



# B Note and C Note History and Recent Transactions; Refinancing and New Money Opportunities in FY2020

**Presentation to Audit Committee**

**Presented by:**  
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# **B Note and C Note History and Recent Transactions**



## **Creation and Funding of Detroit General Retirement System Service Corp.**

- ◆ In 2005 and 2006 Detroit funded certain UAAL of the General Retirement System (“GRS”) through the creation of the Detroit General Retirement System Service Corporation (the “Service Corporation”) and subsequent multiple issuances of Certificates of Participation (“COPs”)
  - A portion of the proceeds of COPs was irrevocably paid to GRS, fully funding its UAAL, including amounts attributable to DWSD
  - COPs evidenced an undivided proportionate interest in the right to receive payments made by the City under a 2005 Service Contract and 2006 Service Contract (the “Service Contracts”)
- ◆ Detroit also entered into certain interest rate exchange agreements in conjunction with the issuance of COPs (the “COP Swap Agreements”)
- ◆ Pursuant to the Service Contracts and COP Swap Agreements the City paid certain payments to the Service Corporation, calculated to be sufficient to allow the Service Corporation to make payments on the COPs
- ◆ Proportionate share of the Service Payments were allocated and paid by DWSD



## Background and History of B Notes and C Notes

- Plan of Adjustment provided for the satisfaction of certain claims, including claims relating to the COPs and post-retirement health benefits for which DWSD was proportionately responsible through the issuance of Financial Recovery Bonds, Series 2014B (“B Notes”) and Financial Recovery Bonds, Series 2014C (“C Notes”)
- Consistent with prior year formulas for allocation of COP liabilities, DWSD responsible for paying an allocable share of the B Notes and C Notes
- Pursuant to the terms of the Lease Agreements, GLWA is required to pay the portion of the B Notes and C Notes allocable to the Regional Water System and Regional Sewer System
  - The City and DWSD are required to pay the portion of the B Notes and C Notes allocable to the Local Water System and Local Sewer System
- Full amount of Local System and Regional System contractual obligation to pay on B Notes and C Notes sits on DWSD balance sheet, with offsetting receivable from GLWA; GLWA balance sheet reflects contractual obligation allocable only to Regional System
- Payment of DWSD and GLWA allocable shares of the debt service on the B Notes and C Notes is made after and subordinate to payment of debt service on all bonded indebtedness and replenishment of debt service reserve fund related to that indebtedness



## GLWA and DWSD Allocation of B Notes and C Notes

	B(1) Notes	B(2) Notes	C Notes
<b>Initial Principal Amount</b>	\$616.6 mil	\$15.4 mil	\$88.4 mil
<b>Allocable to Water and Sewer Systems in Aggregate</b>	\$69.4 mil (11.3%)	\$1.3 mil (8.6%)	\$10.2 mil (11.6%)
<b>Allocable to Regional System (71.4%)</b>	\$48.8 mil	\$0.9 mil	\$7.2 mil
Water (22.0%)	\$17.5 mil	\$0.3 mil	\$2.6 mil
Sewer (49.4%)	\$31.3 mil	\$0.6 mil	\$4.6 mil
<b>Allocable to Local System (28.6%)</b>	\$20.6 mil	\$0.4 mil	\$3.0 mil
Water (15.5%)	\$12.4 mil	\$0.2 mil	\$1.8 mil
Sewer (13.0%)	\$8.3 mil	\$0.2 mil	\$1.2 mil



## Original Terms of Underlying B Notes and C Notes

	B(1) Notes	B(2) Notes	C Notes
<b>Dated Date</b>	December 10, 2014	December 10, 2014	December 10, 2014
<b>Initial Principal Amount</b>	\$616.6 million	\$15.4 million	\$88.4 million
<b>Final Maturity</b>	April 1, 2044	April 1, 2044	June 30, 2026
<b>Amortization</b>	Interest-only through 2024	Interest-only through 2024	Level payments through final maturity
<b>Optional Redemption</b>	None	None	Callable at any time at par plus accrued interest
<b>Repayment Source</b>	Full faith, credit, and resources of the City	Full faith, credit, and resources of the City	Parking revenues and full faith, credit, and resources of the City
<b>Interest Rate</b>	4.00%	4.00% through 4/1/2034; 6.00% thereafter through final maturity	5.00%



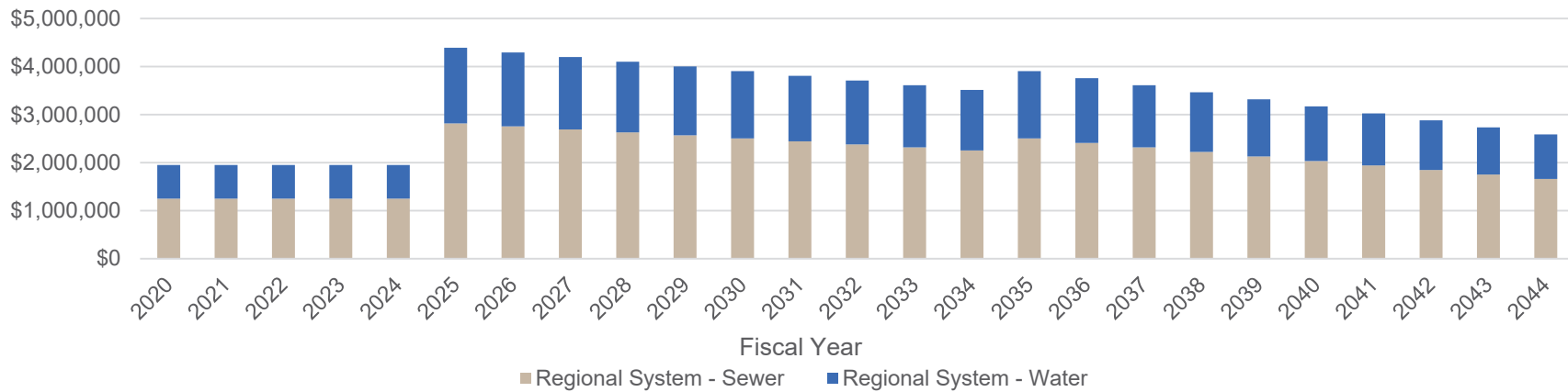
## Recent Transactions Relating to Underlying Notes and MOUs

- City of Detroit has executed two transactions that have changed nature of underlying B Note and C Note Obligations:
  - On March 14, 2018, the City funded and escrowed amounts for full repayment of the C Notes at par plus accrued interest using General Funds of Detroit
  - On December 13, 2018, the City issued Financial Recovery Refunding Bonds (“2018 Refunding Bonds”) for the purpose of purchasing a portion of the B Notes
    - Proceeds of the 2018 Refunding Bonds were used to purchase and cancel \$197,652,356 of the B Notes, which had been tendered pursuant to an offer and acceptance of tender offers
- In each case, a portion of the underlying debt is related to DWSD obligations GLWA is contractually obligated to pay via the Lease Agreements
- City of Detroit has entered into two separate MOUs with enterprise funds originally allocated responsibility for repayment of portions of the B Notes and C Notes (B Notes: DWSD, DDOT, Airport, Parking, Library; C Notes: DWSD, DDOT, Library)
- Each MOU commits each enterprise fund to continue payments to the City on allocated B Note and C Note debt according to original terms, with minor adjustments to payment dates

