

CREDIT OPINION

19 September 2023



Contacts

Amy Hellmann +1.312.706.9964
Analyst
amy.marks@moodys.com

Karen Liu +1.312.706.9984
Associate Lead Analyst
karen.liu@moodys.com

Benjamin J VanMetre +1.312.706.9951
VP-Senior Analyst
ben.vanmetre@moodys.com

CLIENT SERVICES

Americas 1-212-553-1653

Asia Pacific 852-3551-3077

Japan 81-3-5408-4100

EMEA 44-20-7772-5454

City of Madison, WI, Madison Water Enterprise, WI & Madison Sewer Enterprise, WI

Update to credit analysis

Summary

[Madison](#) (Aaa stable) benefits from a strong and diverse economic base with significant institutional presence derived from its status as the state capital and site of the University of Wisconsin's flagship campus. The financial position is expected to remain solid, supported by growing revenue from ongoing development and strong fiscal management. These credit strengths offset the limited revenue raising flexibility and above average leverage.

The [Madison Water Enterprise](#) (Aa2 stable) and the [Madison Sewer Enterprise](#) (Aa2 stable) benefit from the institutional stability embedded in the city's economic base and solid legal provisions. Liquidity and coverage have improved in recent years, supported by regular rate increases which is trend that is expected to continue. These credit strengths are balanced against the water system's constrained rate-setting authority and above average leverage, with both enterprises maintaining system sizes that trail those of similarly-rated peers.

Credit strengths

- » Strong and diverse economic base serves as the seat of government for the state, county, and city, as well as the state's flagship university
- » Solid demographic trends
- » Solid financial position with stable operations
- » Customer base benefits from institutional stability of state capital and university (water and sewer)
- » Independent rate-setting authority with rates subject to City Council approval (sewer)

Credit challenges

- » Above average leverage (issuer, GOULT, and water)
- » Limited revenue raising flexibility due to state-imposed levy limits (issuer and GOULT)
- » Constrained water rate-setting authority as increases necessitate approval by the Wisconsin Public Service Commission (water)
- » System size trails those of similarly-rated peers (water and sewer)

Rating outlook

The stable outlook on the city reflects the expectation that the credit quality will remain strong, supported by continued economic growth, long-standing government and higher education presences within the city, and continued financial stability.

The stable outlook on the water and sewer system revenue debt ratings mirrors the stable outlook assigned to the city because their close governance ties and customer bases that benefit from significant institutional presence.

Factors that could lead to an upgrade

- » Not applicable (issuer and GOULT)
- » Strengthening of debt service coverage (water and sewer)
- » Substantial and sustained increases to system liquidity (water and sewer)

Factors that could lead to a downgrade

- » Material narrowing of reserves or liquidity (issuer and GOULT)
- » Notable growth in leverage
- » Weakening of debt service coverage (water and sewer)
- » Material narrowing of system liquidity (water and sewer)

This publication does not announce a credit rating action. For any credit ratings referenced in this publication, please see the issuer/deal page on <https://ratings.moody.com> for the most updated credit rating action information and rating history.

Key indicators

Exhibit 1

Madison (City of) WI

	2019	2020	2021	2022	Aaa Medians
Economy					
Resident income ratio (%)	105.9%	108.3%	105.5%	N/A	173.0%
Full Value (\$000)	\$30,910,698	\$33,036,794	\$32,940,368	\$38,606,699	\$8,668,233
Population	254,977	258,366	265,447	N/A	35,992
Full value per capita (\$)	\$121,229	\$127,868	\$124,094	N/A	\$225,444
Economic growth metric (%)	N/A	0.4%	0.1%	N/A	-0.5%
Financial Performance					
Revenue (\$000)	\$582,325	\$574,754	\$628,947	\$691,521	\$101,177
Available fund balance (\$000)	\$146,652	\$150,304	\$160,722	\$194,989	\$58,570
Net unrestricted cash (\$000)	\$268,679	\$297,080	\$361,223	\$461,664	\$82,803
Available fund balance ratio (%)	25.2%	26.2%	25.6%	28.2%	61.7%
Liquidity ratio (%)	46.1%	51.7%	57.4%	66.8%	88.4%
Leverage					
Debt (\$000)	\$778,162	\$881,274	\$856,735	\$873,765	\$71,733
Adjusted net pension liabilities (\$000)	\$624,001	\$841,727	\$1,070,528	\$1,020,860	\$120,941
Adjusted net OPEB liabilities (\$000)	\$71,453	\$79,592	\$80,620	\$65,282	\$14,374
Other long-term liabilities (\$000)	\$59,062	\$66,976	\$69,048	\$69,375	\$3,750
Long-term liabilities ratio (%)	263.2%	325.3%	330.2%	293.5%	263.2%
Fixed costs					
Implied debt service (\$000)	\$55,367	\$56,736	\$63,110	\$60,091	\$4,989
Pension tread water contribution (\$000)	\$20,332	\$12,439	\$8,963	N/A	\$3,389
OPEB contributions (\$000)	\$3,253	\$3,529	\$3,239	\$3,706	\$523
Implied cost of other long-term liabilities (\$000)	\$4,178	\$4,306	\$4,796	\$4,843	\$245
Fixed-costs ratio (%)	14.3%	13.4%	12.7%	11.2%	11.6%

For definitions of the metrics in the table above please refer to the [US Cities and Counties Methodology](#) or see the Glossary in the Appendix below. Metrics represented as N/A indicate the data were not available at the time of publication. The medians come from our most recently published [US Cities and Counties Median Report](#).

