

BOND PRICING

**City of Manitowoc (AA-/AA BAM Insured)
General Obligation Refunding Bonds - FINAL
BQ; Callable 2/1/2028 or any Date Thereafter**

Bond Component	Maturity Date	Amount	Rate	Yield	Price	Yield to Maturity	Call Date	Call Price	Premium (-Discount)
Serial Bonds:									
	02/01/2021	330,000	3.000%	1.200%	101.319				4,352.70
	02/01/2023	195,000	3.000%	1.250%	104.696				9,157.20
	02/01/2024	200,000	3.000%	1.300%	106.183				12,366.00
	02/01/2025	1,065,000	3.000%	1.370%	107.453				79,374.45
	02/01/2026	1,105,000	3.000%	1.450%	108.504				93,969.20
	02/01/2027	1,130,000	2.000%	1.550%	102.868				32,408.40
	02/01/2028	1,150,000	2.000%	1.700%	102.165				24,897.50
	02/01/2029	1,170,000	2.000%	1.800%	101.437 C	1.821%	02/01/2028	100.000	16,812.90
	02/01/2030	1,195,000	2.000%	1.850%	101.075 C	1.879%	02/01/2028	100.000	12,846.25
		<u>7,540,000</u>							<u>286,184.60</u>
Term Bond due 2033:									
	02/01/2031	235,000	2.125%	2.150%	99.721				(655.65)
	02/01/2032	240,000	2.125%	2.150%	99.721				(669.60)
	02/01/2033	<u>245,000</u>	2.125%	2.150%	99.721				<u>(683.55)</u>
		<u>720,000</u>							<u>(2,008.80)</u>
Term Bond due 2035:									
	02/01/2034	250,000	2.250%	2.300%	99.376				(1,560.00)
	02/01/2035	<u>255,000</u>	2.250%	2.300%	99.376				<u>(1,591.20)</u>
		<u>505,000</u>							<u>(3,151.20)</u>
Term Bond due 2037:									
	02/01/2036	265,000	2.500%	2.450%	100.348 C	2.474%	02/01/2028	100.000	922.20
	02/01/2037	<u>270,000</u>	2.500%	2.450%	100.348 C	2.474%	02/01/2028	100.000	<u>939.60</u>
		<u>535,000</u>							<u>1,861.80</u>
Term Bond due 2039:									
	02/01/2038	275,000	2.500%	2.550%	99.256				(2,046.00)
	02/01/2039	<u>285,000</u>	2.500%	2.550%	99.256				<u>(2,120.40)</u>
		<u>560,000</u>							<u>(4,166.40)</u>
		<u>9,860,000</u>							<u>278,720.00</u>

Dated Date	05/05/2020	
Delivery Date	05/05/2020	
First Coupon	02/01/2021	
Par Amount	9,860,000.00	
Premium	278,720.00	
Production	10,138,720.00	102.826775%
Underwriter's Discount	(98,600.00)	(1.000000%)
Purchase Price	10,040,120.00	101.826775%
Accrued Interest		
Net Proceeds	10,040,120.00	

SOURCES AND USES OF FUNDS

**City of Manitowoc (AA-/AA BAM Insured)
General Obligation Refunding Bonds - FINAL
BQ; Callable 2/1/2028 or any Date Thereafter**

Dated Date 05/05/2020
Delivery Date 05/05/2020

Sources:

Bond Proceeds:	
Par Amount	9,860,000.00
Net Premium	278,720.00
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	10,138,720.00
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Uses:

Cost of Issuance:	
Q&B Bond Counsel	25,750.00
S&P Rating	13,770.00
Q&B Disclosure Counsel	9,000.00
Baird Official Statement & Clearing	4,080.00
Associated Trust Fiscal Agent	325.00
Day Loan	273.89
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	53,198.89
Underwriter's Discount:	
Underwriter's Discount	98,600.00
Other Delivery Date Expenses:	
Bond Insurance - BAM	21,292.84
Other Uses of Funds:	
NAN Principal to be Refunded on 5/21/20	9,905,000.00
NAN Interest to be Refunded on 5/21/20	60,079.33
Rounding	548.94
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	9,965,628.27
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	10,138,720.00
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BOND DEBT SERVICE

