MOODY'S
INVESTORS SERVICE

RATING METHODOLOGY
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Rating Methodology

Operational Privately Financed Public Infrastructure (PFI/PPP/P3) Projects

This rating methodology replaces the *Operational Privately Financed Public Infrastructure (PFI/PPP/P3) Projects Methodology* published in June 2021. This update clarifies that the methodology applies to issuers that hold minority interests in one or more project companies and to holding companies owning project companies, and it provides more guidance related to the calculation of scorecard metrics and the application of notching factors for these issuers. We have also reordered and have made editorial changes to various sections of the methodology.

Scope

This methodology applies to operational privately financed public infrastructure[1] projects globally. Operating PPPs are special or single purpose entities (SPEs) financed on a nonrecourse, project finance basis whose primary* business purpose is limited to one activity. The main source of operating PPP revenue is from availability payments made by a public sector off-taker and is based on the project's performance measured against contractual specifications. Off-takers are government entities or agencies, including sovereign or sub-sovereign governments, government agencies or authorities, public universities and other public sector entities.

This methodology applies to PPP projects that have either fully exited the construction phase or have commenced operations and hold minimal construction risk. At this phase, the project has been formally accepted by the off-taker as having reached substantial completion, per the definition in the project agreement (PA) between the parties. Also, the project is receiving more than 90% of its expected total availability payment, which the off-taker makes to the project company for operating and maintaining a public asset per contracted standards. Failure to complete any remaining construction would not, in itself, lead to an event of termination of the project by the off-taker under the PA. In this methodology, we consider a number of factors to assess the incremental risk that may be posed during this transition period from construction to operation (please see Appendix A). PPP projects that are in

*The determination of an issuer's primary business is generally based on the preponderance of the issuer's business risks, which are usually proportionate to the issuer's revenues, earnings and cash flows.

the construction phase are rated using our methodology for construction risk in privately financed public infrastructure (PFI/PPP/P3) projects.[2]

This methodology also applies to holding companies that primarily own operating PPP projects, including companies with a minority holding, typically of at least 15%, in one or more operational PPP projects or in a project holding company, provided that (i) there are strong structural features in the transaction documents that clearly delineate a fixed or essentially fixed percentage of project cash flows that will flow to the minority owner; or (ii) the minority holder has some meaningful influence or control over decisions at the operating company or companies. In these cases, a key component of the analysis is our assessment of the stand-alone credit quality of the operating company(ies) determined by a rating committee in accordance with this methodology.

For some operating PPP projects rated using this methodology, the revenues may be a combination of availability payments and commercial revenues or volume-based payments. Please see the “Other considerations” section for considerations that apply to these hybrid projects.

This methodology does not apply to projects that deviate materially from an availability payment PPP project model.

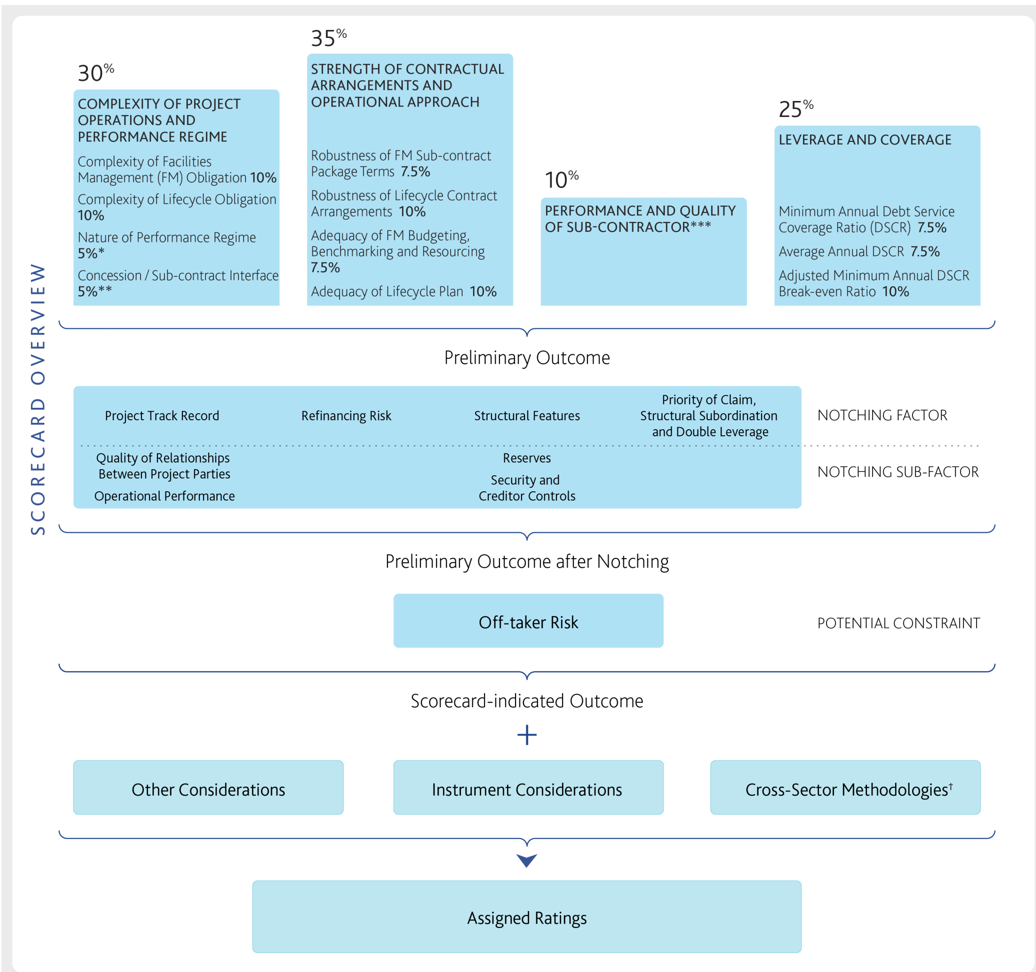
Rating approach

In this rating methodology, we explain our general approach to assessing credit risk of issuers in the operating PPPs sector globally, including the qualitative and quantitative factors that are likely to affect rating outcomes in this sector. We seek to incorporate all material credit considerations into ratings and to take the most forward-looking perspective that visibility into these risks and mitigants permits.

The following schematic illustrates our general framework for the analysis of operational privately financed public infrastructure projects, which includes the use of a scorecard.[3]

Exhibit 1

Illustration of the operational privately financed public infrastructure (PFI/PPP/P3) projects methodology framework



* 10% weight for issuers that self-perform FM services.
**0% weight for issuers that self-perform FM services.
*** This factor has no sub-factors.
† Some of the methodological considerations described in one or more cross-sector rating methodologies may be relevant to ratings in this sector. A link to a list of our sector and cross-sector methodologies can be found in the "Moody's related publications" section.
Source: Moody's Investors Service

Operational privately financed public infrastructure (PFI/PPP/P3) projects scorecard

For general information about how we use the scorecard and for a discussion of scorecard mechanics, please see the "Using the scorecard to arrive at a scorecard-indicated outcome" section. The scorecard does not include or address every factor that a rating committee may consider in assigning ratings in this sector. Please see the "Other considerations" and "Limitations" sections.

Exhibit 2

Operational privately financed public infrastructure (PFI/PPP/P3) projects scorecard

	Weight	Aaa	Aa	A	Baa	Ba	B	Caa
Factor: Complexity of Project Operations and Performance Regime (30%)								
Complexity of Facilities Management (FM) Obligation	10%	Limited operational responsibilities for the issuer, focused on very simple services such as routine asset operation and maintenance with no onerous conditions (e.g., 24/7 maintenance requirements) in terms of service performance.	Broad operational responsibilities, focused on simple services such as asset operation and maintenance, including limited 24/7 maintenance requirements; and Any Soft FM requirements are limited to basic services such as gardening, security, trash removal, and cleaning of non-specialist areas.	Operational responsibilities comprise a mix of simple and more complex requirements (such as cleaning of specialist areas, catering, portering, managing complex tolling arrangements, comprehensive 24/7 maintenance); asset operation and maintenance may be more challenging due to complexity of assets, access issues and/or a small portion of legacy components (retained estate or assumed infrastructure) relative to the entire asset.	Operational responsibilities are weighted towards more complex services; asset operation and maintenance may be more challenging, for instance due to a modest portion of legacy components relative to the entire asset.	Operational responsibilities are weighted towards more demanding types, such as IT services or maintenance of medical equipment, to which the issuer is somewhat exposed; or Service delivery to be performed across a challenging asset base, for instance where there are significant legacy components.	Complex service requirements which involve a level of sensitivity (such as military equipment, medical or correctional services requiring specialist labor); or Project takes risk on material legacy components.	Complex service requirements which involve a level of sensitivity requiring specialist labor; and Challenging asset base, for instance where project takes risk on significant legacy components.
Complexity of Lifecycle Obligation	10%	Off-taker retains all lifecycle obligations as part of the concession.	Lifecycle obligations require straightforward maintenance and refurbishment on new-build simple assets.	Lifecycle obligations require straightforward maintenance and refurbishment on somewhat complex, new-build assets; or Simple assets with assumed infrastructure, but with no major issues or onerous requirements.	Lifecycle obligations require maintenance and refurbishment related to complex new build; or Somewhat complex asset with a mix of new build and assumed infrastructure.	Lifecycle obligations are onerous due to a complex asset primarily comprised of assumed infrastructure; or Project includes significant equipment refresh obligations (such as purchasing rail cars for rolling stock projects).	Lifecycle obligations require the management of technological risks for complex new-build assets such as big-ticket military equipment.	Lifecycle obligations require the management of technological risks for complex assets such as big-ticket military equipment with assumed infrastructure.
Nature of Performance Regime	5% [1]	Payment mechanism is very clearly defined, very benign and is structured so that poor performance would be extremely unlikely to result in deductions or service failure points (SFPs).	Payment mechanism is clearly defined and materially benign relative to sector standards as evidenced by (a) track-record of low deductions/SFPs due to definitions and thresholds (i.e., not simply due to performance), or (b) the technical advisor (TA) opines that the mechanism is materially more benign relative to peer projects.	Payment mechanism is clearly defined in PA and standard for the sector, without any onerous requirements, as concurred by the TA.	Payment mechanism is clearly defined in PA and standard for the sector without onerous requirements for experienced contractors, but some elements could pose challenges to a less experienced contractor if one were to take over.	Payment mechanism is based on typical sector form but not very clearly defined, introducing the possibility of issues in interpretation; or Regime is somewhat onerous and difficult to meet on a consistent basis.	Payment mechanism is poorly defined, likely leading to some issues in interpretation; or Regime is onerous and frequently difficult to meet.	Payment mechanism is very poorly defined, leaving ample room for interpretation and disagreements that are likely to lead to significant deductions/SFPs; and Regime is onerous and frequently difficult to meet.

