



# RESULTS

## Water and Sewer Rate Evaluation Dudley MA

May 28, 2020 Memorandum Attachment

# WATER RATE FUNDAMENTALS

## Rate Setting Principals & Goals

1

*Recover full cost of service*



All Requirements  
Met



Fully  
Staffed



Proactive  
Repair & Maintenance

2

*Distribute costs equitably*



Residential  
- VS -  
Non-Residential



Large Households  
- VS -  
Small Households



Essential Use  
- VS -  
Discretionary Use

3

*Provide revenue stability & resource protection*



Usage  
Trends



Rate  
Design

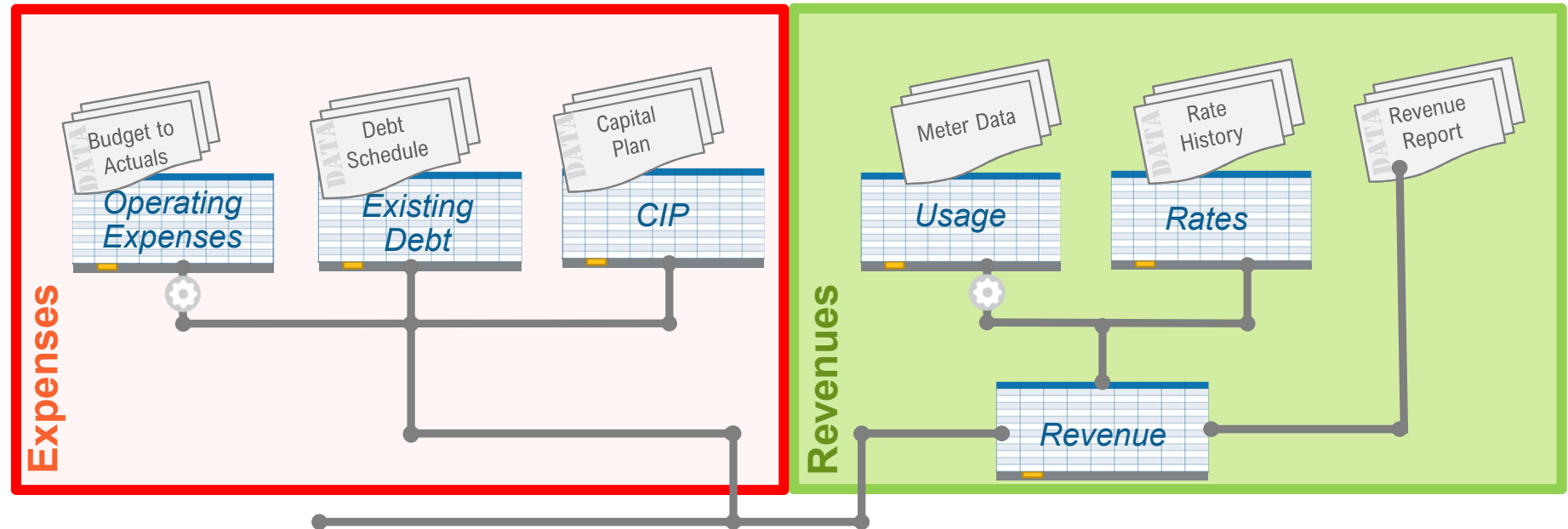


Permit  
Limits

# EVALUATING WATER & SEWER RATES

## 1. Project expenses

## 2. Project revenues



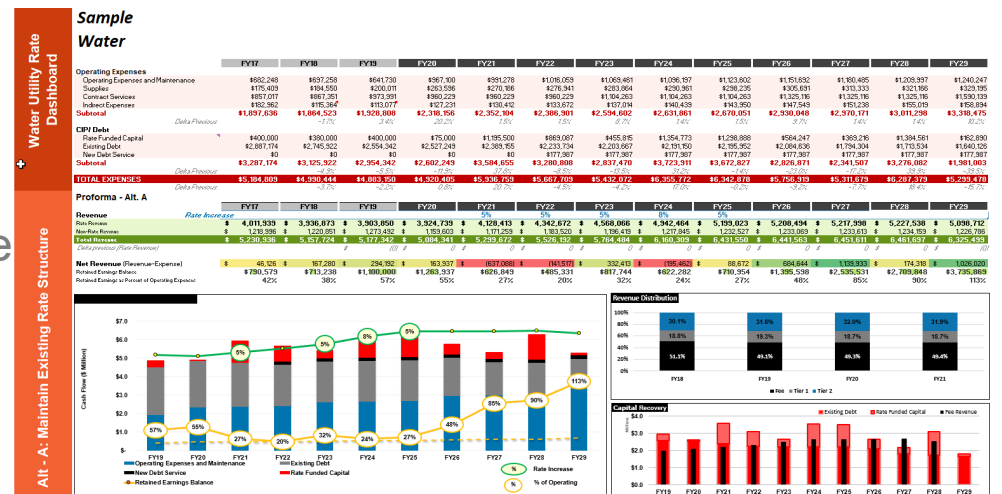
## 3. Calculate net revenue

## 4. Adjust rates to maintain fund balance

## 5. Calculate user costs

## 6. Evaluate equity

## 7. Evaluate affordability



# WATER SYSTEM STATUS AND NEEDS

Town currently gets all of its water from two well stations, #3 and #6, the Town would not be able to meet daily demands if either station went down. This has also prevented the Town from being able to add customers. Recently, while replacing a well at Station 3, PFAS was detected above the newly developed permit limit. The water system needs significant capital investment to maintain the existing level of service and provide for the needs of the Town.

## Key projects (by number):

1,4 & 7 Brings third source shut down years ago back on line and other key system improvements.

