	3%
Description	Type	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30
Base Charge	Quarterly Fee	$34.00	$36.00	$38.16	$41.21	$45.33	$49.87	$54.85	$60.34	$67.58	$73.66	$75.87
Consumption	Usage	$5.20	$5.75	$6.10	$6.58	$7.24	$7.96	$8.76	$9.64	$10.79	$11.77	$12.12

Alt. B - 25 % General Fund Contribution *

	Rate Increase			6%	6%	6%	8%	10%	10%	12%	12%	5%
Description	Type	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30
Base Charge	Quarterly Fee	$34.00	$36.00	$38.16	$40.45	$42.88	$46.31	$50.94	$56.03	$62.75	$70.29	$73.80
Consumption	Usage	$5.20	$5.75	$6.10	$6.46	$6.85	$7.40	$8.14	$8.95	$10.02	$11.23	$11.79

Alt. C - 50 % General Fund Contribution *

				6%	6%	6%	7%	7%	7%	8%	7%	6%
Description	Type	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30
Base Charge	Quarterly Fee	$34.00	$36.00	$38.16	$40.45	$42.88	$45.88	$49.09	$52.53	$56.73	$60.70	$64.34
Consumption	Usage	$5.20	$5.75	$6.10	$6.46	$6.85	$7.33	$7.84	$8.39	$9.06	$9.69	$10.28

5 Cost Impacts & Affordability

When evaluating water rates, the total annual cost for residential users is typically the most important metric for stakeholders. Calculating the cost to a residential user also provides a convenient means to compare different rate alternatives.

5.1 Annual Water Customer and Taxpayer Costs

The costs shown below are based upon a 4-person household using 50 gallons per person per day, which is the usage recommended for evaluating the financial burden. For context, the US Census Bureau reported Ware's average family size to be 2.2 persons per household and 65 gallons per gallon per person per day is the MassDEP's target water conservation goal.

Table 8

Typical Residential Cost

Annual Cost												
Scenario	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30
100% Rate Funded	$ 480	$ 531	$ 581	$ 616	$ 665	$ 732	$ 805	$ 885	$ 974	$1,091	$ 1,189	$ 1,224
Increase		$ 52	$ 50	$ 35	$ 49	$ 67	$ 73	$ 80	$ 89	$ 117	$ 98	$ 36
25% GF Contribution	$ 480	$ 531	$ 581	$ 616	$ 653	$ 692	$ 747	$ 822	$ 904	$1,013	$ 1,134	$ 1,191
Tax Impact					$ 32	$ 32	$ 32	$ 32	$ 32	$ 32	$ 32	$ 32
Total	$ 480	$ 531	$ 581	$ 616	$ 685	$ 724	$ 779	$ 854	$ 936	$1,045	$ 1,166	$ 1,223
Increase		$ 52	$ 50	$ 35	$ 69	$ 39	$ 55	$ 76	$ 82	$ 109	$ 122	$ 57
50% GF Contribution	$ 480	$ 531	$ 581	$ 616	$ 653	$ 692	$ 740	$ 792	$ 848	$ 916	$ 980	$ 1,038
Tax Impact					$ 65	$ 65	$ 65	$ 65	$ 65	$ 65	$ 65	$ 65
	$ 480	$ 531	$ 581	$ 616	$ 718	$ 757	$ 805	$ 857	$ 913	$ 981	$ 1,045	$ 1,103
Increase		$ 52	$ 50	$ 35	$ 37	$ 39	$ 48	$ 52	$ 55	$ 68	$ 64	$ 59

For Alternatives B and C the estimated increase in real estate tax is included. The calculation for Alternative C, the 50% General Fund contribution, is shown below.

	FY20	FY21	FY22	FY23	FY24	FY25
Total Levy	$ 15,501,517	$ 16,079,323	$ 16,678,667	$ 17,300,350	$ 17,945,206	$ 18,614,099
General Fund Contribution(GFC)	$ 250,000	$ 250,000	$ 250,000	$ 250,000	$ 250,000	$ 250,000
GFC contribution as % of levy	1.61%	1.55%	1.50%	1.45%	1.39%	1.34%
Mill Rate ($/1000$)	$20.63	$21.40	$22.20	$23.02	$23.88	$24.77
Increase to Mill Rate due to GFC	$0.33	$0.33	$0.33	$0.33	$0.33	$0.33
Mill Rate with GFC	$20.96	$21.73	$22.53	$23.36	$24.22	$25.11
Average single family home valuation	$ 191,233	$ 191,520	$ 191,808	$ 192,097	$ 192,385	$ 192,674
Estimated single family tax bill	$ 3,845	$ 4,098	$ 4,258	$ 4,423	$ 4,595	$ 4,773
Estimated increase in Single Family Tax Bill	$ 63.63	$ 63.72	$ 63.82	$ 63.91	$ 64.01	$ 64.11

1. Total levy includes residential, Commercial and industrial and is escalated by 3.36% annually. (Based upon last ten years of Ware levy totals)
2. 50% of estimated filtration plant debt service = $232,214
3. Funding 50% of filtration plant debt service would result in a $0.33 increase in the mill rate
4. This results in an increase of about $65 per year on the annual property tax for an average single-family home

5.2 Affordability

Affordability is highly subjective; therefore, indicators are used for evaluating cost impacts. An April 2019 report entitled "Developing a New Framework for Household Affordability and Financial Capability Assessment in the Water Sector" commissioned by the American Water Works Association, the National Association of Clean Water Agencies and the Water Environment Federation recommended a new indicator, the Household Burden Indicator (HBI). The degree of financial burden is based upon two elements, the Prevalence of Poverty Indicator (PPI) and the above noted HBI.

The PPI is defined as the percentage of households with incomes at or below 200% of the Federal Poverty Level. For Ware, this value is 35.3% based on 2018 data from the United States Census Bureau.

The HBI is determined by dividing the annual cost of both water and sewer bills by the Lowest Quintile Income (LQI), which was $17,621 according to the 2018 American Community Survey. The HBIs for the analysis period are shown below; note that the income value is

escalated at 1% per year. Sewer costs were calculated using the same usage and assuming a 3% annual increase in rates.

Table 9

General Fund Contribution and Household Burden

Household Burden - LQI Escalated at 1% per year												
Scenario	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30
100% Rate Funded	5.9%	6.3%	6.6%	6.8%	7.1%	7.5%	7.9%	8.3%	8.8%	9.5%	10.0%	10.2%
25% GF Contribution	5.9%	6.3%	6.6%	6.8%	7.2%	7.4%	7.7%	8.1%	8.6%	9.2%	9.8%	10.1%
50% GF Contribution	5.9%	6.3%	6.6%	6.8%	7.0%	7.3%	7.6%	7.9%	8.2%	8.6%	8.9%	9.2%

To determine the financial burden the PPI and HBI are entered into the rubric shown below.

Figure 6

PPI and HBI matrix

HBI – Water Costs as a percent of income at LQI	PPI Percent of Households below 200% of FPL		
	>=35%	20% to 35%	< 20%
>= 10%	Very High Burden	High Burden	Moderate - High Burden
7% to 10%	High Burden	Moderate - High Burden	Moderate - Low Burden
< 7%	Moderate - High Burden	Moderate - Low Burden	Low Burden

Ware is at the upper limit of the PPI rubric at 35.3%, under the 100% rate funded scenario the financial burden starts at a moderate to high burden and shifts to high in FY23 and very high in FY30. For the 50% cost share alternative the burden also starts at moderate to high, becoming high in FY23 where it remains throughout the study period.

6 Conclusions and Recommendations

The consideration for a debt service share is based upon the argument that the water system serves most if not all of the non-residential properties in the Town which help lower the residential tax rate. Under the cost share scenarios, the cost to a typical residential household not connected to the water system would consist only of the additional real estate tax of $32 or $65 annually. The Town must decide which scenario best suits its needs.

The water rates from FY21 to FY30 increase by a factor of 2.1x under Alternative A, 2.0x under Alternative B and 1.8x under Alternative C because the debt service for the new filtration plant represents 63% of the total increase in expenses for FY23 but less than 30% in FY30 as the debt from the remaining CIP projects comes on line.

Ware should continue to update the model and revisit rates annually.

Attachments:

A – Water Rate Evaluation Presentation Slides

B – Water Rate Model Hard Copy

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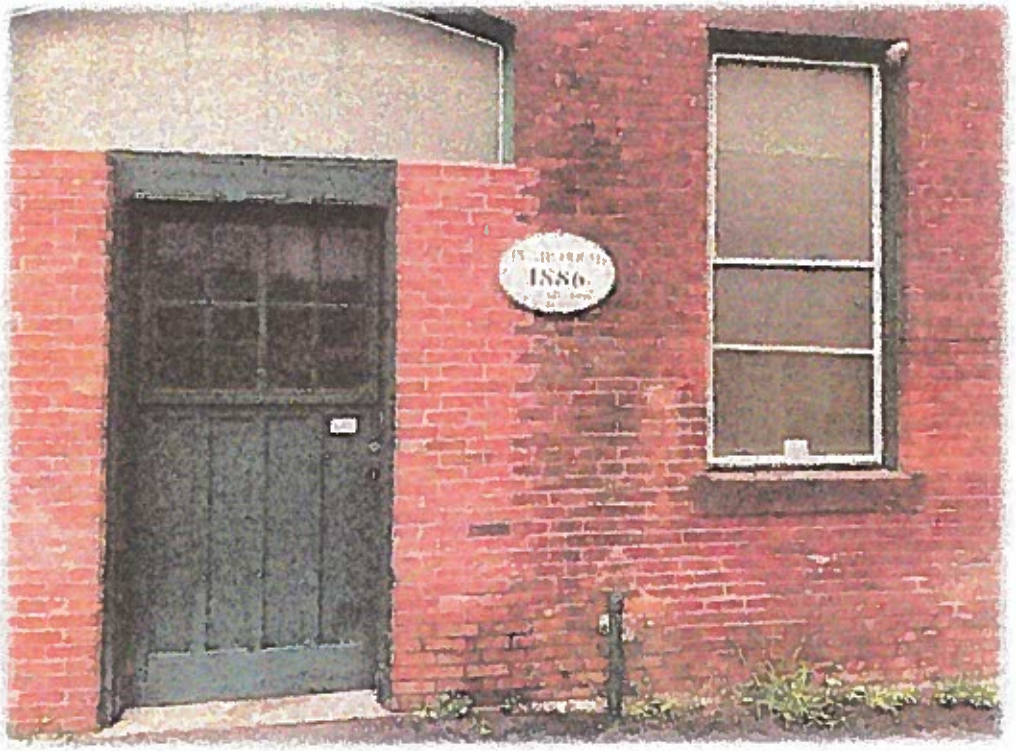

BOARD OF SELECTMEN WATER RATE EVALUATION

Water Filtration Plant

Ware, MA

January 5th, 2021

Tighe&Bond

WATER RATE EVALUATION

1. **Project Water Expenses**
2. **Evaluate Funding Sources**
3. **Project Water Revenues**
   - With Existing Rate Structure
   - With General Fund Subsidy
4. **Estimate annual typical customer cost**