	Weight	Aaa	Aa	A	Baa	Ba	B	Caa
Factor: Complexity of Project Operations and Performance Regime (30%)								
Concession / Sub-contract Interface	5% [2]	Trigger/Default level for SFPs/deductions set materially below the corresponding levels in the PA; and No restrictions on ability to replace sub-contractor; accumulated SFPs/deductions under the PA wiped-clean upon sub-contractor replacement.	Trigger/Default level for SFPs/deductions set materially below the corresponding levels in the PA; and Some restrictions on ability to replace sub-contractor; accumulated SFPs/deductions under the PA wiped-clean upon sub-contractor replacement; or Material headroom and no issuer SFPs/deductions as long as the issuer finds sub-contractor replacement within a reasonable period; or Trigger/Default level for SFPs/deductions set below the corresponding levels in the PA but with limited headroom; and No restrictions on ability to replace sub-contractor; accumulated SFPs/deductions under the PA wiped-clean upon sub-contractor replacement.	Trigger/Default level for SFPs/deductions set materially below the corresponding levels in the PA; and Limited or no ability to wipe-clean accumulated SFPs/deductions under the PA but a grace period for the incoming sub-contractor provides protection against termination; or Trigger/Default level for SFPs/deductions is set below the corresponding level in the PA but with limited headroom; and Some restrictions on ability to replace sub-contractor; accumulated SFPs/deductions under the PA wiped-clean upon sub-contractor replacement.	Trigger/Default level for SFPs/deductions set below the corresponding levels in the PA but with limited headroom; and No ability to wipe-clean accumulated SFPs/deductions but a grace period for the incoming sub-contractor provides protection against termination; or Trigger/Default level for SFPs/deductions set at the same level as the corresponding levels in the PA; and Some restrictions on ability to replace sub-contractor; accumulated SFPs/deductions under the PA wiped-clean upon sub-contractor replacement.	Trigger/Default level for SFPs/deductions set at the same level as the corresponding levels in the PA; and Some restrictions on ability to replace sub-contractor; a material portion of accumulated SFPs/deductions under the PA wiped-clean upon sub-contractor replacement.	Trigger/Default level for SFPs/deductions set at the same level as the corresponding levels in the PA but a grace period for the incoming sub-contractor provides protection against termination.	Trigger/Default level for SFP/deductions set at the same level as the corresponding levels in the PA; and (A) No ability to wipe-clean accumulated SFPs/deductions under the PA but a grace period for the incoming sub-contractor provides protection against termination, or (B) no replacement of sub-contractor permitted under the PA.
Factor: Strength of Contractual Arrangements and Operational Approach [3], [4] (35%)								
Robustness of FM Sub-contract Package Terms	7.5%	Price and performance risk transferred to (A) a large, diversified sub-contractor with very strong financials or (B) a sub-contractor with very strong performance security [5] ("very strong"); and Sub-contractor annual liability cap ≥100% of annual service fee.	Price and performance risk transferred to a very strong sub-contractor with a 50-100% annual liability cap; or Price and performance risk transferred to (A) a large, diversified sub-contractor with strong financials or (B) a sub-contractor with strong performance security ("strong"); and Sub-contractor annual liability cap ≥100%.	Price and performance risk transferred to a very strong sub-contractor with a 20-50% [6] annual liability cap; or Price and performance risk transferred to a strong sub-contractor with a 50-100% annual liability cap; or Price and performance risk transferred to a moderate [7] sub-contractor with a ≥100% annual liability cap; or If self-performing, project equity sponsors have a good and extensive track-record of operations and cost management, the project is located in their key market, and failure would create significant reputational damage.	Price and performance risk transferred to either (A) a strong sub-contractor with a 20-50% annual liability cap, or (B) a moderate sub-contractor with a 50-100% annual liability cap; or If self-performing, the issuer/equity sponsors have a good and extensive track record in the operation and cost management of similar projects in the jurisdiction, including ability to contract-out services.	Price and performance risk transferred to either (A) a moderate sub-contractor with a 20-50% annual liability cap, or (B) a sub-contractor where there is material short or medium-term concern about its financial viability ("weak") and a > 50% annual liability cap; or If self-performing, the issuer/equity sponsors have a good track record in the operation and cost management for similar projects, including ability to contract-out services.	Price and performance risk transferred to a weak sub-contractor with a 20-50% annual liability cap; or The issuer/equity sponsors have reasonable track record in the operation and cost management of PPPs but face new services/responsibilities on this project.	Price and performance risk retained by the issuer/equity sponsors with no proven ability to self-perform; or Material reservations exist regarding ability of responsible party to deliver contracted services.

	Weight	Aaa	Aa	A	Baa	Ba	B	Caa
Factor: Strength of Contractual Arrangements and Operational Approach [3], [4] (35%)								
Robustness of Lifecycle Contract Arrangements	10%	Off-taker retains all lifecycle risk, i.e., lifecycle risk is excluded from the scope of the project.	Lifecycle risk fully transferred to a very strong sub-contractor. [8]	Lifecycle risk fully transferred to a strong sub-contractor; or Lifecycle risk is largely transferred to a strong sub-contractor with the issuer retaining the residual risk; the issuer/equity sponsors have good and extensive experience managing lifecycle for this asset class and jurisdiction and capacity in procuring works as needed; good relationships with capable sub-contractors.	Lifecycle risk fully transferred to a modest sub-contractor; or Lifecycle risk largely retained by issuer and issuer/equity sponsors have good and extensive experience managing lifecycle for this asset class and jurisdiction and capacity in procuring works as needed; good relationships with capable sub-contractors.	Lifecycle risk largely retained by the issuer and equity sponsors have good experience and capacity to tender for works as needed and have reasonable ongoing relationships with capable sub-contractors.	Lifecycle risk largely retained by the issuer and equity sponsors have at least some experience of lifecycle management but their ability to procure works on an ongoing basis to capable sub-contractors may be unclear.	Entity responsible for lifecycle has limited resources or a questionable track record of lifecycle management.
Adequacy of FM Budgeting, Benchmarking and Resourcing	7.5%	Conforming sub-contract [9] and price is in the upper range [10] for the sector; and Benchmarking/market testing mechanism ("benchmarking" [11]) for 70-100% of costs; [12] and Significant reputational risk for sub-contractor in case of non-performance.	Conforming sub-contract and price is in the upper range for the sector with 50-70% benchmarking.	Conforming sub-contract and price is (A) in the upper range for the sector with 20-50% benchmarking, or (B) average for the sector with > 50% of benchmarking; or If the issuer self-performs, budget is in the upper range for the sector with > 50% benchmarking, and equity sponsors have extensive and demonstrated experience in cost management on similar projects ("good track record") in jurisdiction.	Conforming sub-contract and price is (A) in the in the upper range for the sector with 0-20% benchmarking; (B) average for the sector with 20-50% benchmarking, or (C) in the lower range for the sector with 70-100% benchmarking; or If the issuer self-performs, budget is (A) toward the upper end of the range with 20%-50% benchmarking, or (B) average for sector with > 50% benchmarking; or If the issuer self-performs but only provides Hard FM services under the PA: Budget is average, the issuer/ equity sponsors have a good track record in jurisdiction and costs are predictable.	Conforming sub-contract and price is (A) average for the sector with 0-20% benchmarking, or (B) in the lower range for the sector with 50-70% benchmarking; or The issuer self-performs, and budget is (A) in the upper range for the sector with 0-20% benchmarking, (B) average for the sector with 20-50% benchmarking, or (C) toward the lower range for the sector with 50-70% benchmarking; or If the issuer self-performs but only provides Hard FM services under the PA: Budget is average for sector and the issuer/ equity sponsors have a good track record.	Conforming sub-contract and price is in the lower range for the sector with 20-50% benchmarking; or The issuer self-performs, budget is (A) average for the sector with 0-20% benchmarking, or (B) in the lower range for the sector with 20-50% benchmarking; or If the issuer self-performs but only provides Hard FM services under the PA: Budget is (A) average for sector and the issuer/ equity sponsors have limited track record of managing similar projects, or (B) in the lower range for the sector and the issuer/ equity sponsors have a good track record.	Budgeting, benchmarking and resourcing is or is expected to be worse than the descriptions in all the other scoring categories.

	Weight	Aaa	Aa	A	Baa	Ba	B	Caa
Factor: Strength of Contractual Arrangements and Operational Approach [3], [4] (35%)								
Adequacy of Lifecycle Plan	10%	Lifecycle cost is a pass-through to an off-taker rated "Aa" or better.[3]	Conforming[10] sub-contract at a price or prices considered by the technical advisor to be in the top quartile based on a full lifecycle cost assessment.	Conforming sub-contract at a price or prices considered by the technical advisor to be toward the upper end of the average range based on a full lifecycle cost assessment; or If the issuer self-performs, budget is considered by the technical advisor to be at the upper end of the average range within the sector based on a full lifecycle cost assessment and equity sponsors have extensive and demonstrable track record of managing lifecycle costs.	Conforming sub-contract at a price or prices considered by the technical advisor to be average for sector on a full lifecycle cost assessment; or If the issuer self-performs, budget is considered by the technical advisor to be at the upper end of the average range within the sector based on a full lifecycle cost assessment and equity sponsors have a good track record in the sector and jurisdiction; or The issuer's budget is considered by the technical advisor to be average for the sector based on a full lifecycle cost assessment and equity sponsors have extensive and demonstrable track record of managing lifecycle costs.	Conforming sub-contract at a price or prices considered by the technical advisor to be in the lower quartile of relevant cost benchmarks based on a full lifecycle cost assessment; or Conforming sub-contract at a price or prices average for sector but with no independent lifecycle assessment; or If self performing, the issuer's budget is considered by the technical advisor to be average for the sector based on a full lifecycle cost assessment and equity sponsors have some track record of managing lifecycle costs.	Lifecycle price is, whether sub-contracted or retained, considered inadequate or poor visibility around future costs; or If self performing, the issuer's budget is average based on a full lifecycle cost assessment and the issuer/equity sponsors have an inconsistent or limited track record or are untested in type of project.	Lifecycle price is, whether sub-contracted or retained, considered inadequate and history of lifecycle is above original projections.
Factor: Performance and Quality of Sub-contractor (10%)								
Performance and Quality of Sub-contractor	10%	Uniquely qualified sub-contractor with unparalleled track record on a wide range of projects including projects in this jurisdiction and of the type undertaken by the issuer.	Top-tier sub-contractor with extensive track record of excellent performance on a wide range of projects including the type undertaken by the issuer.	Competent sub-contractor with extensive track record of very good performance on a range of projects including the type undertaken by the issuer; or If self-performing, equity sponsors are top-tier entities with excellent performance track record on a wide range of projects including the type undertaken by the issuer.	Competent sub-contractor with more limited track record of performance on similar projects and expected to be capable of carrying over experience into delivery of services to the issuer; or Competent sub-contractor with extensive track record but with some performance issues; or If self-performing, no track record on specific project type but the issuer/equity sponsors are experienced in related project types and are likely to competently perform maintenance.	Sub-contractor competence less tested; very limited record of performance on other projects; or If self-performing, the issuer/ equity sponsors are competent but less experienced with related project types.	Whether sub-contracted or self-performing, the FM sub-contractor or issuer/ equity sponsors is untested or some reservations regarding its ability to deliver services.	Whether sub-contracted or self-performing, material reservations regarding the FM sub-contractor or issuer/equity sponsors' ability.

	Weight	Aaa	Aa	A	Baa	Ba	B	Caa
Factor: Leverage and Coverage (25%)								
Minimum Annual DSCR	7.5%	≥ 2.5x	1.3x - 2.5x	1.2x - 1.3x	1.15x - 1.2x	1.1x - 1.15x	1x - 1.1x	< 1x
Average Annual DSCR	7.5%	≥ 3x	1.45x - 3x	1.3x - 1.45x	1.2x - 1.3x	1.1x - 1.2x	1.05x - 1.1x	< 1.05x
Unadjusted Minimum Annual DSCR Break-even Ratio [13]		≥ 65%	30% - 65%	20% - 30%	15% - 20%	10% - 15%	5% - 10%	< 5%
Adjustment Uplift - up to one category when:		The minimum Annual DSCR (ADSCR) break-even ratio is uncharacteristic of an otherwise more robust cash flow profile and (b) the minimum ADSCR break-even ratio occurs at a point when (1) we have very high visibility around revenues and costs, or (2) there is meaningful flexibility around the timing of lifecycle payments.						
Adjusted Minimum Annual DSCR Break-even Ratio	10%	Combination of the Unadjusted Minimum ADSCR break-even ratio and the Adjustment Uplift, if any.						
Preliminary outcome								

Notching factor						
Project Track Record						
	+1	+0.5	0	-0.5	-1	
Quality of Relationships Between Project Parties	Strong working relationship between all key parties with evidence of a partnership approach to this project; and the issuer's management is well-resourced and historically proactive; and The off-taker's very favorable view of the infrastructure, service and the issuer is evidenced in flexible interpretation of the PA.	Effective working relationship of all key parties in operation of this project; and The issuer's management is adequately resourced and expected to be proactive.	Neutral relationship between parties; or Parties have limited history of working in consortium on other PPPs.	Relationship between off-taker and issuer shows some signs of strain ; or There are indications that the off-taker is dissatisfied with the contract management approach on this project or on other projects where the parties work together; or Issues resolution is protracted; or Relationship between off-taker and the issuer is difficult but deductions/SFPs are not expected to be material.	Relationship between off-taker and the issuer is difficult; or History or reasonable expectation of a material disagreement under the PA or in its interpretation that is likely to lead to material deduction/SFPS.	
	+1	+0.5	0	-0.5	-1	
Operational Performance	Zero or minimal deductions and performance penalty points for a minimum of 18 continuous months of full service provision.	Low deductions and performance penalty points over a minimum 12-month period of full service provision, materially below warning notice thresholds; or pre-operating phase with at least 24 months of operating a material portion of the asset with minimal deductions.	Modest deductions and performance penalty points; good headroom to warning notices.	Performance is triggering or expected to trigger warning notices; some deductions but reasonable buffer remains to concession termination thresholds.	Performance is triggering or expected to trigger warning notices and meaningful deductions, with a modest buffer to concession termination thresholds.	

