

CREDIT OPINION

22 May 2025



Send Your Feedback

Contacts

Cintia Nazima +1.212.553.1631
VP – Senior Analyst
cintia.nazima@moody's.com

Kayla Attis +1.212.553.2876
Sr Ratings Associate
kayla.attis@moody's.com

Kurt Krummenacker +1.212.553.7207
Associate Managing Director
kurt.krummenacker@moody's.com

CLIENT SERVICES

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

Maryland Trans. Auth. - Trans. Facilities

Update to credit analysis

Summary

[Maryland Transportation Authority's](#) (MDTA, Aa2 negative) credit profile reflects the essentiality of the authority's road network, the fundamental strength of the service area and its history of strong financial and operational management and performance. As expected, MDTA's performance was slightly impacted by the Key Bridge collapse in March 2024. In the fiscal year to date performance through March 2025, traffic and toll revenue have declined by 2.7% and 3.3%. In fiscal 2023, Key Bridge's toll revenue represented 7% of total toll revenue, so this 3% decline is in line with our expectations that part of the traffic would be diverted to the two tunnels owned and operated by MDTA in the service area (Fort McHenry and Baltimore Harbor tunnels). MDTA's credit profile also incorporates the authority's financial policies and history of conservative budgeting coupled with a track record of exceeding its forecasts. This strong financial policy with a proven track record is one of the main strengths of this credit that somewhat mitigates the projected metrics being lower than peers. Taken together, these factors support the authority's board-approved \$5.1 billion capital expenditure program spanning fiscal 2025 through fiscal 2030, which includes the \$1.7 billion Key Bridge replacement project.

In December 2024, the federal government confirmed that it would fund 100% of the costs related to the Key Bridge replacement project, which is positive for the credit. However, the continued declining liquidity coupled with the increasing leverage and debt service requirements from the implementation of the remaining projects of the capital expenditure program, could place pressure on the authority's current credit profile should toll revenues not keep pace with growing debt service requirements through either traffic growth or toll rate increases. The credit profile incorporates our expectation of the authority's willingness to maintain strong financial metrics by increasing toll rates or making other adjustments to preserve its financial position.

Credit strengths

- » Strong financial profile supported by authority's financial policies and proven track record of conservative budgeting practices
- » Authority's willingness to maintain strong financial metrics by increasing toll rates or making other adjustments to preserve its financial position.
- » Long history of strong demand for the authority's multiple, essential and established transportation facilities in a well-developed, affluent and slowly growing service area.

Credit challenges

- » Maintenance of strong financial metrics is highly reliant on toll revenue increases from traffic growth or from active management from the authority, by increasing toll rates or making other adjustments to preserve its financial position
- » Significant capital program (2025-2030) sized at \$5.1 billion with approximately \$2.0 billion of additional debt by 2030
- » Liquidity levels to decline to \$400 million which is lower than the historically strong level of about \$600 million over the past five years, as the large capital improvement program is funded with about 28% pay-go funds over the 2025-2030 period. Debt service reserves funded with surety policies further reduces liquidity.
- » Some remaining uncertainty regarding Francis Scott Key Bridge replacement project's total costs and timeline, even though funding is expected to come 100% from the federal government
- » The indenture allows for funds to flow out of the system to the Maryland Department of Transportation (MDOT) when authorized by the authority. However, the authority has not made payments since 2007.

Rating outlook

The negative outlook reflects the financial metrics expected to narrow as MDTA moves forward with its capital improvement program coupled with remaining uncertainty around the Key Bridge's replacement project, though at lower levels now given the definition of 100% funding by the federal government.

Factors that could lead to an upgrade

- » Continued significant and sustained higher-than-projected traffic levels
- » Successful completion of planned capital projects
- » Toll revenues that support adjusted debt to operating revenues of less than 3.0x while maintaining strong liquidity could exert upward pressure on the rating
- » Clearer path on Key Bridge's replacement project with minor impact to MDTA's credit profile could stabilize the outlook

Factors that could lead to a downgrade

- » Lower traffic and revenue levels than assumed in the authority's base case forecast
- » Significantly higher debt financing of the capital program than currently envisioned
- » A sustained decline in the DSCR below 2.0x
- » A sustained increase in leverage resulting in adjusted debt to operating revenue above 4.5x
- » Liquidity below 400 days cash on hand
- » Prolonged uncertainty on bridge replacement project and/or replacement project resulting in further weakening of financial metrics without any mechanism to offset it
- » Transfers of funds out of the system to MDOT that put pressure on toll rates and/or on financial metrics

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's.com> for the most updated credit rating action information and rating history.

