



Dominion
Bond
Rating
Service

Rating Project Finance



DBRS Rating Approach



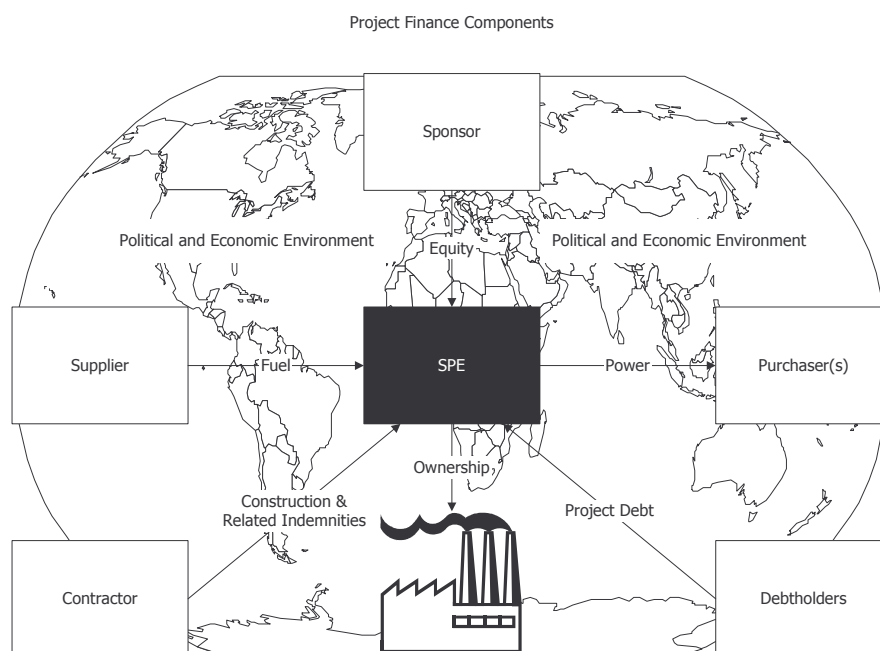
DBRS Rating Approaches

Rating Project Finance

Project Finance transactions are often structured as a non-recourse or limited-recourse transactions where the bondholders may only look to the collateral (and related cash flows) for satisfaction of their obligations. While general corporate debtholders look to the success of the corporate enterprise as their source of repayment, holders of non- or limited-recourse debt may only look to the value and performance of the specific assets identified in the indenture. Rather than a corporate balance sheet, the holder of project debt has a limited set of assets upon which to rely: project hardware, contractual rights and in some cases cash reserve funds.

Given the limited nature of the recourse, bondholders must understand the economic and operational risks associated with the project through due diligence, disclosure (whether through offering memoranda or rating reports) or both. Bondholders understand that the sponsors of the project are insulating themselves from these risks and as such the quantum of risk and the pricing of that risk need to be evaluated to determine the desirability of an investment (ratings per se do not address these market risks). This limited recourse (for the purposes of this report the term "limited recourse" will be assumed to encompass both non- and limited recourse situations) is achieved structurally and contractually. Structurally the assets are isolated by placing them in a separate legal entity (generally a partnership or limited purpose corporation). Contractually the assets are isolated by securing the agreement of bondholders to the non-recourse nature of the transaction.

There are a great many potential types of project finance issues, but on the whole they tend to be either energy related (hydroelectric, cogeneration, gas-fired etc.) or transportation related (toll roads and airports being the most notable). Given that the majority of project finance financings are energy related and because DBRS has already published a rating commentary on toll roads [Evaluating Toll Road Risks – February 27, 1998], the focus of this report will be on energy related infrastructure. The concepts espoused in this document will continue to be relevant for non-energy related projects though the particular components of the analysis will be somewhat different.