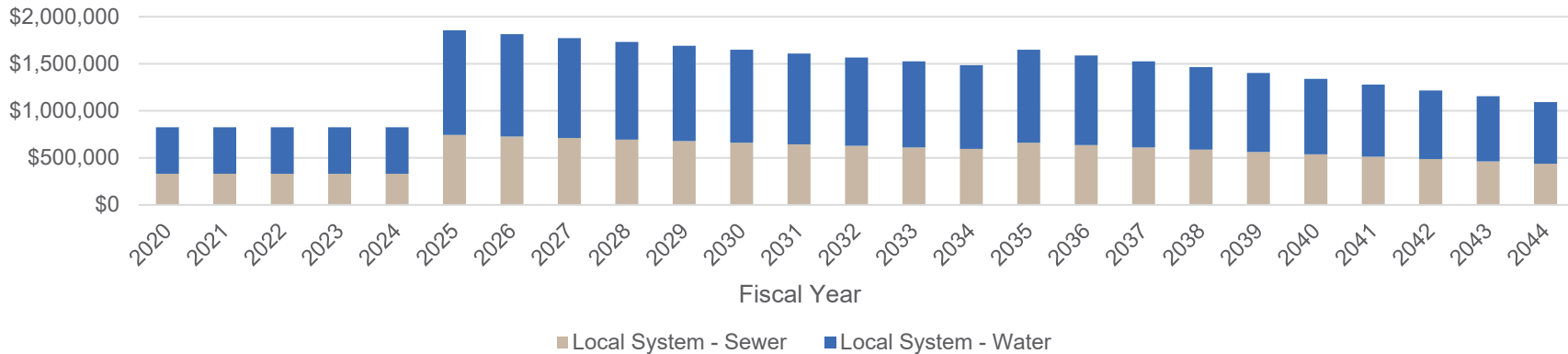


## Future Payments on B-1 Notes per MOU – Allocated to Local and Regional Systems

Regional System Payments on B-1 Notes



Local System Payments on B-1 Notes

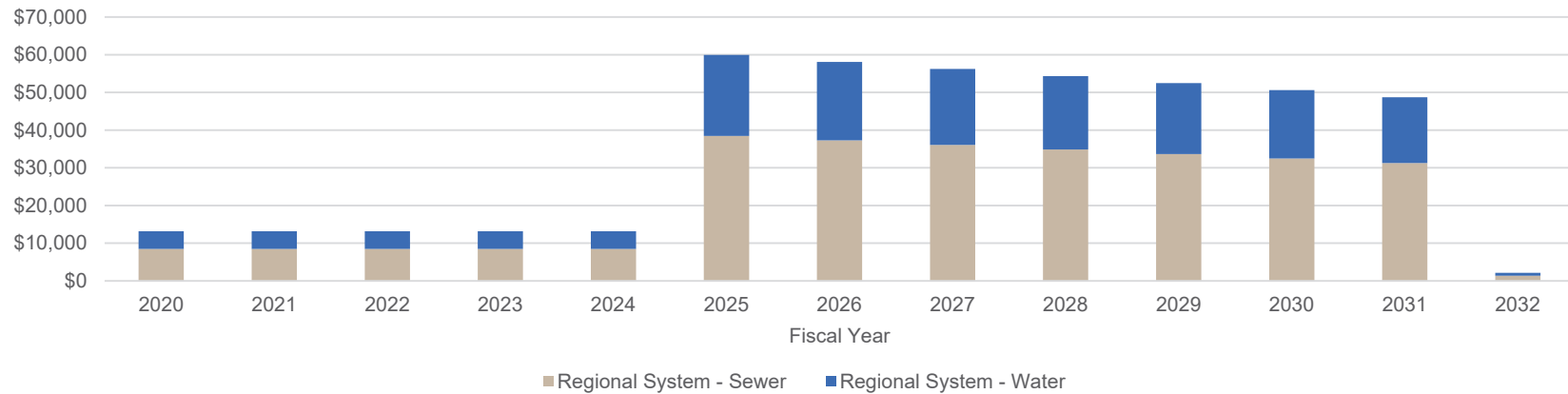




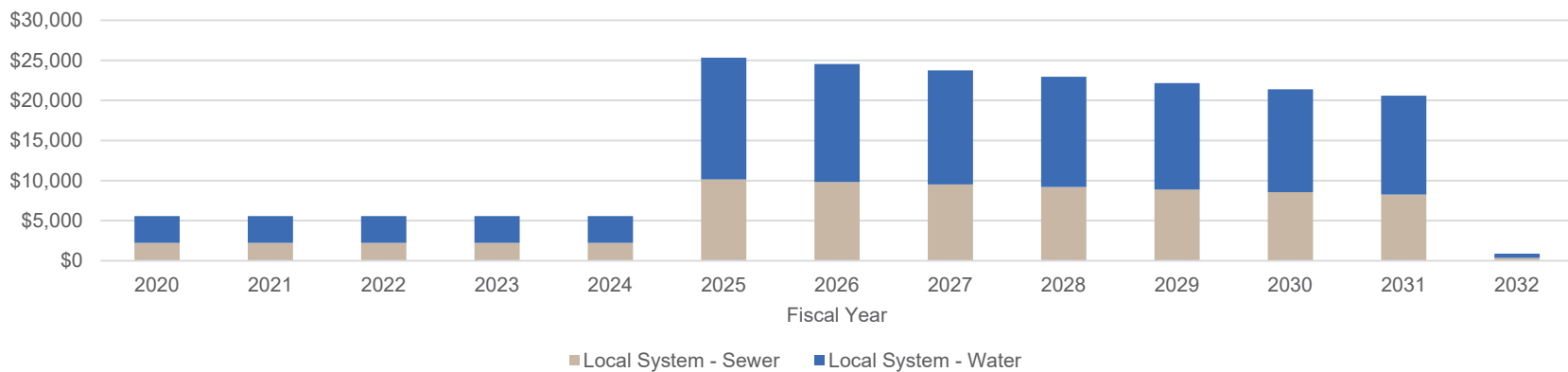


## Future Payments on B-2 Notes per MOU – Allocated to Local and Regional Systems

Regional System Payments on B-2 Notes

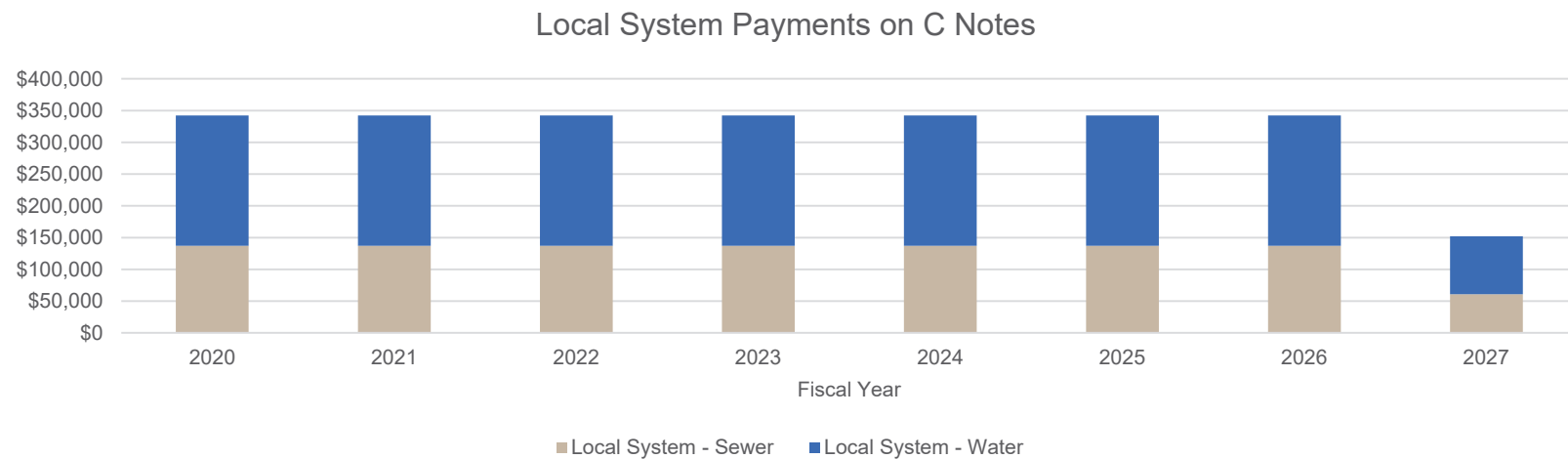
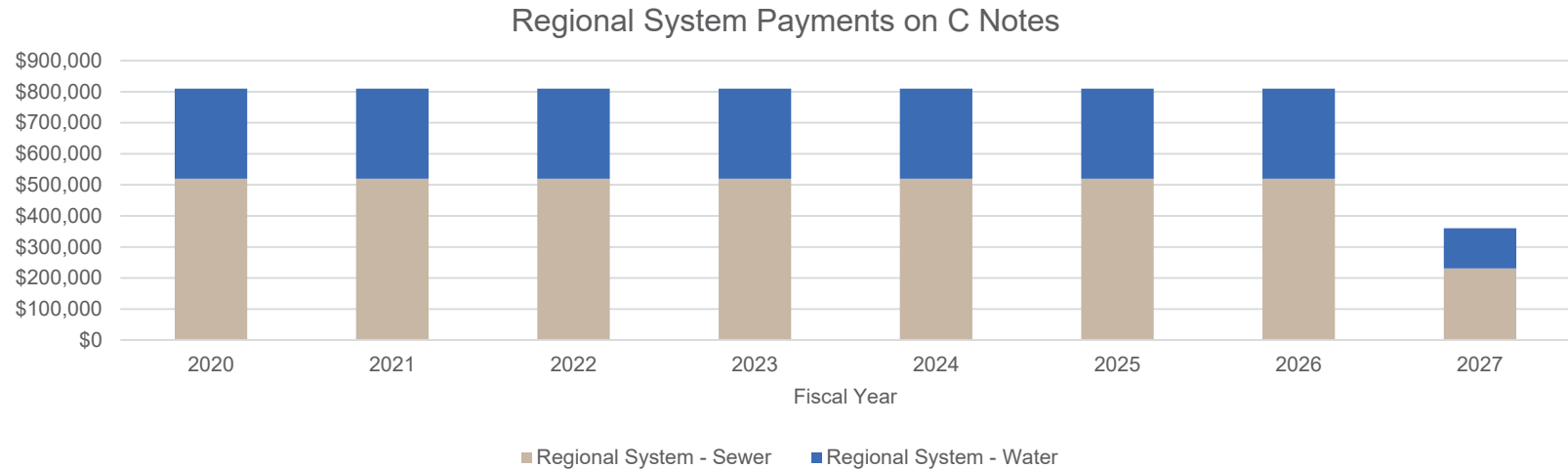


Local System Payments on B-2 Notes





## Future Payments on C Notes per MOU – Allocated to Local and Regional Systems



*Note: payments shown represent the contractual payments due by DWSD, a portion of which are payable by GLWA pursuant to the terms of the Lease Agreements..*



## **B Note and C Note Summary and Conclusion**

- ◆ History of B Note and C Note transactions presented as information only; no actions are required at this time
- ◆ PFM and GLWA staff continue to monitor the outstanding liability in regards to future opportunities for refinancing and/or prepayment with the City