3 Combines two sources to allow temporary use of the new well until a PFAS treatment plant is built.

2 8 & 11 Design and construction of water treatment plant to treat PFAS at Stations #3 and #6

## Capital Improvement Plan

No.	Description	Funding Source	Estimated Cost	Fiscal Year	Term
1	PS #1 and PS#3 well improvements	Rate	\$500,000	2020	1
2	PFAS Water Treatment Plant - Preliminary Design	Rate	\$200,000	2020	1
3	Interim PFAS Water Main Project	Debt	\$1,000,000	2021	20
4	SRF Project - Design	Debt	\$500,000	2021	5
5	SRF Project - Water Asset Management Plan	Rate	\$40,000	2021	1
6	Truck 1	Rate	\$40,000	2021	2
7	SRF Project - Construction	SRF	\$4,535,300	2022	20
8	PFAS Water Treatment Plant - Final Design	Debt	\$400,000	2022	20
9	Water Meter Replacement - Phase 1	Rate	\$188,333	2024	1
10	Risk, Vulnerability Assessment and Subsequent ERP	Rate	\$30,000	2022	1
11	PFAS Water Treatment Plant - Construction	SRF	\$6,000,000	2023	20
12	Delaney Avenue Area Water Main	SRF	\$3,270,000	2026	20
13	Water Meter Replacement - Phase 2	Rate	\$188,333	2026	1
14	New Well Water Source	SRF	\$3,000,000	2025	20
15	Truck 2	Rate	\$40,000	2025	1
16	Konkel Avenue Area Water Main	SRF	\$2,860,000	2028	20
17	Water Meter Replacement - Phase 3	Rate	\$188,333	2028	1
18	Jaybee Avenue Area Water Main	SRF	\$3,250,000	2030	20
TOTAL			\$26,230,300		

Town is considering funding projects 7 & 11 as a debt exclusion.



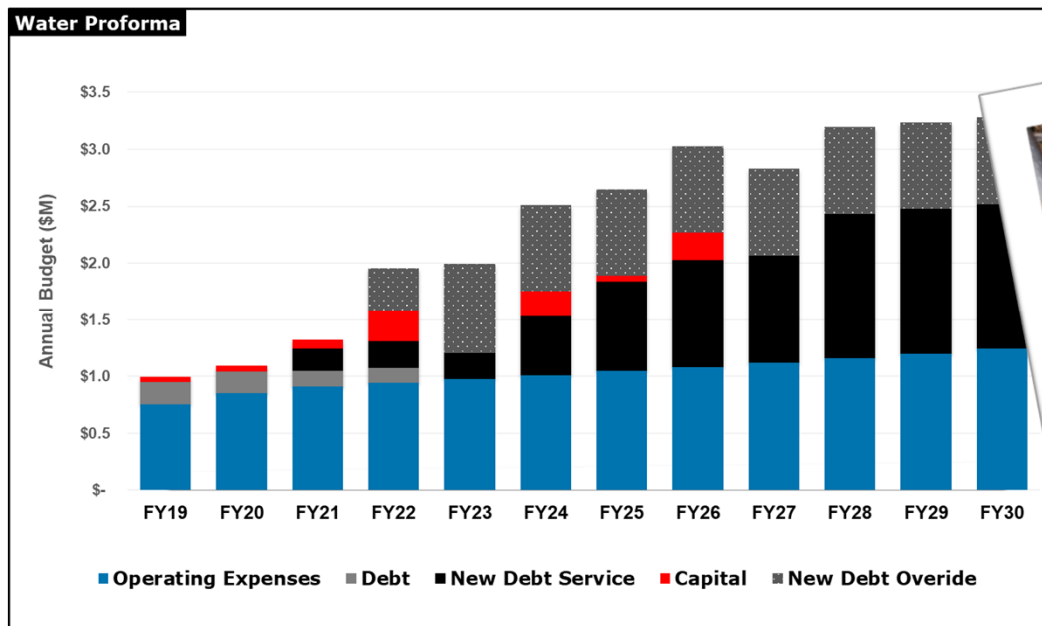
**PFAS:** A group of once common man-made chemicals that have recently become regulated due to growing concern over human health impacts.



