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2006

Global Project Finance Yearbook

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Contents

Letter To Our Readers

Standard & Poor's is pleased to present our 2006 Global Project Finance Yearbook. In it, you will find in-depth commentary about some of the latest trends in project finance worldwide, articles outlining key rating criteria for project finance transactions, and a summary reference of all our project finance ratings. Every year Standard & Poor's is presented with financings that are increasingly complex. The genesis of these articles is the adoption of more sophisticated analysis to historical sectors or to new sectors previously untapped.

In 2005, there has been a resurgence of project finance. The amount of project finance debt rated in 2005 will be second only to the amount rated in 2001. Some of the revival has come from hedge funds, private equity players, and financial institutions that have utilized project finance as a way to monetize large capital-intensive power assets that they own. However, owners of other types of assets have utilized this dynamic financing technique to address funding needs and risk allocation.

Standard & Poor's expects that 2006 will build on the momentum of 2005 and also expects the use of project finance to grow. Some of the external factors contributing to this assumption include:

- The continuing lofty level of energy prices, which will likely lead to even more investment in liquefied natural gas infrastructure,
- The passage of the Energy Bill in the U.S., which promotes a greater usage of ethanol and renewable based energy projects,
- The ongoing need for additional electric power and potable water in many regions around the globe, and
- An increase in the use of public/private partnerships and concessions around the world.

As a result, bankers, borrowers and lenders have consistently turned to Standard & Poor's independent project finance credit research and the detailed analysis on which it rests. We hope that the 2006 Global Project Finance Yearbook delivers new insights into what is becoming a progressively more complex financing tool and that you will turn to it as a valuable reference.

The 2006 Global Project Finance Yearbook is available in hard copy by contacting Theresa Hearns in New York at 212-438-7987, and is also accessible on the web at **http://www.projectfinance.standardandpoors.com** or at Standard & Poor's local offices.

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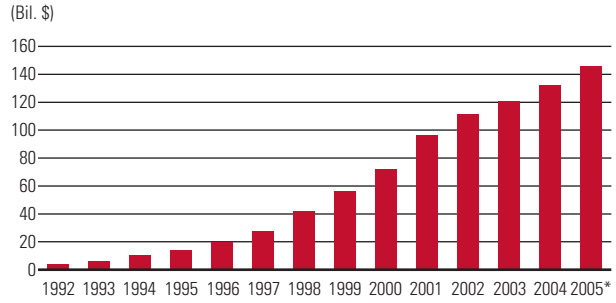
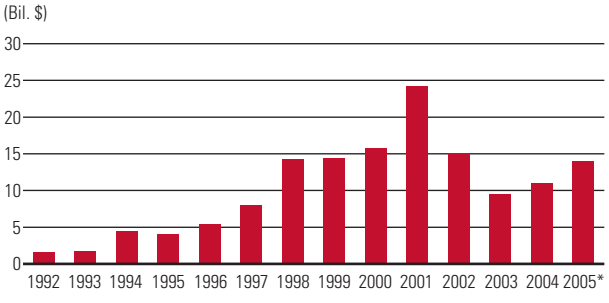
Project Finance At A Glance

Chart 1 Total Rated Project Debt



*As of August 2005

Chart 2 Annual Rated Project Debt Issuance



*As of August 2005.

Chart 3 Project Rating Changes

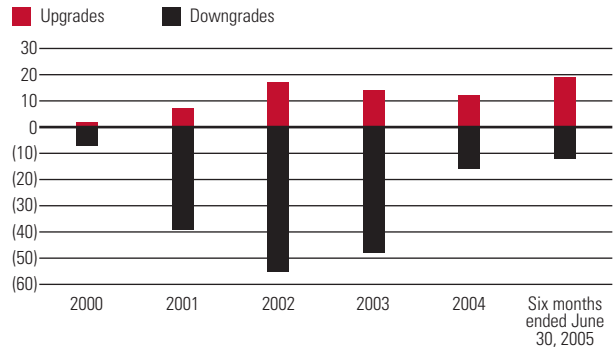


Chart 4 Project Rating Outlook And CreditWatch Distribution

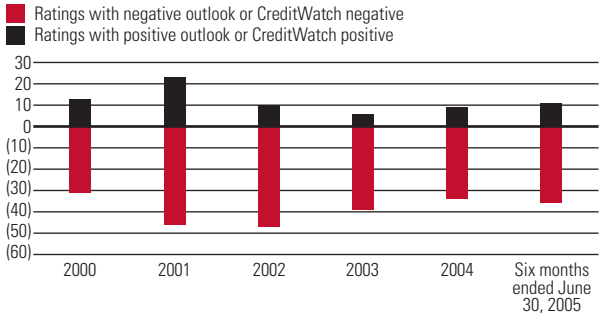
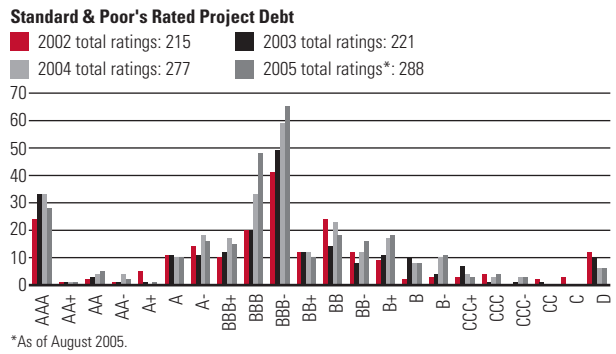
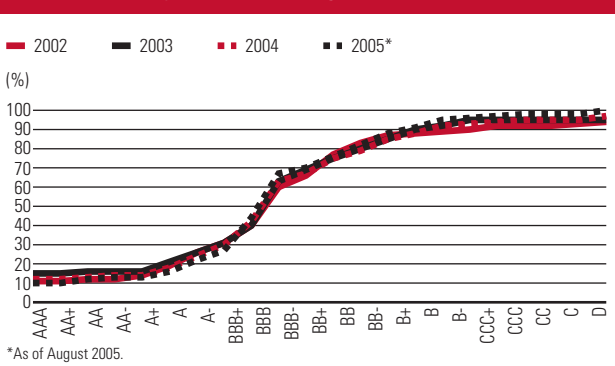


Chart 5 Number Of Ratings By Year



*As of August 2005.

Chart 6 Cumulative Percent Distribution Of S&P Project Debt Ratings



*As of August 2005.

Chart 7 Project Debt By Type

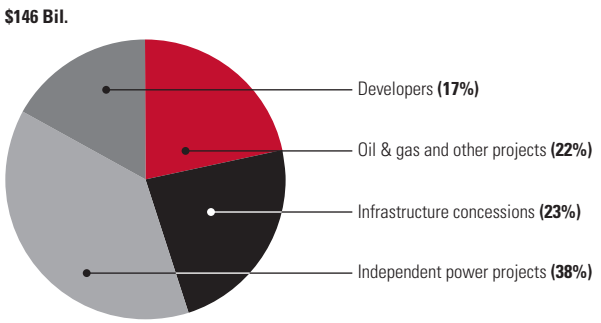
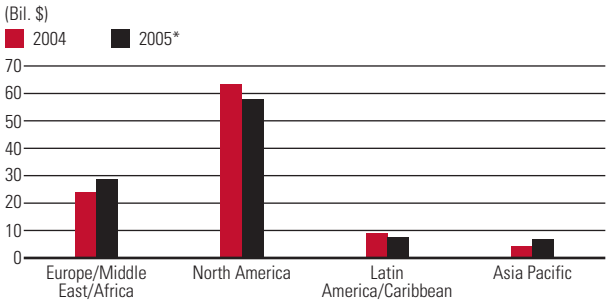
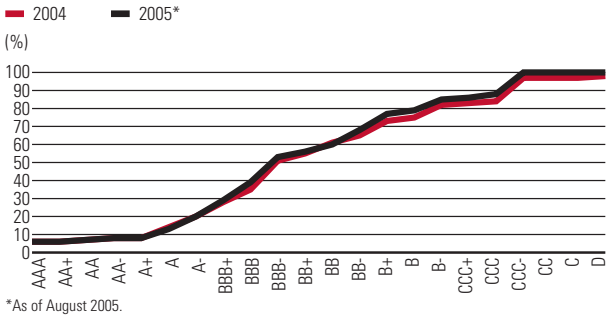


Chart 8 Regional Project Debt Issuance



*As of August 2005.

Chart 9 Cumulative Percent Distribution Of Dollars Of S&P Rated Project Debt



*As of August 2005.

Table 1 Rating Distribution For Project Debt

Rating	Number of ratings	% of Total	Par amount ($ mil.)	% of Total
AAA	28	9.7	9,452	6.5
AA+	1	0.3	112	0.1
AA	5	1.7	2,167	1.5
AA-	2	0.7	860	0.6
A+	1	0.3	72	0.0
A	10	3.5	7,723	5.3
A-	16	5.6	9,992	6.8
BBB+	15	5.2	13,550	9.3
BBB	48	16.7	15,251	10.4
BBB-	65	22.6	21,116	14.5
BB+	10	3.5	4,009	2.7
BB	18	6.3	5,154	3.5
BB-	16	5.6	11,209	7.7
B+	18	6.3	12,815	8.8
B	8	2.8	2,466	1.7
B-	11	3.8	8,351	5.7
CCC+	3	1.0	1,142	0.8
CCC	4	1.4	2,476	1.7
CCC-	3	1.0	16,964	11.6
CC	0	0.0	0	0.0
C	0	0.0	0	0.0
D	6	2.1	1,121	0.8
Total	288	100.0	145,999	100.0

Table 2 Project Rating Changes

	2000	2001	2002	2003	2004	Six months ended 6/30/2005
Upgrades	2	7	17	14	12	19
Downgrades	7	36	55	48	16	12
Total rating changes	9	43	72	62	28	31

Table 3 Project Rating Outlook Distribution

	2004	2005*
Positive outlook	8	9
Negative outlook	31	32
Stable outlook	192	210
Developing outlook	0	1
CreditWatch positive	1	2
CreditWatch negative	7	5
CreditWatch developing	1	1
Not meaningful	37	28
Total ratings	277	288
Outlook/CreditWatch positive	9	11
Outlook/CreditWatch negative	38	37

*As of August 2005.

The Top Trends

Keys To Success For U.S. Merchant Electricity Generators

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Standard & Poor's Ratings Services generally views the business risk of merchant generation as high relative to integrated utility operators or transmission and distribution companies. Merchant generation is a cyclical, capital intensive, and commodity-based industry that is subject to volatile cash flows. As a result, the companies in this sector generally have business profile scores that range from '8' to '10'. (Business profiles are categorized from '1' (excellent) to '10' (vulnerable).)

The key factors considered in Standard & Poor's evaluation of merchant generators are:

- The regulatory/political framework;
- Market dynamics, including size and scope of the market;
- The company's competitive advantage;
- The company's operational expertise, including the technology used; and
- The company's management, including business strategy and risk management practices.

From a financial perspective, some of the key measures of credit strength relate to financial and operating leverage, and financial flexibility and liquidity.

Business Risks

The sector's business risks are discussed below.

Regulatory and political framework/ market structure

The regulatory and political framework in which a company operates is an important component of credit analysis for merchant generators. Regulatory reform has progressed much more slowly than originally anticipated, resulting in an industry that faces uncertainty. Without standard market rules and design, it will continue to be a difficult environment for many merchant generators in many jurisdictions. Market rules continue to evolve because there is still only partial deregulation (wholesale and not retail) in most jurisdictions. In addition, vertically integrated utilities still compete on the generation side. Because these entities are allowed to recover their costs in retail rates, their incentives are not aligned with market forces the way the merchant generators' incentives may be. So, while in theory deregulation should have resulted in more efficiencies and more innovation, in reality, electric utility industry restructuring has increased credit risk in many jurisdictions because of the uncertainty it has caused.

Markets

The extent to which the market for power may threaten a merchant generator's cash flow will depend on market dynamics, notably:

- The market's size and growth;
- How the market is structured;
- Who the competitors are, and how competitors behave within the given structure;
- The demand and supply dynamics of a specific regional market; and
- Whether the market works as desired or is subject to regulatory intervention.

Standard & Poor's completes a detailed analysis of the market where the merchant generator is located to determine if the market dynamics favor merchant generation. Operating in more than one region may act to hedge against fluctuations in cash flow if the markets are not correlated, and may be viewed positively from a credit perspective.

Technology and operations

Operational risk can be managed through diligent budgeting, cost containment, operational efficiencies, and personnel recruitment and training. This is one area where the merchant generators have historically had very good performance, and no company has

consistently distinguished itself from the rest of the top performers in the industry. However, this may change as industry competition increases and the peer group becomes more focused on operating efficiently, since this efficiency will drive superior operating margins. Standard & Poor's will continue to evaluate operational risk when analyzing the creditworthiness of merchant generators.

Competitiveness

For a commodity-based company, the key determinants of competitive advantage will be the ability to maintain low production costs; geographic, technology, and fuel diversity of the asset base; and credit quality (to be able to contract forward). For commodity-based merchant generators, competition is based primarily on price, since there is no way to differentiate the main product—electricity. As a result, the most successful merchant generator will generally be the one with the lowest cost structure, both fixed and variable. Standard & Poor's evaluates the merchant generator with an eye toward areas of vulnerability or competitive advantage.

To generate consistent cash flow, a merchant generator must be able to control its cost structure, and continue to be a low-cost provider even during times of economic downturn. Because merchant generators are price takers, operating results are influenced by factors often outside management's control, such as supply and demand for electricity and the cost and volatility of its most important input-fuel. In most jurisdictions, natural gas tends to set the power price for many hours during the year. The merchant generator's fate, in many cases, is tied to having enough gross margin during periods of high and low natural gas prices to still cover all of its fixed costs.

Since natural gas-fired units, especially during on-peak hours, tend to be the marginal units in a system, the price assumption for natural gas will be a key determinant of profitability for many merchant generators. A change in natural gas prices can directly affect power prices. Therefore, it is critical for determining the profitability of merchant generators, regardless of fuel type. Standard & Poor's uses its own internally generated natural gas forward price curve when evaluating the credit quality of merchant generators. Standard & Poor's has been purposefully conservative with these assumptions when analyzing a merchant generator.

For the merchant generator there is typically a trade off between variable and fixed costs, depending on the technology used. For example, a nuclear plant may have a very low variable cost, yet have high fixed costs as compared with a gas-fired combustion turbine, which will likely have low fixed costs, but higher variable costs. This is where the concept of operating leverage becomes important for merchant generators. If a merchant generator has a cost structure that leans toward higher fixed costs—say 70% to 80% of total costs—the break-even point comes at a higher level of production. If the generator's cost structure leans toward lower fixed costs as a percentage of total costs, the break-even point comes at a lower level of production and sales. Therefore, the dispatch assumptions used for many generators will be tested to analyze the sensitivity to operating leverage. Overall, given today's market structure and market dynamics, where the merchant generator still has to compete with cost of service, vertically integrated utilities (the lowest all-in cost structure) will tend to be the winner, in all cases.

Management

Management is evaluated based on its operational and financial success and also for governance and risk tolerance. As in all business segments, ownership structure, management practices, internal controls, corporate governance, and financial disclosure policies are all important components when analyzing management of the merchant generator for credit rating purposes.

Financial Risks

The sector's financial risks are discussed below.

Financial and operating leverage

Conservative debt levels and low fixed charges strengthen a company's operating flexibility during an industry downturn. This is important for merchant generators because a downturn can last for several years, during which time prices and/or demand can become very low. Financial

strength necessitates having a moderately strong capital structure and good liquidity to weather unpredictable cycles.

Financial flexibility and liquidity

Financial flexibility is a key risk factor for merchant generators that are exposed to cyclical commodity downturns. Standard & Poor's assessment of financial flexibility evaluates a company's overall financing needs, plans, and alternatives. This also entails examining the company's ability to accomplish its financing program, even during economic downturns, without damaging creditworthiness. A company's continued access to external financing sources as well as operating flexibility will augur well for a merchant generator.

Since the merchant model entails buying and selling large quantities of power and fuel, these companies are large users of liquidity. Falling power prices, increased collateral calls, and near-term maturities have caused severe liquidity crises for certain players in the market. The following points are considered when assessing a company's financial flexibility and liquidity:

- Maturity schedule (including, lease obligations, letters of credit, pension fund contributions, and tax payments);
- Internal sources of liquidity (working capital, timing of capital expenditures, curtailing negative cash flow operations);
- External sources of liquidity (commercial paper, public bonds, bank credit, and equity);
- Uses of liquidity (negative mark-to-market exposure, working capital, prepayments of fuel or power purchases);
- Changes in liquidity requirements under stress scenarios (market movements and/or credit events); and
- Management's skill in dealing with the potential for a liquidity crisis. ■

Independent Engineer Reports Play Key Role In Gauging Risk For Global Power Projects

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Project finance debt in the global power sector typically relies on the performance of a single asset to service nonrecourse debt obligations, so it is critically important that lenders identify operational or technological issues that limit a project's ability to reach its financial objectives. An independent engineer's (IE) report is an important resource that Standard & Poor's uses to assess the credit implications of a project's operating and technology risk in the power sector.

Some key uses of an IE's report include evaluating construction risk in greenfield projects, assessing operational problems that require a fix not contemplated during the project's original financing, and investigating the technological and operating characteristics of acquired assets that are financed on a project basis.

Although the IE's report plays an important role in the credit evaluation process, it is only one of many information sources that Standard & Poor's uses. Other resources used during the ratings process include meetings with engineering, procurement, and construction (EPC) contractors, discussions with project management, site visits, participation in industry conferences, reviews of technical literature, and close and careful reading of relevant contracts.

The Role Of The Independent Engineer

Ideally, IEs serve as objective and unbiased consultants to lenders on any technical matters that are relevant to a project's ability to repay its obligations on time and in full. An IE not only brings technical expertise to the table, but also benchmarks a project's technology and the operational profile against a suitable peer group to highlight engineering and management differences that may advantage or disadvantage a project relative to similar operating units.

Although Standard & Poor's experience using IE reports has generally been positive, it should be noted that even the best IE reports may include some bias due to overly optimistic information that is provided by project sponsors. As a result of these biases or other conflicts of interest, Standard & Poor's notes instances in which IE reports were either reluctant to criticize a project or provided less comprehensive analysis of technical issues that later became of greater importance to investors.

In one example, an IE report noted a mismatch between the physical requirements of an offtake agreement and the operating requirements of a key piece of project machinery, but nevertheless concluded that the sponsor's operating practices would be sufficient to avoid significant problems. Despite the benign appearance of the issue, the project ultimately suffered years of poor operating and financial performance and issued a substantial amount of additional senior debt to finance the replacement of the affected equipment.

Although this situation may be atypical and does not diminish the use of IE reports as a useful benchmark for evaluating the technical and operating risks of a project, it does underscore that these documents do not provide a foolproof guarantee that all relevant technical issues have been identified by lenders. Indeed, the contents of an IE report should be reviewed as much for what is not mentioned, as for what is discussed.

Standard & Poor's is sometimes asked whether certain IEs are preferred over others. As a matter of policy, Standard & Poor's does not opine on the suitability of a given consultant; however, Standard & Poor's will evaluate the depth of an IE's experience in the industry and familiarity with similar projects when judging the value of a specific IE report. In general, the

most useful IE reports will have a comprehensive scope of work that includes a review of the risks and advantages of the project's technology, the key project documents for compliance with standard industry practices, and the overall reasonableness of operating assumptions.

Although Standard & Poor's makes its own assessment regarding a project's financial profile, a comprehensive IE report will also include a thorough examination of a project's operating and budgeting assumptions against the average operating performance and cost structure of similar units. To the extent that an IE's report falls short of addressing all of these factors, or if the independence or objectivity of an IE is questionable, Standard & Poor's will deemphasize the IE report during its analysis of technology and operating risk. Standard & Poor's forms opinions about the independence, objectivity, depth, and completeness of an IE's assessment through meetings with the IE at the project site and ongoing discussions during the course of operations. It is ideal if an IE continues to monitor the progress of a project after a project is constructed and has begun operations so that lenders have an updating source of technical and operating information.

IE reports are important in assessing the extent of construction risk. A Standard & Poor's study of the causes of credit deterioration in rated project finance transactions revealed that technology, construction, and operational problems have contributed to only 2% of total project defaults over the last 10 years (see "When Projects Fail: 10 Years of Project Financed Debt at Standard & Poor's" on page 96 in the "Criteria And Commentary" section.) Nevertheless, potential problems identified during the engineering and construction phases of a project signify susceptibility to higher-than-expected future maintenance costs and diminished operating performance that may not threaten a project's viability, but could weaken the project's future financial profile. For higher-risk projects, Standard & Poor's will require stronger debt service coverage, more tightly structured contracts, or a more advantageous competitive position to achieve the same ratings as other similar projects without construction or technology concerns.

There are five primary areas to which an IE report can add analytical insight into a project's risk profile. These areas are:

- Siting and permitting,
- Engineering and design,
- Contractual requirements,
- Environmental compliance,
- Testing and commissioning, and
- Operations and maintenance.

Siting And Permitting

An important part of an IE's analysis is to verify that all of a project's appropriate permits and approvals are in place. In many cases, the legal siting of a project is not a credit concern for lenders because most state, local, and federal approvals have been received by the time the project sponsors access the debt markets. However, in circumstances where there is substantial public opposition to the construction of a project facility and all necessary permits have not yet been attained, the ratings are likely to reflect these additional risks. Nevertheless, even projects with no legal siting issues may be susceptible to force majeure events or potentially costly environmental liabilities that unless identified and addressed could impair the project's ability to perform as expected.

Credit analysis in this regard centers on the geophysical characteristics of the site. Important questions for an IE to analyze are whether seismic activity could disrupt operations or require specific engineering to meet building code requirements. An IE's analysis of the region's 100-year flood plain and last recorded flood event would also provide insight into the likelihood of weather-related force majeure disruptions. For projects that depend on access to a reliable water supply, the IE report should discuss the project's water requirements under minimum and full capacity operating scenarios and any exposure that the project has to drought or curtailment from upstream water users. The IE should also note the duration of a project's water permits and whether there is any significant repermitting risk.

Although the presence of any one these risks is unlikely to have a direct credit implication for a project, these risks may broadly influence Standard & Poor's overall perception of a

project's risk profile. Relatively riskier projects will need to display stronger financial performance, have adequate force majeure protections in offtake and supply contracts, and good insurance coverage to maintain ratings parity with other projects that are not subject to these concerns.

Engineering And Design

Good IE reports thoroughly discuss the technology used by a project and identify whether or not the technology is standard for the industry. Standard & Poor's views technologies for which there is a long and well-established operating history as having less risk than less common technologies. Widely used technologies provide the opportunity to benchmark forecasted operational performance against the collective operational performance of similar units and provide a more statistically sound record of identified engineering problems that can manifest over the project's life.

Even a proven technology may have above average operating risks when it is employed on a much larger scale. Scale-up risk can cause lower credit ratings during the first few years of a project's operations until sufficient observable operating history demonstrates that these risks are manageable for the project. Likewise, a proven technology that is unusual in its engineering design (i.e., an atypical configuration of power turbines and generators) could pose risks that suggest more conservative maintenance budgeting or higher operating reserves to offset these technical uncertainties.

Ultimately, the IE's report should provide an indication of whether or not the project facility's useful life is expected to meet or exceed the tenor of the project's debt. This is a greater credit concern for projects with long debt tenors, when refinancing or acquiring an older asset, or for a project where technical obsolescence is a concern.

Contractual Requirements

In addition to providing a general indication of the reliability of a specific plant's design, an IE report should provide lenders with insight into how a project's technical and operating parameters compare with the facility's contractual obligations. A comprehensive IE report will comment on the adequacy of the following types of contracts:

- EPC construction contracts,
- Offtake agreements, and
- Other operating agreements.

EPC contracts

Standard & Poor's closely reviews EPC contracts during a project's construction period to assess the degree to which lenders may or may not be exposed to delays, cost overruns, or engineering underperformance. IE reports are used as an input to review the scope of work included in an EPC contract and denote whether or not the work plan is comparable with other similar projects. For most projects, Standard & Poor's views fixed-price, turn-key construction contracts with adequately funded contingency budgets as lower risk than construction plans that require sponsors or other third parties to manage substantial portions of the EPC process.

For example, a recently rated project had certain preconstruction site preparation activities excluded from the EPC contractor's scope of work. When ground was broken at the project site, unexpected soil contamination and unforeseen remediation activities raised the risk that the project would be delayed and require sizeable early draws on the contingency budgets. Because the additional labor and materials were excluded from the EPC contract, none of these costs or delays would be subject to the performance guarantees or delay damages included in the EPC contract. In this instance, a preconstruction IE report had not specifically indicated that subsurface soil remediation was not covered under the EPC contractors scope of work. Although the additional costs were ultimately included in an expanded EPC contract, this situation underscores how a comprehensive EPC contract can partially mitigate the impact of some construction risks.

When assessing construction risk, the IE report should comment on the likelihood of a project being completed on-time and on-budget. The ability of an EPC contractor to meet a project sponsor's construction time line is a crucial concern especially where the project must begin performance on a specific date under an offtake agreement,

or risk contract termination or penalties. Even absent termination risk, construction delays may impair the financial health of a project if delay-damages provisions of the EPC contract do not sufficiently cover interest during construction and other project obligations prior to commercial operation. Standard & Poor's relies on an IE's assessment of a project's proposed construction schedules, the EPC contractor's prior experience building similar facilities, and the staffing and resources outlined in the construction plan to assess the adequacy of the liquidated damages provisions in the EPC contract.

As mentioned, cost overruns are greatly mitigated where fixed-price EPC contracts are in place. Nonetheless, Standard & Poor's expects situations to arise during construction that fall outside of a project's original scope of work, such as change orders. The risk of a cost overrun is weighed against the project's overall cost and the adequacy of its contingency funding. Here, an IE's report is helpful in benchmarking a project's construction costs versus other comparable facilities. Where the installed cost of a project is already high, the risk of cost overruns weighs more heavily on Standard & Poor's overall assessment of a project's construction risk and will require a larger than normal contingency budget. An IE report supports this assessment by commenting on provisions within the EPC contract that allow for change orders to be submitted by sponsors or that allow the EPC contractor to pass through to the project unanticipated cost increases.

Standard & Poor's also reviews an IE report's discussion of incentives and penalties within an EPC contract to determine the relative risk that lenders bear for the contractor's failure to perform. A good IE report will opine on whether the timing of payments at predetermined construction milestones provides the proper incentives for contractors. Strong EPC contracts allow contractors to be reimbursed at appropriate intervals, but should not front-load compensation such that late-stage testing and commissioning activities critical for successful project operations are neglected. An IE should also note as reasonable and customary any retainage amounts that project sponsors may withhold pending the facilities' final acceptance.

The IE report should also discuss if contractor delays are subject to penalties and whether the EPC contract contains liability caps that limit a project sponsor's ability to recover contractor-related damages. As mentioned earlier, the adequacy of delay damages to cover interest during construction and reimburse sponsors (and, indirectly, lenders) for shortfalls in guaranteed operating performance is an important consideration in Standard & Poor's overall evaluation of construction risk.

Offtake contracts and operating agreements

Standard & Poor's will analyze a project's operating agreements to determine their economic implications, the extent to which the contracts expose lenders to operating risk, and the conditions under which cash flow could be disrupted by poor operating performance. As part of this review, Standard & Poor's partly relies on IE reports to determine if a project is capable of technically achieving forecasted financial performance under the sponsor's base case operating assumptions. Specifically, Standard & Poor's looks to the IE to validate the operating assumptions in financial projections, conformity with the contractual requirements of offtakers, and whether forecast budgets adequately account for the fixed, variable, and maintenance costs faced by a typical facility. In the case of power plants, Standard & Poor's will look to the IE to verify whether projects that will be subject to dispatch are adequately compensated for the wear and tear that results from multiple starts and stops. IE reports also serve as a check that supply contracts for production inputs and fuel are sufficient to support project operations at pro forma levels.

Environmental Compliance

Noncompliance with environmental regulations can quickly signal the end of an otherwise economically viable project; therefore, a comprehensive IE report should opine on a project's ability to operate within legal emissions and affluent regulations. Reports should indicate whether there is any significant exposure to existing environmental liabilities, confirm that all necessary environmental permits have been

obtained or are reasonably expected, and discuss any expected compliance costs.

It is important that lenders understand the environmental limitations of a project's technology and operating plan, because even projects that operate within currently acceptable guidelines may be subject to future regulatory risk as environmental restrictions change. The most creditworthy projects will provide some operational and financial flexibility to address changing environmental requirements and allow for environmental remediation equipment to be installed at the least possible cost without requiring substantial overhaul of the facility. The IE should provide some guidance as to whether environmental modifications are possible or are expected to be necessary given the operating characteristics of the facility.

Projects that are unable to meet current environmental regulations may require emissions credits or other offsets to comply with the relevant legislation. In these cases, the IE's report can add value in estimating the extent to which a project may require emissions credits and comment on the availability of these credits in future years. Although many IE reports rely on emission credit pricing information provided by third-party consultants, the role that these credits play in the budgeting of a plant should be a key area of discussion, particularly for coal-fired power plants.

Testing And Commissioning

A good IE engagement should provide a technical assessment of the project's acceptance testing and start-up procedures and include an independent monitoring and verification of the testing results. It is critical for the long-term viability of a project that adequate testing demonstrate whether lenders can expect the facility to perform as forecasted. For power plants, the IE should further attest that the facility is able to remain available over a reasonable testing time frame. If testing protocols are less comprehensive than industry standards or if the duration of testing is shorter than normal, the project may have higher risk of future operating problems.

Operating And Maintenance

After construction, a project's success will in part depend on the operating expertise of the operations and maintenance (O&M) contractor. At a minimum, the IE's report should opine on the O&M contractor's expertise and proven record at similar facilities. The IE should also review the budgeting and planning process required by the O&M contract and evaluate the facility's staffing plans. The IE should comment on whether contractor fees are reasonable for the scope of work required of the contractor and whether there are adequate incentives for the contractor to meet budgetary and operational objectives. Furthermore, O&M contracts should provide some recourse by project sponsors to replace O&M contractors for subpar performance.

A good IE engagement does not end at the completion of construction, but will extend into the operating period of the project for as long as debt remains outstanding. A good IE engagement will also include periodic reports on the project's operations and an independent review of the sponsor's annual budget. All projects will at one time experience operating problems and the IE with a long-standing relationship with the project is better positioned to help lenders identify major operating problems from small technical glitches with no long-term significance.

A Cautionary Note

IE reports can provide lenders with insight into the types of technical and operating risks posed by a power plant financing. Lenders should keep in mind, however, that these insights are gained only to the extent that the IE is willing to go beyond purely technical descriptions and express opinions concerning the appropriateness of the technology, provide meaningful comparisons with other operating units, and detail the types of operating problems that a unit is most likely to experience. Significant gaps in an IE's analytical treatment of technical issues or superficial analysis should concern lenders and may indicate a higher construction, technology, and operating risk. ■

Prospects Improve For IGCC Technology In U.S., But Challenges Remain

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While integrated coal gasification combined cycle (IGCC) technology has been around for decades, it has experienced more rigorous interest in the U.S. utility industry only recently. This technology converts any carbon-containing material into a synthetic gas, or syngas (made up of more than 85% hydrogen and carbon monoxide), that can be used as the fuel in a standard combined cycle power plant. Today, the technology is being touted as a cure for a variety of ills, most importantly controlling emissions, avoiding natural gas price volatility, and decreasing dependence on energy imports.

Several potentially transforming developments occurred in 2004. General Electric (GE) acquired the coal gasification technology of Chevron Texaco, a market leader in this technology; AEP and Cinergy announced their intention to build multiple large IGCC projects, possibly before the end of the decade; and the federal government announced subsidies for two projects in late 2004 under its clean coal power initiative (CCPI), for which it has promised about $2 billion over the next decade.

However, is IGCC all that it appears to be? Is the utility industry going to experience large-scale and widespread investment in IGCC as part of the baseload construction cycle that commenced in the last two years and is expected to last a decade or more? There are several key impediments—as well as key incentives—that could affect the commercial viability and success of IGCC as a viable baseload generation option for the U.S. utility industry. The key issues that have to be addressed are:

- Capital cost and construction risks;
- Environmental performance;
- Technology and reliability; and
- Non-economic factors.

IGCC Projects Face Higher Construction Risks

Prior to GE's entrance into the IGCC market through its acquisition of Chevron Texaco's technology, gasification technology companies licensed their technologies to various end users, and no operational guarantees or warranties were provided. This complicated the IGCC development process and led to longer construction lead times. IGCC technology is handicapped by the lack of contractor infrastructure, which would provide utility industry standard, fixed-price engineering, procurement, and construction (EPC) contracts with performance guarantees and provisions for liquidated damages in the event that a plant performs below specifications. This is a significant stumbling block for regulated utilities, which will be exposed to potential disallowances in the event of cost overruns or lack of cost recovery in the event a plant fails to meet the "used and useful" standard, as happened to Sierra Pacific Power's Pinon Pine unit in Nevada.

Developments from 2004 augur a change in this dynamic. GE Energy and Bechtel Corp. announced an alliance to develop a standard commercial offering for optimized IGCC projects in North America built around Chevron's technology and GE's combustion and steam turbines. The Black & Veatch Corp. and Uhde announced an alliance to provide similar turnkey EPC services using Shell's technology. Similarly, ConocoPhillips has teamed with Fluor to offer its E-Gas technology. Thus far, only GE and Bechtel appear to have publicly committed to EPC contracts with warranties, which will buttress their competitive position, as will the superior financial strength of Bechtel in comparison with Black & Veatch and Uhde. Nevertheless, until the first few projects are successfully completed within cost and time budgets and

in line with design parameters, a risk premium will remain and EPC contractors may need to offer sweetened contractual terms, such as sharing of costs during the start-up period (which is likely to be longer than for pulverized coal, or PC, units), performance buydown payments if design parameters are not achieved, and availability guarantees with operator incentives and/or penalties.

Environmental Benefits Are Substantial

IGCC technology promises substantial air quality and public health benefits. Because pollutants are separated from the syngas prior to combustion, IGCC systems can achieve very low emissions of conventional air pollutants, such as sulfur dioxide (SO2), nitrogen oxides (NOx), particulate matter (PM), and mercury (Hg). A supercritical PC unit with state-of-the-art controls can also meet all of today's environmental requirements, including the EPA's Clean Air Interstate Rule and Clean Air Mercury Rule, which were finalized in March 2005. Yet, a state-of-the-art IGCC unit with enhanced sulfur removal technology can simultaneously achieve greater than 99.5% sulfur removal, essentially total volatile mercury removal (greater than 90%-95% removal), and reduce particulate matter levels to below 0.004 pounds per BTU (lb/mmBTU). Such a plant will also produce only 40% as many solid byproducts as PC units, and will use almost 40% less water.

Table 1 **IGCC's Environmental Advantages**

Performance characteristic	New PC unit	IGCC unit
SO2 (lb/mmBTU)	0.06-0.2	0.01-0.07
NOx (lb/mmBTU)	0.04-0.1	0.01-0.07
Particulate matter (lb/mmBTU)	0.018-0.03	0.014
Carbon dioxide (Kg/megawatt-hour)	800	720
Carbon capture	limited	yes
Mercury removal (%)	30-80	> 90
Mercury removal cost ($/lb)	37,800	3,620
Thermal efficiency (%)*	38-40	40-43

Source for SOx, NOx, PM values: Western Governors' Association Clean Coal Working Group.
The ranges in the values indicate estimates for various technologies and coal types. * Traditional PC units achieved only 33%-35% efficiency. New Supercritical PC technology has narrowed the efficiency gap, while future advances may improve IGCC efficiency to 45%-50%.

NOx, SO2 advantages alone not likely to spur IGCC investment

Certain performance differentials in Table 1 are material, particularly as they represent improvement from already low levels achieved by pulverized coal technology. However, from a big picture perspective, investment in IGCC is not likely to be spurred by improvements in SO2 and NOx emissions alone. Given that IGCC's capital costs are significantly higher than those of PC units (see "IGCC Technology Faces Higher Capital Costs," below), can the SOx and NOx emission advantage alone compensate for the higher capital cost absent carbon capture? A simple illustrative calculation indicates that they may not. IGCC will be more expensive by at least $200/kW, or about $120 million for a large-scale 600 MW plant, even if only EPC costs are considered. With a 50/50 debt-to-equity capital structure, 6% cost of debt and 10% cost of equity, the annual capital costs for an IGCC unit will exceed those of a PC unit by about $9.6 million. However, the benefit from IGCC's lower emissions, assuming the same availability levels as a PC unit and valued using SO2 and NOx allowance prices of $850/ton and $2,500/ton, respectively*, works out to only between $3 million-$4 million per year even assuming significant future reduction in IGCC emissions from currently achievable levels shown in Table 1. Thus, SO2 and NOx reductions alone are unlikely to make IGCC attractive.

Carbon capture distinguishes IGCC technology

The most distinguishing feature of IGCC technology and the most important reason it has emerged as a contender for baseload generation despite technological uncertainties is its ability to economically capture carbon dioxide (CO2) emissions. In an IGCC system, carbon monoxide in the syngas can react with steam to make hydrogen and CO2. This CO2 is concentrated at about 30%-40% of the gaseous mixture, in contrast with 12% for PCs, and is at high pressure (versus low pressure in PCs). This makes it easy to separate a relatively pure stream of CO2, which provides a hedge against greenhouse gas emission limits in the future. Capturing CO2 in PC units is at least twice as expensive, often more so. By some estimates, capturing

carbon would add about 25% to the cost of electricity from an IGCC plant and 70% to conventional plants, significantly vitiating their economic viability and suggesting large rate increases for customers should carbon capture be mandated.

IGCC Technology Faces Higher Capital Costs

A wide variety of estimates suggest that EPC contract costs for IGCC would be about 15%-25% higher than those for PC systems, resulting in a higher cost of electricity from IGCC units. The EPC cost of a greenfield PC unit is expected to be between $1,200-$1,300/kW, and that of a new IGCC unit (with a spare gasifier but without carbon capture) is expected to cost around $1,400-$1,500/kW. However, considerable care must be exercised in making capital cost estimates for a number of reasons.

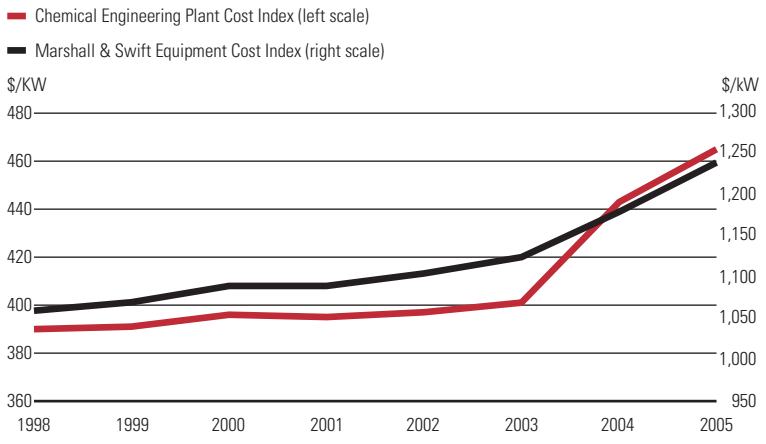
First, construction costs have increased sharply in the past year, mainly on the back of increased steel costs (labor costs have been relatively stable), and capital costs for both PC and IGCC should also demonstrate a corresponding increase. Construction cost increases are illustrated in Chart 1 below.

Additionally, IGCC performance varies significantly with the type of coal that is combusted, much more than the variation experienced in PC units. In general, IGCC technologies perform better with lower-ash, lower-moisture bituminous coals and show an increase in cost or reduction in performance with low-rank and high-ash coals such as Powder River Basin (PRB) coal and lignite. Dry-coal-fed gasifiers (as used by Shell) suffer lesser deterioration in cost and performance than slurry-fed gasifiers such as those used by ConocoPhillips (E-Gas) and GE when used with low-rank coals. A study suggests that the capital cost difference between PC and IGCC is narrowest for bituminous coals and could widen by about $200-$300/kW for PRB coal and $400/kW for lignite¶. Given the abundance and low cost of U.S. resources of low rank fuels such as Power River Basin sub-bituminous coal and Texas and North Dakota lignites, the poorer performance with these coal types could itself serve as another hurdle to widespread acceptance of IGCC. Pet coke, another fuel alternative, will lie further to the right of Pittsburgh coal on the above chart and will likely be used in the fuel mix at many IGCC plants, especially if the IGCC plant is located near a refinery.

The specific choice of which IGCC technology to employ will be driven by the priority among a set of potentially conflicting objectives, including target coal type, least cost power, maximum efficiency, maximum CO2 capture, and minimal emissions. But consideration must also be given to variables such as oxygen consumption in gasification—an important capital cost and auxiliary power cost—and the need for a refractory-lined gasifier, a huge maintenance cost. GE, Conoco, and Shell, by virtue of the strength of their backers and the EPC partnerships, will be the primary competitors, although there are others, like the British Gas-Lurgi and German GSP technologies.

Compared with that of GE and Conoco, Shell's technology has many advantages such as the ability to react better with low-rank coals, shorter start-up times, lower oxygen consumption, and a water-cooled membrane gasifier that is much cheaper to maintain than the refractory-lined GE and Conoco designs; however, it suffers from higher capital costs. GE's technology has the greatest solid-fuel operating experience, a key advantage in an industry where the commercial track record is very limited. Ultimately, the

Chart 1 Construction Cost Indices



Source: Chemical Engineering Magazine, May 2005; Electric Power Research Institute (EPRI).

winner will be the one that can provide the best commercial combination, including construction and operational guarantees.

Carbon capture characteristic eliminates cost disadvantage

Not only does PC technology suffer from very high capital costs of carbon capture, its parasitic load is also about 25% of the plant's pre-carbon capture capacity, as opposed to about 15% for IGCC. The capital cost of carbon capture is about $350-$500/kW for IGCC while it is more than $900/kW for PC units. Standard & Poor's will study the issue of carbon emissions further and expects to publish its analysis on the relative cost of electricity produced through various technologies—-including PC, IGCC, natural gas combined cycle, and nuclear power—when carbon capture and sequestration are considered.

Reliability Issues Are Front And Center

As shown in Chart 3, an IGCC plant has four main processes:

- Gasification of coal using pure oxygen;
- Syngas cleanup to remove sulfur compounds, ammonia, metals, ash, and particulates to meet the gas turbine's fuel gas specifications;
- A combined cycle gas power plant; and
- A cryogenic air separation unit that provides oxygen to the gasification reactor, sometimes providing nitrogen to mix with the syngas for input into the gas turbine and/or supplemented with post-compression air from the gas turbine.

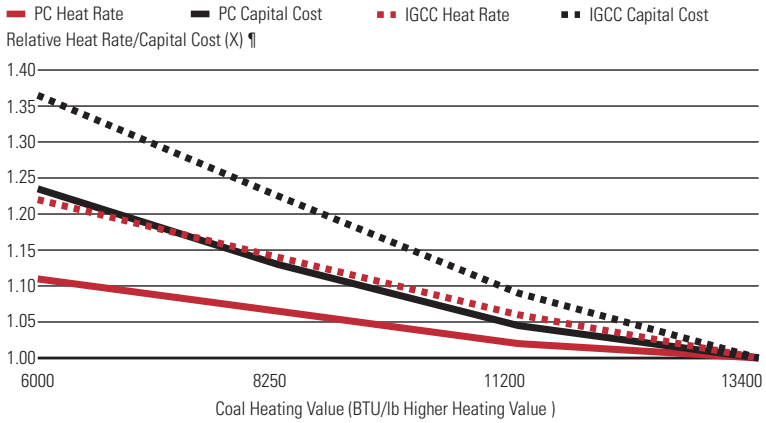
Byproducts such as methanol, ammonia, fertilizers, and other chemicals can be produced, if desired, from the compounds removed during the syngas cleanup by sacrificing some power production.

A 1999 survey§ identified 161 commercial gasification plants in operation, construction, or in development in 28 countries, with a combined syngas production capacity equivalent to 33,000 MW if all were used to generate electricity. Despite such broad commercial acceptance of gasification (used in developing chemicals, fuels, and other byproducts) and combined cycle power systems, the integration of coal gasification with combined cycle power generation to produce electricity as a primary output is relatively new and has been demonstrated at only a handful of facilities around the world. Various technical and operational impediments have been experienced that affect the reliability of operations, key among which is syngas clean up. The syngas produced by the gasifier is too dirty to be used in a natural gas turbine. It is also corrosive and often damages plant equipment. The gas must be cooled down before it can be cleaned, and reliability issues often occur at the cooler/clean-up island.

Air separation unit (ASU) integration is also an important reliability issue. The compression of oxygen for oxygen-blown gasifiers requires costly compressors, utilizes substantial power and represents the largest parasitic load on an IGCC facility.** One way to reduce this parasitic load is to integrate the combustion turbine (CT) and ASU by extracting a portion of the air from the compressor of the CT to feed the ASU. This integration is often problematic, and the extent of integration varies with each unit, usually 25%-50%.

The two operating IGCC facilities in the U.S.—Teco's Tampa Electric facility in Florida (GE/ChevronTexaco gasifier) and the Wabash River Project (recently sold to Wabash Valley Power Coop by Cinergy) in Indiana (E-Gas/ConocoPhillips gasifier)—were both constructed in the mid-1990s but achieved commercial operations only in 2001. The Pinon Pine facility in Nevada never achieved operation

Chart 2 **Effect of Coal Quality on PC and IGCC Performance***



Source: EPRI. * IGCC performance indicative of slurry-fed technology; dry-fed technology performs closer to PC. ¶ Relative values compare performance of each technology as coal type changes relative to Pittsburgh No. 8. Chart does not imply identical performance of PC and IGCC with Pittsburgh No. 8 coal.

and was decommissioned after 18 start-up failures over three years, the last of which resulted in a fire that significantly damaged the facility.

Single gasification train IGCC units have yet to consistently exceed 85% availability levels (although such levels have been achieved on a quarterly basis) and often operate with backup gas supply from a pipeline. The operating experience at the Spanish Elcogas and Dutch Buggenum plants, Europe's two operating large-scale IGCC power plants, has been very similar both in terms of availability and time to achieve commercial operations. Such an experience discourages both utilities and state commissions from undertaking an IGCC project besides causing financial markets to demand a premium to finance the project. Multi-train plants with spare gasifiers will achieve greater than 90% availability but will experience higher capital costs. It is possible that the standard IGCC plant will include a spare gasifier in order to ensure availability levels comparable with those of PC units. Such a unit will likely have capital costs of about $1,400-$1,500/kW, without carbon capture. Besides gasification technology improvements, IGCC's competitiveness will also be aided by improvements in gas turbine efficiency. The Federal Energy Technology Center's advanced turbine systems research program aims to achieve 60% thermal efficiency and lower busbar power costs of a combined cycle gas plant by 10% compared with 1992 levels, besides lower emissions and higher fuel flexibility and reliability. Such improvements will aid IGCC in emerging as a stronger alternative to PC technology.

Non-Economic Considerations

Energy security and global warming

IGCC's ability to economically sequester carbon, combined with the ability to use plentiful domestic supplies of coal, provide a strong policy incentive to support IGCC given the confluence of concerns over energy import dependence, and growing concerns over, and political recognition of, the threat of global warming. The U.S. Government's CCPI provides for up to $2 billion in funding for clean coal projects over the next decade. In fact, the Department of Energy (DOE) respectively shared 49% and 50% of the costs of the Polk and Wabash stations, the two operating U.S. IGCC plants.

In October 2004, the DOE awarded $235 million under the CCPI to a 285 MW IGCC plant being built in Florida by the Orlando Utilities Commission and Southern Co. The project, which costs $557 million, will use the transport reactor technology developed by Southern Co. The expected date of commercial operation is early 2010. The DOE also announced a $36 million grant to the $1.18 billion, 531 MW Mesaba Energy Project in Minnesota being built by Excelsior Energy using the ConocoPhillips technology. While the Excelsior Energy grant will not make a meaningful difference to the project's economics, support for clean coal is often stronger at the state level. In 2003, Minnesota enacted legislation that entitles the project to a long-term, 450 MW power purchase agreement with Xcel Energy subject to a public interest finding by the Minnesota Public Utilities Commission.

Table 2 **Coal Technologies—Impact Of Carbon Capture***

Technology	IGCC Texaco Quench	IGCC Texaco Radiant SGC	IGCC E-Gas	IGCC Shell	PC Ultra Supercritical
MW no capture	515	550	520	530	600
EPC capital cost $/kW no capture¶	1,300	1,550	1,350	1,650	1,235
MW with capture§	455	485	440	465	460
EPC capital cost $/kW with capture¶	1,650	1,950	1,900	2,200	2,150

Source: "Gasification Process Selection—Trade-offs and Ironies", EPRI, presented at the Gasification Technologies Conference 2004, by Neville Holt. *Table assumes a nominal 450 MW net output from each technology after carbon capture. ¶ Capital cost estimates are from early 2004 and will likely be higher now. However, the table amply illustrates the relative performance of technologies.
§ Lower capacity reflects parasitic load of carbon capture unit.

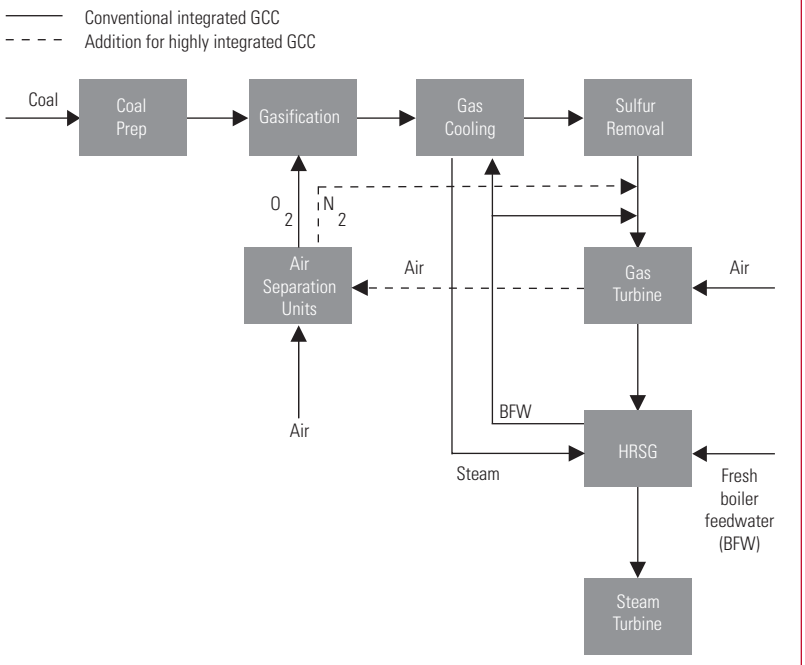
Other financial incentives

A study by the Electric Power Research Institute (EPRI)¶¶ examined how the cost disadvantages of IGCC may be overcome by financial incentives, including loan guarantees, direct federal loans, federal cost sharing grants, investment tax credits, production tax credits, tax-exempt financing, accelerated depreciation, and federal availability insurance. The incentives examined have varying value to different project owners. For example, while tax incentives may have significant value to profitable investor-owned utilities (IOUs) and independent power producers (IPPs), they have no value (unless they are tradable) to public power.

The study assumed capital costs of $1,300/kW for PC (no carbon capture) and $1485/kW for IGCC (with a spare gasifier but without carbon capture), with availability factors of 88% and 78%, respectively. The study indicated that power from IGCC would be more expensive than that from PC by about $8/MWh for both IOUs and IPPs and that subsidies can make a difference. For instance, a 10% investment tax credit was found to be worth about $2.30/MWh, which makes the recent energy bill's 20% investment tax credit a significant benefit for IGCC projects.

A paper published by Harvard University§§ suggests a "three-party covenant financing and regulatory program" between a federal agency that provides 'AAA' rated credit by guaranteeing the debt on the project, a state public utilities commission that provides an assured revenue stream, and an equity investor who builds the project with appropriate EPC contracts and operational guarantees. This arrangement, coupled with an 80 to 20 debt-to-equity ratio, has been shown to significantly reduce the cost of power from an IGCC facility and to impose a lower burden on the federal budget than other forms of incentives, such as production tax credits or grants.

Chart 3 **IGCC Plant Processes**



Source: "Opportunities to Expedite the Construction of New Coal-Fired Power Plants," National Coal Council.

Determinants Are Clear, Outcome Remains To Be Seen

Despite its significant technological advantages, IGCC technology has not been widely deployed in the U.S. or elsewhere. Low natural gas prices were a key reason in the 1990s. Today, two principal factors account for this: high initial capital costs and construction risks, and industry concern that technological risks affect the reliability and availability of commercial-scale units. But noneconomic factors, such as concern over energy import dependence and subsidies arising from political consensus over global warming may hold the potential to tip the scale and provide the impetus for the construction of the first few new IGCC units. Afterward, the ability of contractors to provide turnkey, utility industry standard EPC contracts and demonstrated reliability of operations will be key to IGCC's future prospects. The specific choice of IGCC technology will be driven by the priority among a set of potentially conflicting objectives, including target coal type, least-cost power, maximum efficiency, maximum CO2 capture, and minimal emissions. Ultimately, the winning technology will be the one that can provide the best commercial combination, including fixed-price contracts, as well as construction and operational guarantees.

Notes

* Platts' Emissions Daily.

¶ "Pulverized Coal and IGCC Plant Cost and Performance Estimates," Electric Power Research Institute (EPRI), presented at the Gasification Technologies Conference 2004, by George Booras and Neville Holt.

§ "Gasification: Worldwide Use and Acceptance," SFA Pacific Inc., prepared for the U.S. Department of Energy, Office of Fossil Energy, National Energy Technology Laboratory and the Gasification Technologies Council, Mountain View, Calif., January 2000.

** "Evaluation of IGCC to Supplement BACT Analysis of Planned Prairie State Generating Station," SFA Pacific Inc., May 11, 2003, p. 7.

¶¶ "Financial Incentives for Deployment of IGCC: A CoalFleet Working Paper" EPRI, prepared for the Senate Subcommittee on Energy & Natural Resources Bipartisan Coal Conference, Washington, D.C., March 10, 2005, by Tom Wilson.

§§ William G. Rosenberg, Dwight C. Alpern, and Michael R. Walker, "Deploying IGCC Technology in this Decade with 3Party Covenant Financing: Volume I," July 2004, http://www.ksg.harvard.edu/bcsia/enrp.

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New Financial Players Enter U.S. Project Finance And Merchant Energy

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Over the past three years there has been a dramatic increase in the number of financial players that are equity owners in project finance and merchant energy in the U.S. At first, it was hard to tell if their asset acquisitions were one-of-a-kind transactions or if they signaled a trend. Now, years later, financial players have become integral stakeholders in the power sector and are likely to remain so.

This article describes 12 transactions that were rated by Standard & Poor's Ratings Services from 2003 to 2005 and discusses the ratings and rating methodologies, and, based on incentives, shows how financial players differ from strategic owners and the effect it has on the power industry.

Not all financial players are the same. Those involved in the power sector include:

- A mix of private equity partnerships and funds;
- Commercial banks that have reluctantly become owners through foreclosures;
- Investment banks looking to expand their commodity positions;
- Hedge funds that have entered the sector by trading distressed debt and equity; and
- Financial institutions seeking long-term, stable annuity-like returns, such as pensions funds or newly formed infrastructure funds.

Such a broad range of financial players could not be expected to act uniformly, and they have not. However, they commonly rely on aggressively leveraged transactions, an absence of a long-term track record in the power sector, and a need to partner with or hire professional industry managers to operate their deals. Most of the assets that have been acquired with rated debt are power generation assets; a surprisingly large number are merchant power assets that Standard & Poor's considers to be in the highest-risk segment of the industry. At the other end of the risk spectrum have been acquisitions of existing electric transmission systems, which offer attractive FERC-regulated cost-of-service returns, and have been financed as corporate hybrids.

