Article Title: ARCHIVE | Criteria | Corporates | Project Finance: Behind The Ratings: Power Projects--What Makes A Construction Project Investment Grade? Data: (EDITOR'S NOTE: — This criteria article is no longer current. It has been superseded by "Project Finance Construction Methodology," published Nov. 15, 2013.) Lenders to power projects assume multiple risks, such as changing political and regulatory climates, technical operating difficulties, deteriorating business conditions, and construction. Standard & Poor's has described the risks and their attendant implications over the years in different arenas. Of these, construction, almost by definition, presents the most eminent threat of default in the near term. Construction risk in this context measures simply the probability, as implied by the project's design and proposed construction plan, that the lead contractor will fail to complete a project on time, within budget, and within contract design specification. Such failures can result in cost overruns and schedule slippage that can force a project to default on its bonds even before revenues begin. The addition of nearly 55,000 MW of private power in the U.S. since the passage of the 1978 Public Utility Regulatory Policies Act (PURPA) and the ever-increasing number of new generation projects exceeding 1,000 MW in the emerging economies suggests that developers and lenders may have largely discounted construction risk. Indeed, the use of fixed-price, turnkey construction contracts and various technological developments have, in part, allowed project sponsors to structure transactions with investment-grade rated debt. However, the fierce competition for good projects has been driving down the installed cost of power and profit margins. Thus, the potential exists for owners and contractors to structure construction projects with a reduced financial ability to absorb potential problems arising during construction, especially toward the end of the project's construction schedule, when no cash flows and minimal reserves, if any, are available to cover bond servicing. While power projects do benefit on the whole from increased competition, construction risk remains one of the more critical components of private power credit risk assessment. That many rated power projects carry low investment-grade ratings, even in emerging markets, may evidence a trend toward structuring projects to the bottom edge of investment grade. On the other hand, it may be indicative of an even larger number of unrated projects that would be subinvestment-grade quality if rated. Fortunately for bondholders of rated and unrated debt, construction firms and vendors have increasingly been willing to absorb some of the construction risk by taking equity positions in the project and by providing performance guarantees and liquidated damages. Nonetheless, rated power construction projects will distinguish themselves from the unrated ones, not so much by the level of risk, as by enjoying a position that allows debtholders to decide how much construction risk they are willing to assume. To guide developers and potential investors in power-project debt, Standard & Poor's has detailed in this article its approach to evaluating construction risk. The article suggests some benchmarks for obtaining investment-grade or near-investment-grade ratings. In particular, Standard & Poor's critiques the following areas when assessing construction risk for private power: Conceptual design, Construction management plan, Siting plans and permits, and Supporting contracts. Conceptual Design Should Limit Construction Risk In assessing design risk, Standard & Poor's evaluates the extent to which the developers have adopted a conceptual design that the construction contractor can successfully translate into a well-operating power plant on time and within budget. This objective recognizes that construction risk levels vary among different technologies and the size of certain projects. For example, pulverized-coal plants, which have numerous subsystems and associated civil works, involve much longer construction schedules than simple gas-fired turbine units. In addition, because coal plant designs and other solid fuel projects may specify major equipment items supplied from different vendors, such as boilers, steam turbines and generators, the potential exists for interface coordination problems. Designs that call for complicated sequencing of construction activities may also present delay and cost risks. That most large-scale solid-fuel projects rely on commercially proven technology and that certain contractors have extensive experience with these technologies, supported by construction guarantees, can mitigate much of the construction risk attributed to design. Generally, Standard & Poor's relies in part on the independent consulting engineer's review of the project design and site when assessing design risk. Experience with other rated projects also factors into the risk assessment. Construction Management Even though a project's conceptual design may have the objective of limiting the potential for construction difficulties that could delay the project or result in higher costs, other factors can affect the risk profile. Limited contractor and vendor experience