**City of Manitowoc (AA-/AA BAM Insured)
General Obligation Refunding Bonds - FINAL
BQ; Callable 2/1/2028 or any Date Thereafter**

Period Ending	Principal	Coupon	Interest	Debt Service	Annual Debt Service
05/05/2020					
02/01/2021	330,000	3.000%	172,742.98	502,742.98	
08/01/2021			111,943.75	111,943.75	614,686.73
02/01/2022			111,943.75	111,943.75	
08/01/2022			111,943.75	111,943.75	223,887.50
02/01/2023	195,000	3.000%	111,943.75	306,943.75	
08/01/2023			109,018.75	109,018.75	415,962.50
02/01/2024	200,000	3.000%	109,018.75	309,018.75	
08/01/2024			106,018.75	106,018.75	415,037.50
02/01/2025	1,065,000	3.000%	106,018.75	1,171,018.75	
08/01/2025			90,043.75	90,043.75	1,261,062.50
02/01/2026	1,105,000	3.000%	90,043.75	1,195,043.75	
08/01/2026			73,468.75	73,468.75	1,268,512.50
02/01/2027	1,130,000	2.000%	73,468.75	1,203,468.75	
08/01/2027			62,168.75	62,168.75	1,265,637.50
02/01/2028	1,150,000	2.000%	62,168.75	1,212,168.75	
08/01/2028			50,668.75	50,668.75	1,262,837.50
02/01/2029	1,170,000	2.000%	50,668.75	1,220,668.75	
08/01/2029			38,968.75	38,968.75	1,259,637.50
02/01/2030	1,195,000	2.000%	38,968.75	1,233,968.75	
08/01/2030			27,018.75	27,018.75	1,260,987.50
02/01/2031	235,000	2.125%	27,018.75	262,018.75	
08/01/2031			24,521.88	24,521.88	286,540.63
02/01/2032	240,000	2.125%	24,521.88	264,521.88	
08/01/2032			21,971.88	21,971.88	286,493.76
02/01/2033	245,000	2.125%	21,971.88	266,971.88	
08/01/2033			19,368.75	19,368.75	286,340.63
02/01/2034	250,000	2.250%	19,368.75	269,368.75	
08/01/2034			16,556.25	16,556.25	285,925.00
02/01/2035	255,000	2.250%	16,556.25	271,556.25	
08/01/2035			13,687.50	13,687.50	285,243.75
02/01/2036	265,000	2.500%	13,687.50	278,687.50	
08/01/2036			10,375.00	10,375.00	289,062.50
02/01/2037	270,000	2.500%	10,375.00	280,375.00	
08/01/2037			7,000.00	7,000.00	287,375.00
02/01/2038	275,000	2.500%	7,000.00	282,000.00	
08/01/2038			3,562.50	3,562.50	285,562.50
02/01/2039	285,000	2.500%	3,562.50	288,562.50	
08/01/2039					288,562.50
	9,860,000		1,969,355.50	11,829,355.50	11,829,355.50

BOND SUMMARY STATISTICS

**City of Manitowoc (AA-/AA BAM Insured)
General Obligation Refunding Bonds - FINAL
BQ; Callable 2/1/2028 or any Date Thereafter**

Dated Date	05/05/2020
Delivery Date	05/05/2020
First Coupon	02/01/2021
Last Maturity	02/01/2039
Arbitrage Yield	1.960443%
True Interest Cost (TIC)	2.059381%
Net Interest Cost (NIC)	2.084009%
All-In TIC	2.155694%
Average Coupon	2.293804%
Average Life (years)	8.707
Weighted Average Maturity (years)	8.622
Par Amount	9,860,000.00
Bond Proceeds	10,138,720.00
Total Interest	1,969,355.50
Net Interest	1,789,235.50
Bond Years from Dated Date	85,855,444.44
Bond Years from Delivery Date	85,855,444.44
Total Debt Service	11,829,355.50
Maximum Annual Debt Service	1,268,512.50
Average Annual Debt Service	631,273.05

