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CREDIT OPINION
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Harris County Toll Road Authority, TX

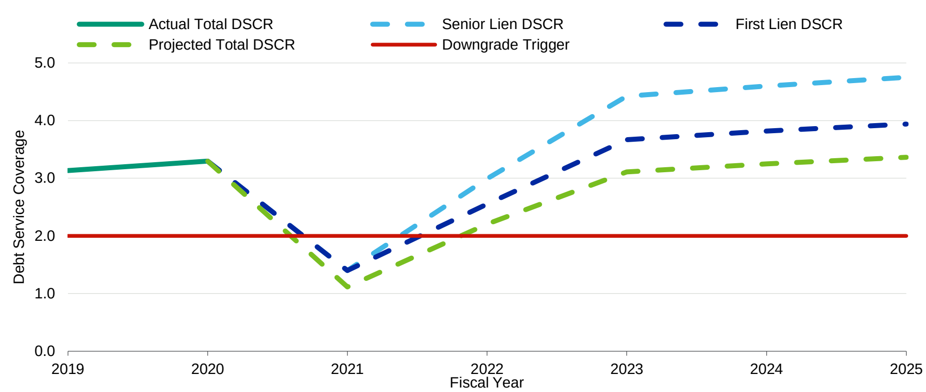
Update to credit analysis following upgrade of senior lien bonds to Aa1

Summary

Harris County Toll Road Authority, TX's (HCTRA, Aa1 senior/Aa2 first lien stable) credit profile will remain among the strongest of US toll roads despite the negative traffic trends in fiscal 2021, ending February 28. HCTRA's credit is supported by its large, affluent, and growing service area and leverage below 3.0x, currently around 2.8x, and high debt service coverage ratios around 3.1x. HCTRA plans to make the new first lien the working lien and will gradually shift debt from senior to first lien as refunding opportunities become available. HCTRA's largest project, the replacement Ship Channel Bridge, faces cost escalation risk given the design-bid-build procurement method and the long construction schedule of seven years. HCTRA faces higher than average environmental risk than peers from localized flooding, most of which was caused by increasingly potent hurricanes, however the short term disturbance to revenue collections is easily absorbed given HCTRA's high DSCR and ample liquidity.

We recently upgraded HCTRA's senior lien bonds to Aa1 from Aa2 and assigned Aa2 to the new first lien bonds that will become the working lien.

Exhibit 1
Debt service cover ratio will drop below downgrade trigger in fiscal 2021 but return above it in fiscal 2022 and increase thereafter



*Fiscal 2021-2025 represents projected DSCR's based on management's conservative forecast
Source: Moody's Investors Service

Credit strengths

- » DSCRs and cash balances will remain strong after fiscal 2021 COVID-19 driven traffic and revenue decline
- » Service area is among the largest metropolitan areas in the nation and is expected to continue strong growth long-term even after impact of COVID-19
- » Annual independent engineer's report shows system assets to be in good condition and current capital plan can be funded from revenues and small draws on reserves
- » Availability of an authorized but untapped property tax levy for general obligation debt service and a separate levy to make up any operating deficits provide additional flexibility

Credit challenges

- » Though the economy has seen increased diversification, it remains heavily exposed to the energy sector, which has exhibited high volatility historically and will face challenges given our view of oil and gas price recovery
- » Open flow of funds allows for transfers to the county, but have historically only been used for mobility projects
- » The elected county commissioners court directly oversee the authority, reducing the level of independence of rate setting versus peers

Rating outlook

The stable outlook reflects our view that ample liquidity and surplus revenue will remain to manage through the reduced demand from the coronavirus-caused closures and a protracted economic recovery and that HCTRA will not be subject to significant cost overruns associated with their ongoing construction plan.

Factors that could lead to an upgrade

- » The Aa1 rating on the senior lien, the highest in our rated toll road portfolio, is unlikely to be upgraded given the current rating level.
- » We do not expect the Aa2 rating on first lien bonds to go up in the medium term though continued strong growth, low leverage and annual rate increases would contribute to positive pressure.