Key indicators

Exhibit 1

Key Indicators

Maryland Transportation Authority

	2020	2021	2022	2023	2024
Total Transactions ('000)	137,864	132,278	152,204	162,833	165,312
Total Transactions Annual Growth (%)	-16.6	-4.1	0.2	-0.5	1.5
Debt Outstanding (\$'000)	1,910,419	2,135,975	2,101,573	2,263,932	2,110,062
Adjusted Debt to Operating Revenues (x)	4.07	4.83	3.78	3.49	3.12
Days Cash on Hand	782	532	576	865	743
Total Debt Service Coverage By Net Revenues (x)	4.06	4.98	3.87	3.03	3.42

Source: Moody's Ratings

Profile

The authority is an independent agency with autonomous rate-setting authority, however the Secretary of Maryland Department of Transportation (MDOT), also serves as chairman of the authority's 8-member board which is appointed by the governor (and confirmed by the Senate). The two agencies work together to address state-wide transportation needs and this high level of coordination benefits the authority as it undertakes capital projects.

The authority owns and operates 8 facilities, of which revenues from 7 are deemed Transportation Facilities Projects: the John F. Kennedy Memorial Highway; the Fort McHenry Tunnel; the Baltimore Harbor Tunnel; the Francis Scott Key Bridge (that collapsed in March 2024 and will be replaced); the Governor Harry W. Nice Memorial Bridge (formerly the Potomac River Bridge); the Chesapeake Bay Bridge; and the ICC. The last facility is the Thomas J. Hatem Memorial Bridge (formerly the Susquehanna River Bridge), which the authority operates as a General Account Project.

Detailed credit considerations

Francis Scott Key Bridge Replacement Project

On March 26, 2024, the Francis Scott Key Bridge collapsed after a container ship collided with a support column. While final costs and timing of the Key Bridge replacement project are still uncertain, the confirmation of 100% funding by the federal government is positive for MDTA. Final reconstruction costs are still unknown at this point, however we expect them to be substantial in part because of elevated construction costs driven by high inflation in recent years and a tight labor market, further impacted by tariff related uncertainties. Besides, there is uncertainty regarding the timing of the project given its complexity.

Even with a complex project ahead given timing, design and size, we believe that MDTA will be successful in the implementation of this project given its strong track record of delivering construction projects. In October 2022, MDTA concluded the replacement of its Nice/Middleton Bridge about three months ahead of schedule following a 30-month construction period at a \$636 million cost.

MDTA entered in a progressive design build agreement with Kiewit in August 2024 for phase 1 of the project which includes the project development, with pre-construction and design works which allow for the preparation for phase 2 request for proposal process. Phase 2 includes the project delivery and the final award of the fixed price contract is expected to be reached late summer of 2025.

Preliminary estimates at the time of collapse included project completion by the end of calendar year 2028 and total costs of about \$1.7 billion. The project will be funded with MDTA's insurance policy's proceeds and federal funds. MDTA will use the \$60 million of FHWA emergency relief funds and proceeds from its \$350 million in property and business interruption insurance that were received in 2024 to fund the replacement project prior to drawing additional federal funds. MDTA may also receive third-party insurance proceeds, including from the ship owner and manager that caused the crash. However we expect that any proceeds from these insurances would take a long time to be recovered (both ship owner and manager have filed claims seeking to limit their financial liability), so we do not consider them as available sources to fund the project in the short to medium term. If any of these funds are received, we expect they will be used to reimburse the federal government.