# **2019 Refunding Opportunity Update**



## Current Interest Rate Snapshot

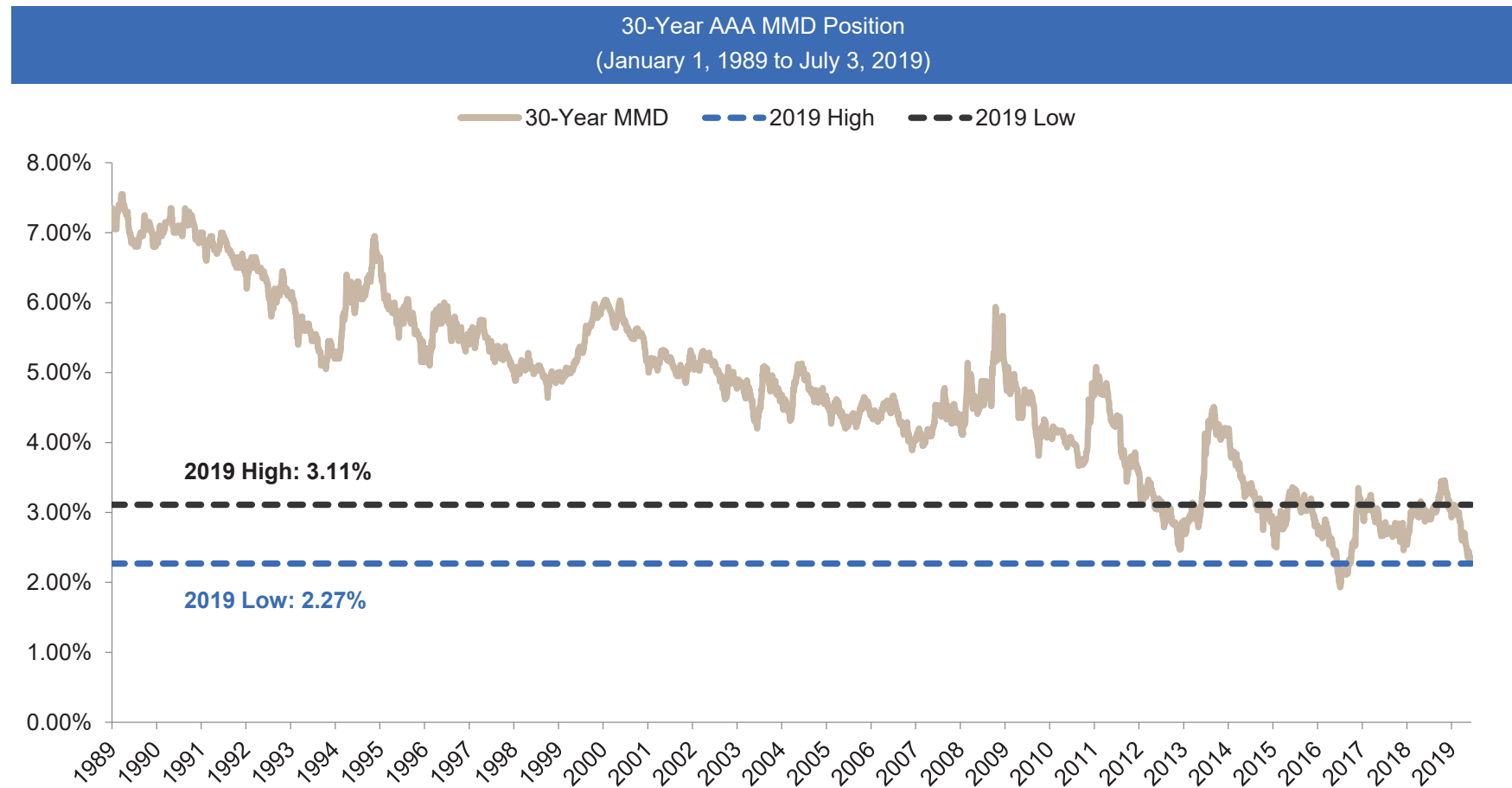
As of July 3, 2019															
Year	Maturity	UST	AAA MMD	AA MMD	AA Spread	A MMD	A Spread	Year	Maturity	UST	AAA MMD	AA MMD	AA Spread	A MMD	A Spread
1-Year	2020	1.91%	1.21%	1.22%	0.01%	1.33%	0.12%	16-Year	2035	-	1.92%	2.10%	0.18%	2.29%	0.37%
2-Year	2021	1.77%	1.22%	1.24%	0.02%	1.39%	0.17%	17-Year	2036	-	1.96%	2.14%	0.18%	2.33%	0.37%
3-Year	2022	1.71%	1.23%	1.26%	0.03%	1.44%	0.21%	18-Year	2037	-	2.00%	2.18%	0.18%	2.37%	0.37%
4-Year	2023	-	1.24%	1.29%	0.05%	1.50%	0.26%	19-Year	2038	-	2.04%	2.22%	0.18%	2.41%	0.37%
5-Year	2024	1.74%	1.28%	1.34%	0.06%	1.57%	0.29%	20-Year	2039	2.25%	2.08%	2.26%	0.18%	2.45%	0.37%
6-Year	2025	-	1.33%	1.41%	0.08%	1.63%	0.30%	21-Year	2040	-	2.12%	2.30%	0.18%	2.49%	0.37%
7-Year	2026	1.83%	1.39%	1.48%	0.09%	1.70%	0.31%	22-Year	2041	-	2.16%	2.34%	0.18%	2.53%	0.37%
8-Year	2027	-	1.46%	1.56%	0.10%	1.78%	0.32%	23-Year	2042	-	2.19%	2.37%	0.18%	2.56%	0.37%
9-Year	2028	-	1.53%	1.64%	0.11%	1.86%	0.33%	24-Year	2043	-	2.21%	2.39%	0.18%	2.58%	0.37%
10-Year	2029	1.96%	1.60%	1.72%	0.12%	1.93%	0.33%	25-Year	2044	-	2.22%	2.40%	0.18%	2.59%	0.37%
11-Year	2030	-	1.67%	1.81%	0.14%	2.00%	0.33%	26-Year	2045	-	2.23%	2.41%	0.18%	2.60%	0.37%
12-Year	2031	-	1.72%	1.88%	0.16%	2.06%	0.34%	27-Year	2046	-	2.24%	2.42%	0.18%	2.61%	0.37%
13-Year	2032	-	1.78%	1.95%	0.17%	2.12%	0.34%	28-Year	2047	-	2.25%	2.43%	0.18%	2.62%	0.37%
14-Year	2033	-	1.83%	2.01%	0.18%	2.18%	0.35%	29-Year	2048	-	2.26%	2.44%	0.18%	2.63%	0.37%
15-Year	2034	2.21%	1.88%	2.06%	0.18%	2.25%	0.37%	30-Year	2049	2.47%	2.27%	2.45%	0.18%	2.64%	0.37%

Source: Thomson Reuters; United States Treasury



## Interest Rates in 2019

Long-term interest rates in 2019 have remained within a historically low range, with the 30-year MMD remaining between a maximum of 3.11% and a minimum of 2.27%

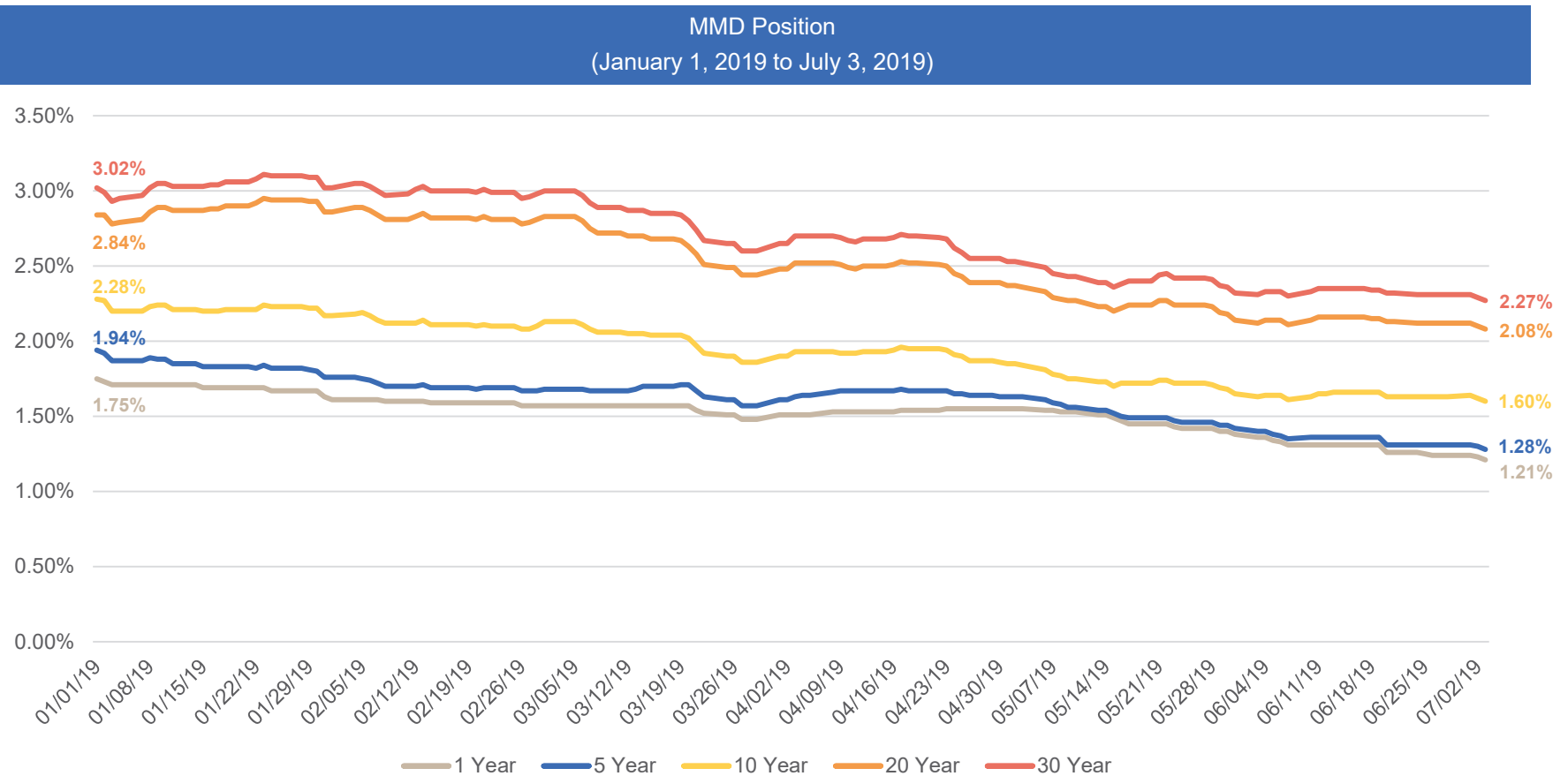


Source: Thomson Reuters



## MMD in 2019

MMD rates in 2019 have steadily declined with reductions of 0.55% - 0.75% across the curve



