Article Title: ARCHIVE | Criteria | Governments | General: Toll Road And Bridge Revenue Bonds In The U.S. And Canada Data: (EDITOR'S NOTE: — We originally published this criteria article on Feb. 25, 2014. We've republished it following our periodic review completed on Feb. 8, 2017. As a result of our review, we updated the author contact information and additional clarity to paragraph 13 regarding electronic toll collection and paragraph 15 regarding toll increases. Our prior review completed on February 11, 2016 we added the 'Related Criteria And Research' section, and made minor revisions in the text to remove non-criteria text and to clarify criteria. Additionally, we amended paragraph 28, which has been partially superseded by the article titled, "Assigning Issue Credit Ratings Of Operating Entities," published on May 20, 2015. This article has been superseded by "U.S. And Canadian Not-For-Profit Transportation Infrastructure Enterprises: Methodologies And Assumptions," published March 12, 2018.) Rating Methodology 1. The heavy costs associated with the construction and maintenance of roadways and bridges normally require large amounts of debt, even for publicly owned toll roads. The sizable debt burden, combined with the presence of competition, the potential for fuel shortages, toll sensitivity, and shifting demographic and economic factors, make it difficult for a revenue bond issue secured solely by tolls to receive a Standard & Poor's Ratings Services rating above the 'A' category. However, well-established toll facilities, particularly toll bridges with limited competition and U.S. state and Canadian federal and provincial toll authorities with very stable demand, low rates, and well-defined capital programs could be rated higher than the 'A' category. For privately owned toll roads that benefit from very long-term concessions, but are highly leveraged, high investment-grade category ratings are difficult to achieve given the high debt levels relative to cash flow generation, combined with ongoing pressures to distribute equity to shareholders. 2. These criteria do not apply to corporate or nonpublic entities that we assess under our corporate criteria, "Key Credit Factors For The Transportation Infrastructure Industry". In addition, these criteria do not apply to transportation infrastructure companies or projects that we assess using our project finance criteria, owing to their legal, contractual, and financial structures. Traffic Demand 3. Toll road ratings focus on traffic demand as one of the most essential ingredients for a financially successful operation. For "green field" or "start-up projects" construction risk also demands significant analysis. Strong demand for a toll facility is vital to its successful operation and the ability of the facility to generate toll revenues. Most U.S. and Canadian toll roads and bridges have been and will be developed in heavily traveled corridors with a demonstrated need to relieve traffic congestion and reduce travel time for motorists. However, in some cases, demand for improved service has not been strong enough or developed fast enough to generate revenues sufficient to cover the operation and maintenance expenditures of the facility, as well as debt service. This risk is particularly true for new toll roads, expansions or extensions built in anticipation of future development. In other instances, the healthy and vibrant economic base that had supported the system deteriorated, resulting in flat or declining traffic flow. 4. When evaluating these projects, key questions include: Is the project a new road or bridge to ease congestion on overcrowded existing roads, or is it designed in expectation of or to spur new development? What is the composition of vehicles between commercial and private vehicles as well as trip purpose? Will all access roads or connecting roads not under the direct control of the project team be in place prior to the completion of the project? Ultimately, how do the time savings provided by the toll facility relate to the toll structure? 5. Answers to these questions begin to identify the various strengths and weaknesses of a project and what information will be needed for Standard & Poor's analysis. Toward this end, Standard & Poor's expects a detailed feasibility study reviewing the underlying economic underpinnings and project-specific issues that result in the projected traffic and revenue forecasts. The forecasts should clearly state all assumptions used and extend through the debt offerings' repayment term. In some instances, Standard & Poor's may request an independent evaluation of the traffic report (should the feasibility report be generated by the project sponsor) to verify and collaborate the reasonableness of assumptions and methodologies applied. 6. Evaluating the economic strength and diversity of the toll road's region is integral to the rating process. Standard & Poor's will analyze the region's wealth, income, and employment indicators, as well as a host of other factors. While a sound and growing economic base usually ensures a high level of commercial and business-related travel, the level of disposable personal income has a direct bearing on the volume of discretionary and recreational trips. Commuter or short-haul traffic, indicated by such measures as average trip length, largely depends on