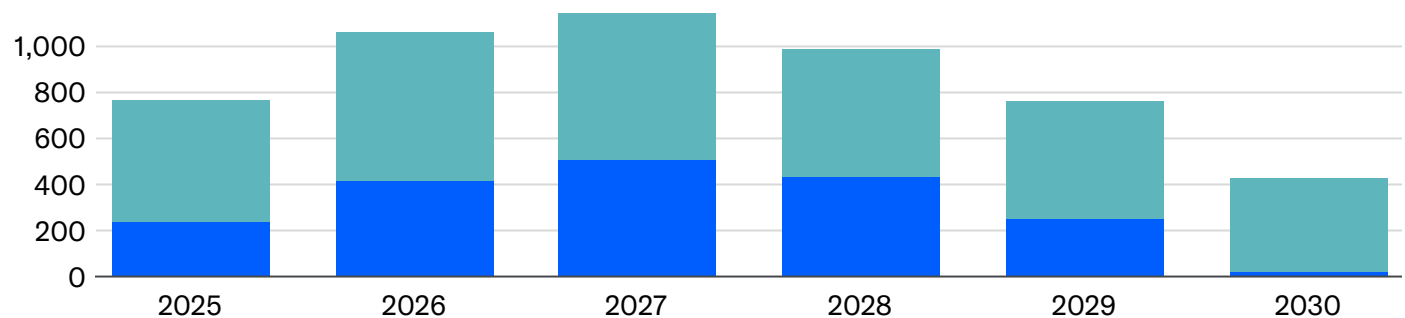
Specifically referring to federal resources, the total amount of the funding/percentage of total costs to be funded is defined at 100%. So far, the federal government has released \$60 million emergency relief funds to finance initial costs such as mobilization, operations and debris recovery, following the declaration of State of Emergency by Governor Wes Moore on March 26, 2024 and MDTA and MDTA's request to US Department of Transportation's Federal Highway Administration (FHWA) for a quick release of emergency relief funds. Soon after the request, the FHWA approved and made available the requested amount as down payment toward initial costs.

In a stress case scenario where 100% of federal funding is unavailable and the federal government covers only the usual 90% of the project costs, similar to emergency relief fund releases for interstate roads, MDTA would need to cover the remaining 10%. MDTA would have options to fund this 10% and/or bridge near-term reconstruction costs if needed. These include tapping its \$650 million in liquidity (unrestricted and discretionary reserves) as of March 2025 as well as using funds from insurance. If MDTA needs to issue debt or deplete its liquidity to finance bridge replacement, it could place additional pressure on MDTA as it is in the midst of a \$5.1 billion capital expenditures program (2025-2030). This program includes the \$1.7 billion Key Bridge replacement project, expected to be fully funded with the \$350 million from insurance proceeds and the remaining from federal emergency relief funds. For all the other projects, this program contemplates the issuance of about \$2 billion in new debt and the remaining portion is expected to be funded with internally generated cash and liquidity balances. This is expected to result in the depletion of MDTA's current strong level to close to the triggers for downgrade. Of note, MDTA has an internal policy to keep the minimum liquidity of \$400 million unrestricted cash balance and coverage above 2.0x. In any case, in line with its track record, we expect MDTA to take action to maintain its strong financial profile by increasing toll rates or making other adjustments.

Exhibit 2

Fiscal 2025-2030 Capital Expenditures Program USD million

■ Francis Scott Key Bridge replacement project ■ Remaining projects of MDTA facilities



Source: Maryland Transportation Authority

Revenue Generating Base

Key MDTA's assets are located in the Baltimore area and according to Moody's Analytics, as of January 2025, Baltimore-Columbia-Towson will grow more slowly than the U.S. in the next year. Federal government job losses will constrain payroll and income growth, and logistics will underwhelm. In the long term, poor demographic trends will render Baltimore-Columbia-Towson an underperformer.

The [State of Maryland](#) (Aa1, stable) will face greater economic risk than other states from federal government actions, in view of its elevated level of federal employment and several other key measures. After supporting the state economy for many years, the presence of federal agencies including the National Institutes of Health, the Food and Drug Administration, the Social Security Administration and many other agencies creates a vulnerability at a time of federal downsizing. Cuts in federal workforce could have a negative impact in traffic, however as an important offset to this negative impact there is the new administration memorandum calling for all federal employees to return to the office full-time. This is especially important given the relevance of remote work in the region, which has been one of the key reasons for an overall slower recovery to pre pandemic levels versus other regions.

Financial Operations and Position

Moody's debt service coverage ratio (DSCR) remained strong in fiscal 2024. The DSCR increased to 3.42x from 3.03x in fiscal 2023 given the traffic and revenue increase of 1.5% and 0.7% respectively coupled with slightly lower debt service. Moving forward, we expect the authority's DSCR to decline due to the expected increase in leverage over the next few years as part of the authority's capital expenditure program.