The Economic Growth metric cited above compares the five-year CAGR of real GDP for Madison, WI Metropolitan Statistical Area to the five-year CAGR of real GDP for the US.

Sources: US Census Bureau, Madison (City of) WI's financial statements and Moody's Investors Service, US Bureau of Economic Analysis

Exhibit 2

Madison (City of) WI Water Enterprise

Madison (City of) WI Water Enterprise					
System Characteristics					
Asset Condition (Net Fixed Assets / Annual Depreciation)	36 years				
System Size - O&M (in \$000s)	\$18,182				
Service Area Wealth: MFI % of US median	119.0%				
Legal Provisions					
Rate Covenant (x)	1.25				
Debt Service Reserve Requirement	DSRF funded at lesser of standard 3-prong test (Aa)				
Management					
Rate Management	A				
Regulatory Compliance and Capital Planning	Aa				
Financial Strength					
	2018	2019	2020	2021	2022
Operating Revenue (\$000)	\$35,099	\$43,945	\$44,930	\$48,112	\$48,140
System Size - O&M (\$000)	\$17,627	\$16,474	\$16,949	\$16,649	\$18,182
Net Revenues (\$000)	\$18,161	\$29,073	\$28,530	\$31,447	\$29,673
Net Funded Debt (\$000)	\$199,167	\$203,272	\$193,783	\$182,275	\$167,125
Annual Debt Service (\$000)	\$13,514	\$16,968	\$14,057	\$15,624	\$18,358
Annual Debt Service Coverage (x)	1.3x	1.7x	2.0x	2.0x	1.6x
Cash on Hand	63 days	113 days	221 days	332 days	352 days
Debt to Operating Revenues (x)	5.7x	4.6x	4.3x	3.8x	3.5x

Sources: US Census Bureau, Madison (City of) Water Enterprise, WI's financial statements and Moody's Investors Service

Exhibit 3

Madison (City of) WI Sewer Enterprise

Madison (City of) WI Sewer Enterprise					
System Characteristics					
Asset Condition (Net Fixed Assets / Annual Depreciation)	52 years				
System Size - O&M (in \$000s)	\$38,222				
Service Area Wealth: MFI % of US median	119.0%				
Legal Provisions					
Rate Covenant (x)	1.25				
Debt Service Reserve Requirement	DSRF funded at lesser of standard 3-prong test (Aa)				
Management					
Rate Management	Aa				
Regulatory Compliance and Capital Planning	Aa				
Financial Strength					
	2018	2019	2020	2021	2022
Operating Revenue (\$000)	\$37,923	\$40,947	\$42,740	\$47,618	\$50,965
System Size - O&M (\$000)	\$32,177	\$33,094	\$33,278	\$37,745	\$38,222
Net Revenues (\$000)	\$8,495	\$8,867	\$10,221	\$11,036	\$14,856
Net Funded Debt (\$000)	\$45,164	\$37,999	\$50,921	\$41,643	\$49,731
Annual Debt Service (\$000)	\$5,057	\$6,230	\$5,042	\$10,538	\$5,715
Annual Debt Service Coverage (x)	1.7x	1.4x	2.0x	1.0x	2.6x
Cash on Hand	224 days	98 days	180 days	145 days	238 days
Debt to Operating Revenues (x)	1.2x	0.9x	1.2x	0.9x	1.0x

Sources: US Census Bureau, Madison (City of) Sewer Enterprise, WI's financial statements and Moody's Investors Service

Profile

The City of Madison is the state capital of [Wisconsin](#) (Aa1 stable) and is home to the flagship campus of the University of Wisconsin. It is the state's second largest city with an estimated population of about 265,000.

The Madison Water Enterprise serves over 70,000 customers across the City of Madison, the Villages of Maple Bluff and Shorewood Hills, and a portion of the City of [Fitchburg](#) (Aa1). The water system is comprised of 23 deep wells, 33 reservoirs, and over 910 miles of water mains.

The Madison Sewer Enterprise serves about 70,000 customers within the City of Madison. The sewer system is comprised of 29 lift stations and 760 miles of sanitary sewer mains, all of which is used to pump waste to the Madison Metropolitan Sewerage District (MMSD) for treatment.

Detailed credit considerations**Economy: strong regional economy supported by institutional presence**