Notching factor						
Refinancing Risk (0 to -4 notches)						
We assess the size and the profile of the refinancing need, the current interest rate paid by the issuer in relation to our expectations of interest rates and availability of credit when the refinancing is required (which may include downside scenarios), any risk-mitigation the issuer has put into place, and the expected impact the refinancing will have on leverage and coverage metrics.						
Structural Features (+2 to -6 notches) [14]						
Reserves	We score the DSRA and the MRA/other reserves together. Since the DSRA is of most immediate importance to support timely debt service, it is typically the larger component of the score.					
		Up to +1	Up to +0.5	0	Up to -1	Up to -2
	Debt Service Reserve Account (DSRA)	12 months	9 months	6 months	3 months	No DSRA
	Where MRA is non-standard, notching may range from +0.5 to -2. Cumulative notching ranges from +1.5 to -3.					
Security and Creditor Controls	Security and Step-in Rights (0 to -3) Equity Distribution Lock-up Arrangements (+1 to -1) Ratio-based Event of Default Covenant (0 to -1)					
Priority of Claim, Structural Subordination and Double Leverage						
Priority of Claim, Structural Subordination and Double Leverage	Up to -21 notches					
Off-taker Risk[3]						
The credit quality of the off-taker reflects its ability and willingness to pay the availability payments, hence the issuer's rating would in most cases be constrained by the off-taker's credit quality. Where an issuer's preliminary scorecard-indicated outcome is equal to or higher than our assessment of the off-taker's credit quality, we would typically adjust the preliminary scorecard-indicated outcome to be one rating notch below our assessment of the off-taker's credit quality. We could adjust the preliminary grid-indicated outcome by more than one notch if, for example, there were evidence of the off-taker prioritizing the timely payment of its own obligations. Conversely, if the project is essential to the off-taker and the associated reputational risk of not making a payment to the issuers would have similar consequences as a payment default of the off-taker's own debt obligation, we could equalize the ratings. See the "Off-taker Risk" section for more information.						
Scorecard-indicated outcome						

[1] 10% weight for issuers that self-perform FM services.
[2] 0% weight for issuers that self-perform FM services.
[3] See Appendix B for information on the assessment of off-taker and sub-contractor credit quality and the use of credit estimates.
[4] Where the issuer is sub-contracting but would otherwise score more favorably under the self-performing definitions, the self-performing definitions may be applied.
[5] Performance security refers to the support of a sub-contractor's obligations under the FM sub-contract being backed by letters of credit or other cash-like instruments.
[6] We would typically score the project as self-performing where the annual liability cap is less than 20% of the FM sub-contractor fee.
[7] Either (A) a large national sub-contractor with strong financials or a diversified sub-contractor with moderately strong financials, or (B) a sub-contractor with a modest level of, or non-investment grade, performance security.
[8] As per the Robustness of FM Sub-contract Package Terms sub-factor, we consider the performance security supporting a sub-contractor's obligation in our evaluation of its credit strength.
[9] A conforming sub-contract is where the sub-contractor's credit quality is "moderate" or better and the sub-contract has termination liability cap of ≥ 100% of the FM sub-contractor's annual fee. If non-conforming, we would typically score to the self-performing definitions.
[10] As opined by an independent technical advisor (in most cases) and through comparative analysis with issuers in the same jurisdiction and sector.
[11] If the benchmarking period is more than 7 years, we would typically score one rating category lower (e.g., from "Baa" to "Ba").
[12] All soft and hard facility management costs but excluding lifecycle.
[13] All of the issuer's costs including inter alia soft FM, hard FM, lifecycle, SPV and insurance costs. Note, tax expense, pass-through costs and services where the issuer is fully protected from the risk of performance and termination of the service provider under the PA (ring-fenced services) should not be included in this calculation.
[14] The overall ranges for Structural Features and Reserves are not equal to the sum of the ranges of the components, because there are limits to the impacts that strong/weak structural features can have on the fundamental credit profile.
Source: Moody's Investors Service

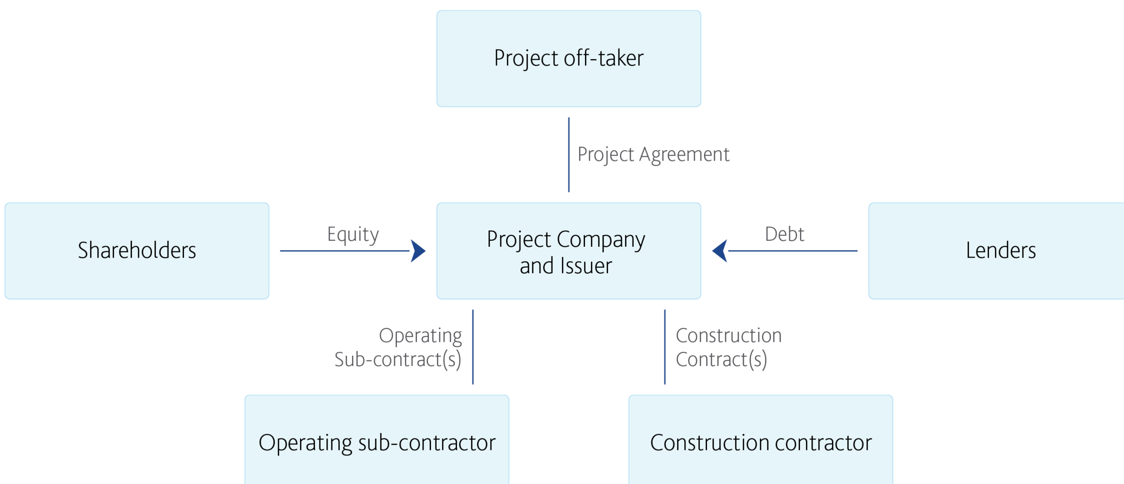
Sector overview

PPP projects are a form of government procurement arrangement characterized by fixed-price, date-certain construction contracts. During their operating phase, compensation is made to the project by the off-taker for the constructed asset through availability payments, a revenue guarantee or other similar payments (all of which are called availability payments in this document). The operating phase is generally 25 years or more. PPP project contractual structures are designed to transfer to the private sector certain financing, design, construction and operating risks of public infrastructure projects such as hospitals, courthouses, schools, jails, roads, public transit systems, bridges and certain power projects.

Once the asset is built to the specifications required by the public sector off-taker, it will pay the private sector project company an availability payment that is typically sized to cover operating, maintenance and lifecycle costs, as well as debt service and equity returns. These availability payments are not subject to any material demand risk and are only reduced for lack of performance or availability.

Usually, a PPP issuer has no title to the public sector infrastructure it has built once construction is complete, and its main asset is its rights under the PA, which is assigned, along with all other major contracts, as security to the issuer's lenders. A simplified PPP structure is set out in Exhibit 3 below.

Exhibit 3
Main parties involved in a typical PPP



Source: Moody's Investors Service

Availability payment PPP projects are usually financed with very high levels of debt, as high as 90% of project construction costs. Equity and subordinated debt are typically sized to produce a target debt service coverage ratio falling within a very narrow band between 1.15x and 1.30x, once the asset is built and starts receiving revenues.

On the other hand, PPP projects are characterized by low business risk relative both to the broad universe of private sector issuers and to the overall project finance sector. The lower business risk is derived from the existence of the PA between the issuer and the off-taker, which contains the requirements and specifications for both construction and operation of the project. In the operation phase, the PA lays out clear and achievable standards, an availability payment mechanism sized to provide a known quantum of revenues from the off-taker under most circumstances, and an absence, in most cases, of market demand risk and competition. The long life of the PA and availability payments typically provide sufficient cash to fully amortize the debt prior to the maturity of the PA.

In operation, the issuer would incur payment deductions and penalties if the project were not operated in accordance with the service delivery requirements included in the PA, and continued poor performance could ultimately lead to an event of default under the PA that would give the off-taker the right to terminate the agreement. Conversely, the issuer typically has termination rights upon non-payment by the off-taker. Upon the termination of the PA before its scheduled maturity, the off-taker will, however, make a termination payment, the calculation of which depends on the circumstances of the termination. Normally, senior debt is made whole in case of termination for a default caused by the off-taker, for convenience and for a force majeure event, but debt holders may suffer losses if the termination is triggered by the issuer.

Discussion of the scorecard factors

In this section, we explain our general approach for scoring each scorecard factor or sub-factor, and we describe why they are meaningful as credit indicators.

Factor: Complexity of Project Operations and Performance Regime (30% weight)

Why it matters

The scope of an issuer's operating responsibilities is contained in the project agreement (PA), and the complexity of those obligations and the challenges the performance requirements pose to the issuer provide important indications of whether it will earn the expected level of availability revenues. The performance regime, which is also part of the PA, outlines how the operator will be assessed in order to calculate revenue deductions and penalties. Generally, a project scope that calls for fairly basic services will result in a lower risk of revenue deductions than where more complex services are involved, unless a performance regime is unusually punitive.

This factor also provides important indications of the relationship between the issuer and its sub-contractor,[4] including contractual triggers for a sub-contractor's replacement, as compared to those under the PA that would cause termination of the issuer for poor performance. The ability and practicality of such a replacement also provides important indications of the complexity of project operations. An inability to replace a poorly performing sub-contractor before a termination trigger under the PA occurs can be a material credit weakness.

How we assess it for the scorecard

Scoring for this factor is based on four sub-factors: Complexity of Facilities Management (FM) Obligation; Complexity of Lifecycle Obligation; Nature of Performance Regime; and Concession/Sub-contract Interface.

COMPLEXITY OF FACILITIES MANAGEMENT (FM) OBLIGATION:

In our assessment of the complexity of the facilities management (FM) obligation, we consider the relative complexity of the issuer's operational responsibilities. Different aspects of complexity include the nature of the service provided, how critical the service is to the off-taker and the population being served, whether services are to be provided during specific hours or constantly on a 24/7 basis, and whether maintenance may be scheduled during off-hours or must take place in an environment where users are present around the clock.

An issuer's service obligations under the PA are typically divided into soft facilities management (Soft FM) and hard facilities management (Hard FM). Soft FM activities are services performed by an issuer, such as catering, cleaning, portering and site security. Hard FM relates to both routine operating and maintenance by the issuer of the project assets and small-ticket replacement items, such as painting, road signage, replacing parts of heating/cooling and water systems, and inspection. While the provision of these services is common across most PPP projects, the scope and complexity of each, along with specific responsibilities, varies widely across projects, even within the same sector.

We consider Soft FM obligations such as routine cleaning, trash removal, and gardening to be relatively simple, whereas cleaning of clinical areas, catering or operating a large help desk function are more complex. For example, cleaning services provided at a school, while important if not carried out properly, will generally not impede classroom learning and can be carried out when school is out. Typically, scoring for simple, Soft FM obligations would be scored higher under this sub-factor. By contrast, while hospital catering services are scheduled, if they are not provided appropriately the patients may be notably affected, typically leading to somewhat lower scoring. Some of the most complex services would include those related to defense or specialized research facilities that require continuous provision and specialized labor due to the sensitive or ad hoc nature of the facility being maintained, the type of maintenance or the equipment used to provide the service or maintenance.

Another aspect of Hard FM complexity is whether the maintained project asset is newly built or was acquired as retained estate or assumed infrastructure (known as legacy components) and renovated as part of the project. For the same project type, there is likely to be less risk associated with maintaining new assets built for the project purpose than with taking over and maintaining existing or re-purposed assets. This is particularly the case if the sub-contractor responsible for Hard FM worked closely with the construction contractor during the bid and development stages and therefore knows what it will have to maintain and has priced its services appropriately. In contrast, assuming responsibility for legacy components may increase the risk that the maintenance obligations or the asset's condition were not fully understood, and the services were mispriced as a result. The same concern could exist if a Hard FM sub-contractor has not been involved in the bid or development of the facility. Additionally, we consider the age and condition of the legacy components and the extent to which their purpose has been changed for the service provision. A project with material legacy components but which was designed for the proposed use, recently built and in good condition could score “A” under this sub-factor.

COMPLEXITY OF LIFECYCLE OBLIGATION:

Lifecycle or major maintenance refers to the replacement of high-cost plant and equipment or the performance of major repairs to maintain the operating condition of an asset over the life of the PA. Assessing the complexity of lifecycle obligations takes into account many of the aspects related to Hard FM operations, including complexity of the asset to be maintained and items to be replaced, but the focus is on long-term requirements and expected cost of asset maintenance. While the scope could range from no lifecycle obligations to those that are exceedingly costly and difficult to project, complexity more typically encountered can range from a school building with minimal requirements such as furniture replacement, which is likely to score quite high, to complex defense equipment that needs to be replaced at various intervals and which is likely to score quite low.

As in the case of Hard FM, whether the asset is newly built to specification or has legacy components is an important determinant of the challenges that an issuer can confront in providing long-term maintenance and replacement services.

NATURE OF PERFORMANCE REGIME:

Project off-takers are relatively free to set whatever performance standards they deem appropriate and are limited only by what the market will accept and by what is possible to document. Consequently, issuers can be subject to performance regimes ranging from very benign to very harsh in terms of the likelihood and amount of potential revenue deductions or penalties. In some cases, a significant portion of an issuer's revenue may not be exposed to performance-related deductions, thereby providing a highly reliable cash flow for debt service.