WATER DEPARTMENT CAPITAL IMPROVEMENTS

Capital Improvement Planner

ID	System	Description	Funding source	Interest Rate	Estimated Cost	Start Year
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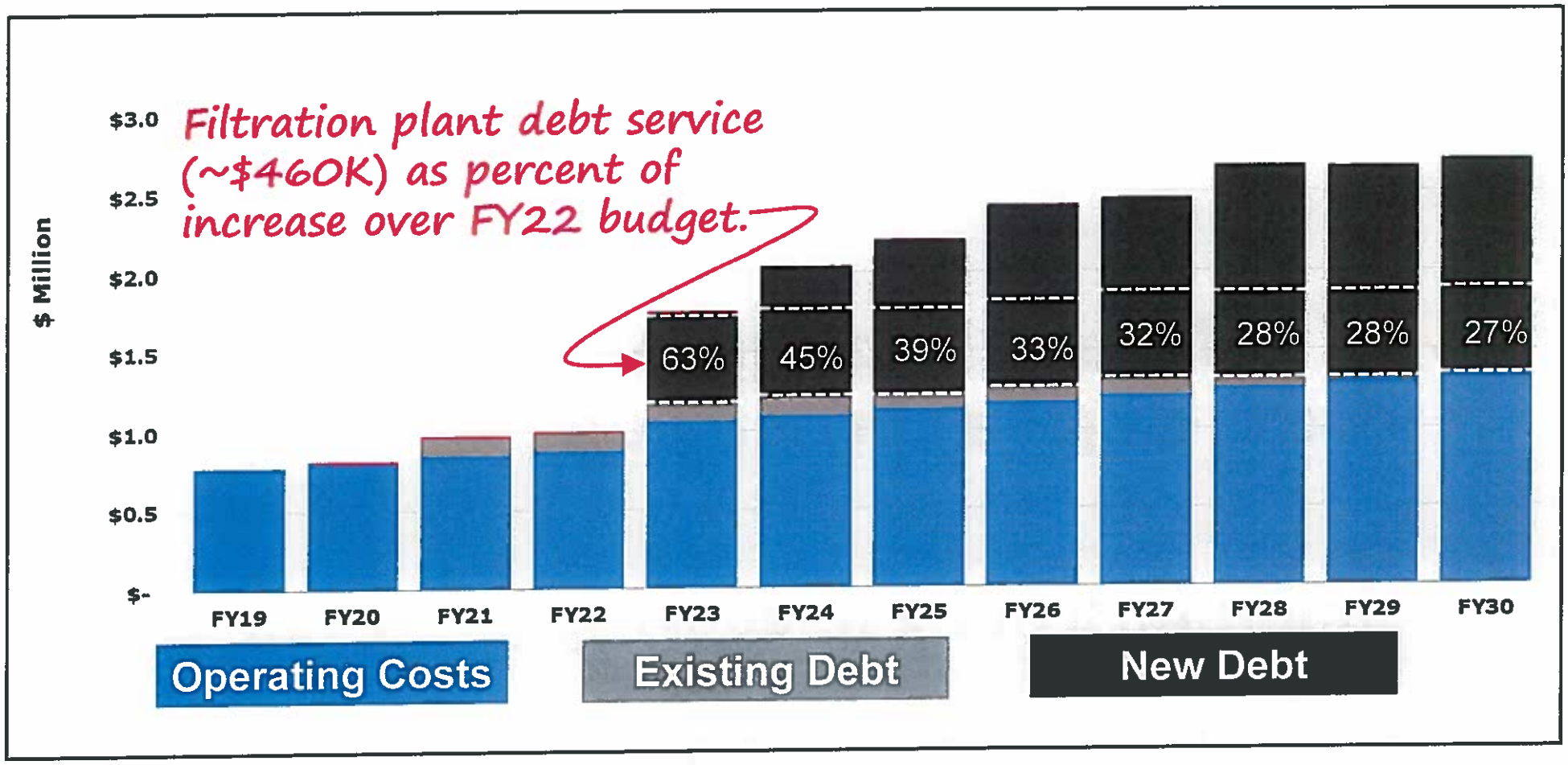
7	Distribution	Water Main Replacement #2-8" DI (~5,860LF)	Debt	4.5%	$2,000,000	2026
8	Distribution	Water Main Replacement #3-8" DI (~5,860LF)	Debt	4.5%	$2,100,000	2028
Total			**Total**		**$22,371,000**	

While the new filtration plant is the most significant capital project, it is not the only one.

PROJECTED WATER EXPENSES



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FUNDING ALTERNATIVES CONSIDERED

Alternative A 100% Water Rate Funded

Alternative B 25% General Fund Contribution*

Alternative C 50% General Fund Contribution*

* Contribution applies to cost of filtration plant only.

PROJECTED RATES BY ALTERNATIVE

Existing Rates - Do Nothing

Rate Increase	Base Charge	5%	0%	4%	6%				
	Consumption	13%	0%	12%	10%				
Description	Type	FY18	FY19	FY20	FY21	FY22	FY25	FY28	FY30
Base Charge	Quarterly Fee	$32.50	$32.50	$34.00	$36.00	$36.00	$36.00	$36.00	$36.00
Consumption	Usage	$4.60	$4.60	$5.20	$5.75	$5.75	$5.75	$5.75	$5.75

Alt. A - 100% Rate Funded

	Rate Increase					6%	10%	12%	3%
Description	Type	FY18	FY19	FY20	FY21	FY22	FY25	FY28	FY30
Base Charge	Quarterly Fee	$32.50	$32.50	$34.00	$36.00	$38.16	$49.87	$67.58	$75.87
Consumption	Usage	$4.60	$4.60	$5.20	$5.75	$6.10	$7.96	$10.79	$12.12

Alt. B - 25 % General Fund Contribution *

	Rate Increase					6%	8%	12%	5%
Description	Type	FY18	FY19	FY20	FY21	FY22	FY25	FY28	FY30
Base Charge	Quarterly Fee	$32.50	$32.50	$34.00	$36.00	$38.16	$46.31	$62.75	$73.80
Consumption	Usage	$4.60	$4.60	$5.20	$5.75	$6.10	$7.40	$10.02	$11.79

Alt. C - 50 % General Fund Contribution *

						6%	7%	8%	6%
Description	Type	FY18	FY19	FY20	FY21	FY22	FY25	FY28	FY30
Base Charge	Quarterly Fee	$32.50	$32.50	$34.00	$36.00	$38.16	$45.88	$56.73	$64.34
Consumption	Usage	$4.60	$4.60	$5.20	$5.75	$6.10	$7.33	$9.06	$10.28

*** Contribution applies to cost of filtration plant only.**

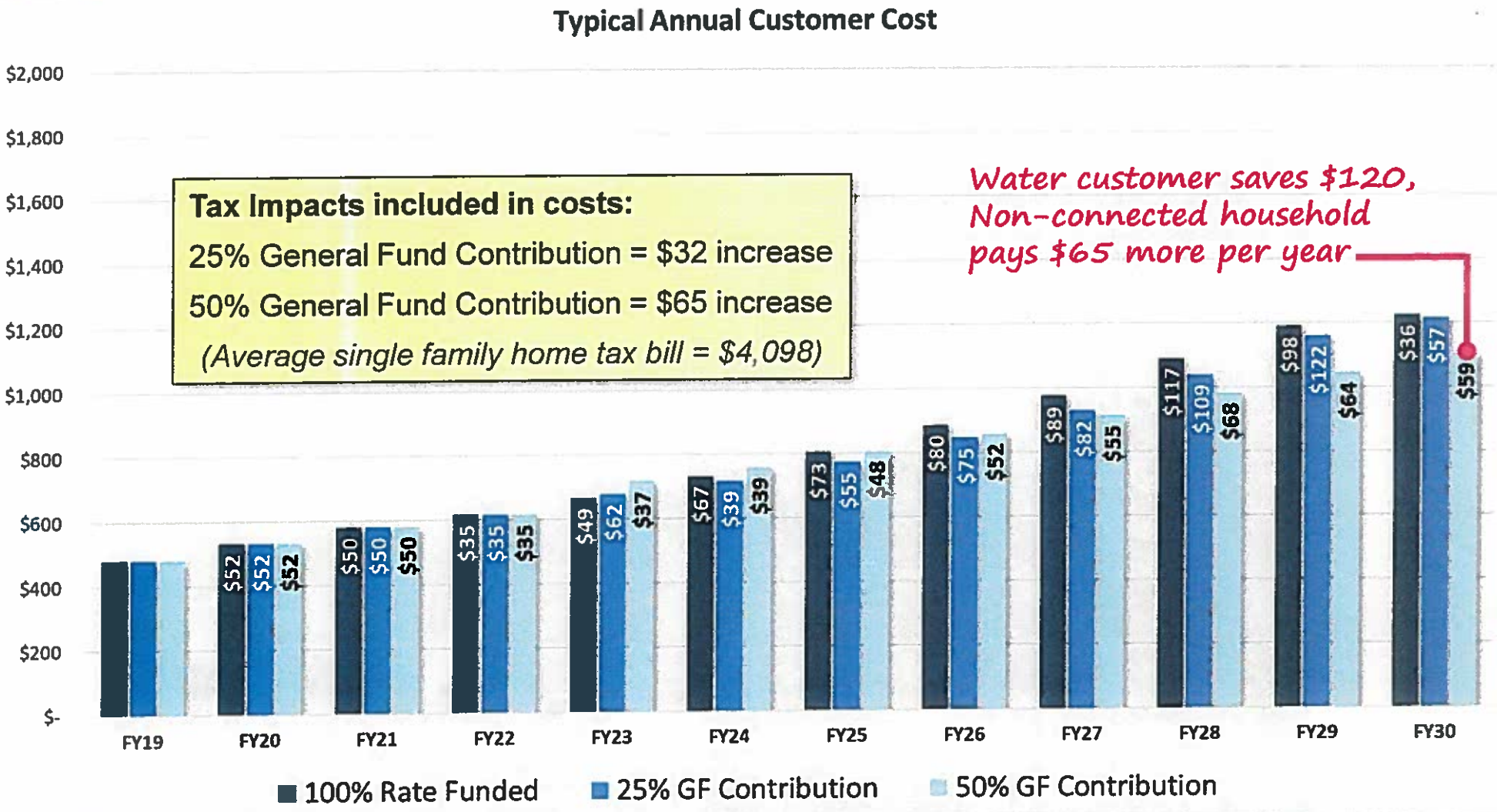
TAX RATE IMPLICATIONS – 50% GENERAL FUND SHARE

	FY20	FY21	FY22	FY23	FY24	FY25
Total Levy	$ 15,501,517	$ 16,079,323	$ 16,678,667	$ 17,300,350	$ 17,945,206	$ 18,614,099
General Fund Contribution(GFC)	$ 250,000	$ 250,000	$ 250,000	$ 250,000	$ 250,000	$ 250,000
GFC contribution as % of levy	1.61%	1.55%	1.50%	1.45%	1.39%	1.34%
Mill Rate ($/1000$)	$20.63	$21.40	$22.20	$23.02	$23.88	$24.77
Increase to Mill Rate due to GFC	$0.33	$0.33	$0.33	$0.33	$0.33	$0.33
Mill Rate with GFC	**$20.96**	**$21.73**	**$22.53**	**$23.36**	**$24.22**	**$25.11**
Average single family home valuation	$ 191,233	$ 191,520	$ 191,808	$ 192,097	$ 192,385	$ 192,674
Estimated single family tax bill	$ 3,945	$ 4,098	$ 4,258	$ 4,423	$ 4,595	$ 4,773
Estimated increase in Single Family Tax Bill	$ 63.63	$ 63.72	$ 63.82	$ 63.91	$ 64.01	$ 64.11

1. Total levy includes residential, Commercial and industrial and is escalated by 3.36% annually. (Based upon last ten years of Ware levy totals)
2. 50% of estimated filtration plant debt service = $232,214
3. Funding 50% of filtration plant debt service would result in a $0.33 increase in the mill rate
4. This results in an increase of about $65 per year on the annual property tax for an average single-family home

All data obtained from Massachusetts Department of Revenue Municipal Databank

COST IMPACTS – TYPICAL RESIDENTIAL CUSTOMER



"Typical" Residential Customer:
Four-person household living in a single-family home valued at $191,520 using 50 gallons of water per person per day.

Tighe&Bond

DISCUSSION

PUBLIC FORUM No. 3
WATER RATE EVALUATION

Water Filtration Plant

Ware, MA

December 10th, 2020

Tighe&Bond

RECAP

WATER FILTRATION PLANT COST & REPAYMENT

- Estimated cost is currently $12-13 million
- Anticipating to work with USDA on a low interest loan and grants.
- Repayment Options include:
  - Increasing only water rates
  - Taxpayer contribution
  - Combination of water rates AND tax payer contribution

WATER FILTRATION PLANT EXPLANATION OF NEED

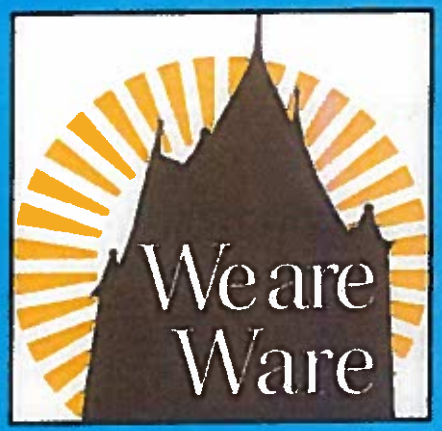
What's Happening?