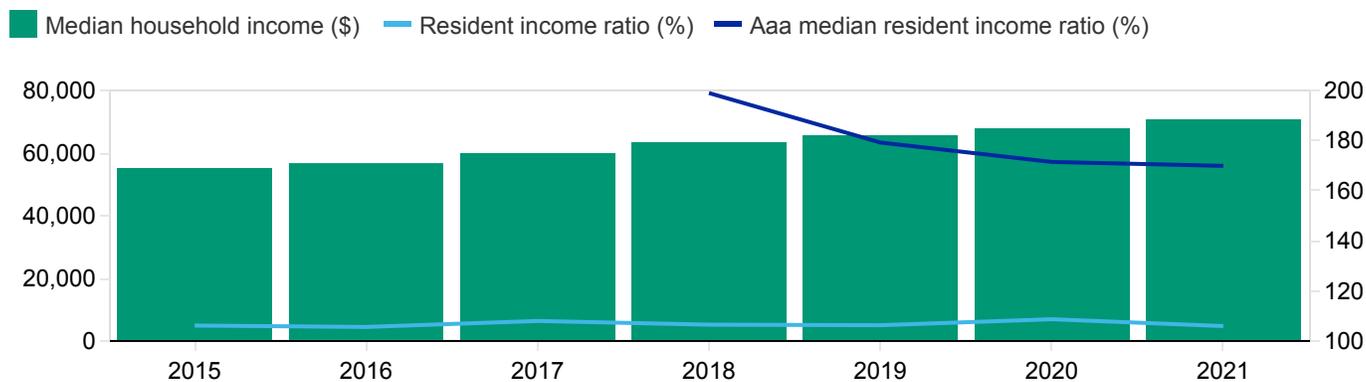
The strong and diversified regional economic base will remain a credit strength, supported by continued residential and commercial development and strong institutional presence. Residents and nearby commuters have access to the city's diverse mix of employment opportunities across large governmental, health care, technology, and insurance sectors. Larger employers in the city include the State of Wisconsin (45,000 employees) and the University of Wisconsin with its affiliated health care facilities (about 39,700 employees).

Regional economic growth remains strong and slightly outpaces the nation. Despite recent declines, residential development is expected to remain strong with more than 240 single-family and almost 2,100 multi-family units completed in fiscal 2022. Additionally, Madison's Metro Transit is undergoing a redesign to provide improved service to all areas of the city. Amongst its many goals, the redesign supports the city's goal of using 100% renewable energy sources and becoming carbon neutral by the year 2030. The expansion of the transit system is also expected to facilitate development along transit lines and increase access to areas of the city with available housing.

The service area for the city's water and sewer systems is also supported by the institutional presences of the state government and the University of Wisconsin's flagship campus. The customer base is predominantly residential for both water (82%) and sewer (85%) and has modestly grown over the past five years. Despite the expanding customer base, water consumption has generally been declining because of conservation efforts. The sewer system has modest customer concentration as the ten largest users comprise 13% of billings, including the University of Wisconsin and the state. The operating size of both systems slightly trail those of similarly-rated peers with annual water operating and maintenance (O&M) expenses at \$18 million and sewer O&M expenses at \$38 million.

Exhibit 4

Resident Income



Source: Moody's Investors Service

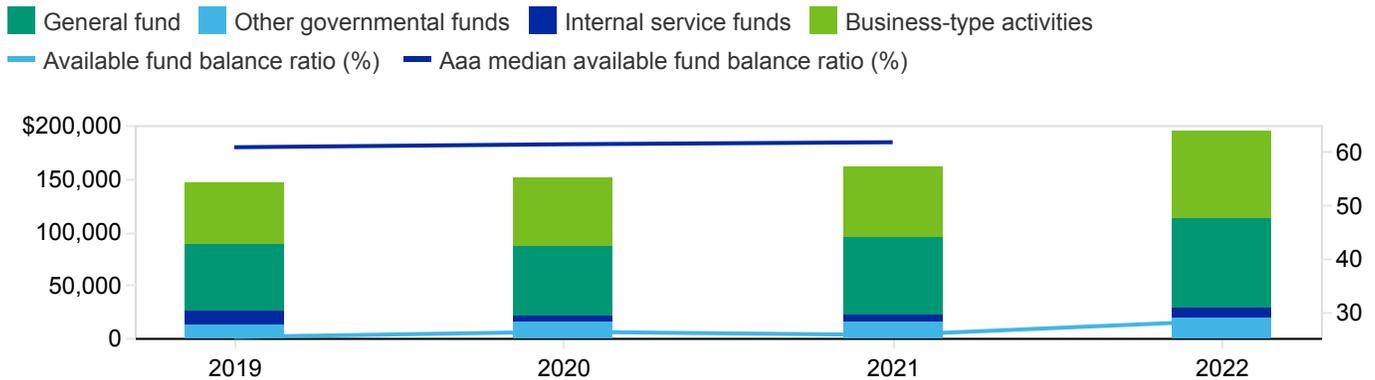
Financial operations: solid financial position expected to remain stable

Madison's financial position is expected remain solid, supported by steadily growing property tax revenue stemming from continued development and sound utility operations. Business-type activities make up about 28% of total revenue and include the city's water utility, sewer utility, stormwater utility, transit utility and nonmajor enterprise (parking utility, convention center, and golf courses) funds. The adopted fiscal 2023 operating budget is balanced, supported in part by the City's plans to use about \$24 million in ARPA funding for revenue replacement between fiscal 2021 and fiscal 2024. The budget also includes a 3% cost of living (COLA) adjustment for general government employees to bring their wage increases in line with those of public safety employees. The city reports that year-to-date operations are tracking close to budget. The city currently faces a \$28 million operating gap for fiscal 2024 and plans to close the gap with about \$4.4 million in ARPA funding, \$6.7 million revenue from two TID closures, a 1% expenditure reduction across all agencies and a small use of fund balance.

The water system's liquidity and debt service coverage (DSC) is expected to remain solid over the next several years because of planned rate increases and a fairly level debt service through fiscal 2028. While coverage remains solid at 1.6x as of fiscal 2022, the system's liquidity has improved materially over the past several years to a strong 352 days cash on hand following a series of rate increases. Favorably, a larger 18% water rate increase was approved by the Public Service Commission and went into effect in March 2023, which support a stable financial profile.