Factors that could lead to a downgrade

- » Increased leverage due to cost overruns that lead to weakened financial metrics
- » Total DSCR below 2.0x
- » Adjusted debt to operating revenue above 5.0x
- » Days cash on hand below 400 days

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Key indicators

Exhibit 2
Key Indicators

Harris County Toll Road Authority, TX					
	2016	2017	2018	2019	2020
Total Transactions Annual Growth (%)	7.9	0.0	0.2	8.6	1.3
Debt Outstanding ($'000)	2,127,280	1,975,055	2,256,415	2,237,585	2,210,890
Adjusted Debt to Operating Revenues (x)	3.0	2.7	3.3	2.9	2.8
Days Cash on Hand ('000)	1,634	1,484	1,945	1,998	1,855
Senior Lien Debt Service Coverage By Net Revenues (x)	4.31	3.77	3.66	3.93	4.14
Total Debt Service Coverage By Net Revenues (x)	3.05	2.93	2.86	3.13	3.30

Source: Moody's Investors Service

Profile

HCTRA operates a well-established multi-asset tollway system in the Houston/ Harris County metropolitan area. The HCTRA system connects with 12 miles of toll roads in Ft. Bend and Montgomery Counties, for a total of 128 miles (or 807 lane miles).

Detailed credit considerations

Revenue Generating Base - Service area centered on the city of Houston will continue to grow even after impact of COVID-19 and energy sector weakness

Although experiencing some COVID-19 driven recession in the near term, HCTRA's revenue generating base is very strong, given the large population base, continued in-migration and dense development. HCTRA serves at the center of the fifth largest metropolitan statistical area, as defined by the US Census Bureau, with an estimated population of 7.1 million people in 2019. Population growth was 1.4% in 2019 down from 2.5% in 2014. Harris County's strong economic performance will remain over the next five to ten years supported by a large and diversifying economy. However the pace of growth over the next couple of years will likely be tempered in response to weakened global conditions, a result of the coronavirus pandemic.

Anchored by the City of Houston, a critically important global economic hub, the county's longer term economic outlook is solid because of favorable demographic trends and high demand for its main economic sectors: energy, healthcare and life sciences and logistics and transportation. In the near term, the economy is challenged by low oil prices and the effects of the coronavirus pandemic which has slowed economic output. Oil prices have dropped below $50 per barrel, and rig activity has steadily declined since January. The largest impacts will be in manufacturing, the bulk of which is equipment, supplies, and fabricated metal products used for drilling. Tempering this, increased diversity that has been established over several decades in nonenergy sectors including healthcare and logistics and transportation bode well for the county and will allow the area to weather the current energy situation. Lower oil prices will also decrease gas prices, which typically leads to increased vehicular travel demand which will be positive for HCTRA's recovery prospectus.

The service area is geologically flat and, as seen during Hurricane Harvey, prone to flooding. Even with the severe weather issues, the system did not sustain any substantial damage. The authority carries high liquidity, allowing them to manage through periods of interruption.

HCTRA will also benefit from an expanding network of tolled facilities in adjacent counties. Fort Bend County continues to expand its Westpark facility that extends from HCTRA's Westpark. Brazoria County is adding tolling to the expansion of SH288 to the south. Montgomery County is constructing tolled facilities on SH249, which is an extension of HCTRA's Tomball Tollway, and Texas DOT will be extending that facility further north. We think that increased regional usage of tolling with increased usage of electronic toll collection will benefit HCTRA by reducing collection efforts and losses and result in small increases in revenue.

HCTRA's current toll policy includes annual escalation at the lesser of CPI or 2% but the policy has not been followed for the last five fiscal years. Increases in 2018, 2019 and 2020 were not deemed necessary because of strong revenue performance, following foregone increases in 2017 when tolling and accounting systems upgrades were planned. While deviation from toll policy is typically credit negative for issuers, the generally flat debt service requirements and the ample DSCR and liquidity held by the authority supports delayed implementation of increases.