In the middle of the risk spectrum are more traditional project financings of single assets or portfolios of power generation, waste–to-energy, and cogeneration plants where the debt is supported by existing medium- or long-term offtake contracts. Financial players also played a critical role in the post-bankruptcy emergence of NRG Energy Inc. and in the purchase of Cogentrix Energy Inc. The table provides a list of 12 rated debt issuers in the power sector involving financial players, the types of assets acquired, and credit ratings on the debt issues. While these transactions are a mix of investment-grade and high-yield debt, all 12 issues have stable outlooks.

Four transactions on the list were rated investment grade and eight were high-yield debt issues. A long-term offtake contract on a single asset backs one of the three investment-grade issuers while the other two investment-grade power generation projects are backed by cogeneration plants with long-term contracts. All of the projects have credit profiles commensurate with investment-grade ratings mainly because of the absence of commodity risk, acceptable counterparty credit risk, adequate debt-service coverage, and a track record of good availability, although East Coast Power LLC has a component of merchant power risk. The third investment-grade transaction involving private equity is ITC Holdings Corp., which is the holding company for a newly acquired transmission system. Despite more than 70% debt leverage on a consolidated basis, the investment-grade rating is supported by the low-risk business risk profile of the electric transmission business. Financial players have found these types of transactions to be attractive, and will probably continue to purchase contracted or low-risk assets so long as they are for sale.

Project Finance Financial Players

Issuer	Financial player	Asset	Generating capacity	Issuer/issue rating
Cogentrix Energy Inc.	Goldman Sachs	Power developer	978 MW	ICR B-/Stable; $50 mil revolv credit fac bank, BB+/Stable; $700 mil term B bank ln, BB+/Stable; $355 mil 8.75% sr nts, A+/Stable
East Coast Power LLC	GS Linden Power Holdings LLC, a Goldman Sachs subsidiary	Two combined-cycle gas fired cogeneration plants in New Jersey	940 MW	$193.5 mil 6.737% sr secd nts, BBB-/Stable; $248 mil 7.536% sr secd nts, BBB-/Stable; $184 mil 7.066% sr secd, BBB-/Stable
Green Country Energy LLC	90% owned by subsidiaries of General Electric Structured Finance (GESF) and 10% by a Cogentrix subsidiary	Single combined-cycle power generation a plant in Oklahoma	810 MW	$319 mil 7.21% sr secd nts, BBB-/Stable
ITC Holdings Corp.	Kohlberg Kravis Roberts/ Trimarin Capital	Electric transmission system in Michigan	N/A	$267 mil 5.25% sr unsecd nts, BBB/Stable
KGen LLC	Mattlin Patterson Fund	Merchant power generation assets in southeast U.S.	5,325 MW	$325 mil first lien term A bank ln, B/Stable; $150 mil second lien term B bank ln, B-/Stable
La Paloma Generating Co. LLC	Indirectly owned by lenders to US Gen Energy Group.	Merchant power generation assets in California	1,022 MW (net)	Senior secured (4 issues) BB-/Stable; $155 mil second lien term C bank ln due 2013, B/Stable
LS Power Funding Corp.	Indirectly owned by ArcLight Capital Partners LLC plants in upper Midwest	Two cogeneration assets	490 MW	$105.6 mil sr secd bnds and $226.4 mil sr secd bonds, BBB/Stable
MSW Energy Holdings LLC & MSW Energy Holdings II LLC	AIG High Star/ CSFB private equity	Portfolio of waste-to-energy plants. American Ref-Fuel	N/A	$200 mil sr secd notes, BB-/Stable; $225 mil sr secd notes, BB-/Stable
NRG Energy Inc.	Mattlin Patterson Fund	Power developer	15,481 MW	ICR B+/Stable/—; $800 mil term loan B, BB; $150 mil revolving credit fac bank ln, BB; $697 mil 1st prior term B bank, BB-; $250 mil 1st prior revolv cred fac bank ln due 2006, BB-; $400 mil convertible perpetual pfd stk, CCC+; $1.725 bil 8% 2nd priority bond, B
NSG Holdings II LLC	AIG High Star/ Ontario Teachers Pension Fund	Portfolio of power generation assets	1,042 MW	$160 mil sr secd bank fac, B+/Stable
Primary Energy Finance LLC	American Securities Capital Partners	Portfolio of mostly contracted power generation assets	N/A	150 mil sr secd term bank ln, BB-/Stable
Texas Genco LLC	Private equity: The Blackstone Group, Hellman & Friedman, Kohlberg Kravis Roberts & Co., and The Texas Pacific Group	Merchant power generation assets in Texas	14,386 MW; 5,222 MW base load	BB/Stable (ICR); $1.625 bil first lien term B bank ln, BB; $325 mil first lien revolv cred fac bank ln, BB; $1.125 bil 6.875% sr nts, B

N/A—Not applicable.

The other eight transactions listed in the table were completed in the high-yield debt market, with credit ratings ranging from 'B-' to 'BB+'. None of the ratings are supported or notched up based on their financial party owners' creditworthiness, and in the Cogentrix example, its owner, Goldman Sachs, is rated much higher. Conversely, some of the financial parties are unrated, but still none of the ratings have been constrained by their owners. This is because they meet our criteria for separateness, or their stand-alone creditworthiness is in the 'B' category and the risk of a parental bankruptcy that could file the project company into bankruptcy is considered to be an acceptable risk at the 'B' rating category. Some of the projects mitigate parental bankruptcy risk through having multiple owners where the likelihood that all of the owners would elect to file for bankruptcy is considered remote. In other cases, the project owner is structured as an equity fund that is largely prohibited from issuing debt at the fund, thereby also reducing the risk of an owner's bankruptcy. In many cases, the projects are also set up as special-purpose entities, with no ability to engage in other businesses and restrictions on their ability to raise additional debt or pledge assets.

Project finance transactions involving financial players are different from previous power sector project financings or developer ratings in several more ways. In contrast to merchant energy developers such as Mirant Corp. and Calpine Corp. that had aggressive project development and construction strategies, financial players are involved in asset acquisitions only. They have expressed little or no interest in new project development. Even Cogentrix, which previously had a strategy of building, has a strategy under its new owners of optimizing its portfolio of contracted assets. NRG Energy has largely become an asset operator. Many of the transactions represent one-time deals in that they are not a component of a broader integrated energy strategy such as that practiced by the large diversified energy companies like Duke Energy Corp., Sempra Energy, Constellation Energy Group Inc., and Dominion Resources Inc. However, several of the financial players, such as Goldman Sachs, are seeking to expand their presence in commodity markets by owning power generation assets. They may be able to expand their trading and marketing operations, and participate in the optionality offered by gas and electric convergence.

Nearly all of the high-yield debt issues financed the purchase of power generation assets with nonamortizing loans (or with very miminal amortizations). As a result, they carry varying levels of refinancing risk. Assessing refinancing risk is something of a challenge because the level of risk to the lenders depends on how much cash is swept before the loan is due and what the market conditions will be when it becomes necessary to refinance the debt or recontract the power generation assets.

Financial players have different motivations for entering the power sector than strategic investors. They are likely to have a shorter time in which to earn expected returns and they may be more willing to flip assets. A good example of a short-term exit strategy was AIG High Star and CSFB Private Equity's ownership of the American Ref-Fuel Co. LLC portfolio of waste-to-energy plants. Through the creation of MSW Energy I and MSW Energy II, American Ref–Fuel was purchased in two steps in June and December 2003. The nearly $750 million acquisition was primarily funded through two issues of high-yield debt totaling $425 million. In February 2005, the private equity owners sold their indirect interests in American Ref-Fuel to Covanta Energy Corp. (another power developer mainly owned by financial players). The total period of ownership by private equity interests was less than two years. Similarly, Kohlberg Kravis Roberts and Trimarin Capital recently cashed out a share of their equity interests in ITC Holdings when they executed an IPO, and Texas Genco LLC is also planning an IPO.

Many financial players have more tolerance for risk than other power sector participants, such as utilities. Or, they may have a different view from strategic investors of when and how the power generation market will rebound. Some of the merchant energy transactions expect to realize equity upside when current power sector market conditions improve. KGen LLC, which purchased power-generation assets in the U.S. Southeast from Duke Energy, owns only one plant with a long-term contract; the rest of the assets are merchant and many are currently mothballed. Their strategy is one of partial liquidation combined with enduring until the power generation markets improve, which could be a long time in the overbuilt southeastern U.S.

NSG Holdings II LLC's portfolio of power generation assets acquired from El Paso Corp. is heavily concentrated on a single project with revenues from a tolling contract with Reliant Energy Inc. on a peaker in Florida that expires in 2012. Market conditions will determine the terms on which this contract will be renewed, but the owners were apparently willing to take the risk that there will be value in this merchant energy asset in Florida beyond the existing tolling period. Texas Genco has entered into medium-term hedges that protect equity and debt during the hedged period, but the company is free to reassess its strategy at any time.

In U.S. regions where wholesale power markets are competitive, the role that financial owners have played has been positive for the industry. Financial players facilitated new sources of capital at a time when the merchant energy sector was in distress, and in so doing they provided necessary acquisition

valuation benchmarks as well as capital. However, lenders must be aware of the specific risk profiles that these deals present. These risks go beyond refinancing risk. Many other risks are incorporated in our current debt ratings. Standard & Poor's research provides regular updates on how the risks may be changing.

In conclusion, financial players are likely to remain market participants in the power sector as long as the high-yield loan market remains open to them for debt financing. Their longer-term involvement is not assured, but is likely to occur and, indeed, more financial players may enter the market in new and different ways. ■

Global Power Projects Turn To Second-Lien Bank Debt For Financing

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Since Standard & Poor's Ratings Services rolled out its recovery rating scale for secured bank debt in December 2003, we have rated three special-purpose entities related to global power projects with structures consisting of both first- and second-lien bank debt. And there appears to be interest in the market for doing more of these structures. In addition to the three project finance transactions, as of May 31, 2005, 117 out of the 799 bank loans rated by Standard & Poor's were secured by second liens.

Standard & Poor's project ratings address default probability combined with the quality of collateral. For a number of reasons, our project ratings do not distinguish between the debt issue rating and the issuer credit rating, as is the case with corporate credit ratings. First, project documentation generally allows a project to issue debt at its inception to operate with a single-business focus and typically maintain a constant risk profile. Second, project debt does not become a permanent part of the capital structure, but rather amortizes in most projects according to a schedule based on the project's estimated useful life. However, in the first-lien/second-lien structures that Standard & Poor's rates, there is a twist added where cash is swept to pay down first-lien debt, and then at maturity the level of refinancing risk is uncertain.

Finally, inherent in the rating of projects is an analysis of the security package. The stronger projects give lenders a first-perfected security interest (or fixed charge, depending on the legal jurisdiction) in all of the project's assets, contracts, permits, licenses, accounts, and other collateral so the project can be disposed of in its entirety, should the need arise. Thus, the project finance debt ratings incorporate the security package available to lenders, rendering an issuer credit rating unnecessary.

Standard & Poor's defines a project company as a group of agreements and contracts between lenders, project sponsors, and other interested parties that creates a form of business organization that will issue a finite amount of debt on inception, operate in a focused line of business, and ask that lenders look only to a specific asset to generate cash flow as the sole source of principal and interest payments and collateral.

Table 1 shows Standard & Poor's outstanding ratings on project finance transactions with first-lien and second-lien structures.

With bank loan issuers that carry issuer credit ratings, the debt rating is driven by the issuer credit rating combined with the recovery rating. Loans rated '1' or '1+' will be notched up one or more notches from the corporate credit rating. Second-lien debt will be notched down one notch if the recovery rating is '3' and two notches if the loan is rated '4' or '5'. Standard & Poor's has rated another three entities whose ratings are linked to the corporate credit rating of a parent company in this manner *(see table 2)*.

All of the projects listed below are power plants or portfolios of power plants. All are structured such that some portion of available cash is swept to repay debt through its term, leaving a balloon maturity of uncertain amounts for the first lien pieces. The cash sweeps vary from project to project. Furthermore, in all of the pure project transactions there has been some period of contractual sales; however, this is not always the case. Because mandatory amortizations are minimal, Standard & Poor's default scenario focuses on weak market conditions at maturity. However, given the unique and specific characteristics of single asset financings, there is no one default scenario that can be relied on for all power plant financings.

Standard & Poor's looks at its distressed market price scenario, which will vary depending on the location of the facility, and considers other asset specific factors, such as deterioration

in plant efficiency or availability, or increasing fixed costs. For power plants, our default scenario assumes a power market at the bottom of its cycle in terms of market heat rate (i.e., overbuilt), coupled with low natural gas prices as determined by our price deck. In Standard & Poor's opinion, market heat rates in recent years provide a good proxy for a downturn case.

Historically, Standard & Poor's has assumed absolute priority in determining recovery ratings for first- and second-lien loans. However, going forward, Standard & Poor's will consider moving recovery ratings closer together based on the rights of the second-lien holders. We have found that over time, loan documents have moved in the direction of favoring second-lien holders more so than historically. For example, instead of permanently silent second liens, we are seeing more and more transactions where the second lien holders have the right to exercise remedies after some period (as short as 90 days). This gives second lien holders more power in a bankruptcy and improves their recovery prospects at the expense of the first lien holders.

Three Cases

Below is a discussion of the three projects with both first- lien and second-lien secured loans rated by Standard & Poor's.

Coleto Creek WLE L.P.

Coleto Creek is a 632 MW coal plant located in South Texas. When the loans were rated, the facility had five-year contracts to sell its power to creditworthy entities. These contracts locked in favorable prices, allowing a substantial amount of debt to be amortized through a mandatory cash sweep of 75% available cash flows.

In analyzing the transaction, Standard & Poor's performed many sensitivities on plant availability and merchant prices to determine a range of potential outstanding debt amounts at maturity. The default scenario assumes that the merchant market deteriorates such that the plant cannot carry its debt burden. In each of the recovery scenarios analyzed, payments on the contracts are used to amortize debt according to the 75% cash sweep requirement during the contract period. At the termination of the contracts, the net present value of the cash flow available for debt service under various discount factors was compared with the outstanding debt amount. The first-lien loans enjoy 100% recovery even under Standard & Poor's low price scenario. However, since the lending documents allow payment of any principal on the second-lien term loan only after completely paying down the first-lien term loan, remaining cash is only expected to provide recovery on the second lien term of 50% to 80%.

As mentioned, Standard & Poor's has seen second-lien holders receiving more rights in recent transactions than in earlier transactions. Coleto Creek was the first project

Table 1 Standard & Poor's Rated First- And Second-Lien Project Finance Transactions

Transaction	Debt rating	Recovery rating
Coleto Creek WLE LP		
$228.1 million first lien	BB	1
$150 million second lien	BB-	3
KGen LLC		
$325 million first-lien bank loan due 2011	B	1
$150 million second-lien bank loan due 2011	B-	4
La Paloma Generating Co. LLC		
$265 million first-lien term loan B due 2012	BB-	1
$65 million first-lien working cap facility	BB-	1
$40 million first-lien synthetic LC facility	BB-	1
$155 million second lien term loan C	B	5

finance structure rated by Standard & Poor's that had a first- and second-lien structure (rated on June 28, 2004), and second lien holders have very little by way of rights and remedies. There is one indenture for both liens, and the indenture conveys all rights to the first lien holders. Second lien holders are given no ability to foreclose on collateral until first lien holders are paid in full. In cases like this, Standard & Poor's views the absolute priority as the more likely to hold. It should be noted that even though the second lien holders have more limited rights, the recovery ratings are closer together than the other rated projects. This is a reflection of Standard & Poor's opinion of the distressed value of the assets.

KGen LLC

KGen owns nine gas-fired generation facilities with a nominal capacity of 5,325 MW located in the Southeast U.S. One of the facilities, a two-unit 1,240 MW combined-cycle generating facility located in Georgia has an offtake agreement for 620 MW with Georgia Power Co. through May 31, 2012. A second had a power-purchase agreement with Entergy Energy Services Inc. for 231 MW that has since expired. Any excess cash flow up to $20 million is swept for first lien holders, as well as 100% of any asset sale proceeds.

In analyzing KGen, Standard & Poor's valued the portfolio of power plants based on a liquidation scenario. KGen is already in the process of selling some of its assets in an effort to reduce debt, and part of the analysis was determining the salability of KGen's peaking unit turbines. For the default scenario in this case, we assumed two very cool summers coupled with KGen's inability to close a sale of any of the peakers by 2006. In determining recovery for first lien holders,

Table 2 **Standard & Poor's Notched Ratings On First- And Second-Lien Project Finance Transactions**

Transaction	Rating	Recovery rating
Midwest Generation LLC		
Issuer credit rating on parent	B+	N.A.
$200 million first-lien working capital facility	BB-	1
$700 million first-lien term loan	BB-	1
$813.5 million pass-through certificates	B+	N.A.
$333.5 million 8.3% pass-through certificates	B+	N.A.
$1 billion second-lien secured notes	B	3
Calpine Construction Finance Co.		
Issuer credit rating on parent	B-	N.A.
$385 million first priority term loan	B	1
$415 million second priority senior secured notes	CCC+	3
Calpine Generating Company LLC		
Issuer credit rating on parent	B-	N.A.
$600 million first priority secured bank loan	B	1
$235 million first priority secured notes	B	1
$100 million second priority secured bank loan	B-	2
$640 million second priority secured notes	B-	2
$150 million third priority secured notes	CCC+	3
$680 million third priority secured notes	CCC+	3

N.A.—Not applicable.

our analysis focused on the value of the generating unit with the power-purchase agreement into 2012, coupled with the residual value of the plant. The residual value was determined to be about $100/kW, which is considered a distressed value. In addition to this facility, the first lien lenders would benefit from the sale of all other plants for recovery. A scenario where none of the peakers is sold and the combined-cycle gas turbines receive $75/kW gives Standard & Poor's comfort that first lien holders would realize enough value for 100% recovery of principal with a high degree of certainty.

Second lien lenders depend more on the plants' liquidation value. Furthermore, there are certain other senior claims granted to contract counterparties of up to $50 million. In its recovery analysis, Standard & Poor's has assumed that these claims are topped out. Standard & Poor's examined many default scenarios but focused on two cases. Second lien recovery ranged from 21% to 55% under the two scenarios, leading Standard & Poor's to the '4' recovery rating.

In the case of KGen, which came to market in February 2005, second lien holders can exercise rights of acceleration after a 90-day standstill period. Although this does not affect their subordination in terms of recovery of collateral value, it does give them some ability to exert influence on the process and, in so doing, force a settlement that may allow them to increase recovery at the expense of first lien holders, making the assumption of absolute priority more tenuous.

La Paloma Generating Co. LLC

La Paloma is a 1,022 MW, combined-cycle, natural gas-fired power plant in California. Three of its four units are under contract through 2012. Similar to Coleto Creek, the contract period is key to reducing debt. There is a required excess cash sweep of 50%, but 75% must be swept if targeted first lien debt reduction milestones have not been reached.

For La Paloma, there was a wide disparity between the first- and second-lien recovery ratings ('1' and '5', respectively). This was driven by the large amount of second-lien debt that was projected to be outstanding at maturity as compared with first lien debt. Under a wide range of scenarios, about $170 million of second-lien debt is expected to remain outstanding. Although several scenarios were considered, principal reliance was placed on a case that incorporated efficiency degradation, compounded by a weak market conditions both in terms of heat rate and natural gas prices. Under this scenario, while first-lien debt was covered fairly handily, second-lien debt would realize less than 25% recovery.

La Paloma recently went to market. Again, in keeping with the trend, second-lien lenders are granted the ability to exercise rights and remedies under the intercreditor agreement after a certain standstill period of 180 days. While still subordinated in terms of priority, like the previous example, these rights give second lien holders the ability to exert influence, making the absolute priority assumption more uncertain.

What's Ahead For Secured Loan Transactions

Project finance transactions with first and second lien loan structures present unique analytical challenges. The recovery analysis for a project finance transaction can be a complicated exercise due to the varying characteristics and structure of each transaction. Standard & Poor's analysis incorporates a detailed review of all project documents, coupled with the development of multiple default scenarios for each project that are tailored to the structure of the transaction. Typically we will focus on one or two of these scenarios in determining the recovery ratings.

Thus far, recovery ratings of first and second lien loans have assumed absolute priority. However, over time second lien holders have been gaining more power under the terms of the intercreditor agreements, which has the effect of making the assumption of absolute priority more tenuous. Until similar loan structures go through the bankruptcy process, it will be difficult to know the degree to which this will affect first and second lien recovery. ■

Prepaid Natural Gas Transactions Help U.S. Municipal Utilities Cut Supply Costs

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In October 2003, the IRS gave the green light to certain municipal prepaid gas and electric commodity purchases financed with tax-exempt debt. Since that time, Standard & Poor's has observed a renewed interest in these transactions and expects this trend to continue.

These contracts emerged in the late 1990s as a means for municipal agencies to leverage their ability to issue tax-exempt debt into lower long-term gas supply costs through a prepayment funded by tax-exempt debt. The growth in prepaid gas transactions prompted several IRS investigations that examined whether these transactions violate the regulations on arbitrage and "private activity" restrictions applicable to entities issuing tax-exempt debt. Those investigations were concluded with the IRS' October 2003 ruling (T.D. 9085), and debt issued to finance these transactions continues to be tax exempt.

The duration of the transaction is typically around 10 to 12 years, and the discount is generated by the positive carry between the costs of the tax-exempt debt and the higher costs of capital associated with a taxable gas supplier. In these transactions, the purchaser prepays the gas by issuing tax-exempt debt whose proceeds are transferred to a supplier as a one-time, lump-sum payment. In return, the supplier commits to deliver a negotiated volume of gas over time to discharge its obligations. That is, the obligation created by the prepayment is discharged through the delivery of the commodity or in some extraordinary instances, through a payment that is the product of the scheduled gas to be delivered multiplied by the index price. The volume is sized based on the value of the prepayment to the issuer as measured by the time value of money and its avoided capital costs.

Standard & Poor's has evaluated prepayment transactions in which the offtaker has been a single municipal utility. In most transactions, however, the offtaker is a joint action agency, which is a municipal agency that acts as a purchasing agent for a group of municipal utilities that often are members of the agency. These transactions present numerous risks. For instance, in several transactions the sponsoring agency could not obtain commitments from load-serving offtakers for the life of the transaction, which could disrupt the revenue stream needed to service its debt. Supplier risk may also be present. A default by the gas supplier would also disrupt the revenue stream needed to service the bonds because, in the absence of the commodity, the municipal gas distributors' revenue stream would be eviscerated. Furthermore, these transactions typically involve one or more swap counterparties to hedge exposure to interest rate movement and lock in commodity prices for the sponsor. At the same time, the retail systems typically prefer floating prices, which they view as providing long-term alignment with prevailing market prices. As a consequence, the transactions are highly structured and must comprehensively protect against each of the risks that could frustrate the municipal agency's ability to service its debt.

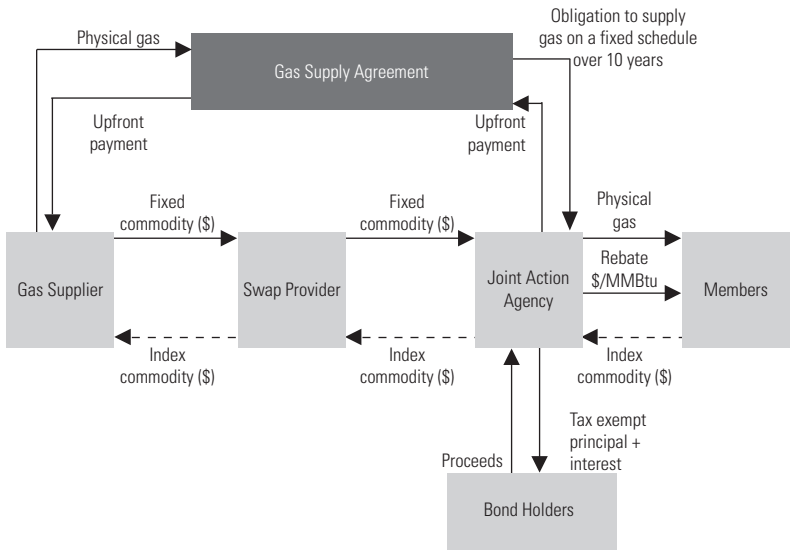
How Prepaid Gas Transactions Typically Work

A municipal utility or joint action agency issues tax-exempt bonds to finance the prepayment of a long-term gas supply on behalf of its members. The gas supplier, who receives an upfront payment, commits to deliver predetermined quantities of gas according to a schedule that may be shaped to reflect seasonal demand or may consist of fixed monthly installments. Either way, it is important that the structure address the shape of the delivery to ensure the proper alignment between retail revenues and debt service. The amount and schedule of the gas factors in the forward prices of gas and a

time value of money that is below the gas supplier's current debt cost. Retail revenues are earned from reselling the gas to municipal utilities that serve retail load. The utilities then make payments to the sponsor based on the product of gas received and the index price of gas.

Because the retail systems prefer floating to fixed gas prices to achieve the predictable cash flow required to honor its debt service obligations, the sponsor enters into a commodity price swap and exchanges a natural gas index price for a fixed gas price on an amount of gas that matches the delivery schedule. The fixed cash flow received from the swap counterparty is used to service the debt and surplus cash flow—derived from the gas supplier in the form of an implied interest rate higher than the coupon on the tax-exempt debt—is accumulated in contingency reserves, but eventually paid to the municipal utilities as rebates in the form of a fixed discount to the gas purchased. In instances where variable rate debt has been issued, an interest rate swap is used to align the fixed payment received from the commodity swap counterparty with the variable obligations associated with the variable rate debt. Provisions also need to be made for any bullet maturity associated with nonamortizing variable rate debt.

Prepaid Gas Supply Structure



Rating Perspective

To avoid having these transactions evaluated based on the weakest link in the spectrum of risk presented by each of the numerous components of the transaction, all but a few of the transactions rated by Standard & Poor's have used a financial guarantor or surety to cover the obligations and exposures created by the supplier, the offtakers, and the swap counterparties. Although several transactions have involved highly rated suppliers, such as BP Corporation North America Inc. (AA+/Stable/A-1+), other transactions have involved less creditworthy suppliers, such as Aquila Inc. (B-/Negative/B-3). In these cases, the risk of nonperformance by the gas supplier presents substantial credit concerns in light of the mismatch between the obligation to supply the commodity and the revenue stream—the supplier having been paid in full at the onset of a lengthy transaction. In addition, as noted, in several transactions where sponsoring agencies have not been able to find municipal commitments for all of the prepaid gas through the life of the transaction, remarketing surplus gas can be an issue because of private use restrictions and the basis differentials between gas basins.

Recent transactions have replaced insurance surety bonds with financial guarantees from highly rated entities; two recent prepaid contracts between BP Plc subsidiaries and two joint action agencies were guaranteed by BP North America. The ratings on these transactions reflect financial guarantees that are unconditional, irrevocable, and absolute. The guarantees not only cover a gas supplier default, but also extend to cover the offtakers' obligations, which create the underlying revenue stream required to pay bondholders. Absent such a guarantee, the member utilities' ability to pay for delivered gas on a timely basis or even their willingness to accept gas as delivered becomes a rating issue.

The swap and swap provider

The typical prepay structure uses commodity swaps to address commodity price risks, and, in the case of variable rate debt obligation, interest rate risk. Since the swap provider is critical to the structure, a rated transaction will usually not be rated higher than the rating on the swap counterparty. However, by

entering into a reverse swap with the gas supplier, the swap provider achieves a matched book, theoretically limiting its credit exposure only to that of the gas supplier and gas purchaser, whose exposure is typically addressed by termination events that mirror one another on back-to-back swaps.

Limitations On The Use Of These Transactions

The amount of debt the joint action agencies are allowed to issue is limited only by the IRS regulation, which requires that at least 90% of the gas purchased by the sponsor be sold to retail customers in a municipal utility's service area. This limit could potentially complicate remarketing efforts, as the remarketing agent must find a tax-exempt entity willing to take the gas in the same basin, so as to avoid basis differential issues. A failed gas remarketing effort along side a loss of tax-exempt status on the bonds typically constitutes a mandatory redemption event for the bonds, in which case the guarantor redeems all outstanding bonds. The 90% restriction limits the possibility that gas will flow to parties outside the member utilities' service territory, but is waived if the base size of the prepayment contract was the average amount of gas used over the previous five years by the member utilities.

Standard & Poor's expects to see many more of these transactions over the near term as municipal utilities continue to seek competitively priced natural gas. The tax-exempt debt issued to finance these transactions is imputed to the gas supplier in recognition of the obligation created to repay funds advanced with the commodity over time. ■

U.S. Ethanol Industry Is Still Making Great Strides, But Risk Lingers

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In Standard & Poor's Ratings Services' article on the ethanol industry published Nov. 15, 2004 on RatingsDirect, we identified the ethanol industry as a relatively capital-intensive, commodity-based, and government policy-dependent industry with thin margins that are subject to price volatility. We also concluded that most projects in the ethanol industry seeking ratings for long-term financing would fall into the highly speculative-grade 'B' category.

Since November 2004, there have been a number of significant developments in the industry that should boost demand for ethanol. Today, the ethanol industry looks stronger in terms of demand and growth prospects, but the industry's fundamental volatility is still the same. Standard & Poor's views the following as the most significant developments for the industry:

- The long-awaited Energy Policy Act Of 2005 that raises the renewable fuel requirement to 7.5 billion gallons per year by 2012 was signed into law on Aug. 8, 2005;
- Valero Energy Corp. (BBB-/Watch Neg/—), the third-largest U.S. refiner of the ethanol substitute product methyl tertiary butyl ether (MTBE), announced its decision to abandon MTBE production;
- The Chicago Board of Trade (CBOT) and Chicago Mercantile Exchange (CME) launched denatured fuel ethanol futures contracts in March 2005, which will be domestic and corn-based; and
- Gasoline prices remain at record-breaking high levels.

The Energy Act: If You Build It, They Will Come

With the new energy law, ethanol producers get the relief they have been waiting for. The new law requires that gasoline sold in the U.S. contain a specified volume of renewable fuel, primarily corn-based ethanol. The annual average volume of renewable fuel additives in gasoline will gradually increase to 7.5 billion gallons per year by 2012 from 4 billion gallons per year in 2006. The phase-in for renewable fuels volumes as outlined in the new law is shown in the table.

The 7.5 billion gallons per year goal by 2012 is almost double the July 2005 total ethanol production capacity in U.S., which the Renewable Fuels Association estimates to be 3.9 billion gallons per year. An estimated 1 billion gallons per year of capacity is currently under construction.

Standard & Poor's expects the ethanol industry to respond to increased demand quickly, but the response could lead to an oversupplied market and depressed prices. Due to the rapid expansion of capacity in the industry in the past two years, margins for ethanol producers were pressured for a short time in 2005. The price of ethanol was significantly less than the price of gasoline from March 2005 until August 2005. Low corn prices and record-high gasoline prices helped the ethanol producers through this period, but margins were squeezed. By December 2005, the ethanol industry's production capacity is expected to roughly equal the mandated demand. Standard & Poor's expects prices to fluctuate in the future, as supply and demand balance work toward equilibrium. Important factors for rating consideration include being a low-cost producer and having adequate liquidity and financial flexibility to help a project to sustain itself through suppressed price periods.

Significantly, the Energy Act is the first federal law that addresses a renewable fuel standard (RFS). It established definitions for the renewable fuels program, including:

- Renewable fuel (defined as motor vehicle fuel that is produced from grain, starch, oilseeds, sugar components, tobacco, and potatoes and is used to replace fossil fuel present in a fuel mix), and
- Cellulosic biomass ethanol (defined as ethanol derived from dedicated crops and trees, wood and wood residues, plants, grass, municipal solid waste, and other waste).

The law also creates a credit-trading program whereby blenders can sell credits for amounts above the required amount of renewable fuel usage and others can buy such credits to meet the requirements. The RFS credits provide flexibility for blenders to mix renewable fuel with gasoline where it is most economically feasible. The law provides extra incentives for cellulosic biomass ethanol over grain-based ethanol, such that every gallon of cellulosic ethanol produced counts as 2.5 gallons of renewable fuel. Standard & Poor's keeps its focus on the domestic corn-based fuel ethanol industry because virtually all of the proposed projects continue to be in this category. Currently, more than 90% of U.S. ethanol production is estimated to come from corn. Standard & Poor's expects cellulosic biomass ethanol projects to take longer to reach the markets.

The renewable fuel requirement is a positive for the ethanol industry's credit quality. It creates a larger base demand for ethanol and forms the basis of a sustainable industry. Nevertheless, commodity price fluctuations are expected to continue and margin volatility will underlie the ratings in this industry.

MTBE Phase-Out

The energy law does not ban the use of the gasoline additive MTBE, which some believe to contaminate groundwater; consequently, some states ban its use. However, the law eliminated the oxygenate requirement in reformulated gasoline and provided no liability protection to MTBE manufacturers. Therefore, gasoline refiners, who generally also manufacture MTBE, are no longer required to use an oxygenate such as MTBE.

Phase-In Of Renewable Fuels

	Bil. gallons
2006	4.0
2007	4.7
2008	5.4
2009	6.1
2010	6.8
2011	7.4
2012	7.5

MTBE manufacturers are open to legal liability for the product's potential health hazards. In response to this, MTBE manufacturers are expected to abandon it. Valero, which currently produces 60,000 barrels per day of MTBE, is the first company to announce that it would no longer produce MTBE.

As MTBE volumes are withdrawn from blended gasoline, a reduction in the total volume of motor vehicle fuel will occur. Ethanol is considered a viable alternative to replace this loss of volume. Some industry experts and market consultants expect a 20% reduction in MTBE volumes annually over the next five years. Total MTBE use in 2005 is estimated to be around 2.2 billion gallons; based on oxygen content, this would equal about 1.1 billion gallons of ethanol per year. Nevertheless, refiners are not required to replace MTBE with another oxygenate like ethanol, since the Clean Air Act's oxygenate mandate expires 270 days from the 2005 Energy Act's effective date. Nonetheless, Standard & Poor's expects refiners to replace some of the lost volume resulting from abandoning MTBE with ethanol because ethanol is currently an economically viable alternative given the 51 cent per gallon exemption from gasoline excise tax the blenders are granted for each gallon of ethanol they blend in with 10 gallons of gasoline. This incentive, the Volumetric Ethanol Excise Tax Credit (VEETC), provides a significant price advantage for ethanol and helps drive discretionary demand for ethanol. Resulting usage of ethanol for replacement of MTBE will count toward the RFS requirement. MTBE replacement does not necessarily create additional demand for ethanol on top of the RFS requirement, but provides a likely area for increasing ethanol use.

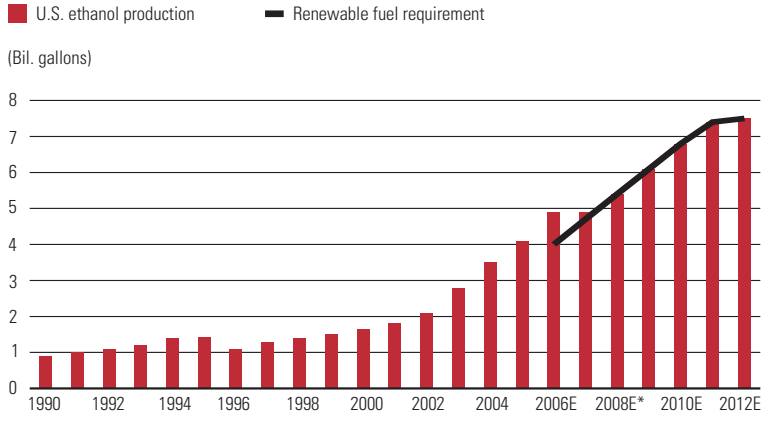
Rising Gasoline Prices

Historically, ethanol prices have been highly correlated with oil and gasoline prices because of ethanol's use as a gasoline additive. The historical relationship between ethanol and gasoline prices is illustrated in chart 2.

Until 2005, ethanol prices tended to track gasoline prices and enjoy a premium over gasoline that stems from the 51 cents per gallon VEETC, which provides a financial incentive for the blenders to use ethanol.

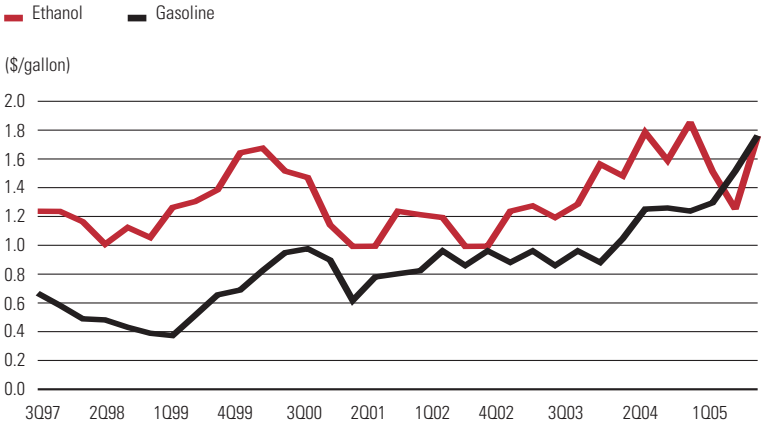
Nevertheless, in March 2005, ethanol prices fell below gasoline prices. This may be due to an oversupplied ethanol market as developers rushed to build capacity in anticipation of increasing demand. As gasoline prices surpassed ethanol prices, the blenders were expected to use more ethanol to lower the gasoline cost. It took longer than expected for blenders to increase voluntary usage of ethanol and the prices slumped for about four months. Although prices recovered as of August 2005, they are only back at the gasoline price level and the blenders are enjoying the full benefit of the VEETC. The delay in the gasoline blenders' response may be attributed to physical restrictions (such as adjusting the infrastructure to accommodate increased use of ethanol) as well as reluctance to voluntarily use more ethanol.

Chart 1 **U.S. Ethanol Production And Renewable Fuel Requirement**



*Assumes production equals mandated demand for 2008 and beyond. E—Estimated.

Chart 2 **Historical U.S. Ethanol Versus Gasoline Prices (Quarterly Average)**



Gasoline blenders are mostly major oil companies such as Shell Oil Co., ConocoPhillips, BP PLC, Exxon Mobil Corp., and Chevron Corp. They represent the dominant players of an integrated industry, whereas the ethanol industry is a highly fragmented one represented mostly by small producers. The gasoline blenders can exert significant pricing power over the ethanol producers, especially during times of excess supply. Standard & Poor's concludes that, even though ethanol and gasoline prices are highly correlated historically and rising gasoline prices would render the use of ethanol economical for the blenders and should drive discretionary demand up, the pricing power of the blenders is a significant risk factor. In addition, Standard & Poor's sensitivity analysis includes a low price case for ethanol that correspond with our low oil price case. Companies' margins are tested under the low price case with certain assumptions for corn, natural gas, electricity prices, and by-product revenues. The ability to cover debt service, and to what extent, will play a significant role in determining ratings.

Futures Contracts For Ethanol

In March 2005, CBOT and CME, both launched domestic, corn-based futures contracts for denatured fuel ethanol. This is a positive development for the industry. The New York Board of Trade also launched its World Ethanol Contract in May 2004. However, those contracts were international and sugar-based. The CBOT and CME ethanol futures and spot markets better serve the commodity price risk management needs of the majority of U.S. ethanol producers (90% of domestic ethanol production is corn-based). Such markets are important for price transparency and liquidity for the industry, a much-needed development for a growing and fragmented industry.

The ethanol producers' margins are thin and exposed to volatile prices of fuel ethanol and corn, which statistically show little correlation and have experienced wide fluctuations in the past. The ability to lock-in gross margins at least for a short time should help

producers in planning and strategizing. Nevertheless, contracts are short term and ethanol producers are still exposed to long-term price movements in ethanol, corn, natural gas, and the by-products. There is talk of longer-term contracts that address margin volatility between corn and ethanol, however, it has yet to be seen and analyzed regarding any effect on credit.

Project Risks

The framework Standard & Poor's uses to evaluate the project-level risk of an ethanol project, or any project for that matter, fundamentally covers the following areas:

- Contractual structure,
- Counterparty credit risk,
- Competitive market exposure,
- Technology,
- Construction and operations,
- Legal structure, and
- Financial strength.

The competitive market exposure, along with financial strength, remains the underlying issue for determining an ethanol project's rating because most ethanol projects lack a traditional contractual structure whereby the market risk and commodity price risk are transferred to off-take parties and/or feedstock providers. Regarding technology and construction and operations risk, Standard & Poor's concluded that design and construction risk is not significant for ethanol facilities, especially for typical dry-mill technology, which constitutes the majority of new and proposed plants. Lenders assume certain construction and operational risks as with any project, but Standard & Poor's has concluded that these risks are not a limiting factor when rating ethanol projects.

Regulatory risk and margin volatility risk remain the significant risk factors for the industry. Margin fluctuations are expected to continue as capacity expansions and required demand increases play cat and mouse with each other over the next several years. Exposure to commodity price risk and volatile margins will continue to limit the ratings for ethanol producers to deep speculative grade. Improvement in ratings would be possible if industry participants are able to attain long-term contracts with highly rated counterparties that mitigate the commodity price risk of ethanol and corn for the term of the debt. ■

Peer Comparison: Two U.S. Ethanol Producers

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Standard & Poor's Ratings Services recently rated two ethanol producers, Aventine Renewable Energy Holdings Inc. (CCC+/Stable/—) and Hawkeye Renewables LLC (B/Stable/—). Currently, ethanol production facilities with a capacity of about 750 million gallons per year (mmgpy) are under construction in the U.S., so other debt issues are expected to come to market in 2005. In an effort to provide insight into the difference that structure can bring to a debt issue and to provide transparency on the differences between the two entities and their ratings, this report highlights their differences and the credit implications.

Background

From a business-risk standpoint, Aventine and Hawkeye face similar risks. The difference in the ratings is primarily driven by the difference in the debt issues' structural provisions. Aventine and Hawkeye operate in the highly volatile ethanol market. The ethanol industry is capital-intensive and commodity-based, with highly speculative margins.

Ethanol is a renewable alcohol fuel produced primarily from the starch contained in grains such as corn, grain sorghum, and wheat through a fermentation and distillation process that converts starch to sugar and then to alcohol. A key factor in the rating process for ethanol facilities is the stability and predictability of cash flow available for debt service during the debt's term. Ethanol producers' margins are extremely uncertain and exposed to fuel ethanol and corn prices, which are not highly correlated and have widely fluctuated in the past. There is very little ethanol producers can do to mitigate margin volatility risk because virtually no long-term fixed-price contracts are available for either the product or the feedstock.

Another major credit risk is that industry capacity additions may outpace the growth in demand in a short period of time, squeezing the margins to levels where the companies may not generate enough cash flow to pay interest expense. The industry is rapidly adding capacity. According to a January 2005 Renewable Fuels Association estimate, U.S. ethanol production capacity is about 3.6 billion gallons per year and there is about 750 mmgpy of capacity currently under construction. When this construction comes on-line, likely within a year, the total production capacity in U.S. will be about 4.35 billion gallons per year. This compares with demand of about 3.4 billion gallons in 2004. Industry experts forecast demand growing at a rate of 2% to 7% per year. Assuming that construction of the 750 mmgpy is completed by year-end 2005, there may be 4.35 billion gallons of supply to meet between 3.6 billion to 3.9 billion gallons of demand in 2006.

In addition, government support is required for the industry's viability. The current subsidy in the form of a federal excise tax exemption on gasoline for gasoline blenders of about 51 cents per gallon was recently extended until 2010. However, the industry cannot survive without the subsidy. Without it, historical gross margins for most plants would be negative in all years since 1994, except for 2004. Lenders bear the regulatory risk in financings that extend beyond 2010.

The Two Producers

Aventine is a producer and a leading marketer of fuel-grade ethanol in U.S. The company produces a total of 140 mmgpy of ethanol through its two production facilities, the 40 mmgpy dry-mill facility in Aurora, Neb. and the 100 mmgpy wet-mill facility in Pekin, Ill. Aventine also plans to expand the Pekin facility by 40 mmgpy to 56.5 mmgpy of dry-mill capacity.

Hawkeye owns and operates a newly built, 40 mmgpy dry-mill ethanol plant in Iowa Falls, Iowa. The plant entered service on Nov. 9, 2004. Hawkeye plans to expand this plant by 40 mmgpy and build a new 100 mmgpy dry-mill plant in Fairbank, Iowa. The forecast completion date of the Iowa Fall expansion is

March 2006 and the Fairbank plant should be completed in May 2006.

Debt Structure

The difference between the ratings is primarily due to the debt's structure. Although both producers are highly leveraged, Hawkeye's capital structure includes a 24% equity layer compared with zero equity at Aventine. Aventine may have been purchased under distressed conditions and the accounting convention could skew the capital structure. However, the lack of an equity layer detracts from Aventine's credit quality because the sponsors have less incentive to manage the project through difficult times because they have already recouped their original investment.

Aventine's debt structure adds significant credit risk compared with Hawkeye's. The table illustrates some of the key differences in structure.

Standard & Poor's concludes that the default risk for Hawkeye is lower than for Aventine. For liquidity needs, Hawkeye has a 12-month debt-service reserve that will be funded at closing and a $10 million working capital facility. Hawkeye is also required to trap cash at the project level until year-end 2006, which amounts to more than $30 million under the base case forecast. To distribute this cash, Hawkeye must meet the following test: For each 12-month period the debt coverage ratio must be equal to or greater than 1.2x. The test looks back 12 months and forward 12 months. In contrast, Aventine has no debt-service reserve and does not trap cash unless the fixed-charge coverage ratio falls below 2x. To meet liquidity needs, Aventine does have a $60 million working capital revolving credit facility, but it expires in December 2008, three years before the bonds mature. Also, the availability of the revolving credit facility is limited by the borrowing base, which is determined by the value of receivables and inventory. The revolver's availability declines in a low-ethanol price scenario because of the corresponding decline in the borrowing base. Therefore, less of the revolver is available when the company needs liquidity most.

In addition, Hawkeye's refinancing risk is significantly lower than Aventine's. Although the bond maturities of both producers each extend beyond the ethanol tax subsidy's expiry in 2010, the Hawkeye debt includes an amortization structure that greatly reduces refinancing risk, but does not significantly increase default risk. To minimize default risk, Hawkeye is only required to amortize 1% of outstanding principal per year. However, Hawkeye's debt covenants include a cash sweep that requires the project to use at least 40% of the excess cash flow to pay down senior debt. The project must also meet an annual schedule for outstanding senior debt, paying down a minimum of about $25 million per year. If the 40% cash sweep does not bring debt levels down to the scheduled amount, up to 100% of excess cash must be used to pay down debt. Aventine's debt is structured as a bullet maturity, and any amortization of principal is at the Aventine management's discretion. Under some scenarios, Hawkeye debt could be fully amortized before maturity, but Aventine bondholders face the risk of refinancing the entire debt amount in 2011, in an uncertain commodity and regulatory environment.

In addition, Hawkeye's ability to add additional debt is more severely limited than that of Aventine. Hawkeye can add up to $10 million of debt—$5 million for capital purchases and $5 million for capital leases of rail cars or related equipment. Aventine can add debt as long as it maintains an EBITDA interest coverage ratio of 2x.

Hawkeye's collateral position is superior to Aventine's. Hawkeye's security package

Debt Structure Comparison

	Aventine	Hawkeye
Ethanol capacity (mmgpy)	170	180
Senior debt (mil. $)	160	185
Maturity	December 2011	January 2012
Collateral	Varies	Asset pledge
Required amortization	None	1% per year
Cash sweep	None	40%-100% of available cash
Debt service reserve	None	12 months
Cash trap	None	Cash trapped until 2007
Working capital revolver (mil. $)	60	10

Mmgpy—Million gallons per year.

includes a first-priority lien on all of the plants' assets, a pledge of the ownership interests, and an assignment of all project contracts, revenues, and deposit accounts. The collateral for Aventine includes a first lien on the Pekin plant and equipment, the escrow account, and a second lien on all other assets. Aventine's security package lacks a lien on the Nebraska facility or a guarantee by the Nebraska subsidiary because it is not 100% owned. Lenders to Hawkeye are potentially subordinate to the $10 million working-capital facility, while lenders to Aventine are potentially subordinate to the $60 million working-capital facility and could receive significantly less recovery under a default scenario.

Construction

Although Hawkeye must build two plants, compared with Aventine's single plant, construction risk is somewhat lower for Hawkeye. Hawkeye has fixed-price, date-certain, and turnkey engineering-procurement-construction (EPC) contracts with Fagen Inc. for the Iowa Falls expansion and the Fairbank plant. The EPC contracts include adequate performance/delay liquidated damages and performance bond-backed construction. In addition, an independent engineer has assessed the projects' technical risk. At financial closing, Fagen will deliver a performance bond and a payment bond to Hawkeye, each in the amount of the contract price, subject to increase due to change orders. In contrast, Aventine's expansion project does not yet have an EPC contract, site plan, or permits. Funds for construction are escrowed until construction begins and a portion of the bonds must be redeemed if construction does not start by March 2006.

Legal Structure

Hawkeye's legal structure adds some level of credit support to the rating compared with Aventine. Hawkeye's special-purpose entity structure provides lenders with a sufficiently bankruptcy-remote structure to warrant separating Hawkeye's debt rating from that of its unrated majority owner, Whitney & Co. LLC. Whitney owns about 58% of Hawkeye Holdings LLC (including the general partnership interest), which owns 100% of Hawkeye Renewables. Hawkeye Holdings is intended to be a passive vehicle and cannot embark on other substantial businesses. The decision to add debt to Hawkeye Holdings is subject to a ratings affirmation for the debt at Hawkeye Renewables. The structure meets Standard & Poor's criteria for bankruptcy-remote entities.

Although Aventine is not structured as a special-purpose entity, the risk of consolidation into a potential bankruptcy of its corporate parent, Morgan Stanley (A+/Positive/A-1) is negligible because of the parent's strong rating. However, Aventine can pursue expansion into similar businesses at management's discretion.

Conclusion

Debt structure can significantly affect an ethanol producer's rating. Aventine and Hawkeye illustrate how two ethanol producers with similar business risk profiles and debt levels can have significantly different credit ratings. The project finance structure, which has proven itself empirically over time, can add significant benefits toward an entity's creditworthiness. However, while structural provisions can mitigate some risks, structure alone cannot overcome the inherent risks of the volatile ethanol industry and ratings for well-structured deals will likely fall into the 'B' category. ■

A Global Survey Of PPPs: New Legislation Sets Context For Growth

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Since public-private partnership (PPP) projects—including private finance initiative (PFIs)—were introduced in the U.K. in 1992, their number has risen steadily to about 700 to date. Despite this success, the spread of PPP projects outside the U.K. has so far been slower than many market participants had hoped. This slow progress in the past has often related to deficiencies in legal and institutional frameworks in various countries, and also to questions about whether value for money is being provided in the PPP format. But with many countries now initiating legislative changes and developing institutions to encourage PPP, can we now expect a surge in these transactions elsewhere in the world?

The entry of new countries to the EU, fiscal constraints being felt by EU member countries, and the considerable research that many countries have already undertaken into implementing the concept, bode favorably for PPPs. While the level of activity in 2004 remained below expectations, Standard & Poor's Ratings Services still expects the PPP concept to take root outside the U.K., given the strong deal flow in the pipeline for countries such as Spain, Portugal, Italy, and Germany. Outside Europe, PPP transactions are also closing in Australia, Canada, South America, and Asia. This global survey highlights the main developments in different regions.

Background

Standard & Poor's definition of a PPP is any medium-to-long-term relationship between the public and private sectors, involving the sharing of risks and rewards of multisector skills, expertise, and finance to deliver desired policy outcomes. PFI is a subset of PPP that typically involves concessions, or franchises, of public sector assets contracted with the private sector to provide long-term services. PFIs can take advantage of private sector management skills, incentivized by having private finance at risk. Standard & Poor's refers to both PFI and PPP transactions as PPPs, unless otherwise indicated.

When determining the rating on a PPP project, Standard & Poor's generally evaluates construction risk, operational activities, and demand issues. It also applies its project finance methodology, as PPP is a subset of project finance. Other considerations include the credit quality of the offtaker; the type of service provided; operator experience; the existence of alternative operators; and the risk of payment loss or reduced cash flow available for servicing debt due to volume risk, performance deductions, or unexpected costs. Some PFI projects may involve close interface with core public services, contain more intensively used assets, or, in some cases such as road projects, be exposed to direct volume risks.

Global PFI Rollout

The U.K. continues to be at the center of global PFI development, as is demonstrated by a substantial list of completed assets and a significant number of future projects in the pipeline. Other countries have also adopted PFI-like methodologies, with local variations.

Commonwealth countries such as Australia and Canada have developed a local framework through drawing on the U.K.'s experience. European neighbors have also adopted techniques and learned lessons relevant to the rollout of PFI transactions in their countries. After facing problems in their earlier attempts to introduce private investment in infrastructure in the 1990s, a more mature approach to PPP is now being seen in some emerging economies in Latin America and Asia, bringing a greater hope of success.

A recently published EU Green Paper on PPPs indicates that interest in PPPs is increasing on a supranational level. The Green Paper discusses how EC rules on concessions apply to PPP contracts, and seeks to ensure that operators within the EU are not prevented from gaining access to the different types of PPP. This may be the first step toward the creation of a unified approach to PPPs in the EU, but its proposals are still in the discussion

phase. An EU-wide approach is also visible in the recent proposal by the European Commission to guarantee part of the debt of priority cross-border transport infrastructure projects and stimulate private investment in Trans-European Network projects. If the guarantee were called, it would rank subordinated to senior debt but senior to equity.

While budgetary constraints of governments have been touted as the rationale for PPP in Europe and elsewhere, the value-for-money aspects and long-term benefits, in terms of increased operational efficiencies and greater discipline, are increasingly acknowledged and explicitly taken into consideration when assessing a potential project. Furthermore, a report by the U.K. Treasury has noted that almost 60% of PFIs appear on the government's balance sheet, which contradicts the notion that PFI is being driven by fiscal considerations to keep debt off the balance sheet.

In most countries, PPPs still amount to a small percentage of general government revenues, expenditures, debt, and contingent liabilities. Consequently, Standard & Poor's does not expect PPPs to affect sovereign ratings over the short term. Should PPPs grow relative to the general government sector, however, analytical focus will shift accordingly. Many PPPs are already included in government accounts, and scrutiny of leases and other debt-like financial commitments will intensify. Furthermore, examination of off-budget PPPs will become progressively more important.

PPPs Increasingly Used Throughout Italy

Private participation in the financing of public infrastructure projects has been used in Italy for some time now, but the overhaul of the legal framework for PPPs in Italy in 2002 has prompted further development of these financing schemes. Key development areas are still the traditional road and rail infrastructure. In addition, and thanks to the legal provisions of 2002, project finance is increasingly being used for the financing of health care projects and other assets such as parking lots and sport complexes.

A tight budgetary framework should continue to sustain the development of PPPs in Italy. The central government is actively backing project financing, through its dedicated arm, the Project Finance Unit. Also, in 2003, the Italian government created Infrastrutture Spa (ISPA), a company set up specifically to finance large infrastructure projects. Already working actively, ISPA has raised money to finance the construction of the Italian high-speed railway network through a €25 billion ($32 billion) funding program ultimately backed by the Italian state. ISPA is also actively advising on PPP developments in other sectors such as transportation, water, environment, and accommodation. Finally, the state-owned financial institution Casa Depossiti Prestiti was transformed into a limited liability company at the end of 2003, and was mandated by the Italian government to fund local infrastructure projects that were potentially self-supporting. Some regions, such as Lombardy (AA-/Stable/—), Veneto, and Campania (A-/Stable/—), have also developed their regional PPP units to promote project financing in their respective regions. Lombardy has recently established its own Infastrutture Lombarda Spa to fund PPP projects in the region.