The sewer system's liquidity and DSC is also expected to remain solid, supported by regular rate increases. Historically solid, DSC fell sharply to 1x in fiscal 2021 because the system's refunding of \$4.8 million outstanding sewer revenue bonds. Net of the refunding, fiscal 2021 DSC was a solid 1.8x and maximum annual debt service (MADS) coverage was 1.6x. Going into fiscal 2024, the system anticipates a 5% to 6% rate increase to maintain operations. DSC is expected to remain fairly level at a satisfactory 1.4x through fiscal 2025.

Exhibit 5
Fund Balance



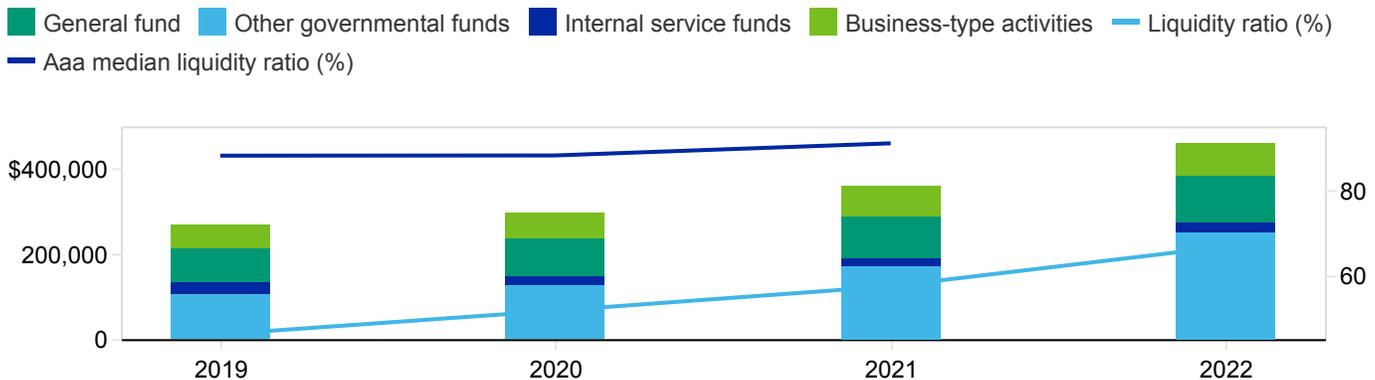
Sources: Madison (City of) WI's financial statements and Moody's Investors Service

Liquidity

The city's liquidity position is strong with net cash at \$462 million, equal to 67% of revenue. Liquidity is higher than fund balance because of \$127 million in cash across the city's capital project funds restricted for TID development and other capital purposes, about \$70 million in cash across other special revenue funds restricted for various uses, and \$22 million in cash restricted for debt service.

The water system closed fiscal 2022 with \$17.5 million in unrestricted cash, equal to a strong 352 days cash on hand. The sewer system closed fiscal 2022 with \$25 million in unrestricted cash, equal to a solid 238 days cash on hand.

Exhibit 6
Cash



Sources: Madison (City of) WI's financial statements and Moody's Investors Service

Leverage: above average leverage and solid legal covenants

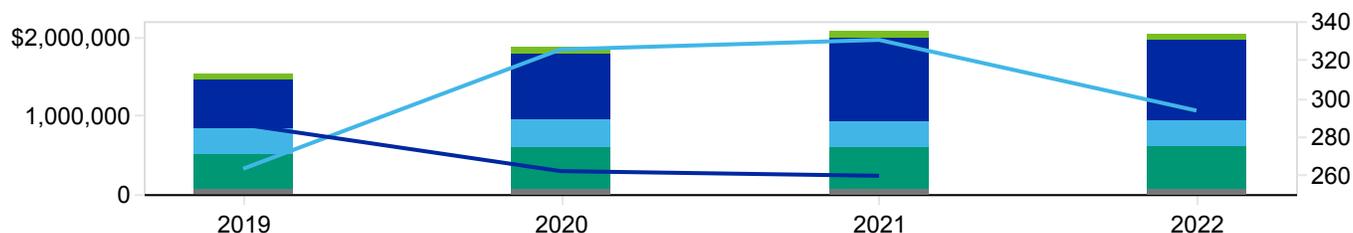
Madison's leverage will remain above average relative to its peers because of regular borrowings to address capital needs, though that is somewhat mitigated by the city's rapid amortization schedule. The water and sewer systems' debt burdens were 3.5x and 1x operating revenue respectively by the close of fiscal 2022, but those are expected to somewhat moderate as rate increases come online in fiscal 2023 for both systems. The city is in the process of issuing \$116 million of general obligation unlimited tax (GOULT) notes for various capital projects across multiple departments, with about \$42 million specifically dedicated to environmentally beneficial and sustainability-minded projects. Following the sale, the city's total leverage would rise modestly to 309% of fiscal 2022 total revenue, which remains above average for the rating category. Additionally, the city is planning to issue roughly \$4.7 million water utility revenue to the State of Wisconsin Environmental Improvement Fund as security on a loan the city is receiving under the State's Safe

Drinking Water Loan Program. Adjusted fixed costs are moderate at 11% of fiscal 2022 revenue, but actual fixed costs are considerably higher given the city's rapid debt amortization compared to the 20 years assumed in our implied debt service calculations.