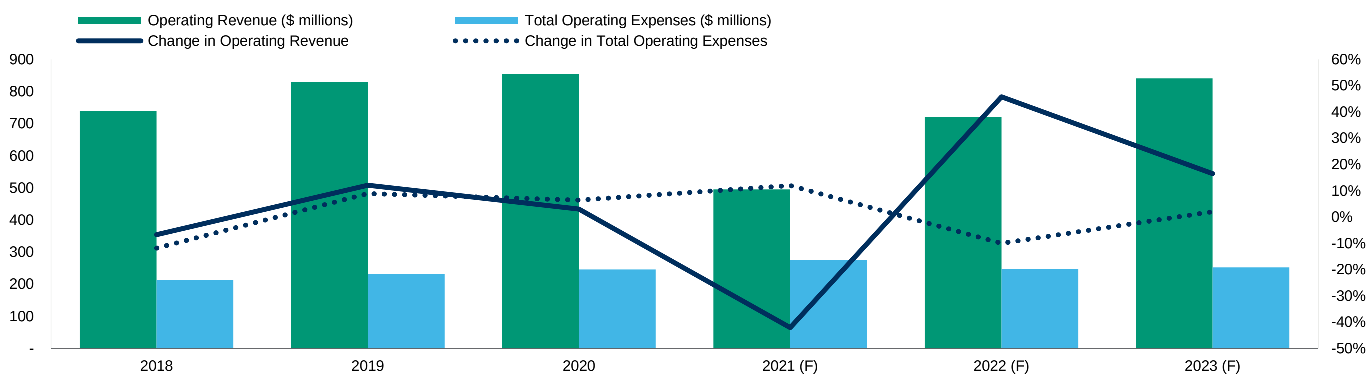
Financial Operations and Position – Fiscal 2021 metrics will decline noticeably from 2020 levels but will gradually improve throughout the recovery period

Strong revenue growth persisted through fiscal 2020 with operating revenues up 3% from fiscal 2019 levels. This 3% growth is attributable to total transaction growth of 1.3%, owing to growth in both passenger and commercial transactions, coupled with no weather related toll disruptions in the fiscal year. Passenger car transactions increased by 1.2% in fiscal 2020, outpaced by commercial vehicle transactions which increased 3.9%.

As a result of HCTRA's 2/28 fiscal year end which aligns almost simultaneously with the outbreak of COVID-19 in the US, fiscal 2021 will realize a substantial decline in revenues compared to fiscal 2020 levels. Management conservatively forecasts that revenues will decline by approximately 42% in fiscal 2021 due to the various stay-at-home mandates that drastically impacted commuter travel throughout the onset of the pandemic. HCTRA suspended tolls throughout the month of April, effectively foregoing revenue for the month. Given the timing of the fiscal year and the toll suspension HCTRA will post one of the biggest losses of rated toll roads in fiscal 2021. Traffic and revenue has steadily returned each month and, per latest October data, transactions and revenue are down 12% and 19% respectively compared to October 2019 levels. Revenue is most reduced on the Katy managed lanes and the Hardy tollroad, which runs into the downtown central business district and parallels untolled I-45. Even with the drastic revenue impact, HCTRA will comfortably exceed coverage of 1.0x in fiscal 2021 and maintains sizable liquidity in the event of a more pronounced recovery period. After fiscal 2021, management forecasts gradual revenue growth of 46% and 16.5% and expects revenue to recover above fiscal 2020 levels in fiscal 2024 (Exhibit 2).

Exhibit 3

Management forecasts a prolonged revenue recovery which does not return to 2020 levels until fiscal 2024 while expenses remain relatively flat.