# WATER ENTERPRISE – PROJECTED EXPENSES

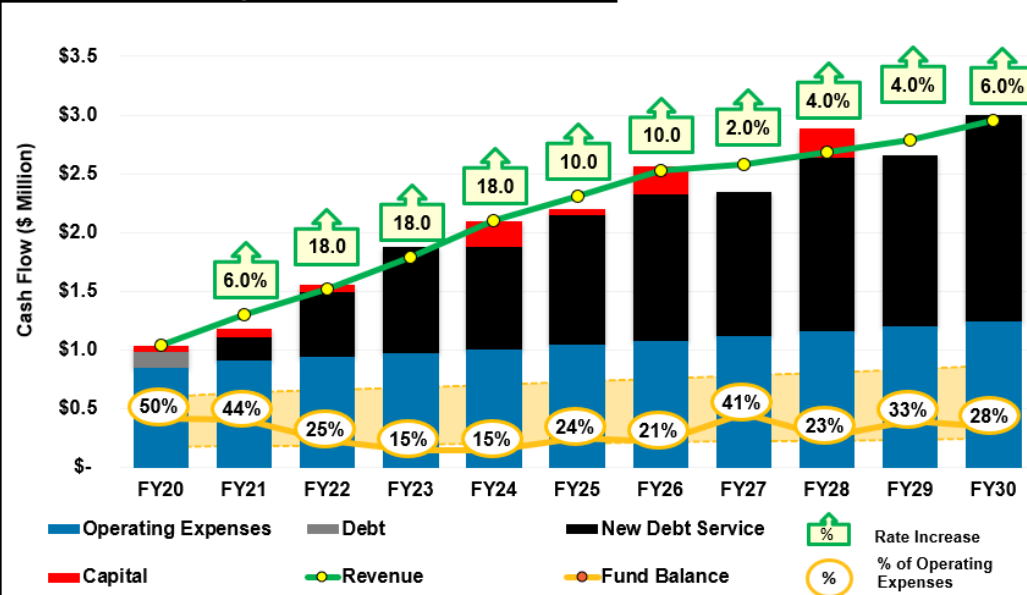
## Dudley Water

	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30
<b>Operating Expenses</b>											
labor	\$311,624	\$320,726	\$331,951	\$343,570	\$355,595	\$368,040	\$380,922	\$394,254	\$408,053	\$422,335	\$437,116
Operation & Maintenance	\$218,100	\$228,315	\$236,306	\$244,577	\$253,137	\$261,997	\$271,167	\$280,658	\$290,481	\$300,648	\$311,170
Indirects- Fringes	\$89,094	\$127,594	\$132,060	\$136,682	\$141,466	\$146,417	\$151,542	\$156,846	\$162,336	\$168,017	\$173,898
Supplies	\$143,200	\$143,200	\$148,212	\$153,399	\$158,768	\$164,325	\$170,077	\$176,029	\$182,190	\$188,567	\$195,167
Indirects- Admin	\$85,500	\$85,661	\$88,659	\$91,762	\$94,974	\$98,298	\$101,738	\$105,299	\$108,984	\$112,799	\$116,747
Miscellaneous	\$5,700	\$5,000	\$5,175	\$5,356	\$5,544	\$5,738	\$5,938	\$6,146	\$6,361	\$6,584	\$6,814
<b>Subtotal</b>	<b>\$853,218</b>	<b>\$910,496</b>	<b>\$942,364</b>	<b>\$975,347</b>	<b>\$1,009,484</b>	<b>\$1,044,816</b>	<b>\$1,081,384</b>	<b>\$1,119,233</b>	<b>\$1,158,406</b>	<b>\$1,198,950</b>	<b>\$1,240,913</b>
<b>CIP/ Debt</b>											
Capital	\$55,000	\$75,000	\$65,000	\$0	\$220,000	\$50,000	\$240,000	\$0	\$250,000	\$0	\$0
Debt	\$185,338	\$135,200	\$132,600	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
New Debt Service	\$0	\$198,403	\$554,389	\$900,703	\$871,592	\$1,108,805	\$1,241,863	\$1,224,292	\$1,474,795	\$1,458,316	\$1,763,305
<b>Subtotal</b>	<b>\$240,338</b>	<b>\$408,603</b>	<b>\$751,989</b>	<b>\$900,703</b>	<b>\$1,091,592</b>	<b>\$1,158,805</b>	<b>\$1,481,863</b>	<b>\$1,224,292</b>	<b>\$1,724,795</b>	<b>\$1,458,316</b>	<b>\$1,763,305</b>