local economic conditions. However, those toll facilities directly connected with other major thoroughfares are shielded to an important degree from local economic conditions. 7. An examination of total traffic trends is not sufficient. The nature and composition of that travel, as well as its vulnerability to business cycles, changes in fuel prices, and toll elasticity are also critical. While commercial traffic serves as a stabilizing force, most successful toll roads or bridges have a good balance between commercial and private-vehicle trips. Commercial traffic is less sensitive to toll increases than private-sector traffic since, for all but the marginal carriers, additional costs can eventually be passed on to customers. Fuel prices have, on an inflation-adjusted basis, remained very low and, historically, price increases have not had a dramatic effect on travel or gasoline consumption trends. However, the long-term effects of significantly higher oil prices, on a real basis, on traffic and demand levels are unknown. 8. Within the private travel sector, a breakdown of nondiscretionary (business) and discretionary (recreational) trips is useful. Business-related trips, while obviously sensitive to levels of economic activity, tend to be less so than recreational travel. As a general rule, a diverse traffic mix cushions the impact of a decline in any one segment. 9. Demand is affected by demographic characteristics and local economic performance. However, for start-up toll roads, Standard & Poor's also assesses the overall acceptance of tolls in the region as the economy in the area may be vibrant but the road users are expected to also demonstrate a willingness to pay tolls. Competition 10. Since most toll roads and bridges are designed to relieve existing traffic congestion or reduce commuting time in a heavily traveled corridor, well-planned projects generally encounter little competition in the immediate years following an opening. Nonetheless, subsequent development of toll-free thoroughfares can attract traffic away from a toll facility. 11. In assessing the potential for such competition, Standard & Poor's examines the capital improvement program of the appropriate state, provincial, or federal department of transportation, as well as the plans of regional and local transportation commissions and the private sector. Where a high degree of cooperation exists among various levels of governmental transportation departments and private toll operators and authorities, the likelihood that competing roadways will be developed is lessened. A lack of coordinated planning is behind almost all cases where toll-free roadways were constructed to the detriment of a toll facility. In addition to standard issuer meetings, discussions or meetings with the appropriate national, state or provincial, and local transportation planning boards are helpful. 12. Where competitor facilities exist, especially free competitors, as is often the case with congestion relief projects, the level of traffic diversion projected from the existing roadways to the new road is an important indicator of project success. Projects with conservative diversion factors tend to be viewed more favorably. If start-up traffic history and diversion levels exist for other local facilities, whether free or tolled, it can further help to analyze the forecast traffic. 13. The key to a facility's competitive analysis is the cost-benefit analysis that drivers make in the form of time-savings or increased access versus cost. If, in the mind of the decision maker, the new road does not get one to work faster or allow deliveries fast enough to recover the cost of the toll, the project is not likely to succeed. The use of electronic toll collection (ETC) systems has improved traffic flows, though in many instances such systems do not consistently produce overall annual savings relative to manual toll collection systems given the pace and scale of technological reinvestment of second-, third- and fourth-generation systems. Understanding the impacts of ETC systems on the overall elasticity of demand is also evolving as the technology expands and users do not easily notice toll increases. Clearly, the introduction of electronic toll collection allows for more efficient and potentially variable toll changes, ultimately giving operators more revenue-maximizing options. With the increased use of ETC systems generally also comes a thorough analysis of the toll road operator's violation rates and violation enforcement system process. Management 14. In addition to assessing management's overall ability to coordinate its activities with relevant planning boards and governmental bodies, Standard & Poor's evaluates management in the context of quality of planning in the budget-making process for operations, maintenance, and capital improvements. For existing systems with an operating history, successful financial performance serves as a broad measure of management capabilities. For new roads, we've found experienced management helpful. The degree of autonomy enjoyed by the directors of a toll facility has an important bearing on its capacity to manage. Of particular importance is the ability and willingness of management to increase tolls as needed. 15. When the level of a rate increase is limited by concession