Our scoring of this sub-factor incorporates an assessment of multiple dimensions, because the services that can be provided, the ways in which performance can be measured and the penalties incurred are myriad, and they vary across assets and across off-takers. Overall, we make a judgment about the project's performance regime (ranging from particularly onerous to particularly benign) and its expected impact on an issuer's cash flow. The transparency and clarity of the payment mechanism set out in the PA is another important consideration in assessing the level of deductions a project is likely to incur. Interpretation issues arising from unclear wording can lead to disagreements, arbitration or even judicial proceedings and can also strain relationships between the off-taker and the issuer.

We regard a performance regime as onerous or even punitive if it imposes disproportionate penalties for performance failures. For instance, the severity of performance failures may increase incrementally while the severity of penalties increases steeply, or there may be very large one-off payment deductions. We do not consider ratchet mechanisms, whereby penalties become increasingly severe if problems persist or go unremedied, to be punitive in principle unless the ratcheting is extreme. The most punitive performance regime, which we expect would be extremely rare, would expose the issuer to termination for a single and likely severe performance failure. A more common example of a punitive regime would feature revenue deductions that could exceed an issuer's total revenues in a given measurement period, causing deductions to roll over from period to period.

In general, a benign payment mechanism would be one that makes it difficult for an issuer to incur deductions. For new projects, we would generally consider the opinion of the lenders' technical advisor as to whether the required service performance is achievable without incurring material deductions under the payment mechanism. For projects with an operational track record, evidence of a collaborative approach with no excessive deductions typically demonstrates that the mechanism is not overly onerous or sensitive to interpretation. Projects that have experienced a very high level of Service Failure Points (SFPs) or deductions, or have a history of PA interpretation issues typically would score lower under this sub-factor.

CONCESSION / SUB-CONTRACT INTERFACE:

In many cases, an issuer's service obligations are partially or fully sub-contracted. Typically, an issuer protects itself from performance failure by fully mirroring the PA's performance obligations and penalty regime in its sub-contract, but with provisions that provide it greater flexibility to intervene at an earlier stage to enforce improvement or to replace the sub-contractor. The terms of the sub-contracts are important because they specify how an issuer's obligations under the PA are passed on to the sub-contractor, how performance problems get resolved, and, ultimately, how a sub-contractor can be replaced before its underperformance causes a PA termination.

For this sub-factor, we assess the headroom, or distance between the performance requirements and penalties, as specified in the PA and as specified in the sub-contract. We also consider the protections available to an issuer in the PA to support a replacement of the sub-contractor. Where an issuer has a material buffer, allowing it to replace a sub-contractor comfortably in advance of an issuer default under the PA, the issuer typically scores better than a project with little or no headroom between the sub-contract and the PA. Additionally, the PA will set out whether the issuer can replace the sub-contractor, and if the project's accumulated SFPs under the PA can be canceled or wiped clean upon such replacement. Where the PA allows the issuer to replace the sub-contractor multiple times with accumulated SFPs wiped clean, the score for this sub-factor is usually quite high. Where the PA allows the replacement of the sub-contractor but with no wipe-clean of SFPs and no settling-in or grace period[5] for the new sub-contractor, the score is usually quite low.

Where there are multiple sub-contracts, we would typically score to the issuer's weakest material sub-contract, because a single trigger of the SFP or deduction levels under the PA can generally result in a right for the off-taker to terminate the project.

Factor: Strength of Contractual Arrangements and Operational Approach (35% weight)

Why it matters

One of the key aims of the PPP framework is to transfer risk from the public sector to the private sector. Given the long tenors of typical PAs and PPP debt, there is a potential for a material mismatch between an issuer's revenues that relate to its maintenance and service obligations and the cost of providing those services.[6] The impact that under-budgeting, mismatch between contractual indexes/inflators in the PA and realized costs over time, or poor performance may have on the issuer is amplified by the high leverage and resultant low DSCRs that are typical of most PPP projects.

A typical issuer sub-contracts most of its FM obligations to an entity that has the ability to perform under a long-term sub-contract, in order to mitigate deductions for poor performance or decrease the potential that its actual costs (operating services, maintenance and lifecycle) will be above the original forecast. Under the relevant sub-contract, the sub-contractor will typically agree to make certain reimbursements to the project, subject to two liability caps (the size of which may vary) that are typically expressed as a percentage of the annual FM sub-contractor fee.[7] The first pertains to the maximum annual availability and performance deductions that the FM sub-contractor agrees to absorb; the second is the liability cap upon termination of the FM sub-contractor. The level of the annual liability cap is a key consideration, in part because it indicates the amount of deductions under the PA that the project can incur before its financial metrics are affected. Any deductions up to that level will be borne by the FM sub-contractor, thereby mitigating the issuer's exposure to such deductions. The effectiveness of the mitigation depends on the contractual terms and the credit strength of the sub-contractor.

How we assess it for the scorecard

Scoring for this factor is based on four sub-factors: Robustness of FM Sub-contract Package Terms; Robustness of Lifecycle Contract Arrangements; Adequacy of FM Budgeting, Benchmarking and Resourcing; and Adequacy of Lifecycle Plan

ROBUSTNESS OF FM SUB-CONTRACT PACKAGE TERMS:

To assess the robustness of FM sub-contract package terms, we consider the extent to which the issuer has passed on to the sub-contractor its contractual service, maintenance and lifecycle costs, as well as the annual liability cap provided by the sub-contractor and the sub-contractor's credit strength, which may be enhanced by performance security. We consider the credit quality of the FM provider or its guarantor, because the issuer's FM risk mitigation strategy will only be successful if the sub-contractor has sufficient credit strength to stand behind its contractual obligation.

We assess the credit strength of a sub-contractor by reviewing the robustness of its financials, size and diversification. Typically, a "very strong" sub-contractor would be an industry-leading provider in terms of size, market position and diversification, and would display very strong financials (profitability, cash flow, leverage and liquidity). A "strong" sub-contractor would have weaker financials or market position than a "very strong" sub-contractor. A "moderate" sub-contractor would typically have either weak financials or lack diversification. A "weak" sub-contractor may be a thinly capitalized, local or undiversified sub-contractor with poor profitability, weak cash flow and liquidity or very high leverage.

For many operating PPP projects, we consider the dependence on an operating sub-contractor(s) to be low where (i) the operations are relatively straightforward or the sub-contract can be easily replaced on similar commercial terms; or (ii) project agreement protections partly mitigate the issuer's exposure to the sub-contractor, which may include periodic revenue adjustments to reflect changes in the cost of the services being provided. We may use credit estimates as supplementary information in our analysis.[8]

We typically consider operationally complex projects or those with contracts that are aggressively priced or do not reflect actual increases in costs incurred over time to have high dependence on the sub-contractor, because there are likely a limited number of entities that can perform the required duties under similar commercial terms. See "Appendix B: Assessing Off-taker and sub-contractor credit quality," which describes our approach to assessing the sub-contractor's credit strength in these cases.

We also consider the impact of the third-party enhancements to the sub-contractor's obligations, including termination payments, which may include guarantees, or support from a demand instrument such as a letter of credit. The extent to which this performance security augments the sub-contractor's own credit strength will depend on the amount of the instrument relative to the sub-contractor's obligation, timeliness of payment if the instrument is called and the credit quality of the security provider.

Everything else being equal, a large, highly diversified FM sub-contractor with strong profitability and liquidity has materially more scope to absorb losses on a problematic contract than a small local company that may be rendered insolvent by a single large loss.

If an issuer enters into multiple sub-contracts, we assess the sub-contractor credit strength on a composite basis. Typically, this assessment would include looking at average credit strength weighted by the percentage of FM costs, but we may consider other factors such as the importance of a particular sub-contractor for the successful operation of the project and the ease of replacement of a sub-contractor. For self-performing projects, we typically assess the track record of the issuer or the project's equity sponsors in budgeting and managing costs, as well as the importance of this project to the equity sponsors' reputation and business strategy.

ROBUSTNESS OF LIFECYCLE CONTRACT ARRANGEMENTS:

The PPP sector has had limited experience with lifecycle costs toward the end of the concession or the hand-back of a project to the off-taker. We view sub-contracting lifecycle risk to a strong FM sub-contractor as being more creditor-friendly than self-performance, because the project is generally insulated from major maintenance cost increases unless that sub-contractor fails to perform or needs to be replaced. As per the Robustness of FM Sub-contract Package Terms sub-factor, we consider the sub-contractor's credit strength and any performance security supporting its obligation in our evaluation of its ability to perform.

In some of the more established PPP markets, lifecycle tends to be self-performed. This is a key risk differentiator, as PPPs are typically structured with a very low excess cash cushion to absorb cost increases. While a lifecycle reserve can mitigate the risk of a lumpy expenditure profile, it does not mitigate the risks that the expenditure profile will be substantially different from the original or that actual costs will substantially exceed budget.

The highest scores in this sub-factor are reserved for projects where the lifecycle risks are fully borne either by the off-taker or by a very strong sub-contractor. For self-performing projects, which score in the middle and lower portions of the scorecard, we assess the equity sponsors' experience in successfully budgeting and managing lifecycle works.

ADEQUACY OF FM BUDGETING, BENCHMARKING AND RESOURCING:

Where an operating PPP project's risk mitigation strategy relies on a sub-contractor, it will not be successful if the FM sub-contractor fails to meet its contractual obligations or defaults, potentially requiring the project to replace the incumbent FM sub-contractor at a higher cost. For this sub-factor, we assess the FM sub-contract in terms of the appropriateness of the contract price to incentivize and reward the FM sub-contractor over time, any benchmarking or market testing provisions that may be in the PA, and the general predictability of FM costs.

An aggressively priced FM sub-contract is credit negative for a project, because the FM provider's profit margin may be insufficient to incentivize high performance levels or to allow it to absorb costs overruns, and such a contract would be less likely to attract a substitute if the sub-contractor needs to be replaced.

For this sub-factor, we assess the protection from cost increases through the benchmarking and market-testing provisions in the PA. Our assessment of budget adequacy is typically informed by the technical advisor's analysis and a peer comparison with the costs of comparable projects. Additionally, we generally consider, to the extent available, the project's actual costs versus budget. However, historically higher or lower spending against the budget may be a timing issue rather than actual cost overspending or saving.

While Hard FM services are not typically subject to benchmarking, Soft FM services often have the benefit of this mechanism. Benchmarking or market-testing typically occurs on a periodic basis (for example, every five years) for the costs of some of the services undertaken by the issuer. Benchmarking is a process of comparing the contract price of the service with the market price of equivalent services, following which the availability payment is adjusted to reflect the difference between the prices in the PA and market prices, but the FM sub-contractor is normally not replaced. Many contracts also have market-testing provisions under which the specific services are re-tendered. The outcome will be an adjustment of the availability payment as well as replacement of the incumbent sub-contractor if it does not provide or match the lowest price offered in the market-testing exercise.

We typically score projects with services that are both market-tested or benchmarked and sub-contracted higher than those whose services are neither market-tested/benchmarked nor sub-contracted, even though sub-contractor replacement through market-testing may cause some short-term disruption and the incurrence of higher deductions. Some projects have benchmarking only in the sub-contract, such that the increase or decrease is not passed through to the off-taker. In such cases, we typically score in line with self-performing projects with no benchmarking under the PA, as the issuer must increase the FM sub-contract fee on a periodic basis but has no protection from any resultant cost increases under the PA.

ADEQUACY OF LIFECYCLE PLAN:

Poor forecasting or budgeting for lifecycle can have a material impact on a project's financial metrics. Although a growing number of operating PPPs have reached a point at which major lifecycle works are required, there is still limited historical evidence as to the success of lifecycle management through a whole project concession life. Our assessment is prospective, and our view may evolve as more projects incur end-of-lifecycle costs.

For this sub-factor, we assess the adequacy of a project's lifecycle budget, typically with the input of the lenders' technical advisor, and informed by the issuer's track record, if any, of keeping costs within budget. We typically score an issuer whose budget or sub-contract for lifecycle is above sector peers higher, as it is more likely to be able to deliver its contractual obligations within the budget.

Factor: Performance and Quality of Sub-contractor (10% weight)

Why it matters

The performance and experience of the FM sub-contractor is a key consideration for the credit quality of a project. Where a PPP project's services are provided in line with the contract requirements, there are typically few if any deductions, and it can earn expected revenues. An FM sub-contractor inexperienced in the project's sector may not have the expertise or capabilities to manage ad-hoc issues and consistently meet the service requirements, potentially leading to deductions or even more serious repercussions under the PA.