<b>TOTAL EXPENSES - WITHOUT Override</b>	<b>\$1,093,556</b>	<b>\$1,319,099</b>	<b>\$1,694,353</b>	<b>\$1,876,050</b>	<b>\$2,101,075</b>	<b>\$2,203,621</b>	<b>\$2,563,248</b>	<b>\$2,343,524</b>	<b>\$2,883,200</b>	<b>\$2,657,266</b>	<b>\$3,004,218</b>
<b>Water Capital Proposed for Debt Exclusion</b>											
PFAS Water Treatment Plant - Construction	\$ -	\$ -	\$ -	\$ 367,558	\$ 338,446	\$ 338,446	\$ 338,446	\$ 338,446	\$ 338,446	\$ 338,446	\$ 338,446
PS1 Rehab, Mason Rd WM, Storage Rehab.	\$ -	\$ -	\$ 322,930	\$ 301,686	\$ 301,686	\$ 301,686	\$ 301,686	\$ 301,686	\$ 301,686	\$ 301,686	\$ 301,686
<b>Total</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ 322,930</b>	<b>\$ 669,244</b>	<b>\$ 640,132</b>	<b>\$ 640,132</b>	<b>\$ 640,132</b>	<b>\$ 640,132</b>	<b>\$ 640,132</b>	<b>\$ 640,132</b>	<b>\$ 640,132</b>
<b>TOTAL EXPENSES - WITH Override</b>	<b>\$1,093,556</b>	<b>\$1,319,099</b>	<b>\$1,371,423</b>	<b>\$1,206,806</b>	<b>\$1,460,943</b>	<b>\$1,563,489</b>	<b>\$1,923,115</b>	<b>\$1,703,392</b>	<b>\$2,243,068</b>	<b>\$2,017,133</b>	<b>\$2,364,086</b>
	\$ -	\$ 198,403	\$ 231,460	\$ 231,460	\$ 231,460	\$ 468,673	\$ 601,731	\$ 584,160	\$ 834,662	\$ 818,183	\$ 1,123,172



# WATER ENTERPRISE –PROJECTED RATES

Water Proforma - Proposed Rates - NO Debt Exclusion

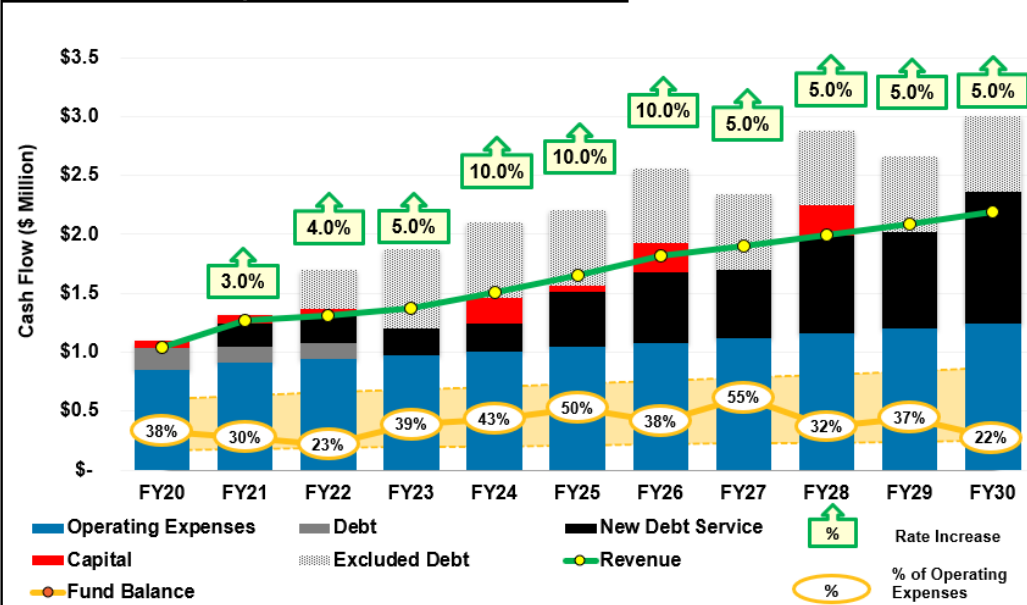


Revised Rates - NO Debt Exclusion

Rate Increases		6%	
Description	Type	FY20	FY21
5/8" Base Charge	Quarterly Fee	\$45.00	\$47.70
>5/8" Base Charge	Usage		\$238.50
Tier 1	Usage	\$3.25	\$3.45
Tier 2	Usage	\$4.25	\$5.17
Tier 3	Usage	\$5.25	\$10.34

Water rate structure was modified to add an increased base charge for larger services and the incremental cost between tiers was increased.