Revenue Stream

Crucial to the over project strength is the nature and characteristics of the revenue stream. Most project finance arrangements operate in a relatively stable environment (exceptions, of course, are not uncommon), and as such, the key risks generally are related to the revenue stream. The nature of the output contract(s) is paramount. In general terms the longer the term, the less conditional the contract, and the more fixed the nature of the pricing, the more stable cash flows will be. They also better match the related obligations that are generally fixed in nature (capital and financing costs). The terms and conditions of the contract, however, must be placed within the context of the overall project to determine reasonableness. For example, a relatively short, variable priced maintenance agreement for a plant using established technology is entirely reasonable for a highly rated project offering, while the same would not be true if the technology is sophisticated, specialized and/or relatively new.

Purchaser's Credit Strength

In general the credit risk associated with the revenue stream will serve as a ceiling for the rating on the project since the survival of the project is dependent upon the cash flow stream provided by the purchaser(s). Typically the initial purchaser(s) of power are those that make most economic sense for the project (i.e. they reflect the strongest, largest and most committed purchasers of power in the region served by the project). It is therefore, unlikely that purchasers of higher credit strength will supplant these initial purchasers. However, the ultimate rating of the project debt can be lower than that of the purchaser of power, if debt holders are also absorbing other risks such as construction, operating or financing risks. Also, the project's debt usually has a lower rating than the sponsor's debt rating because the cost economics and strategic importance are not as compelling as the sponsor's owned assets (one of the reasons why the project is finance on a limited recourse basis in the first place). Because of this tie between the purchaser's credit strength and the rating of the project debt, any subsequent movements in the credit strength of the purchaser will likely have an impact on the rating of the project debt. For example, if a power project was rated A(high) based primarily on the credit strength of the power purchaser (for example, AA(low)) and the purchaser's rating was subsequently downgraded to A(high), then it is likely the project debt would also be downgraded to "A".

It is unlikely that a project's rating would be higher than the purchaser of the power, unless there are mitigating circumstances. This would most likely be a significant cost advantage in terms of overall cost of power or the strategic importance of the power to a purchaser. For example, if a power project had a significant cost advantage over other power suppliers in the region, the owners of the project may decide to seek purchasers who are prepared to pay the highest prices for power, irrespective of the purchaser's credit rating. In this case, notwithstanding the poor credit rating of the purchaser(s), a higher rating may be obtained because the replacement of such purchaser(s) with other purchaser(s) should be relatively easy, given the cost advantages the project has vis-à-vis its competitors. Essentially we must be comfortable with the ability of the project to replace revenue loss associated with a contract breach.

Basis of Cash Flows

The basis for the revenue flow to the project needs to be thoroughly understood, notwithstanding the credit strength of the purchaser. Fixed or variable cash flows can introduce or eliminate risks depending on the overall cost structure of the project. Obviously variable cash flows (i.e. market based pricing or cost of fuel plus type of arrangements) can introduce significant risks to a project if most costs are relatively fixed (which is typically the case given the overall debt obligations incurred to finance the project). A fixed price contract can also entail risks if a significant component of costs are variable (such as fuel costs).

In pricing of power, therefore, the significant fixed cost component of the project (primarily capital costs) and the significant variable cost component (primarily fuel) must be considered. The pricing of power typically includes a fixed capacity payment as well as a variable energy component. Generally, the fixed capacity payment is charged to the customer as long as the plant is "available" to produce power and not whether it is called upon to actually deliver power. The capacity payment is, therefore, a more dependable source of cash flow because no operational risks are incurred (i.e. the actual ability to produce power is not a factor in determining whether payment is required only the theoretical ability to produce power). Ideally, this capacity payment should be sized to ensure all fixed costs are adequately covered (including debt service obligations). One must not blindly accept that such capacity payments will be made. The contractual definition of "available" can vary significantly from contract to contract and as such needs to be evaluated to determine the level of risk embedded in the definition. Availability clauses can vary from very tight

operational and availability standards (such as high efficiency requirements and/or very low unplanned disruptions) to those that would be relatively simply to comply with as long as the project was still standing.