Source: Thomson Reuters



## GLWA Taxable and Tax-Exempt Borrowing Rates







## Interest Rate Forecasts

- With recent comments from FOMC members and the current economic outlook, the federal funds futures market is currently pricing a 100% chance of a rate cut at the July 31 FOMC meeting with the market pricing in the potential for three cuts by the end of the year

Bond Yield Forecast (As of July 3, 2019)							
Average Forecasts	Current	Q3 19	Q4 19	Q1 20	Q2 20	Q3 20	Q4 20
30-Year UST	2.47%	2.66%	2.74%	2.79%	2.82%	2.88%	2.90%
10-Year UST	1.96%	2.21%	2.31%	2.37%	2.39%	2.47%	2.49%
5-Year UST	1.75%	2.02%	2.13%	2.17%	2.20%	2.27%	2.29%
2-Year UST	1.78%	1.93%	2.02%	2.07%	2.07%	2.14%	2.15%
3M LIBOR	2.29%	2.31%	2.30%	2.28%	2.25%	2.26%	2.25%
Fed Funds Target Rate (Upper)	2.50%	2.25%	2.15%	2.10%	2.05%	2.05%	2.05%
Fed Funds Target Rate (Lower)	2.25%	1.99%	1.89%	1.84%	1.80%	1.80%	1.79%

Source: Bloomberg



## GLWA Fixed Rate Callable Debt (Call Dates Through 2022)

Water						
Series Name	Indenture	Lien	Tax Status	Outstanding (\$000s)	Next Call Date	Callable Par (\$000s)
Series 2011A Senior	Water	Senior	Tax-Exempt	293,970	7/1/2021	289,605
Series 2011B Senior	Water	Senior	Taxable	3,950	7/1/2021	2,295
Series 2011C Senior	Water	Senior	Tax-Exempt	75,145	7/1/2021	74,125

Sewer						
Series Name	Indenture	Lien	Tax Status	Outstanding (\$000s)	Next Call Date	Callable Par (\$000s)
Series 2012A Senior	Sewer	Senior	Tax-Exempt	495,175	7/1/2022	437,795
Series 2014C-1 Senior	Sewer	Senior	Tax-Exempt	123,220	7/1/2022	123,200
Series 2014C-2 Senior	Sewer	Senior	AMT	27,470	7/1/2022	27,450
Series 2005A Sec.(Call Mod) <sup>1</sup>	Sewer	Second	Tax-Exempt	31,785	7/1/2021	31,785
Series 2006B Sec.(Call Mod) <sup>2</sup>	Sewer	Second	Tax-Exempt	55,000	7/1/2021	55,000

Note: excludes series of debt with callable amounts of \$100,000 or less outstanding.

1. The call date on \$31.8 million of the series 2005A Sewer Bonds was modified to July 1, 2021.

2. The call date on \$55.0 million of the Series 2006B Sewer Bonds was modified to July 1, 2021.



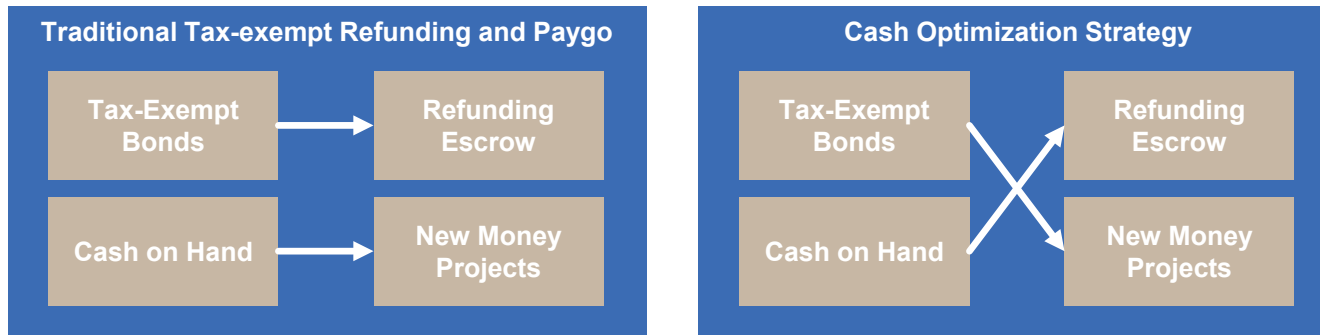
## Refunding Opportunities in the Wake of Tax Reform

- The elimination of tax-exempt advance refundings and the subsequent dependence on taxable bonds to advance refund outstanding debt has generally led to increased cost and decreased the viability of issuing traditional advance refunding bonds
- Despite increased borrowing costs, savings is available to GLWA by issuing taxable advance refunding bonds
- While taxable advance refundings allow GLWA to generate debt service savings by taking advantage of current low interest rates, GLWA would forgo the benefit of tax-exempt financing
- If rates stayed the same as they are now, tax-exempt current refunding's at the call dates could generate \$26 million of additional savings for Water and \$69 million of additional savings for Sewer on an NPV basis
- This represents an implied interest rate penalty of up to 120 basis points for “locking in” savings today vs waiting and taking on interest rate risk
- Additional loss of future potential refinancing savings on long-dated bonds (taxable bonds are typically issued as par coupon bonds with a make-whole call option as opposed to tax-exempt premium coupon bonds with a 10 year par call)
- Current refundings (within 90 days of call date on refunded debt) will be more efficient than advance refundings (no additional escrow cost) and ultimately could afford more savings than tax-exempt advance refundings that are no longer permissible due to tax reform
- Does involve more interest rate risk for GLWA between now and current refunding date
- GLWA would get the benefit of “moving down the curve” for financing rates, and could always look at taxable advance refunding options
- Effective on March 1, Department of Treasury suspended the sale of SLGS as part of “extraordinary measures” to prevent the United States from defaulting on its obligations, which requires open market escrows for any defeasance or taxable refunding currently