Water Proforma - Proposed Rates WITH Debt Exclusion



Revised Rates - WITH Debt Exclusion

Rate Increases		3%	
Description	Type	FY20	FY21
5/8" Base Charge	Quarterly Fee	\$45.00	\$46.35
>5/8" Base Charge	Usage		\$231.75
Tier 1	Usage	\$3.25	\$3.35
Tier 2	Usage	\$4.25	\$5.02
Tier 3	Usage	\$5.25	\$10.04

# SEWER ENTERPRISE – STATUS AND NEEDS

## Capital Improvement Plan

Project	System	Description	Funding Source	Estimated Cost	Cost Year
1	Collection	Dudley I&I Mitigation Construction Project	SRF	\$1,300,000	2020
2	Collection	Annual Miscellaneous Repairs and Maintenance of Pump Stations and System	Rate	\$150,000	2020
3	Collection	Inflow Investigation Program	Rate	\$50,000	2020
4	Collection	Annual Miscellaneous Repairs and Maintenance of Pump Stations and System	Rate	\$150,000	2020
5	Collection	Inflow Removal Construction Program	Rate	\$75,000	2020
6	Collection	Inflow Investigation Program	Rate	\$50,000	2020
7	Collection	Annual Miscellaneous Repairs and Maintenance of Pump Stations and System	Rate	\$150,000	2020
8	Collection	Inflow Removal Construction Program	Rate	\$75,000	2020
9	Collection	Annual Miscellaneous Repairs and Maintenance of Pump Stations and System	Rate	\$150,000	2020
10	Collection	Annual Miscellaneous Repairs and Maintenance of Pump Stations and System	Rate	\$150,000	2020
11	Collection	Annual Miscellaneous Repairs and Maintenance of Pump Stations and System	Rate	\$150,000	2020
12	Collection	Annual Miscellaneous Repairs and Maintenance of Pump Stations and System	Rate	\$150,000	2020
13	Collection	Annual Miscellaneous Repairs and Maintenance of Pump Stations and System	Rate	\$150,000	2020
14	Collection	Annual Miscellaneous Repairs and Maintenance of Pump Stations and System	Rate	\$150,000	2020
15	Collection	Annual Miscellaneous Repairs and Maintenance of Pump Stations and System	Rate	\$150,000	2020
				<b>\$3,050,000</b>	

Dudley sends its wastewater to Webster to be treated, the sewer system consists of pipes and pump stations. The Capital Improvement Plan focuses on addressing infiltration and inflow and adds placeholders for pump station improvements and the Town's share of the future upgrade of the Webster Wastewater Treatment Facility.



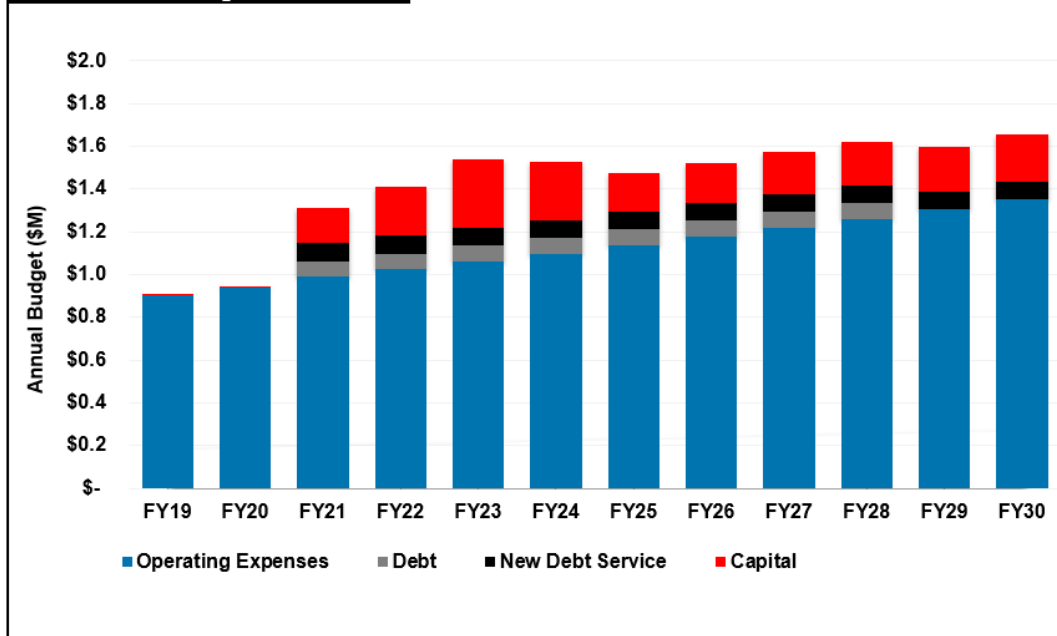
**Infiltration and Inflow (I&I):** Groundwater and stormwater that makes its way into the sewers through leaks and improper connections. This increases the Town's cost and reduces available capacity.