*Fiscal 2021-2023 based on management forecast from consultant report
Source: Harris County Toll Road Authority, TX

DSCRs further improved in fiscal 2020 after increasing in fiscal 2019. Senior lien coverage by net revenue increased to 4.14x in fiscal 2020 from 3.93x in fiscal 2019, while total DSCR by net revenue increased to 3.30x from 3.13x. As a result of the aforementioned revenue declines, total DSCR will decline substantially in fiscal 2021 but will comfortably exceed 1.0x. Subsequent to fiscal 2021, management conservatively forecasts that total debt service coverage will exceed 2.2x in fiscal 2022 before returning above 3.0x in the subsequent years. Senior lien DSCR will continue to strengthen as debt amortizes and/or is strategically moved to the new working first lien until it fully amortizes in 2050. Total debt service coverage will follow a similar pattern after the recovery period, annually improving as debt continues to amortize (Exhibit 1).

Liquidity

HCTRA maintains a strong liquidity position with 1,855 days cash on hand at fiscal year-end 2020. We expect liquidity to remain strong at over 1,000 days even as HCTRA proceeds with cash funding a large portion of their capital plan. HCTRA also plans to remit

$300 million of its available $1.25 billion available liquidity to the county to support other projects. We do not think the unusually high transfer weakens the credit profile because HCTRA's available cash is well in excess of its needs.

HCTRA identifies its capital plan by the year that projects are approved versus an annual cash outflow basis and the impact of COVID-19 has delayed much of the originally scheduled construction. Consequently, exact projections are difficult to ascertain given the uncertainty surrounding resumed scheduling. We think that HCTRA would see weaker liquidity in the event that capital expenditures are cash funded in advance of substantial traffic and revenue return following the COVID-19 pandemic, however, given management's past policies on liquidity, we do not envision a scenario where HCTRA reduces liquidity to levels below 700 days.

Debt and Other Liabilities - Leverage will remain low as no additional debt is currently scheduled beyond current issue

CAPITAL PLAN

HCTRA expects to fund its five-year, $2.8 billion capital plan with remaining bond proceeds, future net revenues and existing cash reserves. Because HCTRA's capital plan acknowledges capital expenditures when projects are encumbered through executed contracts and not in the year of expenditure, meaning when contracts are executed rather than when the funds are actually expended, the cash usage will be different from the total size of the plan. For example, some previously encumbered projects are still in run-off and incurring cash payments while portions of the current plan budget will be spent outside of the current five-year window. Also, HCTRA notes that many projects in the capital plan can be delayed if net revenue is slow to recover.

The largest project in the plan is Ship Channel Bridge, which has a target completion before the end of calendar year 2025 but is not expected to be slowed significantly because of funding issues. The estimated cost of $1.058 billion is up approximately 10% from the initially estimated budget of $962 million. Management does not expect debt issuance over the next year. The authority has the ability to incur further cost increases given their strong liquidity position and ample coverage that will exceed 3.0x once traffic returns to pre-coronavirus levels.

Legal security

The senior lien revenue bonds are special obligations of the county, secured by a senior lien on the trust estate established under the existing 2015 senior lien revenue bond indenture, which includes a gross pledge of funds in the debt service and debt service reserve fund (DSRF) and all revenues of the toll road system. The rate covenant requires toll revenue collection sufficient to produce revenues that provide at least 1.25x aggregate debt-service coverage on toll road senior lien revenue bonds accruing in such fiscal year. The senior lien DSRF, which is fully funded, is to be funded at not less than average annual aggregate debt service and not more than maximum annual debt service.

The first lien revenue bonds are also special obligations of the county, secured by a first lien on, pledge of and security interest in the Trust Estate established under the new revenue bond indenture, which includes a pledge of all revenues derived from the operation of the toll facilities comprising the Harris County Toll Road System, subject to and subordinate in all respects to any lien or pledge granted with respect to senior lien revenue bonds under the 2015 Indenture. The first lien bonds also benefit from a 1.25x rate covenant and the covenant that HCTRA will not issue new debt on the senior lien beyond replacement of the existing commercial paper program and the refunding or replacement of the Series 2007B bonds and related swaps (in connection with the expiration of LIBOR) unless the issuer obtains written approval of 75% of first lien bondholders. The 2021 bonds will participate in the first lien debt service reserve fund, which will be funded at the standard IRS three-prong test that is expected to provide just over 12 months of debt service.