Exhibit 7

Total Primary Government - Long Term Liabilities

■ Governmental Debt
 ■ Business-Type Activity Debt
 ■ Adjusted net pension liabilities
■ Adjusted net other post-employment liabilities
 ■ Other long-term liabilities
 — Long-term liabilities ratio (%)
— Aaa median long-term liabilities ratio (%)



Sources: Madison (City of) WI's financial statements and Moody's Investors Service

Legal security

The city's GOULT debt is backed by the city's full faith and credit pledge, and is payable from ad valorem taxes unlimited as to rate or amount.

Debt service on the water system's revenue debt is payable from net revenue of the water utility. Legal provisions include a 1.25x rate covenant, an additional bonds test of 1.25x MADS coverage, and a debt service reserve fund funded at the lesser of MADS, 10% of original principal amount, or 125% of average annual debt service for all outstanding bonds. The system's revenue BANs are backed by the future issuance of revenue bonds, and are considered special obligations of the city payable from net revenues of the water utility and other funds appropriated by the city, if necessary.

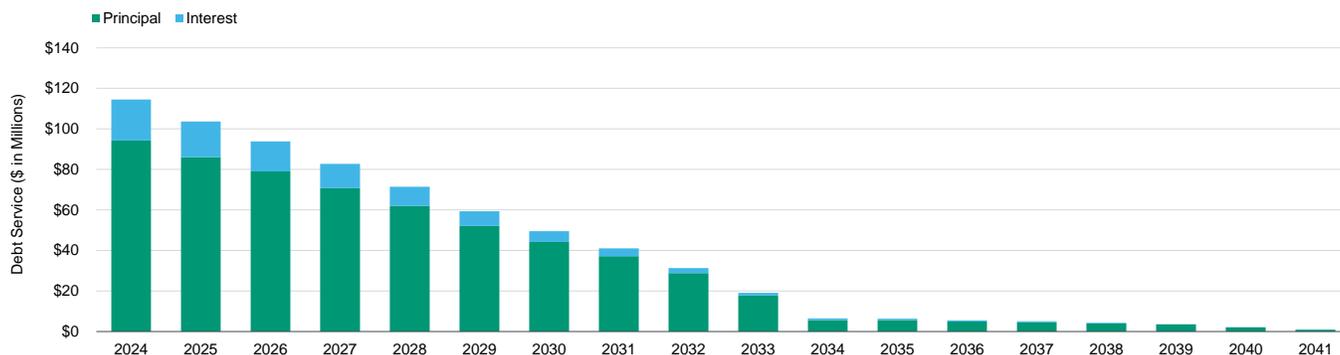
Debt service on the sewer system's revenue debt is payable from net revenue of the sewer utility. Legal provisions include a 1.25x rate covenant, an additional bonds test of 1.25x MADS coverage, and a debt service reserve fund funded at the lesser of 10% of principal amount or MADS.

Debt structure

All of the city's debt is fixed rate. Amortization is very rapid for with 95% of the city's general obligation debt scheduled to be paid off over the next ten years. The city's descending debt service schedule provides the city flexibility in structuring future bond issuances or accommodating material shocks in fixed costs should they materialize.

Exhibit 8

City's descending debt service schedule provides flexibility to address future capital needs without materially impacting fixed costs.



Source: City's offering documents

Debt-related derivatives

The city is not a party to any debt-related derivatives.

Pensions and OPEB

Madison participates in the Wisconsin Retirement System (WRS), a statewide cost-sharing plan. Contributions are determined using a level contribution actuarial method in an effort to keep employer and employee contribution rates at a level percentage of payroll over time, and are set at 100% of the plan's funding requirement. As a result, WRS remains one of the best-funded public employee retirement systems in the country. The city's adjusted net pension liability (ANPL) is about \$1 billion, representing 148% of total revenue in fiscal 2022. Moody's ANPL reflects the use of a market-based discount rate to value pension liabilities rather than the assumed rate of investment return on plan assets. In comparison, the city's reported net pension asset, based on the plan's 6.8% discount rate, was \$147 million in fiscal 2022.

Madison's other post-employment benefits (OPEB) obligations do not pose a material cost to the city. The OPEB liability reflects an implicit rate subsidy for retirees who pay to remain on the city's health care plan, which are funded on a pay-as-you-go basis. The city's adjusted net OPEB liability is modest at \$65 million, or 9% of revenue in fiscal 2022.

ESG considerations

Madison (City of) WI's ESG Credit Impact Score is Neutral-to-Low CIS-2

Exhibit 9

ESG Credit Impact Score

CIS-2

Neutral-to-Low

For an issuer scored CIS-2 (Neutral-to-Low), its ESG attributes are overall considered as having a neutral-to-low impact on the current rating; i.e., the overall influence of these attributes on the rating is non-material.

NEGATIVE IMPACT : : POSITIVE IMPACT

Source: Moody's Investors Service

Madison's ESG Credit Impact Score is neutral-to-low (**CIS-2**), reflecting neutral to low exposure to environmental, social, and governance risks.

Exhibit 10

ESG Issuer Profile Scores



Source: Moody's Investors Service

Environmental

The city's E issuer profile score is neutral-to-low (**E-2**), reflecting low exposure to environmental risks, including heat stress, water stress, and extreme rainfall. Madison maintains a comprehensive sustainability plan to adapt to changing environmental, social and economic conditions over time. Initiatives include improving water quality, reducing waste, and increasing the use renewable energy.