# SEWER ENTERPRISE – OPERATING EXPENSES

## *Dudley Sewer*

	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30
<b>Operating Expenses</b>											
Operating and Maintenance	\$518,409	\$586,714	\$607,249	\$628,502	\$650,500	\$673,268	\$696,832	\$721,221	\$746,464	\$772,590	\$799,631
labor	\$210,245	\$216,222	\$223,789	\$231,622	\$239,729	\$248,119	\$256,803	\$265,792	\$275,094	\$284,723	\$294,688
Indirects- Fringes	\$114,117	\$99,411	\$102,891	\$106,492	\$110,219	\$114,077	\$118,070	\$122,202	\$126,479	\$130,906	\$135,487
Indirects- Admin	\$85,400	\$86,408	\$89,432	\$92,562	\$95,802	\$99,155	\$102,625	\$106,217	\$109,935	\$113,782	\$117,765
Miscellaneous	\$7,000	\$2,000	\$2,100	\$2,205	\$2,315	\$2,431	\$2,553	\$2,680	\$2,814	\$2,955	\$3,103
Technical services	\$1,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<b>Subtotal</b>	<b>\$936,170</b>	<b>\$990,754</b>	<b>\$1,025,461</b>	<b>\$1,061,383</b>	<b>\$1,098,565</b>	<b>\$1,137,049</b>	<b>\$1,176,882</b>	<b>\$1,218,112</b>	<b>\$1,260,786</b>	<b>\$1,304,955</b>	<b>\$1,350,673</b>
<b>CIP/ Debt</b>											
Capital	\$8,000	\$160,000	\$230,000	\$320,000	\$270,000	\$180,000	\$190,000	\$200,000	\$200,000	\$210,000	\$220,000
Debt	\$63,360	\$0	\$0	\$69,353	\$73,485	\$73,572	\$73,661	\$73,752	\$73,844	\$73,939	\$74,036
New Debt Service	\$0	\$89,703	\$83,802	\$83,802	\$83,802	\$83,802	\$83,802	\$83,802	\$83,802	\$83,802	\$83,802
<b>Subtotal</b>	<b>\$71,360</b>	<b>\$249,703</b>	<b>\$313,802</b>	<b>\$473,154</b>	<b>\$427,286</b>	<b>\$337,374</b>	<b>\$347,462</b>	<b>\$357,553</b>	<b>\$357,646</b>	<b>\$367,741</b>	<b>\$377,838</b>
<b>TOTAL EXPENSES</b>	<b>\$1,007,530</b>	<b>\$1,240,457</b>	<b>\$1,339,262</b>	<b>\$1,534,538</b>	<b>\$1,525,851</b>	<b>\$1,474,423</b>	<b>\$1,524,345</b>	<b>\$1,575,665</b>	<b>\$1,618,432</b>	<b>\$1,672,697</b>	<b>\$1,728,511</b>