How we assess it for the scorecard

PERFORMANCE AND QUALITY OF SUB-CONTRACTOR:

In this factor, we assess the quality of the FM sub-contractor in terms of performance, expertise and experience. For clarity, in this factor abilities are scored independently of financial strength, which is considered in the Strength of Contractual Arrangements and Operational Approach factor. A project whose sub-contractor has an extensive, demonstrable track record of successful operations in similar projects will typically score high in this factor. Self-performing projects typically score no higher than A in this factor. Where material reservations exist regarding the FM provider, whether a sub-contractor or the project or equity sponsors, the project will typically score very low in this factor.

Where there are multiple sub-contracts or where the project partially self-performs, we would assess the risk of the FM arrangement in its totality.

Factor: Leverage and Coverage (25% weight)

Why it matters

The first three rating factors focus on an issuer's operating profile as captured in its complexity, contractual arrangements and sub-contractor relationships; however, projects with similar business profiles may have very different levels of cash flow or leverage, as indicated by their financial metrics. The PPP sector is typically highly leveraged, supported by low volatility, high quality cash flows and structural protections. All else being equal, leverage and coverage metrics differentiate the financial flexibility among PPP projects to withstand revenue deductions and cost overruns and are an important indicator of the potential for issuer default and losses for creditors.

How we assess it for the scorecard

Scoring for this factor is based on three sub-factors: the Minimum Annual Debt Service Coverage Ratio (ADSCR); the Average ADSCR; and the Adjusted Minimum ADSCR Break-even Ratio.

In general, the focus of our assessment of leverage and coverage financial metrics is forward-looking. We generally use cash flow projections based upon our assessment of the most likely financial and operating parameters and sensitivities, which could be different from the management's or sponsor's projections. For operating PPPs that have a track record, this historical performance may inform our view of likely future results. Additionally, we often assess other financial ratios and break-even scenarios, which we discuss in the "Other considerations" section.

MINIMUM ADSCR AND AVERAGE ADSCR:

The minimum ADSCR and average ADSCR[9] are traditional measures of financial leverage and debt repayment capacity. The ratios provide indications of a project's exposure to debt service costs and its ability to sustain lower cash flows from unexpected events before debt service is impaired. For both ratios, the ADSCR is typically calculated or estimated based on the projections, through the scheduled maturity of the issuer's debt (for fully amortizing projects) or through the expected full life of the project debt, including refinancing. The minimum ADSCR is the lowest of the future periodic coverage ratios, while the average ADSCR is the average of the future periodic coverage ratios.

The numerator is cash flow available for debt service (CFADS), and the denominator is interest and principal[10] payment, where:

CFADS equals cash flows from operations (before interest paid) less total capital expenditure[11] plus/minus transfers from/to timing reserves,[12] if relevant.

Interest and principal payment for fully amortizing projects equals cash interest and principal paid or required to be paid in the relevant period. Cash interest and principal payable are generally derived from the financing arrangements, which are typically set out in the cash flow statement in the issuer's financial model. Interest paid is gross of interest income (as the latter is included in the numerator).

Interest and principal payment for non-fully amortizing projects is the debt service annuity. If the financing does not provide for a fully-amortizing mortgage-style principal repayment schedule, we use the debt service annuity as the denominator for this ratio. The debt service annuity is the annuity-type payment of interest and principal required to fully repay outstanding debt over the life of the concession. Debt service annuity is calculated using a standard formula for the present value (PV) of an annuity payment.[13] In other words, we assume that: (i) annual debt service is a constant figure, (ii) interest rates (the discount rate[14] used in the formula) are constant, and (iii) the full amount of debt outstanding at the end of the financial year (i.e., the PV of future payments today) is paid down to zero over the life of the concession.

The DSCR for companies that have minority interests in operating PPPs is calculated as follows:

The numerator of the DSCR ratio is the share of the operating company's CFADS proportionate to the minority interest share,[15] and the denominator is the sum of the proportionate share of the operating company's debt service (including any debt service for obligations that sit between the operating company and the minority holding company) plus 100% of the minority holding company's debt service. This approach to calculating metrics may also inform our analysis of non-minority partially owned projects. Please also see additional guidance in the section on notching factors. In cases where the proportionate share of the operating company's CFADS is unavailable, we may use cash distributions from the operating company to the holding company as a proxy. In cases where the minority owner's economic interest in the operating company (e.g., the minority owner's proportionate share of cash distributions) is different from its ownership interest, the proportionate share of CFADS and debt service is based on the economic interest.

ADJUSTED MINIMUM ADSCR BREAK-EVEN RATIO:

The minimum ADSCR break-even ratio is an important measure for analyzing an issuer's exposure to increasing operating, maintenance and lifecycle costs, which is a key consideration for operating PPPs, which are typically highly leveraged and have largely fixed revenue streams. Two issuers with different cost structures could have the same minimum and average ADSCRs but a very different ability to withstand increasing costs. Additionally, this ratio highlights pinch points in the debt structure where the issuer is most exposed to cost increases; these typically occur in periods when the project has significant lifecycle or hand-back funding obligations.

In each period, we calculate the percentage by which all of the issuer's operating, maintenance and lifecycle costs, including soft FM, hard FM, lifecycle, special purpose vehicle (SPV) and insurance costs, can be increased until the ADSCR is reduced to 1.0x, without any draw-down of cash or any additional draw-downs from reserves. We do not include tax expense, pass-through costs and services where the issuer is fully protected from the risk of performance and termination of the service provider under the PA (ring-fenced services) in this calculation.The smallest percentage increase during the remaining tenor of the debt (if fully amortizing) or concession life (where refinancing risk exists), is then scored using the thresholds for the Unadjusted Minimum ADSCR Break-even Ratio sub-factor in the scorecard.

For holding companies that have a partial interest (e.g., a minority interest) in a single operational PPP project, the minimum break-even DSCR is calculated or estimated using the following two-tiered approach:

» We first calculate or estimate the percentage by which all of the operating company's operating, maintenance and lifecycle costs can be increased in each period until the operating company's ADSCR is reduced to the level of the distribution lock-up[16] DSCR (e.g., 1.10x), which is defined in the operating company's financial covenants. The smallest percentage increase during the remaining tenor of the debt (if fully amortizing) or concession life (where refinancing risk exists) that reaches the distribution lock-up DSCR is used to score this sub-factor, using the thresholds for the Unadjusted Minimum ADSCR Break-even Ratio. If the excess cash flow to the holding company is sufficient for it to meet all of its obligations including debt service, the score for this sub-factor is complete.

» If, however, the excess cash flow to the holding company is insufficient to meet all of its obligations in any period, we then recalculate or estimate the percentage by which all of the operating company's operating, maintenance and lifecycle costs can be increased until the holding company's ADSCR is 1.0x. We then use that percentage increase to score the sub-factor, using the thresholds for the Unadjusted Minimum ADSCR Break-even Ratio.

The score provided by the ratio may be adjusted upward by one broad rating category (for example, to Baa from Ba) when (a) the minimum ADSCR break-even ratio is uncharacteristic of an otherwise more robust cash flow profile and (b) the minimum ADSCR break-even ratio occurs at a point when (1) we have very high visibility around revenues and costs (for example, we would typically not adjust for a minimum ADSCR break-even point which occurs in the medium-to-long term, when visibility around costs is lower than in the short term), or (2) there is meaningful flexibility around the timing of lifecycle payments (for example, we would typically not adjust for a minimum ADSCR break-even point when the issuer has hand-back obligations under the PA, as flexibility around expenditure is limited).

Notching factors

The scorecard includes notching factors. Our assessment of these notching factors may result in upward or downward adjustments to the preliminary outcome that results from the four weighted scorecard factors. Adjustments may be made in half-notch or whole notch increments, based on the notching factors described below. Off-taker Risk considerations can constrain the rating.

In aggregate, the notching factors can theoretically result in a total of up to four upward notches or up to 21 downward notches from the preliminary outcome to arrive at the scorecard-indicated outcome. In cases where we consider that the credit weakness or credit strength represented by a notching factor, or by these factors in aggregate, is greater than the scorecard range, we incorporate this view into the rating, which may be different from the scorecard-indicated outcome.

Project Track Record

Why it matters

The quality of relationships and operational performance are important features that allow us to differentiate among issuers that have demonstrated a period of successful steady-state operations, issuers in transition that have recently completed the construction phase and commenced operations, and issuers that have operational problems.

How we assess it for the scorecard

Within Project Track Record, we assess two sub-factors: the quality of the relationships between the project parties, and the operating performance of the project. We assess and score each of the sub-factors independently, and each has a range of one upward notch to one downward notch.

QUALITY OF RELATIONSHIPS BETWEEN PROJECT PARTIES:

An effective and collaborative relationship between the issuer and the off-taker is fundamental to the success of a PPP project. The off-taker and the issuer need to work together for efficient day-to-day operation of the asset and to manage potential variations to the contractual requirements. In our experience, the most successful projects are those where a partnership approach to the contract is adopted and a good relationship exists among all the project parties. Conversely, where a challenging relationship exists, the off-taker could aggressively enforce the contract or hire specialists to highlight service deficiencies, which may result in the issuer incurring deductions, SFPs or warning notices, or being subjected to increased monitoring.

Typically, there would be positive notching only where (i) the project and the off-taker have some operating track record of working effectively together in the operating phase (we may also consider substantial operations that are carried out during the construction phase for projects with multiple stages), (ii) there is no evidence of relationship problems, and (iii) the issuer is adequately resourced and proactive. Positive notching would typically only be one full notch when the relationship includes the following aspects: the project parties are flexible, a liberal interpretation of the contract is adopted, and the off-taker's actions or statements indicate it has a very favorable view of the assets and the issuer's performance.

OPERATIONAL PERFORMANCE:

An issuer has a higher risk of revenue under-performance and even termination if it incurs a high level of deductions (relative to the availability payment) or SFPs (relative to termination thresholds), which are strong indicators of operational problems.

We assess operational performance through the level of deductions and SFPs that the issuer has incurred in the past 12 to 36 months to assess the service performance track record. For PPPs, historical operating performance is typically a good indicator of future performance. Thus, while our assessment is forward-looking, positive notching is reserved for projects with an operating track record of at least 12 months.

In its transition period, an issuer is more likely to incur deductions as it builds resources and becomes accustomed to the performance specifications of the required service and the key concerns of the off-taker. A prolonged settling-in period or a deteriorating performance record are causes for greater concern. We provide more information on the rating impact of transitioning risk in "Other considerations."

Exhibit 4
Notching factor: Project track record

	1	0.5	0	-0.5	-1
Quality of Relationships Between Project Parties	Strong working relationship between all key parties with evidence of a partnership approach to this project; and the issuer's management is well-resourced and historically proactive; and The off-taker's very favorable view of the infrastructure, service and the issuer is evidenced in flexible interpretation of the PA.	Effective working relationship of all key parties in operation of this project; and The issuer's management is adequately resourced and expected to be proactive.	Neutral relationship between parties; or Parties have limited history of working in consortium on other PPPs.	Relationship between off-taker and issuer shows some signs of strain; or There are indications that the off-taker is dissatisfied with the contract management approach on this project or on other projects where the parties work together; or Issues resolution is protracted; or Relationship between off-taker and the issuer is difficult but deductions/ SFPs are not expected to be material.	Relationship between off-taker and the issuer is difficult and deductions/ SFPs are expected to be material; or History or reasonable expectation of a material disagreement under the PA or in its interpretation that is likely to lead to material deduction/SFPs.
Operational Performance	Zero or minimal deductions and performance penalty points for a minimum of 18 continuous months of full service provision.	Low deductions and performance penalty points over a minimum 12-month period of full service provision, materially below warning notice thresholds; or Pre-operating phase with at least 24 months of operating a material portion of the asset with minimal deductions.	Modest deductions and performance penalty points; good headroom to warning notices.	Performance is triggering or expected to trigger warning notices; some deductions but reasonable buffer remains to concession termination thresholds.	Performance is triggering or expected to trigger warning notices and meaningful deductions, with a modest buffer to concession termination thresholds.

Source: Moody's Investors Service

Refinancing Risk

Why it matters

A project that requires access to the debt markets during the tenor of the PA increases credit risk given the uncertainty of the issuer's ability, at a future point, to reach credit terms that are manageable given its essentially fixed revenues. Most operating PPPs have a fully amortizing debt structure, and projects typically have lower ratings if they will need to access the debt market for refinancing.

How we assess it for the scorecard

In this notching factor, we assess the size and the profile of the refinancing need, the current interest rate paid by the issuer in relation to our expectations of interest rates and availability of credit when the refinancing is required (which may include downside scenarios), any risk-mitigation the issuer has put into place, and the expected impact the refinancing will have on leverage and coverage metrics. For scorecard scoring, refinancing risk can have up to four notches of negative impact in the scorecard, but our ratings incorporate the full impact of refinancing risk where it exists. Thus, pronounced or imminent refinancing risk may cause an issuer's assigned rating to be well below its scorecard-indicated outcome.