High levels of iron (Fe) and manganese (Mn) in the Barnes Street public water supply.
These levels are increasing:
10/04/18 – Fe = 1.07 mg/l - Mn = < 0.250 mg/l
06/11/19 – Fe = 1.12 mg/l - Mn = 0.176 mg/l
05/29/20 – Fe = 1.79 mg/l - Mn = 0.202 mg/l

The SMCL for iron = 0.3 mg/l ; the SMCL for manganese = 0.05 mg/l

RECAP

WATER FILTRATION PLANT EXPLANATION OF NEED



What's happening?

What's the solution?

How do we pay for it?

Sources of funding.

Tonight's Topic

WATER RATE EVALUATION

1. **Project Water Expenses**
2. **Evaluate Funding Sources**
3. **Project Water Revenues**
   - With Existing Rate Structure
   - With General Fund Subsidy
4. **Estimate annual typical customer cost**

PROJECTING WATER EXPENSES

Water Expenses

Operating Expenses

- Salaries & Benefits
- Chemicals & Supplies
- Energy / Fuel

Capital Expenses

- Existing Debt Service
- New Debt
- Capital Outlay

Capital expenditures are the biggest driver behind rate increases

WATER DEPARTMENT CAPITAL IMPROVEMENTS

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Total			**Total**		**$22,371,000**	

Water quality

Tighe&Bond

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Reliability / Level of Service

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Fire protection / reliability

WATER DEPARTMENT CAPITAL IMPROVEMENTS

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Water quality / Asset management

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Fire protection / level of service / water quality

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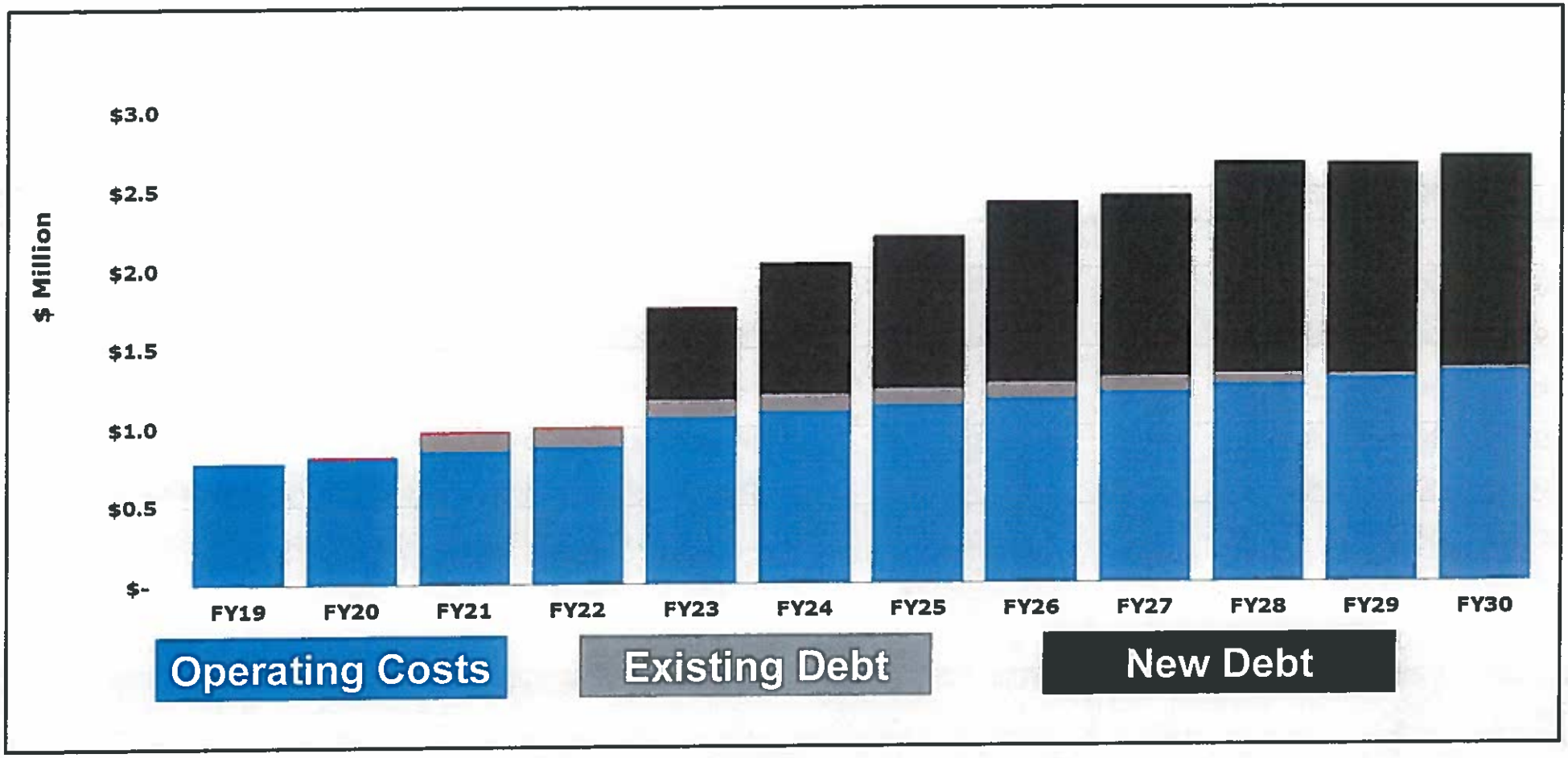

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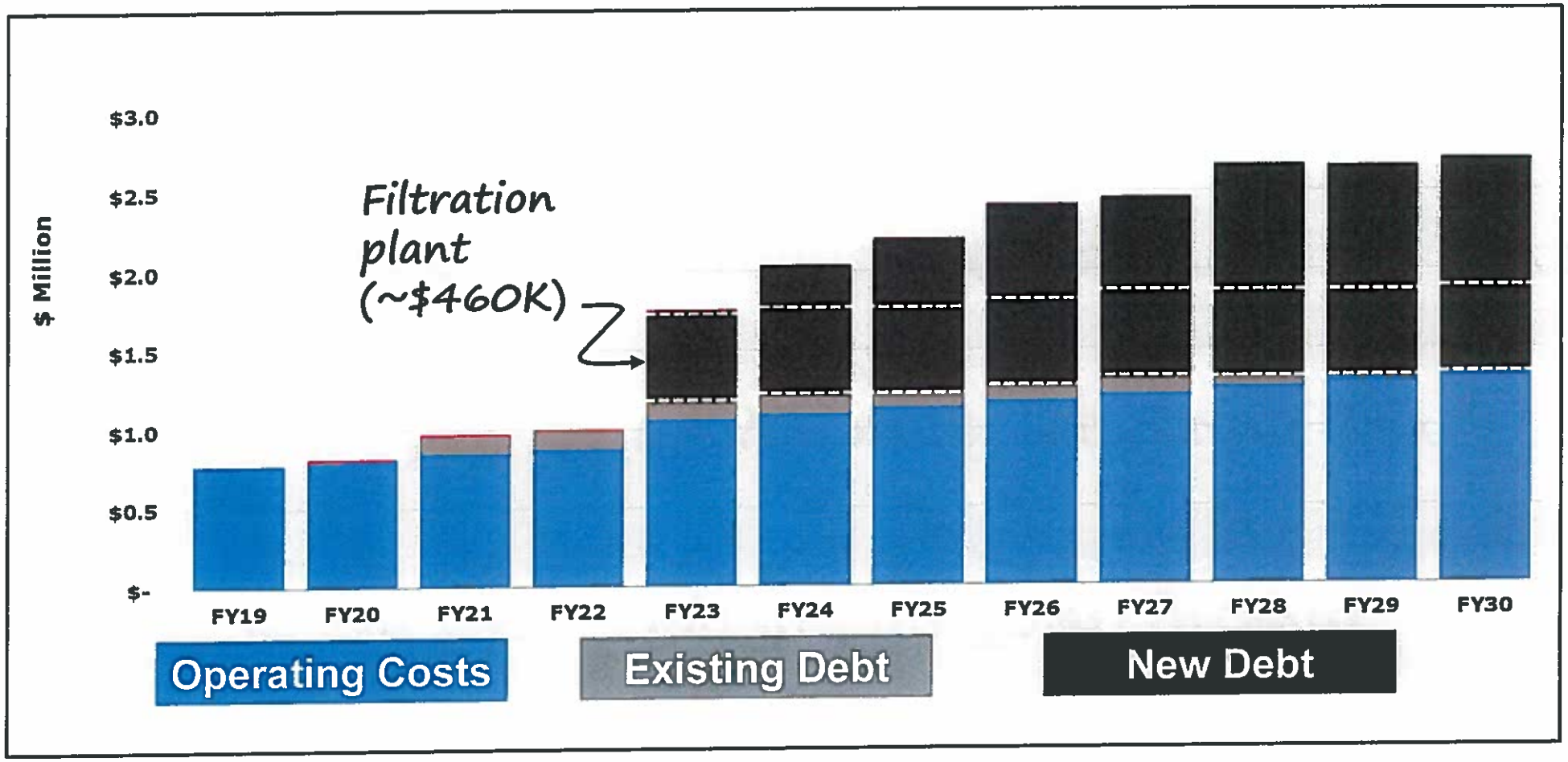

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FUNDING SOURCES

Grants	*USDA financing can include grant portion*
Connection Fees	*Depend on Town growth*
Water Rates	*Only connected users pay*
General Fund	*Property Taxes/Everyone pays*

FUNDING ALTERNATIVES CONSIDERED

Alternative A – 100% Water Rate Funded

Alternative B – 25% General Fund Contribution*

Alternative C – 50% General Fund Contribution*

* Contribution applies to cost of filtration plant only.

WATER RATES

Existing rate structure

Base Charge $36.00 (includes first 500 cubic feet)

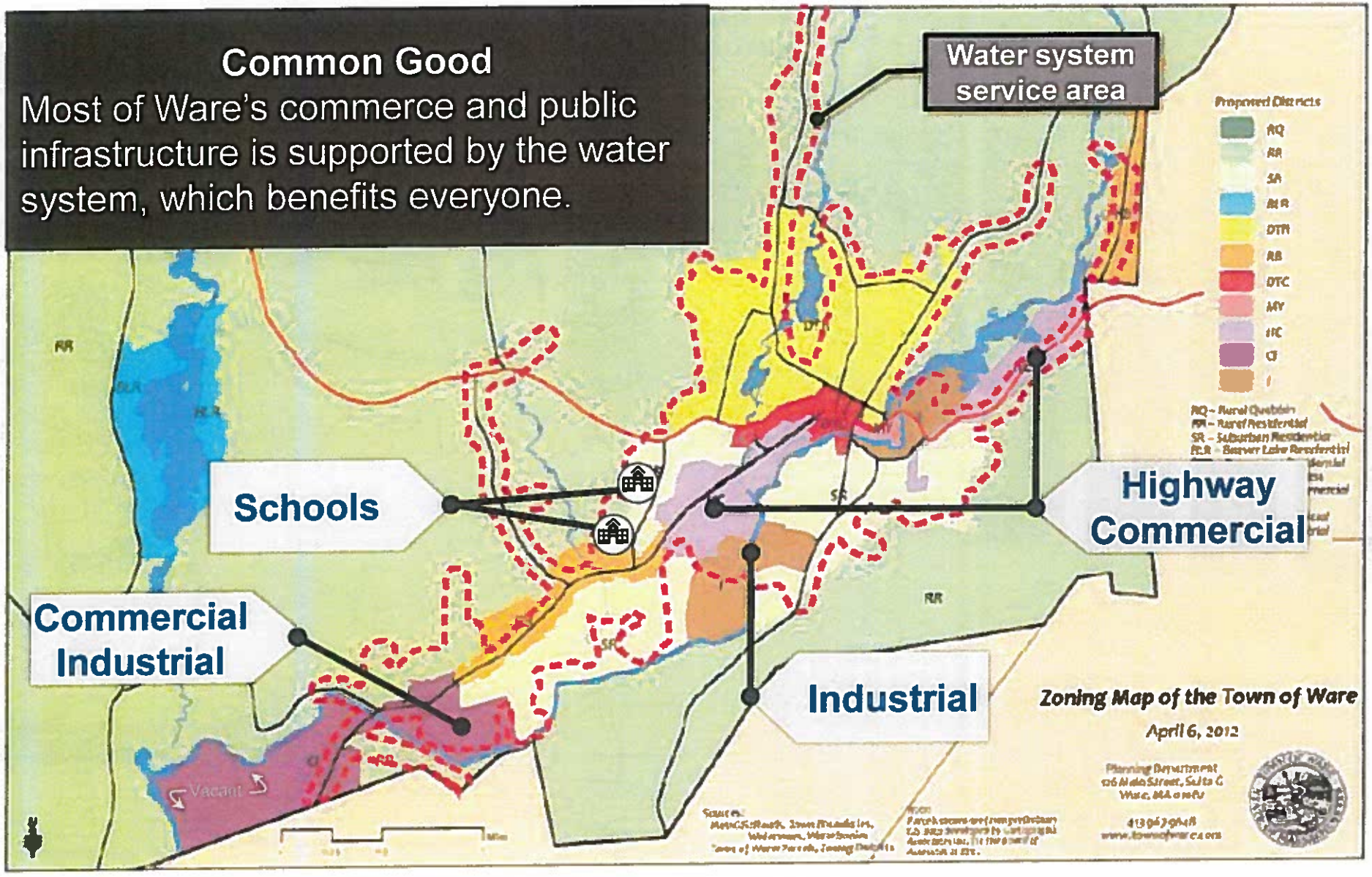
Usage Charge $5.75 per 100 cubic feet
for usage beyond 500 cubic feet