Bond Component	Par Value	Price	Average Coupon	Average Life	Average Maturity Date	Duration	PV of 1 bp change
Serial Bonds	7,540,000.00	103.796	2.252%	6.803	02/22/2027	6.430	4,585.90
Term Bond due 2033	720,000.00	99.721	2.125%	11.753	02/04/2032	10.456	799.20
Term Bond due 2035	505,000.00	99.376	2.250%	14.244	08/02/2034	12.258	626.20
Term Bond due 2037	535,000.00	100.348	2.500%	16.244	08/01/2036	13.456	374.50
Term Bond due 2039	560,000.00	99.256	2.500%	18.248	08/04/2038	14.748	823.20
	9,860,000.00			8.707			7,209.00

	TIC	All-In TIC	Arbitrage Yield
Par Value	9,860,000.00	9,860,000.00	9,860,000.00
+ Accrued Interest			
+ Premium (Discount)	278,720.00	278,720.00	278,720.00
- Underwriter's Discount	(98,600.00)	(98,600.00)	
- Cost of Issuance Expense		(53,198.89)	
- Other Amounts		(21,292.84)	(21,292.84)
Target Value	10,040,120.00	9,965,628.27	10,117,427.16
Target Date	05/05/2020	05/05/2020	05/05/2020
Yield	2.059381%	2.155694%	1.960443%

PROOF OF ARBITRAGE YIELD

**City of Manitowoc (AA-/AA BAM Insured)
General Obligation Refunding Bonds - FINAL
BQ; Callable 2/1/2028 or any Date Thereafter**

Date	Debt Service	Total	PV Factor	Present Value to 05/05/2020 @ 1.9604430833%
02/01/2021	502,742.98	502,742.98	0.985688436	495,547.94
08/01/2021	111,943.75	111,943.75	0.976120295	109,270.57
02/01/2022	111,943.75	111,943.75	0.966645032	108,209.87
08/01/2022	111,943.75	111,943.75	0.957261746	107,159.47
02/01/2023	306,943.75	306,943.75	0.947969545	290,973.33
08/01/2023	109,018.75	109,018.75	0.938767543	102,343.26
02/01/2024	309,018.75	309,018.75	0.929654866	287,280.78
08/01/2024	106,018.75	106,018.75	0.920630646	97,604.11
02/01/2025	1,171,018.75	1,171,018.75	0.911694025	1,067,610.80
08/01/2025	90,043.75	90,043.75	0.902844152	81,295.47
02/01/2026	1,195,043.75	1,195,043.75	0.894080185	1,068,464.94
08/01/2026	73,468.75	73,468.75	0.885401291	65,049.33
02/01/2027	1,203,468.75	1,203,468.75	0.876806643	1,055,209.40
08/01/2027	62,168.75	62,168.75	0.868295425	53,980.84
02/01/2028	1,212,168.75	1,212,168.75	0.859866825	1,042,303.69
08/01/2028	50,668.75	50,668.75	0.851520042	43,145.46
02/01/2029	1,220,668.75	1,220,668.75	0.843254282	1,029,334.15
08/01/2029	38,968.75	38,968.75	0.835068758	32,541.59
02/01/2030	1,233,968.75	1,233,968.75	0.826962691	1,020,446.12
08/01/2030	27,018.75	27,018.75	0.818935311	22,126.61
02/01/2031	262,018.75	262,018.75	0.810985853	212,493.50
08/01/2031	24,521.88	24,521.88	0.803113561	19,693.85
02/01/2032	264,521.88	264,521.88	0.795317686	210,378.93
08/01/2032	21,971.88	21,971.88	0.787597485	17,305.00
02/01/2033	266,971.88	266,971.88	0.779952226	208,225.31
08/01/2033	19,368.75	19,368.75	0.772381179	14,960.06
02/01/2034	269,368.75	269,368.75	0.764883625	206,035.75
08/01/2034	16,556.25	16,556.25	0.757458850	12,540.68
02/01/2035	271,556.25	271,556.25	0.750106148	203,696.01
08/01/2035	13,687.50	13,687.50	0.742824819	10,167.41
02/01/2036	278,687.50	278,687.50	0.735614171	205,006.47
08/01/2036	10,375.00	10,375.00	0.728473516	7,557.91
02/01/2037	280,375.00	280,375.00	0.721402177	202,263.14
08/01/2037	7,000.00	7,000.00	0.714399479	5,000.80
02/01/2038	282,000.00	282,000.00	0.707464757	199,505.06
08/01/2038	3,562.50	3,562.50	0.700597351	2,495.88
02/01/2039	288,562.50	288,562.50	0.693796607	200,203.68
	11,829,355.50	11,829,355.50		10,117,427.16