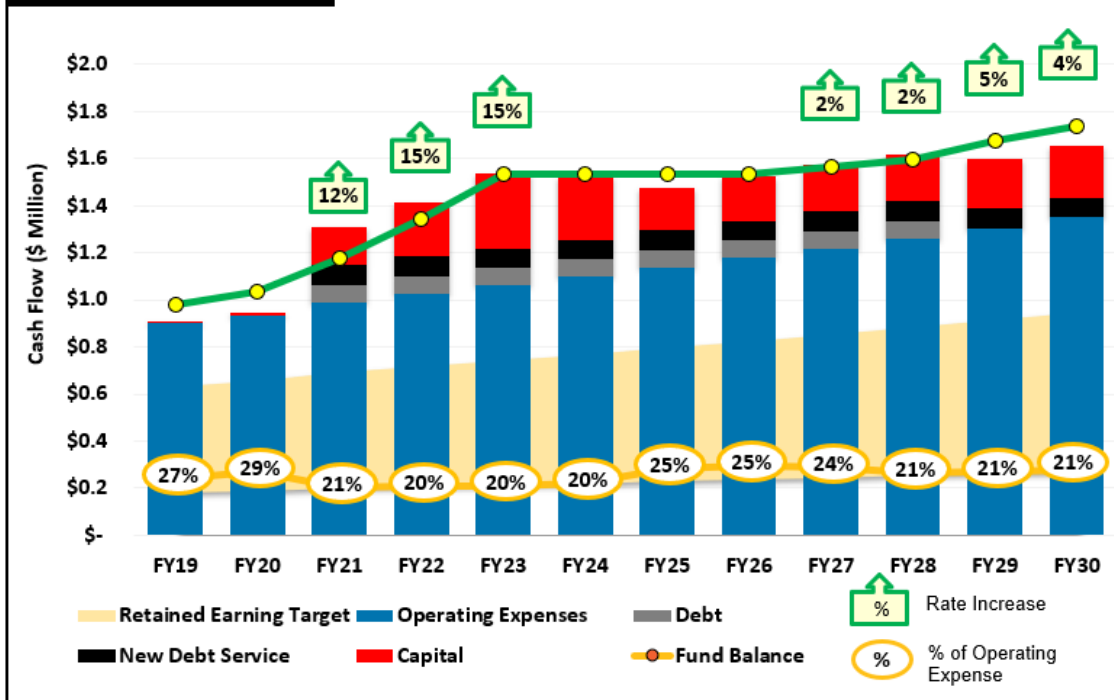
Proforma - Existing Rate Structure





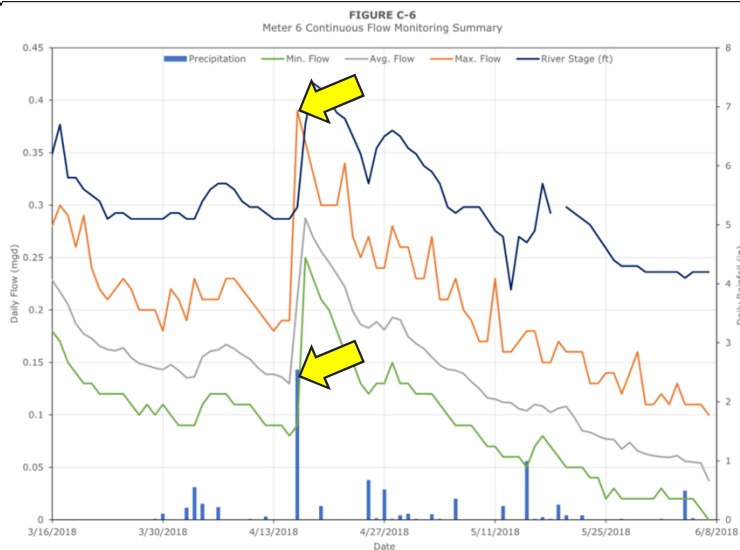
# SEWER ENTERPRISE –PROJECTED RATES

## Proforma - Proposed Rates



## Proposed Rates

Description	Type	Rate Increases	
		FY20	FY21
Base Charge	Quarterly Fee	\$72.50	\$81.20
Usage	Usage	\$3.20	\$3.58



**Upper Right:** Flow meter installation showing mounting ring and data cable. **Lower Right:** Manhole inspection showing active infiltration source. **Left:** Sewer meter data compared with rainfall and river data showing sewer response to rainfall event.