The variable component of the cash flow stream needs to be closely aligned to the underlying project fuel and variable operating and maintenance costs (note that when discussing the variable component of fuel pricing that the basis may have actually been contractually fixed notwithstanding the use of the terminology "variable"). To the extent that the variable component is based upon market benchmarks, it is necessary to ensure that actual fuel purchases will mirror such benchmarks (i.e. an understanding of any basis risk needs to be considered). If the variable component has actually been fixed, firm fuel supply contracts need to be in place to avoid undue fixed-floating risk. However, such long-term contracts often encompass certain minimum takes and will entail certain inventory charges. Such minimum takes need to be incorporated into the operational risk evaluation.

Simplistically, the cost basis (the fixed costs – usually the capital costs of the project and the variable costs – usually the fuel and operating costs) must be matched through the pricing mechanisms of the power purchase contract. Where the basis is different, risks are introduced to the transaction.

Term of Contract

The term of the contract needs to be considered in the context of the economic life of the project, the term of the debt issue and when the debt issue is dependent upon refinancing, the remaining term of the contract. It would be very unusual for the term of the contract to extend beyond the expected economic life of the project, unless significant overhaul/refurbishment were explicitly incorporated into the contract expectations. Such overhaul/refurbishment would represent a construction, technological and cost risk that would be difficult to quantify given that it would be well into the future with few commitments in place to cover these risks. Such arrangements would not normally be part of an investment grade project financing.

A more normal arrangement is a long-term contract whose term is less than the expected economic life of the project (by at least 3-5 years) and where project debt amortizes over the life of such contract. Issues such as refinancing and obsolescence are minimized by such a structure. A typical co-generation project financing would have the following characteristics: economic life of project 25-40 years, long-term contract term 15-25 years and term of debt issue 10-20 years. In this case the contract has a shorter life than the project and the debt is repaid at or prior to the term of the contract. Where the debt term exceeds the contract life, market risks are introduced because expectations of revenue flows following the expiry of the contract need to be considered. Unless there is a step down in debt service obligations, the transition from contractual cash flows to market-based cash flows (or contracts reflecting current market expectations) entails an increase in risk profile. An analysis of the competitive context of the project both currently and anticipated in the future will be the primary basis for assessing the quantum of risk associated with this transition. Needless to say, it is likely such a situation would entail a lower rating than would otherwise be the case.

Where repayment of debt is dependent upon refinancing that would extend beyond the term of the existing contract(s), similar analysis of the transition risk would need to be performed. Where a substantial period still remains for the existing contract(s) then the main risk is related to interest rates and not the transition risk. A determination of the maximum debt payments that could be made during the remaining term of the contract(s) will provide an assessment of the level of refinancing risk (i.e. given the cash flows under the remaining contracts what would the DSCR be during that period? If DSCR's are high even if interest rates rose significantly to historically high rates, then refinancing risk should be low. If, however, only moderate increases in rates would result in DSCR's below "normal" financing levels, then refinancing risk would be moderate to high).

Contingencies/Contract Outs

The devil is in the details. A complete review of the purchase contracts is necessary to ensure that all obligations and contractual outs are identified. Without understanding the risks and obligations imposed under the purchase contracts a correct characterization of the risks involved (and costs) cannot be made. A long-term contract that imposes considerable obligations on the project and ties those obligations to the continuing enforceability of the contract may be no better than a short-term contract that imposes few obligations. For example, if a long-term contract imposes very high reliability standards on a project (i.e. virtually nil downtime), it is unlikely that this standard can be met for the life of the contract. As such, it must be assumed that this contract will fall away *when* such breach occurs.

Any tax benefit associated with a cogeneration facility (i.e. the accelerated capital cost allowance provisions in the Income Tax Act) may be lost if the steam purchaser should default on its purchase obligations. Even though the relative contribution to total revenues may be relatively small the impact of the loss of such tax benefit must be evaluated – particularly so because the steam purchaser often has a lower rating than the primary power purchaser.