Debt structure

Before the comprehensive overhaul of the bond indenture, HCTRA had two primary liens with the vast majority of debt (89%) on the senior lien and the remainder on the subordinate lien (Aaa stable, rated on county's general obligation pledge). With the new indenture, HCTRA will establish a new first lien which will be subordinate to the outstanding senior lien but senior to the outstanding subordinate lien. The first lien will become the new working lien for HCTRA and the authority plans to move all other non-2007B bonds to the first lien from the Senior Lien as refunding opportunities present themselves. HCTRA is inhibited from issuing new obligations on the senior lien with the exception of two scenarios.

» The issuance and re-issuance of commercial paper notes under the county's existing toll road commercial paper programs, which will remain authorized until the County establishes a replacement commercial paper program under the new indenture. The existing CP program is supported by one LC supporting the Series E-1 paper that expires May 2, 2022 and one LC supporting the Series E-2 paper that expires May 15, 2023.

» The issuance of refunding bonds or other obligations for the Series 2007B Bonds and related parity hedge agreements in connection with the replacement of LIBOR. The Series 2007B bonds are LIBOR index floating rate notes that mature in two large bullets in 2035 and 2036. The bonds are fixed out through swaps with Citibank and JP Morgan Chase, each covering the same initial notional value of $72.8 million. The swaps receive payment of 67% of 3 month LIBOR + 0.67%. With LIBOR going away, the swaps will need to be replaced.

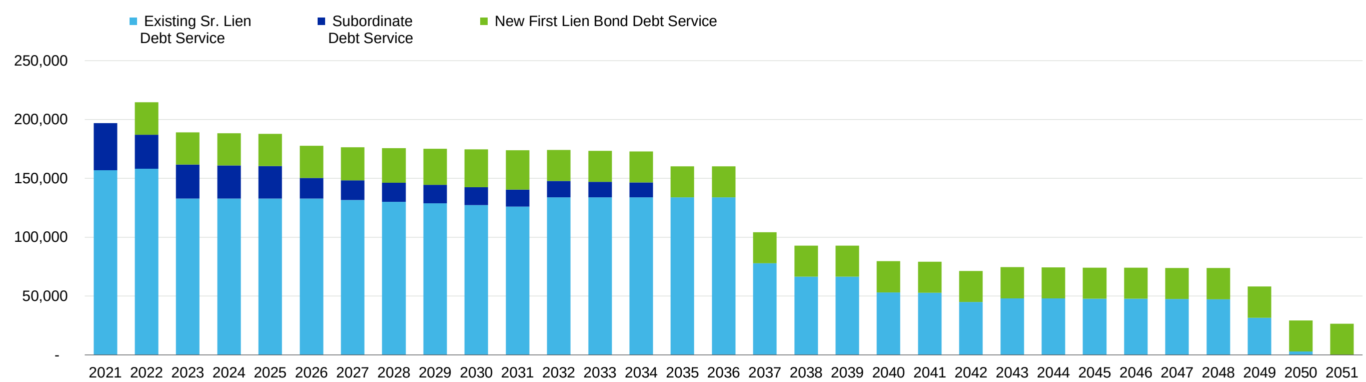
Through the new indenture, the county will benefit from added flexibility with multiple lien levels, while incorporating some more modern terms seen in RMA indentures relating to reserve funds, surety policies and defeasance securities, among others, and updating the statutory authority for financing and developing toll roads in Texas. The updated statutory authority will allow the county greater flexibility in determining whether to bond finance a broader range of projects, including joint projects with TxDOT (such as the recent HCTRA contributions for TxDOT interchange projects), transportation components of flood control projects that relate to the HCTRA toll road system and capital improvements to the Washburn Tunnel and Lynchburg Ferry, which the County currently can fund with surplus revenue on a pay-as-you-go basis.