Structural Features

Why it matters

Structural features are very important in the highly leveraged operating PPP sector, because they help to ensure that a project's cash flows are used as expected and that creditors have the ability to step in and exercise rights when a project is off-track, but while problems are still remediable.

For holding companies, including issuers with a minority ownership interest, key structural protections help to assure a continued stream of distributions to the holder sufficient to meet its debt service requirements. Protections may be reached through a combination of the terms of debt (if any) at the operating company, the holding company's debt terms and a shareholder agreement among the owners. However, some project structural features, such as cash traps at the operating company level, may increase risk to the creditors of holding companies.

How we assess it for the scorecard

In this notching factor, we assess the relative strengths and weaknesses of certain structural elements versus a standard PPP project financing structure in two sub-factors: Reserves, and Security and Creditor Controls. The cumulative adjustment for these two sub-factors is two upward notches to six downward notches.[17] Although a six-notch downward adjustment is theoretically possible, the absence of so many typical structural features would raise serious concerns about the classification of the transaction as a project financing of an operating PPP.

We score structural features based on their effect on the creditors at the level of the debt we are rating. For projects with rated debt at a holding company (whether wholly, partially or minority-owned), we consider structural strengths and weaknesses in this notching factor from the perspective of how they may affect the project and the distributions expected to be received at the holding company. Structural features may also affect our assessment of the Priority of Claim, Structural Subordination and Double Leverage notching factor.

For projects with a minority ownership interest, we typically assess the extent to which the structural features of all relevant agreements provide the minority owner's creditors with key protections to help assure a continued stream of distributions to the minority holder sufficient to meet its debt service requirements. For example, the shareholder agreement may provide minority owners with veto rights over key decisions (such as material changes to the underlying business, distributions, incurrence of debt, or filing for bankruptcy), while the terms of the debt at the holding company may prescribe the minority owner's exercise of these rights.

RESERVES:

We assess two key reserves that are the most typical in this sector, the debt service reserve account (DSRA) and the maintenance reserve account (MRA), although other meaningfully credit-enhancing reserves are also considered. We score the DSRA and the MRA or other reserves together, with a combined scorecard-scoring range of 1.5 upward notches to three downward notches. Because the DSRA is of most immediate importance to support timely debt service, it is typically the larger component of the score.

Dedicated debt service liquidity helps to bridge over periods of financial stress, providing funds with which to pay debt service until a problem is resolved or conditions improve. An operating PPP project would normally have a six-month debt service reserve account in dependable, highly liquid available funds or a letter of credit from a strong investment-grade OECD bank, with a separate repayment source upon drawing.

Exhibit 5

Notching factor: Debt service reserve account

	Up to +1	Up to +0.5	0	Up to -1	Up to -2
Debt Service Reserve Account (DSRA)	12 months	9 months	6 months	3 months	No DSRA

Source: Moody's Investors Service

A Debt Service Reserve Facility (DSRF) or a letter of credit may not qualify as a DSRA equivalent, especially if drawings under the facility affect the issuer's ability to service debt in future periods, e.g., if the issuer must repay the facility from CFADS prior to or coterminously with the maturity of the senior debt.

Typically, the debt service reserve would be fully funded by construction completion. A structure that builds up the reserve over time is also credit negative, and we may apply negative notching for this weakness.

Projects that self-perform their lifecycle obligations tend to have a forward-looking MRA (for example a three-year look forward, with major maintenance requirements funded as follows: Year 1: 100%; Year 2: 66%, Year 3: 33%). In assessing the MRA's impact on the overall Reserves notching, we consider not only the MRA's size and funding, but also the impact it may have on the project's credit profile in light of the actual lifecycle obligations and the party that will perform them. Notching uplift from a materially stronger MRA has been rare and, where it occurs, is typically a half notch. For a lifecycle mechanism that is below the standard, up to one downward notch is fairly typical, but we may view two downward notches as appropriate if the MRA is weak and the lifecycle obligation is onerous or complex. We also apply notching to projects that sub-contract lifecycle obligations. However, the lack of an MRA may be mitigated by high-quality security backing the lifecycle contractor's obligations, and trapping cash through a reduction in the sub-contractor fee where an independent lifecycle study, conducted on a regular basis, shows a potential funding shortfall of future lifecycle.

SECURITY AND CREDITOR CONTROLS:

We assess the following three features with one cumulative score and could apply an adjustment of one upward notch to four downward notches in the scorecard. Although a four-notch downward adjustment is theoretically possible, the absence of so many typical structural features would raise serious concerns about the classification of the transaction as a project financing of an operating PPP.

Security and Step-in Rights

For operating PPP projects, the debtholders would typically have a comprehensive, first-ranking security package, including: a charge over the assets; pledges and assignments (to the extent permitted by the jurisdiction) to attain a first priority interest in all key assets and contracts. Assets typically do not include the public infrastructure constructed by the issuer, which belongs to the public sector entity. Key contracts include the PA and the major sub-contracts.

The lenders also receive the right to step into key sub-contracts if the issuer breaches the terms thereof, and to step into the PA following an issuer event of default and replace the issuer with a new entity. All else being equal, the absence of any of these elements would be a credit weakness and we would typically apply a downward notching adjustment of up to three notches.

Equity Distribution Lock-up Arrangements

Prohibiting distributions to shareholders in a stressed scenario preserves cash within the business, thus reducing the risk of default, and focuses the sponsor's attention on remediating the cause of the reduced cash flow. In jurisdictions with well-established PPP frameworks, we generally view a lock-up ratio of 1.10x to 1.15x to be standard for availability payment PPP projects. We would typically apply an upward notching of up to one notch where the DSCR lock-up is 1.2x or above; however, we would typically only assign the maximum one notch of uplift where the lock-up level is no more than 10 basis points below our base case minimum DSCR, e.g., where we expect the minimum DSCR to be 1.30x and the lock-up level is 1.20x or greater. A weaker-than-standard lock-up would typically be notched down by up to one notch.

Ratio-based Event of Default Covenant

A typical DSCR Event of Default (EOD) covenant level for a PPP project is 1.05x, and a lower level reduces the ability of the lenders to negotiate with equity sponsors or enforce their acceleration rights before an issuer default due to non-payment. A higher ratio does not typically result in upward notching; however, we would typically apply downward notching of up to one notch if there is a lower EOD DSCR covenant or none at all.

Priority of Claim, Structural Subordination and Double Leverage

Why it matters

The scorecard-indicated outcome before the consideration of this notching factor is typically oriented to a senior secured debt rating of an operating project and does not take into account debt positioning within a consolidated capital structure. Debt positioning can lead to downward notching.

For project finance debt, the terms of the financing structure typically have a high degree of influence on the relative credit risk of different debt classes, including holding company debt,[18] due to the payment priorities set out in the project finance waterfall. Unlike a typical non-leveraged buyout corporate structure, where cash flows quite freely among affiliates, such that the probability of default is very close among debt classes at all levels of the corporate family, many project finance structures contain distribution tests and cash traps that can cause probabilities of default for different debt classes to diverge. Project finance debt classes are thus typically notched,[19] relative to one another, based on the priority of claim in a distress scenario for the project as a whole and based on the incremental risk of default for each debt class. In the case of minority holding company debt, probability of default may be further differentiated. The project waterfall may specify the payments that are paid directly to the minority owner, such that the probability of an interruption of distributions is the same for the minority owner and the majority owner, or the minority holder may confront incremental risks, for example, that the majority owner might withhold distributions in order to make further investments in the project operating company.

How we assess it for the scorecard

The most typical structural feature that differentiates default probability is the minimum DSCR for distributions. Since debt service at the holding company debt is typically paid solely from distributions from the project operating company, a high minimum DSCR distribution test is a strength for the project, but it materially increases the risk of default at the holding company. We would also consider how close the actual DSCR is to the minimum. If the DSCR distribution test is set at 1.10x and the project has an established, stable DSCR in the range of 1.20x, we may consider that holding company debt has relatively minor incremental default risk. If the DSCR distribution test is set at 1.10x and the actual DSCR is in the range of 1.15x or is volatile, the downward notching of the holding company debt below the senior secured project debt would generally reflect both the higher expected default risk and the higher expected loss given default. For a holding company with a minority interest in an underlying project, we consider how the project's performance, in combination with the transaction agreements, affect probability of default and loss upon default at that level. Considerations may include the control, if any, that minority holders have over the dividend policy; major uses of cash, such as expansion, acquisitions and operating company capital expenditures; key business decisions, such as incurrence of additional debt; and key corporate decisions, including filing for bankruptcy. Limited control is likely to lead to a greater downward notching adjustment.

In addition to considering the DSCR distribution test and robustness of senior cash flows relative to those tests, we would typically also consider the DSCR based on the total debt burden in rating junior classes of debt. For project holding companies, including those with a minority interest, we may also consider how robust the distributions projected to be received are in relation to debt service at that level, taking into consideration the typically greater volatility of cash flows at the holding company level relative to those at the operating company. We may assess the holding company's proportionate share of the residual cash flow available after the operating company has paid all its debt service (and any intermediate holding company debt that is structurally senior to the holding company's debt) compared with the holding company's total debt and debt service, and we may perform a scenario analysis. If cash coverage of debt or debt service at the holding company is weak, or we consider that there is some weakness in the stability of holding company cash flows, greater downward notching is likely. Stronger cash coverage and stability of holding company cash flows may support lower or, in very limited cases, even no downward notching adjustment. Where the overall debt burden is unsustainable, ratings of senior debt may also be negatively affected. In these cases, we would also consider the strength of the inter-creditor protections for senior lenders and the track record of the jurisdiction in upholding the contractual rights of senior creditors.

In assessing relative loss given default of the different debt classes, we would typically consider the amount of debt and percentage of total debt that each class represents. As a project nears default, notching among debt classes may widen, because there may be more granular information about expected recovery values and the loss implication for each debt class.

Off-taker Risk

In this notching factor, we consider whether the scorecard-indicated outcome should be capped by the credit quality of the off-taker and other related considerations, such as the off-taker's perceived likelihood to dispute project performance or to delay payments. If the off-taker adjustment caps the scorecard-indicated outcome, the concerns evidenced by this scoring would also cap the assigned rating.

Typically, the sole source of an operating PPP project's revenues is the off-taker. The credit quality of the off-taker reflects its ability and willingness to pay the availability payments, hence the issuer's rating would in most cases be constrained by the off-taker's credit quality. Where an issuer's preliminary scorecard-indicated outcome, prior to any adjustment for off-taker risk, is equal to or higher than our assessment of the off-taker's credit quality, we would typically adjust the preliminary scorecard-indicated outcome to be one notch below our assessment of the off-taker's credit quality.

This one-notch difference reflects a general assessment of the distinction between the risk of the off-taker defaulting on its own debt obligation (typically, this would be senior unsecured debt, since the payment to the PPP project is usually a senior unsecured obligation) and the risk of failure to make a payment on a PPP project. Essentially, the two are very closely related, but our general assessment is that a government will somewhat prioritize the timely payment of its own debt obligations. This general relationship will not hold in all scenarios, and our rating of an operating PPP project will incorporate the case-specific relationship between the off-taker, the issuer and the services the project provides. Certain off-takers may highly prioritize the timely payment of debt obligations over the social services provided by the PPP project, or the PA may provide somewhat more latitude for non-timely payment (e.g., in a force majeure scenario), or the off-taker may have a history of disputing or delaying availability payments. In these cases, the issuer's final scorecard-indicated outcome and the assigned rating may be more than one notch below that of the off-taker's credit quality. Conversely, if the project is essential to the off-taker and the associated reputational risk of not making a payment to the project would have similar consequences as a payment default of the government's own debt obligation, we could equalize the ratings. Where an off-taker government is in a stressed or distressed scenario, the positive or negative differential in the scorecard-indicated outcome and the assigned ratings of the issuer and the credit quality of the off-taker could widen further, if there is greater clarity regarding the off-taker's priorities for its limited financial resources.

Please see Appendix B for more information on our assessment of off-taker credit quality and our use of credit estimates.

Other considerations

Ratings may reflect consideration of additional factors that are not in the scorecard, usually because the factor's credit importance varies widely among the issuers in the sector or because the factor may be important only under certain circumstances or for a subset of issuers. Such factors include financial controls and the quality of financial reporting; legal structure; the quality and experience of management; assessments of corporate governance as well as environmental and social considerations; exposure to uncertain licensing regimes; and possible government interference in some countries. Regulatory, litigation, liquidity, technology and reputational risk as well as changes to consumer and business spending patterns, competitor strategies and macroeconomic trends also affect ratings.