Thanks to these efforts, some of the larger road and railway projects are expected to be financed under project finance schemes, including the Messina Bridge, the large subway extensions of Milan and Rome, and several toll roads between the North and South of the country. Regional governments are also financing a good share of their health care infrastructure programs through PPP schemes. Most of the projects, however, are still on the programming or tendering phase, due to delays and authorization hurdles. For example, the first project-financed toll road—the €860 million Brebemi highway project (in Lombardy)—was awarded in 2003, but has not actually begun yet due to €380 million of extra costs arising from route changes, which were required by public bodies after the tender closed.

Funding for these projects comes primarily from banks. One reason for this is the unpredictable delays that often occur between the award of the concession and the financial close, which makes the use of financial markets difficult. Delays in the sign off of operation contracts are also common. From a creditworthiness standpoint, these are aspects that add risk to the transactions.

The payment mechanism for PPPs in Italy has to include a variable component, even

for social infrastructure projects. The larger the variable share of the payments, the riskier the project. For example, in the case of a hospital project, part of the payments can be based on occupancy levels in the hospital, which significantly increases the risks. This is mitigated to an extent, however, by the common practice of having an element of fixed payments not subject to unavailability or performance deductions.

Legal Changes Support Spanish PPPs

PFI and PPPs have a long history in Spain, mainly in the toll road sector. However, the new concessions legislation that was introduced in 2003 allows for the delivery of a broader type of public-infrastructure service through PPPs. Thus PPP activity in Spain is expanding now into new sectors such as health care (hospitals) and government buildings. Standard & Poor's views the legislative framework for concession projects in Spain as supportive. Although contracts are not as detailed as in the U.K., the system has been sufficiently tested and works well. Termination provisions are robust but could prove insufficient to cover all debt in some cases. In any case, termination is a rare event in Spain, and parties usually negotiate to avoid termination.

In the toll road sector, 2004 was a breakthrough year as Autovia de los Viñedos ('AAA' senior secured debt rating insured by XL Capital Assurance (U.K.) Ltd. (AAA/Stable/—)), a shadow toll road in the Autonomous Community of Castilla la Mancha, issued the first ever project toll road bond in Spain, thereby opening up the capital markets to these projects. The capital markets, which offer maturities of up to 30 years, could provide an alternative for refinancing toll road concessions initially financed via shorter-tenor bank loans in the early 1990s.

In January 2005, the Spanish Public Works Ministry (Ministerio de Fomento) presented the draft of an ambitious infrastructure and transport plan for 2005-2020 (Plan Estrategico de Infraestructuras y Transporte, PEIT), which forecasts investments for €241 billion over the 15-year period and expects higher participation from the private sector than in the 2000-2010 infrastructure plan. The rail sector has the largest share within this plan, representing 48% of the total investment, while the road sector occupies second place with 26.8%. While the road sector benefited from large investments in the past, much is still needed to achieve the government's target of an integrated road network. Private participation will vary depending on the sector: the government expects the largest involvement of the private sector in airports and ports, financing 98% and 90% of the total bill, respectively; the rail industry is expected to receive about 18% private sector finance; and roads are set to receive 25%. The government's road plan will be coordinated with the infrastructure plans of each autonomous community. The autonomous communities are very active—especially Galicia (AA-/Stable/A-1+), Valencia (AA-/Stable/A-1+), and Catalonia (AA/Stable/—)—in tendering their roads programs under a PPP scheme.

Similar to Italy, budget constraints at the national and regional levels, coupled with recent legal developments that are supportive to lenders, have paved the way for a development of PPP schemes in the social infrastructure area. The most important project launched to date is a €250 million hospital in the Autonomous Community of Madrid (AA/Positive/A-1+), which has been awarded recently and will be bank financed. The concession contract for this first hospital tendered includes construction and the management of noncore services, similar to the U.K. PFI projects. Payments are mostly availability-based, but also include a fixed component and a small degree of volume risk. Under its 2003-2007 plan, the region will tender out another nine hospitals for a total investment of more than €500 million.

Additional health care projects are being planned in other regions. In the next few years, we may also see schools developing as a new asset class for project financing in Spain. Given that both health care and education are responsibilities of regional governments, we are likely to see a common approach to risk sharing and concession-contract provisions.

Portuguese PPPs Awaits Clarity On Shadow-Toll-Road Program

Portugal started a road program of 17 concessions (shadow toll roads) 10 years ago, the first initiative of private financing in public

infrastructure. More recently, in 2002, the government announced a health care program to finance the construction and operation of hospitals through private sources.

The Portuguese government passed a PPP Law in August 2003 aimed primarily at ensuring better coordination of the government's approach to PPP across various sectors and between various ministries, whilst ensuring value for money. The law imposes specific requirements to ensure that PPP-based projects are approved only if they involve a significant and effective transfer of risk. It is intended to complement already existing sector legislation (for example, for the shadow toll roads, and the 2002 legislation concerning hospital concessions in the health care sector). Overall, the legal framework is well structured, with a clear process and rules for specific sectors.

The change of administration, following the elections in February 2005, has postponed the resolution of the issue surrounding the shadow-toll-road (SCUT) program. On Sept. 30, 2004, the government of Portugal announced that before long it would stop paying shadow tolls under long-term concession agreements and move toward payment of real tolls by users. At that time, Standard & Poor's issued a commentary on the serious repercussions this measure could have for the operators of the concessions and their credit quality (see "Out of The Shadows: Portugal Shifts to User-Paid Tolls", published on Oct. 11, 2004, on RatingsDirect). The previous administration expected to have a solution by the end of 2004; however, the change of administration has delayed a sustainable solution to the SCUT program.

The transformation of the Roads Institute (Instituto das Estradas de Portugal) into a public company (Entidade publica empresarial) under the name of Estradas de Portugal (EP) by decree-law No.239, of Dec. 21, 2004, opens the possibility of this entity playing an important role in the resolution of the SCUT program issue. According to the decree-law, EP, which is a 100%-government-owned entity, is responsible for the planning, management, and execution of the road infrastructure policies set in the National Road Infrastructure Plan. To reach its objectives, the decree-law states that EP can have shareholdings in other companies. The decree-law also establishes that EP represents the state as the roads national authority in relation to road infrastructure, concessioned or otherwise. While the new administration gave some indications that not all roads in the program will be moved to real tolls systems, clarity is awaited on the mechanism that will be implemented to renegotiate the current concession agreements and compensate the concessionaires.

The road model is a classic design, build, finance, and operate (DBFO) model. The health care model is also DBFO, including the provision of clinical services, which, from a creditworthiness perspective, adds risks to the project. Two hospitals (Loures and Cascais) are out for tender. In the Portuguese health care model, bidders are required to propose two SPVs, a hospital management company (clinco) and an infrastructure management company (infraco).

Infraco is responsible for designing, building, financing, and maintaining the hospital building. The services include provision of utilities, security, entrance control, and cleaning. Payments by the authority to Infraco are availability based.

Clinco provides clinical, laundry, food, waste-treatment, and equipment-maintenance services. Payments to Clinco are made against performance indicators such as waiting time, mortality, readmission, and patient satisfaction.

German PPPs Increasing Despite Setbacks

In Germany, PPPs are gaining momentum, driven by public budget constraints and the wish to realize efficiency gains. Although the volumes are still relatively small, in 2004 some transactions were awarded, especially in the States of North-Rhine Westphalia (AA-/Stable/A-1+) and Hesse (AA+/Stable/A-1+). Several projects have been contracted by local authorities and cover asset classes such as schools, prisons, hospitals, and administrative buildings. Two school projects, launched in the County of Offenbach, have been the largest PPP-style contracts at the regional and local government level to date. The district has tranched its schools projects into two packages: a €295 million share has been contracted to a subsidiary of Vinci S.A.

(BBB+/Stable/A-2), and €411 million have gone to Hochtief.

At the national level, the German government has recently launched a €488 million PPP project to design, build, and operate military helicopter training centers. The contract has been awarded to an industry consortium of CAE, the EADS subsidiary Eurocopter, Rheinmetall Defence Electronics GmbH, and Thales. A dark shadow over the small but positive progress in 2004 was the problems with the Toll Collect project, which introduced a national system for truck tolling. The system is still not providing the revenues as expected, due to evasion and people not paying. The technical problems at Toll Collect should provide a serious warning to other technology driven PPP proposals such as an IT project for the Ministry of Defence.

Many PPP projects are in the infant stage of project award or under construction. The most significant PPP initiative, the F-Model for new road infrastructure, has not been a full success story. Many scheduled F-projects did not take off at all and the one in operation, the Warnow Tunnel in Rostock, has only achieved 40% of projected traffic. The opening of the Herrentunnel in Lübeck later in 2005 may be more successful. The other PPP initiative, the A-model, which is focused on road widening, was stalled due to the problems at Toll Collect. The A-model is to be funded from the tolls collected by Toll Collect.

In February 2005, however, the Minister of Transport announced that five German highway expansion programs (Autobahn-Ausbau) would be tendered out as a PPPs. The expansion program relates to the following highways:

- A8 in the State of Bavaria (AAA/Stable/A-1+) (Augsburg West—München Allach);
- A4 in the State of Thuringia (AS Waltershausen—AS Herleshausen, sog. "Umfahrung Hörselberge");
- A1/A4 in the State of North Rhine-Westphalia (AA-/Stable/A-1+) (AS Düren—AK Köln Nord);
- A5 in the State of Baden-Wuerttemberg (AA+/Stable/A-1+) (AS Baden-Baden—AS Offenburg); and
- A1 in the State of Lower Saxony (—/—/A-1+) (AD Buchholz—AK Bremer Kreuz).

Private companies will be responsible for expanding, financing, and operating already existing sections of federal highways. The tender for the first model (A8) should kick off in March 2005, and the project in Thuringia is in the early planning stages according to the ministry. About 37 kilometers of the A8 between the Cities of Munich and Augsburg are up for expansion, with estimated costs of €230 million. The start of the construction for the A8 expansion to six from four lanes is expected in the second half of 2006, and completion is scheduled for 2010. The operator gets reimbursed via the toll, which is collected from the heavy trucks that use the expanded road section. In addition, the concessionaire receives start-up financing provided by the state, which acts as compensation for the light trucks and passenger cars, which also use the respective highway section.

PPPs In The Netherlands Make Small Steps Forward

Since the PPP contract for the Delfland wastewater treatment was signed in October 2002, only a few other PPPs have followed. The slow progress has been a result of the critical political environment and lengthy discussions about value for money. This is about to change, however. After the further success of the HSL-Zuid, the high-speed rail network operation, the first PPP road contract and a PPP contract for schools were awarded in 2004. In addition, the A59, a €218 million contract, was awarded to a preferred bidder in November 2004, while in December 2004, a €17 million design, build, finance, and maintain (DBFM) contract was signed for the Montaigne school. More importantly, the current government appears to have taken a more positive stance in 2005. A key improvement is that for all infrastructure projects worth more than €112.5 million, the value of a PPP will be tested (similarly for buildings from a level of €25 million). This is an important step, given the ongoing debate about perceived uneconomic government investments in the rail-cargo line to Germany (Betuwelijn). The government has signalled support for the second Coen-tunnel and the A4 and A2 roads to go through a PPP structure.

Legislation Marks PPP Progress In France

The provision of French public facilities or infrastructure was in the past delivered principally through public procurement contracts or service contracts known as "Délégation de Service Public" (DSP), a category that includes concession agreements. The public procurement code ("Code des Marchés Publics") and administrative law maintained a tight grip on procedures. However, under the "ordonnance" (edict) passed in June 2004, a new form of contractual relationship ("Contrat de Partenariat") was created between the public and private sectors. This allows for the classic DBFO project finance model with a private party or consortium, under which the contractor will be paid over time by the contracting public body. The contract legislation is also designed to improve security for those lenders with ownership rights over the assets involved. This codification will help facilitate project financing, including financing through the securitization of public sector revenues.

The new legislation, combined with budget constraints for local governments and requirements for improved efficiency, is expected to spur debt issuance in health care, transport, education, and other sectors. On the downside, however, restrictions on the use of PPP contracts determined by the Conseil d'Etat—the highest administrative court in France—may constrain the take-up of PPP projects. Moreover, a degree of political resistance still remains against the PPP concept in general. It could therefore take some time before large demand for such transactions emerges.

Overall, the central government estimates that some €19 billion of investment could be allocated to PPP projects in the next three years (including hospital transactions). Furthermore, many of the initial transactions are likely to be initiated at the central government level—such as the announcement by the Ministry of Justice of a €1.3 billion PPP program to build 18 new prisons. The Ministry of the Interior has issued a tender for 20 PPP projects to outsource construction and maintenance operations on its real estate portfolio (including police stations and residential housing).

(For more information on PPPs in France, see "New Legal Framework Set to Increase Public Private Partnership Momentum in France," published on Jan. 21, 2005, on RatingsDirect.)

Central And Eastern Europe Gearing Up For PPPs

Second-wave accession countries joining the expanded EU, and the newer EU members, are thinking actively about using PPP to fulfill large capital requirements for upgrading infrastructure and integrating it within the EU. In doing this, many countries are taking a systematic approach that involves making the appropriate policies and legislative changes to enable PPP provision, and conducting broad feasibility studies to decide on which projects are amenable to the PPP format for investment.

After extensive policy consultations, the Czech Republic has established PPP Centrum, a task force to support the public sector. A PPP Act, a new law that will amend the current public procurement legal framework, will facilitate the PPP process. In addition, the Slovakian government has conducted a feasibility study for its PPP program, which identified eight motorway sections for possible PPPs. The study has suggested the use of the DBFO model to procure the roads. Bulgaria, meanwhile, has reported making a national "fast-track" infrastructure plan that focuses on concession contracts and involves integrating the national railway infrastructure into the European intermodal transport. The Hungarian government has passed a bill allowing the state company in charge of roads maintenance and toll charging to act as a public counterparty for construction contracts for motorways. Not all the going is smooth, however, as was demonstrated when the newly elected Romanian government reported reconsidering PPP contracts awarded earlier.

Given that PPP initiatives have been driven by the imperative of physically integrating the economies of the accession countries into the EU, the majority of the proposed projects involve upgrading transport networks: roads, railways, and increasingly airports.

The road sector has been the most active. The Hungarian government is using PPPs for the development of its motorway system: in December 2004 the M6 project, a €470 million concession-based PPP motorway linking Budapest with the southern part of the country, reached financial close. In addition, debt

syndication to refinance the Hungarian M5 motorway phase 1, together with financing for phase 2, were completed. In Russia, the government has approved plans for the country's 20 toll roads, including a $6.2 billion highway between the Cities of Moscow (foreign currency BBB-/Stable/—) and St. Petersburg (BB+/Stable/—). This is the first time Russia is seeking private money for a major infrastructure deal. The Russian government will provide one-half of the funding, while the other one-half should be covered by private investors. Poland is also implementing significant road projects and utility-concession agreements.

There is also significant activity linked to the Trans European Networks (TENS) program, which aims to cut bottlenecks and promote the rail system as an alternative to road haulage across the expanded EU and into neighboring countries. The priority given to TENS rail projects is evident in the high level of European Investment Bank and European Bank for Reconstruction and Development (both rated foreign currency AAA/Stable/A-1+) funding being channeled into the sector.

Other projects in Central and Eastern Europe are under active consideration. For instance, the Czech Republic is considering its first PPP in the rail sector along with Austria. It is also considering the development of a 25 kilometer rail link between the center of the City of Prague (A-/Stable/A-2) and Ruzyne Airport for an estimated cost of €380 million. Prague is considering using PPP-financing for its Czech koruna 20 billion ring-road project. The Bulgarian government, meanwhile, has received bids for the concession for refurbishment and management of Varna and Burgas airports.

Standard & Poor's has recently reviewed and affirmed its 'BB+' long-term rating on the €210 million senior secured bonds due 2022, issued by Croatia-based road construction and operation company Bina-Istra, d.d. The rating reflects that project fundamentals have remained unchanged over the past year, despite delays to the start of subphases and a challenge to Bina-Istra's tax-exemption status. Construction is now progressing according to schedule, and financial performance has been better than the base case due to higher-than-forecast traffic revenues and cost savings.

Spencer Street PPP Tests Maturity Of Australian Market

Australian PPPs continue to move ahead. A road project worth at least A$1 billion ($766 million) comes along every couple of years, interspersed with A$100 million-A$300 million social infrastructure projects such as hospitals, schools, or prisons. Greater uptake and enthusiasm for the strategy have developed over the past 18 months or so, with a handful of large projects up and running or nearing completion.

So far, A$9 billion worth of PPPs has been contracted, and a further A$4 billion is up for grabs. Although PPP still constitutes a comparatively small share in total capital spending (annual state and commonwealth government capital spending is at A$15 billion), the concept continues to gain currency in Australia. The States of Victoria and New South Wales (both rated AAA/Stable/A-1+) lead the way; and only the Australian Capital Territory and the State of Queensland (again, both rated AAA/Stable/A-1+) have no project under way among the seven states and territories. However, without Queensland's wholehearted inclusion, the Australian PPP market may not gain the momentum needed to sustain itself. There is a perception that the Queensland government has gone cold on PPPs. The perception stems from rejection by government of a procession of PPP bidders to build the A$450 million Southbank TAFE, a tertiary education establishment.

The delay over Melbourne's Spencer Street station overhaul has brought attention to the real risks in PPP projects. The constructor's access to what continues to be a "working station" is restricted to the small hours, making the timely fulfillment of contractual obligations a challenge. Late delivery will incur penalties from the government, and ultimately could threaten debtholders. With the project likely to overrun on cost and time, contractor Leighton has set aside A$110 million to cover penalties.

The Spencer Street case has made it clear that governments are currently not willing to bend if contractors fail to meet requirements. Since Spencer Street, contractors are more cautious about the level of risk they are prepared to take on. Due to the problems that have been encountered, there will be a tendency for

contractors to cap their liability. This could leave a project SPV's equity and bondholders exposed to additional risk if any penalties incurred by the contractor breach that cap. This tendency may also push up bid costs.

A positive development is greater coordination among the state and Commonwealth governments on PPPs. Regular semiannual meetings will help standardize PPP contracts, addressing a common bugbear that contracts differ between states, and are therefore expensive to draw up. Another far-sighted initiative at these meetings will be to coordinate the timing of PPP projects throughout the country. With a limited pool of contractors able to provide the expertise and labor to build large-scale projects, and without the scale so far to entice foreign companies, there is a risk projects would be vying for the same resources.

PPPs have already brought tangible benefits to the Australian public. The road network has been improved by various projects: Melbourne's CityLink is operational (run by Transurban; 'A-/Stable' senior secured rating); and in Sydney, the Lane Cove Tunnel and West Sydney Orbital are near completion. Elsewhere there have been successes in building hospitals, courthouses, and schools. Governments and contractors' enthusiasm for these projects is still buoyant, but recent difficulties have brought a dose of reality to expectations.

The development of a secondary market for PPP equity illustrates the continued attraction of the sector. Another significant development of post-completion projects is refinancing of early bank-funded PPPs, which can catapult the sector into the forefront of the capital markets.

(For more on Australian PPPs, see "Australian Public-Private Partnerships: Succeeding, But Not Flourishing," published on March 22, 2004, on RatingsDirect.)

Provinces Drive PPP Projects in Canada

In Canada, after a lengthy developmental period in which a variety of obstacles slowed the progress of PPPs as a form of alternative public sector asset procurement, the signs of PPP traction appear to have taken hold in late 2004 and early 2005. By mid-March 2005, financial close was reached on hospital PPPs in the Provinces of British Columbia and Ontario (both rated AA/Stable/A-1+), while a preferred proponent had been selected on several large-scale projects in British Columbia and the Province of Alberta (AAA/Stable/A-1+).

To date, the majority of projects under PPP consideration are primarily focused on transportation and health care. Geographically, Alberta, Ontario, and British Columbia have been the more active supporters of the PPP framework for asset procurement. British Columbia, in particular, has been the more notable proponent of PPP asset procurement and has established Partnerships BC (similar to Partnerships U.K.) to assist in the evaluation of potential projects, including whether or not PPPs offer value for money to taxpayers.

Several large-scale projects in British Columbia, including the Richmond-Airport-Vancouver rapid transit project, which will link the Cities of Vancouver (AAA/Negative/—) and Richmond, and the Vancouver International Airport, as well as the Sea-to-Sky Highway project, which is a highway widening and rehabilitation project between North Vancouver and Whistler, have selected a preferred proponent consortium to undertake a DBFO concession.

In addition to the notable PPP movement in British Columbia, the Province of Quebec has announced the creation of an agency similar to Partnerships BC. The Quebec government appears committed to considering the use of alternative service delivery for the design-build and nonclinical service operation of two proposed research, teaching, and acute care hospitals in the City of Montreal (A+/Stable/—), as well as potential transportation projects.

Ontario's Ministry of Public Infrastructure Renewal appears to be increasingly committed to the use of alternative asset-procurement strategies to manage the province's infrastructure deficiency and to fund large-scale capital projects. For example, in December 2004 Ontario announced that the Durham Courthouse project in Oshawa, Ont., would be undertaken through a DBFO concession. The province's spring 2005-2006 budget might announce further strategic capital projects that could be undertaken through PPPs.

Finally, the federal government might also be willing to consider PPP asset procurement for capital projects, which would diversify the current list of PPP projects in Canada, which are primarily in health and transportation and at the provincial level. Potential PPP capital projects that might be considered, given the federal government's constitutional service-delivery responsibilities, could include defense, accommodation, and correctional facility assets.

In future, key trends to monitor would include the depth of the Canadian debt capital markets, as several large-scale projects are likely to seek long-term debt capital in the next 15 months, and the extent to which financial guaranty companies (monoline bond insurance firms such as Ambac Assurance Corp., MBIA Insurance Corp., and FSA Insurance Co. (all rated AAA/Stable/—), for example) might be permitted to operate in Canada under a license that must be granted by the Office of the Superintendent of Financial Institutions. In mature PPP markets, such as the U.K., strong competition and depth in the lending markets and among financial guaranty companies has provided solid support for the sector.

(For more information, see "Canadian Private-Public Partnerships Gaining Traction," published on March 14, 2005, on RatingsDirect.)

A New Lease Of Life For PPPs In Latin America

In Latin America, the initial impetus for PPP came from the toll road sector. The first wave of private investment in roads occurred during the 1990s; however, the severe economic crises that hit the region revealed some deficiencies in the concession mechanism, such as in Mexico in 1995. The second wave started at the end of the 1990s, and incorporated important lessons learned from those earlier projects that suffered setbacks: the use of more conservative and appropriate financial structures, and concession arrangements where the government does not seek to "recover" the asset in the shortest time possible. The second wave also saw the participation of experienced international toll-road builders and operators.

Initially, local banks financed the deals, but with inappropriately short tenors that would need a take-out with longer maturities. The local public debt markets in Chile and Mexico later emerged as a financing option, taking different approaches: the Chilean market opted for financing toll road projects under a guarantee provided by international monoline insurers, while the Mexican market accepted a stand-alone risk. Using local debt eliminates the risk of a severe currency devaluation rendering a project uneconomical. Standard & Poor's has rated more than 20 toll roads in these countries. Most of the project sponsors tend to structure projects to the lowest investment-grade category (BBB) to maximize leverage and return on equity.

PPP continues to gather pace in Latin America. The spread of its popularity is shown by the recent federal PPP Law in Brazil, which incorporates a number of amendments to facilitate investment. Brazil has put together a list of 23 priority projects to be progressed as PPPs in 2005. These include roads, railways, ports, and irrigation projects. Chile has recently awarded the contract for its longest bridge, to be built on a PPP basis under a 30-year concession at a cost of about €400 million.

(For more on Latin American PPPs, see "A Second Wave for Latin American Toll Road Financing," published on Sept. 29, 2004, on RatingsDirect.)

Asia Making A Start

In Japan, PPPs have only very recently emerged as a means to manage cultural, educational, or public-use properties, and Standard & Poor's has yet to publish ratings on such projects. These PPPs primarily aim toward streamlining managerial and operational functions, so they do not generally have major financing needs. Legal and regulatory changes in fiscal 2003 accelerated the establishment of PPPs, as an alternative to the longstanding practice of public services being directly provided by highly centralized and regulated administrations. A year after the legal change, there are now an estimated 450 PPPs in Japan, and their numbers are growing.

Whereas PPPs in Japan are normally identified with projects requiring small financing needs, PFIs tends to be identified as more financing-oriented PPPs in the Japanese

market. About four years have passed since PFIs were introduced into the market under the new legal institutionalization, and about 160 such large financing-associated PPPs have been operated or planned so far. A few PFIs have been rated, but most are carried out between relevant parties without the use of ratings. As local and regional governments in Japan continue to amass debt, PPPs and PFIs will begin to fill more significant roles in the public sector.

Besides developed markets, the momentum for PPPs seems to be picking up in emerging Asian economies such as China and India. In India, a significant part of the NHDP program for developing 13,000 kilometers of roads is already being implemented through the PPP route, and bids have been called for upgrading the airports of Delhi and Mumbai; railways could be next on the PPP agenda. China already has a long history of PPP investment, and continues to expand the role of private capital in the infrastructure sector. The MTRC has recently signed an agreement to build and run an underground railway in the City of Beijing. ■

High Recovery Prospects For Spanish Infrastructure Concessions

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Termination payments are a key feature of expected loss given default (or recovery) for infrastructure concession financing in Spain. Such payments are required of contracting authorities when a concession is terminated early and will likely be favorable in terms of recovery prospects for secured investors in Spanish concession-based projects, in the view of Standard & Poor's Ratings Services.

In this commentary, we focus on the obligation of the contracting authority to make a termination payment and discuss the factors that we will consider in our recovery analysis when assigning recovery ratings to Spanish concession projects.

The Benefits Of Termination Payments

Termination payments could allow for 100% recovery of the outstanding principal, and therefore the project's debt could achieve high ratings on our recovery rating scale. For more information on recovery ratings, see sidebar below. The recovery rating will, however, depend on:

- The sponsor's equity in the project (originally destined to finance part of the total investment carried out);
- The default scenario; and
- The moment when the default occurs (in a predefined default scenario) and the project's debt amortization profile.

Although recovery prospects are generally high for Spanish concessions, each one will have to be analyzed individually.

In the future, Standard & Poor's will assign a recovery rating to all project finance, public-private partnership, and private finance initiative transactions, and we consider that the termination payment will be an important factor when assigning recovery ratings to Spanish concessions. Concessions were incorporated into the Public Administration Contracts Law (PACL) by Law 13/2003. Law 13/2003 is intended to provide a clearer framework for concession-based projects tendered after it came into effect in August 2003. Standard & Poor's has already commented on the positive implications of Law 13/2003 for the private financing of infrastructure in Spain (see "Concessions in Spain Set to Gain From New Law", published on RatingsDirect, Oct. 30, 2003).

The Rules On Early Termination Payment Obligations

The obligation of the contracting authority to make a termination payment to the concessionaire in the case of early termination, known as the Responsabilidad Patrimonial de la Administración (RPA), is set out in clause 266 of the PACL, which was introduced by Law 13/2003. The RPA already existed for toll road concessions, and the obligation on the contracting authority to make a payment in case of early termination of a concession was broadly included in the PACL before it was modified. The modifications introduced by Law 13/2003 set out the obligation of the contracting authority to make the termination payment and extend it to all type of concessions, for example hospitals and prisons.

In summary, the obligation to make the termination payment is applicable to all concessions tendered after the law came into effect in August 2003, no matter who the contracting authority is or the cause of early termination. The amount of the termination payment, however, will vary depending on the termination scenario (see below) and the specific clauses regarding the termination payment included in the tender documents or the concession contract.

For concessions granted before August 2003, Standard & Poor's will have to consider the law applicable at the time the concession was granted. It will also examine the specific clauses regarding termination payments included in the concession contract.

Key issues relevant to the assessment of termination payments under the PACL include:

- Factors that will trigger a right to early termination by the contracting parties;

- How the termination amount is calculated, and factors that might affect that calculation;
- The administrative process for payment and when the termination amount is paid; and
- Implications for the recovery analysis.

Overall Standard & Poor's sees the following key positives for recovery prospects under the new law:

- A payment obligation arises notwithstanding the reason for termination, and
- There are good prospects for full recovery of senior debt.

At the same time, we also perceive the following negatives:

- The law is vague about how much will be deducted for damages, and
- There is no quick process for lenders to appeal the calculation of the RPA.

Factors That Trigger The Right To Early Termination Payments

One of the positive features of the RPA from the recovery perspective is that the obligation to pay arises on early termination no matter what the reason for termination: it is not confined to the contracting authority's fault or action. Consequently, the obligation to pay arises if there is early termination due to either party's breach of, or noncompliance with, its contractual obligations or where the concessionaire becomes insolvent. Nevertheless, the question of which party caused the early termination remains relevant because the calculation of the amount of the termination payment differs in each case.

How Is The Termination Payment Calculated?

The starting point

The PACL provides the general rule for assessing the termination amount payable: where there is early termination of the concession, the contracting authority must pay the concessionaire the amount of the investments made by the concessionaire for:

- The acquisition of expropriated land;
- The construction works carried out (cost overruns will be excluded unless there are additional construction costs resulting from changes requested or approved by the administration); and
- The assets acquired to operate the concession.

When determining the value of the assets acquired for operation, depreciation will be factored in (accounting depreciation). Any other provisions related to the asset value contained in the concession's economic and financial plan, and approved by the administration at the start of the concession, will also be included.

This is the general rule, but the tender documents and the concession contract could contain more specific or detailed clauses regarding the items to be included in the calculation of the RPA. This is also applicable to tenders of

Recovery Ratings For Project Finance Transactions

In May 2004, Standard & Poor's launched its Recovery Rating Scale in Europe (see "European Recovery Rating Scale Methodology", published on May 6, 2004, on RatingsDirect). In April 2005, Standard & Poor's published its methodology for assigning recovery ratings to project finance loans (see "Recovery Ratings For Project Finance Transactions", published on April 8, 2005, on RatingsDirect).

Recovery ratings do not blend default risk and recovery given default, as conventional issue ratings do. Rather, they express an opinion of an issue's recovery prospects. Standard & Poor's recovery rating uses a numerical scale with 1+ and 1, the two highest rankings, denoting different levels of likelihood that an issue will fully recover principal in the event of default. Recovery ratings below that, 2 through 5, denote progressively lower levels of expected principal recovery.

Issue-specific recovery ratings are increasingly important for project lenders, monoline insurers, and borrowers because they help quantify a project's loss given default. Loss given default is an important component for calculating bank capital requirements (for bank lenders), capital charges (for monolines), market liquidity, and loan pricing.

Recovery ratings are especially suitable to project finance because project finance lending generally provides lenders with full security.

local or regional governments. The concession contract for the unrated Sant Martí-Besos light railway, for example, states that the payment will have to cover the amounts invested by the concessionaire in rolling stock and facilities, financial expenses, and all the expenses that might be necessary to settle the financing at the time of termination. The contracting authority in this concession is the Metropolitan Transport Authority of Barcelona.

Potential additions to or deductions from the base amount

A number of factors have to be considered in the calculation of the termination amount. These include:

Whether the concession was terminated by an act of the contracting authority or the contracting authority's default on its contractual obligations. In this case, in addition to the termination payment, the contracting authority must make an indemnity payment to the concessionaire for future earnings lost due to the early termination and the depreciation of the concession's assets that will not revert to the administration. In the calculation of the loss of future earnings, the law indicates that, when possible, the earnings from the last five years should be taken into consideration. The law does not, however, provide any guidelines on how the indemnity payment would be calculated where there are not five years of historical earnings.

Whether the concession was terminated due to the concessionaire's default of its contractual obligations or the concessionaire entering into insolvency proceedings. In these cases, the contracting authority must still make the termination payment. At the same time, the concessionaire might be required to compensate the contracting authority for damages suffered due to the early termination. Alternatively, the contracting authority could deduct these compensation payments from the termination payment amount.

One weakness of the law is that its language regarding any deductions for damages is very broad and vague. The contracting authority will, however, have to demonstrate the actual damages suffered in order to be entitled to compensation. This reduces the risk of potentially arbitrary deductions.

We understand that deductions can be expected for circumstances including: physical damage to property (due to lack of maintenance); damage to third parties (this risk, however, should be covered by the concessionaire's insurance); and the costs of a new tendering of the concession.

Standard & Poor's will have to estimate the deductions applicable to the termination payment. This is due to the lack of precedents for early termination of concessions in Spain.

The Administrative Process For Payment

The contracting authority, a public entity, has the ultimate responsibility and decision-making power regarding calculation of the RPA. In general, this calculation should not be subject to much controversy because the contracting authority has to document it. Furthermore, the concession's economic and financial plan offers a good reference point.

The general rule, according to clause 266 of the PCAL, is that the granting authority has six months to close the administrative procedure to terminate a concession and calculate the RPA, together with the damages it has suffered, if any. Within this time, it is

Standard & Poor's Recovery Rating Definitions

Recovery rating	Recovery expectations	Indicative recovery expectations
1+	Highest expectation of full recovery of principal	100% of principal
1	High expectation of full recovery of principal	100% of principal
2	Substantial recovery of principal	80%-100% of principal
3	Meaningful recovery of principal	50%-80% of principal
4	Marginal recovery of principal	25%-50% of principal
5	Negligible recovery of principal	0%-25% of principal

also the responsibility of the granting authority to make an expenditure credit available within its budget. The different budget laws affecting each level of government all have enough procedural flexibility to allow the expenditure credit to be approved within the six months.

The terms of a given concession agreement can make explicit reference to the timing for calculation of the termination payment and reduce it to less that the general provision of six months. The terms cannot extend the period.

The administration is obliged to make the termination payment three months after the administrative procedure has been closed and the final amount fixed. If it does not, it will have to pay interest on the amount due. This obligation to pay is unconditional, in the sense that there is no instance in which the administration can refuse to pay. This payment is subject to budget laws, however, like any other payment made by a public administration. Consequently, the calculation and payment process should take no more than nine months.

Insolvency moratorium

Under Spanish law, the insolvency of a debtor results in a moratorium on all claims against the debtor for a maximum period of one year. During this time, creditors (including secured creditors) cannot take legal action to enforce payment of their claims or to enforce their security (see "A Report On Security And Insolvency In The Spanish Leveraged Finance Market", published on June 9, 2005, on RatingsDirect).

Where a concession has been terminated early due to debtor insolvency, it is not clear whether creditors who have security over the termination payment would be barred, as a result of this insolvency rule, from taking steps to collect the termination payment until the end of the moratorium. This is not addressed in the concession legislation or elsewhere as far as we are aware. It could be argued that the payment from the contracting authority is not an asset used for the company's ongoing operations and therefore should not be affected by the insolvency moratorium. Nevertheless, in the absence of any precedents or jurisprudence on this matter, we believe that it is prudent to assume that the termination payment will not be made within the moratorium period (i.e. for a maximum of one year).

The Recovery Rating Methodology Applied To The RPA

Owing to the factors discussed above, when assigning a recovery rating to a concession in Spain, Standard & Poor's will follow the procedure outlined below.

Defining the most likely default scenario

In light of the long history of concessions in Spain, and the support for them demonstrated by all levels of government during that time, the likelihood that an administration would willfully act to cause the default of a concession is assumed by Standard & Poor's to be low. The most likely default scenario is therefore default by the concessionaire.

Although the default scenario will have to be defined specifically for every concession, these scenarios can nevertheless be grouped under various headings: vulnerability to declines in counterparty credit quality; competitive exposure such as traffic risk for toll road concessions; exposure to weak parents or sponsors; construction and technology risk; structural weaknesses; and poor financial and operational performance.

When running default scenarios, Standard & Poor's will evaluate whether the concessionaire's insolvency could give rise to damages that can be claimed by the contracting authority. We will therefore estimate the amount that the concessionaire will have to pay the administration or that the administration could net from the termination payments. The insolvency of a toll road concessionaire, for example, could result in low maintenance of the road. The administration could therefore require the concessionaire to pay the amounts necessary to carry out the maintenance or directly deduct this amount from the termination payment due.

For concessions where payment is based on availability only, operational risk tends to be low once construction is over. This is reinforced by the generally very lenient penalty regime. Nevertheless, given the high leverage and minimum coverage levels of most concession-based projects, small changes in assumptions can cause large

effects. Key risks that will be considered in a default scenario will include assumptions of cost determination, the concessionaire's ability to maintain high availability, and external factors that could cause a default. If there is some volume risk, in a Madrid hospital for example, that risk would be significantly mitigated by the high occupancy levels in all Madrid public hospitals and the growing population in the catchment areas. In some cases, the concessionaire takes on the risk of cost escalation. This would also need to be scrutinized.

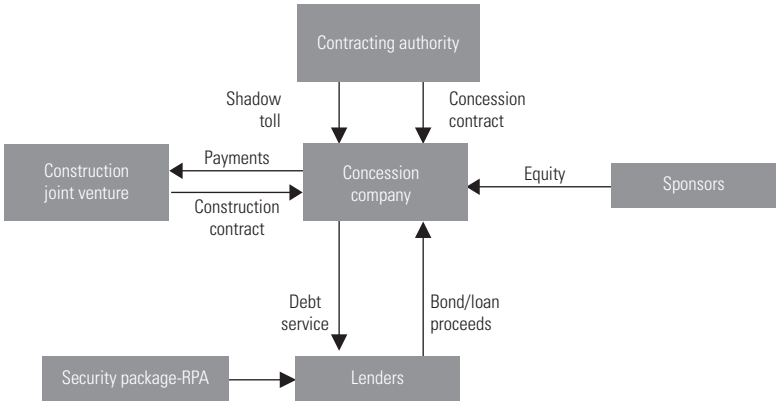
Calculating the termination payment amount

From the information available in the concession's economic and financial plan, we obtain the net value of the assets at the time of the estimated default, the amount of expropriations paid, and any other amounts that have to be included in the termination payment under the concession contract.

Determining possible deductions

We analyze whether, in the default scenario assumed, the administration could request indemnity payments for damages. If so, we estimate the amount of payments for damages due by the concessionaire to the contracting authority. The garantia definitivia given by the concessionaire to the contracting authority will be used to offset any indemnity payments. If these payments exceed the amount of the guarantee, however, the excess amount will be deducted from the termination payment.

Project Finance Structure



Evaluating the contracting authority's ability to pay the RPA

The creditworthiness of the key contracting authorities in Spain is solid in general. Autonomous Communities, government-owned entities, and municipalities will grant most of the concessions. Standard & Poor's rates 10 Autonomous Communities and five local entities (provinces and municipalities). These are all investment grade, and the ratings range from 'AA+' to 'A'. The credit quality of the granting authority is therefore unlikely to be a constraint on the recovery rating. The rated entities are, however, the largest regional and local authorities in Spain. The creditworthiness of small public authorities can be less robust and Standard & Poor's will analyze their ability to pay case by case.

Determining the amount of outstanding debt

From the economic and financial plan, we determine the outstanding debt at the time of default.

Determining the amount of principal to be recovered from the termination payment

The termination payment may not be sufficient to recover 100% of principal. This situation may occur where the concessionaire has to make a payment for damages to the contracting authority. It would depend on the estimated indemnity amount, the amount of the outstanding guarantee given to the contracting authority, and the amount of debt outstanding at the time of the estimated default.

Project finance focuses on a special-purpose entity (SPE) whose capital structure is created for the purpose of constructing, financing, and operating the project facility. The assets of the SPE and its ownership interest are pledged to lenders. The SPE has a single business purpose, is limited in the amount of debt it can issue, and has various other restrictions imposed on it as a condition of its borrowing. In return, lenders agree to look solely to the project's cash flow and assets for satisfaction of their debt. These facts make project financing eminently suitable for recovery analysis. A structure diagram for a typical project financing is shown above.

When assigning a recovery rating to a concession project loan, Standard & Poor's will analyze the project's default risk and analyze whether cash from the project after default—whether derived from operations, asset sale, or, as in the case addressed by this article, a termination payment from the contracting authority—is sufficient to repay lenders' principal. There is no link between default risk and the recovery rating. It is not impossible for a low probability of default to coexist with low recovery after default.

Nevertheless, the circumstances of a potential default are relevant to the recovery rating. Understanding the default scenario is part of every analysis.

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U.S. Convention And Conference Center Hotel Credit Rating Methodology

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The rating of a conference and convention center hotel is a complex exercise involving an integrated analysis of business risk, financial risk, construction risk, legal structure, and governmental support. As cities have spent more money on such facilities and competition has increased, the level of government support necessary to ensure investment-grade ratings has also increased. Standard & Poor's will continue to monitor existing projects and revise the methodology as necessary as the market develops.

Over the past decade, the number of cities expanding their convention centers has grown as they look to maintain or stimulate economic development. Along with this trend has been a desire by operators of convention-center facilities for an anchor hotel to provide better amenities and meet travelers' needs. More recently, several of these headquarter hotels have been financed through public-private partnerships involving developers, hotel operators, and sponsoring municipal governments. Because of restrictive financial structures, above-average capital costs, and variability in the revenue stream, private capital for these projects has become more difficult to obtain. In addition, many cities have found in recent years that the hoped-for economic development from building or enhancing convention and conference center properties has not materialized, as supply has grown and demand has dwindled.

Standard & Poor's Ratings Services has analyzed many of these public-private partnerships and provided both public and private credit ratings on these projects. Like all project-financed entities, the rating has been driven by business risk, legal and financial structure, and financial risk considering any explicit government support. Business risk is a function of a detailed market analysis and demand levels, both in terms of the individual hotel in comparison with the local competitive set, and in the context of the location itself and how it competes in the regional or national market. Management operations and construction risk are also components of the business risk analysis. Analysis of the legal and financial structure includes a review of project and financing documents and how well project cash flows are defined and the level of protection in place for bondholders. Financial analysis incorporates capital structure and cash flow protection measures. Finally, any municipal support in the form of tax revenues, in kind support, guarantees, or other credit enhancements are considered.

Market Analysis

The main driver of business risk for these projects is the market. The market analysis will vary slightly for convention centers compared with conference centers.

Convention center hotels compared with conference center hotels

While tourism may be a component for both convention center and conference center hotels, the market analysis will vary because each serves different purposes and targets different market segments. The market for a convention center hotel is tied very closely to the convention center and its bookings. Many convention centers have expanded, but they still require an adjacent hotel to provide rooms to attract trade shows and conventions. The market for convention centers is primarily national or regional conventions and trade shows. Because of the strong ties between the hotel and the convention center, the hotel market analysis focuses on the national or regional cities with competing convention centers in addition to the competing hotels in the local market. Hotel operations are also affected because a convention center hotel must reserve large blocks of rooms, with room rates sometimes priced at

a discount to the market rate to accommodate the conventions.

For conference centers, most of the bookings are by regional businesses or associations, such as local businesses hosting smaller meetings or conferences and local events including benefits or association meetings. Most conference center hotels are located in suburban areas and serve a larger geographic market area than hotels. Successful conference centers are typically located within a one-hour drive of a major airport and metropolitan area and enjoy repeat business from corporate clients. The market analysis would focus on the regional market and its primary and secondary competitive hotel set with less emphasis on similar properties in other cities.

Supply and demand

The market analysis can be divided into subcategories of supply and demand. In assessing the demand for the existing and new facilities, Standard & Poor's examines many economic and demographic trends, both nationally and regionally, depending on the type of project. Trends include the employment base, population, unemployment, and income and wealth levels. Major restructurings of local businesses or relocations of new companies to the area will also affect demand.

Standard & Poor's also examines how local markets respond to national and regional trends. For example, after Sept. 11, 2001, travel across the U.S. dropped dramatically. The most affected major market was San Francisco, which reflected the decline in travel after the terrorist attacks and the technology bubble burst. The experience in San Francisco provides a benchmark for the local market. In some instances, local events may have a greater effect on hotel economics than national trends, such as downsizing at a major area employer.

Standard & Poor's requires the submission of a market study to assist in assessing local market conditions. The analysis focuses on existing properties and how the properties, individually and collectively, performed over an extended period of time. In each market, a primary set and secondary set of competing hotels are examined, with emphasis on the primary set, whose facilities and amenities most closely resemble the new project. Standard & Poor's examines how the facilities performed over a long period of time (at least 10 years) to understand how they responded through economic cycles. Data from reliable industry sources such as Smith Travel Research are used.

A good indication of a market's long-term viability is its ability to absorb new supply. A key measure is revenue per available room (RevPAR), which is calculated by multiplying occupancy by the average daily rate. When new supply is added, percent occupancy at the incumbent hotels will often drop. Hotel managers may respond by lowering rates to attract demand. RevPAR is a good comparative measure across the competitive set, and indicates the revenue generated by each available room on an average night. In addition to RevPAR trends, the age of competing facilities, recent facility upgrades and the presence of national and local hotel flags are considered in assessing the competitive landscape.

Standard & Poor's reviews the market study for the proposed hotel project for insight into the market. A market study should examine economic and demographic data to forecast future trends in the local economy and their effect on the hotel sector. In addition, the study should subdivide the market into segments, such as commercial, meetings and groups, leisure, and discount, and forecast the proposed facility's penetration into each segment. While Standard & Poor's runs several sensitivities, the market study is useful for developing a base case.

Location, location, location

The facility's location in a market relative to other competitors is of utmost importance to these projects' success. In the case of convention and conference center hotels, the hotel must be considered a prime destination to appeal to business travelers and tourists, and provide a high level of amenities. In the case where a convention center and the adjacent hotel are built as a redevelopment project, packaging the facilities with other tourist attractions and events may offset an inferior location.

Likelihood of future competition

Standard & Poor's examines barriers to future competition because many projects

have debt maturities that extend beyond 20 years. Although it is difficult to assess long-term market conditions, a key to developing new facilities is the availability of prime, undeveloped sites. Hotels with municipal involvement may benefit because the municipality can control the permitting and zoning process necessary to build a competing facility and could prevent new entrants in the market.

Management And Operations

The structure and role of each participant affects that participant's ability to influence a project's success. For the municipality, in most cases, it would not be involved in day-to-day operations, but has tools available to influence the project's long-term viability, including project oversight and the ability to block competing projects. While some of the roles vary according to project, most times, the municipality approves major maintenance and expansion projects and can remove a poorly performing operator. The municipality's role is more critical for a convention center's hotel operations because of the strong links between the hotel and the convention center. The project developer's contribution is more tangible during the project's earlier phases. However, the developer's equity contribution, in many cases, is critical to long-term financial viability.

Ownership structure

The ownership structure in the projects Standard & Poor's examined has varied. In general, the projects are either ultimately owned by a municipality or a private developer. In each case, a separate financing authority was established to issue the tax-exempt debt. If the project is privately owned, the legal and organizational structure must be bankruptcy remote and insulated from the owner's potential financial problems.

From a credit perspective, the ownership structure is not as important as the levels of incentive for each of the project participants. Specifically, the analysis focuses on the economic incentives for the developer, the hotel operator (discussed below), and the municipality involved in each project, who each may have differing and conflicting goals and measures of success.

Management agreements

The hotel owner enters into a management agreement that defines the terms under which the facility will be managed. Convention center projects also enter into a separate convention center management agreement. When analyzing the hotel and convention center operators and managers, we consider the extent and diversity of experience, the number of similar facilities managed, and the profitability of managed facilities. Standard & Poor's views favorably a project that is managed by or is a franchise of a major national hotel brand. The benefits of the major brand include increased exposure to meeting and convention planners, higher customer awareness and loyalty, the ability to share marketing costs among more hotels, and greater purchasing power.

Credit friendly management agreements should shift more of the risk of facility operations from the project/lenders to the manager/operator. Standard & Poor's views longer-term agreements more favorably, and typical agreements range from 15 to 20 years. Management agreements should clearly spell out managers' roles, and a significant amount of the fees should be subordinated to debt service. This serves to align the incentives of the managers to those of the bondholders.

Standard & Poor's views the ramp-up period, the years from opening until stabilization, to be the riskiest for a hotel project—even riskier than the construction period. The majority of distressed projects that Standard & Poor's reviewed experienced significant problems during ramp-up and fell well below base case assumptions. As such, well-structured pre-opening service agreements are important. While credit enhancements, such as a municipal guarantee of debt service (up to some maximum level), during the startup period can mitigate some of this risk, the first line of defense is the management agreement.

The contract should provide for liquidated damages if the manager fails to accomplish tasks related to opening within a reasonable time after completion. In this manner, the manager and not the bondholders assume this risk.

The role of the convention center manager and marketing staff is key for the success of the hotel, especially before the stabilization

period. One of the reasons that convention center hotels have failed during this period is because the convention center did not book the projected number of conventions or booked events that generate little hotel demand. A marketing staff with a successful track record will help mitigate some of this ramp-up risk. The marketing staff should be incentivized not only based on the convention center success, such as number of attendees and catering, but also on the overall project success, which may include room revenue in their incentive formula. In addition, the marketing efforts should begin years before the center opens, which is difficult given the potential uncertainty regarding the project's completion. Another issue to consider is the timing of the project's opening, its marketing effort, and convention center cycles. The lead-time on booking conventions varies, with large citywide conventions having long advance booking periods (three to five years) compared with smaller conferences (one to three years). Also, there is cyclicality in the demand, as many large conventions rotate through different regions.

The ongoing management agreement should require specific standards for operating profits, and the project should have the right to terminate the operator or collect liquidated damages if these standards are not met. It should also contain provisions precluding the manager from opening competing hotels in the market.

Convention center management agreements are similar to the hotel operating agreements. As with the hotel operating agreement, fees should be based on incentives when practicable. There should be standard performance measures specified in the contract that allow the project to terminate if they are not met, and restrictions on the manager's ability to operate competing facilities.

Governmental Support

Single-asset convention and conference centers and their hotels are risky ventures, and many have not performed as projected. All of the hotel projects analyzed by Standard & Poor's have some level of explicit municipal support, which provides bondholders with relatively certain payment, even in the face of a failing business. The level and type of support varies according to each project, which affects the amount of benefit to each project. Clearly, the weaker a project is on its own merit, the more explicit and extensive the government support will need to be for the same rating level. Governmental support can be in the form of in-kind and/or cash contributions. In-kind contributions may include things such as donating the site or abating property taxes during the ramp-up period. Other contributions include a range of recurring and nonrecurring payments. Nonrecurring payments increase the project's equity and contribute to some of the construction costs while ongoing contributions such as pledging a portion of the city's sales and use tax, hotel/motel tax, or even a general fund annual appropriation can be dedicated to specific series of debt, decreasing the debt supported by the hotel net revenues. Another form of support can be a guarantee of debt service, which is effective under specific conditions.

Because of the municipal involvement, the capital structure for the hotel is very different than one owned by a for-profit entity, such as a hotel corporation or real estate investment trust. While this will vary by project, typically the structure has several liens of debt and very little equity. Some mix of hotel net revenue and a municipality's pledged revenue stream will support first- and second-lien debt. The lowest, or most subordinate, debt lien is often purchased by the hotel operator or developer and is structured to more closely resemble an equity contribution than a fixed debt instrument.

To assess the effect of governmental support in the capital structure, the legal provisions are reviewed. If the debt is structured so that a missed principal or interest payment on any lien does not trigger an event of default under the other liens, then Standard & Poor's can rate each lien separately based on the security for each lien and assign issue ratings. However, if the liens, and especially if the least-senior piece of debt, can trigger a cross default to the other liens, then the analysis will consolidate the entire capital structure. Standard & Poor's would assign a consolidated credit rating, reflecting the ability of all the pledged revenue, including the net hotel revenues and pledged municipal revenues, to

support all of the debt, including the "equity-like" subordinate lien. In this instance, the corporate notching criteria would be applied to potentially notch the rating up or down from the consolidated credit rating to reflect structural provisions such as overcollateriza-tion and subordination of specific liens.

In cases where each debt lien is rated separately based on its pledged security, government support supplements the hotel net revenues. The financial risk profile of the individual liens is affected by the amount of senior debt relative to the amount of subordinate debt. While less senior debt may enhance the senior lien's credit profile, it cannot offset a weak market, which is a key driver of the project's risk profile.

Construction

Construction risk is important in hotel transactions because the payment of debt service is contingent on the project's completion. Therefore, completion of the project on time and within the original budget is important. Standard & Poor's addresses construction risk by evaluating the construction process and the credit support. Assuming there is strong public support for a project, and it is not complex, the construction analysis focuses on the following issues:

- Experience with similar projects;
- Contractor's experience with the issuer/obligor;
- Project schedule and cost structure;
- Construction contingencies in the project budget;
- Duration of capitalized interest;
- Insurance coverage during construction, including whether coverage is sufficient to cover full redemption of the bonds in the event of damage or destruction; and
- Permitting and site approvals.

Generally, Standard & Poor's has found construction risk on hotel projects to be well mitigated. However, in cases where it is not, further mitigants may be required, such as timely liquidated damages covered by an investment-grade counterparty or LOCs, the analysis could include the retention of a construction consultant.

Historically, Standard & Poor's has not required an independent engineer's report for hotel projects as an aid to identifying and summarizing construction risks, and construction risk has not been a limiting factor in the ratings. Nevertheless, limited contractor and vendor experience can put a project at risk, as can a weak security and warranty package. A construction management plan that fails to adequately control construction fund disbursement can result in cash leakage. Designs requiring complicated sequencing of construction activities may also present delay and cost risks. Construction relying on commercially proven methods and experienced contractors can mitigate much of the construction risk attributed to design.

Sponsors often use "turnkey" contracts on major projects as a means of shifting construction risk away from the project. In a turnkey contract, the builder promises to deliver the completed project on a certain day, and takes all responsibility for design, engineering, procurement, construction, and testing. All the project owner has to do is pay the contract costs, and "get the keys" to a fully functioning project at the end of the process. Turnkey contracts can shift risk to the extent that they may be viewed as an indirect type of credit enhancement by providing for timely and full completion on pain of damage or penalty payments, on which the project might be able to rely for debt service. However, timely payment of liquidated damages is required through mechanisms like LOCs and inability to dispute claims for credit enhancement to be given.

Turnkey or other construction contracts cannot eliminate all risk. Some risk generally remains, such as force majeure and change-of-law events, which by definition, cannot be controlled by the vendor and contractor. For a more detailed discussion on construction risk, see "Public Finance Criteria: Assessing Construction Risk In Public Finance," published May 5, 2005.

Financial Analysis

Financial analysis is a key component to hotel/convention center rating. Like most projects rated by Standard & Poor's, the analysis focuses on cash flow protection and capital structure. The analysis includes an examination of the project's ability to reduce debt over time through mandatory amortizations and cash sweep mechanisms. Standard & Poor's

requests numerous sensitivities to ascertain the property's resilience to various downturn scenarios. Finally, Standard & Poor's reviews the effect of municipal support on the financial analysis.

Cash flow protection

Regarding cash flow protection, Standard & Poor's focuses on debt-service coverage ratios. Debt-service coverage is calculated as net operating income divided by total debt service. Standard & Poor's calculates debt-service coverage, including any and all subordinated payments that are essential to ongoing operations, as expenses in the calculation. For example, in some projects, furniture, fixtures, and equipment (FF&E) reserve deposits are subordinated to debt service. However, Standard & Poor's believes that these deposits are essential to ongoing operations, and therefore would need to be made for the project to remain viable. As such, debt-service coverage ratio calculations are performed net of these subordinated reserve payments. Also, if required FF&E deposits do not appear adequate, Standard & Poor's assumes higher-than-projected FF&E payments. Similarly, Standard & Poor's compares management fees with market rates, and to the extent that management fees are subordinated to debt service, these may be deducted from net operating income before calculating debt-service coverage if Standard & Poor's determines that a market management fee would include such subordinated expenses. As discussed earlier, Standard & Poor's will examine combined debt-service coverage for projects receiving a consolidated credit rating.

The level of debt-service coverage ratio necessary for an investment-grade rating varies depending on the business risk, which is heavily influenced by the market, management, and operations. The resilience of the property under various sensitivity analyses, and the degree of support provided by stable tax revenue sources, will also factor into this analysis.