70% of user charge revenue comes from usage which is decreasing by ~2% per year

30% of revenue comes from base charge

One cubic foot equals 7.5 gallons

GENERAL FUND- BASIS FOR COST SHARE



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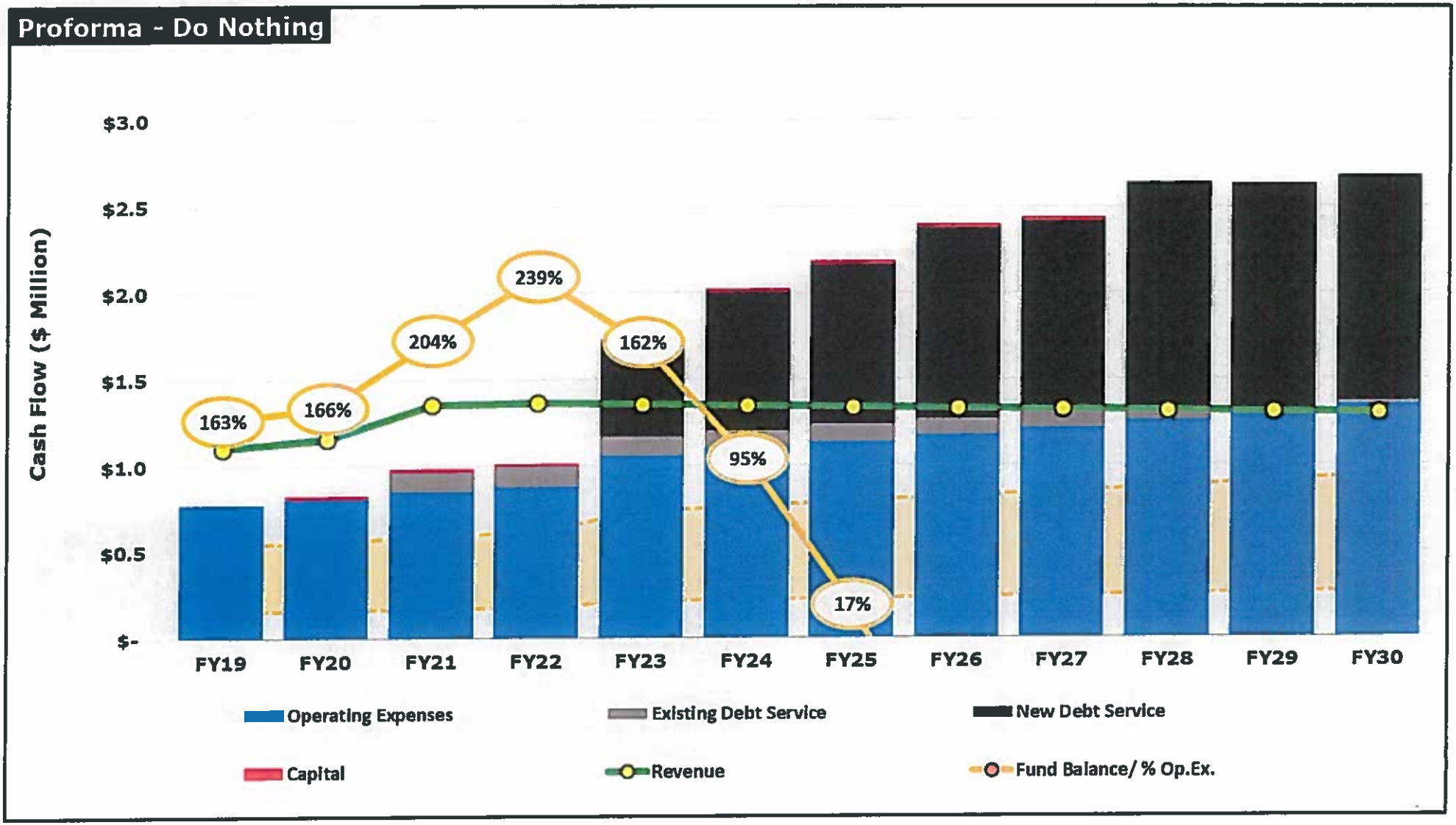
IF NO WATER RATE INCREASES



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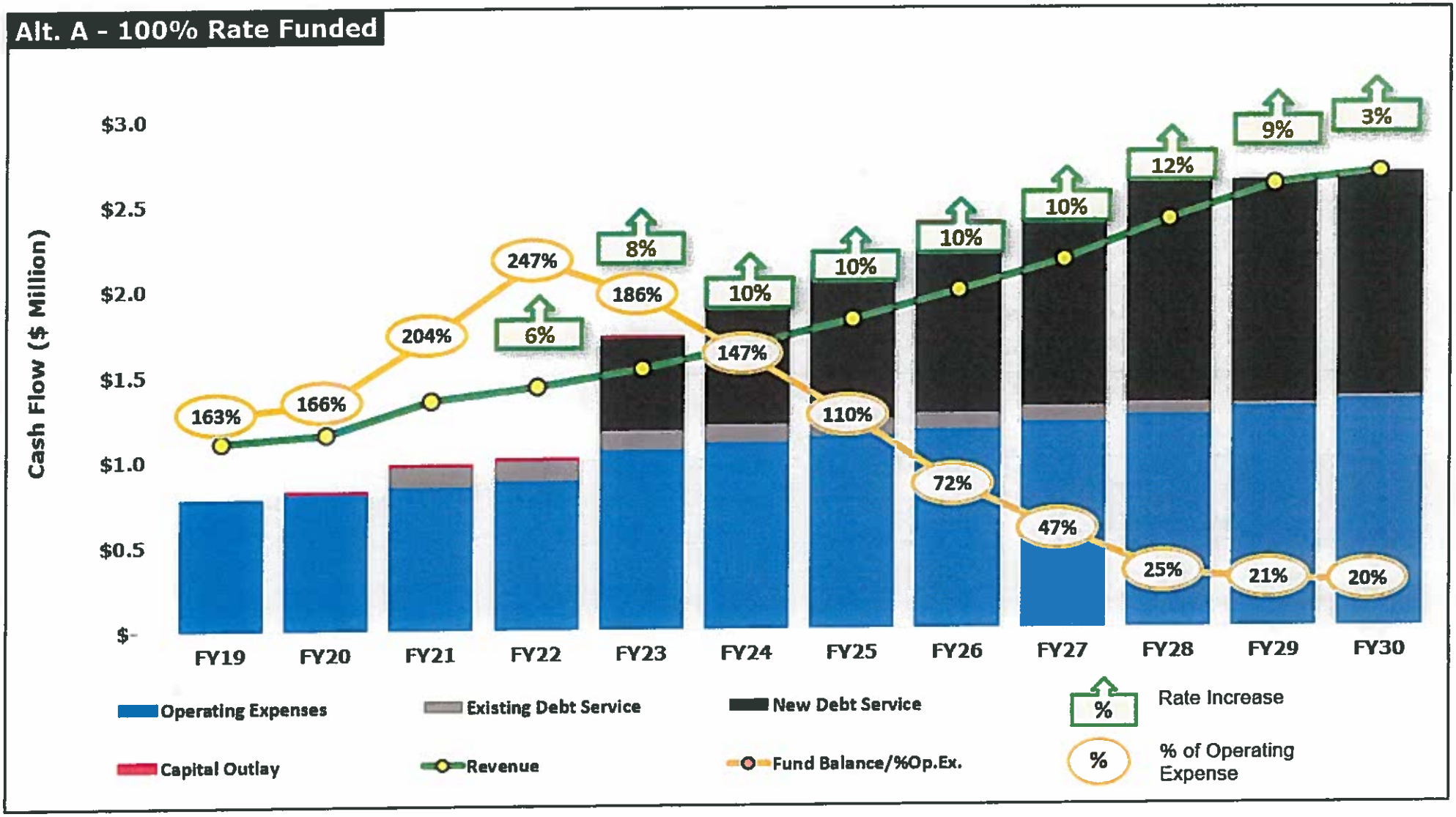
100% OF FILTRATION PLANT SUPPORTED BY WATER RATES



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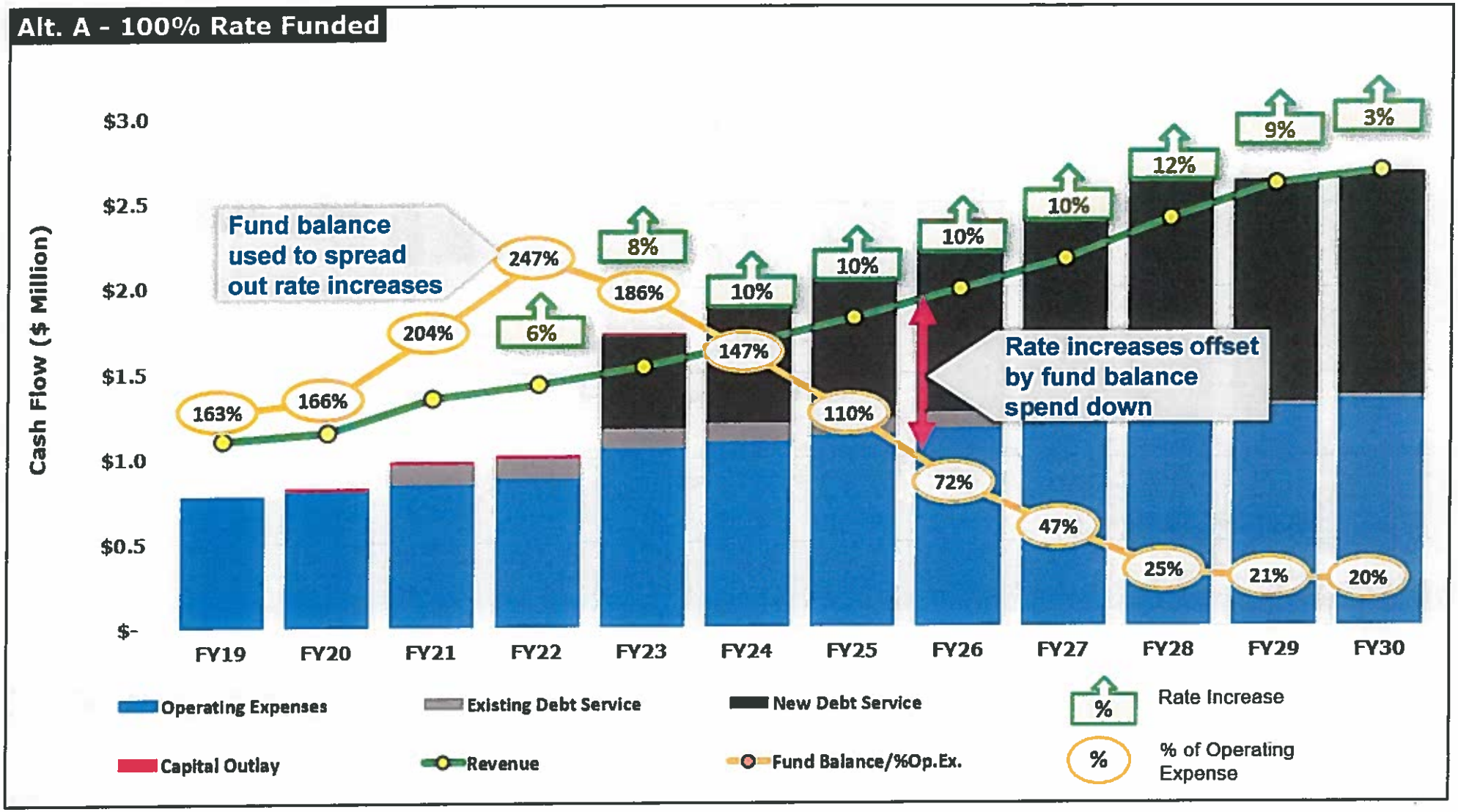