In the fiscal year-to-date performance through March 2025, traffic and toll revenue have declined by 2.7% and 3.3%. We expect the negative impact from the Francis Scott Key Bridge's collapse to remain limited. Toll revenue from the 1.6-mile Key Bridge, one of eight toll facilities owned and operated by MDTA, accounted for only about 7% of its total toll revenue, minimizing the adverse effects from lost collections. As a significant share of traffic is diverted to the other MDTA facilities in the area, Fort McHenry Tunnel and Baltimore Harbor Tunnel, toll collections from the tunnels stand to offset part of the lost toll revenue. The tunnels, however, have more limitations regarding commercial vehicles that can travel through them (ie trucks carrying hazardous materials and oversized trucks).

Exhibit 3

MDTA's facilities in Baltimore harbor crossings

Traffic and revenue performance

	2020	2021	2022	2023	2024
FRANCIS SCOTT KEY BRIDGE					
Transactions ('000)					
passenger	10,966	10,115	10,581	11,124	7,959
commercial	1,148	1,256	1,224	1,306	1,150
Total	12,114	11,372	11,805	12,430	9,109
Toll Revenues (\$'000)					
Passenger	27,552	30,266	31,370	31,842	22,966
Commercial	20,234	22,367	21,657	24,262	21,826
Total	47,787	52,633	53,026	56,104	44,792
<i>Total as a % of MDTA total toll revenues</i>	<i>8.2%</i>	<i>8.1%</i>	<i>7.5%</i>	<i>7.4%</i>	<i>5.9%</i>
FORT MCHENRY TUNNEL					
Transactions ('000)					
passenger	38,545	35,018	37,064	38,375	40,379
commercial	4,093	4,608	4,495	4,591	4,751
Total	42,638	39,626	41,559	42,966	45,130
Toll Revenues (\$'000)					
Passenger	115,633	116,438	123,893	126,439	135,112
Commercial	77,974	93,803	88,643	93,190	96,436
Total	193,607	210,241	212,537	219,629	231,548
<i>Total as a % of MDTA total toll revenues</i>	<i>33.1%</i>	<i>32.5%</i>	<i>30.2%</i>	<i>29.1%</i>	<i>30.4%</i>
BALTIMORE HARBOR TUNNEL					
Transactions ('000)					
passenger	13,818	16,455	24,242	27,822	28,132
commercial	461	617	741	938	981
Total	14,279	17,072	24,982	28,760	29,114
Toll Revenues (\$'000)					
Passenger	41,369	56,072	81,587	93,525	94,786
Commercial	6,005	9,143	9,683	13,734	12,858
Total	47,374	65,214	91,269	107,259	107,644
<i>Total as a % of MDTA total toll revenues</i>	<i>8.1%</i>	<i>10.1%</i>	<i>13.0%</i>	<i>14.2%</i>	<i>14.1%</i>

Source: Maryland Transportation Authority

LIQUIDITY

Liquidity decreased to 743 days cash on hand (DCOH) in fiscal 2024 from 876 DCOH in fiscal 2023. Going forward cash is expected to continue to decline as the authority funds a large portion of its capital program with internally generated funds. Increasing operating

expenses level also pressures the liquidity profile of the issuer. The current liquidity level is below its historical average of about \$700 million, translating into about 1,000 DCOH from 2015 through 2019. Depending on the Key Bridge's replacement project's funding timing, liquidity could be negatively impacted if MDTA needs to tap into its balance to bridge a part of this project's costs.

Debt and Other Liabilities

The authority's total debt outstanding was \$2.11 billion in fiscal 2024, resulting in a low leverage as measured by adjusted debt to operating revenues of 3.12x.