with the technology or in the host country can place a proposed project at risk. In addition, a construction management plan that does not strictly manage construction funds disbursement can place bondholders at risk. Construction and vendor experience. Standard & Poor's reviews the performance record of equipment vendors and general contractors in building projects comparable to the proposed project. Higher-rated projects will enjoy vendors and contractors that have broad experience building projects comparable to the proposed project and demonstrated records of meeting schedules. In addition, the better contractors will have demonstrated a predictable pattern of meeting budgets and avoiding liquidated damage payments or other penalties. If the construction is being done pursuant to a fixed-price, turnkey contract, Standard & Poor's verifies that the owners and developers have had favorable experience with the proposed contractor. While Standard & Poor's does not identify specific vendors or contractors as appropriate for construction, it does examine the experience of contractors and vendors in building comparable power facilities, as well as overall performance records. Standard & Poor's also considers the ongoing and future business interests of the contractor and key vendors. For instance, power-project construction under turnkey contracts should be a key part of contractors' and vendors' ongoing business plans; the ongoing business interests of these parties often provides incentive to ensure that the construction and acceptance periods reach successful completion. Experience has shown that business interests of contractors, vendors, and sponsors contributes as much influence as legal obligations in ensuring on-time and under-budget construction projects. Construction funds management. Managing construction fund disbursements frequently provides a mechanism to maintain leverage over contractors and thus helps to minimize construction risk in the better-rated projects. Active management by the lender or lenders on projects financed by banks and other specialized lenders achieves this objective. Loan documents typically give lenders the right to closely monitor construction progress and release funds only for work that the lender's engineering and construction expert has approved as being complete. On projects seeking to raise capital from a broader investor base--either through private placement or public debt issues--management of construction funds becomes more difficult, since individual investors have no real capacity to oversee construction draws. For such projects, however, third-party trustees, acting in a fiduciary capacity, will generally manage disbursement of funds to protect debtholders' interest in the project. Most of the higher-rated power and nonpower project financings under construction have adopted these structures to protect investors in project-financed transactions. In general, the better-rated project financed transactions will provide the following controls over construction funds: Retention of all debt-financed funds in a segregated account by a trustee experienced in management of power-project construction, preferably an experienced bank or other lender for these projects; Control over all disbursements from this account with disbursements made only for work certified as complete by an independent project engineer retained by the construction trustee solely for approving disbursements; Right to suspend or halt disbursements when the trustee, acting in consultation with the independent project engineer concludes that construction progress is materially at risk because of outside events, such as reversals or revocations of necessary regulatory approvals or changes in law or cost outside the levels anticipated by the budget and schedule; and Authority to approve all change orders. Construction schedule and budget. Standard & Poor's assessment of construction risk includes a determination of whether the contractor can achieve the proposed construction schedule and budget without costly delays or quality problems. Standard & Poor's expects that the independent engineer will have had the opportunity to review detailed budgets and construction schedules to determine their suitability for the proposed project. Better rated projects will have contractors and equipment vendors who have consistently provided services on time. Because an increasing number of power projects financed in the capital markets are located in the emerging economies, acceptable schedules should include sufficient time for problems encountered in remote locations such as weather delays, equipment importation and other logistics problems and skilled labor and material shortages, among others. Budgets should include contingencies to cover unexpected construction events, not just uncosted items, in the construction process. In addition, Standard & Poor's assesses the extent to which engineering and design are complete and equipment procured at the point when construction begins; investment-grade power projects will generally have completed these tasks earlier than noninvestment-grade ones. Regulatory Changes Site and "permitting" risks, sometimes synonymous

with political risk, can present a more difficult area of analysis of private power projects, since regulations and enacting legislation in some jurisdictions, both developing and emerging countries, provide continuous openings for project opponents to stop projects for reasons related, or unrelated, to siting concerns. Enron's well-publicized, recent experience in India with the State of Maharashtra's opposition to the Dahbol project illustrates how effective and expensive local opposition to a project can be. Accordingly, Standard & Poor's analysis focuses on the extent to which the project has been able to develop its site and complete the permitting process without significant opposition from affected parties either in the surrounding communities or in other areas. The higher-rated private power projects have consistently demonstrated good public and government relations practices through extensive public vetting of their proposed projects. In addition, the better projects have often initiated some type of community development programs, such as building schools or health facilities. Standard & Poor's has concluded that those siting and permitting activities that make the process as transparent and amicable as possible can mitigate much of the risk associated with local opposition and the permitting process. These steps certainly assist in