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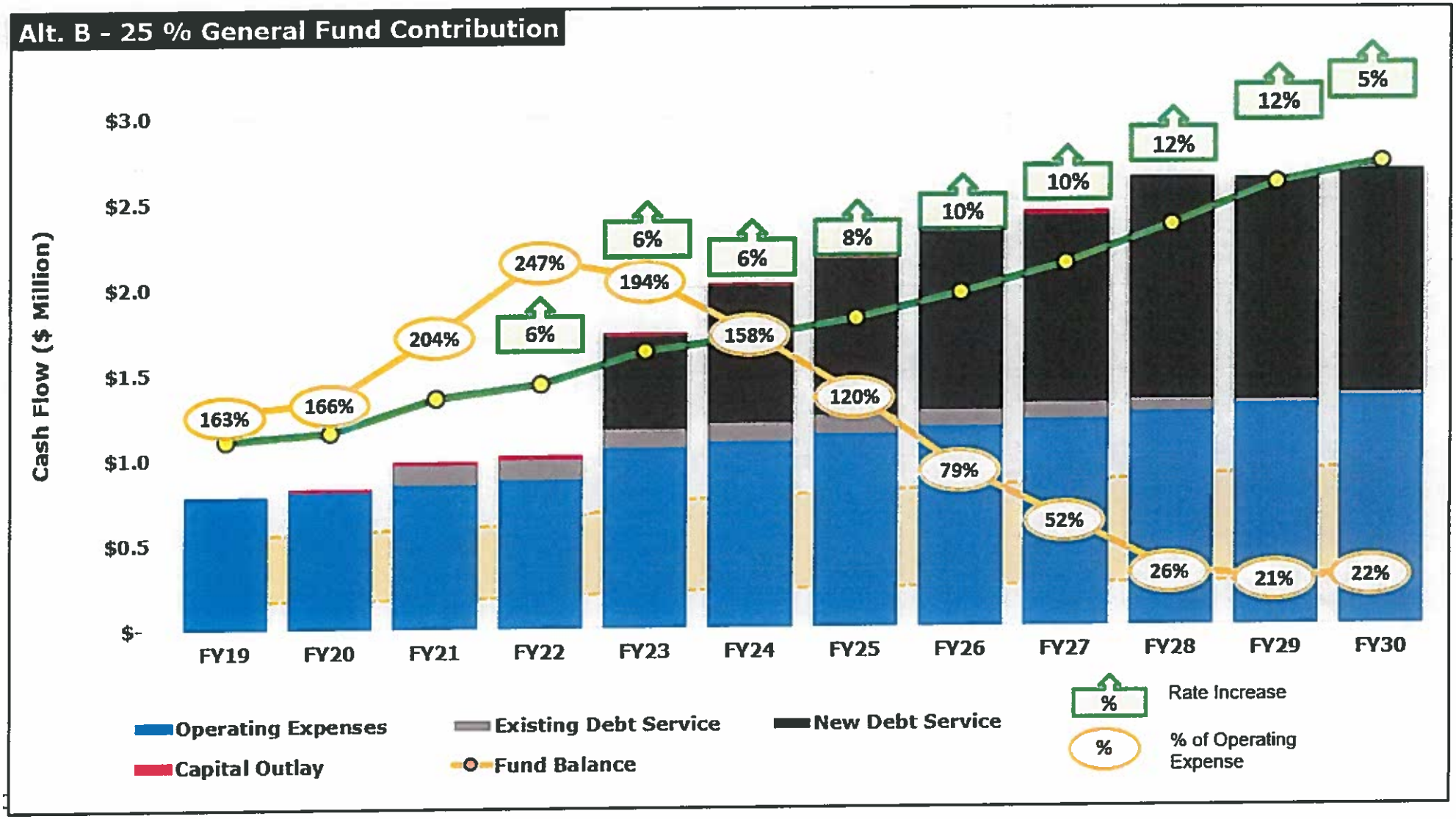
75% OF FILTRATION PLANT SUPPORTED BY RATES, 25% BY GENERAL FUND



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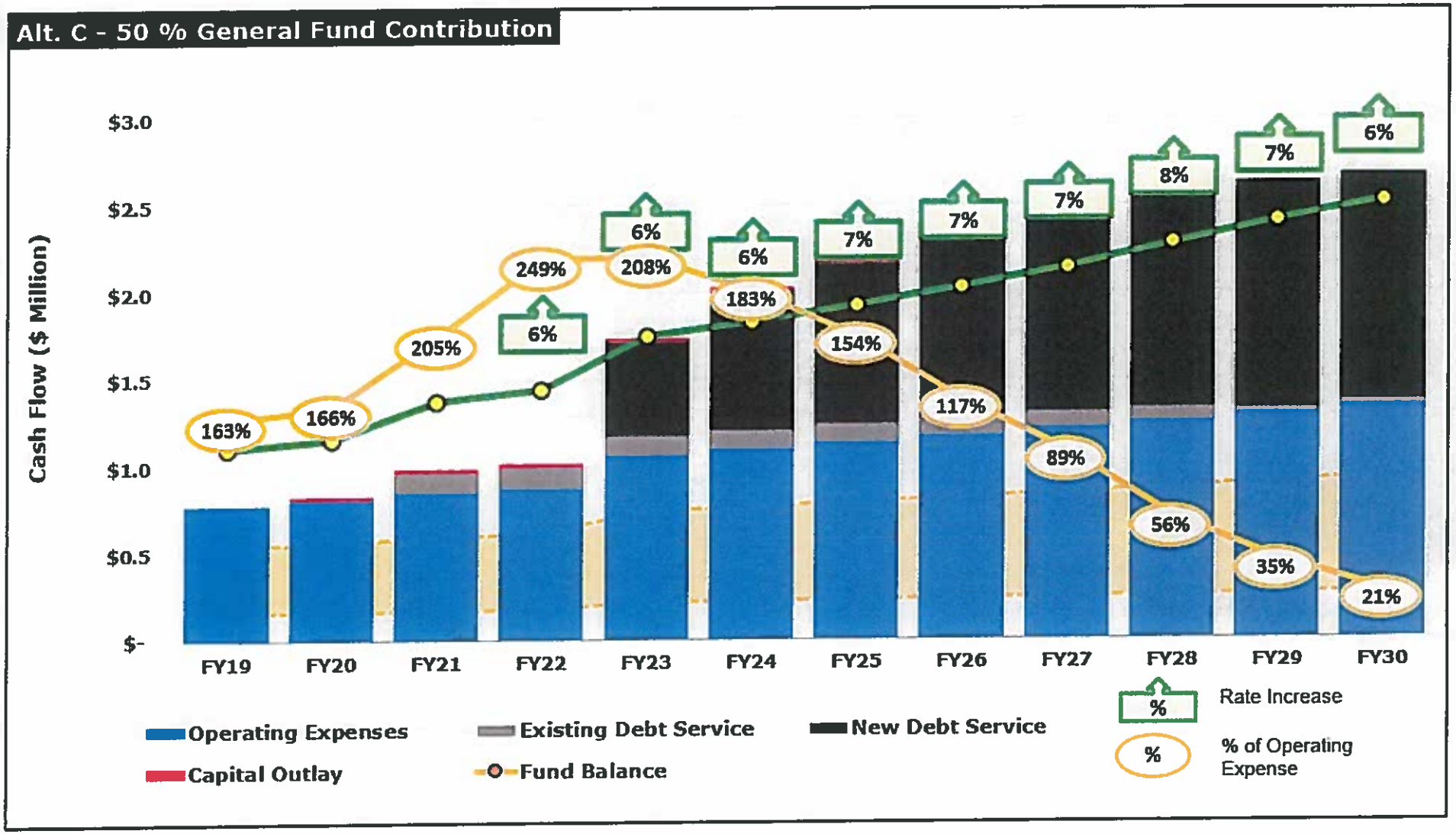
50% OF FILTRATION PLANT SUPPORTED BY RATES, 50% BY GENERAL FUND



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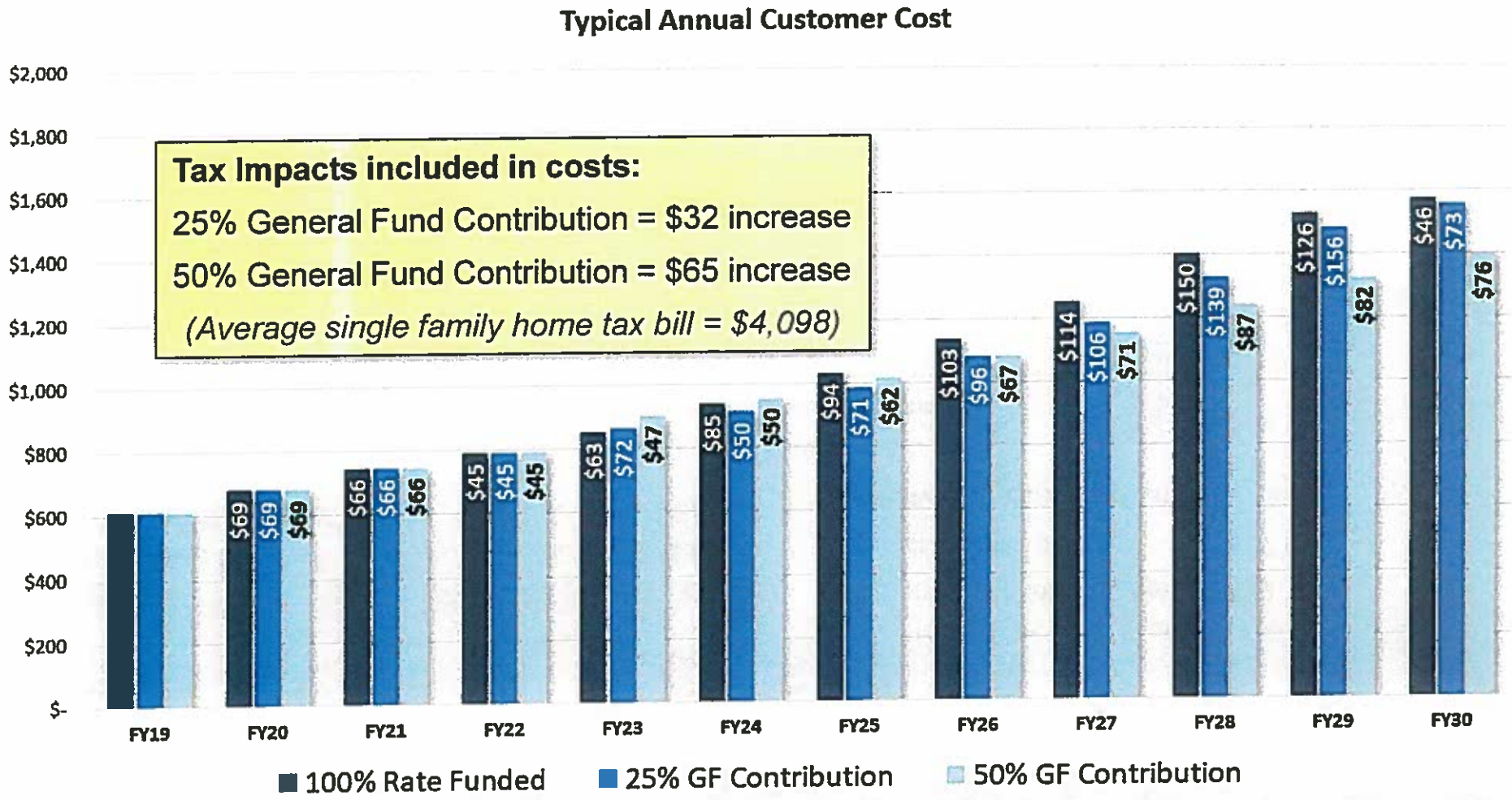
COST IMPACTS – TYPICAL RESIDENTIAL CUSTOMER



"Typical" Residential Customer:
Four-person household living in a single-family home valued at $191,520 using 65 gallons of water per person per day.