Input Costs

Relative Cost

The cost of power is likely to be a key barometer of the level of commitment to a project of both the purchaser and seller. In addition, regulatory and community support for the project is typically inversely related to the cost of power. If a project provides an economic source of power under most market conditions then both the purchaser and seller have a strong incentive to keep the project operating even if there may be temporary setbacks. In distressed situations the relative economics of the power will be reflected in the purchase price of the project (if sold) or the severity of the haircut (if restructured).

Notwithstanding the desire for a highly competitive project, low costs must be balanced against appropriate financial performance for the project. In evaluating a project from a cost competitiveness perspective, DBRS looks for:

- Highly efficient technology compared to current alternatives
- Fuel arrangements that lock in relatively favourable fuel prices and provide stability against price hikes
- Absence of above-market pricing arrangements with related parties and/or politically motivated entities
- Embedded fixed costs secured at or below current replacement costs (most notably the site and equipment)
- No risky fuel, pricing or operating strategies
- Proximity to customer base and/or fuel supplies (minimization of transportation costs)
- No contingencies (environmental, land claims etc.) that may impose expensive litigation costs or cause delays in project operation

Operating Inputs

Fuel arrangements should protect the project cash flow against changes in fuel market conditions. Contracts that pass along fuel costs to the purchaser do provide protection against market conditions but suffer from the risk that the purchaser may use moral suasion or the project may become the target of political pressures when the purchaser passes such increased costs to the ultimate consumer. In addition, the purchaser may be reluctant to absorb such cost increases fully because it lacks the ability to fully recover such costs from *its* consumers. As such, market-market types of arrangements are *generally* considered inferior to fixed-fixed arrangements from a ratings perspective. This is particularly true where the fuel supplier, the project and the purchaser reside in differing legal jurisdictions. It may be politically expedient to impose costs on another party if they reside in another legal jurisdiction (i.e. abrogation of arrangements may be politically justified, when existing arrangements impose a high burden on the constituents, and where the costs of such abrogation are borne by an entity outside this particular political constituency).

It should be clear that notwithstanding a preference for the fixed-fixed type of contractual relationships, these arrangements are not without risk as well. The primary concern is that long-term prices may be locked in prior to a significant decline in spot market prices making the project expensive vis-à-vis other projects that have sourced fuel on a spot basis. For both the previous paragraph and this one, consider the political jockeying occurring between the State of Vermont and Hydro-Québec concerning long-term hydro contracts signed in a period of higher electricity prices.

Maintenance

The control of maintenance costs and the availability of “spares” are the primary considerations in evaluating maintenance costs. The first relates the expected maintenance cost and potential variability through the life of the project. Long-term fixed price contracts from the major equipment suppliers are most desirable. Where third-party service companies are responsible for maintenance, then appropriate controls must be in place to ensure compliance with maintenance guidelines and to contain costs. The availability of “spares” for key components will ensure minimum downtimes when unscheduled maintenance must be performed. Typically the cost of downtime far exceeds the actual maintenance costs incurred.

Technological Risks

Notwithstanding any assessment of the expected financial performance or the credit risk associated with such performance, no evaluation of a project would be complete without considering the various contingencies associated with the technology of the project, however simple.

Construction

Construction risk is the risk that a project will not be (i) completed, (ii) completed on time, and/or (iii) completed on budget. Completion risk is generally the easiest to remedy. Typical construction projects include sizable completion bonds and are with experienced, financially strong contractors. To the extent these elements are missing, it is unlikely the project would receive an investment grade rating. The remaining two risks (timeliness and on budget completion) are more difficult to control and assess.