Sensitivity analysis

Just as important as the base case cash flow projections are the various sensitivity analyses that Standard & Poor's examines. Hotel occupancy and rates tend to be cyclical, while the rating on a hotel/convention center is meant to represent a long-term view. Therefore, a downside analysis is essential. Typically, project sponsor base case scenarios incorporate stabilized revenues reflective of existing market conditions with straight-line inflationary increases over time. Furthermore, the model may incorporate some level of induced demand from the new facility. In reality, revenue is highly variable over time and induced demand is very difficult to project accurately. In the sensitivity analyses, Standard & Poor's examines the absence of induced demand, lower stabilized revenue, depressed average room rates increasing operating expenses, lower food and beverage revenues, and harsh downturn scenarios analogous to those that occurred during the economic downturn and reduced travel following Sept. 11, 2001. In addition, Standard & Poor's sensitizes the operating margins earned during these stress events given the fixed costs associated with operating large urban hotels. This wide variety of analysis helps Standard & Poor's understand the degree of resiliency of the financing structure to various stresses.

Capital structure

The capital structure analysis focuses on two primary metrics; total debt to total capitalization and, when applicable, total debt to available rooms. The latter metric is analyzed in the context of whether the debt issued funds a convention center as well as a hotel. Often, Standard & Poor's is asked to rate a senior tranche of debt, and not issue a rating on the subordinated tranches. Standard & Poor's considers a tranche of debt as "equity-like" if it is deeply subordinated, has no rights to act on a missed payment by accelerating the debt, or otherwise forces the property into bankruptcy while the senior debt is outstanding. In addition to the cross-defaults, Standard & Poor's examines the expected equity repayment schedule and its effect on the debt-service payments. A stronger structure would not allow any subordinated debtholders any acceleration rights before senior bondholders are repaid, nor would there be any cross-defaults to the senior bondholders. A weak structure would allow the developer's equity to be repaid, under the base case, long before the bonds mature.

Legal And Financial Structure

Standard & Poor's assessment of the legal structure focuses on documents defining the project company itself, whether the insolvency of sponsors that are unrated or are rated lower than the rating sought for the project could affect project cash flow, and other structural features to assess their potential to manage cash flow and prevent a change in the project's risk profile.

Special-purpose entity (SPE) considerations

In general, the well-structured project will be one that is owned by an SPE, and is well insulated from a sponsor's insolvency. This is usually accomplished through multiple ownership when it becomes an issue. A project-financed SPE, as defined by Standard & Poor's, is a limited-purpose operating entity whose business is limited to:

- Owning the project assets,
- Entering into the project documents and financing documents, and
- Operating the defined project business.

Financial structure and features

Other items reviewed in the legal and financial structure include the amount and funding of any reserves. Ideally, reserves are funded out of bond proceeds. However, this may not always be practical. Debt-service reserves should at a minimum cover one year of debt service, especially for an investment-grade rating. FF&E reserves, operating and maintenance reserves, and any other special reserve funds are reviewed and need to be adequate given the characteristics of the given hotel. Operating revenues from the facility should be deposited into a lockbox fund when received. An important restriction is that the entity be prevented from issuing any subsequent debt rated lower than its existing debt, unless such debt is subordinated in payment and security to the existing debt and does not constitute a claim on the project. A limited amount of completion bonds may be included.

Because the debt's term is often longer than 20 years, there is the potential for the hotel to lose its luster and competitiveness, and for revenue growth to decline or become negative. An important mitigant is to include mechanisms in the structure requiring cash to be swept to redeem or defease debt when the industry is at the top of a cycle. In this instance, lenders benefit from the upside related to peaks of cycles, and debt declines more rapidly.

Also, financing documents should contain provisions requiring lenders to hire a consultant if debt-service coverage fails to meet a prespecified target. The consultant makes recommendations if the revised operating plan and budget does not bring debt-service coverage ratios in line with targets.

Finally, a strong security package is paramount for an investment-grade project. Bonds should be secured by net hotel revenues, a mortgage on the property, and any city support payments. ■

Traffic Forecasting Risk Study Update 2005: Through Ramp-Up And Beyond

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The 2005 traffic risk study update carried out by Standard & Poor's Ratings Services further supports our earlier conclusions regarding toll road forecasting performance in the first year of operations. Optimism bias—overforecasting asset use—and error remain prevalent. Beyond Year 1, our case study analysis does not support the notion of any systematic improvement in forecasting accuracy. Optimism bias and error measurement statistics remain constant through Years 2 to 5.

This bias and error is not caused by a failure by forecasters to consider the impact of ramp-up upon project opening. The majority of case studies that we analyzed had some form of ramp-up profile imposed on their forecasts. Actual ramping-up, however, is often far less aggressive than is assumed, and can take many years. Beyond ramp-up, a number of toll road case studies still fail to meet use expectations.

From a subset of case studies, Standard & Poor's was able to disaggregate traffic forecasting performance by vehicle type. The variability of truck forecasts was particularly high. This variability can magnify the uncertainty associated with revenue projections because trucks typically pay high tariffs and, therefore, make a disproportionate contribution to total project income.

Given the nature and extent of uncertainty that surrounds traffic forecasts, projects with investment-grade aspirations that expose lenders to demand risk will need to demonstrate financial resilience under various and rigorous sensitivity and scenario stress tests. These projects should have sufficient liquidity throughout the life of the concession to be able to accommodate performance that falls short of expectations. The results of sensitivity tests and stress scenario analyses provide a guide to the size, shape, and quality of liquidity appropriate at investment grade.

An investment-grade toll road transaction is not necessarily the one that performs robustly against the most likely future-year scenario. It is the one that performs robustly against a number of likely future-year scenarios.

In addition to presenting the most recent Year 1 data and associated analysis, updating our earlier findings, this Traffic Risk Update report begins to look beyond the first 12 months of tolling operations at traffic forecast performance in subsequent years. For our previous studies, see "Traffic Risk in Start-Up Toll Facilities", published on Aug. 15, 2002; "Traffic Forecasting Risk: Study Update 2003", published on Nov. 6, 2003, and "Traffic Forecasting Risk: Study Update 2004", published on Oct. 19, 2004. All three articles are available on RatingsDirect.

Background

Since 2002, Standard & Poor's has been compiling data on toll road traffic forecasting performance, comparing predictions of asset use with outturn results. Our sample—which continues to expand as new data is made available—now contains 104 international toll road, bridge, and tunnel case studies. More than 90% of our sample represents project-financed concessions. Excluding the non project-financed concession case studies from the sample had no statistically significant impact on our findings.

To date, our research has focused on Year 1 performance. This reflects financial structures that commonly leave lenders particularly exposed to traffic risk in the earliest years of operations.

Year 1 Data Analysis: Update 2005

At the end of 2004, when we last reported our study findings, our toll road, bridge, and tunnel sample comprised 87 case studies. The sample is now 104 (August 2005). This increase reflects credit analysis and

Chart 1 Standard & Poor's Expanded Sample (2005)

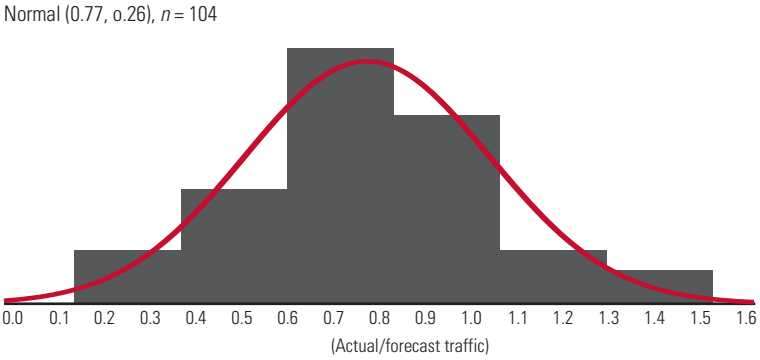


Chart 2 Traffic Forecasting Performance Time Series Frequency Distribution

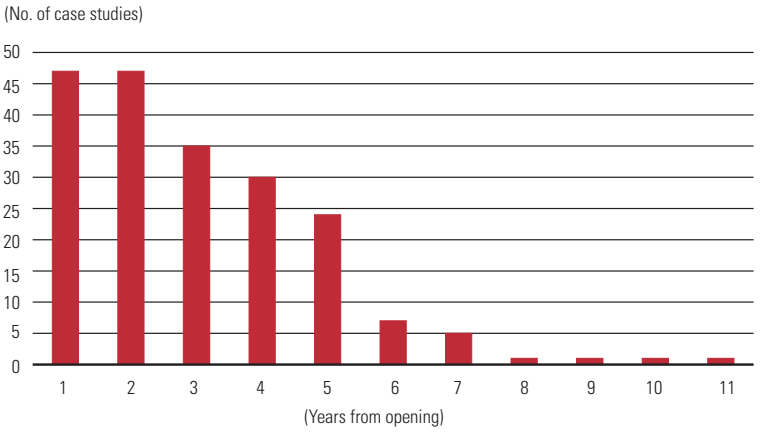
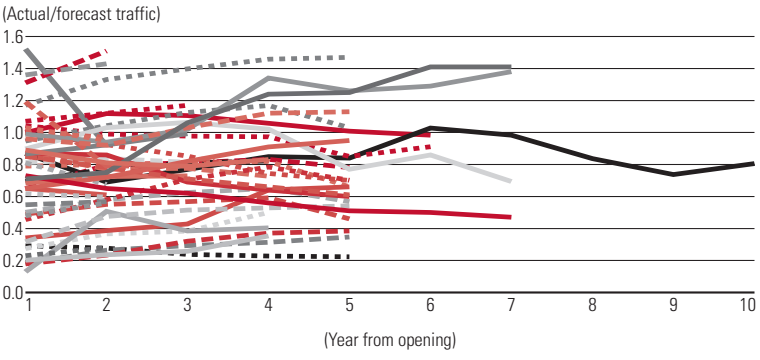


Chart 3 Traffic Forecasting Performance: Time Series



surveillance activity over the last nine months across many of Standard & Poor's offices and the release of a sizeable volume of new, multiyear traffic data from a leading European toll road concessionaire with international projects.

Our earlier research revealed considerable variability (error) in traffic forecasting performance, and the existence of systematic optimism bias. Performance ranged from actual traffic that was only 15% of that forecast to forecasts that were exceeded by more than 50%. On average, across all case studies, toll road forecasts overestimated Year 1 traffic by 20%-30%.

Chart 1 presents the Year 1 traffic forecasting performance from all our 104 case studies. Consistent with earlier analysis, performance is measured in terms of the ratio of actual traffic volumes to forecast asset use.

The mean of the distribution still sits well below 1.0 at 0.77, underscoring the sector's systematic tendency toward optimism bias. The standard deviation—which measures error—remains large at 0.26, identical to last year's value.

Through Ramp-Up And Beyond

In 2005, we revisited our toll road, bridge, and tunnel case studies to extract actual and forecast data from periods beyond Year 1. The resulting sampling frame is summarized in chart 2.

Unsurprisingly, the frequency distribution "tails off" rapidly. At present, we have only seven case studies that cover Years 1 to 6, for example. Although this constrains the conclusions that we can draw about toll road traffic forecasting performance after Year 5, it reflects the innovative nature of the sector and the fact that operational project-financed infrastructure concessions are a relatively recent phenomenon. A significant number of highway concessions globally still remain in design or under construction.

The challenges of compiling a traffic forecast performance time series are exacerbated by the common practice of preparing revised or rebased forecasts for toll facilities whose predicted use departs significantly from expectations. In such instances, credit surveillance documentation may fail to report the original forecasts.

Chart 3 summarizes our results. One hypothesis we wanted to test was that forecasting optimism bias and error reduces after Year 1. That hypothesis is not supported by our findings.

If actual traffic performance had systematically improved over time (in comparison with their respective forecasts) a general upward trend in the ratio of actual to forecast traffic to more than 1.0 would be observed over time. It is not. Instead, a mixed picture emerges, with a number of case studies failing to match their forecasts by Year 5 or, in some cases, beyond. Clearly some caution is required at this stage, because our sample size prohibits the drawing of definitive conclusions. This preliminary analysis, however, suggests that there is no automatic improvement in traffic forecasting accuracy after Year 1.

The extent of optimism bias and error in the case study traffic forecasts from Years 2 to 5 is similar to that observed for Year 1 data. Table 1 suggests that neither the mean of the distribution nor its standard deviation alter significantly during the first five years of operations.

Table 1 Forecast Performance Distribution Statistics For Years 1-5

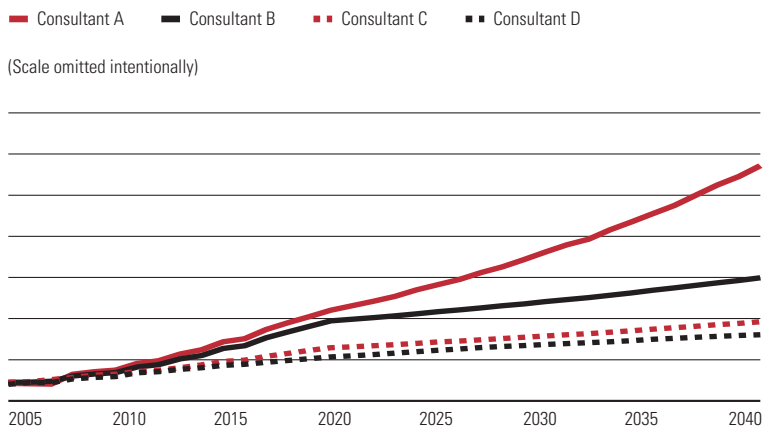
Years from opening	Mean	Standard deviation
Year 1	0.77	0.26
Year 2	0.78	0.23
Year 3	0.79	0.22
Year 4	0.80	0.24
Year 5	0.79	0.25

Table 2 Conflicting Traffic Forecasts

Forecast period (from project opening)	Difference between highest and lowest base-case forecast (%)*
5 years	26
10 years	66
15 years	106
20 years	130
25 years	164
30 years	204
35 years	255

*This is not the difference between high and low growth sensitivity tests. This is the difference between alternative base-case forecasts.

Chart 4 Alternative Base Case Traffic Forecasts



The Trucking Challenge

A subset of our case studies provided traffic forecasts and asset use statistics by vehicle category, reflecting tolling policies with differential tariffs and/or shadow toll payment mechanisms that distinguished light vehicles (private cars) from heavy ones (mainly trucks weighing more than 3.5 metric tons). Disaggregated analysis revealed that the variability associated with truck forecasts was consistently higher that that observed for light vehicles. The standard deviation for trucks was 0.33, compared with 0.26 for all vehicles.

This finding accords with intuition and is supported by anecdotal evidence from traffic forecasting firms, which in the past have reported that the trucking community's behavioral response to tolls is particularly difficult to predict. This is especially true in road haulage sectors dominated by owner-drivers rather than fleet operations. In terms of route choice, smaller haulage contractors can remain very sensitive to tolls and, upon the opening of a new facility, often support an extended "protest period" by refusing to pay tolls as a matter of principle.

Truckers' response to tolls can be an important credit consideration. Trucks commonly pay 2x-5x the respective car tariff (sometimes this toll multiple is as high as 10x) and so their contribution to total revenues can be significant. Standard & Poor's

Sample Bias

Throughout the research effort Standard & Poor's has remained critically aware of the potential for our selection of toll facilities to incorporate sampling bias. Although a sample of 104 international case studies from a single asset class reflects a certain critical mass that, by itself, can temper the impact of bias, we are conscious that our case studies have not been selected randomly. The majority are toll facilities that have been presented to us for credit analysis as stand-alone assets or have been selected by banks as constituents of collateralized loan obligation portfolios. This sample undoubtedly reflects an over-representation of toll facilities with higher credit quality. Consequently, very poorly performing assets will remain under-represented in the sample and the results derived from our case studies are likely to be flattered in comparison with average, global toll road traffic forecasting performance.

recently reviewed a typical toll road where, although trucks accounted for less than 10% of traffic, they contributed more than 25% of total revenues. On some French toll road networks, trucks contribute one-third of toll income. For this reason, where truck-related incomes are significant, Standard & Poor's will carefully review the assumptions behind truck forecasts and will look for robust justification for these assumptions. For investment-grade ratings, future-year truck use may be subjected to particularly severe downside stress testing if the respective forecasts seem unsupported or optimistic.

Forecast Uncertainty And Variability Constrains Credit Quality

Standard & Poor's is frequently presented with conflicting base (i.e. central) case forecasts for the same project, compiled by different firms at or near the same point in time, on behalf of different project counterparties, and incorporating different assumptions. By way of illustration, a recent example is presented in chart 4. The vertical scale units have been omitted to retain project and source anonymity.

Even in the short to medium term, the differences between these forecasts are material. The differences between the lowest and highest base-case forecasts in the example presented above are summarized in table 2.

Analysis of the assumptions behind the forecasts presented above—and others—demonstrates that very different projections of asset use result from relatively small divergence among the model input assumptions. This highlights a critical issue that often serves to constrain the credit quality of toll facility transactions incorporating demand risk. Traffic forecasts, particularly in the medium to longer term, can remain very sensitive to marginal parameter changes within the modeling framework, even though these parameter values are drawn from an entirely plausible range. In terms of assessing the reliability of future project cash flows, rigorous sensitivity testing clearly has a pivotal role to play in such cases. ■

LNG Project Finance: Clearing The Investment-Grade Hurdle

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The surge in new liquefied natural gas (LNG) projects over the past 10 years has largely relied on nonrecourse, or project finance, debt to fund the construction of these multi-billion dollar, joint venture enterprises. Going forward, LNG projects will most likely continue structuring their financings with project finance debt to limit the exposure to sponsor balance sheets of these joint ventures.

However, because the LNG market is becoming more complex as it becomes more global and because LNG customers want greater flexibility in their purchasing terms, LNG financings have begun to relax some of the structural features typically found in project finance structures. Moreover, project sponsors increasingly want greater flexibility in how they operate their projects and to whom and where they sell LNG in order to exploit market opportunities. Whether these changes materially affect the credit profiles of new LNG deals will depend on how all of the other aspects of an LNG project come together, such as economics, counterparty risk, technology, and sponsor commitment.

Most existing LNG project financings have relied on one anchor customer with a 20-year or longer purchase contract—an arrangement that could easily support an investment-grade bond. Ras Laffan Liquefied Natural Gas Co. Ltd. (A/Stable) did so in 1996 (see chart 1) when it issued $1.2 billion of project bonds that were rated 'BBB+' on the back of a 25-year contract with Korea Gas Corp. (A-/Stable/—).

Most recently, Ras Laffan expansion projects, Ras Laffan Liquefied Natural Gas Co. Ltd. (II) (RasGas II; A/Stable) and Ras Laffan Liquefied Natural Gas Co. Ltd. (3) (RasGas 3; A/Stable), collectively issued $2.25 billion of 'A' rated bonds on the strength of five long-term contracts and two heads of agreement with six different counterparties (see chart 2).

Future projects, however, will likely contract with multiple customers, many of whom may be unwilling to sign long-term deals in the future but, instead, want shorter, more flexible arrangements that reflect their own changing needs. All things being equal, the potential mismatch between long-term debt and short-term contracts should make raising long-term investment-grade debt more challenging. In addition, as oil companies develop LNG projects in nontraditional LNG regions of the world rife with political instability, such as West Africa, Yemen, Venezuela (B+/Stable/B), Peru (BB/Positive/B), and Sakhalin Islands of Russia (BBB-/Stable/A-3), among others, a plethora of risks will make it difficult for all but the most robust projects to achieve anything near investment grade potential. Only a combination of proven technology, solid contracts, controllable political risk and creditworthy counterparties and project sponsors will permit LNG projects to raise investment-grade debt.

Quick Take: LNG Investment-Grade Projects

- Contracts that ensure reliable cash flow,
- Financing documents that require a single focus on the business and preserve liquidity,
- Technology and construction that ensure reliable production operations,
- Low cost structure that creates world class competitive advantage,
- Legal structure that supports contract enforceability and limits credit risk events from the sponsors,
- Reliance on creditworthy counterparties that are providing infrastructure and purchasing the LNG,
- Financial forecasts that show robust debt service coverages, even under market stress conditions, and
- Host country business and legal institutions that support contract and property rights.

Whereas conventional project financings typically rely on nonrecourse financings, LNG projects have generally included some limited recourse qualities in which a project partly relies on the credit of its sponsor to mitigate certain risks. While the debt may ultimately be nonrecourse to the parent, the sponsor may have some obligations beyond its initial equity obligation, such as a completion guarantee or a limited price support facility. Unlike power plant or toll road financings, LNG projects require the billions of dollars of investment and the contributions of many counterparties, such as multiple engineering, procurement, and construction (EPC) contractors and, increasingly, marketing agents. And because of the enormous scale of these projects, none of these counterparties is in a position, financially or willingly, to provide any conventional recourse provisions, such as guarantees or liquidated damages that could support the project's credit. Consequently, in order to achieve investment-grade ratings, LNG project sponsors have had to put nominal amounts of their balance sheets at risk—usually for a limited time.

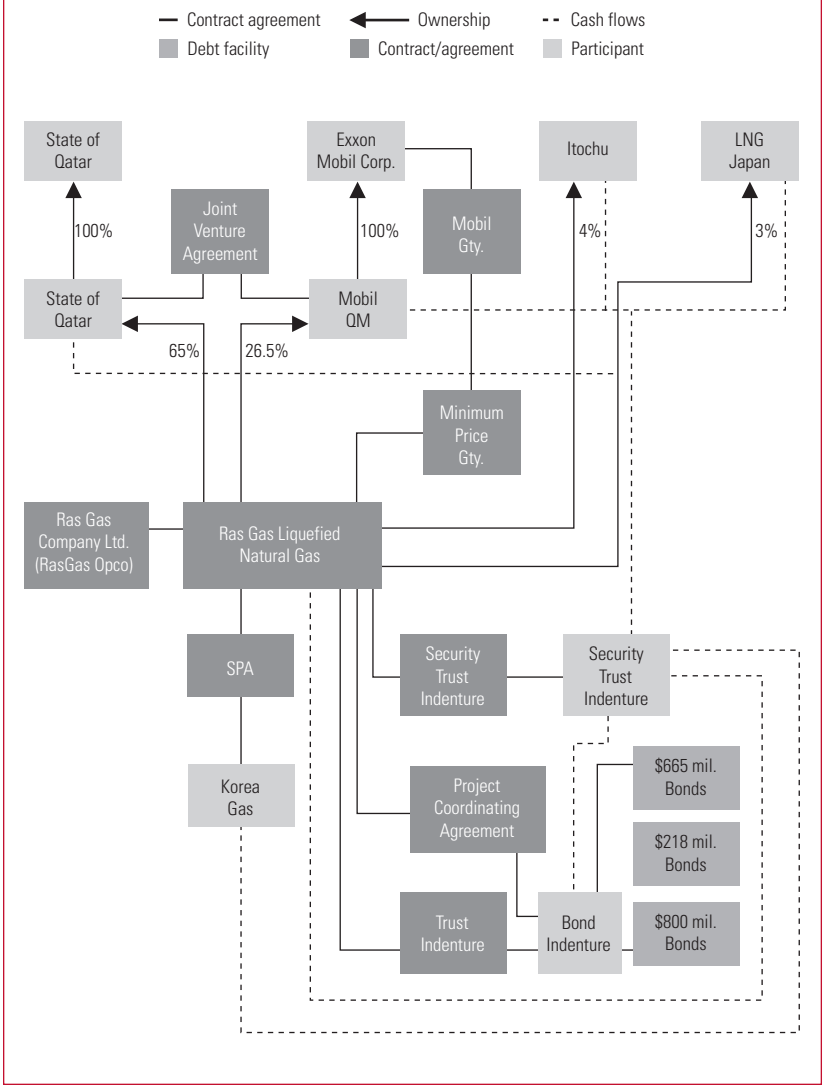
Most projects outside of the LNG industry assign virtually all project assets, contracts, permits, and accounts to their lenders as collateral. But LNG sponsors, such as Exxon Mobil Corp. (AAA/Stable/A-1+) and Royal Dutch Shell PLC (AA/Stable/A-1+), have financed their projects with collateral packages that are reduced in scope as to resemble certain aspects of unsecured corporate debt. That in practice it could be difficult for lenders to seize an LNG asset in most host countries, such as Qatar or Indonesia, suggests that even the most complete LNG collateral packages may differ little in reality than the so-called "hybrid" transactions with reduced collateral.

As it becomes more apparent that most LNG project financings will feature qualities that make them look different than traditional projects, lenders need to determine whether or not LNG project credit risk profiles are deteriorating. And because current record high oil prices may be masking some of the underlying long-term risks, it is becoming even more imperative that lenders identify a project's true vulnerabilities under a variety of commodity price scenarios.

As a starting point to assessing LNG credit risk, Standard & Poor's begins with its simple, but flexible, definition of project finance, which has not changed in the face of relaxing project finance structures:

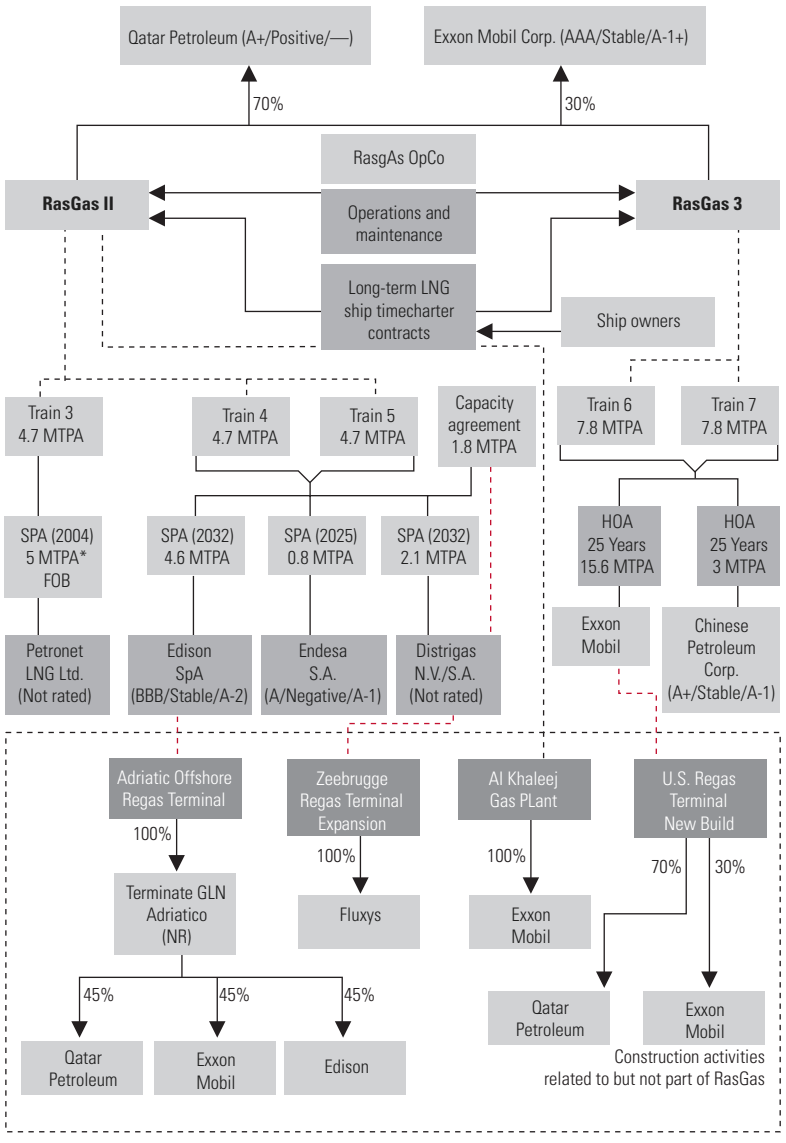
A project company is a group of agreements and contracts between lenders, project sponsors, and other interested parties that creates a form of business organization that will issue a finite amount of debt on inception, will operate in a focused line of business, and will ask that lenders look only to a specific asset to generate cash flow as the sole source of principal and interest payments and collateral.

Chart 1 Ras Laffan Transaction Summary



Although the definition of project finance might appear simple, the question of credit risk is indeed complicated. Even though LNG projects' operational and financing documentation seems to be growing longer and more complex as the parties try to anticipate and allocate every potential risk, LNG project transactions remain susceptible to an infinite number of known and unknowable risks that could precipitate a default. While new hybrid structures do little to alleviate these risks, they may do just the opposite, or have no affect at all.

Chart 2 RasGasII and RasGas3 Transaction Summary



*4.7 MTPA from RasGasII train 3 and 0.3 MTPA from Ras Laffan
HOA—Heads of agreements.
MTPA —Million metric tons per annum.

LNG Risk Analysis

LNG project risk assessment should cover three levels of analysis:

- Project level risk,
- Sovereign risk, and
- Institutional business and legal risk.

The analysis begins with analyzing the project specific details and then continues to wider, often country specific, concerns, such as the political and currency risk and the viability of the local business institutions.

Project Level Risks

The contractual foundation

An LNG project's essence is the nexus of contracts and agreements that protect its investors from market, operating, and agency risk (the separation of ownership of a project and the management and operation of a company), thereby providing investors with some measure of assurance of repayment. By structuring a business as a project, LNG project sponsors use a specialized form of organization that will act as an agent on behalf of its stakeholders (lenders and equity) to secure factors of production and access a market or markets for the product.

The investment-grade LNG project structure should protect stakeholders' interests through contracts that encourage the parties to complete project construction satisfactorily and operate it competently. Moreover, higher rated projects will generally give lenders the assurance that project management will align their interests with lenders' interests; project management should have limited discretion in changing the project's business or financing activities. Investment-grade documentation will limit the number of provisions that allow for contingencies that could potentially interrupt cash flow. Finally, to the extent local law permits, investment-grade projects will distinguish themselves by agreeing to give lenders a first perfected security interest in all of the project's assets, contracts, permits, licenses, accounts, and other collateral so that the project can be disposed of as an entirety, should

the need arise. In other words, lenders should receive a complete collateral package sufficient to allow lenders to take over the project and continue its operations in the event of a severe cash flow disruption.

LNG sales agreements. Although LNG sales purchase agreements (SPA) between seller and purchaser have remained some of the most secretive contracts over the past 30 years, enough is known about what should characterize an investment-grade SPA. The stronger projects will feature SPAs that cover most—say 70% to 80%—of a project's output while the debt is outstanding. Because weather patterns greatly influence LNG consumption in most countries, buyers will negotiate some type of cargo deferral mechanism that will allow the buyer to shift receipt of LNG tankers from one year into the next, as well as increase their purchases from time to time. In addition, operational and shipping constraints make it impractical to ship partial loads that might otherwise occur in a strict contract interpretation of a calendar year. As a result, an SPA will typically provide a series of "true-up" mechanisms that set up deficiency and surplus accounts for the buyer and the seller that will need to be addressed in the ensuing years. Investment-grade LNG projects, however, should not have to suffer a deferral of more than 5%-10% of the annual contract quantity in any one year, and the maximum outstanding over a two-year period should be little more than 10% of the annual base contract amount. Investment-grade SPAs should require that buyers that have deferred more than an amount specified in the SPA begin making payments for cargoes not taken.

All LNG SPAs will expose sellers and lenders to a certain amount of force majeure risks, resulting from war, natural disturbances, and strikes, which might affect either shipping or the production/receiving facilities, or both. Investment-grade SPAs can mitigate most force majeure risks to a project through two mechanisms. First, an SPA may allow the buyer to defer any force majeure deficiency to an ensuing year. Alternately, an SPA can give the buyer the right to add the deferral amount to future deliveries over some defined time period, such as one to five years. Obviously buyers and sellers will negotiate all sorts of variations on mitigating force majeure risk; however, the key element will be that the buyer will eventually have to take deferred volumes. Fortunately, the history of material force majeure events in the LNG shipping business is unremarkable.

Few, if any, LNG SPAs completely remove commodity price risk from the credit profile calculus. No buyer will likely agree to a fixed price over a multi-decade obligation, especially if LNG competes domestically with other fuels, although some have fixed prices for short durations during escalating price environments. And, few LNG sellers in the current rising price market want to limit upside potential. Consequently, most LNG SPA pricing arrangements will tie the price of LNG to some basket of crude oil prices, such as the Japanese Customs Cleared price, or a natural gas index price, such as Henry Hub in the U.S. In the past, some LNG SPAs did have a minimum floor price of LNG, which certainly enhanced an LNG project's credit profile, but those arrangements will increasingly become rare, if they exist at all any more. Finally, some SPAs may provide for a periodic contract price review; while these reviews could mitigate contract termination risk in a high price environment, they will more likely than not add revenue uncertainty to a project's credit profile.

Project lending agreements. An LNG project's indenture, loan agreements, and credit facilities are contracts between the project and the lenders. Investment-grade LNG project lending documents will do three key things for lenders:

- They define and regulate the project, including debt service obligations, and specify the rights that the project creditors will have in a default, including step-in and foreclosure.
- They will prevent the project's management and sponsors from changing the risk profile of the project by limiting management's discretion in the scope and operation of an LNG project.
- The loan agreements will also preserve liquidity levels, manage the cash flow, and otherwise safeguard against the project's risk profile from deteriorating over the term of the debt.

LNG transactions, on occasion, need to issue additional debt for various purposes, such as capital improvements, permitted

expansions, and for compliance with changing legal requirements, such as new environmental regulations. Hence, investment-grade LNG project documentation will need to strike a balance between allowing project sponsors to reasonably respond to opportunities or legal requirements and generally restricting a project from issuing additional debt except in defined circumstances.

More highly rated transactions should restrict the incurrence of additional debt unless the project can demonstrate that the risk profile will not deteriorate. Debt required to fund expenditures required by law generally should try to balance minimizing erosion of the project's creditworthiness with keeping the project operational. As a guideline, minimum debt service coverage ratios (DSCR) should be no lower than the project's initial minimum base case DSCR.

LNG financing documents should preclude a project's ability to distribute residual cash unless DSCRs exceed certain covenanted thresholds. Investment-grade LNG projects generally restrict such distributions unless the four preceding and four prospective quarters satisfy these thresholds. Residual distributions should also be contingent on the full funding of all reserve funds, such as those earmarked for debt service and maintenance, and no existing or pending event of default.

LNG project collateral arrangements are typically expansive in practice and can comprise many assets, accounts, property rights, insurance policies, permits, and, of course, all of the physical property needed to produce LNG. Where a full collateral package cannot be provided either because of legal obstacles (e.g., the absence of supporting host country law or negative pledges), cost constraints, or other factors, Standard & Poor's will entertain other approaches ad hoc. If, on foreclosure, secured parties would not be able to realize on the project as a going concern due to some collateral deficiency, a lower rating could result.

Many project financing documents generally require the maintenance of several project accounts with the project trustee. These include, among others, an operations and maintenance (O&M) reserve account, a major maintenance reserve account, a capital expenditure account for environmental compliance if conditions suggest that such expenditures are likely, and a debt-service reserve fund.

At a minimum, debt service reserve funds should equal the next six months' debt service of the rated obligation. Stronger transactions will have reserve funds equal to the highest remaining six-month obligation. Investment-grade projects should have all reserve accounts fully funded with cash and available to lenders by the start of commercial operations. Under certain circumstances, a letter of credit may substitute for cash. However, project documentation must require that if a letter of credit is substituting for a cash debt service reserve fund, the project must draw the funds and deposit them with the depositary agent if the issuing bank refuses to renew the letter of credit.

By contrast, project documentation that allows debt service reserve funds to be funded out of operating cash flow are necessarily characteristic of highly speculative debt ratings. A project's most uncertain period tends to occur during the start-up period, either because of project delays or unforeseen operational problems in achieving full output. In the spirit of providing lenders repayment assurance, the debt service reserve fund should be available in full on a date-certain basis, without contingencies such as a commercial project completion certificate or the conversion of a construction loan into a term loan.

Finally, lending documentation for investment-grade LNG projects will require that the project maintain some level of property loss insurance to guard against insurable force majeure incidents. And depending upon how strong the sponsor commitment is, business interruption insurance may be necessary. Increasingly terrorism and sabotage insurance, which would enhance credit, is becoming more difficult to obtain in meaningful amounts; in such instances, credit analysis will have to weigh the circumstances surrounding the financing ad hoc.

Technology, construction, and operations

The dependability of an LNG project's design, construction, and operation are critical to the project rating; if a project fails to achieve completion or perform as designed, many contractual and other legal remedies may fail to keep lenders economically whole.

Despite a project's claim of force majeure, protracted negotiations, arbitration, or litigation could delay or prevent lenders from getting payments due. Thus, investment-grade credit strength will largely rely on proven technology and robust, standard industry operational practices.

Project lenders frequently rely on the reputations of the EPC contractor or the project sponsor as a proxy for technical risk, particularly when lending to unrated transactions. The record suggests that such confidence may be misplaced. Standard & Poor's experience with technology, construction, and operations risk on over 500 project finance ratings indicates that technical risk is pervasive during both pre- and postconstruction phases, while the possibility of sponsors coming to the aid of a troubled project is elusive.

Preconstruction risk. Investment-grade LNG projects should employ commercially proven technology and designs that will minimize future operating problems. In addition, the design should specify the use of premium-grade materials and equipment in areas of the project that are historically problematic, subject to harsh operating environments, or critical to reliability. Finally, the better LNG projects will put together construction consortia that have the experience and record to translate the design into a well operating project on time and within budget. Projects that take unusual risks either through the use of advanced, unproven technologies or contractors with doubtful experience will struggle to achieve investment-grade rated debt.

Site and permitting risks, sometimes synonymous with political risk, can present a difficult area of analysis of LNG construction projects, particularly if the LNG chain spans multiple locations and even multiple countries. Regulations and enacting legislation in some jurisdictions, both developed and emerging countries, leave continuous openings for project opponents to stop projects for reasons related, or unrelated, to siting concerns.

The higher rated LNG projects have consistently demonstrated good public and government relations practices through joint ventures with the state-owned oil company and through extensive public vetting of their proposed projects. These siting and permitting activities, which can make the process transparent and amicable, can mitigate much of the risk associated with local opposition and the permitting process.

No guarantee exists that projects will not encounter future opposition. However, projects able to complete siting and permitting with widespread political and legal support and little or no opposition enter the construction phase with a stronger potential to avoid siting and permitting problems.

Even though an LNG project's conceptual design may intend to limit the potential for construction difficulties that could delay the project or result in higher costs, the construction program may adversely affect the risk profile. Limited contractor and vendor experience with the technology or in the host country can place a new project at risk. A weak guarantee and warranty package can similarly prevent an investment-grade rating.

LNG project sponsors have extensively used turnkey contracts on major projects, particularly power projects, as a legal vehicle for shifting construction risk away from project owners and users. Contracts can 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. Yet, for large LNG projects, no one contractor will have the capabilities or willingness, whether they be financial or technical, to provide a traditional, turnkey, date-certain, fixed price contract with liquidating damages that would mitigate completion risk sufficiently to clear the investment-grade hurdle. LNG projects will more likely rely on a handful of turnkey contracts to construct the project.

In essence, LNG project sponsors act as general contractors for their projects. This works because the major oil companies who are building LNG projects have the large balance sheets to provide credit support through completion guarantees, as well as a large professional staff with extensive experience in managing "mega-construction" projects.

Investment-grade LNG projects will need to demonstrate a high level of confidence that they can achieve the proposed schedule and budget without costly delays or quality problems. Because many projects financed in the capital markets are in emerging economies,

acceptable schedules should include sufficient time for problems encountered in remote locations, such as weather delays, equipment importation, 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. That steel and nickel prices have risen dramatically in the last two years underscores the point. In addition, projects that have completed engineering and design and have procured equipment at the point when construction begins will more likely end up as investment-grade projects than those that do not.

Performance and delay liquidated damages typically play a role in investment-grade project finance risk mitigation equally important as guarantees and warranties. Yet, because no one contractor will be willing to assume the risk that other contractors will fail to complete their tasks as required, contractual delay damages from the delinquent contractor will not be sufficient to cover principal and interest payments for a period of several months. Consequently, investment-grade LNG projects, particularly greenfield projects, will likely have to rely on some limited recourse to the sponsors to prevent a default that would have been otherwise caused by a delay in project startup.

Postconstruction. That an LNG project relies solely on the successful performance of a few liquefaction trains underscores the importance of a solid, experienced based prospective O&M plan. How an LNG project plans to operate and maintain a facility during start-up and the early years of a project generally determines the long-term performance of the facility. Thus, investment-grade LNG projects will emphasize the O&M expertise, planning, coordination with marketing and shipping affiliates, budgeting, and staffing details. Operator expertise and a proven performance record tend to support higher ratings.

A systematic, proactive approach that ensures reliable plant operation must include specific procedures for operation, maintenance, predictive and preventive maintenance, performance monitoring, and environmental monitoring. In addition, operation plans should include thorough safety and emergency planning provisions.

Competitive market exposure

A project's competitive position relative to its peer group is a principal credit determinant. Given that LNG is increasingly becoming a commodity, or at least one that competes with other commodities, such as oil, pipeline gas, or other energy sources, low-cost production relative to the market is essential for an investment-grade rating. High costs relative to an average market price, absent mitigating circumstances, will almost always place lenders at risk. Also, the strongest LNG projects will have ready access to abundant and easily produced natural gas reserves that have little demand domestically.

Typically industry fundamentals will always play a part in the credit calculus. Throughout much of the world, natural gas has become the fuel of choice because of its clean burning and low green house gas emissions qualities compared with other fossil fuels, such as oil and coal. However, many countries simply do not have domestic supplies or easy access to pipeline gas, which makes LNG an attractive import. Consequently, investment-grade LNG projects should be targeting markets in which domestic natural gas supplies are failing to keep up with domestic demand at normalized pricing, such as the U.S. Other long-term fundamentally strong markets that will support investment-grade LNG projects will be those in which there will likely be little competition from pipeline gas imports, such as Korea, Japan, and India. In Europe, where extensive reserves of pipeline gas lie on the periphery in Russia, North Africa, and the Middle East, as well as the North Sea, LNG fundamentals will be more difficult to discern.

Probably the greatest project-level risk that LNG projects face is the potential that the LNG market price could fall below the project's break-even threshold for sustained periods of a year or longer. Consequently investment-grade LNG projects should demonstrate ability to weather low cycles that will inevitably impose themselves on the project through the term of the debt. "Back cast" analysis that considers how low crude oil and LNG prices have been over the past 10 to 20 years may be helpful. Typically, investment-grade LNG projects should be able to withstand oil price environments as low as $10 to

$11 per barrel and the LNG prices that would accompany such an oil price.

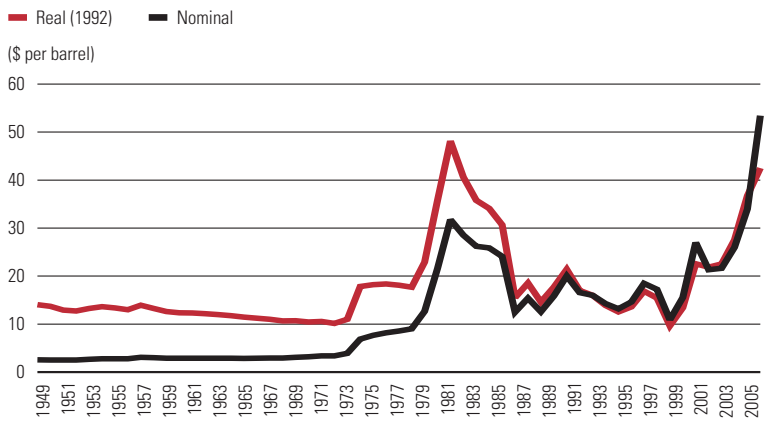
LNG pricing can exhibit high volatility during the course of a year (as opposed to cyclical trends) in markets where pipeline gas determines the price, such as in the U.S. where LNG contracts will be linked to Henry Hub pricing or some other index. Volatility of LNG pricing, consequently present perhaps a greater challenge to financings (see charts 3 and 4). Other things being equal, projects with the lowest cost structure among their competitors tend to show investment-grade characteristics.

Natural gas supply can potentially pose an economic risk to an LNG project's commercial viability and competitiveness. Insofar as a natural gas feedstock costs, local tax regimes, or the royalty rate are measurably more expensive relative to its peer group, investment-grade ratings may be more difficult to achieve. Obviously, the natural gas reserve base supporting the project's financing is a potential cost risk. As the resource base dwindles, not only will the costs to extract the resource increase, but also the amount of salable product will generally decline. For investment-grade transactions, project sponsors will need to demonstrate how the project has minimized resource factor supply and cost risk.

Another distinguishing feature of the stronger LNG projects are associated product sales, particularly condensate. For LNG projects whose gas supply is particularly rich in natural gas liquids, such as the Ras Laffan projects in Qatar, the sales of associated products will contribute substantial cash flows to a project, but also provide a certain revenue diversity. Not all LNG projects enjoy the benefit of associated product sales; the host country oil company, for instance, may retain title and rights to these products.

LNG projects should demonstrate that proven reserves exist to supply the project more than adequately through the maturity of the bonds. Virtually all investment-grade projects rely on proven developed reserves. Projects relying on potential or unproven reserves will tend indicate toward noninvestment grade.

Chart 3 **Crude Oil Prices**



Source: U.S. Energy Information Administration

Legal structure

An investment-grade LNG project should be chartered solely to engage in the business and activities of LNG. The ownership structure should prevent the potential insolvency of entities connected to the project (e.g., sponsors, affiliates thereof, or suppliers) from affecting project cash flow. Finally, investment-grade LNG project structures should feature choice of legal jurisdiction, trustee arrangements, and intercreditor arrangements that help to manage cash flow and prevent a change in the project's risk profile.

SPE status. An LNG's credit profile typically cannot be stronger than the lowest rated entity (i.e., the offtaker) crucial to project performance, unless the entity may be replaced within a reasonable timeframe notwithstanding its insolvency or failure to perform, or unless it is a special purpose entity (SPE). Moreover, the transaction debt rating may also be constrained by the rating on a project sponsor if the project is located in a jurisdiction where the insolvency of the sponsor may possibly give rise to the insolvency of the project, particularly in cases where the sponsor is the sole parent of the project.

A project finance SPE is a limited purpose operating entity whose business purposes are limited to owning the project assets, entering into the project and financing documents, and transacting the restrictively defined project business and other activities reasonably incidental thereto. The thrust of this single-purpose restriction is that the rating on the bonds represents, in part, an assessment of the

creditworthiness of specific business activities. Allowing the project company the power to engage in other business activities complicates the credit analysis—a situation that could threaten investment-grade potential.

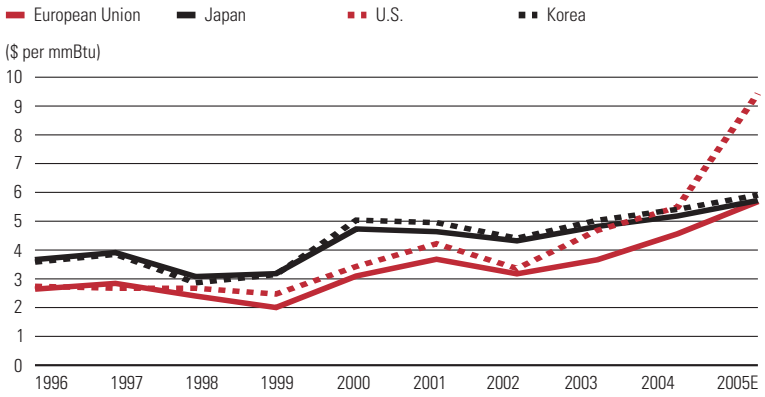
A requirement of a project finance SPE should restrict it from issuing any subsequently issued debt rated lower than its existing debt, unless such debt is subordinated in payment and security to the existing debt and does not constitute a claim on the project.

The second requirement is that the LNG project should not be permitted to merge or consolidate with any entity rated lower than the rating on the project debt. A third requirement is that the LNG enterprise (as well as the issuer, if different) continues in existence for as long as the rated debt continues to be outstanding.

The final requirement is that the SPE have an antifiling mechanism in place for the purpose of resisting attempts by an insolvent parent to bring the project into bankruptcy. In the U.S., this can be achieved by the independent director mechanism where the SPE provides in its charter documents that a voluntary bankruptcy filing by the SPE requires the consenting vote of the designated independent member of the board of directors (the board generally owing its fiduciary duty to the equity shareholders or shareholder). The independent director's fiduciary duty, which is to the lenders, would vote against the filing. In other jurisdictions, the same result is achieved by the "golden share" structure, in which the project issues a special class of shares to some independent entity (such as the bond trustee), whose vote is required for a voluntary filing. The purpose of the antifiling mechanism is to hinder an insolvent sponsor from bringing a solvent project into bankruptcy. It is not designed to allow an insolvent project to continue trading when it should otherwise be seeking bankruptcy protection. In countries such as the U.K. and Australia, where a first "fixed and floating" charge may be granted to the collateral trustee as security for the bonds, the collateral trustee is able to appoint a receiver to foreclose on and liquidate the collateral without stay or moratorium, notwithstanding the insolvency of the project debt issuer. In such circumstances, the requirement for an independent director may be waived.

Choice of law risk. Project documents, such as the offtake and construction agreements, tend to be governed by local law, as many jurisdictions require the choice of local law. Dispute resolution of issues arising under such local law-governed documents should contain an acceptable arbitration clause, as there may be an increased incentive to breach if the breaching party believes that a more favorable interpretation of the contract may be achieved if adjudicated in a local court. For investment-grade LNG projects, Standard & Poor's will generally require arbitration under the auspices of a recognized body of arbitral rules, such as those of the International Chamber of Commerce, the American Arbitration Association, or the United Nations Commission on International Trade Law. The host country to the arbitration hearing should be a party to the New York Convention on Recognition and Enforcement of Arbitral Awards, and Standard & Poor's will often request an opinion to the effect that any arbitration award will be enforceable (convertible to a judgment) in the project's host country, as well as in the country where the award is potentially rendered. If a contract party is a sovereign instrumentality and the arbitral award is to be enforced against that entity, an effective waiver of sovereign immunity should be received along with a supporting legal opinion from local counsel confirming such a waiver.

Chart 4 **Average Global LNG Prices**



Source: Platts, U.S. Energy Information Agency, and International Energy Agency 2004.
E—Estimated. LNG—Liquefied natural gas. MmBtu—Million Btu.

By contrast, the financing documents of investment-grade LNG projects will generally be governed by the law of a major commercial center, typically New York or English law with the venue specified as being in the respective countries. New York and English law are perceived as the most favorable to creditors.

Counterparty exposure

While the ultimate strength of an LNG project's financing rests on its ability to control costs and generate cash, much of the credit profile will derive from contractual participation of outside parties in the establishment and operation of the LNG enterprise. This participation raises questions about the strength or reliability of such participants. Traditional LNG counterparties may include the natural gas feedstock supplier, the principal LNG purchaser, and EPC contractors. Sponsors of LNG projects are also typically a source of counterparty risk because they will not only provide the equity during construction or after the project has exhausted its debt funding, but also marketing arrangements and certain limited recourse obligations, such as completion guarantees.

Traditionally, project ratings were often linked to the credit strength of the offtake counterparty; this was especially the case for independent power projects with power purchase agreements signed with a creditworthy entity, such as a utility. But experience has shown that offtake counterparty risk has become much more complex, especially as projects increasingly rely upon a host of counterparties to bring the project into commercial operation and to operate the project. The failure of a counterparty can put a project's viability at risk. Important offtake counterparties to project now can include:

- Providers of LOCs and surety bonds,
- Parties to interest rate and currency swaps,
- Buyers and sellers of hedging agreements and other derivative products,
- Marketing agents,
- LNG receiving terminals
- EPC companies,
- LNG tanker construction companies
- Political risk guarantors, and
- Government entities.

In most cases, a Standard & Poor's rating will provide the strongest and most reliable indication of counterparty risk, that is, a contracted party's willingness and ability to honor its obligations to the project. Where ratings are not available, Standard & Poor's will assess the risk by conducting a confidential credit assessment of the counterparty.

Counterparty analysis of suppliers and offtakers necessarily becomes more complicated than the analysis of financial obligors. Economic incentives, business relationships, market position, and reputation take on additional importance. Where counterparty risk from principal suppliers or purchasers raise concerns, stronger projects will benefit from situations where the project can easily find viable alternatives to such suppliers or purchasers. In the case where the counterparty is a government entity that provides financial support, counterparty risk may take on political overtones. Government support may range from the largely superficial support letter, to a guarantee of some revenue base, up to the strongest commitment—a state guarantee to cover the project's financial obligations.

Another counterparty risk comes from market intermediaries, such as an LNG project sponsor's LNG trading and marketing arm that has contracted with a gas utility to deliver short or long term supplies. In this instance, an LNG project could risk losing some of its revenues if it has contracted with a trading and marketing company with a corporate credit rating lower than the project's. If the trading and marketing company actually takes title to the project's output, such as natural gas, and then collects receipts from end users, the project might lose its revenues if the intermediary comes under financial stress. Projects can mitigate some of this risk by relying on intermediaries that serve more as brokers and do not take title to the project output.

One complexity that LNG projects have begun to add is project-shipping responsibility. In some instances, LNG projects will own their tankers so that they can have the flexibility of shipping LNG cargoes to the most attractive markets as conditions change. However, to the extent that the counterparty—the ship building company—fails to deliver a tanker on time or fails to deliver a tanker that works as intended, an LNG project may

find itself short shipping capacity. Investment grade LNG projects that have taken on shipping risk will need to demonstrate how they have mitigated ship delivery risk.

Standard & Poor's notes that on occasion exceptionally strong projects—that is, those with very low-cost production and highly reliable operations—may warrant ratings higher than those of the constraining counterparties. A project may have a higher likelihood of receiving its contractual payment from a principal offtaker than the offtaker's lenders may have of receiving interest payments. Such an example could be an LNG project that sells LNG to a country entirely dependent on energy imports to sustain its economy; such a country might be more likely to reschedule its debt obligations rather than risk the internal political consequences of shutting down heat and electricity.

Financial strength

Project financial risk extends well beyond stressed debt service coverage ratios. Hence, investment-grade LNG projects must demonstrate that they withstand a variety of financial threats to their ability to generate revenues sufficient to cover O&M expenses, nonrecurring items, capital replacement expenditures, taxes, and annual fixed charges of principal and interest, among others. As with all cross border projects, LNG projects must contend with such risks as interest rate and foreign currency volatilities, inflation risk, liquidity risk, and funding risk. Even a project's capital structure can be a source of financial risk. Too much debt places a project at risk of volatile currencies, interest rates, and market liquidity.

In Standard & Poor's experience, project sponsors will generally try to structure and leverage a project to the greatest extent possible in order to limit its paid-in equity cash commitment. LNG projects are no different. Fundamentally, the amount of leverage is irrelevant to the credit rating. What ultimately matters most is the project's ability to generate cash sufficient to cover its debt obligation. Thus, it is theoretically possible to have no equity and still achieve an investment-grade rating.

A project's debt amortization schedule often influences the rating, more so than the degree of leverage. Front-loaded principal amortization schedules that capitalize on the more predictable project cash flows in the near term may be less risky that those with whose delayed amortizations seek to take advantage of long-term inflation effects.

On a related point, investment-grade LNG project debt should be amortizing debt. Few projects can adequately assume the refinancing risk of the bullet maturities characteristic of corporate or public financings, particularly when the most significant risk is commodity price risk, as it is with LNG projects.

Interest rate risk. Most project financings generally remove interest rate risk by financing with fixed interest rate debt. Nonetheless, some projects have incorporated debt with interest rates tied to a floating reference rate. Such projects risk an erosion of their credit strength if market reference rates increase and revenues cannot increase at the same rate to offset the increased costs. Where LNG projects chose to use floating rate debt, the investment-grade issuers will need to demonstrate that under scenarios of sustained high interest rates, the LNG entity will still be able to cover its debt service obligations' robust levels.