Proceeds Summary

Delivery date	05/05/2020
Par Value	9,860,000.00
Premium (Discount)	278,720.00
Arbitrage expenses	(21,292.84)
Target for yield calculation	10,117,427.16

FORM 8038 STATISTICS

**City of Manitowoc (AA-/AA BAM Insured)
General Obligation Refunding Bonds - FINAL
BQ; Callable 2/1/2028 or any Date Thereafter**

Dated Date 05/05/2020
Delivery Date 05/05/2020

Bond Component	Date	Principal	Coupon	Price	Issue Price	Redemption at Maturity
Serial Bonds:						
	02/01/2021	330,000.00	3.000%	101.319	334,352.70	330,000.00
	02/01/2023	195,000.00	3.000%	104.696	204,157.20	195,000.00
	02/01/2024	200,000.00	3.000%	106.183	212,366.00	200,000.00
	02/01/2025	1,065,000.00	3.000%	107.453	1,144,374.45	1,065,000.00
	02/01/2026	1,105,000.00	3.000%	108.504	1,198,969.20	1,105,000.00
	02/01/2027	1,130,000.00	2.000%	102.868	1,162,408.40	1,130,000.00
	02/01/2028	1,150,000.00	2.000%	102.165	1,174,897.50	1,150,000.00
	02/01/2029	1,170,000.00	2.000%	101.437	1,186,812.90	1,170,000.00
	02/01/2030	1,195,000.00	2.000%	101.075	1,207,846.25	1,195,000.00
Term Bond due 2033:						
	02/01/2031	235,000.00	2.125%	99.721	234,344.35	235,000.00
	02/01/2032	240,000.00	2.125%	99.721	239,330.40	240,000.00
	02/01/2033	245,000.00	2.125%	99.721	244,316.45	245,000.00
Term Bond due 2035:						
	02/01/2034	250,000.00	2.250%	99.376	248,440.00	250,000.00
	02/01/2035	255,000.00	2.250%	99.376	253,408.80	255,000.00
Term Bond due 2037:						
	02/01/2036	265,000.00	2.500%	100.348	265,922.20	265,000.00
	02/01/2037	270,000.00	2.500%	100.348	270,939.60	270,000.00
Term Bond due 2039:						
	02/01/2038	275,000.00	2.500%	99.256	272,954.00	275,000.00
	02/01/2039	285,000.00	2.500%	99.256	282,879.60	285,000.00
		9,860,000.00			10,138,720.00	9,860,000.00

	Maturity Date	Interest Rate	Issue Price	Stated Redemption at Maturity	Weighted Average Maturity	Yield
Final Maturity	02/01/2039	2.500%	282,879.60	285,000.00		
Entire Issue			10,138,720.00	9,860,000.00	8.6218	1.9604%

Proceeds used for accrued interest	0.00
Proceeds used for bond issuance costs (including underwriters' discount)	173,091.73
Proceeds used for credit enhancement	21,292.84
Proceeds allocated to reasonably required reserve or replacement fund	0.00