Construction risks for power projects can be substantial because they involve complex construction and technologies as well as basic site and environmental risks. The level of construction risk, however, varies considerably depending upon (i) design and technical requirements, (ii) contractor's/manufacture's technical and financial capabilities and (iii) level of guarantees, warranties or other forms of support (guaranteed maximum price clauses, liquidated damages, etc.). To the extent that timely completion and/or on budget completion are critical to the satisfaction of purchase contracts, sufficient slack must be available to deal with unanticipated delays/costs. Penalties or damage payments should be sufficient to recoup opportunity costs but at a minimum cover debt service obligations. Where purchase contracts have drop-dead dates, an in depth evaluation of the reasonableness of the construction schedule and the probability that delays will not extend beyond such date must be performed. The consequences of not meeting such required in-service date are, obviously, profound.

As the complexity of a project increases, the importance of a comprehensive change orders process and dispute resolution mechanism increases. Dispute resolution, in particular, needs to be comprehensive, efficient, fair and timely.

Operating

The two key operating parameters are plant efficiency and availability. While plant efficiency is often a key factor in overall cost competitiveness of a plant, plant availability is the greatest operating risk since pricing is often tied to plant availability (either through the capital component and/or via the variable component of pricing). When evaluating new technology, unit availability can be somewhat unpredictable especially in the initial startup phase. A manufacturer should be able to demonstrate success with similar units around the world and/or show that teething issues have been resolved. When implementing new technology with no established track record, strong financial and operational support of the manufacturer will be required to obtain an investment grade rating (assuming the manufacturer itself is investment grade). A key component in the evaluation of the technological (and to a lesser extent construction) risks, is a project feasibility study performed by an independent engineer with solid credentials. Needless to say, the engineer should have no direct or indirect ties to the project being evaluated.

Plant availability is the greatest operating risk facing a plant. Notwithstanding sound project design and construction techniques, poor operating procedures and management can result in significant variability and absolute level of plant availability (not to mention efficiency). Demonstrated prior experience managing similar project facilities is a definite asset. To the extent that this cannot be demonstrated close oversight by the manufacturer during the first few critical years is an important mitigant.

Given the long life of most projects, issues such as environmental compliance and capital costs associated with *seemingly* ever tightening environmental controls need to be considered. These issues are more profound for technologies which are currently less desirable (nuclear, coal and to a lesser extent oil-fired power projects).

Maintenance

Maintenance risks usually are consistent with the operating risk (i.e. where operating risks are high due to relatively new or sophisticated technology, maintenance risks are also higher because maintenance issues are more problematic as well). Either a demonstrated capability in maintaining similar projects or a manufacturer managed maintenance program is important to the overall success of higher technological risk projects.

Projected Financial Performance

The main financial performance measures from a ratings perspective are cash flow coverage (cash flow available to cover all fixed debt service obligations) and the level of equity invested in the project (a key determinant of the level of the owners' commitment to the project and also decreases leverage).

Cash Flow Coverage

The key consideration in assessing cash flow coverage is the level of certainty that the revenue stream will cover operating expenses and debt service obligations. Operating costs are relatively small in the overall scheme of the transaction, debt and other fixed obligations are virtually fixed and known, and only the revenue stream is uncertain or variable. The assessment of the revenue stream has been covered earlier in this report.

Each rating category does not have fixed cash flow coverage levels as qualitative factors associated with the certainty of cash flows, credit risk etc. can have as much of an impact on a rating as the absolute coverage ratios. For example, a "hell or high water" cash flow stream from a very strong purchaser may achieve a higher rating than a project where coverage ratios are very high but the cash flow stream is uncertain. *Everything else being the same*, higher coverage ratios do correspond to higher ratings. DBRS looks at projected cash flow coverage ratios, but more importantly, looks at coverage ratios in stressed scenarios. Stressed scenarios are consistent with the rating obtained and include an assessment of a worst case scenario where combinations of margin pressures, poor operating availability and efficiency, and negative consequences of take or pay provisions are considered. Any investment grade rating must survive such worst-case scenarios, usually with some additional margin to spare (typically 10%). The pattern of DSCR's over time can be a consideration in the rating, as very tight DSCR's in the early years may provide little financial flexibility to deal with unforeseen contingencies or very high DSCR's in the latter years may be required where tail-end risks are significant.