Social

The S issuer profile score is neutral-to-low (**S-2**), reflecting population growth, a diverse labor market, and strong educational attainment. Health metrics are also favorable: nearly 96% of the city's population has health insurance compared to the national rate of 91%. Overall demographics and educational attainment are strengths. Residents have easy access to basic services and the county scores favorably in health and safety.

Governance

Madison's G issuer profile score is neutral-to-low (**G-2**). The city is limited in its ability to raise revenue, however management utilizes a conservative budgetary approach and multi-year capital planning to maintain operating reserves in compliance with its formal fund balance policy.

ESG Issuer Profile Scores and Credit Impact Scores for the rated entity/transaction are available on Moodys.com. In order to view the latest scores, please click [here](#) to go to the landing page for the entity/transaction on MDC and view the ESG Scores section.

Rating methodology and scorecard factors

The US Cities and Counties Rating Methodology includes a scorecard, which summarizes the rating factors generally most important to city and county credit profiles. Because the scorecard is a summary, and may not include every consideration in the credit analysis for a specific issuer, a scorecard-indicated outcome may or may not map closely to the actual rating assigned.

The assigned rating differs from the scorecard-indicated outcome. The final rating is impacted by city's rapidly growing economy and strong fiscal management.

Exhibit 11

Madison (City of) WI

	Measure	Weight	Score
Economy			
Resident income ratio	105.5%	10.0%	Aa
Full value per capita	145,440	10.0%	Aa
Economic growth metric	0.1%	10.0%	Aaa
Financial Performance			
Available fund balance ratio	28.2%	20.0%	Aa
Liquidity ratio	66.8%	10.0%	Aaa
Institutional Framework			
Institutional Framework	Aa	10.0%	Aa
Leverage			
Long-term liabilities ratio	293.5%	20.0%	A
Fixed-costs ratio	11.2%	10.0%	Aa
Notching factors			
No notchings applied			
Scorecard-Indicated Outcome			Aa2
Assigned Rating			Aaa

The complete list of outstanding ratings assigned to the Madison (City of) WI is available on their [issuer page](#). Details on the current ESG scores assigned to the Madison (City of) WI are available on their [ESGView page](#).

Sources: US Census Bureau, Madison (City of) WI's financial statements and Moody's Investors Service

Appendix

Exhibit 12

Key Indicators Glossary

	Definition	Typical Source*
Economy		
Resident income ratio	Median Household Income (MHI) for the city or county, adjusted for Regional Price Parity (RPP), as a % of the US MHI	MHI: US Census Bureau - American Community Survey 5-Year Estimates RPP: US Bureau of Economic Analysis
Full value	Estimated market value of taxable property in the city or county	State repositories; audited financial statements; continuing disclosures
Population	Population of the city or county	US Census Bureau - American Community Survey 5-Year Estimates
Full value per capita	Full value / population	
Economic growth metric	Five year CAGR of real GDP for Metropolitan Statistical Area or county minus the five-year CAGR of real GDP for the US	Real GDP: US Bureau of Economic Analysis
Financial performance		
Revenue	Sum of revenue from total governmental funds, operating and non-operating revenue from total business-type activities, and non-operating revenue from internal services funds, excluding transfers and one-time revenue, e.g., bond proceeds or capital contributions	Audited financial statements
Available fund balance	Sum of all fund balances that are classified as unassigned, assigned or committed in the total governmental funds, plus unrestricted current assets minus current liabilities from the city's or county's business-type activities and internal services funds	Audited financial statements
Net unrestricted cash	Sum of unrestricted cash in governmental activities, business type activities and internal services fund, net of short-term debt	Audited financial statements
Available fund balance ratio	Available fund balance (including net current assets from business-type activities and internal services funds) / Revenue	
Liquidity ratio	Net unrestricted cash / Revenue	
Leverage		
Debt	Outstanding long-term bonds and all other forms of long-term debt across the governmental and business-type activities, including debt of another entity for which it has provided a guarantee disclosed in its financial statements	Audited financial statements; official statements
Adjusted net pension liabilities (ANPL)	Total primary government's pension liabilities adjusted by Moody's to standardize the discount rate used to compute the present value of accrued benefits	Audited financial statements; Moody's Investors Service
Adjusted net OPEB liabilities (ANOL)	Total primary government's net other post-employment benefit (OPEB) liabilities adjusted by Moody's to standardize the discount rate used to compute the present value of accrued benefits	Audited financial statements; Moody's Investors Service
Other long-term liabilities (OLTL)	Miscellaneous long-term liabilities reported under the governmental and business-type activities entries	Audited financial statements
Long-term liabilities ratio	Debt + ANPL + ANOL + OLTL / Revenue	
Fixed costs		
Implied debt service	Annual cost to amortize city or county's long-term debt over 20 years with level payments	Audited financial statements; official statements; Moody's Investors Service
Pension tread water contribution	Pension contribution necessary to prevent reported unfunded pension liabilities from growing, year over year, in nominal dollars, if all actuarial assumptions are met	Audited financial statements; Moody's Investors Service
OPEB contribution	City or county's actual contribution in a given period	Audited financial statements
Implied cost of OLTL	Annual cost to amortize city or county's other long-term liabilities over 20 years with level payments	Audited financial statements; Moody's Investors Service
Fixed-costs ratio	Implied debt service + Pension tread water + OPEB contributions + Implied cost of OLTL / Revenue	

*Note: If typical data source is not available then alternative sources or proxy data may be considered. For more detailed definitions of the metrics listed above please refer to the [US City and Counties Methodology](#).