Following are some examples of additional considerations that may be reflected in our ratings and that may cause ratings to be different from scorecard-indicated outcomes.

Transition

Following construction completion, the issuer is required to mobilize resources and provide full operating, maintenance and lifecycle services on the project. In most cases, projects transition without major incident. However, an issuer required to provide ad-hoc or complex services or to achieve onerous availability targets, which are not mitigated (for example by a phased hand over of services during construction) could have a rating below its scorecard-indicated outcome. Please see Appendix A for more details.

Market-based Revenue

While in essentially all cases issuers rated using this methodology receive availability payments from a government entity that are expected to be sufficient to meet their operating, maintenance and lifecycle costs as well as debt service requirements, some projects may also have a degree of reliance on market-based or volume-based revenue, introducing a risk that can range from minor to material. Such issuers are sometimes referred to as hybrid infrastructure projects. Revenues that are subject to commercial risk are generally much less dependable than availability payments, as they can fluctuate with changes in markets, demand, competitive pressures, affordability issues, demographic changes, etc. Where market-risk revenues exist in PPP projects, they typically represent equity upside rather than a required source of cash flow for debt repayment. Nonetheless, these revenues can represent the difference between a barely sufficient DSCR and one that is robust. Issuers that rely on market-based revenues for debt service may have ratings that are significantly lower than their scorecard-indicated outcomes.

In our projections, we are likely to take a much more conservative view of market-based revenues than revenues that are based on a contract with a creditworthy counterparty. The particulars of each project's market, business profile, track record, essentiality of service and cost structure are important factors in our assessment of the non-contractual revenues that will be included in our most-likely projections scenario or any downside scenarios. In cases where the business plan is speculative or the track record is highly volatile, our most likely scenario may include little, if any, market-based revenues. The greater their predictability and demonstrated track record, the more likely that market-based revenues will be part of our projections.

Construction Risk

PPP projects that are exposed to material construction risks are rated using our methodology that discusses construction risk in PFI/PPP/P3 projects.[20] As noted therein, a project that is in the construction phase and will progress to the operational phase is scored using that methodology and also using this methodology, and the final scorecard-indicated outcome is the lower of the two.

While issuers rated using this methodology have exited the construction phase or have minimal remaining construction risk, remaining construction hurdles may cause actual ratings to be below scorecard-indicated outcomes. The most common form of construction works during the operating phase is the remediation of construction defects. When the risks of cost overruns and termination are remote, for instance because the cost of the rectification works and associated deductions are covered by a construction retention bond or liability cap from a sub-contractor of strong credit quality, or where off-taker-requested modifications to the scope of the project (or variations) are excluded from the payment and performance mechanism until the works have been completed and the asset is operational, these risks are unlikely to exert material downward pressure on ratings. However, when construction risks are not fully mitigated, and especially when they could be borne by the issuer rather than being the responsibility of a capable sub-contractor of strong credit quality, such risks may cause an issuer's actual ratings to be materially below its scorecard-indicated outcome.

Compensation on Termination

One of the key strengths of PPP projects is the high expected compensation payment on termination of the PA. Typically, the off-taker is required to make a payment to the issuer when the PA is terminated by the off-taker for a default by the issuer. The contractual terms vary, but typically the payment is set by either a re-tendering process or a fair market value determination. Any change in our expectation of compensation on termination that would be detrimental to creditors, for instance if governments started to challenge or litigate these payments resulting in a delay or reduction thereof, could have a material downward impact on ratings, such that they would be well below scorecard-indicated outcomes. Additionally, the rating of a PPP issuer in a jurisdiction that is untested for the PPP framework, including termination rights, could be below the scorecard-indicated outcome.

Additional elements that could cause actual ratings to be below scorecard-indicated outcomes include: ultimate termination payment terms that are not well-defined or an expectation of material delays in the receipt of proceeds; a lack of clear and comprehensive right to terminate and receive a full pay out of debt for an extended force majeure event; termination for convenience or off-taker default; ambiguous contract terms or definitions; or a lack of transparency or predictability in the legal regime for PPPs.

Conversely, the rating of an issuer that benefits from a PPP compensation-on-termination regime that ensures timely payment or prepayment of 100% of senior debt in essentially all scenarios may be higher than the scorecard-indicated outcome, subject to our view of off-taker risk and the strength of law and contracts in that jurisdiction.

Counterparty Credit Quality

Within the scorecard, we consider the credit quality of a number of key counterparties, including the FM sub-contractor and the off-taker. However, the project may be exposed to the credit risk of other entities, in particular financial counterparties for derivatives, letters of credit and other performance supports, or corporate guarantees supporting the performance of the FM sub-contractor. The credit quality of a counterparty to which an issuer is materially exposed could exert downward pressure or act as a cap on the actual rating of an operating PPP, even if the issuer's scorecard-indicated outcome is higher.

Inflation Risk

The history of PPP frameworks coincides with a prolonged period of decreasing or low inflation, and the framework is untested for a period of rapidly increasing costs. Inflation that is outside the upper band of our expectations or that causes a material mismatch in an issuer's costs relative to its revenues including indexation payments, could cause its actual rating to be materially below its scorecard-indicated outcome. In respect of inflation exposure, we consider the percentage of the cost base that is covered by revenue increases linked to an appropriate indexation mechanism, or whether the off-taker may (in rare instances) absorb all actual cost increases on a pass through basis. A typical PPP project has mitigated its exposure to inflation by a matching of debt service and revenues on a highly linked basis. The actual rating of a project that falls outside these norms may be well below its scorecard-indicated outcome. Our projections may include sensitivities for high and low inflation scenarios.

Scenarios and Sensitivities

Rating committees may analyze the issuer by employing various projection sensitivities, and a variety of macro-economic and deal-specific factors may influence the confidence we have in the different scenarios. We may also consider other metrics in our analysis. For example, a project life coverage ratio, which recognizes the value of cash flows in the debt-free tail, may be relevant if the tail is unusually long. The tail incentivizes equity sponsors to manage a project such that it fully amortizes its debt; however, in most cases the tail is only about six months. Strengths or weaknesses that are particular to a project can cause the issuer's actual rating to be above or below its scorecard-indicated outcome.

Management Strategy

The quality of project and sponsor management is an important factor supporting a project's credit strength. Assessing the execution of business plans over time can be helpful in assessing management's business strategies, policies and philosophies and in evaluating management performance relative to performance of competitors and our projections. Management's track record of adhering to stated plans, commitments and guidelines provides insight into management's likely future performance, including in stressed situations.

Financial Controls

We rely on the accuracy of audited financial statements to assign and monitor ratings in this sector. The quality of financial statements may be influenced by internal controls, including the proper tone at the top, centralized operations and consistency in accounting policies and procedures. Auditors' reports on the effectiveness of internal controls, auditors' comments in financial reports and unusual restatements of financial statements or delays in regulatory filings may indicate weaknesses in internal controls.

Liquidity

Liquidity is an important rating consideration for operating PPPs, although it may not have a substantial impact in discriminating between two issuers with a similar credit profile. Liquidity can be particularly important for projects, which typically have less operating and financial flexibility, and ratings can be heavily affected by extremely weak liquidity. We form an opinion on likely near-term liquidity requirements from the perspective of both sources and uses of cash. For more details on our approach, please see our liquidity cross-sector methodology.[21]

Event Risk

We also recognize the possibility that an unexpected event could cause a sudden and sharp decline in the fundamental creditworthiness of an issuer, equity sponsor, off-taker or other major counterparty, which may cause actual ratings to be lower than the scorecard-indicated outcome. Typically, PPP projects are structured so that the issuer is prohibited or materially restricted from carrying out any mergers and acquisitions, asset sales, spin-offs, capital restructuring programs, litigation and shareholder distributions. To the extent that these are not prohibited or controlled, this would increase the risk for the issuer or debt holders. Some other types of event risks include pandemics, significant cyber-crime events and geopolitical conflicts.

Additional Metrics

The metrics included in the scorecard are those that are generally most important in assigning ratings to issuers in this industry; however, we may use additional metrics to inform our analysis of specific projects. These additional metrics may be important to our forward view of metrics that are in the scorecard or other rating factors.

Environmental, Social and Governance Considerations

Environmental, social and governance (ESG) considerations may affect the ratings of PPP projects. For information about our approach to assessing ESG issues, please see our methodology that describes our general principles for assessing these risks.[22]

Operating PPPs are subject to varying degrees of regulatory oversight, including environmental standards, an area of increasing scrutiny. Effects of these regulations may entail limitations on operations, higher costs, and higher potential for technology disruptions and demand substitution. Regional differences in regulation, implementation or enforcement may advantage or disadvantage particular issuers. Our view of future regulations plays an important role in our expectations of future financial metrics as well as our confidence level in the ability of an issuer to generate sufficient cash flows relative to its debt burden over the medium and longer term. In some circumstances, regulatory considerations may also be a rating factor outside the scorecard, for instance when regulatory change is swift.

Governance considerations are important for sponsors and may be important for projects, although strong structural features of a project financing may mitigate many governance-related risks. Among the areas of focus for governance are audit committee financial expertise, the incentives created by executive compensation packages, related-party transactions, interactions with outside auditors, and ownership structure.

For issuers in this sector, we also consider social issues that could materially affect the likelihood of default and severity of loss, for example through adverse impacts on business reputation and employee and government relations.

Using the scorecard to arrive at a scorecard-indicated outcome

1. Measurement or estimation of factors in the scorecard

In the "Discussion of the scorecard factors" section, we explain our analytical approach for scoring each scorecard factor or sub-factor,[23] and we describe why they are meaningful as credit indicators.

The information used in assessing the sub-factors is generally found in or calculated from information in the project and financing documents, the financial model, the issuer's or sponsor's financial statements or regulatory filings, derived from other observations or estimated by Moody's analysts. We may also incorporate non-public information.

Our ratings are forward-looking and reflect our expectations for future financial and operating performance. However, historical results are helpful in understanding patterns and trends of a company's performance as well as for peer comparisons. Financial metrics, unless otherwise indicated, are typically calculated based on an annual or 12-month period. However, the factors in the scorecard can be assessed using various time periods. For example, rating committees may find it analytically useful to examine both historical and expected future performance for periods of several years or more.

Financial metrics may incorporate analytical adjustments that are specific to a particular project financing.

2. Mapping scorecard factors to a numeric score

After estimating or calculating each weighted factor or sub-factor, each outcome is mapped to a broad Moody's rating category (Aaa, Aa, A, Baa, Ba, B, Caa or Ca, also called alpha categories) and to a numeric score.

Qualitative factors are scored based on the description by broad rating category in the scorecard. The numeric value of each alpha score is based on the scale below.

Exhibit 6

Aaa	Aa	A	Baa	Ba	B	Caa	Ca
1	3	6	9	12	15	18	20

Source: Moody's Investors Service

3. Determining the overall scorecard-indicated outcome

The numeric score for each weighted sub-factor (or each factor, when the factor has no sub-factors) is multiplied by the weight for that sub-factor (or factor), with the results then summed to produce an aggregate numeric score before notching factors (the preliminary outcome). We then consider whether the preliminary outcome that results from the four weighted factors should be notched upward or downward[24] in order to arrive at an aggregate numeric score after notching factors based on Project Track Record, Refinancing Risk and Structural Features. In aggregate, the notching factors can result in a total of up to four upward notches or up to 12 downward notches from the preliminary outcome. This preliminary outcome after notching may be adjusted downward (not upward) based on our assessment of Off-taker Risk considerations, which can act as a cap on the scorecard-indicated outcome.

The aggregate numeric score before and after notching factors and after Off-taker Risk considerations is then mapped back to an alphanumeric based on the ranges in the table below. For example, an issuer with an aggregate numeric score before notching factors of 11.7 would have a Ba2 preliminary outcome, based on the ranges in the table below. If the combined notching factors totaled two upward notches, the aggregate numeric score after notching factors would be 9.7, which would map to a Baa3 preliminary outcome after notching. If there were no off-taker constraint, the scorecard-indicated outcome would also be Baa3.