Tighe&Bond

CUSTOMER IMPACTS & AFFORDABILITY - RESIDENTIAL

Household Burden - Static LQI

Scenario	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30
100% Rate Funded	6.0%	6.4%	6.8%	7.1%	7.4%	7.9%	8.5%	9.0%	9.7%	10.4%	11.1%	11.5%
25% GF Contribution	6.0%	6.4%	6.8%	7.1%	7.5%	7.9%	8.3%	8.8%	9.4%	10.1%	11.0%	11.4%
50% GF Contribution	6.0%	6.4%	6.8%	7.1%	7.4%	7.7%	8.1%	8.5%	8.9%	9.5%	9.9%	10.4%

Household Burden - LQI Escalated at 1% per year

Scenario	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Existing	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
100% Rate Funded	5.9%	6.3%	6.6%	6.8%	7.1%	7.5%	7.9%	8.3%	8.8%	9.5%	10.0%	10.2%
25% GF Contribution	5.9%	6.3%	6.6%	6.8%	7.2%	7.4%	7.7%	8.1%	8.6%	9.2%	9.8%	10.1%
50% GF Contribution	5.9%	6.3%	6.6%	6.8%	7.0%	7.3%	7.6%	7.9%	8.2%	8.6%	8.9%	9.2%

Scenario	FY21	FY30
100% Rate Funded	**8.6%**	**14.6%**
20% Grant/ General Fund	**8.8%**	**14.5%**

Median Household Income: $42,769

Lowest Quintile Income: $17,621

Poverty Prevalence Indicator: ~~17.6%~~ %35.3

Household Burden Indicator	Poverty Prevalence Indicator		
	>= 35%	20% to 35%	<20%
> = 10%	Very High Burden	High Burden	Moderate – High Burden
7% to 10%	High Burden	Moderate – High Burden	Moderate - Low Burden
<7%	Moderate - High Burden	Moderate - Low Burden	Low Burden

FY30

FY21

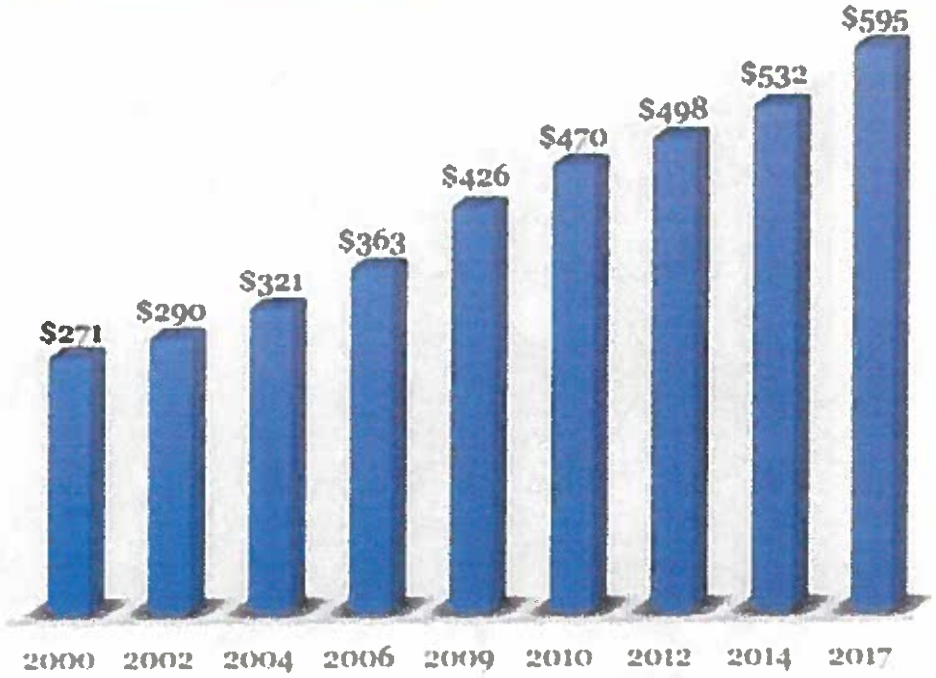
Under either scenario the financial burden associated with funding the required water system improvements would be considered a moderate – high financial burden by FY30

DISCUSSION

The cost of water is rising, yet often too slowly to cover aging infrastructure.

Average annualized water costs of the rate structures reported in the survey was $595, with the median at $568, a low of $123 and a high of $2,025. 65% of survey respondents have increased rates since our last survey (2014). The cost of water has increased 12% over 3 years.

One of the most commonly reported challenges facing water systems across Massachusetts is our aging infrastructure. A rate structure designed to provide sustainable revenue for operations and capital programs is critical to assure reliable, safe drinking water and effective fire protection.



Annual Average Cost of Water

Tighe & Bond offers municipalities and water companies assistance developing sustainable rates to support needed infrastructure improvements, explaining the need for increasing rates, and preparing for funding initiatives. You can read and download recent articles on this topic on our "Water Insights" blog located at www.tighebond.com.

Town of Ware

2020 Water Rate Model

Water Utility Rate Dashboard

Town of Ware

Water Enterprise Financial Model

	Budget FY19	Budget FY20	Budget FY21	Projected FY22	Projected FY23	Projected FY24	Projected FY25	Projected FY26	Projected FY27	Projected FY28	Projected FY29	Projected FY30
Operating Expenses												
Salaries & Wages	$277,694	$290,981	$310,653	$321,526	$332,779	$344,427	$356,481	$368,958	$381,872	$395,237	$409,071	$423,388
Supplies	$185,800	$168,200	$180,300	$186,611	$193,142	$199,902	$206,898	$214,140	$221,635	$229,392	$237,421	$245,730
Other Expenses	$224,000	$244,000	$225,042	$232,918	$391,070	$404,758	$418,924	$433,587	$448,782	$464,489	$480,725	$497,551
Indirect Expenses	$108,541	$102,934	$132,157	$136,782	$141,570	$146,525	$151,653	$156,961	$162,454	$168,140	$174,025	$180,116
Subtotal	$776,235	$804,115	$848,152	$877,837	$1,058,561	$1,095,611	$1,133,957	$1,173,646	$1,214,723	$1,257,239	$1,301,242	$1,346,786
Data Previous	$667,694	$701,181	3.5%	3.5%	20.6%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%
Capital Expenses												
Capital Outlay	$55,919			$0	$22,000	$22,000	$22,000	$22,000	$22,000	$22,000	$22,000	$22,000
Existing Debt Service	$0	$0	$113,726	$115,331	$112,059	$108,987	$105,808	$97,629	$94,651	$71,672	$20,993	$20,547
New Debt Service	$0	$0	$0	$0	$542,784	$796,478	$921,784	$1,105,518	$1,105,518	$1,310,777	$1,310,777	$1,310,777
Subtotal	$55,919	$0	$113,726	$115,331	$676,843	$927,462	$1,049,592	$1,225,147	$1,222,168	$1,404,449	$1,353,770	$1,353,324
Data Previous			1.4%	1.4%	486.9%	37.0%	13.2%	16.7%	-0.2%	14.9%	-3.6%	0.0%
TOTAL EXPENSES	$832,154	$804,115	$961,878	$993,168	$1,735,404	$2,023,073	$2,183,549	$2,398,793	$2,436,892	$2,661,688	$2,655,012	$2,700,109
Data Previous		-3.4%	19.6%	3.3%	74.7%	16.6%	7.9%	9.9%	1.6%	9.2%	-0.3%	1.7%
					$ 464,429	$ 464,429	$ 464,429	$ 464,429	$ 464,429	$ 464,429	$ 464,429	$ 464,429
					$ 742,236	$ 1,029,905	$ 1,190,381	$ 1,405,625	$ 1,443,724	$ 1,668,520	$ 1,661,845	$ 1,705,941
					63%	45%	39%	33%	32%	28%	28%	27%

Dashboard

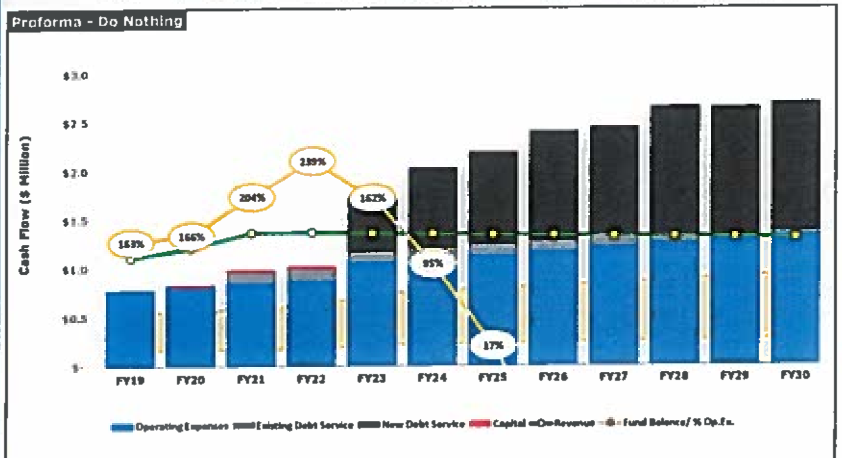
Town of Ware

2020 Water Rate Model

Existing Rates - Do Nothing

Proforma - Do Nothing

	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30
Revenue - Existing		*Rate Increase*										
Rate Revenue	$ 998,860	$ 1,105,904	$ 1,200,123	$ 1,192,781	$ 1,186,535	$ 1,178,386	$ 1,171,331	$ 1,164,371	$ 1,157,504	$ 1,150,730	$ 1,144,046	$ 1,137,456
Non Rate Revenue	$ 104,420	$ 102,356	$ 158,655	$ 168,815	$ 168,023	$ 167,242	$ 166,471	$ 165,710	$ 164,960	$ 164,219	$ 163,489	$ 162,768
TOTAL REVENUE	$ 1,103,280	$ 1,208,259	$ 1,358,777	$ 1,361,596	$ 1,353,558	$ 1,345,628	$ 1,337,802	$ 1,330,081	$ 1,322,464	$ 1,314,949	$ 1,307,536	$ 1,300,224
delta previous			$ 94,219	$ (7,342)	$ (7,245)	$ (7,149)	$ (7,054)	$ (6,960)	$ (6,867)	$ (6,774)	$ (6,683)	$ (6,592)
Net Revenue (Revenue-Expense)	$ 271,128	$ 404,145	$ 396,900	$ 365,428	$ (381,846)	$ (677,445)	$ (845,747)	$ (1,068,711)	$ (1,114,428)	$ (1,346,736)	$ (1,347,478)	$ (1,399,835)
Fund Balance	$1,268,284	$1,338,780	$1,732,680	$2,101,107	$1,719,261	$1,041,816	$196,069	-$872,642	-$1,987,070	-$3,333,809	-$4,681,285	-$6,081,170
Fund Balance as % OpEx	163%	166%	204%	239%	162%	95%	17%	-74%	-164%	-265%	-360%	-462%



Customer Impacts (Annual)	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	Total
Total Cost	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Cost Increase		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	