Currency risk. Typically, a project's financial performance may be at risk if a mismatch exists between the currencies of the project's debt obligations and its revenue sources. Transactions unhedged with respect to currency risk will almost always indicate speculative-grade debt ratings, even for projects in OECD countries with currency obligations in other OECD countries. Practically speaking, because the LNG market is dollar denominated and because virtually all LNG projects rely on dollar financing, currency risk for most LNG projects is nonexistent.

Liquidity risk. As with most ongoing businesses, LNG projects will also need some measure of liquidity to maintain operations. Investment-grade projects should demonstrate the ability to generate sufficient cash to fund major maintenance reserve funds, as well as environmental capital expenditure compliance funds in sectors where such expenditures are likely. Pro forma analyses should demonstrate an ability to generate sufficient cash to purchase consumables and other basic necessities without having to rely on additional debt.

Forecast results. Cash coverage of fixed charges—primarily debt obligations—will outweigh many concerns and bear directly on the project's credit strength. Standard & Poor's assesses the level of certainty that forecast cash flows will be adequate to fund operations, including ongoing maintenance expenses, fuel or other necessary inputs (particularly those with fixed take obligations), capital requirements, nonrecurring expenditures, and total fixed charges. Total fixed charges will include annual principal and interest payments, as well as key letter of credit expenses.

At a minimum, investment-grade LNG projects probably will have to exceed a 2.0x annual DSCR through debt maturity, but also show steadily increasing ratios. Even with 2.0x coverage levels, sponsors of investment-grade LNG deals will need to demonstrate that the scenarios behind such forecasts are defensible.

Because of the wealth of historical oil and natural gas by-project prices, investment-grade LNG projects will need to demonstrate resistance to historical price volatility as a proxy for prospective volatility. Nevertheless, given the limitations of statistical approaches, statistics will not drive the ratings methodology, but only support the analysis.

In addition, investment-grade LNG projects should be able to withstand a variety of credible project stress scenarios that test the pro forma results' sensitivity to changes in key assumptions and operational parameters. LNG scenario analyses should explore some of the following broad uncertainties that tend to influence most LNG projects' creditworthiness from time to time:

- Changes in technical parameters and performance, such as efficiency, availability, and output,
- Gas supply availability,
- An increase in operating expenses,
- Downside market price and demand scenarios,
- High and low inflation rate environments,
- Interest rate exposure for projects with floating rate debt,
- Foreign exchange movements,
- Deferrals of LNG cargoes for extended time periods, and
- Additional debt levels, as allowed by project documentation.

Transactions that show minimal changes to key project finance ratios under scenario analysis will tend to display more robust financials and, accordingly, support investment-grade ratings. Conversely, projects that show difficulty in maintaining coverages under reasonable stress scenarios will not likely achieve investment-grade ratings.

Sovereign Risk

Sovereign risk involves a number of issues highly pertinent to determining whether an LNG project can raise investment-grade rated debt. Central to the concept of sovereign risk is the host's sovereign foreign currency rating, an assessment of the willingness and ability of the host government to pay its foreign currency-denominated debt on time and in full. The sovereign foreign currency rating will constrain the project rating because, even where the project may be rated higher than the sovereign, the sovereign has first claim on available foreign exchange and controls the ability of residents to obtain funds to repay their external creditors. The sovereign can also impede the project through its ability to control the domestic financial system, to tax, and to set tariffs. Empirical evidence has shown time and again that defaults by otherwise creditworthy borrowers can stem directly from a sovereign default or from some lesser but, from a ratings perspective, still mortal act of sovereign interference.

Nevertheless, an LNG project can receive a rating higher than that of the host country. The primary justification for a higher rating is that the project creates an export receivable—the onshore production and offshore sale of market receivables. That an LNG project produces an export, LNG and related co-projects, which are sold into a U.S. dollar-denominated market, virtually eliminates currency risk. Furthermore, because LNG has no value or demand in the host country, the sovereign has little incentive to interfere with its export. If a project can limit diversion risk—that is, the risk that the output could go to an offtaker other than the one with which the project originally contracted, and one who could circumvent trustee arrangements—the risk of sovereign interference could be even less. However, as LNG becomes more global and fungible in nature, diversion risk will more likely increase rather than decrease.

Relative Institutional Development

Even though an LNG project's sponsors and its legal and financial advisors may have structured the transaction to protect against readily foreseeable contingencies, some risks emanating from certain country-specific factors may unavoidably tend to place lenders at risk. Specifically, these factors involve the business and legal institutions needed to enable the project to operate as intended by the transaction parties. Experience suggests that in certain emerging countries, vital business and legal institutions may not exist or may exist only in embryonic form. Standard & Poor's notes that its sovereign foreign currency ratings do not necessarily measure such business and legal institutional risk and that these risks will necessarily have to be assessed ad hoc. In certain cases, institutional risk may tend to prevent a project from reaching the host country's foreign currency rating, notwithstanding other strengths of the project. That many infrastructure projects do not directly generate foreign currency earnings and may not be individually important for the host's economy may further underscore the risk.

In certain emerging markets the concepts of property rights and commercial law may be at odds with investor's experience. In particular, the notion of contract-supported debt is often a novel one. There may, for example, be little or no legal basis for the effective assignment of an LNG sale and purchase agreements to lenders as collateral, let alone the pledge of physical plant. Overall, it is not unusual for legal systems in developing countries to fail to provide the rights and remedies that a project or its creditors typically require for the enforcement of their interests. Even though these projects may appear to be "to big to fail," given the right set of circumstances anyone of them could fail and the sponsors could quite conceivably sit on the sidelines and watch the investments whither away, knowing that the nonrecourse aspect of their investment means that they will not have to throw good money after bad. Since almost no market exists for LNG project debt that is noninvestment grade, or high yield, especially when sponsors themselves carry debt ratings ranging from 'A' to 'AAA', potential LNG projects will need to exhibit investment-grade qualities in order to attract investors at a price that will not affect the project's competitiveness.

Outlook For Investment-Grade LNG Projects

To date, LNG projects have had little difficulty raising debt to fund upstream liquefaction projects, as well as funds for new LNG tankers and regasification terminals. Even as this article goes to press, Cheniere Energy Inc. (B/Stable/—) is raising $600 million in the term B bank market for its regasification terminals (Cheniere LNG Holdings LLC, 'BB/Stable/—'). Indeed, as oil prices inch their way daily toward the three-digit price barrier, LNG projects are increasingly generating unprecedented cash flows. Global fundamentals for natural gas also are steadily improving, both in markets where demand has long been established and in new markets. Nonetheless, raising investment-grade rated debt for a new LNG project is not a given. Sovereign risk, commodity price risk, counterparty credit risk, technology matters, host country business, and legal institutional concerns can conspire in countless ways to derail even the best project plans. How project sponsors structure their deals, with whom they choose to work and what level of recourse they may provide will likely separate the investment-grade projects from the speculative rated ones. ■

Project Finance Summary Debt Rating Criteria

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As project finance has adjusted to the increasingly diverse needs of project sponsors and their lenders, the analysis of risk has become more complicated. The increasing variety of project finance applications and locations suggests that perhaps project finance, despite weaker numbers recently, continues to be viable means of raising capital. Yet, projects have departed from their traditional long-term revenue contract bases. Contract-based revenues are increasingly rare. Fewer projects are able to secure the highly desirable fixed-price, turnkey, date-certain construction contracts that protect lenders from construction and completion risk. Commodity price and market risk now complicate the analysis of project finance. Term B loan structures with minimal amortizations and risky bullet maturities have made inroads in project finance. Transactions span such industries as meatpacking, power generation, oil and gas, entertainment, transport and military housing, to name a few. For lenders and other investors, identifying, comparing, and contrasting project risk systematically can indeed be a daunting task.

To address the challenge in analyzing project finance risk, Standard & Poor's uses a framework of analysis that extends well beyond its traditional approach that grew out of rating U.S. independent power projects. The approach begins with the assumption that a project is a collection of contracts and agreements among various parties, including lenders, that collectively serves two primary functions: The first is to create a company that will act on behalf of its sponsors to bring together several unique factors of production to produce a single product or service.

The second function is to provide lenders with the security of payment of interest and principal from a single operating entity. Standard & Poor's analytic framework then focuses primarily on determining how competitive the project will be in its market segment and which risks might undermine its competitiveness and hence, the assurance of repayment to lenders.

Project Finance Defined

Standard & Poor's defines a project company as a group of agreements and contracts between lenders, project sponsors, and other interested parties that creates a form of business organization that will issue a finite amount of debt on inception; will operate in a focused line of business; and will ask that lenders look only to a specific asset to generate cash flow as the sole source of principal and interest payments and collateral.

What the rating means. Standard & Poor's project ratings address default probability, or put differently, the level of certainty with which lenders can expect to receive timely payment of principal and interest according to the terms of the bond or note. Project ratings do not distinguish between the debt issue rating and the issuer credit rating, as is the case with corporate credit ratings, for a number of reasons. First, project documentation generally allows a project to issue debt at its inception to operate with a single business focus and typically to maintain a constant risk profile. Second, project debt does not become a permanent part of the capital structure, but rather amortizes in most projects according to a schedule based on the project's useful life. Finally, projects do not by design build up equity, but instead, use up cash quickly, first as operating expenses, then as debt service (often the most significant expense), and finally as dividends. (For a more comprehensive discussion of project finance risk and for clarification of specific topics, see

"Debt Rating Criteria for Energy, Industrial, and Infrastructure Project Finance," March 19, 2001).

Framework For Project Finance Criteria

This article summarizes an analytic framework that can be used to systematically assess cash flows based on project-level risks and then to analyze risks external to the project. External risks, many of which are often country specific, include lack of host country institutional development needed to support the project, force majeure, and sovereign risk.

Five levels of analysis form Standard & Poor's framework of project analysis:

- Project-level risks,
- Sovereign risk,
- Business and legal institutional development,
- Force majeure risk, and
- Credit enhancements.

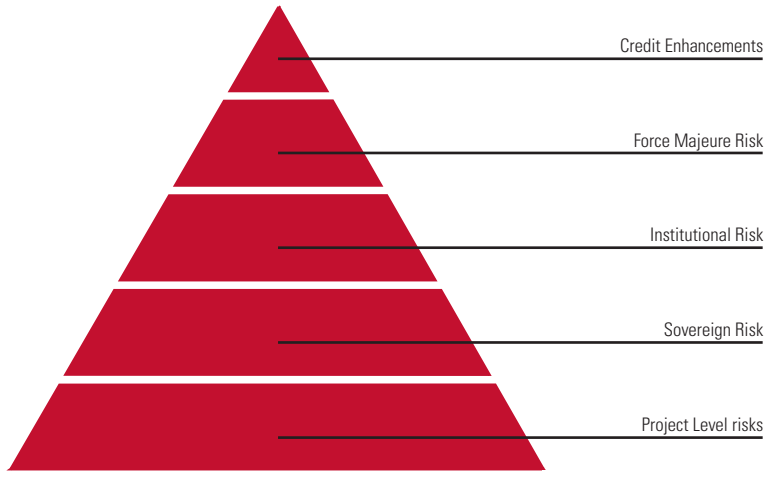
The analysis begins with identifying and assessing project-level risks. These risks generally define most of the risks associated with the choice of business because if a project cannot reasonably forecast commercially ongoing operations, other concerns such as the viability of guarantees or credit enhancements will count for little.

Project-level risk consists of the following categories:

- Contractual foundation;
- Technology, construction, and operations;
- Competitive market exposure;
- Legal structure;
- Counterparty exposure; and
- Financial strength.

A project debt rating involves a marshaling of the various heads of risk, analyzing their respective magnitude and likelihood of occurrence, and assessing the effect thereof on the project to operate and to pay debt service on the rated obligations. Surprisingly, even though project finance is supposed to be nonrecourse to the sponsor, some lender credit assessments are often based on the sponsor's reputation, its creditworthiness, or both—the implication being that the sponsor will support the project in difficult times. Particularly when the sponsor is rated higher than the project, such an approach flies in the face of evidence that sponsors have walked away when the projects became uneconomical. Sponsor reputation and experience are certainly considered in the assessment of project completion and operations. But in the absence of an independent determination that, despite its nonrecourse status, the project is strategically essential to the sponsor, the rating will reflect primarily the project's standalone economic viability.

Chart 1 **Framework of Project Analysis**



Project Level Risks

The analysis of project finance risk begins with identifying and assessing project-level risks. Standard & Poor's defines these risks as those intrinsic to the project's business and the industry in which it operates (e.g., a merchant power plant selling power to the U.K. electricity sector). The first objective of the analysis is to determine how well a project can sustain ongoing commercial operations throughout the term of the rated debt and, as a consequence, how well the project will be able to service its obligations (financial and operational) on time and in full.

Assessing project-level risk takes six broad steps:

1. Evaluate project operational and financing contracts that, along with the project's physical plant, serve as the basis of the enterprise;
2. Assess the technology, construction, and operations of the enterprise;
3. Analyze the competitive position of the project against the market in which it will operate;

Table 1 **Contractual Foundation Benchmark Scores**

Score	Characteristics
1	Project has a credit lease, hell-or-high-water contract; even if the project is a technological/operational failure, it receives full revenue payments sufficient to cover debt service. Indenture creates a first perfected security interest in all project assets, contracts, permits, and accounts necessary to run the project. Strict controls on cash flows and distributions. Trustee (offshore for cross-border debt).
2	Project has a credit lease, hell-or-high-water contract; even if the project is a technological/operational failure, it receives full revenue payments. Indenture creates a first perfected security interest in all project assets, contracts, permits, and accounts necessary to run the project. Strict controls on cash flow. Trustee (offshore for cross-border debt).
3	Project has excellent long-term concession or other offtake agreement that provides predictable revenues that cover fixed payments and variable costs. Virtually no conditions that could reduce revenue payments. Revenues are protected from foreign exchange, inflation, and market risks. Solid supply contracts; minimal cost/revenue mismatch. Business interruption and casualty insurance policies in place. No regulatory outs or easy termination provisions. Indenture creates a first perfected security interest in all project assets, contracts, permits, and accounts necessary to run the project. Strict controls on cash flow. Trustee (offshore for cross-border debt).
5	Project has good long-term concession or offtake agreement, but does not fully protect lenders from market, inflation, or foreign exchange risks. Project could be a merchant project, but is secured by licenses, permits, sites, and contractual access to markets. Contract outs for offtaker or government. Adequate supply contracts; potential for cost/revenue mismatch. Business interruption and casualty insurance policies in place. Indenture creates a first perfected security interest in all project assets, contracts, permits, and accounts necessary to run the project. Strict controls on cash flow. Trustee (offshore for cross-border debt).
7	Project has fair long-term concession or offtake agreement, but exposes lenders to market, inflation, or foreign exchange risks. Contract outs or termination easily achieved. No contractual requirements to perform while disputes are being resolved. Contracts contain poorly defined provisions and ambiguous requirements. No provisions for international arbitration. Weak insurance program. Indenture provides little security or collateral for lenders. Few controls on cash flow. No trustee.
10	No contracts support revenue or supply. No contractual requirements to perform while disputes are being resolved. Contracts contain poorly defined provisions and ambiguous requirements. No provisions for international arbitration. Little or no insurance. Indenture provides virtually no security for project. Virtually no controls on cash flow. No trustee.

4. Determine the risk that counterparties, such as suppliers and customers, present to the enterprise;
5. Appraise the project's legal structure; and
6. Evaluate the cash flow and financial risks that may affect forecasted results.

Contractual foundation

The primary objective of analyzing project contracts is to determine the level of protection from market and operating conditions each agreement provides. The secondary objective is to determine how well the various contract obligations address the project's operating risk characteristics and mesh with other project contracts.

The project structure should protect stakeholders' interests through contracts that encourage the parties to complete project construction satisfactorily and to operate it competently. The project's structure should also give stakeholders a right to a portion of the project's cash flow to service debt and, in appropriate circumstances, to release free cash to the equity in the form of dividends. Moreover, higher rated projects generally give lenders the assurance that project management will align their interests with lenders' interests; project management should have limited discretion in changing the project's business or financing activities. Finally, the stronger projects distinguish themselves by agreeing to give lenders a first perfected security interest (or fixed charge, depending on the legal jurisdiction) in all of the project's assets, contracts, permits, licenses, accounts, and other collateral so the project can be disposed of in its entirety, should the need arise.

Contract analysis focuses on the terms and conditions of each agreement. The analysis also considers the adequacy and strength of each contract in the context of a project's technology, counterparty credit risk, and the market, among other project characteristics. Project contract analysis falls into two broad categories: commercial agreements and collateral arrangements. Examples of key commercial project agreements and contracts include the following:

- Power purchase agreements,
- Gas and coal supply contracts,
- Steam sales agreements,
- Concession agreements, and
- Airport landing-fee agreements.

Collateral agreements include an analysis of the following:

- Project completion guarantees;
- Assignments to lenders of project assets, accounts, and contracts;
- Credit facilities or lending agreement;
- Equity contribution agreement;
- Indenture;
- Mortgage, deed of trust, or similar instrument that grants lenders a first-mortgage lien on real estate and plant;
- Security agreement or similar instrument that grants lenders a first mortgage lien on various types of personal property;
- Depositary agreements;
- Collateral and intercreditor agreements; and
- Liquidity support agreements, such as letters of credit (LOCs), surety bonds, and targeted insurance policies.

Technology, construction, and operations

A project's rating rests, in part, on the dependability of a project's design, construction, and operation; if a project fails to achieve completion or to perform as designed, many contractual and other legal remedies may fail to keep lenders economically whole.

The technical assessment of project risk falls into two categories: preconstruction and postconstruction. Preconstruction risk consists of:

- Engineering and design,
- Site plans and permits,
- Construction, and
- Testing and commissioning.

Postconstruction risk is made up of:

- Operations and maintenance (O&M), and
- Historical operating record, if any.

Project lenders frequently rely on the reputation of the engineering, procurement, and construction (EPC) contractor or the project sponsor as a proxy for technical risk, particularly when lending to unrated transactions. The record suggests that such confidence may be misplaced. Standard & Poor's experience with technology, construction, and operations risk on more than 300 project finance ratings indicates that technical risk is pervasive during the pre- and postconstruction phases, while the possibility of sponsors coming to the aid of a troubled project is uncertain. Moreover, many lenders do not adequately evaluate the risk when

Table 2 **Technology, Construction, and Operations Benchmark Scores**

Score	Characteristics
1	Project is a credit lease, hell-or-high-water contract; even if the project is a technological/operational failure, it receives full revenue payments.
2	Project has fixed-price, date-certain, turnkey contract; one-year-plus guarantees; superior liquidated performance/delay damages; highly rated by Standard & Poor's; EPC contractor, credible sponsor completion guarantee, or LOC-backed construction; installed costs at or below market; contracts executed. Independent engineer (IE) oversight through completion, including completion certificate. Commercially proven technology used. Rated O&M contract with performance damages. Budget and schedule are credible, not aggressive. Thorough and credible IE report.
3	Project has fixed-price, date-certain, turnkey contract; one-year guarantees for adequate liquidated performance/delay damages; reputable EPC contractor or LOC-backed construction; installed costs at market rate; mostly permitted and well-sited. IE oversight through completion. Commercially proven technology used. O&M contract with performance damages. Budget and schedule are credible, possibly aggressive. Thorough IE report, but missing key conclusions.
5	Project has fixed-price, date-certain, turnkey contract; less than one-year guarantees; some liquidated performance/delay damages; known EPC contractor or surety bond-backed construction; installed costs at premium rate; many permits and well-sited; possible local political/regulatory problems. Limited IE oversight. Commercially proven technology used. O&M contract with performance damages. Budget and schedule are credible, possibly aggressive. Mostly complete IE report; conclusions are weak.
7	Project has partial fixed-price, date-certain, turnkey contract and cost-plus features; weak guarantees, if any; minor liquidated performance/delay damages; questionable EPC contractor or weak performance bond-backed construction; installed costs at premium rate or not credible; permits lacking and siting issues; possible local political/regulatory problems. No IE oversight. Technology issues exist. Aggressive budget and schedule. IE report leaves many issues open.
10	Project has cost-plus contracts, no cap; weak guarantees, if any; minor liquidated performance/delay damages; questionable EPC contractor. Costly budget. Permits lacking; siting issues exist. Possible local political/regulatory problems. No IE oversight. No IE report. Technology issues exist. Aggressive budget and schedule.

making investment decisions. Thus, Standard & Poor's places considerable importance on the technical evaluation of project-financed transactions.

Standard & Poor's relies on several assessments for its technical analysis, including a review of the independent engineer's (IE) project evaluation. This review assesses whether the scope and depth of the engineer's investigation support the sponsor's and EPC contractor's conclusions. Standard & Poor's supplements its review of the independent expert's report with meetings with the authors and visits to the site to inspect the project and hold discussions with the project's management and EPC contractor. Without an IE review, Standard & Poor's will most likely assign a speculative-grade debt rating, regardless of whether the project is in the pre- or postconstruction phase.

Competitive market exposure

A project's competitive position within its peer group is a principal credit determinant. Analysis of the competitive market position focuses on the following factors:

- Industry fundamentals,
- Commodity price risk,
- Supply and cost risk,
- Outlook for demand,
- Foreign exchange exposure,
- The project's source of competitive advantage, and
- Potential for new entrants or disruptive technologies.

Given that most projects produce a commodity, such as electricity, ore, oil or gas, or some form of transport, low-cost production relative to the market characterizes many investment-grade ratings. High costs relative to an average market price, in the absence of mitigating circumstances, will almost always place lenders at risk. But competitive position is only one element of market risk. The demand for a project's output can change over time, sometimes dramatically, resulting in low clearing prices. The reasons for demand change are many and usually hard to predict. Any of the following can make a project more or less competitive:

- New products,
- Changing customer priorities,
- Cheaper substitutes, or
- Technological change.

Experience has shown, however, that offtake contracts providing stable revenues or that limit cost risk, or both, may not be enough to mitigate adverse market situations. Hence, market risk can potentially take on greater importance than the legal profile of, and security underlying, a project. Conversely, if a project provides a strategic input that has few, if any, substitutes, economic incentives will be stronger for the purchaser to maintain a viable relationship with the project.

Legal structure

Standard & Poor's assesses whether the project is chartered solely to engage in the business and activities being rated. It will also determine that the insolvency of entities connected to the project (sponsors, affiliates thereof, suppliers, etc.), which are unrated or are rated lower than the rating sought for the project, should not affect project cash flow. Standard & Poor's also analyzes other structural features to assess their potential to manage cash flow and prevent a change in the project's risk profile. These may include:

- Choice of legal jurisdiction,
- Documentation risk,
- Trustee arrangements, or
- Intercreditor arrangements.

Standard & Poor's generally will not rate a project higher than the lowest rated entity (i.e., the offtaker) that is crucial to project performance, unless the entity may be easily replaced, notwithstanding its insolvency or failure to perform, or unless it is a special purpose entity (SPE). Moreover, the transaction rating may also be constrained by a project sponsor's rating if the project is in a jurisdiction where the sponsor's insolvency may lead to the insolvency of the project, particularly if the sponsor is the sole parent of the project.

A project finance SPE, as defined by Standard & Poor's, is a limited purpose operating entity whose business purposes are limited to:

- Owning the project assets,
- Entering into the project documents (e.g., construction, operating, supply, input and output contracts, etc.),
- Entering into the financing documents (e.g., the bonds; indenture; deeds of mortgage; and security, guarantee, intercreditor, common terms, depositary, and collateral agreements, etc.), and
- Operating the defined project business.

The thrust of this single-purpose restriction is that the rating on the bonds represents, in part, an assessment of the creditworthiness of specific business activities.

One requirement of a project finance SPE is that it is restricted from issuing any subsequent debt rated lower than its existing debt, unless such debt is subordinated in payment and security to the existing debt and does not constitute a claim on the project. A second requirement is that the project should not be permitted to merge or consolidate

Table 3 **Competitive Market Risk Benchmark Scores**

Score	Characteristics
1	Project is a credit lease, hell-or-high-water contract; even if the project is a technological/operational failure, it receives full revenue payments.
2	Project sells a commodity sold widely on the world market.
	Project is in first cost quartile of producers.
	Solid competitive advantage in location, technology, and know-how.
	Demand is excellent for product/service.
	Long-term market outlook is excellent.
	For non-commodity products/services, project is in first cost quartile of producers and enjoys defensible price premium.
	Revenue and supply contracts will likely keep project economical.
3	Project sells a commodity sold widely in regional markets.
	Project is in first cost quartile of producers.
	Solid competitive advantage in location, technology, and know-how.
	Demand is excellent for product/service.
	For non-commodity products/services, project is in second cost quartile of producers and enjoys defensible price premium.
	Revenue and supply contracts will likely keep project economical.
5	Project sells a commodity widely sold on the market.
	Project is in the second cost quartile of producers.
	Demand for product/service should be adequate through debt.
	Competitive advantage in location, technology, and know-how, but may be hard to defend long term.
	For non-commodity products/services, project is in second cost quartile of producers; does not have a premium product.
	Pricing controlled/influenced by a regulator.
	Project could be uneconomical to primary offtaker.
7	Project sells a commodity, but sold in limited markets.
	Project is in the third cost quartile of producers
	Few competitive advantages.
	For non-commodity projects/services, project is in third cost quartile of producers producers; does not have a premium product.
	Demand for product/service is limited and decreasing.
	Project is out of market or soon will be.
	Project is uneconomical to primary offtaker.
10	Project sells a commodity, but sold only in a few markets.
	Project is one of the most expensive producers.
	Virtually no competitive advantage in any aspect of its business.
	For non-commodity projects, project is in fourth quartile of low-cost producers and does not have a premium product.
	Little demand for product/service.
	Project is uneconomical to any/all parties associated with it.

Table 4 **Legal Risk Benchmarks**

Score	Characteristics
1	Project is a credit lease, hell-or-high-water contract; even if the project is a technological/operational failure, it receives full revenue payments sufficient to service fixed obligations.
	Project is a bankruptcy-remote SPE.
	Virtually no ability to issue additional debt.
	New York or London financing jurisdiction.
	Adequate legal opinions support project documentation, collateral, and relevant tax matters.
	Documents provide for superior ongoing disclosure and monitoring.
2	Project is a bankruptcy-remote SPE.
	New York or London financing jurisdiction.
	Adequate legal opinions support project documentation, collateral, and relevant tax matters.
	Superior financing documentation.
	Extremely limited ability to issue additional debt.
	Collateral and security strongly enforceable.
	Documents provide for superior ongoing disclosure and monitoring.
3	Project is a bankruptcy-remote SPE.
	New York or London financing jurisdiction.
	Adequate legal opinions support project documentation, collateral, and relevant tax matters.
	Excellent financing documentation.
	Mostly limited ability to issue additional debt.
	Collateral and security strongly enforceable.
	Documents provide for superior ongoing disclosure and monitoring.
5	Project is reasonably bankruptcy-remote and strong SPE.
	New York or London financing jurisdiction.
	Adequate legal opinions support project documentation, collateral, and relevant tax matters.
	Adequate financing documentation.
	Project can issue additional debt with some controls.
	Collateral and security adequately enforceable.
	Documentation provides for adequate ongoing disclosure and monitoring.
7	Project is neither bankruptcy-remote nor an SPE.
	Financing jurisdiction is questionable.
	Legal opinions weak or unavailable.
	Marginal financing documentation.
	Project can issue unlimited additional debt.
	Collateral and security probably not enforceable.
	Ongoing disclosure and monitoring will probably be difficult.
10	Project is neither bankruptcy-remote nor an SPE.
	Financing jurisdiction is questionable.
	Legal opinions unavailable.
	Weak financing documentation.
	Project can issue unlimited additional debt.
	Questionable enforceability of collateral and security.
	Documentation does not provide for ongoing disclosure or monitoring.

with any entity rated lower than the rating on the project debt. A third requirement is that the project (as well as the issuer, if different) continue in existence for as long as the rated debt remains outstanding. The final requirement is that the SPE must have an antifiling mechanism in place to hinder an insolvent parent from bringing the project into bankruptcy. In the U.S., this can be achieved by the independent director mechanism whereby the SPE provides in its charter documents that a voluntary bankruptcy filing by the SPE requires the consenting vote of the designated independent member of the board of directors (the board generally owing its fiduciary duty to the equity shareholder[s]). The independent director's fiduciary duty, which is to the lenders, would be to vote against the filing. In other jurisdictions, the same result is achieved by the "golden share" structure, in which the project issues a special class of shares to some independent entity (such as the bond trustee), whose vote is required for a voluntary filing.

The antifiling mechanism is not designed to allow an insolvent project to continue operating when it should otherwise be seeking bankruptcy protection. In certain jurisdictions, antifiling covenants have been held to be enforceable, in which case such a covenant (and an enforceability opinion with no bankruptcy qualification) would suffice. In the U.K. and Australia, where a first "fixed and floating" charge may be granted to the collateral trustee as security for the bonds, the collateral trustee can appoint a receiver to foreclose on and liquidate the collateral without a stay or moratorium, notwithstanding the insolvency of the project debt issuer. In such

Table 5 **Counterparty Benchmark Scores**

Score	Characteristics
1	Project is a credit lease, hell-or-high-water contract; even if the project is a technological/operational failure, it receives full revenue payments.
	Rated offtake counterparty with exceptional credit rating.
	Counterparty guarantees debt payment.
2	Project is a credit lease, hell-or-high-water contract; even if the project is a technological/operational failure, it receives full revenue payments.
	Rated offtake counterparty with excellent credit rating.
	Counterparty guarantees revenue payments.
3	Supply and offtake contract counterparties have good credit ratings.
	Sponsor counterparty obligations are backed by good ratings or LOCs.
	Government counterparties, if any, have good credit ratings.
	Financial counterparties have good credit ratings.
5	Supply and offtake contract counterparties have adequate credit ratings.
	Sponsor counterparty obligations are backed by adequate ratings or LOCs.
	Government counterparties, if any, have adequate credit ratings.
	Financial counterparties have adequate credit ratings.
7	Supply and offtake contract counterparties have doubtful creditworthiness.
	Sponsor counterparty obligations are uncertain.
	Government counterparties, if any, have adequate credit ratings.
	Financial counterparties have weak credit ratings.
	Service counterparties have weak credit ratings.
10	Supply and offtake contract counterparties have poor creditworthiness.
	Sponsor counterparty obligations are weak.
	Government counterparties, if any, have poor credit ratings.
	Financial counterparties have poor credit ratings.
	Service counterparties have poor credit ratings.

Table 6 **Financial Risk Benchmark Scores**

Score	Characteristics
1	Project is a credit lease, hell-or-high-water contract; even if the project is a technological/operational failure, it receives full revenue payments.
	Financial flexibility not needed.
	Amortizing debt payments.
	No subordinated debt allowed.
2	Financial model strongly reflects project documentation.
	Minimum DSCR exceeds 4.0x.
	Average DSCR exceeds 6.0x.
	Project insensitive to interest, inflation, and foreign exchange risks.
	Distress scenario analyses show less than 50 basis point coverage deterioration.
	Excellent financial flexibility protection.
	Amortizing debt payments.
	No subordinated debt allowed.
3	Financial model reflects project documentation.
	Minimum DSCR exceeds 3.0x.
	Average DSCR exceeds 5.0x.
	Project slightly sensitive to interest, inflation, and foreign exchange risks.
	Distress scenario analyses show less than 100 basis point coverage deterioration.
	Good financial flexibility.
	Amortizing debt payments.
	Subordinated debt allowed, but rights against senior debt are unenforceable.
5	Financial model adequately reflects project documentation.
	Minimum DSCR exceeds 1.5x.
	Average DSCRs range from 2.0x to 3.0x.
	Project sensitive to interest, inflation, and foreign exchange risks.
	Distress scenario analyses show less than 80 basis point coverage deterioration.
	Good financial flexibility.
	Mostly amortizing debt, but may have limited bullet payment(s).
	Subordinated debt allowed, but rights against senior debt are limited.
7	Financial model conflicts with project documentation.
	Minimum DSCR exceeds 1.2x.
	Average DSCR ranges from 1.5x to 2.5x.
	Interest, inflation, and/or foreign exchange changes significantly affect DSCRs.
	Distress scenario analyses show less than 80 basis point coverage deterioration.
	Limited financial flexibility.
	Bullet maturities likely.
	Subordinated debt allowed; distress may affect senior debt.
10	Financial model conflicts with project documentation.
	Minimum DSCR exceeds 1.0x.
	Average DSCR exceeds 1.1x to 1.5x.
	Interest, inflation, and/or foreign exchange changes significantly affect DSCRs.
	Distress scenario analyses show less than 50 basis point coverage deterioration.
	No financial flexibility.
	Bullet maturities likely.
	Subordinated debt likely to have enforceable rights.

circumstances, the requirement for an independent director may be waived.

The SPE criteria will apply to the project (and to the issuer if a bifurcated structure is considered) and is designed to ensure that the project remains nonrecourse in both directions: by accepting the bonds, investors agree that they will not look to the credit of the sponsors, but only to project revenues and collateral for reimbursement. Investors, on the other hand, should not be concerned about the credit quality of other entities (whose risk profile was not factored into the rating) affecting project cash flows.

Counterparty exposure

The strength of a project financing rests on the project's ability to generate cash, as well as on its general contractual framework, but much of the project's strength comes from contractual participation of outside parties in the establishment and operation of the project structure. This participation raises questions about the strength and reliability of such participants. The traditional counterparties to projects have included raw material suppliers, principal offtake purchasers, and EPC contractors. Even a sponsor becomes a source of counterparty risk if it provides the equity during construction or after the project has exhausted its debt funding.

Important offtake counterparties to a project can include:

- Providers of LOCs and surety bonds,
- Parties to interest rate and currency swaps,
- Buyers and sellers of hedging agreements and other derivative products,
- Marketing agents,
- Political risk guarantors, and
- Government entities.

Because projects have taken on increasingly complex structures, a counterparty's failure can put a project's viability at risk.

Financial strength

Projects must withstand numerous financial threats to their ability to generate revenues sufficient to cover O&M expenses, nonrecurring items, capital replacement expenditures, taxes, and annual fixed charges of principal and interest, among other expenses. Projects must contend with such risks as interest rate and foreign currency volatility, inflation risk, liquidity risk, and funding risk. Standard & Poor's considers a project's capital structure a source of financial risk. Too much debt places a project at risk of volatile currencies, interest rates, and market liquidity.

Investment-grade project debt should be amortizing debt. Few projects, particularly power projects, can adequately assume the refinancing risk of the bullet maturities characteristic of corporate or public financings. Unlike a corporate entity, a single-asset power generation facility is more likely to

Table 7 **Institutional Risk Exposure Benchmark Scores**

Score	Characteristics
1	Well-developed legal system; significant precedent exists.
	Well-developed financial system.
	Significant history of transparency in financial reporting.
3	Developed legal system; reasonable precedent exists.
	Developed financial system; enforcement culture still developing.
	Transparency in financial reporting may raise concerns.
5	Developed legal system; limited precedent exists.
	Financial system beginning to develop.
	Contract culture developing.
	Transparency just taking hold.
10	No legal statutes for project finance.
	Bankruptcy code not developed or not enforced.
	Banking sector poorly monitored and/or poorly supervised.
	Little contract culture.

have a finite useful life. Because of this depreciating characteristic, a fixed obligation payable by an aging project near the end of the project's life is necessarily more risky and speculative than an obligation payable from cash sourced in diverse assets.

Standard & Poor's relies on debt-service coverage ratios (DSCRs) as the primary quantitative measure of a project's financial credit strength. The DSCR is the ratio of cash from operations (CFO) to principal and interest obligations. CFO is calculated strictly by taking cash revenues and subtracting expenses and taxes, but excluding interest and principal, needed to maintain ongoing operations. The ratio calculation also excludes any cash balances that a project could draw on to service debt, such as the debt service reserve fund or maintenance reserve fund. To the extent that a project has tax obligations, such as host country income tax, withholding taxes on dividends and interest paid overseas, etc., Standard & Poor's treats these taxes as ongoing expenses needed to keep a project operating (see "Tax Effects on Debt Service Coverage Ratios," July 27, 2000).

Note that some projects have been using subordinated debt recently in their capital structures to help mitigate commodity price risk. Although such structures can be helpful, subordinated debt is just that—inferior to senior lenders' rights to cash flow or collateral until after the project has met senior lenders' obligations. Moreover, in calculating the DSCR, and ultimately the rating, on subordinated debt, Standard & Poor's divides total CFO by the sum of senior debt-service obligations plus the subordinated obligations. Such a formula more accurately measures the subordinated payment risk than using CFO *after* senior debt service obligations and dividing it by subordinated obligations.

Sovereign Risk

As a general rule, the foreign currency rating of the country in which the project is located will constrain the project debt rating. A sovereign foreign currency rating indicates the sovereign government's willingness and ability to service its foreign currency denominated debt on time and in full. The sovereign foreign currency rating acts as a constraint because the project's ability to acquire the hard currency needed to service its foreign currency debt may be affected by acts or policies of the government. For example, in times of economic or political stress, or both, the government may intervene in the settlement process by impeding commercial conversion or transfer mechanisms, or by implementing exchange controls. In some rare instances, a project rating may exceed the sovereign foreign currency rating if the project has foreign ownership that is key to its operations, if the project can earn hard currency by exporting a commodity with minimal domestic demand, or if other risk-mitigating structures exist.

Table 8 **Force majeure Risk Exposure Benchmark Scores**

Score	Characteristics	Examples
1	Highly linear, simple operations.	Toll roads,
	Loose linkages.	Pipelines,
	Geographically spread out.	Hydroelectric power plants
5	Greater complexity in operations.	Coal-fired power plants,
	Specialized equipment used (compressors, generators, heat exchange, high pressure, high temperature).	Natural gas-fired power plants,
	Tighter linkages of sequential operations.	Mines
10	Highly complex operations.	Petrochemical plants,
	Extremely tight linkages among system operations.	Refineries,
	Highly specialized equipment used.	Liquefied natural gas,
	Operating accidents can be costly.	Nuclear power plants.

Institutional Risk

Even though a project's sponsors and its legal and financial advisors may have structured a project to protect against readily foreseeable contingencies, risks from certain country-specific factors may unavoidably place lenders at risk. Specifically, these factors involve the business and legal institutions needed to enable the project to operate as intended. Experience suggests that in some emerging markets, vital business and legal institutions may not exist or may exist only in nascent form. Standard & Poor's sovereign foreign currency ratings do not necessarily measure institutional risk. In some cases, institutional risk may prevent a project's rating from reaching the host country's foreign currency rating, notwithstanding other strengths of the project. That many infrastructure projects do not directly generate foreign currency earnings and may not be individually important for the host's economy may further underscore the risk.

In certain emerging markets, the concepts of property rights and commercial law may be at odds with investors' experience. In particular, the notion of contract-supported debt is often a novel one. There may, for example, be little or no legal basis for the effective assignment of power purchase agreements to lenders as collateral, let alone the pledge of a physical plant. Overall, it is not unusual for legal systems in developing countries to fail to provide the rights and remedies that a project or its creditors typically require for the enforcement of their interests.

Force Majeure Risk

Project-financed transactions distinguish themselves from corporate or structured finance assets by their vulnerability to potential force majeure risks. Force majeure can excuse performance by parties when they are confronted by unanticipated events outside their control. A careful analysis of force majeure events is critical in a project financing because such events, if not properly recompensed, can severely disrupt the careful allocation of risk on which the financing depends. Floods and earthquakes, civil disturbances, strikes, or changes of law can disrupt a project's operations and devastate its cash flow. In addition, catastrophic mechanical failure, due to human error or material failure, can be a form of force majeure that may excuse a project from its contractual obligations. Despite excusing a project from its supply obligations, the force majeure event may still lead to a default depending on the severity of the mishap.

The risk of force majeure events, if unallocated away from the project, will limit most projects to the 'BBB' category or below. Occasionally, some types of project, such as pipelines and toll roads, can achieve ratings that are less affected by force majeure risk because of the improbability of such an event materially disrupting operations. Thus, pipeline and road projects can more easily return to operations, compared with a mechanically complex, site-concentrated project such as a refinery or liquefied natural gas plant. In addition, some rating increase may be possible to the extent that a project can mitigate force majeure risk with business interruption and property casualty insurance.

Credit Enhancement

Some third parties offer various credit enhancement products designed to mitigate project-level risks, sovereign risks, and currency risks, among others. Multilateral agencies, such as the Multilateral Investment Guarantee Agency, the International Finance Corp., and the Overseas Private Investment Corp., to name a few, offer various insurance programs to cover both political and commercial risks. Project sponsors can themselves provide some type of support in mitigation of some risks—a commitment that tends to convert a nonrecourse financing into a limited recourse financing.

Unlike financial guarantees provided by monoline insurers, enhancement packages provided by multilateral agencies and others are generally not comprehensive for reasons of cost or because such providers are not chartered to provide comprehensive coverage. These enhancement packages cover only specified risks and may not pay a claim until after the project sustains a loss; they are not guarantees of full and timely payment on the bonds or notes. Although these packages may enhance ultimate postdefault recovery, they may not prevent a default. On a project default, the delays and litigation intrinsic in the

insurance claims process may result in lenders waiting years before receiving an insurance payment. Even if a project has a debt-service reserve fund of six to 12 months, the effect of the reserve would be limited in preventing the default; the insurance payment could come well after the reserve funds have been exhausted.

For Standard & Poor's to give credit value to insurers, the insurer must have a demonstrated history of paying claims on a timely basis. Standard & Poor's financial enhancement rating (FER) for insurers addresses this issue in the case of private insurers (see "Surety Policies as Mechanisms for Timely Credit Support in Project Finance Transactions," published on RatingsDirect, June 28, 2000), but it should be stressed that such policies or guarantees tend to be limited in scope and that as a result, ratings enhancement may be limited.

Outlook For Project Finance

For single-asset-based transactions and as an asset class for investors, project finance has seen a remarkable growth during the past 20 years This growth will likely continue. Hundreds of billions of dollars of debt have financed thousands of projects across many industries throughout the world. Currency crises tested many project structures and ultimately the financial viability of many projects, especially in Asia and Latin America. Some survived, while others folded. In the U.S. and the U.K., the massive buildout in gas-fired generation followed by the collapse in operating margins has underscored project vulnerability to commodity price risk as projects failed. Despite the failure of some projects, project sponsors will continue to use project finance to raise capital. It is a proven financing technique. Yet, political and country risks will persist, as will market risks. And clearly, the risk profile for project finance is as complex as it has ever been.

Standard & Poor's expects that project sponsors and their advisors will continue to develop new project structures and techniques to mitigate the growing list of risks and financing challenges. As investors and sponsors return to emerging markets, particularly as infrastructure investment needs increase, project debt will remain a key source of long-term financings. Moreover, as the march toward privatization and deregulation continues in all markets, nonrecourse debt will likely continue to help fund these changes. Standard & Poor's framework of project risk analysis anticipates the problems of analyzing these new opportunities, in both capital debt and bank loan markets. The framework draws on Standard & Poor's experience in developed and emerging markets and in many sectors of the economy. Hence, the framework is broad enough to address the risks in most sectors that expect to use project finance debt, and to provide investors with a basis with which to compare and contrast project risk.

Project Risk Benchmarks—Appendix

The analysis of project finance relies on many subjective judgments, although many quantitative techniques are available to assess comparative financial and competitive project attributes, such as sales price or cost of production. To facilitate comparing and contrasting key project risks across the spectrum of rated projects, Standard & Poor's uses a series of benchmark scoring criteria for project-level and external risks (e.g., institutional, and force majeure).

Benchmark scores, expressed as integers, range from one to 10, with one being the least risky. Higher numbers represent exponentially higher risk. The scores and their criteria represent only guidelines; they are not prescriptive but are flexible, given the specifics of a particular transaction.

The different benchmark scores are not additive, as they might be in a scoring-driven rating model. As project finance is a form of structured finance, a deficiency in one small part of a transaction, such as the lack of a debt-service reserve fund or an unsecured lending structure that prevents lenders from taking control of the project, could be cause for a speculative-grade rating. In such an example, a project could conceivably have relatively high benchmark scores in all categories but one and still achieve only a speculative-grade rating. Nonetheless, in general, scores of one to five will typically point to investment grade characteristics. ■

When Projects Fail: 10 Years Of Rated Project Finance Debt At Standard & Poor's

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When Standard & Poor's first began rating project finance debt about a decade ago, many in the financial community, particularly bond investors, greeted this asset class with caution, if not with a certain skepticism. Single-asset risk was just too great and so could never achieve or maintain an investment-grade threshold was one criticism. Others doubted whether the analysis of technical and construction risk could be robust enough to support a nonrecourse debt rating on a single asset, especially on large, complicated multibillion-dollar projects, such as power plants. To assess just how well rated project finance debt has performed over the past 10 years, we went back and examined the data. Our findings may surprise continuing skeptics, but will also confirm what many initially believed. If properly structured and economically well conceived, projects can expect long-term rating stability when they align themselves with stable, creditworthy counterparties and work within predictable legal jurisdictions and stable sovereign environments.

As Standard & Poor's predicted, the performance of project finance debt over the past 10 years, as measured by defaults and ratings downgrades, has proven the strength of this asset class. Defaults of project debt initially rated investment grade—'BBB-' or higher—have been about 4.1% of the total rated portfolio. Similarly, defaults of debt originally rated noninvestment-grade have been about 4.6%. And, while rated project assets have included such diverse industries as power generation, petroleum refining, liquefied natural gas, transportation, mining, and entertainment, the causes of defaults and ratings downgrades have been remarkably similar. Counterparty and sovereign (or sovereign-related) risks together account for just over 16% of all project downgrades. Projects that were not structurally separate from their parent or sponsor, or otherwise sufficiently bankruptcy remote, have accounted for about another 5.5% of downgrades. Technical risk, which includes construction, technology, and operations, has contributed to 1.4% of all project debt downgrades, while weakened financial performance has caused only 3.2% of downgrades.

Admittedly, such a result from analysis of rated project finance debt might not accurately represent the totality of all project finance performance. Indeed, rated project finance debt covers at most 5% of the total project debt worldwide. It is probably not overreaching to suggest that only the best of the best tend to seek ratings. Up until this year's surge in high-yield financing, few projects without investment-grade ratings, but located in investment-grade countries, could ever hope to access the broader capital markets. Institutional investors have traditionally had limited capacity for noninvestment-grade debt in their portfolios. That left the bulk of project financing to seek financing from commercial banks, which traditionally felt little need for the additional scrutiny and surveillance that has come with rated project finance debt. Yet, with the increased focus on recovery of bank loans and capital requirements of the Basel II agreement, Standard & Poor's expects that many projects that might never have sought ratings may soon pursue them. How that potential trend might affect the performance of rated project debt is of course speculative. Yet one intriguing possibility is out there: the exercise of seeking a project finance rating that uses the framework of risk analysis that Standard & Poor's has developed over the years could improve the quality and performance of many projects, especially those that seek the broadest group of investors possible.

Methodology

This paper summarizes the performance of 217 rated project debt financings over the past 10 years by comparing original ratings with the last available ratings. Although most ratings have been public, many are subject to confidential rating provisions. The paper excludes several hundred "credit assessments" that were, effectively, preliminary studies done for issuers contemplating a full rating, or "rating estimates" done for structured finance collateralized debt obligations that included project debt in their portfolios. Projects excluded from the study certainly provide insight into project finance debt performance. But mere assessments and estimates do not benefit from the document review, site visits, analysis of key counterparties, and engineering and market studies that are characteristic of rated project debt. This paper analyzes the primary causes of project rating downgrades along the lines of Standard & Poor's project finance rating criteria (see Standard & Poor's "Debt Rating Criteria for Energy, Industrial, and Infrastructure Project Finance," published March 19, 2001).

Definition Of Project Finance

Project finance has always been a developing concept. Over the years, project finance has taken different forms as its users have modified structures to accommodate the needs of new ventures, as well as lenders' and the market's needs. Indeed, one of its virtues is the flexibility of project finance to adapt to new circumstances and business needs. Nonetheless, Standard & Poor's has continued to rely on a broad definition that has continued to accommodate the variations that have emerged over the years.

"A project company is a group of agreements and contracts between lenders, project sponsors, and other interested parties that creates a form of business organization that will issue a finite amount of debt on inception; will operate in a focused line of business; and will ask that lenders look only to a specific asset to generate cash flow as the sole source of principal and interest payments and collateral."

It is within this definition that Standard & Poor's has evaluated rated debt performance.

Overall Project Finance Performance

Of the 217 projects reviewed in this paper, 19, or 8.8%, have defaulted over the past 10 years *(see table 1)*. In these instances, as with all defaults, Standard & Poor's defines a default as a missed payment of scheduled principal or interest.

Debt that is originally rated investment grade (rather than noninvestment grade) is of particular interest to institutional investors because many may not hold debt that has transitioned to noninvestment grade (often referred to as crossover debt). Project debt originally rated investment grade, but which eventually defaulted, represents 4.1% of all project debt ratings in the study group. Similarly, about 4.6% of debt originally rated noninvestment grade defaulted over the 10-year period *(see table 2)*.

One of the guiding principles of Standard & Poor's analysis of project debt risk is that the rating's horizon extends to the debt's maturity. This is so for a number of reasons. The rating anticipates that the project structure will largely prevent the project's risk profile from changing over time insofar as the project's special-purpose entity status eliminates project-management discretion over the nature, scope, and financing of the project and in some instances, with whom the project conducts its business.

Table 1 Default Incidence Of Rated Project Finance Debt

	Number	% of total project debt ratings
Total defaults	19	8.8
Total non-defaults	198	91.2
Total project ratings	217	100.0

Table 2 Defaults Among Investment And Non-Investment Grade Rated Projects

	Number	% of total ratings	% of ratings that defaulted
Defaults from initial investment-grade rating	9	4.1	47.4
Defaults from initial noninvestment-grade rating	10	4.6	52.6
Total defaults	19	8.8	100.0
Total original project ratings	217		100.0

Second, the combination of long-term contracts and highly leveraged aspects of most projects suggests that if a project performs as forecast at the outset of the rating, few opportunities will exist for rating upgrades. The few exceptions, of course, will be those instances where a counterparty's rating or host country foreign currency rating constrains the project rating and those ratings later improve. Project debt ratings in Mexico, for example, transitioned from noninvestment grade to investment grade following the foreign currency rating upgrade into investment grade. The third reason for rating through the maturity of the debt is that once a project is launched and issues its debt, the rating anticipates that the project will generally not issue additional debt, merge with or acquire other businesses, or materially change—all factors that frequently contribute to rating changes to corporate debt.

Not surprisingly, project finance ratings exhibit more ratings downgrade potential than upside. Standard & Poor's has raised its project finance ratings on only a few projects—6% of the total projects in the study *(see table 3)*. In contrast, 66 project debt ratings, or 30.4% of ratings in the study, suffered downgrades—a result that should have caught few unaware in light of the recent general decline in corporate credit quality. Most project rating downgrades have happened during the past three years, particularly as U.S. electric utilities and merchant energy companies that were, and are, contractual counterparties to projects experienced precipitous credit downgrades. Companies such as El Paso Corp., Dynegy Inc., Aquila Inc., The Williams Cos. Inc., and others that had investment-grade ratings a few years ago entered into tolling and offtake contracts with independent power projects. Those contracts and the credit quality of the counterparties' balance sheets provided the basis for many project financings.

Again, with an eye toward the problems (and opportunities) that crossover debt represents, we segregated ratings by those that were initially investment grade and and those that were initially noninvestment grade *(see table 4)*. Out of the 217 ratings in the study group, 125, or 57.6%, have held their original investment grade status. Twenty-eight, or 12.9%, have transitioned from investment grade to noninvestment grade, but avoided defaulting. Another 28 that were originally noninvestment grade remain noninvestment grade. As of the date of this study, eight project debt ratings, or 3.7% of the study portfolio, have defaulted and now carry 'D' ratings. Finally, either through default or timely retirement of debt, 23 projects have had their ratings withdrawn. Although exact numbers are not available, about one-half of those projects defaulted and half retired their debt.

Table 3 Total Rating Changes From Original Ratings

	Number	% of total ratings
Total upgrades from original rating	13	6.0
Total downgrades from original rating	66	30.4
Total rating changes	79	36.4
Total ratings without changes	138	63.6
Total ratings	217	100.0

Table 4 Crossover Project Finance Debt Rating Changes

	Number	% of total ratings
Ratings that have held investment-grade status	125	57.6
Investment-grade to noninvestment-grade crossover downgrades (no default)	28	12.9
Noninvestment-grade to investment-grade crossover upgrades	5	2.3
Ratings that have remained noninvestment-grade	28	12.9
Ratings currently in default	8	3.7
Withdrawn ratings	23	10.6
Total project finance ratings	217	100.0

Why Projects Fail

Projects fail, or suffer downgrades, due to reasons ranging from the simple and easily identifiable to the varied and complex. Nevertheless, for the purposes of this paper, Standard & Poor's has identified a primary reason for each project rating downgrade (such as counterparty risk) with the proviso that had not this primary reason occurred, consequential problems, such as weakening financing or competitiveness problems, might not have followed. *(See table 5.)*

Technical risk

Although many in the investment community once considered that technical risk may have presented a significant risk to rated project finance debt success, history has shown otherwise. Of the 217 projects in the study, three, or 1.4%, experienced technical problems that resulted in a downgrade. Stated differently, 4.5% of ratings downgrades were directly attributable to technical problems. These were either mining projects that employed newer technologies or one project that never received key permits, years after it issued the rated debt. Although normally a project would not be rated absent receipt of key permits, an investment-grade rated counterparty guaranteed the debt in this case. In the former cases, Standard & Poor's acknowledged the mining technology risks, among other risks, and assigned low noninvestment-grade ratings.

Counterparty risk

The primary causes for most ratings downgrades are counterparty credit downgrades and host country sovereign-related risks. Of the downgraded projects in the study, 16, or 7.4%, experienced a debt ratings downgrade due primarily to corporate credit rating downgrades of key counterparties—in most cases the purchaser of the project's output. Of all projects in the study, counterparty risk caused 24.2% of ratings downgrades. For instance, Standard & Poor's downgrade of its corporate credit rating on Williams, a counterparty to a number of tolling power projects, directly caused downgrades from investment grade to the 'B' rating category.

Sovereign-related risk

About 45 project finance debt ratings (about 21%) were on projects located in emerging markets, most with sovereign foreign currency ratings at the lowest end of investment grade or lower. Consequently, these projects were vulnerable to downgrades due to reasons beyond their or their sponsors' control. In this regard, 18 projects, or 8.3% of the total project ratings in the study, experienced rating downgrades. Stated differently, sovereign-related issues were the principal reasons behind 27.3% of all project finance ratings downgrades.

In some instances, state-owned industries, such as PT PLN Pesero, an Indonesian electric utility, were direct project counterparties in their role as power purchasers from several project financings. Because it was widely understood that the utility was insolvent at the time of the initial rating and that the government would back the obligations of the utility, Standard & Poor's attributed the cause of the downgrades to the sovereign foreign currency ratings that fell during the Asian financial crisis in the late 1990s. Alternatively, Standard & Poor's could have attributed the project downgrades to counterparty risk.

Table 5 **Primary Reasons For Project Finance Rating Downgrades**

	Incidents of rating downgrades	% of total rating changes	% of total ratings
Competitive weaknesses	10	15.2	4.6
Contractual foundation	0	0.0	0.0
Counterparty credit downgrades	16	24.2	7.4
Financial performance problems	7	10.6	3.2
Legal or structural deficiencies	12	18.2	5.5
Sovereign or host country business and legal institutions risks	18	27.3	8.3
Technical, construction, and operating problems	3	4.5	1.4
Subtotals			
Total rating changes	66	100.0	30.4
No rating change or upgrades	151		69.6
Total	217		100.0

In other instances, the host country foreign currency rating constrained the original project debt rating because of the host country's potential to interrupt the fund flows leaving the country.