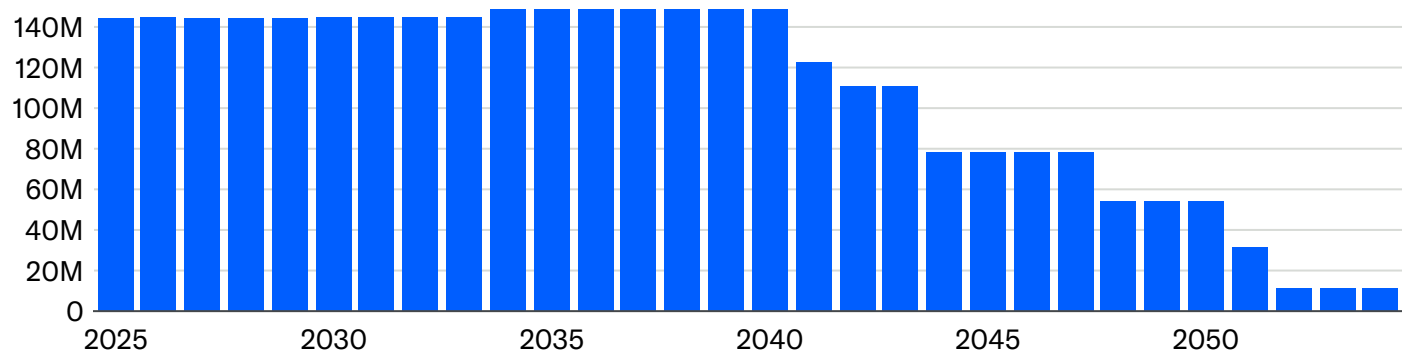
MDTA's capital expenditure program through the next six year period (2025-2030) is expected to be approximately \$5.1 billion, which includes the \$1.7 billion Key Bridge replacement project to be funded with insurance and federal funds. The authority anticipates cash funding (pay-go) approximately 28% of capital expenditure expenses and funding the remaining portion through the various debt financings, totaling \$2 billion of additional debt. The implementation of the 2025-2030 capital expenditure program and its funding through debt and liquidity result in narrower financial metrics going forward and they could be further pressured if there are any changes to the Key Bridge's replacement project, adding risk to future performance.

Besides the Key Bridge replacement project, the authority's capital expenditure program incorporates high system preservation costs given the age of some of the system's assets. The authority will also continue several significant projects as part of the capital expenditure program including the extension of the northbound I-95 Express Toll Lanes, even though there is a substantial part of the work already completed, with the latest being the extension to MD152 that opened in December 2024.

DEBT STRUCTURE

As shown in the exhibit below, the debt service schedule of the authority remains relatively flat before declining in 2041. Going forward, the authority expects to significantly increase leverage through approximately \$2.0 billion of debt financing for its capital expenditure program, which will increase the debt service level.

Exhibit 4
Current debt service profile



Source: Maryland Transportation Authority

DEBT-RELATED DERIVATIVES

None.

PENSIONS AND OPEB

MDTA reported a net pension liability of \$277 million in fiscal 2024, compared to Moody's adjusted net pension liability (ANPL) of about \$553 million. Moody's adjusts the reported pension liabilities of entities that report under governmental accounting standards, to enhance comparability across rated issuers. Under governmental pension accounting, liabilities are discounted using an assumed rate of investment return on plan assets. Under our adjustments, we value liabilities using a market based discount rate for high quality taxable bonds, a proxy for the risk of pension benefits.

LEGAL SECURITY

The authority's outstanding revenue bonds are secured by a pledge of revenues from the Transportation Facility Projects and from the General Account Project, which is subject to reallocation at the option of the MDTA. The authority's rate covenant requires net revenues of the Transportation Facility Projects to be at least the sum of 1.2x annual debt service and 100% of the amount required to be deposited in the maintenance and operations reserve account. The additional bonds test requires the rate covenant to be met on a 5-year prospective basis.

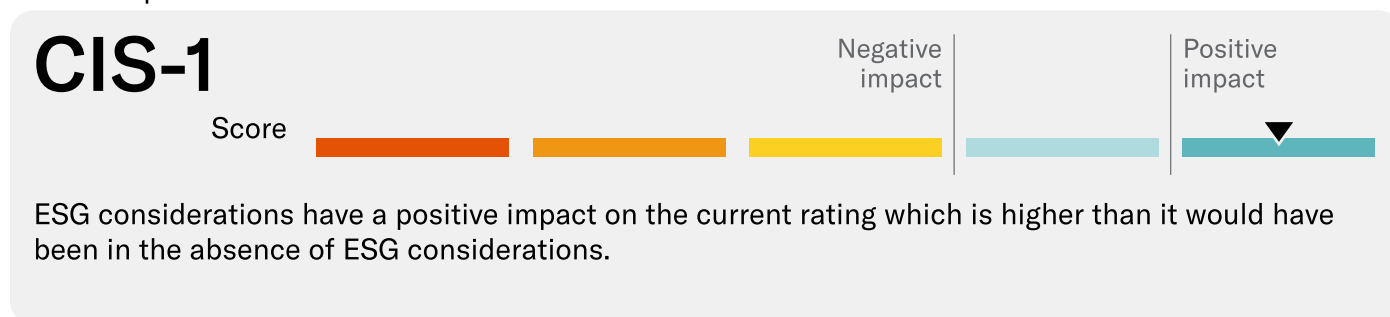
The outstanding municipal bonds are also secured by a surety policy funded debt service reserve subaccounts sized at the lesser of maximum annual debt service, 125% of average annual debt service or 10% of the proceeds of the principal amount of the bonds funded with surety policies. Series 2022 TIFIA Loan does not have a debt service reserve subaccount at this point.