## Indirect Refundings via Cash Optimization Strategies

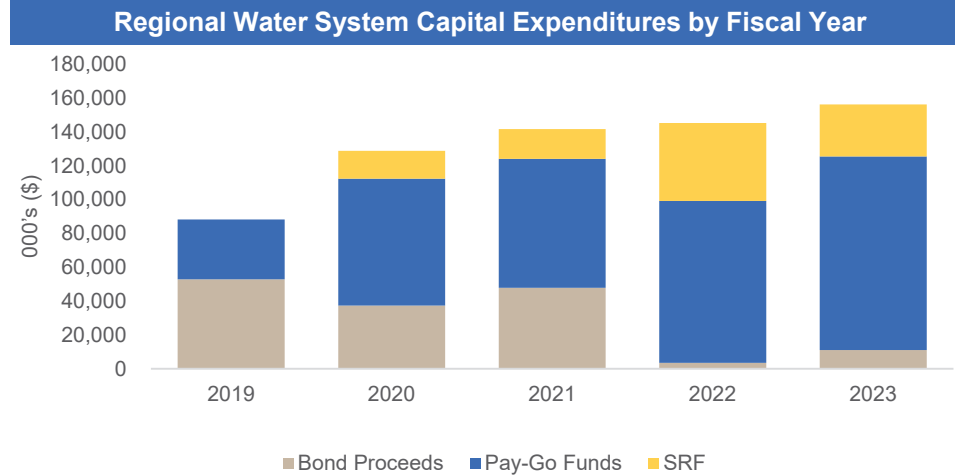
- GLWA could pursue a strategy to optimize the use of cash on hand to defease callable bonds and instead issue tax-exempt new money bonds to fund projects that would have otherwise been funded by pay-go



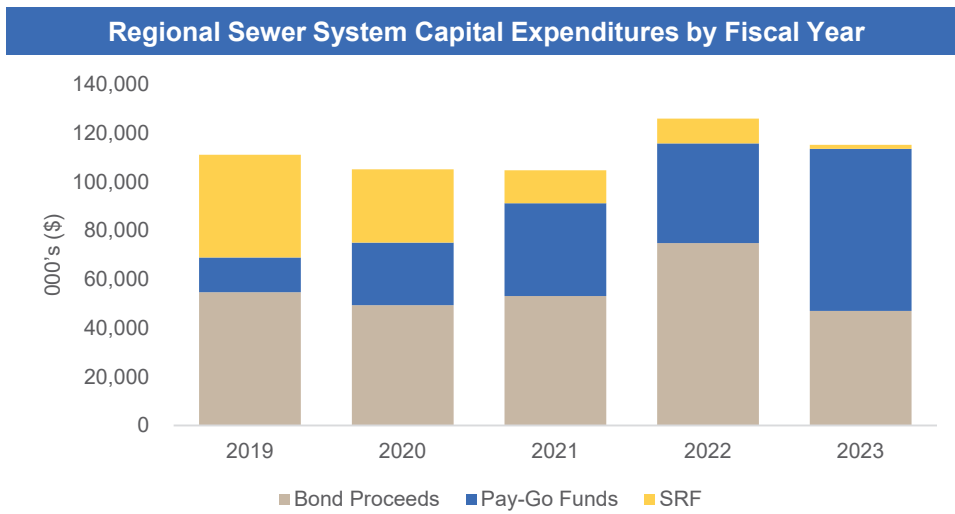
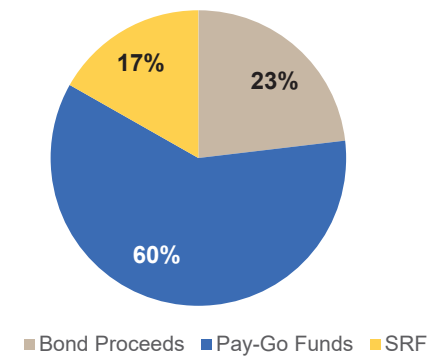
- Benefits:
  - Could allow GLWA to lock in higher savings than a taxable refunding today, while reducing rate risk versus a tax-exempt current refunding later
- General considerations:
  - Executing the call option removes ability to execute a tax-exempt current refunding (with potentially higher savings) later
  - Defeasance escrow must be purchased before the new money bonds are sold, and tax counsel will require some separation between the timing of the defeasance escrow purchase and the sale of the bonds, exposing GLWA to interest rate risk in the intervening period
- GLWA-specific considerations:
  - New money bonds must fund Regional System projects to avoid entanglement of Local System-allocable debt
  - GLWA has limited near-term planned pay-go funding of debt-eligible projects that could be redirected for use in a cash optimization
    - Significant portions of limited I&E pay-go funding available is allocable to Budgeted Capital Outlays and Specifically Designated I&E Projects



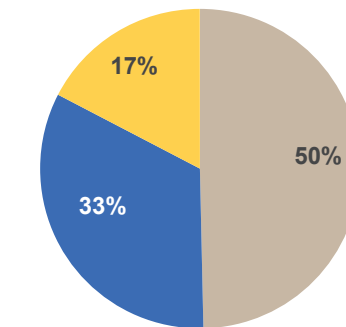
## Projected Regional Capital Spending and Sources of Funds



**Regional Water System FY 2019-2023  
CIP Application of Funding Sources**



**Regional Sewer System FY 2019-2023  
CIP Application of Funding Sources**





## Taxable Advance Refunding Candidate Summary

	Sewer System Debt Generating Savings (Taxable Advance Refunding)			Water System Debt Generating Savings (Taxable Advance Refunding)		
Refunded Series	Series	Call Date	Par (\$000s)	Series	Call Date	Par (\$000s)
Senior	2012A	7/1/2022	419,810	2011A	7/1/2021	289,605
	2014C-1	7/1/2022	123,200	2011B	7/1/2021	2,295
	2014C-2	7/1/2022	27,450	2011C	7/1/2021	74,125
<b>Total Senior</b>			<b>570,460</b>			<b>366,025</b>
Second	2005A	7/1/2021	31,785	-	-	-
	2006B	7/1/2021	55,000			
<b>Total Second</b>			<b>86,785</b>			<b>-</b>
<b>Total Refunded</b>			<b>657,245</b>			<b>366,025</b>

*Note: Series 2012A Sewer Bonds partially funded Extraordinary Working Capital projects. The ability to refinance the portion of the Series 2012A Bonds related to the Extraordinary Working Capital on a tax-exempt basis is subject to opinion of Tax Counsel.*