Other project downgrades in emerging markets did not necessarily result from downgrades of the host country foreign currency rating. Instead, other issues related to changes in government policy toward the project or a failure of host country businesses and legal institutions to support project financings or to provide the remedies in the event of a dispute resulted in the project debt downgrade. Poorly defined or enforceable property and contractual rights have caused problems for some projects. For instance, in China, various disputes arose over increases in toll road tariffs for several projects. These disputes resulted in financial problems that ultimately caused project defaults. In the Philippines, a series of lengthy disputes between the government and the CE Casecnan Water and Energy Co. Inc. over payments and value-added tax refunds burdened the project with financial difficulties, but did not result in a default. Finally, Indonesia realized in the late 1990s that it could not afford to meet its contractual obligations to foreign-sponsored power projects. In the case of CE Indonesia Funding Corp., this inability to perform resulted in a breach of contract that ultimately caused the project's sponsor to abandon the project.

Competitive risk

Weakened abilities to compete in markets have led to defaults and ratings downgrades. Out of the 217 projects in the study group, 10, or 4.6% of all projects, suffered downgrades stemming from competitive problems. These downgrades represent 15.2% of all rating downgrades. In two instances in the U.S., this weakness resulted in defaults. One was the Mobile Energy Services Co. LLC project, an inside-the-fence power project that provided services to a pulp mill. When the mill closed, no "second best use" of the project emerged. Because its contract was tied to the mill's continued operation, not the credit of the mill's owner, the project lost its income stream and defaulted from its original investment-grade rating. The second project default was an aquarium entertainment facility, called Underwater World of America. This project simply could not attract sufficient business; it defaulted from its original speculative-grade debt rating. Other downgrades have largely affected power projects with merchant exposure that have not performed as well as the original ratings anticipated.

On a related point, many have raised concerns about so-called "out-of-market contracts," in which the contract price for a good or service exceeds the current market price. It is interesting to note that our data show that contract abrogations have not triggered ratings downgrades. Particularly in the U.S., the courts have typically upheld the sanctity of contracts. Indeed, while an expensive contract might pose a competitive risk to a project, the risk more likely results from a weakening counterparty's credit profile. In some emerging market jurisdictions, governments have attempted to renegotiate project contracts, but we have characterized those risks as sovereign related for the purpose of this paper.

Legal and structural risk

Another significant cause for downgrades and defaults were project structures that legally could not completely protect projects from credit rating downgrades of the sponsors. In some instances, sponsor bankruptcies forced some projects into the parent's bankruptcy. Legal or structural weaknesses have contributed to 12 project debt downgrades, or 5.5% of the study group's 217 projects, or 18.2% of all ratings changes. Typically, Standard & Poor's has not rated projects higher than three notches over the sponsor's rating in instances where the sponsor owns 100% of the project because of the possibility that in a sponsor bankruptcy the sponsor or its creditors could force a substantive consolidation of all or some of the sponsor's assets. Projects owned by The AES Corp., Edison Mission Energy, Calpine Corp., NRG Energy Inc., and Mirant Corp., among others, all suffered rating downgrades as ratings on the parents fell. In a number of instances, such as those arising with PG&E Corp.'s National Energy Group, Mirant, and NRG Energy Inc., projects were materially affected by their parent's bankruptcy proceedings.

Table 6 **Primary Reasons For Project Finance Debt Defaults**

	Incidents of project defaults	% of total defaults	% of total ratings
Competitive weaknesses	2	10.5	0.9
Contractual foundation	0	0.0	0.0
Counterparty credit downgrades	2	10.5	0.9
Financial performance problems	0	0.0	0.0
Legal or structural deficiencies	6	31.6	2.8
Sovereign or host country business and legal institutions risks	7	36.8	3.2
Technical, construction, and operating problems	2	10.5	0.9
Total defaults	19	100.0	8.8
Total project debt ratings	217		100.0

Financial performance

Weakened financial performance has directly caused seven downgrades, which represents 3.2% of all project debt ratings and 10.6% of all downgrades. Typically, operations and maintenance costs that increased more rapidly than revenues have been the main reason for weakened financial performance. Obviously, exposure to weakened commodity energy prices could also be a reason for weakened financial performance, but we have chosen to attribute those instances to competitive weaknesses. Under this analysis, no projects defaulted strictly because of weakened financial performance.

Contract structure risk

Finally, contractual structure, the collection of contracts, agreements, and financing documents that create a project, have not caused project defaults. As Standard & Poor's has frequently stated, documents are important to a project's credit quality, but they do not create or substitute for cash flow. Therefore, the project and financing documentation, in and of itself, has not caused defaults. That said, documentation that creates a weak project structure, excuses key contractual parties, or allows project liquidity to leak out when a project most needs liquidity, among other potential issues, can pave the way for project problems. And, typically, weak project documentation can result in original project finance debt ratings that are noninvestment grade.

Going Forward

Table 6 breaks down the primary reasons for project defaults. It is difficult to draw far-reaching conclusions because of the scarcity of data in each category. That said, the same primary reasons for project downgrades, as described above, seem to cause defaults with about the same relative frequencies: counterparty credit risk, host sovereign issues, and deficient legal structures.

As rated project finance increasingly moves into the bank market world and into the Term B loan market, rated project finance debt will likely continue to separate the better projects from the weaker ones, simply because of the disciplined analysis that the project finance debt rating process demands. Based on the results in this cursory survey, it is possible that upside potential for ratings improvement will be much lower than potential for ratings downgrades. Moreover, investors in project debt must be mindful of the reasons, as highlighted in this report, that cause projects to falter or fail so that they can move to protect their portfolios. Standard & Poor's would argue that not only is the rating process valuable to investors at origination, but so is the continual surveillance process that accompanies the Standard & Poor's project finance debt rating.

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Criteria For Special-Purpose Entities In Project Finance Transactions

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Since first publishing its project finance criteria in October 1993, Standard & Poor's has stressed the importance of the use of the special-purpose entity (SPE) in structuring project finance debt. To reflect the changing circumstances of project finance practice, Standard & Poor's in 1997 revised its requirement that SPEs have an independent director, a "golden share" mechanism, or some equivalent device to achieve an investment-grade rating. More recently, in 1999, Standard & Poor's revised its criteria for limited liability companies (LLCs) to incorporate recent changes in state laws, in particular Delaware law, as regards the use of so-called single-member LLCs.

The SPE is not unique to project financings, but as is usual in nonrecourse or limited-recourse transactions. While a project finance SPE is not the "strict" type of SPE seen in securitizations (the type of SPE used in project finance transactions could perhaps be better described as a "limited-purpose operating entity"), it has, as a matter of terminology, sufficient similarities with the securitization SPE to be commonly associated with the latter.

The common characteristic of limited-recourse transactions (such as project financings) is that bondholders may only look to the indenture collateral for satisfaction of their obligations. The spirit of these transactions is that, based on bondholders' understanding of the economic and operational risks through due diligence, the disclosure mechanism, or both, they accept such risks. At the same time, bondholders understand that sponsors and other participants are insulating themselves from any adverse consequences of those risks.

This insulation is achieved in two ways: structurally, by the sponsor isolating the operational and documentary assets of the transaction in a separate legal entity; and contractually, by securing the agreement of bondholders to the nonrecourse nature of the transaction. The intended effect of the nonrecourse structure (though this may be modified by mutual agreement) is to allocate the risks and benefits of the financing away from transaction sponsors.

The reverse side of the coin is that in project financings, only one credit source exists for bondholders. The project, its cash flows, and the other collateral pledged under the indenture are the entire extent of investors' security. Where holders of general corporate debt look to the success of the diversified corporate enterprise as their source of repayment, holders of nonrecourse obligations may look only to the value and performance of a defined set of assets for satisfaction. Where the corporate bondholder has the luxury of a corporate balance sheet, the holder of project finance debt has a considerably more limited universe: project hardware, contracts, and financial projections.

In these circumstances, Standard & Poor's believes that project credit risk is reduced when three things can be demonstrated. First, the project exists solely for the purpose for which it was designed. Second, the owner of the project and its affiliates should operate it in a manner consistent with the express provisions of the transaction documents. Third, the only insolvency risk the holders should bear is the failure of the business enterprise of the project. As a consequence of the nonrecourse nature of the transaction, Standard & Poor's believes that the preservation and protection of the project and the other collateral from extraneous, nonproject risk is of prime importance to investors. Such risk threatens the full and timely repayment of debt service, which, of course, is the basis of Standard & Poor's bond or default rating.

Standard & Poor's believes that the possibility of unrelated corporate activity (other than the project's business enterprise) poses a risk to the transaction. As a corollary, Standard & Poor's also considers that the rating should reflect the potential for insolvency of any transaction party—or its affiliates—that is not an SPE, when such insolvency has a strong likelihood of affecting the credit strength of the transaction.

Accordingly, if the rated risk is the sum of the various probabilities that the enterprise will remain solvent under the contractual, legal, and regulatory regimes in force at closing, then all is well and good; that is what the rating is supposed to address. In power project financings, for example, these risks are broadly classified as analytical (power cost, fuel and technology risk, offtake strength, and projected financial results) and legal (covenant and contract analysis, legal structure and completeness, and effectiveness and priority of the collateral pledge), and institutional (an analysis of the political and legal institutions having sway over the project). (See "Project Finance Rating Criteria", RatingsDirect, Aug. 29, 2000.)

A transaction insolvency can occur at the project level, at the funding conduit level, or as a side effect of an insolvency of an affiliate or related entity. When an insolvency occurs, cash flow to noteholders will often be interrupted as a result of the stay or moratorium provisions of the bankruptcy regime governing the project. To avoid the rating reflecting these risks, Standard & Poor's must be assured of two things. First, that the entity is organically impaired from taking those steps leading to a possible insolvency. Second, that the entity is suitably isolated from the bankruptcy consequences of others—usually its corporate relatives. By ensuring that the consequences of an insolvency are sufficiently remote, Standard & Poor's analysis can focus on the true issue at hand: the project's own credit quality. This is the primary rationale for the bankruptcy remoteness of structured transactions.

In the past, most single-project financings reviewed by Standard & Poor's were structured with a single *de novo* SPE issuer. Recently, however, particularly in the case of projects located in the U.S., Standard & Poor's has been asked to analyze projects that were formed years ago, and with little if any regard for bankruptcy remoteness. Standard & Poor's has also been asked to analyze variations on the traditional project owner/issuer model, such as funding entities, pass-through structures in which multiple project cash flows are run through a single issuer, and transactions in which the issuer resembles an unfettered corporate operating entity rather than a limited-purpose, bankruptcy-remote entity.

Each such transaction type poses structurally different but conceptually similar issues: To what degree can debt service payments be affected by a transaction participant's bankruptcy? What is the risk to bond holders of an unsecured or undersecured structure? What steps can be taken to reduce the exposure of the transaction to bankruptcy risk? Standard & Poor's believes that nonrecourse secured transactions meeting these criteria may offer a higher degree of structural assurance to its credit analysis.

Structural risks can be summarized as internal or external in nature. Internal risks are those that are created by the issuer or other concerned transaction party—the incurrence of additional debt and the conducting of extraneous business activities are typical examples. External risk is posed by that entity's relationships with its parents or affiliates, and includes the consequences of the insolvency of that parent or affiliate.

Protection afforded by the transaction structure can have a direct and beneficial effect on the rating. In practice, this protection permits Standard & Poor's to discount such risks and allow the rating to focus exclusively on the economic features of the transaction. Appropriate structural safeguards will permit the analyst to evaluate the project and project-related matters with the assurance that the issuer will incur no other liabilities inconsistent with the rating; they will also permit the analyst to issue a rating on the project largely independent of the ratings of the issuer's affiliates.

The Characteristics Of Bankruptcy Remoteness

The role of the SPE is to limit the likelihood of either a voluntary or an involuntary filing. It tries to do this by assuming a combination of behavioral features and natural defenses, the mutual effect of which should be to quell any incentives to file the SPE, aside from action by the board of directors of the SPE itself due to the failure of the project's primary business. The SPE achieves this degree of immunity by adopting some form of the following five characteristics:

- Restriction on objects and powers;
- Debt limitations;
- Independent director;

- No merger or reorganization;
- Nonpetition language in contracts to which the SPE is a party; and
- Separateness.

Each of these characteristics is important to the overall concept of bankruptcy remoteness, and regardless of the nature of the corporate entity, these elements should, generally, be treated in the relevant organizational documents. While the nature of the corporate structure may be different, the nature of the protections offered by the bankruptcy-remoteness characteristics remains constant. While the precise terms of these criteria are described in the latter part of this article, their rationale is briefly explained here.

Restriction on objects and powers

The fundamental SPE characteristic is that its corporate objects and powers be restricted as closely as possible to the bare activities necessary to effect the transaction. The purpose of this restriction satisfies the internal risk of insolvency mentioned above; by its own actions the corporation can reduce its exposure to insolvency.

The corporation's reason for existence is expressed in the "objects" clause of its articles of incorporation. The objects clause defines the corporation's permitted activities—analogous to a job description. In previous times, courts took a dim view of expansive objects clauses, fearing that an unbounded corporation was more likely to encounter financial difficulties than one that was established to pursue one particular business. As prudent as this view might have been, it was clearly at odds with a more expansive business philosophy; as opportunities increased, and with them economies of scale, the limitation of one's enterprise to a finite object was both unrealistic and unpopular.

The old view never really died, however. Private lenders wishing to lend to a particular operating company would hedge their risk by extracting a contractual undertaking from the borrower that it would not divert its resources from its core business until such time as either the debt was retired or the lenders gave their consent. Presumably, this was because lenders felt comfortable with the demonstrated success of the existing venture and were not willing to lend to a more speculative activity. It is generally easier to analyze a restricted activity than a mixed one

Thus, in structured transactions, Standard & Poor's requests that the SPE embed in its organic document of establishment (Articles of Incorporation [Corporation], Deed of Partnership, [Limited Partnership] or Articles of Organization [LLC]) an objects clause, constrained to the activity needed to ensure the sufficiency of cash flow, that will allow certain limited and incidental powers thereto. The organic documents are the preferred locus for this constraint (as well as the other SPE restrictions) for two reasons. First, incorporation in the publicly deposited organic documents is deemed to place the world at notice of the restriction, rather than merely the parties to a particular transaction. Second, an organic restriction arguably imposes a higher duty on the directors of the SPE to act in accordance with its charter: A breach of covenant is generally less momentous than a breach of a charter provision. Where possible, Standard & Poor's requests that the constraint also be reiterated in appropriate transaction documents.

Save for the power to conduct operations reasonably incidental to the SPE's primary business, inflexibility of purpose has its advantages. In the case of an independent power project, the issuer should exist only to own the project, issue the notes, and carry on closely related incidental activities. Operations and maintenance activities are generally contracted out to third parties. In brief, the SPE should not engage in unrelated business activities unless the parties to a transaction are willing to allow the rating to reflect the effects such activities might have on the entity's resources, cash flows, and the like. A special-purpose entity should live up to its description.

Debt limitations

A concern related to the foregoing is the restriction on issuance of other debt by an SPE; other debt suggests other business, and other business, in turn, may suggest other credit risks. This, too, is an internal mitigant of insolvency risk. Moreover, the creation of a new class of creditors could, unless properly isolated, affect the interests of existing debtholders, perhaps even subordinating their previously

preferred claims. Nevertheless, Standard & Poor's will consider the issuance of certain additional debt under three circumstances:

First, any additional debt should be fully subordinated to the rated debt. To the extent there are other creditors of the SPE, the subordination of their interests to the rated debt is a disincentive to any bankruptcy filing. It is unlikely that a subordinated creditor will file if its chances of recovery depend on the full payment of the senior class of noteholder.

Second, such additional debt should be rated by Standard & Poor's as highly as the rating on already outstanding issues. Third, such additional debt should be nonrecourse to the issuer or any assets of the issuer other than cash flow in excess of amounts necessary to pay holders of the rated debt. The additional debt does not constitute a claim against the issuer to the extent that funds are insufficient to pay such additional debt.

The thrust of these exceptions is that on an involuntary filing by a holder of any such additional indebtedness, there would be no effect on the creditworthiness of the SPE (because there is no recourse to the SPE), or, alternatively, the risk to the SPE would be no greater than that posed by the original issue (because the additional debt is rated at least as high).

The independent director

Although corporations are legal persons, they cannot act by themselves. For example, a corporation acts through its board of directors; major corporate activity is conducted at the direction and under the supervision of the board, although day-to-day management of the corporation is generally delegated by the board to the corporation's officers. The directors are elected by shareholders, the corporation's owners.

Among the major decisions taken by the board of directors is the decision to file the corporation into bankruptcy, and it is this concern that, in certain circumstances, prompts Standard & Poor's to request an independent director. In many structured transactions, the SPE is established by a non-SPE operating entity parent. This parent is at times either unrated or rated below its SPE subsidiary. Moreover, the directors of the parent may well serve as the directors for the SPE. These interlocking directorates present a potential conflict of interest. If the parent becomes insolvent in a situation where the SPE is performing adequately, there may be an incentive for the directors of the parent entity to bridge the corporate separateness of the SPE and its parent by filing the SPE into bankruptcy and consolidating its assets with those of the parent. In transactions where a high investment-grade rating is sought, Standard & Poor's attempts to avoid this situation by requiring that the SPE have at least one director whose independence from the parent company can be established by certain arm's-length standards: no potential for the direct or indirect benefit from, activity with, or control or influence over, the parent. Where possible, Standard & Poor's requests that the organic documents of the SPE recite that in voting on bankruptcy matters, the independent director take into account the interests of the noteholders as well as those of the stockholders. This approach is designed to provide additional protection against the project being filed into bankruptcy to serve the project sponsor's interests. This eventuality is particularly likely when the shares of the SPE are held by an unrated or lower-rated sponsor.

In certain exceptional circumstances, however, the independent director requirement may be relaxed. For example, in certain offshore jurisdictions, if counsel unqualifiedly opines as to the enforceability of the parents' covenant not to file the project company or issuer into bankruptcy, no independent director will usually be required. Another instance is when the project or funding company is controlled by two (in roughly equal shares) or more unrelated entities, at least one of which is rated at the investment-grade level. Standard & Poor's will not require the independent director mechanism to be included in the SPE's governing documents if:

- Each of the controlling entities agrees not to file, without the consent of the other, the project and issuing entities into bankruptcy;
- There is a sufficient first priority perfected pledge of the project collateral; and
- The nonstructural elements of the transaction suggest that the transaction would, at best, achieve a low or medium investment-grade rating.

Standard & Poor's understands that project developers establishing transactional SPEs may have concerns with respect to the independent

director as regards the independent director's confidential treatment of technology, know-how, and other matters. Although these concerns may be addressed by confidentiality undertakings on the part of the individuals concerned, Standard & Poor's believes that its concept of the independent director accommodates these concerns in other ways. From the structural perspective, the role of the independent director is to preserve the bankruptcy-remoteness of the SPE, not to invite outsiders to participate in the everyday business and management of a project. In dealing with confidentiality and related concerns, Standard & Poor's will consider proposals limiting the role of the independent director solely to voting on those matters dealing with bankruptcy-remoteness of the SPE. Where appropriate, Standard & Poor's will also consider other structural proposals that may serve to achieve the same end as the independent director.

No merger or reorganization

This requirement ensures that any merger with a non-SPE will not undermine the bankruptcy-remote status of the SPE or through reorganization, dissolution, liquidation, consolidation, merger, or asset sale while the rated debt is outstanding. Standard & Poor's also requests that the SPE not amend its articles of incorporation without prior written notice to Standard & Poor's.

Separateness

Standard & Poor's analyzes whether the SPE holds itself out to the world as an independent entity on the theory that if the entity does not act as if it had an independent existence, there is no reason to conclude that a court would conclude it had one either. Clearly, the threat to the SPE is from the involvement of an overreaching parent. This requirement is the first that refers to the isolation of the SPE from the consequences of the insolvency of others. As such, it is an example of an external bankruptcy threat.

Perhaps the most common external threat is the twin danger of "piercing the veil" and "substantive consolidation". These two quoted terms are two sides of the same coin. Piercing the veil is the remedy exercised by a court when a controlling entity, such as the parent of an SPE, so disregards the separate corporate identity of the SPE that their enterprises are seen as effectively commingled. The remedy is sought by plaintiffs with claims against an insolvent parent who believe funds can be properly traced into the subsidiary. The remedy is resisted by a parent attempting to preserve assets from a bankruptcy trustee. Substantive consolidation is the evolved product of the former strategy—the tracing of assets through corporate barriers—as refined and perfected through the bankruptcy code. Successful motions for consolidation are based on this overly familiar relationship between parent and the subsidiary or partner and partnership.

Standard & Poor's is sufficiently concerned about consolidation risk to request that the issue be addressed by outside legal counsel in the form of a nonconsolidation opinion. Such an opinion should conclude, as a matter of law, that the relationship between an SPE and its shareholder (in the case of a corporation) is sufficiently remote so as to permit the opinion giver to conclude that consolidation of the two entities would not be ordered by a court.

In the case of a limited partnership, matters are somewhat more complex. Partnerships are generally constituted with at least one director of the partnership itself and one limited partner. The role of the general partner is to manage the partnership, and its liability is unlimited for partnership debts. The limited partner has a passive role, with only limited liability for partnership debts. To enable Standard & Poor's to size the risk that an otherwise healthy limited partnership would not be dragged into the bankruptcy estate of one of the partners, Standard & Poor's requests that transaction counsel review the relationship of the partnership with its partners and opine that in the event of an insolvency of any general partner or any limited partner having more than a 49% interest, the partnership would not be consolidated into the insolvent partner's bankruptcy estate.

The bankruptcy code provides that in the event all of the general partners of a partnership become insolvent, the partnership may also be brought into insolvency proceedings. This appears to be the case, despite thorough implementation of a "separateness" program, and without necessarily violating the conclusion of a nonconsolidation opinion. To avoid this result, Standard & Poor's will request

that at least one general partner of the partnership itself be an SPE. With this precaution, all of the general partners are highly unlikely to become insolvent.

In sum: Standard & Poor's looks for nonconsolidation opinions and an SPE general partner for all limited partnerships.

While Standard & Poor's SPE criteria are designed for transactions located and financed within the U.S., similar concerns will shape Standard & Poor's approach to rating project financings in other countries. When requested to rate a project financing elsewhere in the world, Standard & Poor's will evaluate relevant local law bankruptcy or insolvency regimes and will endeavor to reconcile the legal policies underlying these regimes with the requirements of the transaction and the risks sought to be addressed by its criteria.

Jurisdictional Exceptions

Occasionally, the application of certain legal doctrines in such regimes may permit variations from the SPE criteria. For example, for projects located in a jurisdiction such as the U.K., a first fixed and floating charge will permit the holder of the charge to appoint a receiver and foreclose on the collateral regardless of the bankruptcy or insolvency of the project company, issuer, or any parent or affiliate thereof. In this case, Standard & Poor's may not require compliance with the foregoing SPE criteria if the collateral agent holds such a first fixed and floating charge on the project assets. In such a case, the collateral agent is in no worse (and, arguably, a better) position with the first fixed and floating charge on the project collateral than would be the case were the project company merely an SPE without such a charge. Aside from insolvency issues, of course, the SPE criteria also attempt to ensure that investors have a better idea of the commercial risk borne by the transaction, regardless of any potential threat of insolvency.

In conclusion, Standard & Poor's considers that the assignment of a rating to a project involves the weighing and analysis of all factors that might affect the full and timely repayment of debt service.

The criteria that follow have evolved over several years. They are a practical attempt to address risks and concerns to creditworthiness peculiar to non- or limited-recourse financings. The criteria are designed to be consistent with the SPE criteria employed in Standard & Poor's other structured-finance transactions. Moreover, the parties may not simply waive the criteria, and this fact simply disclosed: Standard & Poor's may still not be persuaded that the ability of the project to pay debt service on time and in full will not be affected.

If a project is rated, Standard & Poor's will evaluate all risk factors that might affect full and timely repayment. They have been extracted from careful study of case law, litigation strategies, and default analysis. They are grounded, in other words, in real life experience: Somewhere, at some time, corporations and partnerships have become insolvent as a result of risks that these criteria seek to address.

SPE Criteria

SPE limited partnerships

Standard & Poor's, in its analysis of a limited partnership, will evaluate whether it conforms to the following:

- The limited partnership's purpose should be limited. The nature of the limitation will depend on the limited partnership's role in the transaction. For example, the borrower's purpose generally should be limited to owning and operating the project.
- The limited partnership's ability to incur indebtedness should be limited. Again, the nature of this limitation will depend on the limited partnership's role in the transaction. For example, a borrower generally will be limited to incurring the indebtedness that secures the rated obligations and liabilities relating to the ownership and operation of the project.
- The limited partnership (and, as applicable, its partners and affiliates) should be prohibited from engaging in any dissolution, liquidation, consolidation, merger, asset sale, or amendment of its limited partnership agreement as long as the rated obligations are outstanding.
- At least one general partner of the limited partnership should be a bankruptcy-remote, special-purpose entity *(*see "SPE Corporations and SPE Corporate General Partners" below*)*. Among other things, this requirement is intended to protect against

dissolution of the limited partnership during the life of the rated transaction.

The consent of the general partner of the limited partnership (including the vote of the independent director of the SPE general partner) should be required in order to:

- File a bankruptcy or insolvency petition or otherwise institute insolvency proceedings;
- Dissolve, liquidate, consolidate, merge, or sell all, or substantially all, of the assets of the partnership;
- Engage in any other business activity; and
- Amend the limited partnership agreement.

In addition, the limited partnership (and, as applicable, its partners and affiliates) should agree to abide by certain covenants, as in the following table:

If there is more than one general partner, the limited partnership agreement should provide that the partnership shall continue (and not dissolve) for so long as another solvent general partner exists. Additionally, Standard & Poor's must receive an opinion of counsel that on the insolvency of a limited partner having greater than a 49% interest in the limited partnership or any general partner, the limited partnership or its assets and liabilities would not be substantively consolidated with that insolvent partner. Depending on the circumstances, additional nonconsolidation opinions may be required.

SPE Corporate General Partners Of Limited Partnerships

Standard & Poor's analysis of a corporation will evaluate whether the certificate or articles of incorporation conform to the following:

- The corporation's purpose should be limited to acting as general partner of the limited partnership.
- The corporation's ability to incur indebtedness should be limited.
- The corporation should be prohibited from engaging in any dissolution, liquidation, consolidation, merger or asset sale, or amendment of its articles of incorporation as long as the rated obligations are outstanding.
- The corporation should have at least one independent director.

Independent director means a duly appointed member of the board of directors of the relevant entity who shall not have been, at the time of such appointment or at any time in the preceding five years, a direct or indirect legal or beneficial owner in such entity or any of its affiliates; a creditor, supplier, employee, officer, director, family member, manager, or contractor of such entity or any of its affiliates; or a person who controls (whether directly, indirectly, or otherwise) such entity or its affiliates or any creditor, supplier, employee, officer, director, manager, or contractor of such entity or its affiliates.

The unanimous consent of the directors should be required to:

- File a bankruptcy or insolvency petition or otherwise institute insolvency proceedings or cause the partnership to do so;
- Dissolve, liquidate, consolidate, merge, or sell all or substantially all of the assets of the corporation;
- Engage in any other business activity; or
- Amend the articles of incorporation of the corporation.

The directors of the corporation should be required to consider the interests of the corporation's creditors in connection with all corporate actions. The corporation should agree to observe the separateness covenants (*see table*). Standard & Poor's must receive an opinion of counsel that on the insolvency of any shareholder holding more than a 49% of the stock of the corporation, the corporation or its assets and liabilities would not be substantively consolidated with that insolvent shareholder. Depending on circumstances, additional nonconsolidation opinions may be required. Finally, it should be noted that for various reasons, Standard & Poor's does not believe that, in contrast to a limited partnership, a general partnership is bankruptcy remote from the insolvency of any of its general partners.

SPE Corporations

Standard & Poor's, in its analysis of a corporation, will evaluate whether the certificate or articles of incorporation conform to the following:

- The corporation's purpose should be limited. The nature of the limitation will depend on the limited partnership's role in the transaction. For example, a borrower's purpose generally should be limited to owning and operating the mortgaged property. A depositor's purpose generally should be limited to depositing the mortgage loans.
- The corporation's ability to incur indebted-

ness should be limited. Again, the nature of this limitation will depend on the limited partnership's role in the transaction. For example, a borrower generally will be limited to incurring (a) the indebtedness that secures the rated obligations and (b) liabilities relating to the ownership and operation of the mortgaged property.

- The corporation should be prohibited from engaging in any dissolution, liquidation, consolidation, merger or asset sale, or amendment of its articles of incorporation as long as the rated obligations are outstanding.
- The corporation should have at least one independent director.

In addition, the unanimous consent of the directors should be required to file a bankruptcy or insolvency petition or otherwise institute insolvency proceedings; dissolve, liquidate, consolidate, merge, or sell all or substantially all of the assets of the corporation; engage in any other business activity besides that of the SPE; and amend the articles of incorporation of the corporation.

The directors of the corporation should be required to consider the interests of the creditors of the corporation in connection with all corporate actions.

The corporation should agree to observe the separateness covenants referred to above.

Standard & Poor's must receive an opinion of counsel that on the insolvency of any shareholder holding more than 49% of the corporation's stock, or its assets and liabilities, would not be substantively consolidated with that insolvent shareholder. Depending on circumstances, additional nonconsolidation opinions may be required.

Limited Liability Corporations

The following criteria address concerns arising out of the particular characteristics of multi- and single-member LLCs.

Criteria for multimember LLCs

- The LLC must be established only to engage in the particular activity set forth in its organizational documents. The "particular activity" is that activity (and reasonably incidental other activities) which provides the cash flow necessary to pay timely interest and principal on the rated obligations.

Separateness Covenants

1. Maintain books and records separate from any other person or entity
2. Maintain its accounts separate from any other person or entity
3. Avoid commingling assets with those of any other entity
4. Conduct its own business in its own name
5. Maintain separate financial statements
6. Pay its own liabilities out of its own funds
7. Observe all partnership formalities
8. Maintain an arm's-length relationship with its affiliates
9. Pay the salaries of its own employees and maintain a sufficient number of employees in light of its contemplated business operations
10. Avoid guaranteeing or becoming obligated for the debts of any other entity or hold out its credit as being available to satisfy the obligations of others
11. Avoid acquiring obligations or securities of its partners, members, or shareholders
12. Allocate fairly and reasonably any overhead for shared office space
13. Use separate stationery, invoices, and checks
14. Avoid pledging assets for the benefit of any other entity or make any loans or advances to any entity
15. Hold itself out as a separate entity
16. Correct any known misunderstanding regarding its separate identity
17. Maintain adequate capital in light of contemplated business operations

- To counter arguments that the LLC and an individual member should be substantively consolidated or that "piercing the veil" should be available to a creditor or an insolvent member, the LLC and the members and managers on behalf of the LLC must agree to abide by certain "separateness covenants" discussed above. The separateness covenants are required, notwithstanding the fact that many state statutes provide that the LLC will be treated as a separate legal entity from its members.
- The LLC must have an independent manager that is a member that is an SPE as determined by Standard & Poor's published criteria; an SPE that is not a member; or a natural person.
- The independent manager of an LLC is an entity correlative to the "independent director" of an SPE corporation whose primary function is to vote for, consent to, or vote against or dissent from, as appropriate, the filing of (or acquiescence in) a voluntary bankruptcy petition against the LLC. The LLC's organizational documents must prohibit it from filing a voluntary bankruptcy petition or from consenting to or acquiescing in an involuntary petition without the affirmative vote of all of the members (including the independent director of the SPE member, if applicable) and the independent manager (if the independent manager is not a member) of the LLC. The LLC's organizational documents must provide that, when acting on matters subject to the vote of the members, notwithstanding that the LLC is not then insolvent, the members and the independent manager shall take into account the interest of the LLC's creditors, as well as those of its members. The Delaware Act permits the duties (including fiduciary duties) and liabilities of a member or manager of an LLC that exist at law or in equity to the LLC or to another member or manager to be expanded or restricted by provisions in the LLC agreement and further provides that no member or manager acting under the LLC agreement shall be liable to the LLC or to any such other member or manager for the member's or manager's good faith reliance on the provisions of such LLC agreement.
- The assets of any member must not at any time be commingled with the assets of the LLC; any dealings between the LLC and its members must be arms-length transactions.
- The LLC's organizational documents must prohibit it from engaging in a merger, conversion, consolidation, or, except as contemplated by the transaction documents, asset transfer.
- The LLC's organizational documents must prohibit additional debt or the incurrence of any other actual or contingent liability unless either (a) the additional debt or liability is rated by Standard & Poor's the same as the rating on the obligation in question (at the time of issuance and at all times going forward), or (b) the additional debt or liability is fully subordinated to the rated obligation, and, in either case, is nonrecourse to the LLC or any assets of the LLC other than cash flow in excess of amounts necessary to pay holders of the rated obligation, and does not constitute a claim against the LLC to the extent that funds are insufficient to pay such additional debt or liability.
- On dissolution of the LLC, or on other events of default, holders of the LLC's rated obligations must have the independent ability to retain the collateral and continue to pay scheduled debt service, or to liquidate the collateral in the event the proceeds would be insufficient to repay all amounts due.
- To the extent permitted by tax law, the LLC agreement or articles of organization should provide that the LLC should not be dissolved and its affairs should not be wound up solely upon the withdrawal or termination of a member (other than the last remaining member). If the LLC is dissolved, to the extent permitted by law, the articles of organization must provide that the LLC assets not be liquidated (except as permitted under the transaction documents) without the consent of 100% of the holders of rated obligations. Such holders may continue to exercise all of their rights under the existing security agreements or mortgages, and must be able to retain the collateral until the debt has been paid in full or otherwise completely discharged.
- The LLC must be qualified under applicable law in the state in which the LLC's assets are located if the LLC is not organized under the laws of that state.

- The LLC must provide Standard & Poor's with an opinion of counsel that, upon the insolvency of a non-SPE member, neither the LLC nor its assets would be consolidated with such member and, with respect to an SPE member, that upon the insolvency of the parent of such SPE member, neither the SPE member nor its assets would be consolidated with the parent.
- If the LLC has no SPE members, Standard & Poor's concern is that the insolvency of a non-SPE member may precipitate the insolvency of the LLC itself, despite the fact that the LLC may be solvent and otherwise able to pay its debts as they become due. In addition to the LLC appointing an "independent manager," for a multi-member LLC having no SPE members, Standard & Poor's must receive legal comfort that the members would not be viewed as general partners of the LLC for purposes of Section 303(b)(3)(A) of the U.S. Bankruptcy Code and, therefore, in the event of insolvency of a member, the bankruptcy trustee of such a member could not unilaterally file the LLC into bankruptcy as a voluntary proceeding. Recognizing the absence of any direct authority on the issue, Standard & Poor's will accept an opinion premised on the absence of general liability of LLC members under the relevant LLC statute (in contrast to general partners); the presence of specific provisions in the relevant LLC statute contemplating a single-member structure (in contrast to a partnership); and the quasi-corporate nature of LLC governance.
- If the LLC has no SPE members, Standard & Poor's must receive an opinion of counsel that the required affirmative vote of the independent manager in order for the LLC to file a voluntary bankruptcy petition (see bullet point 3 above) is enforceable under applicable state law; and in a bankruptcy proceeding of the LLC, a federal bankruptcy court would apply such state law in determining who has the authority to file a voluntary bankruptcy petition on behalf of the LLC.

Single-member LLCs

There appear to be three variations of the single-member LLC: In the first, an SPE single member holds a 100% membership interest in the LLC; in the second, a non-SPE single member holds a 100% membership interest in the LLC but delegates certain rights and duties to an independent third party; in the third, a non-SPE member holds a 100% economic membership interest in the LLC with an SPE member or independent natural person holding a 0% noneconomic membership interest. If not an SPE, the single economic member should be a legal entity, not a natural person. If the LLC has no SPE members, Standard & Poor's views the inclusion of the "springing member" provision described below as an advantage in structuring the LLC. With some adaptation, the criteria for multimember LLCs may be made to apply to single-member LLCs as well.

LLC with SPE single member

Structurally speaking, this variation is perhaps the least troublesome, as Standard & Poor's will assume that if the single member meets Standard & Poor's SPE criteria, the LLC is unlikely to become insolvent due to the single member's insolvency. The LLC must comply with the applicable criteria set forth above, including provision of the appropriate nonconsolidation opinions.

LLC with non-SPE single member

Like a multimember LLC that has no SPE members, Standard & Poor's concern with respect to a single-member LLC whose member is not an SPE is that the insolvency of the member may precipitate the insolvency or dissolution of the LLC itself. This concern is mitigated by compliance with the applicable criteria set forth under the section "Criteria for Multimember LLCs," including provision of the opinions regarding nonconsolidation and enforceability of the independent manager provisions. In addition, for a non-SPE single-member LLC, an opinion should be provided to the effect that the bankruptcy of the non-SPE single member of the LLC will not, by itself, cause the LLC to be dissolved or its affairs to be completed. See the section on the "springing member" below.

LLC with economic non-SPE member and noneconomic SPE member

This type of LLC may more closely resemble the limited partnership model, except that the "economic member" is generally

an unrated (or lowly rated) operating entity with the noneconomic member serving as the independent manager. A noneconomic member may be either a legal entity or a natural person. As with a multimember LLC having no SPE members, the concern with the "economic/noneconomic" structure is that the insolvency of the non-SPE "economic" member may precipitate the insolvency of the LLC on the theory that the LLC will be treated, for bankruptcy purposes, as a partnership. This type of LLC must comply with the criteria for multimember LLCs set forth above, except that Standard & Poor's will also require comfort that, like a single-member LLC whose member is not an SPE. This comfort includes provisions that:

- The noneconomic member must be functionally established as an SPE, the affirmative vote of which must be secured before the LLC may file a voluntary bankruptcy petition or consent to acquiesce in an involuntary petition of the LLC;
- The death, bankruptcy, insolvency, or incapacity of the economic member will not, by itself, cause the LLC to be dissolved or its affairs to be completed (*see below*); and
- On any insolvency of the economic member, neither the LLC nor its assets would be consolidated into the bankruptcy estate of such economic member.

The "springing member"

Standard & Poor's has taken assurance from the inclusion of the so-called "springing member" provision in the LLC agreement of a single-member LLC. This mechanism ensures that, in the event that the non-SPE member ceases to be a member of the LLC, the independent manager of the LLC automatically becomes a member of the LLC without any further act, vote, or approval of any person, so that the business of the LLC shall be continued without dissolution. Standard & Poor's must receive an opinion of counsel that such provision is enforceable.

As appropriate, the criteria for single- and multimember LLCs should be incorporated in the relevant LLC agreement or articles of organization and in the other transaction documents. State law and bankruptcy opinions should be delivered by outside counsel to Standard & Poor's for review well prior to closing. Standard & Poor's may require that the issuer provide a copy of the statute under which the LLC is constituted. ■

Rating Criteria For Project Developers

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Standard & Poor's uses the criteria described in this article to evaluate the credit risk associated with project developers. A project developer is an entity that invests in various infrastructure projects or infrastructure companies. The term "project developer" has been attributed to entities such as The AES Corp. and MidAmerican Energy Holdings Co., which have invested primarily in power projects, and to Hopewell Holdings Ltd. and Cheung Kong Infrastructure Holdings Ltd., which, in addition to investing in power assets, have invested in other infrastructure projects such as toll roads and real estate *(see table 1 for a list of project developers and their respective ratings)*.

A project developer may be any one of the following:

- A closed-end portfolio of infrastructure assets,
- An unregulated generation subsidiary of an integrated utility company, or
- An competitive generation company.

Project developers have diverse strategies. For example, some have a fully integrated strategy in one industry, such as the competitive generation industry. In this case, the developer may have investments in generation, fuel supply, and marketing and trading assets, which are managed as an integrated unit. Other project developers may have more of an investment company strategy, in which the developer has interests in various industries (such as generating assets, real estate, telecommunications, etc.). Project developers that employ this strategy typically operate each investment separately, and no single investment contributes the majority of the revenue and cash flow.

Financing strategies, which are also diverse, range from corporate debt to specific structured debt securities to finance one specific asset or a group of assets. But the same rating methodology is used, whether Standard & Poor's is rating an independent corporate project developer, a corporate utility subsidiary, or a structured, closed-end portfolio.

Rating Methodology

Investment-level risk analysis is the foundation of the project developer credit analysis. The methodology employs a broad four-step process:

- Determining the weighted-average quality of the cash flow generated by a portfolio of investments;
- Analyzing the diversification characteristics of the pool of investments for concentration and correlation risks;
- Examining management's strategy and the ownership structures of the investments and the project developer; and
- Conducting in-depth financial and sensitivity analyses.

The rating assigned to a project developer is typically an issuer credit rating, which is an opinion of the developer's overall ability to meet its financial obligations, but the rating extends beyond the developer's capacity just to make interest and principal payments on corporate-level debt. The rating can be thought of as a measure of counterparty risk and reflects the company's capacity and willingness to meet *all* of its obligations as they come due. Nonetheless, the rating includes an analysis of the corporate entity's ability to make ongoing interest and principal payments on its corporate debt in addition to being able to repay or refinance any bullet maturities as they come due.

Quality Of Cash Flow

The first step in the project developer credit rating process is to assess the quality of cash flow contributed by the developer's investments. This measures the likelihood of whether the investment will distribute cash to the project developer. The evaluation of each investment in a portfolio is critical to the credit assessment because the residual cash flow from each investment (dividends or distributions paid to the developer) provides the means to support project developer-level debt obligations. To assess an investment's cash flow quality, Standard & Poor's analyzes the

investment's stability and predictability of cash flow, evaluates the extent to which an investment's cash flow is encumbered by debt and other fixed charges, and finally gauges how covenants and structural features in the financing documents affect the investment's ability to make distributions.

A key foundation in determining the quality of each investment's cash flow is to first establish the ability of that investment to pay its own obligations, and then to determine the likelihood that the investment will make distributions to the project developer. Although a project's debt rating provides a good starting point in determining cash flow quality, Standard & Poor's also examines the structural features of the financing documents at the investment level. Particular attention is focused on aspects such as dividend restrictions or cash sweeps that protect bondholders at the project level, yet encumber cash flows to the project developer. If the investment is not burdened with debt, Standard & Poor's would determine the economic viability of the investment and the predictability and stability of its cash flow stream.

Standard & Poor's uses a combination of existing corporate and project finance criteria to assess the quality of cash flow for each investment, depending on whether it is a project or a corporate entity. (See "Debt Rating Criteria for Energy, Industrial, and Infrastructure Project Finance," March 19, 2001, and "Global Corporate Ratings Criteria" for the evaluation of corporate risk.) In summary, Standard & Poor's makes this assessment by examining both qualitative (nonfinancial) and quantitative factors.

For projects, risk factors include:

- The underlying contractual foundation;
- Sovereign risk;
- Technology, construction, and operations;
- Competitive market exposure;
- Business and legal structures;
- Financial strength; and
- Counterparty risk.

Typically, the host country's foreign currency rating limits a project's debt rating potential, especially for largely nonexportable products such as electricity, and the cash flow quality may reflect such a cap. Typically, project ratings will be lower than the sovereign's foreign currency rating. Institutional business and legal development issues such as corporate governance, status of commercial and contract culture, and pervasiveness of corruption, among other topics also influence cash flow quality. Force majeure risk is also evaluated for the project, as well as any credit distribution enhancements, such as insurance policies that guarantee distributions in the event of currency convertibility or transferability problems.

For corporate entities, Standard & Poor's examines both qualitative and quantitative factors to assess cash flow quality. Qualitative factors determine a corporate entity's business position. The analysis is a fundamental business analysis with a focus on the company's competitive position and covers regulation, markets, technology, efficiency, competition, and operations. Quantitative measures determine the corporate entity's financial position and include the financial policy, profitability, cash flow protection, capital structure, and financial flexibility. The results of this analysis can vary widely because, for example, cash flow from an investment with a fixed-price, long-term power purchase agreement or from an investment in a regulated utility in a developed country is likely to be much less variable than cash flow from a commodity-based project in a developing country.

Standard & Poor's assigns a cash flow quality score typically to investments that make up 80% to 90% of the overall developer-level

Table 1 **Project Developers**

Issuer	Issuer credit rating
AES Corp. (The)	B+/Positive/—
Calpine Corp.	B-/Negative/—
Cheung Kong Infrastructure Holdings Ltd.	A-/Negative/—
Cogentrix Energy Inc.	BB-/Stable/—
Edison Mission Energy	B+/Stable/—
International Power PLC	BB-/Stable/—
MidAmerican Energy Holdings Co.	BBB-/Watch Pos/—
NRG Energy Inc.	B+/Stable/B-1
Reliant Resources Inc.	B/Stable/B-2
Road King Infrastructure Ltd.	BBB-/Stable/—

Ratings as of Sept. 20, 2005

cash flow. Standard & Poor's uses a scale of 1 to 10 (with 1 being the highest certainty and 10 being the lowest) to quantify relative cash flow quality. Table 2 displays scores for quality of cash flow as they relate to Standard & Poor's assessment of cash flow predictability. Table 3 gives examples of investments with different cash flow quality scores.

After assessing cash flow quality of the investments in the developer's portfolio, the next step is determining the portfolio's weighted-average quality of cash flow. Standard & Poor's calculates this based on the size of the expected cash flows from each investment. Because most project developers issue debt with bullet maturities and therefore have inherent refinancing risk, the weighted-average quality of cash flow is computed over a long-term horizon (10 years) to evaluate the project developer's ability to refinance its corporate-level debt. Standard & Poor's assesses a developer's access to various capital markets based on management's willingness and accessibility to tap the debt and equity markets. In general, a company's experience with varying financial instruments and capital markets gives management alternatives if a particular financing vehicle is no longer available.

Portfolio Characteristics

Although the foundation of a project developer's credit strength rests with the ability of its investments to generate cash distributions, the overall credit strength stems from the specific portfolio's diversification characteristics. The credit strength of a pool of diversified assets will generally be stronger than the credit strength of any individual investment or a small group of investments because pooled cash flows diversify default risk.

Standard & Poor's assesses diversification by testing the portfolio for concentration and correlation risks to determine how diverse the portfolio's cash flow stream is likely to be and how these cash flows may be hampered if a specific event occurs. This analysis weighs heavily on the rating outcome because the financial ratios used *(outlined under the "Financial Analysis" section, below)* assume the portfolio exhibits some diversification. This being the case, Standard & Poor's adjusts the portfolio's weighted-average quality of cash flow assessment downward, or adjusts the cash flow stream downward ("diversification penalty") if the portfolio is deemed to lack diversification.

Concentration and correlation analyses are applied on a case-by-case basis. Concentration in a portfolio will obviously limit any diversification benefits. For example, if payment of project developer-level debt is highly dependent on the performance of a small number of investments, the diversification effects will be negligible. When a portfolio is highly concentrated, the developer's rating will be dependent more on the cash flow quality of the investments deemed to cause concentration than on the financial ratio analysis at the project developer level. An example of high concentration is a group of merchant generating assets that all use the same technology and the same fuel, are all under construction, and are all located in one or two markets. A portfolio with these characteristics will likely be penalized for lack of diversity.

Another example is a project developer that has a large percentage of its cash flow dominated by investments in an emerging market that generate highly uncertain cash flows. For instance, consider a developer that relies on 50% of its cash flow from 10 projects (all in the Philippines) with a quality of cash flow score of 10, and 50% of its cash flow from five projects elsewhere with a quality score of 2, to give a weighted-average quality of cash flow score of 7. Consider further that based on the company's base case financial projections, the cash flow coverage ratio averages more than 4 times (x). According to Standard & Poor's financial benchmarks *(discussed below)*, the rating would be 'BBB'. But, it cannot be stressed enough that the financial benchmarks assume the portfolio has some diversity. Because of the lack of diversity in this example, and the

Table 2 **Residual Cash Flow Ratings And Quality Of Cash Flow Scores**

Residual cash flow rating	Quality score
Highly predictable	1, 2
Somewhat predictable	3, 4
Somewhat uncertain	5, 6, 7
Highly uncertain	8, 9, 10

fact that a strong likelihood exists that the project developer will receive zero cash flow from the Philippines in certain years, the developer's rating will be penalized for the concentration risk inherent in this portfolio. Standard & Poor's would perform a scenario analysis of the cash flow coverages without the benefit of any cash flow from the Philippine projects, and a scenario with less cash flow contributed from the Philippines than the base case shows.

Similarly, diversification benefits are limited by having high correlation. In analyzing correlation, Standard & Poor's determines the extent to which a large portion of a portfolio's assets can be affected by related circumstances. For example, if a project developer's portfolio is made up of 20 power projects, all located in Brazil, Standard & Poor's may determine that the portfolio exhibits high correlation due to the overreliance on Brazilian factors. On the other hand, if a portfolio is made up of different types of projects (pipelines, generating facilities, distribution companies, etc.) in a number of countries, Standard & Poor's would be more likely to conclude that correlation risk is low. In addition to qualitative analysis, any correlation patterns exhibited in a portfolio's historical cash flows are measured quantitatively and assessed. Because a project developer's portfolio does not typically have a large number of investments and is usually made up of infrastructure investments, some correlation is expected. For portfolios lacking correlation, the diversification benefits may exist and lead to a higher rating (all else being equal). Conversely, if a portfolio exhibits high correlation, Standard & Poor's would likely penalize the project developer's credit rating.

Management And Ownership Strategies

Management plays a vital role in Standard & Poor's analytical process of rating project developers because management's strategies and decisions are the key elements in determining a developer's future and credit strength. Management is evaluated for its role in determining the firm's overall operational success, financial track record, and risk tolerance. Standard & Poor's looks for evidence of management's willingness to achieve and commitment to maintaining credit quality from past actions and from a sound, articulated long-term strategy.

Standard & Poor's focuses on senior management's record of enhancing a firm's financial condition using various discretionary actions such as the sale of common equity, common dividend practices, and debt repayment. The assessment of a firm's senior management is ascertained through meetings, conversations, and review of company plans. The meeting with management is used to

Table 3 Characteristics Of Quality Of Cash Flow Scores

Scores	Characteristics
1, 2	High predictability of cash flow, such as a FERC-regulated pipeline with 100% of the capacity under long-term contracts with counterparties rated in the 'A' category.
	High probability of receipt of cash distributions at the project developer level.
	No restrictive covenants in the indenture that limits cash distributions.
3, 4	High degree of stability of cash flows, such as a qualifying facility project with 100% of its revenues under contract.
	Moderate debt leverage.
	Restrictive covenant that limits cash distribution; however, project has a high likelihood of achieving the distribution profit threshold.
5, 6, 7	Moderate stability and predictability of cash flow; some volatility, such as a merchant power facility with adequate liquidity.
	Moderate debt leverage.
	Restrictive covenant for cash distributions.
8, 9, 10	Highly uncertain cash flows; high volatility of cash flows to project developer.
	Power project in the emerging markets.
	Overleveraged project in the U.S. where expected coverages are low.

augment the public record and to discuss the project developer's strategic plans and investment policies. The key test, however, remains management's ability to achieve performance consistent with its strategic plans.

Another key aspect of the management evaluation is the assessment of financing and structural strategies that may lead Standard & Poor's to consolidate certain investments for analytical purposes, even if the investments are financed on a stand-alone, nonrecourse basis. The objective of this evaluation is to determine how much linkage exists between the project developer and each investment or between investments within the group. This determination depends on many factors. First, Standard & Poor's analyzes the ownership and strategic importance of the investments, determines how much of the overall cash flow is contributed by the investments, and makes a judgment about whether the investments would likely be consolidated if the project developer declares bankruptcy. Then, Standard & Poor's determines whether an investment supports the activities or business of other parts of the family. Finally, Standard & Poor's forms an opinion about whether the project developer would lend short-term support to the investment in times of stress to preserve overall shareholder value. Once these factors have been analyzed, Standard & Poor's will determine which investments, if any, will be consolidated at the project developer level and will consolidate a certain amount of the debt and cash flow of these investments based on its analytical judgment. In these cases, Standard & Poor's assumes that all structure collapses.

For example, a project developer has ownership interests in 20 investments. Two investments contribute 70% of the cash flow and are structured as subholding companies with many unleveraged assets. In addition, the two investments carry a large portion of the consolidated debt (for instance, 80%). Assume further that the two investments are financed on a nonrecourse basis; however, they are also 100% owned and controlled by the project developer and are not structured as bankruptcy-remote, special-purpose entities. One other key factor is that these investments benefit from affiliate relationships within the group. For instance, suppose the assets are generating stations and benefit from fuel procurement and energy marketing from an affiliate. Because of the facts in this example, Standard & Poor's would consolidate 100% of the debt and 100% of the cash flow from these two investments at the project developer level. The quality of cash flow score for these investments, once consolidated, would improve because Standard & Poor's would view cash for analytical purposes as fungible between the entities. Standard & Poor's view would be that the investors at the subholding company are equally exposed to the project developer's credit risk because of the integration of operations and affiliate relationships. Standard & Poor's considers large portfolio financings at subholding companies to be financing strategies for what would ordinarily be corporate (project developer-level) debt.

Standard & Poor's also is interested in the project developer's strategies for refining its portfolio of investments. Is the developer a passive or active investor? In either case, how are the investments structured and financed? What is the time horizon for each investment? Management should have a well-conceived plan for investing in projects and for determining appropriate project ownership structures. Not only are the initial investing strategies critical, but the developer's ongoing cash flow management and exit strategies are of equal importance. These issues demonstrate the project developer's commitment to each investment, capacity to upstream residual cash flows, and willingness

Table 4 **Comparison Of Concentration And Correlation**

High concentration and correlation	Low concentration and correlation
Total cash flows are reliant on a small number of projects (two or three).	Total cash flows are reliant on a large number of projects (four or more).
A large portion of the portfolio cash flows will react similarly to economic cycles or for any other reasons.	A large portion of the portfolio cash flows will not react similarly to economic cycles or for any other reasons.

to make further financial commitments to a specific investment.

Credit for parental ownership

When a project developer is part of a larger corporate family, Standard & Poor's determines how much, if any, support from the parent company should be incorporated in the project developer's credit rating. Standard & Poor's weighs the strength of the economic incentives, strategic importance, and other ties that could bind a parent company to its project developer subsidiary and investments against the insulation factors that exist to keep the developer or its investments structurally at greater-than-arm's-length away from the parent company. The results of this analysis determine whether Standard & Poor's should elevate, maintain, or cap a project developer's stand-alone rating. For U.S. markets, this factor was important before electricity deregulation because large electric utility companies owned many of the project developers.

To gauge the level of parental support, Standard & Poor's analyzes the linkage between a parent and the project developer. Because a corporation's primary obligation is to serve the interests of its shareholders, if a parent company has invested large sums of cash (shareholder or bondholder funds) at the project developer level, management may feel more compelled to support the project developer in stressful situations.

When considering how much parental support should be factored into the project developer's rating, the strategic importance of the developer and of its investments to the corporation as a whole are also analyzed. If the developer has substantial size and is the principal vehicle within the organization to increase future earnings, greater parental support would be factored into the rating.

Moral obligations, political influences, and management's stated posture also could bind a parent to lend support to its project developer subsidiary and potentially enhance the rating. Moral obligations often come from the need to keep lenders happy so the capital markets will be responsive to future capital investments.

Financial Analysis

Once Standard & Poor's has established the portfolio's quality of cash flow, taking into account concentration and correlation, and has determined which investments will be consolidated for analytical purposes, the process then moves to conducting a detailed financial analysis of the project developer to determine its ability to service all of its obligations, given the cash flow expected from its investments. A principal element in evaluating a project developer's financial strength is determining the developer's ability to withstand numerous threats (financial and otherwise) to its capacity to generate stable and predictable cash flows. This is most easily done through the use of scenario analysis. When performing the financial analysis, the key areas examined are cash flow, capital structure, financial policy, and financial flexibility. Financial ratio analysis allows Standard & Poor's to analyze trends from one year to the next and to compare one project developer to another.