limiting opposition that may be able to use the permitting or siting process to impede financing and construction. CalEnergy's CE Casecnan Water&Energy; Co. project in the Philippines underscores the importance of having broad support for a project; widespread local and federal government support, complemented by an extensive public hearing process, helped reduce public opposition to this hydroelectric and irrigation project to a minimum and ensure that all needed permits and approvals were in place before construction started. While no guarantee exists that projects will not encounter future opposition, projects that are able to complete siting and permitting with widespread political and legal support and with little or no opposition have stronger potential to avoid siting and permitting problems during construction. Reinforcing Contracts The highest-rated private power projects will be those that have substantially allocated most, if not all, construction risk, vis-à-vis contracts, to the parties best able to manage the risk. In most instances, the construction contractors and vendors can best manage these risks. Although this assurance has tended to come at some price premium, the industry has found that turnkey, fixed-price contracts effectively allocate construction risk to the appropriate parties. However, Standard & Poor's also recognizes that in some instances, owners with extensive experience with the proposed technology can effectively and efficiently act as general contractor. Complemented by an acceptable corporate-level completion guarantee, this arrangement can provide levels of project completion assurances comparable to turnkey contracts with the added benefit of lower power costs to the offtaker. Standard & Poor's analysis focuses on the extent to which construction contracts provide performance guarantees and penalty and damage payments sufficient to ensure that the project will reach acceptance within the established schedule and budget. Projects achieving investment-grade or near-investment-grade ratings generally have construction contracts that substantially direct all project completion risk to the contractors and vendors, rather than to the project's investors. The analysis also focuses on how general contractors expect to manage subcontractors, subcontractors' qualifications, and, in particular, timeliness of liquidated damage and performance bond payments in relation to cash flow required for meeting debt service following construction. Higher-rated projects have included joint and several completion liability among the contractors and subcontractors. Turnkey contracts as credit enhancements. Sponsors, particularly with U.S. PURPA projects, have extensively used turnkey contracts on major power projects as a legal vehicle for shifting construction risk away from project owners and users. However, only recently in offshore settings have contracts been able to shift risk in ways that effectively permit them to be used as credit enhancement sources during construction by ensuring timeliness and adequacy of any damage or penalty payments on which the project may have to rely for debt service. Construction contracts cannot eliminate all risk to a project. Some residual level of risk generally remains as force majeure and change-of-law events, since by definition, the vendor and contractor cannot control such events. However, the better projects will seek to minimize these risks through such avenues as insurance, sovereign guarantees and provisions to renegotiate tariff cost-offsetting provisions of purchase power agreements, to achieve investment-grade ratings, especially the heavily leveraged, high fixed-cost project. That most project-financed transactions typically have fixed revenue streams severely limits their capacity to carry any risk that results in material cost increases. What constitutes an acceptable level of risk that can remain with projects

varies. Those risks that do remain with the project should have so low a likelihood of occurring that they can be eliminated as material credit risks. Financial capacity to perform on turnkey contracts. While turnkey contracts can effectively absorb most construction completion risk, contractors must exhibit adequate financial capacity in order for the contracts to be credible credit enhancements. The analytic task is to determine the financial ability of contractors and vendors to perform on their obligations pursuant to the turnkey construction arrangements. Standard & Poor's generally assesses the performance obligation through a rating applied to the specific obligations. This rating, like any rating, considers the capacity to pay, potential interference from competing obligations, and the extent of the obligations undertaken. Contracts generally must be with parties with substantial experience in power project construction and should have investment-grade credit ratings backing the contract guarantee. Standard & Poor's may issue these ratings either privately or in published form. Outlook For Ratings Improves Several private power projects have achieved investment-grade rating during construction in 1996, most recently Jawa Power ('BBB-') and Paiton I ('BBB') in Indonesia. Foster Wheeler's Petropower project in Chile, a combination power and refinery upgrade project, also achieved a 'BBB' rating. Although construction risk was not insignificant, these projects' sponsors demonstrated the management abilities and financial capacities to absorb construction risk while raising over $3 billion of debt financing from multiple investors in either the public or private markets and from banks. Although the sponsors reduced the risk to levels consistent with investment-grade ratings, construction risk, in almost all cases, will be greater than post-construction operating risk, with the result that ratings potentially may increase, ceteris paribus, after construction is completed.