## Water – Senior Series 2011A/B/C (Taxable Advance Refunding)

Water – Senior Lien   Series 2011A   Refunding Screen   (\$ in 000s)									
Candidate				New Yield	PV Savings		Negative Arb. (\$ in 000s)	Savings Efficiency	Breakeven to TE Current Refunding
Maturity	Par (\$ in 000s)	Rate	Call Date		\$ in 000s	%			
7/1/2027	3,930	5.25%	7/1/2021	2.66%	433	11.03%	60	87.90%	0.74%
7/1/2031	14,540	5.00%	7/1/2021	2.83%	1,805	12.41%	264	87.30%	
7/1/2036	27,855	5.00%	7/1/2021	3.29%	3,831	13.75%	727	84.10%	
7/1/2037	20,845	5.75%	7/1/2021	3.47%	4,618	22.15%	613	88.30%	
7/1/2041	222,435	5.25%	7/1/2021	3.49%	40,720	18.31%	6,602	86.00%	
Candidates meeting thresholds									
July 2019	289,605				51,407	17.75%	8,265	86.15%	
March 2019	289,605				23,366	8.07%	9,338	71.40%	
Water – Senior Lien   Series 2011B   Refunding Screen   (\$ in 000s)									
Candidate				New Yield	PV Savings		Negative Arb. (\$ in 000s)	Savings Efficiency	Breakeven to TE Current Refunding
Maturity	Par (\$ in 000s)	Rate	Call Date		\$ in 000s	%			
7/1/2033	2,295	6.00%	7/1/2021	2.62%	352	15.34%	34	91.20%	1.15%
Candidates meeting thresholds									
July 2019	2,295				352	15.34%	34	91.20%	
March 2019	2,295				213	9.28%	46	82.20%	
Water – Senior Lien   Series 2011C   Refunding Screen   (\$ in 000s)									
Candidate				New Yield	PV Savings		Negative Arb. (\$ in 000s)	Savings Efficiency	Breakeven to TE Current Refunding
Maturity	Par (\$ in 000s)	Rate	Call Date		\$ in 000s	%			
7/1/2023	2,000	5.25%	7/1/2021	2.19%	79	3.95%	14	85.10%	0.82%
7/1/2024	10,490	5.25%	7/1/2021	2.29%	655	6.24%	91	87.80%	
7/1/2025	9,645	5.25%	7/1/2021	2.38%	804	8.33%	99	89.00%	
7/1/2027	5,000	5.25%	7/1/2021	2.66%	551	11.03%	76	87.90%	
7/1/2027	4,585	4.50%	7/1/2021	2.66%	326	7.11%	69	82.50%	
7/1/2041	42,405	5.00%	7/1/2021	3.49%	6,298	14.85%	1,252	83.40%	
Candidates meeting thresholds									
July 2019	74,125				8,713	11.75%	1,601	84.47%	
March 2019	74,125				3,294	4.44%	1,924	63.10%	

Assumptions: Matched lien refunding with Delivery Date of October 1, 2019; SLGS escrow; refunding bonds issued with par coupon structure and a make whole call; COI and UD of \$5/\$1000 and \$5/\$1000, respectively; uniform savings structure; no Debt Service Reserve Fund releases or deposits; Interest rates as of July 2, 2019; PV at Arbitrage Yield. Totals show sum of selected bonds. Breakeven to TE Current Refunding column shows uniform increase in tax-exempt yields between now and the call date for the specific series of bonds that would cause the same set of refunding candidates to generate the same level of PV savings on a tax-exempt current refunding basis as a taxable advance refunding.



## Base Case Taxable Advance Refunding – Water System

### Savings Summary

- Over \$87 million in gross cashflow savings can be achieved (>\$62 million present value)
- Potential to accelerate savings as desired

### Refunding Candidates

- Includes all bonds generating >3% savings
- Refunding on a tax-exempt basis not an option under current tax law

### Assumptions

- Uninsured, matched lien refunding
- Interest rates as of July 2, 2019
- Contribution of accrued interest from DS fund
- Conservatively assumes no DSRF release
- Hypothetical SLGS escrow as of July 2, 2019
- Savings structured for level aggregate savings
- Par coupon structure
- Assumes make whole call option

### Refunding Results

Delivery Date:	10/1/2019
Call Date:	MWC
Advance Refunded Par (\$):	366,025,000
NPV Savings (\$):	62,023,822
NPV Savings as % :	16.94%
Negative Arbitrage (\$) <sup>1</sup> :	(10,209,232)
Escrow Efficiency <sup>1</sup> :	85.87%
TIC:	3.43%
WAM:	16.9 yrs
Refunded Bonds WAM:	17.8 yrs

Date	Prior Net Cashflow (\$)	Refunding DS (\$)	Savings (\$)
7/1/2020	19,091,363	16,063,128	3,028,234
7/1/2021	19,091,363	15,050,777	4,040,586
7/1/2022	19,296,363	15,258,925	4,037,438
7/1/2023	21,294,063	17,251,913	4,042,150
7/1/2024	29,626,163	25,588,144	4,038,019
7/1/2025	28,229,938	24,191,704	4,038,234
7/1/2026	18,037,475	13,999,793	4,037,683
7/1/2027	31,553,175	27,510,837	4,042,338
7/1/2028	21,258,125	17,218,670	4,039,455
7/1/2029	21,042,925	17,003,696	4,039,229
7/1/2030	20,293,075	16,252,601	4,040,475
7/1/2031	20,250,375	16,210,745	4,039,631
7/1/2032	20,095,825	16,053,499	4,042,327
7/1/2033	20,039,625	15,999,019	4,040,607
7/1/2034	19,746,925	15,709,154	4,037,771
7/1/2035	19,696,425	15,655,848	4,040,577
7/1/2036	28,909,175	24,868,531	4,040,644
7/1/2037	43,511,675	39,470,381	4,041,294
7/1/2038	73,184,588	69,143,088	4,041,500
7/1/2039	73,186,800	69,145,504	4,041,296
7/1/2040	73,191,225	69,150,224	4,041,001
7/1/2041	71,899,250	67,857,360	4,041,890
	712,525,913	624,653,537	87,872,376

1. Negative arbitrage and escrow efficiency calculated for illustrative purposes assuming earnings cap on investments at refunding bond yield.





## Sewer – Senior Series 2012A / 2014C-1 & 2 (Taxable Advance Refunding)

Sewer – Senior Lien   Series 2012A   Refunding Screen   (\$ in 000s)									
Candidate				New Yield	PV Savings		Negative Arb. (\$ in 000s)	Savings Efficiency	Breakeven to TE Current Refunding
Maturity	Par (\$ in 000s)	Rate	Call Date		\$ in 000s	%			
7/1/2023	17,985	5.00%	7/1/2022	2.19%	32	0.17%	237	11.90%	1.18%
7/1/2026	9,170	5.25%	7/1/2022	2.53%	570	6.22%	207	73.30%	
7/1/2027	2,310	5.25%	7/1/2022	2.66%	172	7.47%	61	74.00%	
7/1/2032	65,730	5.00%	7/1/2022	2.76%	7,118	10.83%	2,177	76.60%	
7/1/2039	292,865	5.25%	7/1/2022	3.06%	40,477	13.82%	14,085	74.20%	
7/1/2039	49,735	5.00%	7/1/2022	3.47%	5,514	11.09%	2,386	69.80%	

### Candidates meeting thresholds

July 2019	419,810				53,851	12.83%	18,915	74.01%	
March 2019	358,595				16,907	4.71%	17,071	49.80%	

Sewer – Senior Lien   Series 2014C-1   Refunding Screen   (\$ in 000s)									
Candidate				New Yield	PV Savings		Negative Arb. (\$ in 000s)	Savings Efficiency	Breakeven to TE Current Refunding
Maturity	Par (\$ in 000s)	Rate	Call Date		\$ in 000s	%			
7/1/2044	123,215	5.00%	7/1/2022	3.52%	16,240	13.18%	6,072	72.80%	0.77%

### Candidates meeting thresholds

June 2019	123,215				16,240	13.18%	6,072	72.80%	
No Savings in March 2019									

Sewer – Senior Lien   Series 2014C-2   Refunding Screen   (\$ in 000s)									
Candidate				New Yield	PV Savings		Negative Arb. (\$ in 000s)	Savings Efficiency	Breakeven to TE Current Refunding
Maturity	Par (\$ in 000s)	Rate	Call Date		\$ in 000s	%			
7/1/2044	27,465	5.00%	7/1/2022	3.52%	3,614	13.16%	1,352	72.80%	0.77%

### Candidates meeting thresholds

June 2019	27,465				3,614	13.16%	1,352	72.80%	
No Savings in March 2019									

Assumptions: Matched lien refunding with Delivery Date of October 1, 2019; SLGS escrow; refunding bonds issued with par coupon structure and a make whole call; COI and UD of \$5/\$1000 and \$5/\$1000, respectively; uniform savings structure; no Debt Service Reserve Fund releases or deposits; Interest rates as of July 2, 2019; PV at Arbitrage Yield. Totals show sum of selected bonds. Breakeven to TE Current Refunding column shows uniform increase in tax-exempt yields between now and the call date for the specific series of bonds that would cause the same set of refunding candidates to generate the same level of PV savings on a tax-exempt current refunding basis as a taxable advance refunding.