ESG considerations

Maryland Trans. Auth. - Trans. Facilities' ESG credit impact score is CIS-1

Exhibit 5

ESG credit impact score

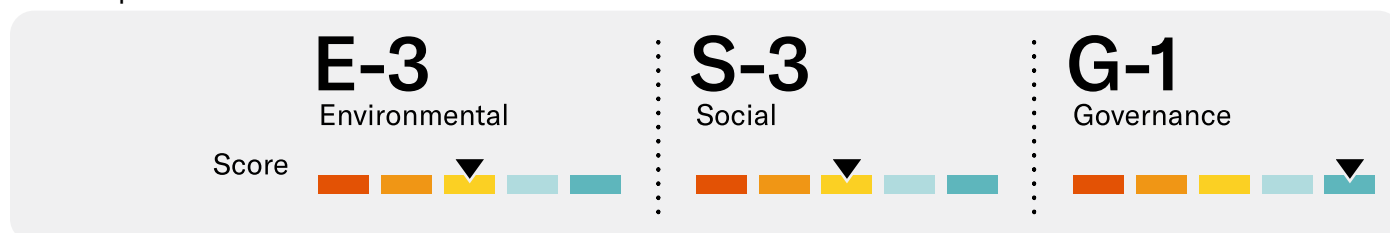


Source: Moody's Ratings

Maryland Transportation Authority – Transportation Facilities (MDTA)'s **CIS-1** indicates that ESG considerations have a positive impact on the rating. The score reflects MDTA's positive exposure to governance risk and moderately negative exposure to environmental and social risks.

Exhibit 6

ESG issuer profile scores



Source: Moody's Ratings

Environmental

MDTA's **E-3** issuer profile score reflects its negative exposure to physical climate risk. As a system with several tunnels and bridges, MDTA faces physical climate risk from its location with exposure to extreme weather events, such as hurricanes. The increasing use of electric or hybrid vehicles still require the use of the roadways, limiting exposure to carbon transition risks impacts on traffic and revenue. While roadway materials are carbon intensive (i.e., concrete and asphalt), wide use of sustainable alternatives have yet to become widely and affordably available and there has yet to be a rise in political or social pressure to decarbonize construction materials to date.

Social

MDTA's **S-3** issuer profile score reflects negative exposure from demographic and societal trends. Local demographic and societal trends in the region have had a moderately negative impact on traffic whereby more professionals are working from home after the pandemic and population growth is lower than average.

Governance

MDTA's **G-1** issuer profile score reflects positive exposure from financial strategy and risk management. MDTA benefits from its track record of strong financial performance, its financial policies and history of conservative budgeting coupled with track record of exceeding its forecasts. The authority's board is a group of eight citizens who are appointed by the governor (and confirmed by the senate) and the secretary of transportation serves as chairman. Members serve four-year terms and may not serve more than three consecutive terms. The authority cannot take action without the concurrence of the chairman, the secretary of the state department of transportation, MDOT.

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 actual rating of Aa2 reflects the scorecard indicated outcome of Aa2. The scorecard is a reference tool that can be used to approximate credit profiles for Publicly Managed Toll Roads in most cases. Please see the Publicly Managed Toll Roads and Parking Facilities Methodology published in May 2023 for more information about the limitations inherent to grid.