agreement terms or governmental approval, a history of being able to increase toll rates when needed to the maximum level allowed is considered a positive. It is also considered a credit strength if ratemaking decisions, such as the setting of electronic tolls, are shielded from normal political processes or influence. With growth of ETC comes the opportunity to automatically raise tolls on a predetermined basis, or in line with inflationary assumptions but the entity's flexibility to deviate from this schedule, if necessary, to maintain financial margins is an important credit consideration. Failure to increase toll rates when needed because of political intervention or pressure is a frequent situation with existing facilities that Standard & Poor's has evaluated. Operations 16. Evaluation of maintenance procedures is also somewhat difficult. While it is fairly common practice for toll road entities to hire independent engineering firms for periodic facility inspections and to determine the need for repairs, the reports from these surveys often are general in nature and offer limited insight to third parties. Moreover, members of the engineering profession often have differing views on what constitutes adequate maintenance. 17. Nevertheless, several considerations can be useful in determining the quality of maintenance. Operators that retain their own engineering staff -- who are capable of conducting frequent inspections -- may be better equipped to plan and budget for repairs and perform preventive maintenance than those systems that rely entirely on outside firms for less frequent inspections. The utilization rate of the facility, that is, the number and type of vehicles traversing the roadway for a given time period, provides a good indication of the relative need for resurfacing and repair. Clearly, a facility that allows access to the heaviest of motor vehicles will suffer greater roadway deterioration and require a larger maintenance budget than a system with a comparable level of traffic limited to lighter-weight vehicles. Operating and capital reserve accounts are common in toll road projects and cover risks associated with excess usage. These reserves are typically funded at levels recommended by engineering staffs or consultants. However, for established toll facilities, the lack of these reserves might also be acceptable based on some combination of their historically high unrestricted cash balances, high debt service coverage, and demonstrated toll-rate flexibility. 18. With start-up toll roads, projected annual operating costs (on a per mile or per kilometer basis) that are similar to other existing toll roads with similar operational and construction qualities can often provide an initial level of comfort and the starting point for further analysis. Feasibility Study 19. Finally, in reviewing a capital improvement program or extension of an existing system, Standard & Poor's considers the project's feasibility. Feasibility, as determined by an independent engineering firm, can be an important tool in the credit analysis. A well-documented feasibility study includes: An overview of the existing facility. A market and demand analysis that examines the following factors: demographic patterns; historical and projected traffic patterns; traffic mix (by type of vehicle and nature of trip); competing facilities; historical and projected toll rates; and, where practicable, the sensitivity of motorists to various toll levels. A financial analysis examining revenues and operating costs, as well as projecting the impact of planned improvements and competitive highways. The financial analysis typically demonstrates the degree of financial stress that a new project, or roadway expansion, may place on existing operations and income levels. 20. A set of sensitivity runs or analyses are critical for all start-up facilities and for all existing facilities that are undergoing a significant capacity addition. However, the sensitivity analysis will vary on a case-by-case basis depending on the degree of historical information available and the aggressiveness of assumptions in the forecasts. Standard & Poor's evaluates the reasonableness of the assumptions supporting these forecasts. Assumptions regarding future traffic growth rates and operating costs should be based on historical patterns, with forecasts that greatly exceed historical levels likely adding credit uncertainty. 21. In evaluating the traffic and revenue forecasts, Standard & Poor's ultimately looks to the coverage of annual debt service by net revenues, taking into account expenses, capital expenditures and other operating obligations in addition to revenues. When toll-rate adjustments are linked to changes in inflation or when toll-rate increases require the approval of governmental authorities, coverage of debt service by net revenue is an extremely important credit factor. In these circumstances, the ability to raise toll rates in real terms may be limited. 22. However, depending upon the management objectives of the operator (e.g. revenue maximization versus cost-recovery) the specific level of coverage of annual debt service by net revenues may not be as important when there is a strong and demonstrated willingness to raise rates as needed. In fact, a toll facility with lower coverage ratios and with considerable flexibility in increasing