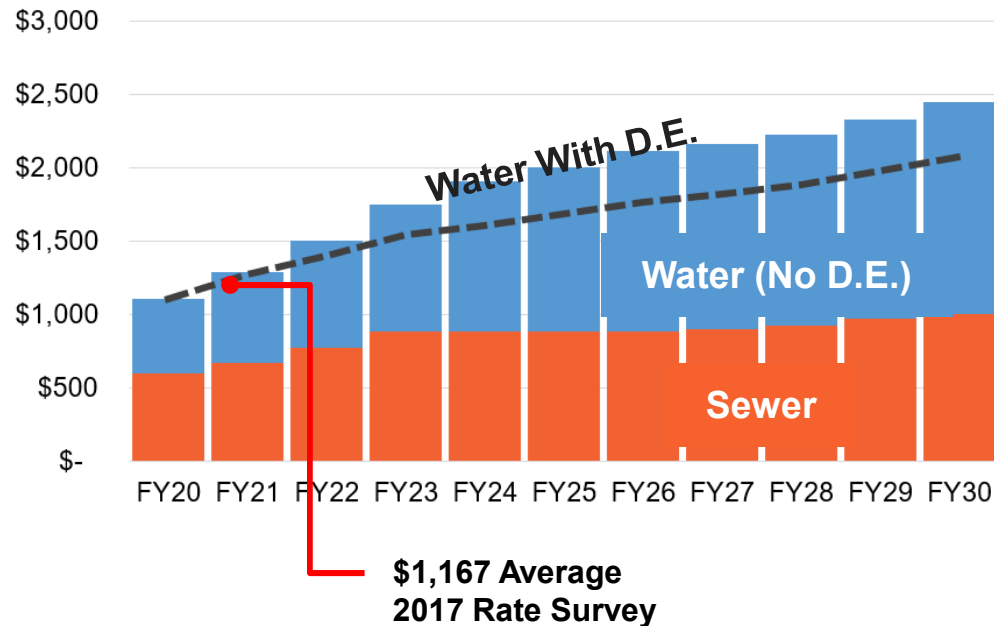
# CUSTOMER IMPACTS & AFFORDABILITY

Annual Cost											
Scenario	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30
Water - No Override	\$ 509	\$ 619	\$ 731	\$ 862	\$ 1,018	\$ 1,119	\$ 1,231	\$ 1,256	\$ 1,306	\$ 1,358	\$ 1,440
Sewer	\$ 598	\$ 670	\$ 770	\$ 886	\$ 886	\$ 886	\$ 886	\$ 904	\$ 922	\$ 968	\$ 1,006
<b>Total</b>	<b>\$ 1,107</b>	<b>\$ 1,289</b>	<b>\$ 1,501</b>	<b>\$ 1,748</b>	<b>\$ 1,903</b>	<b>\$ 2,005</b>	<b>\$ 2,117</b>	<b>\$ 2,159</b>	<b>\$ 2,228</b>	<b>\$ 2,326</b>	<b>\$ 2,446</b>
<i>Increase</i>	\$ 115	\$ 182	\$ 212	\$ 247	\$ 155	\$ 102	\$ 112	\$ 42	\$ 68	\$ 98	\$ 120

Scenario	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30
Water - WITH Override	\$ 509	\$ 602	\$ 626	\$ 657	\$ 723	\$ 795	\$ 875	\$ 918	\$ 964	\$ 1,013	\$ 1,063
Sewer	\$ 598	\$ 670	\$ 770	\$ 886	\$ 886	\$ 886	\$ 886	\$ 904	\$ 922	\$ 968	\$ 1,006
<b>Total WITH Override</b>	<b>\$ 1,107</b>	<b>\$ 1,272</b>	<b>\$ 1,396</b>	<b>\$ 1,543</b>	<b>\$ 1,609</b>	<b>\$ 1,681</b>	<b>\$ 1,760</b>	<b>\$ 1,822</b>	<b>\$ 1,886</b>	<b>\$ 1,980</b>	<b>\$ 2,070</b>
<i>Increase</i>	\$ 115	\$ 164	\$ 125	\$ 147	\$ 66	\$ 72	\$ 80	\$ 61	\$ 64	\$ 94	\$ 89

Annual Water & Sewer Costs



## Impact of Debt Exclusion



Water Rates = \$205



Property Tax = \$189

### Cost if funded by Water Rates:

Annual water cost  
(FY23) \$862 - \$657 = \$205

### Cost if Tax Rate:

Total Excluded Debt: \$760K  
Increase in property tax mill rate: \$0.75  
Average home valuation (2019): \$255,500  
Additional on property tax bill: \$189



All Costs based upon a family of 4 each using 50 gallons per day each.

# CUSTOMER IMPACTS & AFFORDABILITY



**Measuring Affordability.** Affordability, like temperature, is highly subjective. To determine whether or not water and sewer costs represents a financial burden we use the two most common and appropriate indicators. In both cases the income used to calculate affordability is not escalated and is based on 2018 data.

## Residential Indicator

Scenario	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30
No Water Override	1.7%	2.0%	2.3%	2.7%	3.0%	3.1%	3.3%	3.4%	3.5%	3.6%	3.8%
With Water Override	1.7%	2.0%	2.2%	2.4%	2.5%	2.6%	2.7%	2.8%	2.9%	3.1%	3.2%

*The Residential Indicator.* Adopted from EPA guidance developed in the late 90's to determine the cost impacts of federal regulatory programs, this indicator divides the total annual cost of water and sewer and divides it by the median household income. A score of 4% or more is considered to be a financial burden.

## Household Burden Indicator (HBI)

Scenario	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30
No Water Override	3.9%	4.6%	5.3%	6.2%	6.8%	7.1%	7.5%	7.7%	7.9%	8.3%	8.7%
With Water Override	3.9%	4.5%	5.0%	5.5%	5.7%	6.0%	6.3%	6.5%	6.7%	7.0%	7.4%

*The Household Burden Indicator.* Introduced in 2019, this indicator is based the lowest quintile income (the lowest 20%), which is more representative of household financial status, is used. The second component, the Poverty Prevalence Indicator determines what percentage of the community is below 200% of the Federal Poverty Level. The burden is determined by using the chart below.

### Dudley Income Data (US Census)

Median Household Income: \$84,281

Lowest Quintile Income: \$28,126

Poverty Prevalence Indicator: 23.9%

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

Dudley