BOND DEBT SERVICE

**City of Manitowoc (AA-/AA BAM Insured)
CR of Levy Supported Portion of NAN**

Period Ending	Principal	Coupon	Interest	Debt Service	Annual Debt Service
05/05/2020					
02/01/2021	330,000	3.000%	101,523.33	431,523.33	
08/01/2021			63,750.00	63,750.00	495,273.33
02/01/2022			63,750.00	63,750.00	
08/01/2022			63,750.00	63,750.00	127,500.00
02/01/2023			63,750.00	63,750.00	
08/01/2023			63,750.00	63,750.00	127,500.00
02/01/2024			63,750.00	63,750.00	
08/01/2024			63,750.00	63,750.00	127,500.00
02/01/2025	860,000	3.000%	63,750.00	923,750.00	
08/01/2025			50,850.00	50,850.00	974,600.00
02/01/2026	890,000	3.000%	50,850.00	940,850.00	
08/01/2026			37,500.00	37,500.00	978,350.00
02/01/2027	910,000	2.000%	37,500.00	947,500.00	
08/01/2027			28,400.00	28,400.00	975,900.00
02/01/2028	930,000	2.000%	28,400.00	958,400.00	
08/01/2028			19,100.00	19,100.00	977,500.00
02/01/2029	945,000	2.000%	19,100.00	964,100.00	
08/01/2029			9,650.00	9,650.00	973,750.00
02/01/2030	965,000	2.000%	9,650.00	974,650.00	
08/01/2030					974,650.00
	5,830,000		902,523.33	6,732,523.33	6,732,523.33

BOND SUMMARY STATISTICS**City of Manitowoc (AA-/AA BAM Insured)
CR of Levy Supported Portion of NAN**

Dated Date	05/05/2020
Delivery Date	05/05/2020
First Coupon	02/01/2021
Last Maturity	02/01/2030
Arbitrage Yield	1.960443%
True Interest Cost (TIC)	1.822537%
Net Interest Cost (NIC)	1.847197%
All-In TIC	1.938705%
Average Coupon	2.233265%
Average Life (years)	6.932
Weighted Average Maturity (years)	6.900
Par Amount	5,830,000.00
Bond Proceeds	6,044,320.80
Total Interest	902,523.33
Net Interest	746,502.53
Bond Years from Dated Date	40,412,722.22
Bond Years from Delivery Date	40,412,722.22
Total Debt Service	6,732,523.33
Maximum Annual Debt Service	978,350.00
Average Annual Debt Service	691,303.02

Bond Component	Par Value	Price	Average Coupon	Average Life	Average Maturity Date	Duration	PV of 1 bp change
Serial Bonds	5,830,000.00	103.676	2.233%	6.932	04/10/2027	6.430	3,601.00
	5,830,000.00			6.932			3,601.00

	TIC	All-In TIC	Arbitrage Yield
Par Value	5,830,000.00	5,830,000.00	5,830,000.00
+ Accrued Interest			
+ Premium (Discount)	214,320.80	214,320.80	214,320.80
- Underwriter's Discount	(58,300.00)	(58,300.00)	
- Cost of Issuance Expense		(31,455.34)	
- Other Amounts		(12,589.99)	(12,589.99)
Target Value	5,986,020.80	5,941,975.47	6,031,730.81
Target Date	05/05/2020	05/05/2020	05/05/2020
Yield	1.822537%	1.938705%	1.960443%