Exhibit 7

Scorecard-indicated outcome

Scorecard-indicated outcome	Aggregate numeric score
Aaa	x < 1.5
Aa1	1.5 ≤ x < 2.5
Aa2	2.5 ≤ x < 3.5
Aa3	3.5 ≤ x < 4.5
A1	4.5 ≤ x < 5.5
A2	5.5 ≤ x < 6.5
A3	6.5 ≤ x < 7.5
Baa1	7.5 ≤ x < 8.5
Baa2	8.5 ≤ x < 9.5
Baa3	9.5 ≤ x < 10.5
Ba1	10.5 ≤ x < 11.5
Ba2	11.5 ≤ x < 12.5
Ba3	12.5 ≤ x < 13.5
B1	13.5 ≤ x < 14.5
B2	14.5 ≤ x < 15.5
B3	15.5 ≤ x < 16.5
Caa1	16.5 ≤ x < 17.5
Caa2	17.5 ≤ x < 18.5
Caa3	18.5 ≤ x < 19.5
Ca	x ≥ 19.5

Source: Moody's Investors Service

In general, the scorecard-indicated outcome is oriented to the senior secured rating. For issuers that benefit from rating uplift from parental support, government ownership or other institutional support, we consider the underlying credit strength or Baseline Credit Assessment for comparison to the scorecard-indicated outcome. For an explanation of the Baseline Credit Assessment, please refer to *Rating Symbols and Definitions* and to our cross-sector methodology for government-related issuers.[25]

Assigning issuer-level and instrument-level ratings

After considering the scorecard-indicated outcome, other considerations and relevant cross-sector methodologies, we typically assign a senior secured project finance instrument rating. We may also assign ratings to other debt classes and to project finance holding companies in accordance with the "Notching factors" section above. For issuers that benefit from rating uplift from government ownership, we may assign a Baseline Credit Assessment.[26] We may also assign an issuer rating.

Key rating assumptions

For information about key rating assumptions that apply to methodologies generally, please see *Rating Symbols and Definitions*.[27]

Limitations

In the preceding sections, we have discussed the scorecard factors and many of the other considerations that may be important in assigning ratings. In this section, we discuss limitations that pertain to the scorecard and to the overall rating methodology.

Limitations of the scorecard

There are various reasons why scorecard-indicated outcomes may not map closely to actual ratings.

The scorecard in this rating methodology is a relatively simple tool that can be used in most cases to approximate credit profiles of issuers in this sector and to explain, in summary form, many of the factors that are generally most important in assigning ratings to these issuers. Credit loss and recovery considerations, which are typically more important as an issuer gets closer to default, may not be fully captured in the scorecard. The scorecard is also limited by its upper and lower bounds, causing scorecard-indicated outcomes to be less likely to align with ratings for issuers at the upper and lower ends of the rating scale.

The weights for each factor or sub-factor in the scorecard represent an approximation of their importance for rating decisions across the sector, but the actual importance of a particular factor may vary substantially based on an individual project's circumstances.

Factors that are outside the scorecard, including those discussed above in the "Other considerations" section may be important for ratings, and their relative importance may also vary from project to project. In addition, certain broad methodological considerations described in one or more cross-sector rating methodologies may be relevant to ratings in this sector.[28] Examples of such considerations include the following: how sovereign credit quality affects non-sovereign issuers, the assessment of credit support from other entities, the relative ranking of different classes of debt and hybrid securities, and the assignment of short-term ratings.

We may use the scorecard over various historical or forward-looking time periods. Furthermore, in our ratings we often incorporate directional views of risks and mitigants in a qualitative way.

General limitations of the methodology

This methodology document does not include an exhaustive description of all factors that we may consider in assigning ratings in this sector. Issuers in the sector may face new risks or new combinations of risks, and they may develop new strategies to mitigate risk. We seek to incorporate all material credit considerations in ratings and to take the most forward-looking perspective that visibility into these risks and mitigants permits.

Ratings reflect our expectations for an issuer's future performance; however, as the forward horizon lengthens, uncertainty increases and the utility of precise estimates, as scorecard inputs or in other considerations, typically diminishes. Our forward-looking opinions are based on assumptions that may prove, in hindsight, to have been incorrect. Reasons for this could include unanticipated changes in any of the following: the macroeconomic environment, general financial market conditions, sector competition, disruptive technology, or regulatory and legal actions. In any case, predicting the future is subject to substantial uncertainty.

Appendix A: Transitioning risk in PPP projects

In our ratings for operational PPPs, we incorporate our experience with projects transitioning from the construction phase to the operating phase.

Generally, construction represents the most significant risk for a PPP project, because it cannot generate cash until the facility is completed. However, the start of the operating phase is a sensitive period that may present meaningful management challenges for a PPP issuer and its sponsors. During this time, in addition to commencing services in a new and unfamiliar facility, the issuer may be establishing its working relationship with the off-taker and the sub-contractor and remediating construction punch list items. In a phased-in project, the issuer may face the additional complexity of continuing to oversee material construction.

In most cases, projects transition to the operating phase without major issues. Smooth transitions have been more likely to occur when the off-taker, sub-contractor and issuer have previous experience working together. While less frequent, we have observed a number of examples of difficulties in the transition process. These have included high levels of service failure points or even litigation, often caused by construction defects or changes in standard or scope of the services required, an onerous service requirement or payment mechanism, or a complex or ad hoc service requirement. We have noted some regional differences in the speed and smoothness of transition. In some jurisdictions, the off-takers are concentrated (e.g., a provincial government) as are the principal sub-contractors, which are typically large corporations. In other jurisdictions, the off-takers are much more diversified, as are the sub-contractors, which may be smaller regional players.

In this methodology, we incorporate a notching factor, Project Track Record, that considers the quality of relationships among project parties and the project's operational performance. In the "Other considerations" section, we describe the potential impact to ratings of transition issues and construction overhang.

Appendix B: Assessing off-taker and sub-contractor credit quality

Credit profiles of project counterparties can be an important rating consideration for an operating PPP, including for assessments of the following:

» Off-taker Risk

» Credit strength of the operating sub-contractor(s)

A. Off-taker Risk:

In essentially all cases, issuers rated using this methodology receive from an off-taker(s) availability payments that are expected to be sufficient to meet operating, maintenance and lifecycle costs as well as debt service requirements and equity returns. Sole off-takers are more typical in PPP projects, although in some cases a project's revenue may be derived from multiple off-takers.

We consider availability-payment-based projects to have a high dependence on off-takers given that a project's cash flow stems from one or a limited number of sources which in most cases are not replaceable due to the nature of the product or service being procured by a public sector entity. We assess the credit quality of each off-taker using one of the following:

» (1) a monitored public or private rating of the off-taker[29] (the reference is typically an issuer rating or a senior unsecured rating); or

» (2) a monitored public or private rating[30] of the relevant sovereign or sub-sovereign government,[31] and, after considering the off-taker's legal position and the importance of its activities to the sovereign or sub-sovereign government, a rating committee views the credit quality of the off-taker as being at or near that of the rated government.

In cases of projects with multiple off-takers[32] where sufficient information is not available to assess the credit quality of particular off-takers or the related cash flows are very small, we may consider the expected project cash flows excluding these entities, and we may exclude their cash flows in our calculation of financial metrics.

B. Sub-contractor Credit Strength:[33]

Sub-contractor credit strength is considered as part of our analysis of the sub-factors Robustness of FM Sub-contract Package Terms and Robustness of Lifecycle Contract Arrangements.[34]

For projects that are considered to have high dependence on the sub-contractor because there are likely a limited number of entities that can perform the required duties under similar commercial terms, we would employ one of the methods enumerated in "A" above to assess the sub-contractor's credit strength.

Moody's related publications

Credit ratings are primarily determined through the application of sector credit rating methodologies. Certain broad methodological considerations (described in one or more cross-sector rating methodologies) may also be relevant to the determination of credit ratings of issuers and instruments. A list of sector and cross-sector credit rating methodologies can be found here.

For data summarizing the historical robustness and predictive power of credit ratings, please click here.

For further information, please refer to *Rating Symbols and Definitions*, which is available here.

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Endnotes

1 These projects are often referred to as PFI, PPP or P3 projects. In this methodology, we refer to them as operating PPPs, operating PPP projects or issuers.

2 A link to a list of our sector and cross-sector methodologies can be found in the "Moody's related publications" section.

3 In our methodologies and research, the terms "scorecard" and "grid" are used interchangeably. The scorecard-indicated outcome is not expected to match the actual rating for each company. For more information, see the "Other considerations" and "Limitations" sections.

4 Many operating PPPs have multiple sub-contracts. Certain sub-factors of the first two factors include a description of our general analytical approach for assessing multiple sub-contractors.

5 In this methodology, the term "grace period" is used to refer to a period in which penalties may be imposed at a reduced rate or other flexibility may be provided.

6 Mismatches between revenues and expenses that relate to the project's capital cost are also possible but can generally be mitigated through fully amortizing long-term fixed rate debt. The Refinancing Risk notching factor addresses the potential for mismatch when the capital structure requires refinancing.

7 Where the liability cap amount covers the duration of the FM sub-contract, we would typically divide the liability cap amount by the years remaining in the contractual period in order to compare annual coverage among projects.

8 Please see our cross-sector methodology that discusses credit estimates. For clarity, we do not apply a jump-to-default test when using credit estimates for sub-contractors. A link to a list of our sector and cross-sector methodologies can be found in the "Moody's related publications" section.

9 These ratios typically consider a 12-month period. This is consistent with the typical DSCR calculation for PPP projects although, per most financing agreements, the covenant is normally tested at each payment date.

10 Typically, we would only include the interest and principal corresponding to the senior facilities, as PPP projects generally have robust inter-creditor arrangements in place where subordinated and mezzanine lenders (junior facilities) have no rights to accelerate or enforce their rights until the senior facilities are repaid in full, and the payment of subordinated interest and principal is subject to distribution lock-up thresholds. If this is not the case, we would typically calculate our financial metrics based on total debt (senior plus junior).

11 Capital expenditure/major maintenance spending may be smoothed by the presence of a maintenance reserve account.

12 We include scheduled projected movements to/from reserves such as maintenance, operational and debt service reserves. Transfers from reserve accounts have a positive effect on CFADS, while transfers to reserve accounts have a negative effect on CFADS.

13 The formula for debt service annuity payment is: ((Short-Term Debt + Long-Term Debt, gross) x Discount Rate) / (1 – (1/(1 + Discount Rate)$^{\text{remaining concession life}}$)).

14 Discount rate used is typically either (1) the issuer's actual cost of debt, or (2) the expected cost of debt at the refinancing date, as projected by Moody's.

15 Where a holding company derives material cash flows from a source not related to its minority holding, we include these in the calculation of the consolidated DSCR.

16 For a discussion of lock-up arrangements, please see the "Structural Features" section.

17 This overall range is not equal to the sum of the ranges of the components, because there are limits to the impacts that strong or weak structural features can have on the fundamental credit profile of a project.

18 Debt at a holding company on top of debt at the project operating company is also called double leverage.

19 For the purposes of the notching guidance in this methodology, and on the basis of historical average loss experience across corporate ratings at various horizons, a one notch downgrade can be thought of as generally implying an average 60% increase in expected losses for investment-grade ratings (Aaa to Baa3) and generally implying an average 40% increase in expected losses for non-investment-grade ratings (Ba1 and lower).

20 A link to a list of our sector and cross-sector methodologies can be found in the "Moody's related publications" section.

21 A link to a list of our sector and cross-sector methodologies can be found in the "Moody's related publications" section.

22 A link to a list of our sector and cross-sector methodologies can be found in the "Moody's related publications" section.

23 When a factor comprises sub-factors, we score at the sub-factor level. Some factors do not have sub-factors, in which case we score at the factor level.

24 Numerically, a downward notch adds 1 to the score, and an upward notch subtracts 1 from the score.

25 A link to a list of our sector and cross-sector methodologies and a link to *Rating Symbols and Definitions* can be found in the "Moody's related publications" section.

26 For an explanation of the Baseline Credit Assessment, please refer to *Rating Symbols and Definitions* and to our cross-sector methodology for government-related issuers. A link to a list of our sector and cross-sector methodologies and a link to *Rating Symbols and Definitions* can be found in the "Moody's related publications" section.

27 A link to *Rating Symbols and Definitions* can be found in the "Moody's related publications" section.

28 A link to a list of our sector and cross-sector methodologies can be found in the "Moody's related publications" section.

29 Ratings are assigned using the relevant sector methodologies.

30 Ratings are assigned using the relevant sector methodologies.

31 For off-taker risk, in some cases the relevant entity may be a public sector agency or authority, e.g., a publicly funded university. For sub-contractor credit strength, discussed below, the corollary would be a monitored rating of an affiliate of the sub-contractor and, after considering the sub-contractor's legal position and the importance of its activities to the corporate family, a rating committee views the credit strength of the sub-contractor as being at or near that of the rated affiliate.

32 When off-taker obligations are joint and several, we typically consider the highest-rated off-taker and its maximum potential contractual share in calculating the weighted average credit quality.

33 For self-performing projects we typically assess the track record of the issuer and/or the project's equity sponsors in budgeting and managing costs, as well as the importance of this project to this equity sponsor's reputation and business strategies.

34 Sub-contractor credit strength is assessed on a continuum that includes "very strong," "strong," "moderate," and "weak." Please see Robustness of FM Sub-contract Package Terms for a description of each of these levels.

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