Source: Moody's Investors Service

© 2023 Moody's Corporation, Moody's Investors Service, Inc., Moody's Analytics, Inc. and/or their licensors and affiliates (collectively, "MOODY'S"). All rights reserved. CREDIT RATINGS ISSUED BY MOODY'S CREDIT RATINGS AFFILIATES ARE THEIR CURRENT OPINIONS OF THE RELATIVE FUTURE CREDIT RISK OF ENTITIES, CREDIT COMMITMENTS, OR DEBT OR DEBT-LIKE SECURITIES, AND MATERIALS, PRODUCTS, SERVICES AND INFORMATION PUBLISHED BY MOODY'S (COLLECTIVELY, "PUBLICATIONS") MAY INCLUDE SUCH CURRENT OPINIONS. MOODY'S DEFINES CREDIT RISK AS THE RISK THAT AN ENTITY MAY NOT MEET ITS CONTRACTUAL FINANCIAL OBLIGATIONS AS THEY COME DUE AND ANY ESTIMATED FINANCIAL LOSS IN THE EVENT OF DEFAULT OR IMPAIRMENT. SEE APPLICABLE MOODY'S RATING SYMBOLS AND DEFINITIONS PUBLICATION FOR INFORMATION ON THE TYPES OF CONTRACTUAL FINANCIAL OBLIGATIONS ADDRESSED BY MOODY'S CREDIT RATINGS. CREDIT RATINGS DO NOT ADDRESS ANY OTHER RISK, INCLUDING BUT NOT LIMITED TO: LIQUIDITY RISK, MARKET VALUE RISK, OR PRICE VOLATILITY. CREDIT RATINGS, NON-CREDIT ASSESSMENTS ("ASSESSMENTS"), AND OTHER OPINIONS INCLUDED IN MOODY'S PUBLICATIONS ARE NOT STATEMENTS OF CURRENT OR HISTORICAL FACT. MOODY'S PUBLICATIONS MAY ALSO INCLUDE QUANTITATIVE MODEL-BASED ESTIMATES OF CREDIT RISK AND RELATED OPINIONS OR COMMENTARY PUBLISHED BY MOODY'S ANALYTICS, INC. AND/OR ITS AFFILIATES. MOODY'S CREDIT RATINGS, ASSESSMENTS, OTHER OPINIONS AND PUBLICATIONS DO NOT CONSTITUTE OR PROVIDE INVESTMENT OR FINANCIAL ADVICE, AND MOODY'S CREDIT RATINGS, ASSESSMENTS, OTHER OPINIONS AND PUBLICATIONS ARE NOT AND DO NOT PROVIDE RECOMMENDATIONS TO PURCHASE, SELL, OR HOLD PARTICULAR SECURITIES. MOODY'S CREDIT RATINGS, ASSESSMENTS, OTHER OPINIONS AND PUBLICATIONS DO NOT COMMENT ON THE SUITABILITY OF AN INVESTMENT FOR ANY PARTICULAR INVESTOR. MOODY'S ISSUES ITS CREDIT RATINGS, ASSESSMENTS AND OTHER OPINIONS AND PUBLISHES ITS PUBLICATIONS WITH THE EXPECTATION AND UNDERSTANDING THAT EACH INVESTOR WILL, WITH DUE CARE, MAKE ITS OWN STUDY AND EVALUATION OF EACH SECURITY THAT IS UNDER CONSIDERATION FOR PURCHASE, HOLDING, OR SALE.

MOODY'S CREDIT RATINGS, ASSESSMENTS, OTHER OPINIONS, AND PUBLICATIONS ARE NOT INTENDED FOR USE BY RETAIL INVESTORS AND IT WOULD BE RECKLESS AND INAPPROPRIATE FOR RETAIL INVESTORS TO USE MOODY'S CREDIT RATINGS, ASSESSMENTS, OTHER OPINIONS OR PUBLICATIONS WHEN MAKING AN INVESTMENT DECISION. IF IN DOUBT YOU SHOULD CONTACT YOUR FINANCIAL OR OTHER PROFESSIONAL ADVISER.

ALL INFORMATION CONTAINED HEREIN IS PROTECTED BY LAW, INCLUDING BUT NOT LIMITED TO, COPYRIGHT LAW, AND NONE OF SUCH INFORMATION MAY BE COPIED OR OTHERWISE REPRODUCED, REPACKAGED, FURTHER TRANSMITTED, TRANSFERRED, DISSEMINATED, REDISTRIBUTED OR RESOLD, OR STORED FOR SUBSEQUENT USE FOR ANY SUCH PURPOSE, IN WHOLE OR IN PART, IN ANY FORM OR MANNER OR BY ANY MEANS WHATSOEVER, BY ANY PERSON WITHOUT MOODY'S PRIOR WRITTEN CONSENT.

MOODY'S CREDIT RATINGS, ASSESSMENTS, OTHER OPINIONS AND PUBLICATIONS ARE NOT INTENDED FOR USE BY ANY PERSON AS A BENCHMARK AS THAT TERM IS DEFINED FOR REGULATORY PURPOSES AND MUST NOT BE USED IN ANY WAY THAT COULD RESULT IN THEM BEING CONSIDERED A BENCHMARK.