Exhibit 7

Publicly Managed Toll Roads and Parking Facilities Rating Methodology Maryland Transportation Authority

Factor	Subfactor	Score	Metric
1. Market Position	a) Asset Type	Aa	
	b) Competitive Position and Environment	Aaa	
	c) Economic Strength and Diversity of Service Area	Aaa	
2. Performance Trends	a) Annual Revenue	Aaa	\$854.6
	b) Operating Track Record and Revenue Stability	Aa	
	c) Ability and Willingness to Increase Toll Rates	A	
3. Financial Metrics	a) Debt Service Coverage Ratio	Aaa	3.42x
	b) (Debt + ANPL) to Operating Revenue	Aa	3.12x
Notching Considerations		Notch	
	1 - Debt Service Reserve Fund level	0.0	
	2 - Open/Closed Flow of Funds	-0.5	
	3 - Days Cash on Hand	1.0	743
	4 - Asset Ownership and Financing Structure	0.0	
	5 - Leverage Outlook	-0.5	
Scorecard Indicated Outcome:		Aa2	

Source: Moody's Ratings

© 2025 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 OR OTHERWISE MADE AVAILABLE BY MOODY'S (COLLECTIVELY, "MATERIALS") 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 MATERIALS ARE NOT STATEMENTS OF CURRENT OR HISTORICAL FACT. MOODY'S MATERIALS 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 MATERIALS DO NOT CONSTITUTE OR PROVIDE INVESTMENT OR FINANCIAL ADVICE, AND MOODY'S CREDIT RATINGS, ASSESSMENTS, OTHER OPINIONS AND MATERIALS ARE NOT AND DO NOT PROVIDE RECOMMENDATIONS TO PURCHASE, SELL, OR HOLD PARTICULAR SECURITIES. MOODY'S CREDIT RATINGS, ASSESSMENTS, OTHER OPINIONS AND MATERIALS 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 OR OTHERWISE MAKES AVAILABLE ITS MATERIALS 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 MATERIALS 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 MATERIALS 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. FOR CLARITY, NO INFORMATION CONTAINED HEREIN MAY BE USED TO DEVELOP, IMPROVE, TRAIN OR RETRAIN ANY SOFTWARE PROGRAM OR DATABASE, INCLUDING, BUT NOT LIMITED TO, FOR ANY ARTIFICIAL INTELLIGENCE, MACHINE LEARNING OR NATURAL LANGUAGE PROCESSING SOFTWARE, ALGORITHM, METHODOLOGY AND/OR MODEL.

MOODY'S CREDIT RATINGS, ASSESSMENTS, OTHER OPINIONS AND MATERIALS 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 Materials.

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 Moody's Investors Service, Inc. for credit ratings opinions and services rendered by it. MCO and all MCO entities that issue ratings under the "Moody's Ratings" brand name ("Moody's Ratings"), also maintain policies and procedures to address the independence of Moody's Ratings' 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 ir.moody.com under the heading "Investor Relations — Corporate Governance — Charter and Governance Documents - Director and Shareholder Affiliation Policy."

Moody's SF Japan K.K., Moody's Local AR Agente de Calificación de Riesgo S.A., Moody's Local BR Agência de Classificação de Risco LTDA, Moody's Local MX S.A. de C.V., I.C.V., Moody's Local PE Clasificadora de Riesgo S.A., and Moody's Local PA Clasificadora de Riesgo S.A. (collectively, the "Moody's Non-NRSRO CRAs") are all indirectly wholly-owned credit rating agency subsidiaries of MCO. None of the Moody's Non-NRSRO CRAs is a Nationally Recognized Statistical Rating Organization.

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 India only: Moody's credit ratings, Assessments, other opinions and Materials are not intended to be and shall not be relied upon or used by any users located in India in relation to securities listed or proposed to be listed on Indian stock exchanges.

Additional terms with respect to Second Party Opinions and Net Zero Assessments (as defined in Moody's Ratings Rating Symbols and Definitions): Please note that neither a Second Party Opinion ("SPO") nor a Net Zero Assessment ("NZA") is a "credit rating". The issuance of SPOs and NZAs is not a regulated activity in many jurisdictions, including Singapore. JAPAN: In Japan, development and provision of SPOs and NZAs fall under the category of "Ancillary Businesses", not "Credit Rating Business", and are not subject to the regulations applicable to "Credit Rating Business" under the Financial Instruments and Exchange Act of Japan and its relevant regulation. PRC: Any SPO: (1) does not constitute a PRC Green Bond Assessment as defined under any relevant PRC laws or regulations; (2) cannot be included in any registration statement, offering circular, prospectus or any other documents submitted to the PRC regulatory authorities or otherwise used to satisfy any PRC regulatory disclosure requirement; and (3) cannot be used within the PRC for any regulatory purpose or for any other purpose which is not permitted under relevant PRC laws or regulations. For the purposes of this disclaimer, "PRC" refers to the mainland of the People's Republic of China, excluding Hong Kong, Macau and Taiwan.

CLIENT SERVICES

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