Cash flow

Cash is needed to service a project developer's interest and principal obligations; reported earnings, a measure frequently reported by publicly traded developers, do not always equate to available cash flow. Standard & Poor's defines cash flow as funds from operations. Relevant cash flow ratios are cash flow

Table 5 **Partial Consolidated Cash Flow/Interest Or Parent-Only Cash Flow/Recourse Interest Ratios, By Rating**

Quality of cash flow score	AA-	A+	A	A-	BBB+	BBB	BBB-	BB+, BB	BB-, B+	B, B-
1, 2	3.1-3.9	2.7-3.5	2.4-3.1	2.0-2.7	1.7-2.3	1.4-2.0	1.1-1.7	0.7-1.3	N.M.	N.M.
3. 4	4.5-5.1	4.1-4.7	3.7-4.3	3.3-3.9	2.9-3.6	2.6-3.3	2.3-2.9	1.8-2.4	1.3-1.8	0.7-1.1
5, 6, 7	5.4-8.4	5.0-6.0	4.6-6.5	4.2-5.5	3.8-4.7	3.5-4.1	3.2-3.6	2.7-3.0	2.1-2.3	1.3-1.5
8, 9, 10	N.M.	N.M.	7.7-10.5	6.4-9.2	5.4-8.0	4.5-6.9	3.8-5.8	3.1-4.7	2.4-3.6	1.7-2.5

N.M.—Not meaningful.

to interest, and cash flow to debt service (principal and interest). Because most project developer-level debt can be characterized as bullet maturities, Standard & Poor's focuses the analysis on cash flow to interest.

One of the main considerations in calculating this ratio is which investments are consolidated. If no investments are consolidated, the ratio would be cash distributed from investments to recourse interest. Otherwise, the ratio would be calculated on a fully consolidated basis or on a partial consolidated basis. A project developer having less predictable cash flow will require stronger cash flow interest coverage than a developer with the same rating that has more predictable cash flow. Table 5 shows the relationship between financial risk (the most important being cash flow to interest) and the quality of cash flow. It should be emphasized that this table should be used as guidance and is not meant to be a precise indicator of the project developer rating. Rather, the ratios presented are meant to convey ranges that characterize levels of credit quality. Obviously, strengths shown in one financial or other measurement may be offset by weaknesses in another.

Other cash flow ratios Standard & Poor's computes, analyzes, and uses for comparison purposes are cash flow to recourse debt, and cash flow to total debt. Table 6 presents Standard & Poor's guidance for these ratios.

Because project developer-level debt usually has bullet maturities, the cash flow analysis also must evaluate the certainty of cash flow distributions after the bullet maturity dates to gauge the developer's ability to repay or refinance these obligations at maturity.

Capital structure

The second aspect of the financial analysis is the capitalization and the debt within the capital structure. Total debt to total capitalization and recourse debt to adjusted capitalization (adjusted capitalization equals total capitalization minus nonrecourse debt) are the principal ratios analyzed. Nonrecourse debt is subtracted only to the extent that Standard & Poor's expects the project developer will not support the investment in the short term. Standard & Poor's examines the debt component for risk factors such as reliance on short-term, unhedged debt or simultaneous bullet maturities on a large portion of the outstanding debt. The company's quality of cash flow is again critical in determining the appropriate amount of leverage; strong cash flow quality may support a high use of debt financing. The balance sheet analysis includes an assessment of the company's recourse and nonrecourse debt.

Table 6 Partial Consolidated Cash Flow/Total Debt Interest OR Parent-Only Cash Flow/Recourse Debt Ratios, By Rating

Quality of cash flow score	AA-	A+	A	A-	BBB+	BBB	BBB-	BB+, BB	BB-, B+	B, B-
1, 2	20.0-25.0	17.5-22.0	15.5-19.5	13.5-17.0	11.5-15.0	9.5-13.5	8.0-11.5	6.0-9.0	N.M.	N.M.
3, 4	31.5-36.5	27.5-32.0	24.0-28.5	21.0-25.5	19.0-23.0	17.0-21.0	15.0-19.0	12.5-15.5	9.5-12.0	6.0-8.0
5, 6, 7	40.0-56.0	35.0-50.0	31.0-44.0	28.0-38.5	26.0-34.0	24.0-30.0	22.0-26.5	19.0-22.0	15.0-17.0	9.5-11.5
8, 9, 10	N.M.	N.M.	51.5-74.0	45.5-64.5	39.5-56.0	34.5-49.0	29.5-42.5	24.0-35.5	18.5-28.0	13.0-19.5

N.M.—Not meaningful.

Table 7 Total Debt/Total Capitalization OR Recourse Debt/Adjusted Capitalization Ratios, By Rating

Quality of cash flow score	AA-	A+	A	A-	BBB+	BBB	BBB-	BB+, BB	BB-, B+	B, B-
1, 2	46.5-50.5	49.5-53.5	52.5-56.5	55.5-59.5	58.0-62.0	60.5-64.5	62.5-66.5	65.0-69.0	N.M.	N.M.
3, 4	37.5-42.0	41.5-46.0	45.0-49.0	48.5-52.0	51.0-54.4	53.0-57.0	55.0-59.5	59.0-63.0	64.0-67.0	70.5-72.0
5, 6, 7	30.5-37.5	35.5-40.0	44.0-43.0	43.5-46.0	46.5-48.5	49.0-51.0	51.0-53.0	54.5-57.0	59.5-62.5	66.0-69.0
8, 9, 10	N.M.	N.M.	27.5-37.5	31.5-41.5	34.5-44.5	37.0-47.5	39.0-50.0	42.5-53.5	46.0-58.0	51.0-64.0

N.M.—Not meaningful.

This enables Standard & Poor's to analyze the developer's debt tolerance, given the quality of its investment cash flows. Table 7 presents guidance for the capital structure ratios that may be expected for various weighted-average quality of cash flow assessments.

In addition, Standard & Poor's examines the use of unhedged floating-rate debt or aggressive balance sheet funding of project construction before financial close of the nonrecourse project financing. Off-balance-sheet obligations and contingent liabilities, such as lease payments, performance guarantees, or tolling arrangement payments, are analyzed to determine the likelihood of their realization and the potential adverse effect they would have on a project developer's capital structure.

The need for capital

For capital-intensive firms and growth companies such as project developers, it is critical to analyze the expected capital requirements and compare that to both internally generated cash flow and to the developer's ability to finance its capital requirements externally. Standard & Poor's examines the developer's needs for both working capital and fixed capital, focusing particularly on the developer's working capital management techniques and flexibility to alter the timing of large capital expenditures. Again, the quality of cash flow and ability to finance its capital requirements internally are key in this analysis. Capital market access is an important factor as well; however, markets can disappear very quickly at inopportune times.

Another aspect of capital needs is the developer's appetite for acquisitions and expansions. Expansions can normally be deferred, and a company may have discretion to alter the timing of the investment. On the other hand, if a company uses acquisitions as a means for growth, this must be reflected in the analysis. Management's experience with acquisitions provides a basis for judging prospects for future acquisitions.

Financial flexibility

Standard & Poor's financial analysis also includes a review of a project developer's financial flexibility. Operational needs can be substantial, and liquidity is very important to making future investments and repaying bullet maturities as they come due. Thus, adequate lines of credit, unrestricted cash availability, debt maturity schedules, and reliance on external markets are analyzed with respect to the developer's financing plans and needs. Here, financial policies are analyzed with a focus on their level of conservatism. Financial policies, which include accounting procedures, common dividend practices, capital repatriation methodologies, currency hedging implementation, and reliance on floating rate debt, are examined to determine whether they add risk to the firm's profile. Standard & Poor's also assesses a company's capacity and willingness to issue common equity. To the extent that the project developer is a subsidiary of a large, well-capitalized company, Standard & Poor's determines whether the relationship can provide any liquidity benefit to the developer.

Flexibility can be jeopardized if a company is overly reliant on bank borrowings or commercial paper. Reliance on commercial paper without having adequate backup facilities is viewed negatively when assessing financial flexibility. An unusually short-term maturity schedule for long-lived assets is also a negative.

Conclusion

Standard & Poor's focuses on the qualitative and quantitative issues surrounding a project developer, as it would when rating any corporation. But, because a project developer usually has varying structural limitations at both the corporate and investment levels, Standard & Poor's employs a hybrid approach to rating these types of entities, encompassing aspects of corporate, structured, and project finance criteria. The process outlined in this article provides the framework for credit analysis and promotes consistency and clarity in assigning ratings on project developers. Standard & Poor's also recognizes that a developer's portfolio is not intended to be static and can change dramatically overnight. Therefore, management's previous actions and any demonstrated parental support are key components in determining a project developer's final debt rating. ■

Estimating Bank Loan Recovery Prospects

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Standard & Poor's Ratings Services secured bank loan ratings are issue-specific and reflect the likelihood of ultimate recovery of a syndicated loan. Unlike corporate credit ratings, which focus on the risk of an issuer's default, loan ratings look beyond default, to the likelihood of loan investors ultimately being repaid principal. Loan ratings capture the impact of collateral, covenants, and other repayment protections typically required by senior lenders. These features—sometimes called by bankers the "second way out"—can often assist the lender's prospects for post-default recovery.

Ratings on well-secured loans are notched up from the issuer's corporate credit rating if Standard & Poor's determines that the lenders are likely to be repaid in full in the event of default, under post-default conditions.

The ability of security to enhance ultimate recovery prospects following default depends on the type and amount of the collateral, its value in relation to the borrowings, and the lenders' ability to enforce their rights to the collateral in a timely fashion.

This article outlines Standard & Poor's methodology for evaluating these factors in the rating process and how Standard & Poor's differentiates those loans that exhibit characteristics that support full recovery from those that do not.

Ultimate Recovery

For rating purposes, Standard & Poor's evaluates "ultimate recovery"—that amount realized at the conclusion of the insolvency workout process, not the amount realized by selling the defaulted loan at the first opportunity to sell at distressed debt prices. This is a different approach than that applied to some CDO structures (notably synthetic CDOs), where the focus may be on liquidation values shortly after default—generally "distressed market" prices that are less than the ultimate recovery.

Any delay in realizing the ultimate recovery is critical. In the best case, the recovery will be highly valued by creditors due to its nearly timely character—almost like a grace period. While the time in bankruptcy may vary, depending on whether there is a prepackaged or prearranged bankruptcy versus drawn-out proceedings, the typical U.S. bankruptcy is in the 18- to 24-month range. Since lenders usually expect resolution in this period, Standard & Poor's does not generally give any credit for recovery beyond this time frame. Standard & Poor's makes exceptions for complex project and equipment financings where it may take longer to realize optimal recovery levels from the assets. In these cases, Standard & Poor's generally will consider discounted recovery values to account for lost reinvestment opportunities.

Determining Recovery

The starting point for assigning a loan rating is determining the borrower's default risk (expressed as the corporate credit rating), and the likely default scenario based on an analysis of the firm's business strength and level of financial risk. While the analyst does not attempt to specifically predict the ultimate outcome of any bankruptcy proceeding, the analysis establishes the recovery risk profile by assessing the characteristics of various asset types used as collateral and subjecting the collateral to stress analysis with respect to different post default scenarios. Historical studies of actual recovery point to relatively high average recovery rates for secured debt generally. But, it is critical to analyze each situation. The high average will prove little consolation for holders of a loan that returns relatively little.

Collateral can enhance a creditor's rights and help assure repayment—even though it is rare that the creditor will be able to simply foreclose, seize, and liquidate the collateral. In the U.S., a bankruptcy filing imposes a stay on the creditor's right to the collateral during what is often a long and tortuous process. Indeed, to date, most large U.S. company bankruptcies have not resulted in liquidation: the company is usually

reorganized. Higher collateral coverage levels can increase confidence that asset values will cover the secured loan under adverse conditions even though, in the bankruptcy process, greater levels of collateral do not entitle a creditor to any more than the amount of his specific claim.

Collateral Analysis

Collateral evaluation focuses on:

- Collateral type,
- Valuation, and
- Valuation in relation to the amount of debt secured.

Loans to speculative-grade credits, and some low investment-grade credits, may have a first priority security interest in either specific asset classes (inventory and receivables or plant and equipment) or substantially all of the company's assets. Some collateral may have value independent of the business. Examples of this type would be:

- Producing natural resources reserves;
- Some types of plant and equipment; and
- High-quality, liquid inventory, and receivables.

Alternatively collateral value may be a function of the business as an ongoing concern.

Highly rated borrowers generally are not expected to provide much collateral or other post-default protection. Because the probability of defaulting is low, post-default recovery is of little relevance. When collateral is provided however, it seldom provides additional value toward ultimate recovery. Significant deterioration would undoubtedly occur by the time the borrower is in distress.

Collateral valuation

The outcome for the creditors is ultimately a function of the value of their collateral going in to the workout process. So knowing the value of the collateral—relative to the amount of debt owed—offers an appropriate proxy for just how well the creditor is secured. Accordingly, Standard & Poor's analysis centers on determining values for the various types of assets. If the security consists of assets of a unit that will remain as an ongoing concern, an enterprise value analysis is performed. Otherwise, a liquidation analysis (under a distressed default scenario) is conducted to determine the value of the discrete assets that constitute the collateral. *Standard & Poor's approach differs from some other market analyses, whether enterprise or discrete asset value, in its context; a default rather than a business-as-usual scenario is used.*

Enterprise value analysis

Enterprise value is established by using a market capitalization approach. The company's level of EBITDA at the hypothetical point of default is multiplied by a representative market valuation multiple. Appropriate discounts are applied to stress both cash flow and capitalization rates used to determine the value of the business. Since many speculative-grade borrowers have bank loans secured by virtually all of their assets, giving the lender a claim on the business as a whole, the enterprise value is used frequently.

EBITDA is projected to reflect the decline in cash flow that would normally accompany a

Table 1 **Standard & Poor's Recovery Ratings**

Recovery rating	Recovery of principal	Indicative recovery expectation	Relationship with existing bank loan rating notching
1+	Highest expectation of full recovery of principal	100% of principal	BLR = CCR + 3 notches
1	High expectation of full recovery of principal	100% of principal	BLR = CCR + 1 or 2 notches
2	Substantial recovery of principal	80-100% of principal	BLR = CCR (Un-notched)
3	Meaningful recovery of principal	50-80% of principal	BLR = CCR (Un-notched)
4	Marginal recovery of principal	25-50% of principal	BLR = CCR (Un-notched)
5	Negligible recovery of principal	0-25% of principal	BLR = CCR (Un-notched)

default. For this analytical exercise, the analyst simulates likely default scenarios. A borrower with a respectable business position, but a risky financial profile, would be most likely to default (if a default occurs at all) due to its leverage—as opposed to a decline in its business strength. Such an entity would be viable over the longer term if more appropriately capitalized. By contrast, a company with a weak business position, but no special financial risk, would most likely default because of a decline in its business. The impairment of its business associated with the default scenario could more seriously affect its cash flows and market value. For many companies, it is a combination of business and financial risk that results in default. In such situations, the analyst attempts to determine the appropriate default scenario, based on company-specific information and industry fundamentals.

The multiple employed in the enterprise valuation model is derived from the cash flow multiple of the borrower's peer group. This market multiple too is adjusted to incorporate the depressing effect that a filing or the threat of bankruptcy can have on asset value. Standard & Poor's has concluded from its analytical experience that a multiple of 5 is representative for many industries and actual experience with the sale of distressed companies shows this to be widely applicable, but Standard & Poor's also adjusts this multiple to address any issues specific to individual companies and industries.

For purposes of conservatism, if there are any priority claims, such as product liabilities or environmental liabilities or other civil judgments that are material, their value is deducted. Similarly, the value of other existing secured debt, such as industrial revenue bonds, mortgage debt, or secured lease debt is subtracted from the enterprise value. For holding companies, the value of any subsidiary debt (structurally senior) is also subtracted. The analysis also assumes that unless limited by a borrowing base, any revolving portion of a bank facility is fully drawn at the time of default and any contingent debt obligations triggered by default are outstanding.

Discrete asset value analysis

Standard & Poor's has rated loans backed by a broadly diverse range of assets. Important considerations include the type and amount of collateral, whether its value is objectively verifiable and likely to hold up during various post default scenarios, and any legal issues related to perfecting and enforcing the security interest.

The analytical starting point is the assets' current value. Market value is key and, while all valuation methodologies rely on some subjective components, the more objective the valuation the better. The assets' potential to retain value over time is critical. Therefore, collateral is judged according to factors such as volatility, liquidity, special-purpose nature, and—perhaps most importantly—the correlation of its value with the health of the borrower's business and the sector in which the business operates. Since the relevant context is the default of the assets' owner, the analyst must contemplate that the circumstances leading to default usually will also affect the assets' values. Context is important; the ultimate value may be far less than the value lenders articulate in business as usual projections made at origination.

When stock of a business unit is pledged, Standard & Poor's considers it weaker than security in the assets of that unit. The stock represents only the residual value—after all direct claims against the unit are satisfied—and may be worthless, especially in post-default recovery analysis.

Value Versus Debt

Does the collateral value fully cover the outstanding loan balance?

When businesses are valued as going concerns using the enterprise value methodology capital structure is a key determinant of the likelihood of recovering 100% of senior secured loans. More lower-priority debt in the capital structure is generally beneficial, insuring that collateral value is sufficient to cover the priority debt. This debt can provide the cushion to absorb any potential losses. Standard & Poor's PMD's empirical data indicate that a cushion of 50% or greater results in improved prospects for 100% principal recovery.

When using an asset liquidation value, the concept of debt cushion is filled by the loan-to-value (LTV)—the amount the lender is willing to lend against the collateral. Setting the LTV at an appropriate level, through a borrowing

base, is helpful. The borrowing base sets a limit on borrowings based on a percentage of the assets available at a given time. It also sets out which assets are eligible, excluding impaired assets. Careful monitoring of its maintenance provides a degree of confidence that there will be adequate value against any outstandings.

Tenor/amortization also play a role in collateral adequacy. Long-term concerns that could constrain the corporate credit rating may extend beyond the bank loan facility's time horizon. Therefore, a short final maturity may favor post-default recovery.

In addition, since the ability to rely on asset valuations diminishes over a longer time span, the benefit that can be given for asset-based recovery potential is greatest for shorter-term loans. For example, at a given point in time, the outlook for energy markets may translate into little concern over the value of oil rigs for the next two or three years, but greater concern about potential value loss of value over a 12-year period. This risk of obsolescence or regulatory restrictions increases over time for certain types of assets, such as aircraft. Similarly, when assessing a potential bankruptcy scenario, doubts about how operating assets might be affected will generally be greater if a drawn-out bankruptcy procedure were anticipated. However, assets such as project financing, repaid by sales of commodities such as electricity or natural resources may benefit from this ability of lenders to wait long enough in restructuring to capture favorable commodity price levels.

Amortization reduces the amount of debt that has to be covered by the value of the assets and thereby improves loan-to-value coverage. Accordingly, if one tranche of a loan facility amortizes more quickly or if one tranche's tenor is significantly shorter than another, the two tranches could have different recovery estimates.

Legal Considerations

Access to collateral (to realize value) and the timing of realization depend on how a particular legal regime resolves bankruptcies. Globally, creditor rights vary greatly, depending on legal jurisdiction. In addition to the U.S. and Canada, Standard & Poor's has evaluated the insolvency regimes of several other countries (the U.K., France, and Germany, for example). However, when one moves outside of the U.S., there is much less empirical bankruptcy data and post default recovery experience.

The key question that must be addressed is the creditor's entitlement to receive the value of the security, thereby realizing the value of having collateral. In creditor-oriented environments, lenders can exercise their rights to attach and liquidate collateral before there might be a significant deterioration in value. Conversely, in the debtor-friendly U.S. environment, bankruptcy courts can stay creditors from taking any action to enforce their rights to collateral during the legal process, exposing them to greater risks. Furthermore, one has to know whether the procedures allow for the impairment of security rights. For example: could some pre-petition secured lenders lose collateral and security position as a result of a bankruptcy court approved debtor in possession financing? Finally, who controls the proceedings? Are the controlling parties looking after the rights of the secured creditors or pursuing broader goals?

Greater recovery potential exists in those jurisdictions that have been shown to be more creditor-oriented.

For the lender to have access to its collateral in the event of the borrower's bankruptcy, it should have a "first priority perfected security interest" in such collateral. In the U.S., for non-real estate assets such as inventory, receivables, plant and equipment, revenues, accounts, and general intangibles, the creation, perfection, and priority of the security interest is governed by Article 9 of the Uniform Commercial Code (UCC). "Perfection" involves taking certain prescribed steps to give notice of the security interest to third parties. For example, a security interest is "perfected", depending on the type of collateral, by possession, by filing a financing statement in the appropriate public records, by obtaining "control" over the collateral, or by operation of law. Standard & Poor's does not make any determination of whether the transaction is correctly perfected, but rather relies on representations by the borrower to that effect.

Security interests in some types of collateral are either not governed by the UCC (e.g. real estate and insurance) or a governed by a mix of federal law and the UCC (e.g., deposit accounts), stock shares and other possessory collateral (e.g., intercompany notes) require extra steps to enjoy senior status. In such cases, Standard & Poor's will look to collateral-specific presentations that the borrower has pledged and perfected such collateral under whatever regime applied to the collateral type. Some assets, such as cargo containers, may be easy to perfect, but hard to recover if they are in foreign counties at the time of bankruptcy. Uncertainty about gaining possession of some part of the collateral

Coleto Creek WLE L.P.

In July 2004, Coleto Creek WLE LP issued a $205 million first lien term loan B due 2011 ('BB'; recovery rating '1') and a $150 million second lien term loan C due 2012 ('BB-'; recovery rating '3').

Collateral. First priority lien on all assets of Coleto Creek WLE and its subsidiaries, if any, and the general partnership and the limited partnership interests in Coleto Creek WLE.

Sempra Energy Partners, a wholly owned subsidiary of Sempra Energy, and Carlyle/Riverstone Global Energy & Power Fund II L.P. (Carlyle), the indirect parents of Coleto Creek, acquired 10 power generation plants totaling 4,200 MW from AEP Texas Central Co., including the 632 MW Coleto Creek coal plant, for $430 million. The Coleto Creek plant is the partnership's sole asset and cash from the plant will support debt service on all borrowings. Sempra engaged Citigroup to arrange the term loan B and C financings, and the two owners contributed $97 million in equity, owning 50% each. The borrower is Coleto Creek WLE, which owns the Coleto Creek plant.

The project's debt burden is moderate at $569 per kilowatt. The plant output is substantially contracted through unit-contingent power-purchase agreements for the next five years with creditworthy counterparties at prices that would enable the project to repay much of its debt by the time the loans mature. Since only 12 MW is contracted beyond five years, the project largely becomes a merchant facility. Most generation resources in Electric Reliability Council of Texas (ERCOT) rely on natural gas or fuel oil, with natural gas operating as the marginal fuel virtually all the time. Hence, Coleto Creek sits favorably in the ERCOT merit-dispatch order. This position generates strong operating margins for a coal-fired unit such as Coleto Creek. Although gas price fluctuations will create some volatility for Coleto Creek's margins, the project should post strong financial performance. Forecast debt service coverage ratios support the 'BB' rating even under adverse market and operating assumptions. Under a downside scenario, the project would only need to refinance about 64% of its original debt when the loans mature in 2011-2012.

The loan documents require that Coleto sweep a minimum of 75% of surplus cash (after income taxes to the partners, working capital requirements, and maintenance capital expenditures) to pay down principal, a feature that supports the credit profile. The project must also meet a maximum debt to EBITDA ratio test of 2.75x before making the 25% distribution. Unlike most project financings in which partners assume tax payment responsibilities, the Coleto partnership makes tax payments to its partners to satisfy their tax burden ahead of principal payments on the loans.

Standard & Poor's recovery evaluation used a discounted cash flow methodology that assumed a default would occur after all the contracts expire. Various default scenarios all assumed that the merchant market deteriorates to the point where the plant cannot make debt payments. In each recovery scenario, payments on the contracts amortize the debt according to the 75% cash sweep requirement during the contract period. The recovery analysis compares the net present value of the merchant period cash flow available for debt service (after tax) at contract termination with the outstanding loan principal.

The first-lien loans enjoy 100% recovery under Standard & Poor's low price scenario and a 25% discount rate. However, since the lending documents allow payment of principal on the term loan C only after completely paying down term loan B, recovery on the second-lien term C loan falls between 50%-65% in most scenarios. This results in the two-notch differential between the recovery ratings on the two loans, and a recovery rating of '3' for the term C loan.

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can be offset in part by providing greater overcollateralization. This offset can be determined case by case.

Covenants

Covenants provide the framework lenders use to reach an understanding with a borrower regarding how the borrower will conduct its business and financial affairs. Covenants typically increase in number and grow more stringent as credit quality declines. The stronger the covenant package, the greater the degree of control the lender can exercise over the investment. While covenants do not bolster collateral value by strengthening cash flow generation, they can help to protect secured creditors, especially as a company encounters stress, by capturing cash flow and collateral value that is available for the benefit of senior secured lenders.

In addition to basic covenants, which set out information requirements, specify defaults and remedies, and detail how modifications can be implemented, other negative covenants are more borrower-specific. When analyzing ultimate recovery prospects the covenants that are crucial are those that preserve the value of the collateral and safeguard the priority of the bank lenders. Such covenants assure the lenders that subsequent actions will not materially affect their ultimate recourse. Protection is provided through negative pledge clauses, cross-acceleration (cross-default) provisions, and limits on more senior or equally ranking debt. Banks may also require periodic paying down of balances as a discipline and to limit their exposure.

While providing collateral can enhance recovery prospects for a given senior secured loan, it can damage the prospects for the remaining unsecured creditors. When companies fall from investment-grade levels or sink deeper into speculative grade, secured financing may become the most viable, or only, debt alternative. If existing creditors have not protected themselves sufficiently, their recovery prospects can deteriorate significantly. Negative pledge clauses are designed to keep managements from tying up assets by wedging a layer of secured debt above existing borrowings. Unfortunately, many of these covenants have too many loopholes to be effective. Thus, when companies borrow on a secured basis, unsecured debtholders often see their particular bond issues notched down from the corporate credit rating to reflect their newly disadvantaged position.

Conclusion

Standard & Poor's expects that loan-specific recovery rates will become increasingly important for lenders and borrowers as the syndicated bank loan market expands to include more institutional investors and credit continues to be a major issue for bank asset quality.

In some cases, lenders will continue to estimate recoveries based on the historical performance of broad classes of loans, e.g., secured versus unsecured debt. But Standard & Poor's expects, based on its experience in rating more than 1,200 syndicated loans since its first bank loan ratings, that recoveries will vary significantly even among the same classed loans. Thus, in addition to average recovery rates for classes and types of debt, borrowers and lenders will look for loan-specific recovery estimates. Standard & Poor's approach provides a framework for developing these loan-specific estimates on a consistent basis across diverse loan types and sectors. ■

Summary Reference

AES Eastern Energy L.P.

Sector: Power

Location: New York, U.S.

Debt amount: $550 mil pass thru certificates ser 1999

$75 mil car rate revolv credit fac bank ln due January 2008

Rating/Outlook: BB+/Stable

Description: AES Eastern Energy owns and operates four merchant coal-fired generating assets, representing 1,268 MW of electric generating capacity located in western New York. The AES Corp. owns 100% of the project.

AES Ironwood LLC

Sector: Power

Location: Pennsylvania, U.S.

Debt amount: $308.5 mil 8.857% sr secd bonds due November 2025

Rating/Outlook: B+/Stable

Description: AES Ironwood is a 705 MW combined-cycle, natural gas-fired generating station, located in South Lebanon Township, Pa., which sells capacity and energy to Williams Power Co. Inc., a subsidiary of The Williams Companies Inc., under a 20-year power purchase agreement.

AES Red Oak LLC

Sector: Power

Location: New Jersey, U.S.

Debt amount: $224 mil 8.54% sr secd bonds due November 2019

$160 mil 9.2% sr secd bonds due November 2029

Rating/Outlook: B+/Stable

Description: AES Red Oak is an 830 MW combined-cycle, natural gas-fired generating station, located in Middlesex County, N.J., which sells power to the Williams Power Company Inc. under a 20-year power purchase agreement.

Alinta Co-Generation (Pinjarra) Pty. Ltd.

Sector: Power

Location: Australia

Debt amount: A$118 mil project finance bank ln due June 2015

Rating/Outlook: BBB/Stable

Description: The project finance facility is guaranteed by Alinta Electricity Trading Pty. Ltd. a wholly owned subsidiary of Alinta Ltd. The funds will be used to construct a 140 MW cogeneration unit at Alcoa of Australia's Pinjarra alumina refinery. Alcoa of Australia will use all the steam output in its refinery, and Alinta will sell the electricity direct to contestable customers in the Western Australian market.

Alliance Pipeline L.P. (Canada) and Alliance Pipeline Limited Partnership (U.S.)

Sector: Pipelines

Location: U.S. and Canada

Debt amount: US$125 mil revolving credit facility due 2006

US$200 mil 7.877% notes due December 2025

US$300 mil 4.591% sr secd notes due December 2025

US$300 mil 7.77% sr notes due June 2015

US$350 mil 6.996% notes due December 2019

C$300 mil 7.23 sr notes due June 2015

C$300 mil 5.546% sr notes due December 2023

C$350 mil 7.217% sr secd nts notes due December 2025

C$400 mil 6.76% sr notes due December 2025

C$450 mil 7.181% sr notes ser A due December 2025

C$490 cred fac bank ln

Rating/Outlook: BBB+/Stable

Description: Owned by Fort Chicago Energy Partners L.P. and Enbridge Inc., Alliance is a 1,875-mile natural gas pipeline project with associated laterals that extend from western Canada to Chicago. The system can transport up to about 1.8 billion cubic feet per day of natural gas.

American Ref-Fuel Co. LLC

Sector: Power

Location: New York, U.S.

Debt amount: $1 billion

Rating/Outlook: BB+/Stable

Description: American Ref-Fuel generates and sells electricity under long-term contracts using six waste-to-energy facilities that it owns and operates.

Autolink Concessionaires (M6) PLC

Sector: Transport

Location: U.K.

Debt amount: £124.8 mil 8.39% sr bnds ser A1 due June 2022

Rating/Outlook: AAA, BBB+(SPUR)/Stable (Guarantor: Financial Security Assurance (U.K.) Ltd.)

Description: Autolink, which is owned by Autolink Holdings (M6) Ltd., owns and operates the M6 motorway project.

Autopista Mexico-Toluca

Sector: Transport

Location: Mexico

Debt amount: MxP3.6 bil 4.5% debt certificates ser CONSVEN03U due 2013

Rating/Outlook: AAA/Stable (Guarantor: MBIA Insurance Corp.)

Description: Three concessionaire shareholders, Triturados Basalticos y Derivados S.A. de C.V. (TRIBASA), and Grupo Tribasa S.A. de C.V. (GRUPO TRIBASA), operate this 17 km highway between Mexico City and Toluca, Edo de Mexico.

Autopista Monterrey-Cadereyta

Sector: Transport

Location: Mexico

Debt amount: MxP2.25 bil 5.7% mid-term nts due December 2029

Rating/Outlook: AAA/Stable (Guarantor: MBIA Insurance Corp.)

Description: AMC, a 30-kilometer long toll road in the State of Nuevo Leon, connects the cities of Monterrey and Cadereyta. The road was built with an investment of MxP$60 million and started operations in 1988. It has two main toll plazas (Guadalupe and Cadereyta) and three collection booths per transit direction.

Autopista Tijuana-Mexicali

Sector: Transport

Location: Mexico

Debt amount: MxP600 mil

Rating/Outlook: mxA-/Negative

Description: Autopista Tijuana-Mexicali is a 36 km toll road that belongs to a larger interconnection system (163 km) between the cities of Tijuana and Mexicali.

Autopista Veracruz-Cardel

Sector: Transport

Location: Mexico

Debt amount: MxP700 million

Rating/Outlook: mxAA+/Stable

Description: Autopista Cardel-Veracruz is a toll road that connects the Gulf of Mexico's major port, Veracruz, to the city of Cardel. The toll road has two toll plazas: la Antigua (27 km segment with four lanes) and San Julian (8 km section).

Autopistas Armería-Manzanillo y Ecatepec-Pirámides

Sector: Transport

Location: Mexico

Debt amount: MxP1.64 bil 4.95% med-term nts ser ARMEC03U due May 2015

Rating/Outlook: AAA/Stable (Guarantor: MBIA Insurance Corp.)

Description: The Armeria-Manzanillo toll road is a 47 km highway in the State of Colima, and the Ecatepec-Piramides toll road is a 22.2 km highway located in Mexico City's northeast border.

Autopistas de Chihuahua

Sector: Transport

Location: Mexico

Debt amount: MxP2.5 bil series A certificates program due November 2014

Rating/Outlook: mxAA+/Stable

Description: Autopistas de Chihuahua is a pool of toll roads that is 510 km long and consists of 224 km of Chihuahua's federal concessions and 285.5 km of state toll roads.

Autopista del Maipo Sociedad Concesionaria S.A.

Sector: Transport

Location: Chile

Debt amount: US$421 mil 7.373% due June 2022

Rating/Outlook: AAA/Stable (Bond insurance provider: MBIA Insurance Corp.)

Description: Cintra Chile, a subsidiary of Cintra Spain, and a company related to the Ferrovial Group (Spain), operate Autopista del Maipo, a 192 km toll road that is part of the current Ruta 5. The concession runs from the city of Santiago north to the city of Talca.

Aventine Renewable Energy Holdings Inc.

Sector: Oil and gas

Location: Illinois, U.S.

Debt amount: $160 mil fltg rt sr secd nts due December 2011

Rating/Outlook: CCC+/Stable

Description: Aventine is a large producer and marketer of fuel grade ethanol in the U.S. Through its two production facilities, the dry-mill facility in Aurora, Neb., with a total capacity of 40 million gallons per year (mmgpy) of ethanol production capacity, and the wet-mill facility in Pekin, Ill., with a 100-mmgpy of ethanol production capacity, the company produces a total of 140 mmg of ethanol per year. In addition to ethanol production, the company enters into marketing alliances and sells other plants' ethanol production as well. Aventine has 297 mmg of capacity contracted with nine existing plants and an additional 155 mmg per year capacity contracted with two plants coming on line at the end of 2005. The total alliance capacity will be 451 mmg per year by the end of 2005, which represents about 12% of the total U.S. ethanol market.

Bauang Private Power Corp.

Sector: Power

Location: Philippines

Debt amount: US$85 mil 10.17% sr secd notes due March 2008

Rating/Outlook: BB-/Negative

Description: First Private Power Corp., a Philippine company, and The Philippine American Life Insurance Co. own Bauang, a 235 MW (gross), diesel-fired power generation project, located about 255 km north of Manila. The project sells power to National Power Corp.

Bina-Istra

Sector: Transport

Location: Croatia

Debt amount: €210 mil 8% callable bonds due December 2022

Rating/Outlook: BB+/Stable

Description: Bina-Istra is the concession company that is financing, designing, constructing, and, when opened, operating Phase 1B of the Istrian Motorway Project, a 145 km tolled motorway on the Istrian Peninsula in the Republic of Croatia. Bina-Istra's shareholders are Bina-Fincom (67%), Bouygues (16%), Croatian Motorways (14.8%), and Istarska Autocesta (2.2%). Bouygues has a 51% stake in Bina Fincom, which gives Bouygues an overall interest of 50.17% in Bina-Istra, the issuer.

Blue Water Bridge Authority

Sector: Transport

Location: Ontario, Canada

Debt amount: C$110 mil 6.41% amort rev bonds ser 2002-1 due July 2027

Rating/Outlook: AA-/Stable

Description: The Blue Water Bridge Authority is a federal nonguaranteed Crown corporation established in 1964 under the authority of the Blue Water Bridge Authority Act to operate and maintain the Canadian portion of the two-span Blue Water Bridge linking Sarnia, Ont., to Port Huron, Mich.

Borger Energy Associates L.P.

Sector: Power

Location: Texas, U.S.

Debt amount: $117 mil 1st mortgage bonds due 2022

Rating/Outlook: B+/Developing

Description: Borger is a 230 MW gas-fired cogeneration qualifying facility project that sells energy and capacity to Southwestern Public Service Co., a subsidiary of Xcel Energy Inc., under a 25-year power purchase agreement.

Brooklyn Navy Yard Cogeneration Partners L.P.

Sector: Power

Location: New York, U.S.

Debt amount: $100 mil 7.42% taxable debt secd bonds due December 2020

Rating/Outlook: BBB-/Watch Neg

Description: Brooklyn Navy Yard Cogeneration is a 286 MW natural gas-fired cogeneration facility, located in Brooklyn, N.Y., that sells electricity and steam to Consolidated Edison Co. of New York Inc. BNY Power Partners LLP, Morgan Stanley Dean Witter Capital Partners., and B-41 Associates L.P. own the project.

Caithness Coso Funding Corp.

Sector: Power

Location: California, U.S.

Debt amount: $254 mil 9.05% sr secd bonds due December 2009

Rating/Outlook: BBB-/Stable

Description: The project consists of three 80 MW geothermal power projects, which are owned by several different partnerships and collectively known as the Coso partnership projects. The projects sell energy and capacity to Southern California Edison Co. under long-term power purchase agreements.

California Petroleum Transport Corp.

Sector: Transport

Location: California, U.S.

Debt amount: $167.5 mil serial first pfd mortgage notes due April 2006 (Guarantor: ChevronTexaco Corp.)

Rating/Outlook: AA/Stable

Debt amount: $117.9 mil 8.52% first pfd mortgage notes due April 2015

Rating/Outlook: A-/Watch Neg

Description: Four Suezmax oil vessels, owned indirectly by Frontline Ltd., operate under long-term charter to Chevron Texaco for 20 years.

Calpine Construction Finance Co. L.P.

Sector: Power

Location: California, U.S.

Debt amount: $385 mil 1st prior secd instl bank loan due 2009

Rating/Outlook: B/Negative

Debt amount: $415 mil fltg rate 2nd prior sr secd notes due August 2011

Rating/Outlook: CCC+

Description: Calpine Construction Finance, a subsidiary of Calpine Corp., owns seven geographically diverse merchant natural gas combined-cycle generating plants with a capacity of 3,937 MW.

Calpine Generating Co. LLC

Sector: Power

Location: California, U.S.

Debt amount: $600 mil fltg rate 1st priority secd term loan B bank ln due 2009

$235 mil fltg rate 1st priority secd nts due April 2009

Rating/Outlook: B/Negative

Debt amount: $100 mil fltg rate 2nd priority secd term loan B bank ln due 2010

$640 mil fltg rt 2nd priority secd nts due April 2009

Rating/Outlook: B-/Negative

Debt amount: $150 mil 11.5% 3rd priority secd nts due April 2011

$680 mil fltg rate 3rd priority secd nts due April 2011

Rating/Outlook: CCC+/Negative

Description: A Calpine subsidiary, Calpine Generating Co. LLC (CalGen), owns and operates a geographically diverse portfolio of 14 gas-fired power plants operating in six different energy markets. CalGen owns and controls 9,820 MW of nominal capacity, of which 8,837 MW is base load and 983 MW is peaking capacity. CalGen is the 100% owner of all of the plant assets. With the completion of the Pastoria facility on May 5, 2005, all 14 facilities have reached commercial operation.

Carbon County Industrial Development Authority (Panther Creek Partners)

Sector: Power

Location: Pennsylvania, U.S.

Debt amount: $165 mil 6.7% tax-exempt resource recovery revenue refunding bonds ser 2000 due May 2012

Rating/Outlook: BBB-/Stable

Description: Panther Creek is a 86 MW anthracite waste coal-fired power-producing qualifying facility that sells power to Metropolitan Edison Co. under a 20-year fixed-price, must-take purchased-power agreement. Constellation Energy Group and El Paso Corp. equally own the project.

Carretera Viaducto La Venta-Punta Diamante

Sector: Transport

Location: Mexico

Debt amount: MxP215 million

Rating/Outlook: mxAA/Stable

Description: Viaducto Punta Diamante toll road is located in the Estado de Guerrero. The toll road is 21 km long with 4 lanes (two each way). It has two toll plazas and 4 bridges. It has been operating since February 1993.

Carreteras de Cuota Puebla

Sector: Transport

Location: Mexico

Debt Amount: MxP520 million 6.40% debt certificates due 2019 (MxP275 mil guarantee by Banobras)

Rating/Outlook: mxAAA/Stable

Description: The Atlixcayotl toll road is a 18 km highway between Atlixco and Puebla City in the State of Puebla. The toll road has two lanes in each direction and only one toll plaza. The only toll station is located close to Puebla city and has five boots, two in each direction plus one bidirectional boot.

Catalyst Healthcare (Manchester) Financing PLC

Sector: Other

Location: U.K.

Debt amount: £175 mil EIB sr secd bank ln due September 2037

£218.05 mil var rate (incl £38 mil variation bnds) due September 2040

Rating/Outlook: AAA

Description: The debt is being used to finance the design and construction of new and refurbished facilities for the U.K.-based Central Manchester and Manchester Children's University Hospitals National Health Service (NHS) Trust. The project company, Catalyst Healthcare (Manchester) Ltd., has responsibility for providing maintenance and certain nonclinical services under a 38-year project agreement, including a 4.5-year construction program.

Catalyst Healthcare (Romford) Financing PLC

Sector: Other

Location: U.K.

Debt amount: £100 mil EIB bank ln due September 2034 (Guarantor: Financial Security Assurance (UK) Ltd.)

Rating/Outlook: Preliminary AAA, BBB(SPUR)/Stable

Description: Catalyst is a project that is to design, build, and finance a new 859-bed acute care hospital in the London borough of Havering. On completion, Catalyst will provide nonclinical services to the hospital and will supply, transfer, and maintain medical equipment service under a 36-year project agreement.

CE Casecnan Energy and Water Co. Inc.

Sector: Power

Location: Philippines

Debt amount: US$125 mil 11.45% sr secd notes ser A due November 2005

US$171.5 mil 11.95% sr secd notes ser B due November 2010

Rating/Outlook: B+/Positive

Description: CE Casecnan Energy and Water, which is 85%-owned by MidAmerican Energy Holdings Co., is a combination water and 150 MW hydroelectric power project on the island of Luzon in the Philippines. The project sells power and water to the state-owned National Irrigation Administration.

Cedar Brakes I LLC

Sector: Power

Location: New Jersey, U.S.

Debt amount: $270.6 mil 8.5% (exchange offer) sr secd bnds due Feb. 15, 2014

Rating/Outlook: BBB-/Watch Dev

Description: The project obtains electricity from El Paso Merchant Energy L.P. (EPM) under power-purchase agreements and then sells electric energy and capacity to Public Service Electric & Gas Co. under an amended and restated long-term power purchase agreement. El Paso unconditionally guarantees of the obligations of EPM under the mirror power-purchase agreement between EPM and Cedar Brakes I.

Cedar Brakes II LLC

Sector: Power

Location: New Jersey, U.S.

Debt amount: $362.2 mil 9.875% (exchange offer) sr secd bnds due September 2013

Rating/Outlook: BBB-/Watch Dev

Description: See Cedar Brakes I LLC.

CE Generation LLC

Sector: Power

Location: Delaware, U.S.

Debt amount: $400 mil 7.416% bonds due December 2018

Rating/Outlook: BB-/Positive

Description: The CE Generation project portfolio consists of 13 gas-fired and geothermal power projects with a total capacity of about 817 MW. Southern California Edison Co. purchases the majority of the power. MidAmerican Energy Holdings Co. and TransAlta Corp are equal owners.

Centragas-Transportadora de Gas de la Region Central de Enron Development & Cia. S.C.A.

Sector: Pipelines

Location: Colombia

Debt amount: US$172 mil 10.65% sr secd notes due 2010

Rating/Outlook: BB/Stable

Description: Centragas operates a 578 km natural gas pipeline that runs from Ballena to Barrancabermeja, Colombia, and is an Enron Development special-purpose entity that built, owns, operates, and will eventually transfer ownership of Centragas to Ecogas.

Central Valley Financing Authority

Sector: Power

Location: California, U.S.

Debt amount: $142.7 mil cogen proj rev bonds (Carson Ice-Generation project) ser 1993 due July 2020

Rating/Outlook: BBB/Stable

Debt amount: $101.125 mil (Carson Ice-Generation project) bonds ser 1998 due July 2020 (bond insurance provider: MBIA Insurance Corp.)

Rating/Outlook: AAA/Stable

Description: The 57 MW gas-fired combined cycle plant and a 42 MW gas-fired simple cycle peaking plant project sell power to Sacramento Municipal Utility District under a tolling arrangement.

Choctaw Generation L.P.

Sector: Power

Location: Mississippi, U.S.

Debt amount: $236 mil 9.5% pass-thru ser B due June 2030

$95 mil 8.368% pass-thru ser A due June 2023

Rating/Outlook: BBB-/Stable

Description: This 440 MW coal-fired generation facility sells power to the Tennessee Valley Authority network under a long-term power purchase and operating agreement. Tractebel Power Inc. owns 100% of Choctaw.

Coleto Creek WLE L.P.

Sector: Power

Location: Texas, U.S.

Debt amount: $228.1 mil first lien term B1 bank ln due 2011

Rating/Outlook: BB/Stable

Debt amount: $150 mil second lien term C1 bank ln due 2012

Rating/Outlook: BB-/Stable

Description: The loans, issued in May 2005, were used to refinance the original term loans B and C, which were issued in July 2004 to acquire the Coleto Creek project from American Electric Power Co. Inc., and to pay a $50 million dividend to the sponsors, Sempra Energy Partners, a wholly owned subsidiary of Sempra Energy, and Carlyle/Riverstone Global Energy & Power Fund II L.P. A joint venture of the sponsors acquired a total of 10 power generation plants totaling 4,200 MW from AEP Texas Central Co., including the 632 MW Coleto Creek coal plant, for $430 million. The Coleto Creek plant will, however, be the partnership's sole asset and cash from the plant will support debt service on all borrowings.

Colowyo Coal Funding Corp.

Sector: Mining

Location: Wyoming, U.S.

Debt amount: $192.8 mil coal contract rec bonds due November 2016

Rating/Outlook: BB/Negative

Description: The Colowyo transaction securitizes the coal production payments generated from three coal sales contracts between the Colowyo coal mine in Colorado and six electric utility coal purchasers.

Colver Power Project (Pennsylvania Economic Development Authority)

Sector: Power

Location: Pennsylvania, U.S.

Debt amount: $169 mil sr resource recovery bonds ser 2005F due 2018

Rating/Outlook: AAA/Stable

Description: Colver is a 111 MW generation facility that uses bituminous coal waste as fuel in a pyroflow circulating fluidized-bed boiler. The project sells power to a subsidiary of FirstEnergy Corp.

Compania de Desarrollo Aeropuerto El Dorado S.A. (CODAD)

Sector: Transport

Location: Colombia

Debt amount: US$116 mil 10.19% notes due May 2011

Rating/Outlook: BB/Stable

Description: CODAD won a concession contract from the Republic of Colombia's AEROCIVIL, the operator of Colombian airports, to build and maintain a second runway, which opened in June 1998, at the El Dorado airport in Bogotá through 2015.

Confederated Tribes of the Warm Springs Reservation

Sector: Power

Location: Oregon, U.S.

Debt amount: $50 mil hydroelec adj rate rev bonds (taxable auc rate secs) (Pelton-Round Butte Proj) ser 2003 due February 2033

Rating/Outlook: AAA/Stable, BBB-(SPUR)/Stable

Description: The Confederated Tribes of the Warm Springs Reservation of Oregon acquired a 33% share (about 143 MW) of the Pelton-Round Butte project through the issuance of 30-year amortizing debt in October 2003. Portland General Electric owns 66.67% of the project and has a 50-year agreement to buy 100% of the project's output.

Conproca S.A. de C.V.

Sector: Oil and gas

Location: Mexico

Debt amount: US$370.3 mil 12% sr secd bonds due June 2010

Rating/Outlook: BBB/Stable

Description: Conproca is a 270,000 barrels per day refinery project integrated by Siemens AG (15%) and SK Engineering & Construction Co. Ltd. (85%). Conproca entered into a contract with the Mexican state-owned oil company, PEMEX, to develop, finance, and oversee the construction of the Cadereyta refinery. The project was completed in April 2001, but to date is not operating at full capacity.

Constructora Internacional de Infraestructura (CIISA)

Sector: Power

Location: Mexico

Debt amount: US$452.4 million syndicated bank facility due 2007

US$230 mil bonds due May 2008

Rating/Outlook: BBB/Stable

Description: The CIISA project is building a 750 MW hydroelectric generating facility in the State of Nayarit, Mexico. Construction started April 2003 and will take 52 months. Comision Federal de Electricidad will purchase the power when the project achieves commercial operation.

Corredor Sur (ICA Panama)

Sector: Transport

Location: Panama

Debt amount: $150 mil bnds due 2025

Rating/Outlook: BBB-/Stable

Description: Corredor Sur is a 19.8 km urban toll road in Panama that connects Panama City's downtown area with Tocumen International Airport. In 1995, the Panamanian government awarded ICA Panama a 30-year concession to build, maintain, and operate the toll road. ICA Panama's parent company is ICATECH Corp., which is in turn wholly owned by Empresas ICA S.A. de C.V., the largest engineering and construction company in Mexico, with significant experience in building, operating, and managing infrastructure facilities.

CountryRoute (A130) PLC

Sector: Transport

Location: U.K.

Debt amount: £88 mil sr secd bank ln due 2024

Rating/Outlook: BBB/Stable

Debt amount: £5.5 mil sub secd mezzanine bank ln due 2024

Rating/Outlook: BB/Stable

Description: CountyRoute is a special-purpose, bankruptcy-remote entity indirectly wholly owned by Laing Investments Ltd. In October 1999, Essex County Council awarded CountyRoute a 30-year concession to design, build, finance, and operate the 15 km A130 shadow toll road. Construction has been completed successfully and the A130 was opened in two sections in 2002-2003.

Coventry & Rugby Hospital Co. PLC (CRH)

Sector: Other

Location: U.K.

Debt amount: £407.2 mil var rate bonds due June 2040 (Guarantor: MBIA Assurance S.A.)

Rating/Outlook: AAA, BBB-(SPUR)/Stable

Description: CRH, which is owned by Skanska BOT U.K. Ltd. (25%) and Innisfree Nominees Ltd. (75%), will design, construct, equip, and maintain a 1,212-bed acute hospital, a 130-bed mental health unit, and a clinical sciences building on the Walsgrave site of University Hospitals Coventry and Warwickshire National Health Service Trust and Coventry Primary Care Trust, in Coventry, U.K. After completion in 2007, CRH will provide facilities management services and lifecycle replacement for 35 years.

Crockett Cogeneration, a California Limited Partnership

Sector: Power

Location: California, US

Debt amount: $295 mil 5.869% sr secd nts due March 2025

Rating/Outlook: BBB-/Stable

Description: Crockett is a 240 MW natural gas-fired cogeneration facility located in Crockett, Calif. Crockett is a qualifying facility that sells power to Pacific Gas and Electric Co. under the terms of a power-purchase agreement that expires in 2026 and steam under the terms of a sales agreement that also expires in 2026.

Deer Park Refining L.P.

Sector: Oil and gas

Location: Texas, U.S.

Debt amount: $75 mil 7.1% notes due September 2005

$400 mil 6.47% sr notes due December 2008

Rating/Outlook: A/Stable

Description: Shell Oil Co. and PMI Norteamerica S.A. de C.V., a subsidiary of Petroleos Mexicanos, formed Deer Park Refining L.P. to own, operate, and upgrade the fuels refinery portion of Shell Oil's 1,600-acre integrated refinery and petrochemical facility in Deer Park, Texas. The refinery's crude processing capacity is 340,000 barrels per day (bpd), and its coking capacity is 88,000 bpd.

Delek & Avner, Yam Thethys Ltd.

Sector: Oil and gas

Location: Israel

Debt amount: $217 mil nts due August 2013

Rating/Outlook: BBB-/Stable

Description: The Israel-incorporated issuer's sole purpose is to issue the notes and onlend the proceeds to three entities: Delek Drilling, Delek Investments, and Avner Oil (collectively the Delek Sponsors). The Delek Sponsors are all directly or indirectly held by the Israeli Delek Group Ltd. Jointly with a subsidiary of U.S.-based exploration and production company Noble Energy, Noble Energy Mediterranean Ltd., the joint venture owns and operates an offshore gas production facility off the coast of Israel.

Drax Power Ltd.

Sector: Power

Location: U.K.

Debt amount: £100 mil super prior loc fac due December 2006

Rating/Outlook: A-/Stable

Description: The U.K.-based Drax power station was refinanced in December 2003, and Standard & Poor's rated two debt issues and one facility (see InPower2 Ltd. and NoteCo. Ltd). The Drax power station is a 3,960 MW (gross) pulverized coal-fired power station located in North Yorkshire, England, accounting for about 8% of electricity generation in England and Wales. It is the largest coal-fired power station in Western Europe. The new debt replaces £1.3 billion of senior facilities and introduces several layers of senior loans or loan notes with increasing levels of subordination and reducing levels of security.

DTE Energy Center LLC

Sector: Power

Location: Michigan, U.S.

Debt amount: $244 mil %7.458 sr secd bonds due April 2024

Rating/Outlook: BBB/Stable

Description: The proceeds of the bonds will be used to finance the purchase of a portfolio of utility assets from an affiliate of DaimlerChrysler Corp. Concurrent with the purchase, the project will enter into eight substantially similar utility services agreements with an affiliate of DaimlerChrysler, Utility Assets LLC, under which it will provide utility support services at certain of DaimlerChrysler's North American manufacturing facilities.

East Coast Power LLC

Sector: Power

Location: New Jersey, U.S.

Debt amount: $193.5 mil 6.737% sr secd notes due March 2008

$248 mil 7.536% sr secd notes due June 2017

$184 mil 7.066% sr secd notes due March 2012

Rating/Outlook: BBB-/Stable

Description: East Coast Power owns interests in two gas-fired, combined-cycle cogeneration facilities in Linden, N.J. with aggregate capacity of 940 MW. The plant provides up to 645 MW to Consolidated Edison under a dispatchable power sales agreement.

Edison Mission Energy Funding Corp. (Big 4)

Sector: Power

Location: California, U.S.

Debt amount: $190 mil 7.33% bonds ser B due September 2008

Rating/Outlook: B+/Stable

Description: Edison Mission Energy Funding is a funding vehicle that monetized the dividends from four gas-fired, cogeneration projects with a total capacity of 1,210 MW. Through the guarantors, Edison Mission Energy owns about 50% of the total capacity, or about 601 MW net.

Education Support (Enfield) Ltd. (ESL)

Sector: Other

Location: U.K.

Debt amount: £17.86 mil fltg rate bank ln due September 2024

Rating/Outlook: BBB+

Description: In March 1999, ESL entered into a 26.5-year project agreement with the London Borough of Enfield to design and build a secondary school with 1,290 student places and provide support services once completed. Construction was completed in August 2000, after which ESL began to provide facilities management services.

EES Coke Battery LLC

Sector: Other

Location: Michigan, U.S.

Debt amount: $75 mil 9.382% sr secd notes ser B due April 2007

Rating/Outlook: BB/Positive

Description: This coke battery project, which has a capacity of approximately 920,000 tons of coke a year, supplies the Zug Island facility with approximately 60% of its coke needs. The project is an indirect, wholly owned subsidiary of DTE Energy Co.

Elwood Energy LLC

Sector: Power

Location: Illinois, U.S.

Debt amount: $368 mil 8.159% sr secd bonds due July 2026

Rating/Outlook: B+/Negative

Description: Elwood is a 1,409 MW merchant peaking power plant sells power into the Mid-American Interconnected Network and is fully contracted through 2012 and partially through 2017. Elwood is an equal partnership between wholly owned subsidiaries of Peoples Energy Resources Co. LLC, a wholly owned subsidiary of Peoples Energy Corp., and Dominion Energy Inc., a wholly owned subsidiary of Dominion Resources Inc.