Dashboard

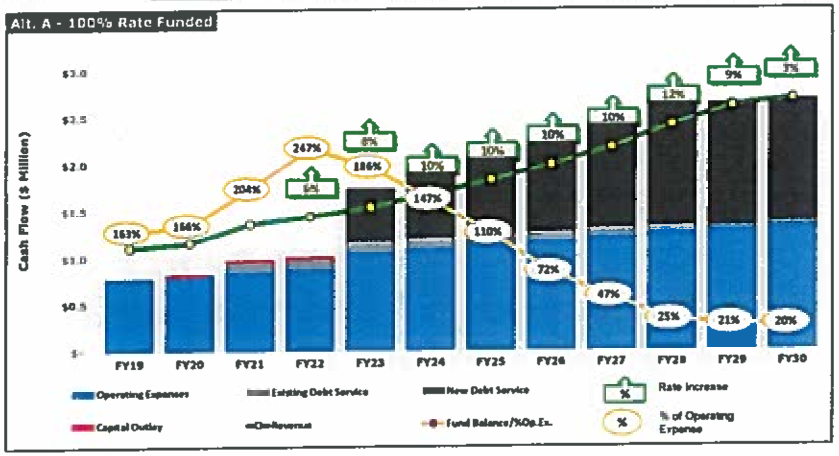
Town of Ware

2020 Water Rate Model

Alt. A - 100% Rate Funded

Alt. A - 100% Rate Funded

	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30
Revenue	*Rate Increase*			6%	8%	10%	10%	10%	10%	12%	9%	3%
Rate Revenue	$ 998,860	$ 1,052,917	$ 1,200,123	$ 1,264,347	$ 1,357,201	$ 1,483,918	$ 1,622,538	$ 1,774,186	$ 1,940,095	$ 2,160,190	$ 2,340,933	$ 2,397,269
Non Rate Revenue	$ 104,420	$ 102,355	$ 152,941	$ 168,815	$ 175,740	$ 185,753	$ 199,418	$ 214,366	$ 230,719	$ 248,609	$ 272,343	$ 291,834
Total Revenue	$ 1,103,280	$ 1,155,272	$ 1,353,064	$ 1,433,162	$ 1,532,941	$ 1,669,671	$ 1,821,955	$ 1,988,552	$ 2,170,814	$ 2,408,799	$ 2,613,276	$ 2,689,102
Delta previous (Rate Revenue)			14.0%	5.4%	7.3%	9.3%	9.3%	9.3%	9.4%	11.3%	8.4%	2.4%
Net Revenue	$ 271,128	$ 351,157	$ 391,186	$ 459,994	$ (202,483)	$ (353,402)	$ (581,523)	$ (410,241)	$ (266,078)	$ (252,889)	$ (41,736)	$ (11,007)
Fund Balance	$1,268,284	$1,338,780	$1,726,966	$2,168,960	$1,964,497	$1,611,095	$1,249,502	$839,261	$573,183	$320,294	$278,558	$267,551
(as % OpEx)	163%	166%	204%	247%	186%	147%	110%	72%	47%	25%	21%	20%



Customer Impacts (Annual) Scenario	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	TOTAL
Total Cost	$ 479.60	$ 531.20	$ 581.00	$ 615.86	$ 665.13	$ 731.64	$ 804.81	$ 885.29	$ 973.82	$ 1,090.07	$ 1,188.83	$ 1,224.30	$ 9,772
Cost Increase		$ 51.60	$ 49.80	$ 34.86	$ 49.27	$ 66.51	$ 73.16	$ 80.48	$ 88.53	$ 116.30	$ 98.18	$ 35.87	

Dashboard

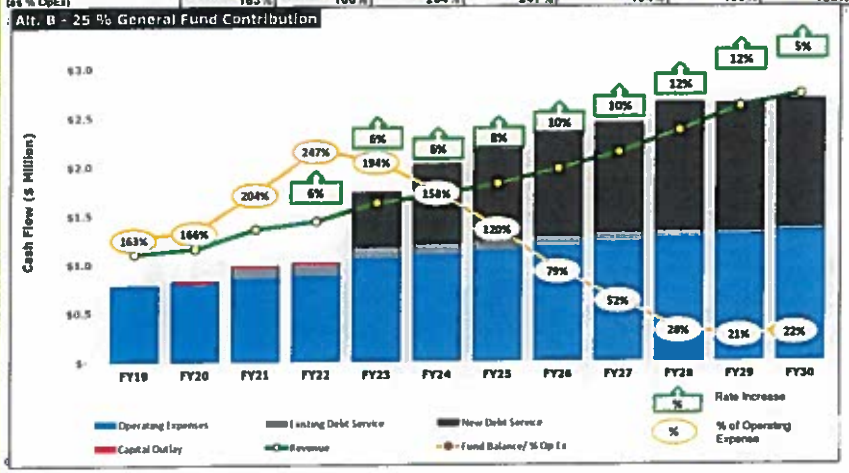
Town of Ware

2020 Water Rate Model

Alt. B - 25 % General Fund Contribution

Alt. B - 25 % General Fund Contribution

Fiscal Year / Rate Increase			FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30
Revenue - Alt. B				6%	6%	6%	8%	10%	10%	12%	12%	5%
Rate Revenue	$ 998,868	$ 1,052,917	$ 1,200,123	$ 1,284,347	$ 1,332,068	$ 1,483,476	$ 1,506,680	$ 1,647,580	$ 1,801,563	$ 2,005,941	$ 2,233,607	$ 2,331,775
Non Rate Revenue	$ 104,420	$ 102,355	$ 152,941	$ 168,815	$ 175,740	$ 183,043	$ 190,743	$ 201,872	$ 217,058	$ 233,671	$ 258,710	$ 280,260
GF Contribution					$ 116,107	$ 116,107	$ 116,107	$ 116,107	$ 116,107	$ 116,107	$ 116,107	$ 116,107
Total Revenue	$ 1,103,288	$ 1,155,272	$ 1,353,064	$ 1,453,162	$ 1,623,915	$ 1,702,627	$ 1,813,531	$ 1,965,489	$ 2,134,728	$ 2,355,719	$ 2,605,425	$ 2,728,143
delta previous			$ 147,206	$ 64,225	$ 87,720	$ 71,409	$ 103,204	$ 140,820	$ 154,062	$ 204,379	$ 227,666	$ 98,168
Grant or GF Subsidy =	25%	25%										
Net Revenue (Revenue-Expense)	$ 271,126	$ 351,157	$ 391,186	$ 439,994	$ (111,489)	$ (320,448)	$ (278,018)	$ (433,313)	$ (302,184)	$ (305,988)	$ (49,588)	$ 28,033
Retained Earnings Balance	$1,258,264	$1,338,780	$1,726,966	$2,166,960	$2,055,471	$1,735,836	$1,365,007	$931,694	$629,530	$323,542	$273,974	$302,008
(as % OpEx)	163%	166%	204%	247%	194%	158%	120%	79%	52%	28%	21%	22%



Customer Impacts (Annual)													
Scenario	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	TOTAL
Total Cost	$ 479.68	$ 531.28	$ 581.08	$ 615.86	$ 652.81	$ 691.98	$ 747.34	$ 822.07	$ 904.28	$ 1,012.79	$ 1,134.33	$ 1,191.05	$ 9,364
Cost Increase		$ 51.60	$ 49.80	$ 34.86	$ 36.95	$ 39.17	$ 55.36	$ 74.73	$ 82.21	$ 108.51	$ 121.54	$ 56.72	

Dashboard

2020 Water Rate Model

Alt. C - 50 % General Fund Contribution

Alt. C - 50 % General Fund Contribution

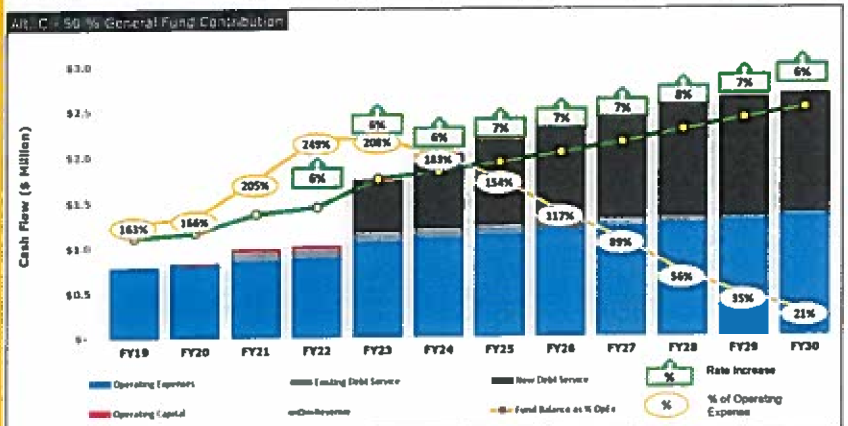
Fiscal Year / Rate Increase

Revenue - Alt C	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30
				6%	6%	6%	7%	7%	7%	8%	7%	6%
Total Rate Revenue	$ 998,860	$ 1,052,917	$ 1,200,123	$ 1,284,347	$ 1,332,868	$ 1,403,476	$ 1,492,730	$ 1,587,730	$ 1,688,852	$ 1,813,286	$ 1,928,948	$ 2,032,904
Non-Rate Revenue	$ 104,420	$ 102,355	$ 168,815	$ 175,740	$ 183,043	$ 190,743	$ 200,368	$ 210,812	$ 221,517	$ 234,935	$ 247,407	$ 258,817
GF Contribution					$ 232,215	$ 232,215	$ 232,215	$ 232,215	$ 232,215	$ 232,215	$ 232,215	$ 232,215
Total Revenue	$ 1,103,280	$ 1,155,272	$ 1,368,937	$ 1,440,088	$ 1,747,325	$ 1,826,434	$ 1,925,312	$ 2,030,667	$ 2,142,583	$ 2,280,435	$ 2,408,570	$ 2,523,736
delta previous			$ 147,206	$ 64,225	$ 67,720	$ 71,409	$ 89,253	$ 95,000	$ 101,122	$ 124,433	$ 115,863	$ 103,956

$ 67,720

Grant or GF Subsidy =	50%	50%

	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30
Net Revenue (Revenue-Expense)	$ 271,126	$ 351,157	$ 427,080	$ 446,920	$ 11,921	$ (198,639)	$ (258,237)	$ (368,298)	$ (294,308)	$ (381,253)	$ (248,442)	$ (178,773)
Retained Earnings Balance	$1,268,284	$1,335,780	$1,742,840	$2,189,760	$2,201,681	$2,005,042	$1,746,805	$1,378,570	$1,084,261	$703,009	$456,566	$280,193
Retained Earnings as Percent of O	163%	166%	205%	249%	208%	183%	154%	117%	89%	56%	35%	21%
Days cash on hand	596.27	606.11	750.01	910.42	752.16	667.57	567.26	428.71	325.90	234.37	137.07	



Customer Impacts (Annual) Scenario	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	TOTAL
Total Cost	$ 479.60	$ 531.20	$ 581.00	$ 615.86	$ 652.81	$ 691.98	$ 740.42	$ 792.25	$ 847.71	$ 915.52	$ 979.61	$ 1,038.39	$ 8,866
Cost Increase		$ 51.60	$ 49.80	$ 34.86	$ 36.95	$ 39.17	$ 48.44	$ 51.83	$ 55.46	$ 67.82	$ 64.09	$ 58.78	

Dashboard

Town of Ware

2020 Water Rate Model

Historical Expenses (Budget)

Type	Expense					
Sum of Budget	Year					
Category	FY16	FY17	FY18	FY19	FY20	FY21
Capital Outlay	$ 317,021	$ 359,304	$ 359,304	$5,833,461	$5,908,461	$5,908,461
Salaries & Wages	$ 283,100	$ 277,588	$ 286,614	$ 277,894	$ 290,961	$ 310,853
Other Expenses	$ 197,800	$ 192,900	$ 194,500	$ 224,000	$ 244,000	$ 211,800
Supplies	$ 253,979	$ 183,050	$ 185,350	$ 185,800	$ 186,200	$ 180,300
Debt Service	$ 101,807	$ 99,348	$ 102,758	$ 111,368	$ 108,535	
Indirect Expenses	$ 100,188	$ 113,804	$ 97,501	$ 108,541	$ 102,934	
Grand Total	$ 1,233,896	$1,225,993	$1,226,027	$6,821,064	$6,821,116	$6,611,814
					$ 912,050	

Historical Expenses (Actuals)

Type	Expense					
Sum of Actual	Year					
Category	FY16	FY17	FY18	FY19	FY20	FY21
Capital Outlay	$ 215,087	$ -	$ -	$ 55,919		
Salaries & Wages	$ 2,564	$ 250,985	$ 220,743	$ 198,771		
Other Expenses	$ 143,434	$ 133,534	$ 96,004	$ 187,822		
Supplies	$ 124,738	$ 159,123	$ 153,245	$ 194,772		
Debt Service						
Indirect Expenses						
Grand Total	$ 485,833	$ 543,643	$ 470,992	$ 637,283		