All information contained herein is obtained by MOODY'S from sources believed by it to be accurate and reliable. Because of the possibility of human or mechanical error as well as other factors, however, all information contained herein is provided "AS IS" without warranty of any kind. MOODY'S adopts all necessary measures so that the information it uses in assigning a credit rating is of sufficient quality and from sources MOODY'S considers to be reliable including, when appropriate, independent third-party sources. However, MOODY'S is not an auditor and cannot in every instance independently verify or validate information received in the credit rating process or in preparing its Publications.

To the extent permitted by law, MOODY'S and its directors, officers, employees, agents, representatives, licensors and suppliers disclaim liability to any person or entity for any indirect, special, consequential, or incidental losses or damages whatsoever arising from or in connection with the information contained herein or the use of or inability to use any such information, even if MOODY'S or any of its directors, officers, employees, agents, representatives, licensors or suppliers is advised in advance of the possibility of such losses or damages, including but not limited to: (a) any loss of present or prospective profits or (b) any loss or damage arising where the relevant financial instrument is not the subject of a particular credit rating assigned by MOODY'S.

To the extent permitted by law, MOODY'S and its directors, officers, employees, agents, representatives, licensors and suppliers disclaim liability for any direct or compensatory losses or damages caused to any person or entity, including but not limited to by any negligence (but excluding fraud, willful misconduct or any other type of liability that, for the avoidance of doubt, by law cannot be excluded) on the part of, or any contingency within or beyond the control of, MOODY'S or any of its directors, officers, employees, agents, representatives, licensors or suppliers, arising from or in connection with the information contained herein or the use of or inability to use any such information.

NO WARRANTY, EXPRESS OR IMPLIED, AS TO THE ACCURACY, TIMELINESS, COMPLETENESS, MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE OF ANY CREDIT RATING, ASSESSMENT, OTHER OPINION OR INFORMATION IS GIVEN OR MADE BY MOODY'S IN ANY FORM OR MANNER WHATSOEVER.

Moody's Investors Service, Inc., a wholly-owned credit rating agency subsidiary of Moody's Corporation ("MCO"), hereby discloses that most issuers of debt securities (including corporate and municipal bonds, debentures, notes and commercial paper) and preferred stock rated by Moody's Investors Service, Inc. have, prior to assignment of any credit rating, agreed to pay to Moody's Investors Service, Inc. for credit ratings opinions and services rendered by it fees ranging from \$1,000 to approximately \$5,000,000. MCO and Moody's Investors Service also maintain policies and procedures to address the independence of Moody's Investors Service credit ratings and credit rating processes. Information regarding certain affiliations that may exist between directors of MCO and rated entities, and between entities who hold credit ratings from Moody's Investors Service, Inc. and have also publicly reported to the SEC an ownership interest in MCO of more than 5%, is posted annually at www.moody.com under the heading "Investor Relations — Corporate Governance — Charter Documents - Director and Shareholder Affiliation Policy."

Additional terms for Australia only: Any publication into Australia of this document is pursuant to the Australian Financial Services License of MOODY'S affiliate, Moody's Investors Service Pty Limited ABN 61 003 399 657 AFSL 336969 and/or Moody's Analytics Australia Pty Ltd ABN 94 105 136 972 AFSL 383569 (as applicable). This document is intended to be provided only to "wholesale clients" within the meaning of section 761G of the Corporations Act 2001. By continuing to access this document from within Australia, you represent to MOODY'S that you are, or are accessing the document as a representative of, a "wholesale client" and that neither you nor the entity you represent will directly or indirectly disseminate this document or its contents to "retail clients" within the meaning of section 761G of the Corporations Act 2001. MOODY'S credit rating is an opinion as to the creditworthiness of a debt obligation of the issuer, not on the equity securities of the issuer or any form of security that is available to retail investors.

Additional terms for Japan only: Moody's Japan K.K. ("MJKK") is a wholly-owned credit rating agency subsidiary of Moody's Group Japan G.K., which is wholly-owned by Moody's Overseas Holdings Inc., a wholly-owned subsidiary of MCO. Moody's SF Japan K.K. ("MSFJ") is a wholly-owned credit rating agency subsidiary of MJKK. MSFJ is not a Nationally Recognized Statistical Rating Organization ("NRSRO"). Therefore, credit ratings assigned by MSFJ are Non-NRSRO Credit Ratings. Non-NRSRO Credit Ratings are assigned by an entity that is not a NRSRO and, consequently, the rated obligation will not qualify for certain types of treatment under U.S. laws. MJKK and MSFJ are credit rating agencies registered with the Japan Financial Services Agency and their registration numbers are FSA Commissioner (Ratings) No. 2 and 3 respectively.

MJKK or MSFJ (as applicable) hereby disclose that most issuers of debt securities (including corporate and municipal bonds, debentures, notes and commercial paper) and preferred stock rated by MJKK or MSFJ (as applicable) have, prior to assignment of any credit rating, agreed to pay to MJKK or MSFJ (as applicable) for credit ratings opinions and services rendered by it fees ranging from JPY100,000 to approximately JPY550,000,000.

MJKK and MSFJ also maintain policies and procedures to address Japanese regulatory requirements.

REPORT NUMBER 1380760

CLIENT SERVICES

Americas	1-212-553-1653
Asia Pacific	852-3551-3077
Japan	81-3-5408-4100
EMEA	44-20-7772-5454