Total debt service to be paid is $3.95 billion. Annual debt service requirements remain relatively flat after fiscal 2022 before substantially declining after fiscal 2036, as shown in Exhibit 4. Even with the new debt issuance, HCTRA's strong historic revenue growth and recovery prospectus, provides the authority with the ability to add debt for future capital plans without significantly reducing coverage. HCTRA has also implemented a commercial paper program to help fund the capital plan.

Leverage as exemplified by adjusted debt to operating revenue, will increase notably to over 5.0x in fiscal 2021 as a result of the increased leverage and COVID-19 related revenue declines. However, if management forecast is met, leverage will return to pre pandemic levels in fiscal 2023. We believe management's forecast to be conservative and in line with our assumptions.

Exhibit 4

Annual debt service requirements remain relatively flat after fiscal 2022 before substantially declining after fiscal 2036.



Source: Moody's Investors Service

Debt-related derivatives

The toll road has two interest rate swaps. As of February 28, 2020, the mark-to-market valuation was approximately negative $27.4 million against the county. This is a manageable amount in relation to the substantial unrestricted liquidity.

Pensions and OPEB

Pursuant to GASB 68, as of February 2020, HCTRA reported a net pension liability (NPL) of $242 million and a net other post employment liability (OPEB) of $111 million for its proportionate share of the state's net pension and net OPEB liability respectively.

Our adjusted net pension liability (ANPL) and net OPEB liability are $383 million and $92.6 million respectively, which are both manageable for an entity with improving leverage and coverage.

ESG considerations

Environmental

Overall, toll road issuers face limited impact from environmental risks, including HCTRA. Reducing emissions from cars by limiting traffic is not a factor in the project's service area. Traffic volumes are linked to regional economic trends, land use, employment and population growth, as well as personal mobility requirements. HCTRA’s facilities and connecting roads have experienced flooding over the past few years that have had operational impacts, however HCTRA’s high liquidity and DSCR mitigate negative revenue shocks.

Social

The most material social risk now is COVID-19 and the related movement restrictions and economic impact that have materially reduced traffic and revenue and will depress growth for years to come. High toll rates can lead to user pushback, but there are free general purpose and frontage lanes adjacent on many of HCTRA's facilities, reducing this risk compared to other toll roads that provide the sole form of connectivity to certain destinations.

Governance

The toll road operates as a division of Harris County. Its operating board is comprised of members of the county commissioners court, all five of whom are elected officials.

Rating methodology and scorecard factors

The principal methodology used in these ratings was Publicly Managed Toll Roads and Parking Facilities published in March 2019. Please see the Rating Methodologies page on www.moodys.com for a copy of this methodology.

The one notch difference between the scorecard indicated outcome and the Aa1 assigned to the senior lien revenue bonds is driven by the higher priority of claim and higher debt service coverage at the senior level.

Exhibit 5

Publicly Managed Toll Roads and Parking Facilities Methodology

Harris County Toll Road Authority, TX

Factor	Subfactor	Score	Metric
1. Market Position	a) Asset Type	Aa	
	b) Competitive Position and Environment	Aa	
	c) Economic Strength and Diversity of Service Area	Aaa	
2. Performance Trends	a) Annual Revenue (USD Million)	Aaa	855
	b) Operating Track Record and Revenue Stability	Aa	
	c) Ability and Willingness to Increase Toll Rates	A	
3. Leverage and Coverage	a) Debt Service Coverage Ratio	Aaa	3.30x
	b) (Debt + ANPL) to Operating Revenue	Aa	2.84x
Notching Considerations		**Notch**	
	1 - Debt Service Reserve Fund	0.0	
	2 - Open Flow of Funds	-1.0	
	3 - Days Cash on Hand	1.0	1,855
	4 - Asset Ownership and Financing Structure	0.0	
	5 - Leverage Outlook	0.0	
Scorecard Indicated Outcome		**Aa2**	

Source: Moody's Investors Service

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