In looking at cash flow coverage all fixed charges are considered (including subordinated debt unless these obligations have explicit deferability clauses that extend beyond the maturity of the senior debt), as the ability to renegotiate subordinated facilities without causing a default on the senior debt is very difficult to achieve.

Equity

The amount of equity contributed by a project sponsor provides protection for bondholders (i.e. decreases "loan-to-value") and also provides an incentive for the sponsor. To the extent a sponsor has little investment in a project the more likely high-risk strategies will be pursued (the equity contributed could be considered to be a premium paid for the option). To prevent such adverse decision-making and to "share the pain," substantial equity contributions will be required to obtain investment-grade ratings.

Where equity is to be contributed over time (such as during the construction phase of the project), certainty of equity contributions must be obtained. Depending upon the rating of the project and the equity participants, there may be some need for third party support such as a bank letter of credit. For example, if the equity provider has a BBB rating and the project would have a rating of "A" (assuming equity contributions have been made), any equity contribution over time would hamper the project rating because we could not rely on equity being contributed except to the BBB default probability of the equity provider. In this case, some form of third party support would be required that was at least equivalent to "A", otherwise the project would be rated no higher than the equity provider.

Legal Structure

The legal structure is both the skeleton (the necessary components that connects the pieces of the transaction and hold it together) as well as the armour (the components that protect the project from some of the unwanted outside influences).

Special Purpose Entities

Project finance is typically accomplished through special purpose entities ("SPE"). SPEs perform two risk reduction functions: (1) SPEs insulate the sponsor from the risks associated with the project; and (2), the SPE insulates the bondholders from risks arising from the sponsor, particularly bankruptcy risks.

The SPE may be a stand-alone entity or it may be a subsidiary of the sponsor. Complications can often arise in the latter case, either because of substantive consolidation in bankruptcy or the inclusion of the SPE in a bankruptcy filing of the sponsor. To insulate the SPE from the sponsor where the SPE is a subsidiary of the sponsor, a number of structuring features should be observed, including the following:

- (1) The SPE should be restricted to engaging in activities permitted under the program agreements;
- (2) If the SPE is a corporation, there should be at least one independent director on the board. Important decisions affecting the SPE should require the unanimous consent of the board. These decisions include: (a) any change in the articles or bylaws; (b) filing for bankruptcy, reorganization, etc; (c) entering into any amalgamation, merger, consolidation or an agreement with respect to the sale, or other disposition, of the SPE's assets; (d) the termination, amendment, waiver or replacement of program agreements; and (e) any change in the business activity or a change in control of the SPE;
- (3) The SPE should maintain an arm's length relationship with the sponsor and affiliates of the sponsor. An exception to this may occur where the sponsor is providing some limited recourse rights to the SPE;
- (4) The SPE should not provide any guarantees, encumber or pledge its assets, or enter into any transaction, except in accordance with the program documents;
- (5) The sponsor should covenant not to include the SPE in any bankruptcy filing (including a covenant to remove the SPE from inclusion in a non-voluntary filing).

Security Provisions

Security provisions are an essential feature of a project financing arrangement. Generally, noteholders will have a security interest, mortgage, hypothec and/or other appropriate security over the assets of the SPE, including any cash flows and contractual rights of the SPE. The security package should generally provide that the noteholders have a first priority interest over the assets of the SPE. On a default by the SPE, the noteholders should be able to obtain control of the SPE's assets and should also have the right to take over any contractual rights and obligations of the SPE, including the assignment of cash flows.