BOND DEBT SERVICE

**City of Manitowoc (AA-/AA BAM Insured)
CR of TID #18 Portion of NAN**

Period Ending	Principal	Coupon	Interest	Debt Service	Annual Debt Service
05/05/2020					
02/01/2021			71,219.65	71,219.65	
08/01/2021			48,193.75	48,193.75	119,413.40
02/01/2022			48,193.75	48,193.75	
08/01/2022			48,193.75	48,193.75	96,387.50
02/01/2023	195,000	3.000%	48,193.75	243,193.75	
08/01/2023			45,268.75	45,268.75	288,462.50
02/01/2024	200,000	3.000%	45,268.75	245,268.75	
08/01/2024			42,268.75	42,268.75	287,537.50
02/01/2025	205,000	3.000%	42,268.75	247,268.75	
08/01/2025			39,193.75	39,193.75	286,462.50
02/01/2026	215,000	3.000%	39,193.75	254,193.75	
08/01/2026			35,968.75	35,968.75	290,162.50
02/01/2027	220,000	2.000%	35,968.75	255,968.75	
08/01/2027			33,768.75	33,768.75	289,737.50
02/01/2028	220,000	2.000%	33,768.75	253,768.75	
08/01/2028			31,568.75	31,568.75	285,337.50
02/01/2029	225,000	2.000%	31,568.75	256,568.75	
08/01/2029			29,318.75	29,318.75	285,887.50
02/01/2030	230,000	2.000%	29,318.75	259,318.75	
08/01/2030			27,018.75	27,018.75	286,337.50
02/01/2031	235,000	2.125%	27,018.75	262,018.75	
08/01/2031			24,521.88	24,521.88	286,540.63
02/01/2032	240,000	2.125%	24,521.88	264,521.88	
08/01/2032			21,971.88	21,971.88	286,493.76
02/01/2033	245,000	2.125%	21,971.88	266,971.88	
08/01/2033			19,368.75	19,368.75	286,340.63
02/01/2034	250,000	2.250%	19,368.75	269,368.75	
08/01/2034			16,556.25	16,556.25	285,925.00
02/01/2035	255,000	2.250%	16,556.25	271,556.25	
08/01/2035			13,687.50	13,687.50	285,243.75
02/01/2036	265,000	2.500%	13,687.50	278,687.50	
08/01/2036			10,375.00	10,375.00	289,062.50
02/01/2037	270,000	2.500%	10,375.00	280,375.00	
08/01/2037			7,000.00	7,000.00	287,375.00
02/01/2038	275,000	2.500%	7,000.00	282,000.00	
08/01/2038			3,562.50	3,562.50	285,562.50
02/01/2039	285,000	2.500%	3,562.50	288,562.50	
08/01/2039					288,562.50
	4,030,000		1,066,832.17	5,096,832.17	5,096,832.17

BOND SUMMARY STATISTICS**City of Manitowoc (AA-/AA BAM Insured)
CR of TID #18 Portion of NAN**

Dated Date	05/05/2020
Delivery Date	05/05/2020
First Coupon	02/01/2021
Last Maturity	02/01/2039
Arbitrage Yield	1.960443%
True Interest Cost (TIC)	2.284132%
Net Interest Cost (NIC)	2.294609%
All-In TIC	2.362197%
Average Coupon	2.347641%
Average Life (years)	11.276
Weighted Average Maturity (years)	11.164
Par Amount	4,030,000.00
Bond Proceeds	4,094,399.20
Total Interest	1,066,832.17
Net Interest	1,042,732.97
Bond Years from Dated Date	45,442,722.22
Bond Years from Delivery Date	45,442,722.22
Total Debt Service	5,096,832.17
Maximum Annual Debt Service	290,162.50
Average Annual Debt Service	271,992.23

Bond Component	Par Value	Price	Average Coupon	Average Life	Average Maturity Date	Duration	PV of 1 bp change
Serial Bonds	1,710,000.00	104.203	2.321%	6.362	09/14/2026	5.918	984.90
Term Bond due 2033	720,000.00	99.721	2.125%	11.753	02/04/2032	10.456	799.20
Term Bond due 2035	505,000.00	99.376	2.250%	14.244	08/02/2034	12.258	626.20
Term Bond due 2037	535,000.00	100.348	2.500%	16.244	08/01/2036	13.456	374.50
Term Bond due 2039	560,000.00	99.256	2.500%	18.248	08/04/2038	14.748	823.20
	4,030,000.00			11.276			3,608.00

	TIC	All-In TIC	Arbitrage Yield
Par Value	4,030,000.00	4,030,000.00	4,030,000.00
+ Accrued Interest			
+ Premium (Discount)	64,399.20	64,399.20	64,399.20
- Underwriter's Discount	(40,300.00)	(40,300.00)	
- Cost of Issuance Expense		(21,743.55)	
- Other Amounts		(8,702.85)	(8,702.85)
Target Value	4,054,099.20	4,023,652.80	4,085,696.35
Target Date	05/05/2020	05/05/2020	05/05/2020
Yield	2.284132%	2.362197%	1.960443%