real tolls could be perceived as a stronger credit than a system with higher coverage ratios and limited capacity for raising tolls. Legal Provisions 23. While legal protections for bondholders vary considerably, almost all toll road authorities provide a margin of safety by pledging to levy tolls at levels that will produce net revenues (after payment of operations and maintenance expenses) equal to debt service plus a coverage multiple. The most common ratio used in a toll covenant is 1.25x. The value of a covenant with debt service coverage appreciably higher than 1.5x is questionable, depending on the sensitivity of motorists to higher tolls and the practical ability to raise tolls when needed. The speed with which a toll-rate increase can be implemented is a critical rating factor. If rate adjustments require approval of elected officials, delays can ensue. On a few occasions, authorities have been in technical default because of such delays. 24. As with all revenue bonds, additional bonds tests that include only historical revenues are significantly stronger than any test allowing projected revenues. Specifically, tests with projected, rather than historical, revenues serving as the basis for calculating future debt service coverage significantly reduce the value of such a test, but are relatively common. In these cases, the relative conservativeness of management -- and their projections -- will be a factor in how a prospective test is viewed. 25. A debt service reserve, fully funded at the equivalent of one year's debt service requirement, can provide significant liquidity to bondholders, particularly given a potential for delays in implementing required rate increases. 26. Additionally in some cases, in the U.S., states have enhanced the security for toll revenue bonds by pledging state-levied highway user tax receipts, or a straight general obligation backup. Financial Projections/Debt Structure/Sensitivity Analyses 27. One traditional measure of financial strength for toll revenue-backed facilities and project bonds is debt service coverage. Typical coverage for many existing U.S. and Canadian operating toll facility is in the 1.5x-2.0x range for debt service from net revenues, as many provide for significant pay-as-you-go capital costs after operations and debt service. Standard & Poor's believes that investment-grade start-up facilities typically should reach or exceed these coverage levels to offset many of the risks indicated above. Toll road transactions structured under a corporate model where senior unsecured debt is offered should provide solid interest coverage ratios and should have a long enough concession term to allow for refinancing and ultimate debt repayment. 28. For start-up facilities, the amount of debt that a project must support establishes the hurdle, in the form of debt service, for which the project must exceed. The existence of equity positions or contributions from private investors, local, state, or federal governments can serve to lower the bar, making the project more affordable, and hence more creditworthy. A debt service schedule that is relatively level over time also allows more flexibility than an upwardly increasing schedule that keeps the pressure on constant growth through traffic or rate increases. 29. Sensitivity analyses are also typically requested to simulate normal or historic changes in economic conditions, traffic declines, operating and capital cost increases, and tariff adjustments to help gauge the project's ability to withstand change. Where projections are critical to future financial condition, Standard & Poor's will typically also request low, no-growth, and break-even sensitivity cases. Public Private Partnerships: Revenue/Debt And Equity Considerations 30. Large-scale privatization financings mark a departure from the typical 25- to 35-year project finance model and have led to significantly different debt structures. The basic analytical considerations in evaluating these transactions remain the same with regard to demand, competition, management, and operations, and our analysis still follows a combination of existing toll road criteria and project finance criteria. However, the debt levels tend to be significantly higher and debt repayment tends to extend significantly beyond the traditional 20- to 30-year period. 31. Furthermore, large-scale privatization financings tend to use deferred pay structures and rely on refinancing. To date, these transactions have occurred with respect to existing toll facilities with demonstrated strong cash flow generation, which has enabled them to support the higher debt levels. In addition, the longer amortization periods are aided by concession terms that are considerably longer (75-99 years) than in the typical concession financing. Debt levels would have to moderate significantly in a privatization of a start-up facility even with a very long concession period. 32. The challenge of long concession periods is in evaluating the traffic and revenue forecasts and feasibility studies. Planning or macroeconomic forecasts, which are key inputs into most traffic models, themselves, only stretch as far as 10 to 20 years. Furthermore, demand models generally remain incapable of capturing structural adjustments to travel markets—such as the longer-term impacts of changes to preferences, relative pricing, technology, and so forth. To address