Representations and Covenants

Representations will be provided by the SPE. These can include representations concerning existence, authority to enter into essential contracts, no defaults under essential contracts, and compliance with laws, including any environmental requirements. Covenants could include the non-disposition of assets, providing that no encumbrances shall be placed on the assets, acting in accordance with material contracts, not breaching material contracts, and timely and full payment to the noteholders.

Transaction Structure

In a project finance context, any agreement between the SPE and a third party for the provision of a service by the SPE can be crucial. As an example, there may be a contract between the SPE and a hydro authority with respect to the sale of power over a period of time. If this contract is terminated, the cash flow to the noteholders is terminated. As a result, noteholders should be informed of any default by the SPE. Further, noteholders should have the ability to cure any default by the SPE and to take the SPE's place and perform the contract in the place of the SPE. This helps to protect the noteholders from any actions, or improper management, of the SPE.

If the counterparty is a government or government agency, the authority of the agency will have to be evaluated. It may also be necessary to file notifications with government with respect to the assignment of cash flows. The political risk of non-payment will also have to be evaluated where there is a possibility that an appropriation risk exists (An appropriation risk is a risk of non-payment arising from the need of a legislature to authorize payment before any right to payment by the SPE becomes contractually enforceable).

In a typical project financing, where the SPE relies on a contractual cash flow from a counterparty, the project financing faces an insolvency or bankruptcy risk in relation to this counterparty. This is particularly acute where there is only one counterparty. In this situation, the rating of the counterparty generally acts as a ceiling on the rating of project financing and, to the degree that the rating of the counterparty changes, the rating of the project financing can also change. If the contract is ongoing, and the counterparty enters into bankruptcy or insolvency, the trustee in bankruptcy of the counterparty will have the right to affirm or disclaim the contract. If disclaimed, the SPE is then in a position where it becomes an unsecured creditor of the counterparty. Assuming typical levels of recovery for unsecured creditors, the noteholders will have to look to alternate contractual parties or the sale or disposition of the asset, in order to recover the outstanding debt.

Insurance

Adequate insurance coverage is critical to a sound project to deal with contingencies that are outside of the usual operating parameters. The proper package of insurance features will depend on the transaction. As a general matter, insurance coverage needs to cover the replacement costs associated with loss or destruction of a part or the whole of the project. It also must cover the loss of revenue associated with plant shutdowns outside the normal course. In this respect, the time period for coverage of revenue loss should be sufficiently long that the plant or asset can be repaired. The noteholders should be an additional insured and any payments made by an insurer should be made to the noteholders. The noteholders should then have a choice of whether the notes are paid out or the plant or asset is rebuilt or replaced. If insurance premiums are not paid by the SPE, the noteholders should be notified. No changes to the insurance coverage should be made without the consent of the noteholders. Insurance coverage must be from an institution with a reasonable credit rating vis-à-vis the project debt rating (generally not significantly lower than the project debt rating).

Expert Reports

Depending on the transaction, it can be advisable for Noteholders to retain experts. Issues that require expert evaluation may include environmental issues, engineering reports with respect to the asset, and an insurance consultant with respect to the design of a proper insurance package. All expert reports should be addressed to the rating agency and to the noteholders so that proper reliance can be placed on these reports.

Opinions

On the closing of the transaction, opinions will be given. As a general matter, the opinions will cover the creation of the SPE, the authorization of parties to enter into the various program agreements, the binding nature and validity of the program agreements on the party's, the creation and perfection of any noteholder security and, if applicable, a bankruptcy remoteness discussion. DBRS requires that opinions include DBRS as an addressee since our rating depends, in part, on the matters outlined in the legal opinions.

Conclusion

Each project is a unique creature. Detailed analyses of the revenue stream followed by a review of the technological risks of the project are the primary determinants of a project finance debt issue rating. A number of supporting and structural features must be present to support this fundamental evaluation. Unlike corporate ratings or even other structured transactions, where general guidelines and ratios can be used to "ballpark" a rating, project finance ratings must evaluate the whole of the transaction which encompasses both quantitative and qualitative criteria.

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