ESI Tractebel Acquisition Corp.

Sector: Power

Location: New Jersey/Massachusetts, U.S.

Debt amount: $194 mil 7.99% sub bonds due December 2011

Rating/Outlook: BB/Stable

Description: ESI Tractebel is a project portfolio consisting of two 300 MW cogeneration projects, Northeast Energy Associates (NEA) in Massachusetts and North Jersey Energy Associates (NJEA) in N.J. NEA sells electricity under five power-purchase agreements to Boston Edison Co., Commonwealth Electric Co., and New England Power Co. NJEA sells electricity under a single power-purchase agreement to Jersey Central Power & Light Co. The project is 50%-owned by ESI Northeast Energy Acquisition Funding, a subsidiary of FPL Group, and 50% by Tractebel Power Inc.

ESI Tractebel Funding Corp.

Sector: Power

Location: New Jersey/Massachusetts, U.S.

Debt amount: $201 mil 9.32% sr secd nts due 2007

$100 mil 9.77% sr secd nts due 2010

Rating/Outlook: BBB-/Stable

Description: See ESI Tractebel Acquisition Corp.

Eurotunnel S.A.

Sector: Transport

Location: U.K./France

Debt amount: £240 mil amortizing sr secd bank loan due 2012

Rating/Outlook: BBB/Watch Neg

Description: Eurotunnel operates the Channel Tunnel between the U.K. and France under a concession granted by the U.K. and French governments until 2086. Eurotunnel's main activities consist of running its own shuttle services and renting out 50% of the tunnel's capacity to railway operators.

Excel Paralubes Funding Corp.

Sector: Oil and gas

Location: Louisiana, U.S.

Debt amount: $187 mil 7.125% sr notes due November 2011

$250 mil 7.43% bonds due 2015

Rating/Outlook: A-/Stable

Description: Excel Paralubes is a 22,200 barrels per day lube base oil facility located adjacent to ConocoPhillips' Lake Charles, La., refinery. Excel Paralubes is owned by 50% general partners, ConocoPhillips and FHR Lubricants LLC, which is an indirect wholly owned subsidiary of Koch Industries LLC.

Exchequer Partnership PLC (No.1)

Sector: Other

Location: U.K.

Debt amount: £127.79 mil 3.582% index-linked bnds due December 2035

Rating/Outlook: AAA

Description: Under a U.K. Government private finance initiative (PFI), the bond proceeds from EP1 have been used to successfully complete the refurbishment of about 50% of the Grade II listed government offices in Great George Street (GOGGS) in 2002. The refurbished part of the building is now occupied by Her Majesty's Treasury (HMT) civil servants. Since July 2002, Exchequer Partnership PLC (No.1) has been providing services—including cleaning, catering, and security—to HMT. The remaining 50% of GOGGS has been refurbished by another project company under the PFI scheme, Exchequer Partnership 2 (EP2).

Exchequer Partnership PLC (No.2)

Sector: Other

Location: U.K.

Debt amount: £166 mil 5.396% bnds due July 2036

Rating/Outlook: AAA/Stable, BBB(SPUR)/Stable

Description: See Exchequer Partnership PLC (No.1).

Express Pipeline L.P.

Sector: Pipelines

Location: U.S. and Canada

Debt amount: US$150 mil sr secd notes due 2013

Rating/Outlook: A-/Stable

Debt amount: US$250 mil sub secd notes due 2019

Rating/Outlook: BBB-/Stable

Description: Express Pipeline is a 1,717-mile, batch-mode, crude-oil pipeline system runs from Hardisty, Alta., to Casper, Wyo., on the Express pipeline system, and then from Casper, Wyo., to Wood River, Ill., on the refurbished Platte pipeline system. A consortium of Terasen Inc., Borealis Infrastructure Management Inc., acting on behalf of Ontario Municipal Employees Retirement System, and Ontario Teachers' Pension Plan equally hold one-third interest in the project.

Fideicomiso Petacalco

Sector: Power

Location: Mexico

Debt amount: US$308.9 mil 10.16% sr secd notes due December 2009

Rating/Outlook: BBB/Stable

Description: Petacalco is dual-fuel station that generates power from coal and fuel oil. The terminal of Lazaro Cardenas Industrial Port provides coal unloading, storage, mixing, and delivery services (through a conveyor system) to Comision Federal de Electricidad's 2,100 MW baseload Petacalco power station.

FPL Energy American Wind LLC (American Wind)

Sector: Power

Location: California and New Mexico, U.S.

Debt amount: $380 mil sr secd notes due June 2023

Rating/Outlook: BBB-/Stable

Description: Seven wind power projects located in six states make up this project portfolio. Each project sells power to investment-grade offtakers under long-term contracts that provide revenues for energy production only. American Wind is indirectly owned by FPL Group Inc.

FPL Energy Caithness Funding Corp.

Sector: Power

Location: California, U.S.

Debt amount: $150 mil 7.645%sr secd bonds due 2018

Rating/Outlook: BBB-/Stable

Description: Two 80 MW net solar electricity-generating stations located in the Mojave Desert, Calif., sell power under Standard Offer No. 2 power purchase agreements with Southern California Edison Co. Indirect, wholly owned subsidiaries of FPL Energy LLC and Caithness Energy LLC own the project.

FPL Energy Wind Funding

Sector: Power

Location: California and New Mexico, U.S.

Debt amount: $125 mil 6.876% sr secd bonds due June 2017

Rating/Outlook: BB-/Stable

Description: See FPL Energy American Wind, which distributes cash to FPL Energy Wind Funding.

FPL Virginia Funding Corp. (Doswell)

Sector: Power

Location: Virginia, U.S.

Debt amount: $435 mil 7.52% bonds due June 2019

Rating/Outlook: BBB-/Stable

Description: Doswell is a 708 MW four-unit, gas-fired, combined cycle power and 171 MW peaking unit complex that sells power and energy under a long-term power purchase agreement to Virginia Electric & Power Co. The project is 100% owned by FPL Energy LLC, a wholly owned subsidiary of FPL Group Inc.

Gilroy Energy Center

Sector: Power

Location: California, U.S.

Debt amount: $301.658 mil 4% sr secd nts due August 2011

Rating/Outlook: AAA/BBB-(SPUR)

Description: Gilroy Energy owns and operates nine peaking power projects in Northern California. All the projects came on line between January 2002 and May 2003. Gilroy Energy consists of 11 LM6000 gas turbines in different locations with a total capacity of 525 MW.

Golden State Petroleum Transport Corp.

Sector: Other (deep sea foreign transportation of freight)

Location: Global

Debt amount: US$51.7 mil serial first pfd mortgage notes due 2006

Rating/Outlook: AA/Stable

Debt amount: US$127.1 mil 8.04% first pfd mortgage notes due February 2019

Rating/Outlook: BB+/Stable

Description: Golden State is a project that owns and operates two very large crude carriers that Chevron Transport Corp. charters under 18-year charters. Each 300,000 deadweight-ton double-hulled tanker can carry 2 million barrels of crude oil each. Frontline Ltd., a publicly listed Bermuda company, owns and manages the Golden State vessel-owning companies.

Green Country Energy LLC

Sector: Power

Location: Oklahoma, U.S.

Debt amount: $319 mil 7.21% sr secd notes due 2024

Rating/Outlook: BBB-/Stable

Description: Green Country is a 810 MW, natural gas fired, combined-cycle plant located in Jenks, Okla. that sells power to PECO Energy Co. under a long-term dependable capacity conversion services agreement. Green Country is 90% owned by subsidiaries of General Electric's structured finance unit and 10% owned by a subsidiary of Cogentrix.

GWF Energy LLC

Sector: Power

Location: California, U.S.

Debt amount: $226 mil 6.1% sr secd notes due December 2011

Rating/Outlook: BBB-/Stable

Description: GWF operates and maintains three peaking power plants in California, which have six units generating a total of 362 MW. GWF sells capacity and energy to the California Department of Water Resources under an amended and restated master power purchase agreement. PSEG Global LLC, a wholly owned subsidiary of PSEG Energy Holdings Inc., owns 76% of the membership interests in the project, and Harbinger Independent Power Fund II LLC owns 24%.

Hawkeye Renewables LLC

Sector: Oil and gas

Location: Iowa, U.S.

Debt amount: $185 mil sr secd term bank ln due 2012

Rating/Outlook: B/Stable

Description: Hawkeye Renewables will build and operate two dry-mill ethanol plants in Iowa. The company currently owns and operates a newly built 40 million gallon per year (mmgpy) ethanol plant in Iowa Falls, Iowa. Hawkeye plans to expand the plant by 40 mmgpy and build a new 100 mmgpy plant in Fairbank, Iowa.

Healthcare Support (Newcastle) Finance PLC

Sector: Other

Location: U.K.

Debt amount: £115 mil sr secd EIB bank ln due 2038

£201 mil 2.187% sr secd bnds due September 2041

Rating/Outlook: AAA, BBB-(SPUR)/Stable

Description: The funds will be used to finance the design and construction of new facilities for the U.K.-based Newcastle Upon Tyne Hospitals National Health Service Trust. The project company, Healthcare Support (Newcastle) Ltd., will also provide maintenance and certain nonclinical services under a 38-year project agreement.

Health Management (Carlisle) PLC

Sector: Other

Location: U.K.

Debt amount: £75.8 mil 7.181% notes due September 2027

Rating/Outlook: AAA (MBIA Assurance S.A.)

Description: Health Management Carlisle (HMC) is a 474-bed district general hospital constructed for Carlisle Hospitals National Health Service Trust (Carlisle Trust) under the U.K. government's private finance initiative. Under a 45-year project agreement, HMC will provide maintenance and certain nonclinical facilities management services to Carlisle Trust. AMEC PLC and Building & Property Ltd. own HMC.

Highway 407 International Inc.

Sector: Transport

Location: Toronto, Canada

Corporate credit rating: A/Stable/—

Debt amount: C$3.252 bil sr secd debt

Rating/Outlook: A/Stable

Debt amount: C$775 mil sub debt

Rating/Outlook: BBB/Stable

Description: 407 International is the sole shareholder, operator, and manager of 407 express-toll route, which is owned by a consortium that comprises the Canadian subsidiary of Cintra Concesiones de Infraestructuras de Transporte (co-owned by Grupo Ferrovial and Macquarie Infrastructure Group) and SNC-Lavalin Inc. The project is an all-electronic, open-access toll highway that extends 108 km east-west and is located just north of Toronto.

Homer City Funding

Sector: Power

Location: Pennsylvania, U.S.

Debt amount: $300 mil 8.137% sr secd bonds due October 2019

$575 mil 8.734% sr secd bonds due October 2026

Rating/Outlook: BB/Stable

Description: Homer City Funding is a funding vehicle for the 1,884 MW, coal-fired Homer City plant, which is leased from a unit of General Electric Co. Edison Mission Energy indirectly owns Homer City Funding.

Hong Kong Link 2004 Ltd.

Sector: Transport

Location: Hong Kong

Debt amount: HK$790 mil 4.28% Tranche C nts due May 2011

HK$800 mil 3.6% Tranche B nts due May 2009

HK$880 mil 2.75% Tranche A nts due May 2007

HK$3.08 bil var rate Class A2 nts due May 2016

Rating/Outlook: AA-/Stable

Description: The government raised HK$6.0 billion by securitizing the future net revenue from its existing tolled facilities over a maximum period of 12 years. These six tolled facilities are vital to Hong Kong's transport network. With the exception of the Lantau Link, all of them have more than 10 years of operating history and have shown a stable traffic pattern over the past few years.

Hovensa LLC

Sector: Oil and gas

Location: St. Croix, V.I.

Debt amount: $400 mil sr secd revolv credit fac bank ln due 2008

Rating/Outlook: BBB/Negative

Description: Hovensa is a crude oil refinery located in St. Croix, V.I. and 50% owned by a wholly owned subsidiary of Amerada Hess Corp. and 50% by a wholly owned subsidiary of Petroleos de Venezuela S.A.

Husky Terra Nova Finance

Sector: Oil and gas

Location: Canada

Debt amount: $250 mil 8.45% sr secd bonds due February 2012

Rating/Outlook: BBB/Stable

Description: The Terra Nova project represents Husky Oil Co.'s share of a floating production storage oil facility that extracts crude oil reserves of the Terra Nova oil field, located off the coast of Newfoundland.

Independence County Hydroelectric

Sector: Power

Location: Arkansas, U.S.

Debt amount: $29.3 million senior secured bonds

Rating/Outlook: B/Watch Neg

Description: The 11.1 MW hydroelectric project consists of three run-of-river hydroelectric power generation facilities to be installed in existing lock and dam structures on the White River in Independence County, Ark. Although originally expected to be completed in early 2005, the completion date has been pushed back by at least two years. The project has a must-take purchased-power agreement with Clarksville, Ark. for 32 years.

Indiantown Cogeneration Funding Corp./Indiantown Cogen L.P.

Sector: Power

Location: Florida, U.S.

Debt amount: $505 mil taxable (Indiantown Cogeneration Project) 1st mortgage bonds due December 2020

Rating/Outlook: BB+/Stable

Description: The project, which is 100% owned by Indiantown Cogeneration L.P., is a 330 MW, pulverized coal-fired cogeneration facility located in Martin County, Fla. Florida Power & Light Co. purchases the power under a long-term power-purchase agreement.

InPower2 Ltd.

Sector: Power

Location: U.K.

Debt amount: £280 mil A1 bank ln due 2015

Rating/Outlook: BBB-/Stable

Description: See Drax Power Ltd.

Integrated Accommodation Services PLC

Sector: Other

Location: U.K.

Debt amount: £406.9 mil 6.48% secd bonds due March 2029 (Bond insurance provider: Financial Security Assurance (U.K.) Ltd.)

Rating/Outlook: AAA, A(SPUR)/Stable

Description: Under the private finance initiative, the project is financing the design and construction of the new government communications headquarters accommodation facilities for the U.K. Secretary of State for the Foreign and Commonwealth Office. Integrated Accommodation Services will also provide certain facilities management and maintenance services under a 30-year project agreement.

Itá Energética S.A.

Sector: Power

Location: Brazil

Debt amount: BrR168 million debentures

Rating/Outlook: brA/Stable

Description: Itá is an independent power producer, which jointly with Tractebel Energia S.A., has the concession until 2030 to exploit the Itá Hydroelectric plant with a nominal capacity of 1,450 MW. Itá's sponsors, Tractebel (48.75% stake), Companhia Siderúrgica Nacional (48.75%), and Cia de Cimento Itambé (2.50%), are also the power offtakers of its energy output until the end of concession.

Itapebi Geração de Energia S.A.

Sector: Power

Location: Brazil

Debt amount: BrR200 million debentures

Rating/Outlook: BB-/Stable

Description: Itapebi is an independent power producer that operates the 450 MW hydro plant. Coelba, the project's main shareholder (42% stake), buys all or the project's output under a long-term contract.

Juniper Generation LLC

Sector: Power

Location: California, U.S.

Debt amount: $206 mil 5.04% sr secd nts due December 2014

Rating/Outlook: BBB-/Stable

Description: Juniper Generation is a holding company that owns interests in a portfolio of 10 cogeneration facilities in California, with a combined capacity of 661 MW. Nine of the projects sell power to Pacific Gas and Electric Co., and one sells power to Southern California Edison Co.

Kern River Funding Corp.

Sector: Pipelines

Location: Texas, U.S.

Debt amount: $830 mil 4.9% sr secd notes due April 2018

$486 mil 6.676% sr notes due July 2016

Rating/Outlook: A-/Negative

Description: Kern River Funding is the funding vehicle for Kern River Gas Transmission Co., the general partnership that owns and operates a 1,678-mile, interstate natural-gas pipeline from Opal, Wyo., to Bakersfield, Calif.

Kern River Gas Transmission Co.

Sector: Pipelines

Location: Texas, U.S.

Corporate credit rating: A-/Negative/—

Debt amount: $790 mil sr secd bank loan

Rating: A-

Description: Kern River Gas Transmission (KRGT) is a 922-mile interstate natural gas pipeline with a design capacity of 700 million cubic feet (mmcf) per day. The solely owned facilities originate near Opal, Wyo., and stretch south through western Utah and southern Nevada, and terminate in Daggett, Calif. At that junction, KRGT and Mojave Gas Pipeline jointly own pipeline facilities (63.6% owned by KRGT) with 1,100 mmcf per day of capacity that continue to Bakersfield, Calif., where the system splits to form the east and west laterals.

KGen LLC

Sector: Power

Location: Georgia, U.S.

Debt amount: $325 mil first lien term A bank ln due 2011

Rating/Outlook: B/Stable

Debt amount: $150 mil second lien term B bank ln due 2011

Rating/Outlook: B-/Stable

Description: KGen owns nine gas-fired generation facilities with a nominal capacity of 5,325 MW through two subsidiaries, KGen Power LLC and KGen Murray LLC. The proceeds from the loans will be used to refinance an existing $325 million loan, repay a $50 million seller note, and fund a required liquidity reserve.

Kincaid Generating LLC

Sector: Power

Location: Chicago, U.S.

Debt amount: $265 mil 7.33% sr secd bonds due June 2020

Rating/Outlook: BBB-/Stable

Description: Kincaid is a 1,108 MW coal-fired plant, located near Springfield, Ill. The facility is owned by Dominion Energy Inc., a wholly owned subsidiary of Dominion Resources Inc., and Dominion Kincaid Inc., a wholly owned subsidiary of Dominion Energy. Exelon Corp. purchases capacity and associated electric energy from the facility under a power-purchase agreement with an original term of 15 years beginning February 1998. After the 15 years, Kincaid will convert to a merchant power plant.

Kiowa Power Partners LLC

Sector: Power

Location: Oklahoma, U.S.

Debt amount: $281 mil 5.737% sr secd bnds due March 2021

$361 mil 4.811% sr secd bnds due December 2013

Rating/Outlook: BBB-/Stable

Description: Kiowa used the proceeds of the bond offering to provide long-term financing for its 1,220 MW, combined-cycle, gas-fired power plant located in Pittsburg County, Okla. The project sells capacity and energy under an 18-year electricity manufacturing agreement with Coral Power LLC.

Lane Cove Tunnel Finance Co.

Sector: Transport

Location: Australia

Debt amount: A$1.2 billion guaranteed secured bonds due 2013 - 2028

Rating/Outlook: AAA

Description: This project consists of the construction, operation, and maintenance of the Lane Cove Tunnel project and associated road works in Sydney, Australia, under an approximately 33-year project deed with the Roads and Traffic Authority of the New South Wales Government.

Libramiento Plan del Rio

Sector: Transport

Location: Mexico

Debt Amount: MxP320 million 7% sr debt certificates due 2020

Rating/Outlook: mxAAA/Stable

Debt Amount: MxP180 million 10% sub debt certificates due 2030

Rating/Outlook: mxBBB/Stable

Description: Plan del Rio bypass is located in the State of Veracruz. It is 12.97 kilometers long and connects the Gulf of Mexico's major port (Veracruz port) with the city of Xalapa. This bypass concludes the four-lane toll road from the port to the city. It was opened in June 2004.

Libramientos Fresnillo-Calera

Sector: Transport

Location: Mexico

Debt amount: MxP412 mil due in 2017

Rating/Outlook: mxAA/Stable

Description: The bypass is a 32-km long toll road that connects the city of Zacatecas and Durango with Mexico City.

LoyVic Pty Ltd. (Loy Yang B)

Sector: Power

Location: Australia

Debt amount: A$490 mil bank loan due 2012

A$672 mil amortizing bank loan due 2017

Rating/Outlook: BBB/Stable

Description: Edison Mission Energy Australia Ltd. and LoyVic Pty. Ltd. are the trading and financing vehicles for the Loy Yang B power station project, domiciled in Victoria, Australia. The project is a 2x500 MW brown coal-fired thermal power plant located in the Latrobe Valley, about 160 km southeast of Melbourne.

LS Power Funding Corp.

Sector: Power

Location: Minnesota/Wisconsin, U.S.

Debt amount: $226.449 mil 8.08% bonds ser A due December 2016

$105.551 mil 7.19% bonds ser A due June 2010

Rating/Outlook: BBB/Stable

Description: Owned by LSP-Cottage Grove L.P. and LSP-Whitewater L.P., the two 245 MW gas-fired cogeneration plants sell electricity to Northern States Power Co. and Wisconsin Electric Power Co. under long-term contracts.

LSP Batesville Funding Corp./ LSP Energy L.P.

Sector: Power

Location: Mississippi, U.S.

Debt amount: $150 mil 7.164% sr secd bonds ser A due January 2014

$176 mil 8.16% sr secd bonds ser B due July 2025

Rating/Outlook: B+/Stable

Description: A wholly owned subsidiary of NRG Energy Inc., the 850 MW gas-fired power plant sells electricity to Aquila Inc. and Virginia Electric & Power Co. under two long-term contracts.

Maritimes & Northeast Pipeline LLC

Sector: Pipelines

Location: U.S.

Debt amount: $240 mil 7.7% bonds due November 2019

Rating/Outlook: A/Stable

Description: Owned by affiliates of Duke Energy Corp., Exxon Mobil Corp., and Emera Inc., the Maritimes & Northeast pipeline consists of Canadian and U.S. mainlines and laterals that bring natural gas into the U.S. from Canada.

Maritimes & Northeast Pipeline L.P.

Sector: Pipelines

Location: Canada

Debt amount: C$260 mil 6.9% notes due November 2019

Rating/Outlook: A/Stable

Description: See Maritimes & Northeast Pipeline LLC.

Massachusetts Development Finance Agency (SEMASS)

Sector: Power

Location: Massachusetts, U.S.

Debt amount: $118 mil resource recovery revenue bonds ser 2001B due January 2009

$134.4 mil resource recovery revenue bonds ser 2001A due 2010-2016

Rating/Outlook: BBB/Stable

Description: Majority owned by a subsidiary of American Ref-Fuel Co. LLC, the SEMASS facility processes 1.1 million tons of waste and sells in excess of 600,000 megawatt-hours of electricity per year to Commonwealth Electric Co.

Max Two Ltd.

Sector: Power

Location: Germany, Portugal

Debt amount: €100 mil 5.7% (Breeze One) amort bnds due September 2024

Rating/Outlook: BBB-/Stable

Description: Max Two Ltd. is a special-purpose vehicle that raised funds for the Breeze One wind power financing transaction. Max Two has no operating assets, and its shares are owned by Max Two Trust, a charitable trust. The proceeds of the debt were used to provide senior loans to a number of wind parks in Germany and Portugal and, through an escrow account providing about €5.7 million ($7.4 million) of collateralized subordinated debt, various wind parks or finance repowering measures.

Maxon Atlantic Station

Sector: Other

Location: Georgia, U.S.

Debt amount: $13.6 mil tax-exempt sr rev bnd

$4.5 mil taxable sr rev bnd

Rating/Outlook: BBB

Description: Maxon is a special-purpose entity formed to finance, construct, own, and operate the district cooling project. The owners of the project includes Maxon Holding LLC (22%) and Mallory Evans Development LLC (78%), which are in turn owned by three individuals, two of which are associated with the project's construction contractor, Mallory and Evans. The district cooling system, which is currently under construction, is composed of three 2,500-ton chiller trains and the related piping system. The chilled water will be sold to subdevelopers within the Atlantic Station development under a separate 20-year chilled water service agreement.

Metronet SSL Finance PLC and Metronet BCV Finance PLC

Sector: Railroads

Location: U.K.

Debt amount: £515 mil fixed/index-linked bonds due March 2032 (Guarantors: Ambac Assurance UK Ltd. and Financial Security Assurance (U.K.) Ltd.)

Rating/Outlook: AAA, BBB+(SPUR)/Negative

Debt Amount: £810 mil bank loan due 2030

Rating/Outlook: BBB+/Negative

Description: The two entities are part of the Metronet consortium responsible for the Bakerloo, Central, and Victoria lines, as well as the District, Circle, Metropolitan, Hammersmith & City, and East London Underground lines.

Metropolitan Biosolids Management LLC

Sector: Other

Location: Chicago, Ill., U.S.

Debt amount: $53.4 mil revenue bonds

Rating/Outlook: BBB/Stable

Description: Metropolitan Biosolids is a special-purpose entity formed to build an inside-the-fence facility that processes wastewater sludge generated by the Metropolitan Water Reclamation District of Greater Chicago.

MGTI Finance Co. Ltd.

Sector: Other

Location: Indonesia

Debt amount: $145 mil 8.375% nts due September 2010

$20 mil 9% nts due January 2011

$105 mil 7% nts due 2007

Rating/Outlook: B+/Stable

Description: MGTI has a fixed-line telecommunications network in the Central Java area (known as KSO IV) and has assigned all of its exclusive operating rights to state-owned telecommunications incumbent, P.T. Telekomunikasi Indonesia Tbk., under an amended Joint Operating Scheme agreement that expires on Dec. 31, 2010.

Midland Cogeneration Venture L.P.

Sector: Power

Location: Michigan, U.S.

Debt amount: $19 mil 6.75% bonds ser B due 2009

$181 mil 6.625% bonds ser A due 2009

Rating/Outlook: BB-/Negative

Description: Owned indirectly by subsidiaries of CMS Energy Corp. and El Paso Corp, Midland is a 1,500 MW natural gas-fired cogeneration facility that sells electricity and steam to Consumers Energy Co., Dow Chemical Co., and Dow Corning.

Midwest Finance Corp.

Sector: Power

Location: Illinois, U.S.

Debt amount: $1 bil 8.75% second lien sr secd notes due May 2034

Rating/Outlook: B/Stable

Description: Midwest Finance is the issuing entity, wholly owned and guaranteed by Midwest Generation LLC.

Midwest Generation LLC

Sector: Power

Location: Illinois, U.S.

Debt amount: $200 mil first lien working capital fac bank loan due 2009

$700 mil first lien term loan bank loan due 20011

Rating/Outlook: BB-

Debt amount: $813.5 mil 8.56% pass thru cert lse oblig ser B due January 2016

$333.5 mil 8.3% pass thru cert lse oblig ser A due July 2009

Rating/Outlook: B+

Description: Indirectly wholly owned by Edison Mission Energy, Midwest Generation owns or leases 9,218 MW of baseload, mid-merit, and peaking capacity in the Mid-American Interconnected Network region.

Monterrey Power S.A. de C.V.

Sector: Power

Location: Mexico

Debt amount: $235.2 mil 9.625% sr secd bonds due November 2009

Rating/Outlook: BBB/Stable

Description: Owned by ABB Energy Ventures and Nissho Iwai Corp., Monterrey Power is a special-purpose entity that has entered into a trust agreement to build a dual-fired (natural gas and diesel) plant in exchange for payments from the Comision Federal de Electricidad.

MSW Energy Holdings LLC

Sector: Power

Location: Delaware, U.S.

Debt amount: $200 mil 8.5% sr secd notes due 2010

Rating/Outlook: BB-/Stable

Description: MSW Energy Holdings is a special-purpose entity that acquired Duke Global Energy's 50% ownership interest in Ref-Fuel Holdings LLC, whose sole asset is American Ref-Fuel Co. LLC. American Ref-Fuel operates six waste-to-energy plants in the northeastern U.S. A CSFB affiliate and AIG Highstar jointly own MSW Energy Holdings.

MSW Energy Holdings II LLC

Sector: Power

Location: Delaware, U.S.

Debt amount: $225 mil 7.375% sr secd notes due September 2010

Rating/Outlook: BB-/Stable

Description: MSW Energy Holdings II is a holding company that acquired United American Energy Holdings Corp., including its 50% interest in Ref-Fuel Holdings LLC. Ref-Fuel Holdings is the source of MSW Energy Holdings II's cash flow and relies on distributions from American Ref-Fuel Co. LLC. American Ref-Fuel controls and operates six waste-to-energy projects located in the northeastern U.S. A CSFB affiliate and AIG Highstar jointly own MSW Energy Holdings II.

New Brunswick (F-M) Project Co. Inc.

Sector: Transport

Location: Canada

Debt amount: C$750 mil 6.47% highway bonds due November 2027

Rating/Outlook: AA-/Stable

Description: New Brunswick (F-M) Project is an entity formed to issue debt and enter into various project agreements to facilitate the construction of the Fredericton-Moncton highway.

Northeast Generation Co.

Sector: Power

Location: Connecticut, U.S.

Debt amount: $320 mil 8.8% sr secd bonds ser B due October 2026

$120 mil 4.998% sr secd bonds ser A due October 2005

Rating/Outlook: BB+/Negative

Description: Northeast Generation owns and operates 1,292 MW of generating assets (including a 1,080 MW pumped-storage facility and several conventional hydroelectric stations) and sells energy to Select Energy, a subsidiary of Northeast Utilities.

Northampton Generation Co. L.P. (Pennsylvania Economic Development Authority)

Sector: Power

Location: Pennsylvania, U.S.

Debt amount: $25 mil 7.88% sr taxable conv ser 1994 B due January 2007

$153 mil tax exempt ser 1994 A January 2019

Rating/Outlook: BB/Stable

Description: Northampton is a 112 MW waste coal-fired generation facility, located in Northampton County, Pa. The project sells its entire electric output to Metropolitan Edison Co. under a 25-year, must-take power-purchase agreement.

NoteCo. Ltd.

Sector: Power

Location: U.K.

Debt amount: £120 mil fltg rt A1 nts due June 2015

Rating/Outlook: BBB-/Stable

Description: See Drax Power Ltd.

NRG Energy Inc.

Sector: Power

Location: Minnesota, U.S.

Corporate credit rating: B+/Stable/—

Debt amount: $800 mil term loan B bank ln due 2011

$150 mil revolv credit fac bank ln due 2007

Rating: BB

Debt amount: $697 mil 1st priority term B bank loan due 2010

$250 mil 1st prior revolving credit facility due 2006

Rating: BB-

Debt amount:$1.725 bil 8% 2nd priority bonds due December 2013

Rating: B+

Description: NRG Energy owns and operates U.S. merchant power generating facilities, thermal production and resource recovery facilities, and various international independent power producers.

NRG Peaker Finance Co. LLC

Sector: Power

Location: Louisiana/Illinois, U.S.

Debt amount: $325 mil fltg rate sr secd bonds ser A due June 2019

Rating/Outlook: AAA/Stable

Description: NRG Peaker Finance is a wholly owned subsidiary of NRG Energy Inc. and was formed to offer bonds for a portfolio of five peaker power plants totaling 1,319 MW.

NSG Holdings II LLC

Sector: Power

Location: Texas, U.S.

Debt amount: $10 mil revolv credit fac bank ln due 2009

$150 mil term bank ln due 2011

Rating/Outlook: B+/Stable

Description: The NSG Holdings II portfolio has interests in seven power plants throughout the U.S., totaling 1,580 MW, with a net ownership of 1,042 MW. NSG Holdings II's interest in each plant varies. NSG Holdings owns 100% of the Vandolah project and 50% of Front Range and NCA #1. NSG Holdings owns noncontrolling shares of less than 33% in the remaining projects. NSG Holdings II operates two of the plants, Vandolah and NCA #1.

Octagon Healthcare Funding Corp.

Sector: Healthcare

Location: U.K.

Debt amount: £341.23 mil 5.333% bonds (incl £35 mil in variation bonds) due December 2035

Rating/Outlook: AAA/Stable

Description: This entity's debt is unconditionally guaranteed by Financial Security Assurance (UK) Ltd. and will be used to fund the construction of the Norfolk and Norwich University Hospital.

Oleoducto Central S.A. (OCENSA)

Sector: Pipelines

Location: Colombia

Debt amount: $650 mil 9.66% sr debt tranche A credit facility bank loan

$150 mil 9.35% tranche A deb due 2005

Rating/Outlook: BB/Stable

Description: OCENSA is a capital stock company formed to acquire, develop, own, and operate the 840-km Oleoducto Central pipeline, which transports crude from the Cupiagua and Cusiana oil fields in Colombia's Llanos Basin to the port of Covenas.

Oleoducto de Crudos Pesados

Sector: Pipelines

Location: Ecuador

Debt amount: $900 mil bank loan due July 2016

Rating/Outlook: BBB/Stable

Description: The project is an integrated, blended stream, heavy crude oil pipeline system being developed to transport crude oil approximately 500 km from production areas running from the Amazonas Oil Terminal in the Oriente Basin of eastern Ecuador to new export facilities on the Pacific coast near Esmeraldas.

Oman LNG LLC

Sector: Gas production/distribution

Location: Oman

Debt amount: $175 mil sr secd bank loan due January 2012

$1.2 bil sr secd bank loan due 2017

Rating/Outlook: A-/Stable

Description: Oman LNG is a two-train liquefied natural gas plant having a capacity of 6.6 million metric tons per year, whose largest shareholders are the government of the Sultanate of Oman and Shell Gas BV. The project sells liquefied natural gas to Korea Gas Corp.

Orange Cogen Funding Corp.

Sector: Power

Location: Florida, U.S.

Debt amount: $110 mil 8.175% sr secd bonds due March 2022

Rating/Outlook: BBB-/Stable

Description: Orange Cogen Funding is a 103 MW gas-fired cogeneration facility owned by indirect subsidiaries of El Paso Corp. and American Electric Power Co. Inc.

Paiton Energy Funding B.V.

Sector: Power

Location: Indonesia

Debt amount: $180 mil sr secd bonds due February 2014

Rating/Outlook: B-/Stable

Description: This 2x615 MW coal-fired plant, composed of units seven and eight of the Paiton power-generating complex, sells electricity to PT Perusahaan Listrik Negara under a long-term contract.

Petropower Energía Limitada

Sector: Power

Location: Chile

Debt amount: $122.2 mil 7.36% trust certs due 2014

Rating/Outlook: BBB/Stable

Description: Petropower is a delayed coker, hydrotreater, and net 59 MW cogeneration facility that burns green coke, a byproduct of its host refinery, Petrox S.A. Refineria de Petroleo.

Petrozuata Finance Inc.

Sector: Oil and gas exploration services

Location: Venezuela

Debt amount: $75 mil 8.37% bonds ser C due October 2022

$287.2 mil 7.63% bonds ser A due April 2009

$625 mil 8.22% bonds ser B due April 2017

Rating/Outlook: B/Watch Neg

Description: Petrozuata produces heavy crude oil from Venezuela's Orinoco Belt, processes it at an upgrader to produce synthetic crude, and then sells it either to sponsors or into the market.

Phoenix Park Funding Ltd./Phoenix Park Gas Processors Ltd

Sector: Natural gas liquids

Location: Trinidad & Tobago

Debt amount: $110 mil 7.26% sr bonds due April 2013

$41 mil 7.5% sr secd bnds due 2015

Rating/Outlook: A-/Stable

Description: Phoenix Park processes and sells natural gas liquids, propane, butane, and natural gasoline from native natural gas streams.

Port Arthur Finance Corp.

Sector: Oil and gas refining/petrochemical/shipping

Location: Texas, U.S.

Debt amount: $255 mil 12.5% sr secd notes due January 2009

Rating/Outlook: BB/Watch Pos

Description: Port Arthur Finance lends bond proceeds to Port Arthur Coker Co. L.P. to finance the construction of a new coking complex at Clark Refining and Marketing Inc.'s 232,000 barrel per stream day refinery complex.

Power Contract Financing LLC

Sector: Power

Location: California, U.S.

Debt amount: $850 mil sr secd notes

Rating/Outlook: BBB/Negative

Description: Power Contract Financing was formed to monetize a long-term contract under which Calpine Energy Services sells electricity to the California Department of Water Resources.

Power Receivable Finance LLC

Sector: Power

Location: California, U.S.

Debt amount: $432.45 mil 6.29% sr secd notes due January 2012

Rating/Outlook: BBB/Negative

Debt amount: $22.2 mil 10.75% sub notes due February 2012

Rating/Outlook: BB+/Negative

Description: Power Receivable Finance, a wholly owned subsidiary of The Goldman Sachs Group Inc., uses proceeds from its notes to refinance a long-term contract between California Department of Water Resources and Allegheny Trading Finance Co.

PPL Montana LLC

Sector: Power

Location: Montana, U.S.

Debt amount: $338 mil 8.903% trust cert pass-thru due July 2020

Rating/Outlook: BBB-/Stable

Description: PPL Montana is a package of 1,157 MW coal- and hydro-generating power plants in Montana, which are wholly owned by PPL Corp., and sells power under a long-term contract to Northwestern Corp.

Premier Transmission Financing PLC

Sector: Pipelines

Location: U.K.

Debt amount: £107 mil 5.2022% nts due March 2030

Rating/Outlook: AAA

Description: The proceeds of the issue were used to acquire Premier Transmission Ltd. from its previous ultimate 50% owners, KeySpan Energy Development Corp. and BG Energy Holdings Ltd., to repay Premier Transmission's existing debt obligations, and prefund the various cash reserves. Premier Transmission owns and operates the Scotland-Northern Ireland Pipeline.

Primary Energy Holdings LLC

Sector: Power

Location: Illinois, U.S.

Debt amount: $165 mil sr secd term B bank ln

Rating/Outlook: B/Stable

Description: Primary Energy is a developer, owner, and operator of on-site combined heat and power (CHP) and recycled-energy projects. Recycled energy includes highly efficient CHP projects and the use of industrial waste heat, nontraditional fuels, and pressure drop to produce electricity and thermal energy. Primary Energy will use the proceeds of this financing to acquire six qualifying facilities from Reservoir Capital Group.

Project Mega/Compañía Mega

Sector: Power

Location: Argentina

Debt amount: $169.7 mil notes ser G due June 2014

$102 mil fltg rate notes ser E due June 2008

$120.9 mil fltg notes ser D due June 2009

Rating/Outlook: B/Stable

Description: Owned by YPF SA, Brasoil Alliance Co., and Dow Investment Argentina S.A., Project Mega is a natural gas separation plant, pipeline, and gas fractionation facility that separates natural gas into ethane, butane, natural gasoline, and liquefied petroleum gas.

Proyectos de Energia S.A. de C.V.

Sector: Power

Location: Mexico

Debt amount: $100 mil 9.75% sr secd notes due July 2013

Rating/Outlook: BBB/Stable

Description: Proyectos de Energia is a special-purpose vehicle created to fund the construction of 13 electrical energy substations, with a total capacity of 1,213 megavolt amps that are delivered to Comision Federal de Electricidad.

Quezon Power (Philippines) Ltd. Co.

Sector: Power

Location: Philippines

Debt amount: $215 mil sr secd bonds ser 1997 due 2017

Rating/Outlook: B-/Negative

Description: Quezon Power is a 470 MW base load, pulverized coal-fired power plant and 31-km transmission line that sells to Manila Electric Co. under a long-term contract.

Ras Laffan Liquefied Natural Gas Co. Ltd.

Sector: Natural gas liquids

Location: Qatar

Debt amount: $800 mil 8.29% bnds due March 2018

$609 mil 3.437% bnds due September 2009

$145 mil 7.628% bnds due September 2006

Rating/Outlook: A/Stable

Debt amount: $150.556 mil 8.294% pass-thru due September 2014

Rating/Outlook: AAA, BBB(SPUR)/Stable

Description: Ras Laffan, which is owned primarily by Qatar Petroleum and Exxon Mobil Corp, is a two-train liquefied natural gas plant that has a potential capacity of 6.6 million metric tons per year and sells to Korea Gas Corp. under its sole long-term contract.

Ras Laffan Liquefied Natural Gas Co. Ltd. (II) and Ras Laffan Liquefied Natural Gas Co. Ltd. (3)

Sector: Oil and gas

Location: Qatar

Debt amount: $150.556 mil 8.294% pass-thru due September 2014

Rating/Outlook: AAA (prelim)

Debt amount: $145 mil 7.628% bnds due September 2006

$609 mil 3.437% bnds due September 2009

$800 mil 8.29% bnds due March 2014

Rating/Outlook: A (prelim)

Description: RasGas II and RasGas 3 plan to source approximately 1.9 trillion cubic feet per year of natural gas from Qatar's North Field and use it to produce about 30 million tons per annum (mtpa) of liquefied natural gas (LNG), 62.4 million barrels of condensate, and 2.1 mtpa of liquefied petroleum gas (LPG). At this size, RasGas II and RasGas 3 jointly will be the world's largest LNG producers, with about 12% of the global LNG market by 2010, according to the sponsors. The expansion represents about $13.7 billion of an approximate $55 billion natural gas investment plan in Qatar. By mid-2007, RasGas II will consist of three fully operational trains (and associated works) producing a total of 14.1 mtpa of LNG or 4.7 mtpa for each train. It is anticipated that by the fourth quarter of 2009, RasGas 3 will consist of two fully operational LNG trains (and associated works) producing a total of 15.6 mtpa or 7.8 mtpa each.

Redbank Project Pty. Ltd.

Sector: Power

Location: Australia

Debt amount: A$207.2 mil 6.8% bank ln due June 2023

A$66 mil 6.8% bank ln due June 2018

Rating/Outlook: BBB-/Watch Neg

Description: Redbank is a special-purpose entity that owns and operates a 132 MW waste coal-fired electric power plant in the State of New South Wales. The plant has a 30-year hedge agreement to April 2031 and a fuel supply agreement with the adjacent Warkworth mine to July 2031.

Riverside Energy Center LLC

Sector: Power

Location: Wisconsin, U.S.

Debt amount: $415 mil sr secd bank ln due 2011

$250 mil sr secd bank ln due 2011

Rating/Outlook: BB-/Negative

Description: A 617 MW natural gas-fired, combined-cycle electric generating plant that sells to Wisconsin Power & Light Co. and Madison Gas & Electric Co. under long-term contracts.

RMPA Service PLC

Sector: Other

Location: U.K.

Debt amount: £680 mil 5.337% (inc. £100 mil variation bonds) due September 2038 (Guarantor: Ambac Assurance UK Ltd.)

Rating/Outlook: AAA, BBB-(SPUR)/Stable

Description: RMPA Service is a project that finances the construction of a new Ministry of Defense garrison.

Road Management Consolidated PLC

Sector: Highway and street construction

Location: U.K.

Debt amount: £165 mil 9.18% secd bonds due June 2021

Rating/Outlook: AAA, BBB(SPUR)/Stable

Description: Road Management built, owns, and operates two U.K. shadow toll roads.

Rocky Mountain Energy Center

Sector: Power

Location: Colorado, U.S.

Debt amount: $415 mil sr secd loan due 2011

$250 mil sr secd loan due 2011

Rating/Outlook: BB-/Negative

Description: Rocky Mountain Energy Center is a 622 MW natural gas fired, combined-cycle power generation plant, owned by Calpine Corp., that sells substantially all of its output to Public Service Co. of Colorado.

Rowville Transmission Facility

Sector: Power

Location: Australia

Debt amount: A$28 mil bnds due December 2028

Rating/Outlook: AAA, A-(SPUR)/ Stable

Description: Rowville is a special purpose entity that owns, operates, and maintains two vital 500kV-220kV step-down transformer and associated switchyard in the Latrobe Valley, Victoria. The operating risk of the assets is passed through entirely to an operator that has strong credit quality. This, along with a revenue stream from a 'AAA' rated state owned corporation, and Rowville's modest finances lends substantial stability to Rowville's credit quality.

Sacramento Cogeneration Authority

Sector: Power

Location: California, U.S.

Debt amount: $86.135 mil bonds ser 1998 due 2021

Rating/Outlook: AAA/Stable

Description: Sacramento Cogeneration is a 120 MW combined-cycle cogeneration facility that sells capacity and energy to the Sacramento Municipal Utility District.

Sacramento Power Authority

Sector: Power

Location: California, U.S.

Debt amount: $122.96 mil 3.75% cogen proj rev rfdg bnds ser 2005 due July 2022

Rating/Outlook: AAA/Stable

$158.1 mil cogen proj rev bonds ser 1995 due July 2022

$124.125 mil cogen proj rev ref bnds ser 2005

Rating/Outlook: BBB/Stable

Description: Sacramento Power is a 160 MW gas-fired combined-cycle cogeneration facility for which the Sacramento Municipal Utility District is the sole offtaker.

Salton Sea Funding Corp.

Sector: Power

Location: California, U.S.

Debt amount: $285 mil 7.475% sr secd bonds ser F due November 2018

$65 mil 8.3% sr secd bonds ser E due May 2011

$109.25 mil 7.84% sr secd bonds pass-thru ser C due May 2010

Rating/Outlook: BB+/Positive

Description: Salton Sea is a project-funding vehicle, owned by MidAmerican Energy Holdings Co., that financed the purchase and construction of 10 geothermal power projects with a total capacity of 327 MW. The project sells most of its power to Southern California Edison Co.

Selkirk Cogen Funding Corp.

Sector: Power

Location: New York, U.S.

Debt amount: $227 mil 8.98% 1st mortgage bonds due June 2012

$165 mil 8.65% 1st mortgage bonds due December 2007

Rating/Outlook: BBB-/Stable

Description: Selkirk is a 345 MW cogeneration project consisting of two electrically separate but thermally integrated, gas-fired generating units that provide energy under long-term contracts with Niagara Mohawk and Consolidated Edison Co. of New York Inc.

Sithe/Independence Funding Corp.

Sector: Power

Location: New York, U.S.

Debt amount: $150.8 mil 8.5% sr secd bonds due June 2007

$408.6 mil 9% sr secd bonds due 2013

Rating/Outlook: B/Developing

Description: A 1,000 MW combined-cycle, natural gas-fired, cogeneration plant that sells capacity to Consolidated Edison Co. of New York Inc. and Dynegy Inc.

Sociedad Concesionaria Autopista Central S.A.

Sector: Transport

Location: Chile

Debt amount: $250 mil 6.223% bonds due December 2026 (bond insurance provider: MBIA Insurance Corp.)

$268.2 mil 5.3% (UF$13 mil Chilean inflation protected units) bonds due December 2026 (bond insurance provider: MBIA Insurance Corp.)

Rating/Outlook: AAA, BBB-(SPUR)/Stable

Description: The consortium of Dragados, Skanska, Sade, Belfi, and Brotec was awarded the concession for the North-South (Sistema Norte Sur) urban toll road system in Santiago, Chile in August 2000. The consortium operates now as Autopista Central. The total length of the concession highway is 60.13 km.

Sociedad Concesionaria Costanera Norte S.A.

Sector: Transport

Location: Chile

Debt amount: UF1.9 mil (Chilean inflation protected units) 5% sr bonds due 2016

UF7.6 mil 5.5% sr bonds due 2024

Rating/Outlook: AAA, BBB(SPUR)/Stable

Description: The consortium of Impregilo Spa (Italy), Fe Grande (Chile), and Tecsa (Chile) was awarded the concession for Costanera Norte in November 1999. The project consists of a 30.4-km six-lane urban toll highway on the north side of the Mapocho River, which runs from east to west through Santiago, Chile. The total length of the concession highway is 42.3 km.

Sociedad Concesionaria Vespucio Norte Express S.A. (AVN)

Sector: Transport

Location: Chile

Debt amount: US$432 mil 5.3% sr bonds due 2028

Rating/Outlook: AAA, BBB-(SPUR)/Stable

Description: The operating company of the consortium of Dragados Concesiones de Infraestructuras S.A. (Grupo ACS), Hochtief HTP Projektentwicklung GmbH, Empresa Constructora Belfi S.A., and Empresa Constructora Brotec S.A. was awarded the concession for Sistema Américo Vespucio Nor-Poniente urban toll road system in Santiago, Chile in 2002. AVN will provide 29 km of high-speed urban motorways, 29 km of service roads, and seven grade-separated junctions.

Societe Marseillaise Du Tunnel Prado-Carenage (SMPTC)

Sector: France

Location: Transport

Debt amount: €69 mil bank ln due 2020

€30 mil outstanding ln due 2009

Rating/Outlook: AAA

Description: SMPTC owns and operates a 2.5-kilometer tunnel in Marseille under a 32-year contract, ending in 2025. The tunnel was opened in 1993 and charges real tolls. The main shareholders are French construction companies Vinci S.A and Effiage, which had a combined stake of 65% as of year-end 2004.

Strait Crossing Development Inc.

Sector: Transport

Location: Canada

Debt amount: C$328 mil 6.17% rev bonds due September 2031

Rating/Outlook: BBB+/Stable

Description: The project is a bridge created pursuant to a federal government proposal to provide a fixed link between Prince Edward Island and New Brunswick.

Sutton Bridge Financing Ltd.

Sector: Power

Location: U.K.

Debt amount: $150 mil 7.97% gtd secd bonds due June 2022

£195 mil 8.625% gtd secd bonds due June 2022

Rating/Outlook: BBB-/Stable

Description: The 790 MW combined-cycle gas turbine power plant, which includes two General Electric gas turbines, sells power under a long-term tolling agreement with London Electricity Group, and is ultimately owned by London Electricity Plc.

Talca-Chillan Sociedad Concesionaria (TACHI)

Sector: Transport

Location: Chile

Debt amount: ChP5.65 mil 3.04% (approx $170 mil) deb ser B due 2019

Rating/Outlook: AAA, BBB(SPUR)

Description: TACHI holds a concession to construct, operate, renovate, improve, and expand a 194-km toll road that is part of the current Ruta 5. The concession starts north of Talca (Kilometre 219) and runs southward to Rucapequén, which is located to the south of Chillán (Kilometre 413).

Tenaska Alabama Partners L.P.

Sector: Power

Location: Alabama, U.S.

Debt amount: $361 mil 7% sr secd bnds due June 2021

Rating/Outlook: B+/Stable

Description: Tenaska Alabama is a Delaware limited partnership that used the proceeds of the bond offering to refinance the 845 MW Tenaska Lindsay Hill generating station, a combined-cycle, natural gas- and oil-fired power plant. The plant commenced commercial operation in 2002 and sells fuel conversion services under a 25-year tolling agreement with Williams Power Co. Inc.

Tenaska Alabama II Partners LLC

Sector: Power

Location: Alabama, U.S.

Debt amount: $410.5 mil 6.125% sr secd bonds due March 2023

Rating/Outlook: BBB-/Stable

Description: Tenaska Alabama II is a 885 MW combined-cycle generation facility that sells power to Coral Power LLC under a long-term agreement.

Tenaska Georgia Partners L.P. (TGP)

Sector: Power

Location: Georgia, U.S.

Debt amount: $275 mil sr secd bonds due February 2030

Rating/Outlook: BBB-/Stable

Description: Tenaska Georgia is a 942 gas-fired simple cycle peaking facility, owned by Tenaska Inc., that sells capacity and energy to Exelon Generation Co. LLC under a long-term contract.

Tenaska Oklahoma I L.P.

Sector: Power

Location: Oklahoma, U.S.

Debt amount: $73.5 mil 6.528% sr secd nts due 2014

Rating/Outlook: BB-/Stable

Description: Tenaska Oklahoma I L.P. is the holding company of Kiowa Power Partners LLC. Kiowa sells capacity and energy under an 18-year electricity manufacturing agreement with Coral Power LLC, a subsidiary of Coral Energy Holding L.P.

Tenaska Virginia Partners L.P.

Sector: Power

Location: Virginia, U.S.

Debt amount: $483.5 mil 6.119% sr secd bonds due March 2034

Rating/Outlook: BBB-/Stable

Description: Tenaska Virginia is a 885 MW combined-cycle, gas and oil fired plant, owned by Tenaska Inc., that sells capacity and energy under a long-term agreement with Coral Power LLC.

Tenaska Washington Partners L.P.

Sector: Power

Location: Washington, U.S.

Debt amount: $189 mil 6.79% 1st mortgage bonds due 2011

Rating/Outlook: BBB-/Stable

Description: Tenaska Washington is a 270 MW facility, owned by Tenaska Inc., that sells power exclusively to Puget Sound Energy Inc. under a long-term contract.

TermoEmcali Funding Corp.

Sector: Power

Location: Colombia

Debt amount: $165 mil 10.125% sr secd notes due December 2014

Rating/Outlook: D

Description: TermoEmcali is a 234 MW combined-cycle, natural gas fired power generation facility that sells capacity and energy to Empresas Municipales de Cali under a long-term contract.

Texas Genco LLC

Sector: Power

Location: Texas, U.S.

Debt amount: $1.625 bil first lien term B bank ln due 2011

$325 mil first lien revolv credit fac bank ln due 2009

Rating/Outlook: BB/Stable

Debt amount: $1.125 bil 6.875% sr nts due December 2014

Rating/Outlook: B/Stable

Description: Texas Genco owns 14,319 MW of generating capacity, all located in the Electric Reliability Council of Texas. Of the total generating capacity, 9,097 MW is fired by gas or oil and contributes very little operating margin to the business. In fact, the company has chosen to mothball or retire 3,378 MW of the 9,097 MW of gas or oil-fired generation. The remaining capacity is baseload capacity, including the 2,464 MW W.A. Parish coal units, located in the Houston Zone, the 1,629 MW Limestone lignite units located in the North Zone, and 1,129 MW of the South Texas Project nuclear units in the South Zone.

Transform School (North Lanarkshire) Funding PLC

Sector: Other

Location: U.K.

Debt amount: £72.5 mil index-linked guar secd bnds due 2016 (plus £15 mil var bnds)

£70.0 mil sr secd European Investment bank ln due 2034

Rating/Outlook: AAA

Description: The funds will be used to finance the design and construction of new schools facilities for the Council of North Lanarkshire, Scotland, U.K. The project company is Transform Schools (North Lanarkshire) Ltd., which will provide maintenance and certain limited non-educational support services under a 32-year project agreement, which expires on March 31, 2037.

TransGas de Occidente S.A.

Sector: Pipelines

Location: Colombia

Debt amount: $240 mil 9.79% notes due November 2010

Rating/Outlook: BB/Stable

Description: A 344-km mainline natural gas pipeline that runs from Colombia's central to southwest region and is owned by the state-owned oil company.

Tube Lines (Finance) PLC.

Sector: Special Purpose Program

Location: U.K.

Debt amount: £285 mil sr secd EIB A bank ln due 2027

£15 mil sr secd EIB B bank ln due 2027

Rating/Outlook: AAA/Stable

Debt amount: £1.15 bil sr secd A-1 nts

Rating/Outlook: AA/Stable

Debt amount: £76.75 mil secd B nts

Rating/Outlook: BBB/Stable

Debt amount: £148.47 mil sub secd C nts

Rating/Outlook: BBB-/Stable

Debt amount: £21.59 million sub secd D nts

Rating/Outlook: BB/Stable

Description: Tube Lines (Holdings) Ltd. owns this finance company, which raised the debt to support the holding company's service contract with London Underground Ltd., the owner and operator of the London underground rail system. Under a 30-year public-private partnership Tube Lines will manage the infrastructure of three London Underground lines: Jubilee, Northern, and Piccadilly.

Tuneles Concesionados de Acapulco

Sector: Transport

Location: Mexico

Debt amount: MxP$180 million due in 2016

Rating/Outlook: mxAA/Stable

Description: The toll tunnel provides access to the city of Acapulco from its outlying suburbs.

Utility Contract Funding LLC

Sector: Power

Location: New Jersey, U.S.

Debt amount: $829 mil sr secd bonds due October 2016

Rating/Outlook: BBB-/Watch Dev

Description: The project monetizes the long-term agreement between El Paso Corp.'s Eagle Point Cogeneration Partnership and Public Service Electric & Gas Co.

West Coast Train Finance PLC

Sector: Railroads

Location: U.K.

Debt amount: £480 mil 6% asset-backed notes due March 2015

Rating/Outlook: A/Stable

Description: West Coast Train Finance has a secured loan agreement with Angel Leasing Co. Ltd., the purchaser of the advanced tilting train used on Virgin Rail Group's rail franchise.

Windsor Petroleum Transport Corp.

Sector: Transport

Location: Delaware, U.S.

Debt amount: $111.7 mil serial secd notes due 2010

Rating: AA+

Debt amount: $239.1 mil 7.84% term secd notes due January 2021

Rating/Outlook: BB+/Stable

Description: Windsor Petroleum Transport funded the construction of four very large crude carriers, each of which is a 300,000 dead-weight-ton, double-hulled tanker and operates under a long-term charter contract with BP Shipping.

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