this concern, Standard & Poor's takes a conservative approach to longer-term traffic forecasts, reducing growth-rate expectations over time to reflect increasing uncertainty and unforeseen events that could result in real declines. While the approach to toll rate setting under a private operator model will focus more on revenue maximization, price elasticity is nonlinear. Mid- to long-term growth rates exceeding 1% per year are unlikely to be considered in our analysis and, depending on the assets characteristics, this could be capped at zero. Similarly, in evaluating projected tariff increases, revenue projections will be adjusted only for reasonable inflationary corrections. It is under this traffic and revenue profile, that Standard & Poor's looks to see that all debt can be repaid prior to the end of the concession term. While high growth rates may be achievable and the potential for strong revenue generation over the long term may exist, this becomes more speculative in the far term and inconsistent with the certainty required for investment-grade ratings. 33. The revenue generation profiles of toll roads more naturally fit amortizing debt structures. However, current financing trends has seen structures with a blend of multitranche debt with different amortizing profiles, including bullet maturities and other nonamortizing debt instruments. One key aspect of our analysis is to determine whether the project cash flows can support the peak debt service levels that such instruments can introduce later in the concession term. 34. To date, Standard & Poor's has evaluated under these criteria a limited universe of such credits and our views are still evolving. However, at present it is envisioned that for such very strong mature assets, peak accreted debt would occur in the first 15-20 years of the concession (depending on the term); 50% of the maximum accreted debt would be repaid within 30-40 years; and all of the debt would be repaid by the 45th to 50th year of the concession term, leaving an ample refinancing tail should traffic and revenues not meet expectations. These are guidelines and each long-term highly leveraged toll road concession would be evaluated on its own merit. However, the concept of limiting debt accretion and generally requiring debt to be paid down well before the end of the concession term remain the same. 35. Transactions with bullet maturities introduce refinancing risk. An investment-grade rating might be difficult to achieve if more than 20% of total debt is due to be retired in any two consecutive years. Refinancing risk is manageable in long-dated concessions with a sufficient refinancing tail of about 10-30 years. Financial models, however, will be examined to understand the assumptions being made about refinancing such as the interest rate employed, and stress tests will be used to evaluate the sensitivities of the transactions to less favorable interest-rate assumptions. Investment-grade structures will typically have secured appropriate hedging arrangements in this regard. 36. With private ownership of toll facilities, equity considerations are introduced into the legal structure. As deferred pay structures are introduced, it also means that early-year coverage ratios are overinflated, giving a misleading indication of project performance. Furthermore, deferred pay structures can leave free cash flow available for equity distributions prior to any substantial debt repayment. Standard & Poor's generally views projects as having less risk where dividends are to be distributed only when project performance is in line with or exceed expectations, and is likely to continue to do so. 37. In this context, Standard & Poor's analyzes the issuer's proposed dividend distribution lock-up covenants. These lock-ups are generally set at levels just below the financial model's base-case minimum debt service coverage ratio for investment-grade credits. The closer the permitted dividend distribution test is to the minimum coverage ratio, the better the subordination relationship between equity and debt. Dividend lock-up tests also focus on the number of consecutive years that must pass (following dividend) lock-up before dividend outflows recommence. Forward-looking tests provide for a stronger structure. 38. Finally, the issuance of additional debt for shareholder distributions require that the additional bonds test for such purposes be set at a higher ratio than for leveraging for other reasons, such as capital expenditures. Related Criteria And Research Assigning Issue Credit Ratings Of Operating Entities, May 20, 2015 Principles of Credit Ratings, Feb. 16, 2011 These criteria represent the specific application of fundamental principles that define credit risk and ratings opinions. Their use is determined by issuer- or issue-specific attributes as well as Standard & Poor's Ratings Services' assessment of the credit and, if applicable, structural risks for a given issuer or issue rating. Methodology and assumptions may change from time to time as a result of market and economic conditions, issuer- or issue-specific factors, or new empirical evidence that would affect our credit judgment.