Expense Trending Analysis

Category	Trends	5-Year Average	5-Year % Change	3-Year Average	3-Year % Change	3-Year Turnback	FY21 Budget	Escalator
Capital Outlay		$ 2,575,510	440.9%	$ 4,087,075	772.2%	98.1%	$ 5,908,461	
Salaries & Wages		$ 278,235	2.6%	$ 285,183	0.8%	39.1%	$ 310,853	3.5%
Other Expenses		$ 210,640	5.6%	$ 220,833	12.7%	30.7%	$ 225,042	3.5%
Supplies		$ 182,878	-8.8%	$ 185,783	0.2%	14.2%	$ 180,300	3.5%
Debt Service		$ 104,783	1.7%	$ 107,554	2.8%		$ -	3.5%
Indirect Expenses		$ 104,584	0.7%	$ 102,992	2.8%		$ 132,157	3.5%
		$ 3,457,618		$ 4,949,466			$ 6,758,812	
							$ 848,152	

Expenses

Town of Ware

2020 Water Rate Model

Projected Expenses

Category	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30
Capital Outlay										
Salaries & Wages	$310,653.00	$321,525.86	$ 332,779.26	$ 344,425.53	$356,481.48	$368,958.31	$381,871.85	$ 395,237.37	$ 409,070.66	$ 423,386.15
Other Expenses	$225,041.86	$232,918.33	$ 391,070.47	$ 404,757.93	$418,924.46	$433,586.82	$448,762.36	$ 464,469.04	$ 480,725.45	$ 497,550.84
Supplies	$180,300.00	$186,610.50	$ 193,141.87	$ 199,901.83	$206,896.40	$214,139.84	$221,634.74	$ 229,391.95	$ 237,420.87	$ 245,730.39
Debt Service	$									
Indirect Expenses	$132,156.80	$136,782.29	$ 141,569.67	$ 146,524.60	$151,652.57	$156,960.82	$162,454.45	$ 168,140.35	$ 174,025.27	$ 180,116.15
	$ 848,151.7	$ 877,836.97	$ 1,058,561.26	$ 1,095,610.00				$1,257,238.71	$1,301,242.97	$1,346,783.54

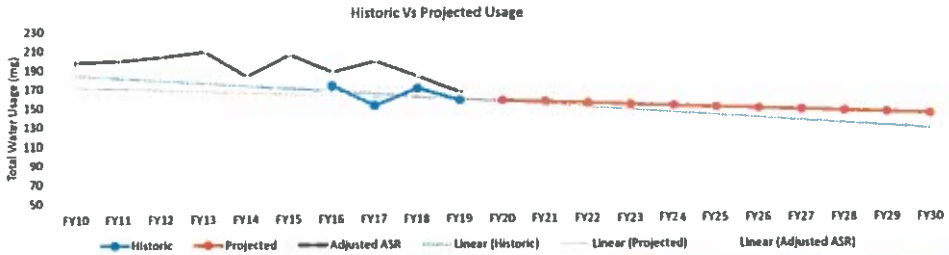
WTP Ops Cost $ 150,000.00

Expenses

Town of Ware

2020 Water Rate Model

Usage Analysis and Projections



No. Accounts - Historic Values

User Class	Actual FY15	Actual FY16	Actual FY17	Actual FY18	Actual FY19	Projected FY20	Projected FY21	Projected FY22	Projected FY23	Projected FY24	Projected FY25	Projected FY26	Projected FY27	Projected FY28	Projected FY29	Projected FY30
Agriculture		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Commercial		136	134	133	131	132	132	133	133	134	135	135	136	137	137	138
Industrial		23	23	24	24	24	24	24	24	24	24	25	25	25	25	25
Municipal		20	20	20	20	22	22	22	22	22	22	22	23	23	23	23
Other		12	12	12	12	11	11	11	11	11	11	11	11	11	11	12
Residential		2,142	2,142	2,144	2,141	2,133	2,133	2,144	2,154	2,165	2,176	2,187	2,198	2,209	2,220	2,231
Residential Institutional		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Total	-	2,337	2,335	2,337	2,332	2,326	2,326	2,338	2,348	2,361	2,373	2,386	2,397	2,409	2,421	2,433
		2,337	(2)	2	(5)	(6)	0	12	12	12	12	12	12	12	12	
					2314.5											

Customer Account Analysis
0.51% Change over period (AS)
0.09% Change per year

Total Usage (CF)

Historic Values / Projected Values

Block	FY15	Actual FY16	Actual FY17	Actual FY18	Actual FY19	Projected FY20	Projected FY21	Projected FY22	Projected FY23	Projected FY24	Projected FY25	Projected FY26	Projected FY27	Projected FY28	Projected FY29	Projected FY30
Base Charge Usage		4,108,002	3,985,542	4,139,668	4,134,938	4,134,938	4,093,589	4,052,653	4,012,126	3,972,005	3,932,285	3,892,962	3,854,032	3,815,492	3,777,337	3,739,564
Consumption		18,954,574	16,291,499	16,523,686	16,850,216	16,850,216	16,681,714	16,514,897	16,349,748	16,186,250	16,024,388	15,864,144	15,705,502	15,548,447	15,392,963	15,239,033
Total		23,062,576	20,277,041	20,663,354	20,985,154	20,985,154	20,775,302	20,567,549	20,361,874	20,158,256	19,956,673	19,757,106	19,559,535	19,363,939	19,170,300	18,978,597
		100.00%	-13.74%	10.52%	-7.98%	0.00%										

Usage Analysis
-2.0% Change in Consumption over period
-2.25% Change in Consumption per year

Meter Sizes / Projected Values (manual regression) - USED

Meter Size	FY15	Actual FY16	Actual FY17	Actual FY18	Actual FY19	Actual FY20	Projected FY21	Projected FY22	Projected FY23	Projected FY24	Projected FY25	Projected FY26	Projected FY27	Projected FY28	Projected FY29	Projected FY30
0.625"		2,021	2,019	2,021	2,018	2,018	2,018	2,029	2,039	2,048	2,059	2,069	2,079	2,090	2,100	2,111
0.75"		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
0.85"		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
0.75"		174	173	174	174	175	176	177	178	179	179	180	181	182	183	184
0.875"		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
1"		92	93	92	92	92	92	93	93	94	94	95	95	96	96	97
1.25"		10	10	10	10	10	10	10	10	10	10	10	10	10	10	11
1.5"		9	9	9	9	9	9	9	9	9	9	9	9	9	9	9
2"		22	22	22	22	22	22	22	22	22	23	23	23	23	23	23
3"		4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
4"		1	1	1	1	2	2	2	2	2	2	2	2	2	2	2
6"		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Total	-	2,337	2,335	2,337	2,332	2,336	2,336	2,348	2,361	2,373	2,386	2,397	2,409	2,421	2,433	2,443

Usage

Town of Ware

2020 Water Rate Model

Rates

Existing Rates - Do Nothing

Rate increase	Base Charge	4%	6%									
	Consumption	12%	10%									
Description	Type	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30
Base Charge	Quarterly Fee	$34.00	$36.00	$36.00	$36.00	$36.00	$36.00	$36.00	$36.00	$36.00	$36.00	$36.00
Consumption	Usage	$5.20	$5.75	$5.75	$5.75	$5.75	$5.75	$5.75	$5.75	$5.75	$5.75	$5.75

Alt. A - 100% Rate Funded

	Rate increase			6%	8%	10%	10%	10%	10%	12%	8%	2%
Description	Type	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30
Base Charge	Quarterly Fee	$34.00	$36.00	$38.16	$41.21	$45.33	$49.87	$54.85	$60.34	$67.58	$73.66	$75.87
Consumption	Usage	$5.20	$5.75	$6.10	$6.59	$7.24	$7.96	$8.76	$9.64	$10.79	$11.77	$12.12

Alt. B - 25 % General Fund Contribution *

	Rate increase			6%	6%	6%	6%	10%	10%	12%	12%	6%
Description	Type	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30
Base Charge	Quarterly Fee	$34.00	$36.00	$38.16	$40.45	$42.88	$46.31	$50.94	$56.03	$62.75	$70.29	$73.80
Consumption	Usage	$5.20	$5.75	$6.10	$6.46	$6.85	$7.40	$8.14	$8.95	$10.02	$11.23	$11.79

Alt. C - 50 % General Fund Contribution *

				6%	6%	6%	7%	7%	7%	8%	7%	6%
Description	Type	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30
Base Charge	Quarterly Fee	$34.00	$36.00	$38.16	$40.45	$42.88	$45.88	$49.09	$52.53	$56.73	$60.70	$64.34
Consumption	Usage	$5.20	$5.75	$6.10	$6.46	$6.85	$7.33	$7.84	$8.39	$9.06	$9.69	$10.28

Rates

2020 Water Rate Model

Revenue

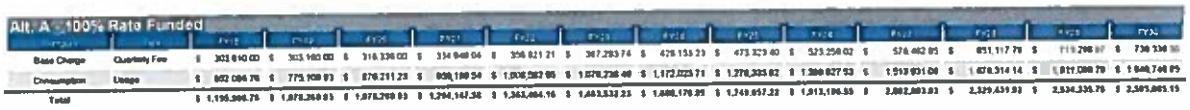
Town of Ware

2020 Water Rate Model

Rate Revenue

Existing Rates - Do Nothing

Alt. A - 100% Rate Funded



Alt. B - 25 % General Fund Contribution

Alt. C - 50 % General Fund Contribution

Revenue

Town of Ware

2020 Water Rate Model

CIP

Projection variables	
Interest rate	4.5%
Escalator	3.0%

Capital Improvement Planner

ID	Category	System	Scope	Description	Funding source	Interest Rate	Estimated Cost	Cost Year	Escalated Cost	Start Year	Term	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
1		Treatment	Eng +Const.	Water Filtration Plant	USDA	1.750%	$13,278,000	2023	$ 13,280,000	2023	40				$ 464,429	$ 464,429	$ 464,429	$ 464,429	$ 464,429	$ 464,429	$ 464,429
2		Source	Other	Dismal Swamp Well Generator + Well #4	[illegible]	4.5%	$500,000	2018	$ 620,000	2023	10				$ 78,355	$ 78,355	$ 78,355	$ 78,355	$ 78,355	$ 78,355	$ 78,355
3		Distribution	Other	Hydrant Replacement (5 per year)	Rate	--	$175,000	2018	$ 220,000	2023	10				$ 22,000	$ 22,000	$ 22,000	$ 22,000	$ 22,000	$ 22,000	$ 22,000
4		Storage	Eng +Const.	Anderson Road Water Tank Rehabilitation	Debt	4.5%	$1,400,000	2020	$ 1,580,000	2024	20					[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
5		Storage	Eng +Const.	Church St WST Water Tank Rehabilitation	Debt	4.5%	$1,400,000	2020	$ 1,630,000	2025	20						$ 120,398	$ 120,398	$ 120,398	$ 120,398	$ 120,398
6		Distribution	Eng +Const.	Water Main Replacement #1-12" DI (~3,800LF)	Debt	4.5%	$1,520,000	2020	$ 1,720,000	2024	20					[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
7		Distribution	Eng +Const.	Water Main Replacement #2-8" DI (~5,880LF)	Debt	4.5%	$2,000,000	2020	$ 2,360,000	2026	20							$ 183,794	$ 183,794	$ 183,794	$ 183,794
8		Distribution	Eng +Const.	Water Main Replacement #3-8" DI (~5,880LF)	Debt	4.5%	$2,100,000	2020	$ 2,670,000	2029	20										$ 208,794
					Total		$22,371,000		$ 24,110,000			$ -	$ -	$ -	$ 564,784	$ 818,476	$ 943,784	$ 1,127,518	$ 1,127,518	$ 1,332,777	$ 1,332,777

Summary by Funding	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Rate Funded	$ -	$ -	$ -	$ 22,000	$ 22,000	$ 22,000	$ 22,000	$ 22,000	$ 22,000	$ 22,000
Debt	$ -	$ -	$ -	$ 78,355	$ 332,046	$ 457,354	$ 641,088	$ 641,088	$ 846,348	$ 846,348
USDA Funded	$ -	$ -	$ -	$ 464,429	$ 464,429	$ 464,429	$ 464,429	$ 464,429	$ 464,429	$ 464,429
TOTAL	$ -	$ -	$ -	$ 564,784	$ 818,476	$ 943,784	$ 1,127,518	$ 1,127,518	$ 1,332,777	$ 1,332,777