## Sewer – Second Series 2005A / 2006B (Taxable Advance Refunding)

Sewer – Second Lien   Series 2005A  Refunding Screen   (\$ in 000s)									
Candidate				New Yield	PV Savings		Negative Arb. (\$ in 000s)	Savings Efficiency	Breakeven to TE Current Refunding
Maturity	Par (\$ in 000s)	Rate	Call Date		\$ in 000s	%			
7/1/2034	15,490	5.00%	7/1/2021	3.16%	2,322	14.99%	369	86.30%	
7/1/2035	16,295	5.00%	7/1/2021	3.57%	1,718	10.54%	503	77.30%	
Candidates meeting thresholds									
June 2019	31,785				4,039	12.71%	872	82.24%	
March 2019	31,785				1,437	4.52%	992	59.20%	

Sewer – Second Lien   Series 2006B   Refunding Screen   (\$ in 000s)									
Candidate				New Yield	PV Savings		Negative Arb. (\$ in 000s)	Savings Efficiency	Breakeven to TE Current Refunding
Maturity	Par (\$ in 000s)	Rate	Call Date		\$ in 000s	%			
7/1/2034	7,890	5.00%	7/1/2021	3.16%	1,183	14.99%	201	83.40%	
7/1/2035	22,980	5.00%	7/1/2021	3.57%	2,422	10.54%	735	73.20%	
7/1/2036	24,130	5.00%	7/1/2021	3.57%	2,736	11.34%	772	74.60%	
Candidates meeting thresholds									
June 2019	55,000				6,341	11.53%	1,642	79.43%	
March 2019	30,870				1,274	4.13%	988	56.30%	

Assumptions: Matched lien refunding with Delivery Date of October 1, 2019; SLGS escrow; refunding bonds issued with par coupon structure and a make whole call; COI and UD of \$5/\$1000 and \$5/\$1000, respectively; uniform savings structure; no Debt Service Reserve Fund releases or deposits; Interest rates as of July 2, 2019; PV at Arbitrage Yield. Totals show sum of selected bonds. Breakeven to TE Current Refunding column shows uniform increase in tax-exempt yields between now and the call date for the specific series of bonds that would cause the same set of refunding candidates to generate the same level of PV savings on a tax-exempt current refunding basis as a taxable advance refunding.



## Base Case Taxable Refunding – Sewer System

### Savings Summary

- Over \$127 million in gross cashflow savings can be achieved (>\$87 million present value)
- Potential to accelerate savings as desired

### Refunding Candidates

- Includes all bonds generating >3% savings
- Refunding on a tax-exempt basis not an option under current tax law

### Assumptions

- Uninsured, matched lien refunding
- Interest rates as of July 2, 2019
- Contribution of accrued interest from DS fund
- Conservatively assumes no DSRF release
- Hypothetical SLGS escrow as of July 2, 2019
- Savings structured for level aggregate savings by lien
- Par coupon structure
- Assumes make whole call option

### Refunding Results

Delivery Date:	10/1/2019
Call Date:	MWC
Advance Refunded Par (\$):	657,245,000
NPV Savings (\$):	87,691,345
NPV Savings as % :	13.34%
Negative Arbitrage (\$) <sup>1</sup> :	(28,717,708)
Escrow Efficiency <sup>1</sup> :	75.33%
TIC:	3.44%
WAM:	17.1 yrs
Refunded Bonds WAM:	18.4 yrs

Date	Prior Net Cashflow (\$)	Refunding DS (\$)	Savings (\$)
7/1/2020	33,623,113	29,547,116	4,075,997
7/1/2021	33,623,113	28,188,123	5,434,990
7/1/2022	33,623,113	28,188,800	5,434,313
7/1/2023	33,633,113	28,197,959	5,435,154
7/1/2024	33,632,613	28,196,487	5,436,126
7/1/2025	33,632,113	28,198,403	5,433,710
7/1/2026	42,801,613	37,368,773	5,432,840
7/1/2027	35,459,688	30,022,419	5,437,269
7/1/2028	39,042,913	33,609,087	5,433,826
7/1/2029	34,246,663	28,814,732	5,431,931
7/1/2030	39,050,163	33,616,487	5,433,676
7/1/2031	46,114,663	40,682,872	5,431,791
7/1/2032	69,649,913	64,218,776	5,431,137
7/1/2033	29,738,913	24,307,790	5,431,123
7/1/2034	54,588,413	49,158,862	5,429,551
7/1/2035	69,206,738	63,775,489	5,431,249
7/1/2036	51,981,888	46,549,408	5,432,480
7/1/2037	132,256,388	127,661,913	4,594,475
7/1/2038	132,253,288	127,657,989	4,595,299
7/1/2039	132,254,275	127,655,644	4,598,632
7/1/2040	34,799,000	30,200,192	4,598,808
7/1/2041	34,795,250	30,195,760	4,599,490
7/1/2042	34,793,500	30,195,000	4,598,500
7/1/2043	34,795,250	30,196,680	4,598,570
7/1/2044	34,581,750	29,984,568	4,597,182
	1,284,177,437	1,156,389,325	127,788,112

1. Negative arbitrage and escrow efficiency calculated for illustrative purposes assuming earnings cap on investments at refunding bond yield.



## Summary of Potential Refunding Opportunities

Although significant savings can be achieved through a taxable refinancing today of certain GLWA bonds, PFM would continue to recommend waiting on the refinancing to take advantage of tax-exempt options in late 2020 or early 2021.

- While there is interest rate risk inherent in waiting 18 months to execute a tax-exempt current refunding instead of a near-term taxable refunding, most interest rate projections suggest that waiting is a better choice
  - By issuing taxable refinancing bonds now, GLWA would forego benefits of tax-exemption and “rolling down the yield curve” an additional year, as well as incur negative arbitrage in the escrows
  - Additionally, taxable bonds would result in reduced optionality on refunding bonds themselves (typically par coupon, with a make whole call)
- While potential savings numbers look attractive for a cash optimization refinancing strategy, the strategy requires near-term regional new money projects that would otherwise be financed with cash
  - A significant portion of GLWA’s near-term capital plan is expected to be funded with low interest rate SRF loans
  - Large portion of overall capital spending is related to DWSD