Rating Methodology for Independent Power Producers (IPPs) and Power Generation Projects

Overview
Before enactment of the Electricity Act in June 2003, private power generators in India sold power entirely to the erstwhile State Electricity Boards (SEB) under the ‘single buyer’ model. Subsequent to the Electricity Act notification, the power sector witnessed significant fundamental changes, including a) de-licensing of thermal generation, b) shift from the single buyer model to the multi-buyer model; c) grant of open access in transmission and distribution (T&D) with intent of introduction of wholesale competition; d) identification of trading as a distinct activity; e) reorganisation of the erstwhile SEBs on functional lines1. In line with the provisions of the Electricity Act, guidelines for competitive bidding based power procurement were approved in CY 2005 by Ministry of Power, Government of India and thereafter, state owned distribution utilities across many states entered into competitively bid based long term PPAs with private IPPs. Further, the National Tariff Policy was issued in January 2006 which recommended adoption of competitive bidding route for signing of PPAs by the distribution utilities even for public sector generation projects w.e.f. January 2011. For domestic coal based projects, the competitive bids assumed adequate availability of domestic coal either through linkage or captive coal block mining, while for imported coal based projects, the bids assumed availability either at a negotiated price level or through captive mining route in the overseas market – mainly in Indonesia.

Over the past decade however, the power sector has faced serious issues in the form of a) delays & consequent cost over-runs in many green-field projects and b) increasing domestic coal shortages. Domestic coal shortages coupled with changes in mining regulations in Indonesia led to cost escalation for many private power generation projects leading to their PPAs turning unviable. In addition, private IPPs with foreign currency project debt remain vulnerable to forex risks, on account of sharp rupee depreciation over the past 4 years that the fixed capacity charge quoted in competitively bid based tariffs does not incorporate. While the GoI has approved a pass-through mechanism in June 2013 for allowing imported coal to the extent of domestic coal shortfall, implementation still remains uncertain given the opposition by the affected state owned distribution utilities and litigation challenges associated. Moreover, counterparty credit risks pertaining to state owned distribution utilities have also increased in many states, mainly on account of tariff inadequacy against the rising cost of supply. While financial restructuring scheme2 as notified by the GoI was implemented by the distribution utilities in 4 states in FY 2014, stricter compliance of mandatory conditionalities under the scheme has not been followed by the utilities. Further, the Supreme Court in September 2014 declared allocation of 204 captive coal blocks illegal. Subsequently, the GoI notified Coal Mines (Special Provisions) Ordinance in October 2014 and also initiated coal mine allocation process through auction and allotment route to ensure continuity in

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1 Post unbundling of erstwhile SEBs, successor entities have been constituted in most of the states on functional lines i.e. for generation (GENCO), distribution (DISCOM) and transmission (TRANSCO) and a common holding company having residual functions which is entirely held by State Government and in turn holds full ownership in the functional entities.

2 The scheme was notified by GoI in September 2012 with the objective to ensure commercial viability of the distribution segment. As part of this scheme, 50% of short term liabilities of the utility are to be taken over by respective State Government and balance 50% is restructured with 3 year of moratorium period & backed by State Government guarantee.
operations for the affected projects. The auction price rules are based on reverse bidding approach for the power sector, to avoid any adverse impact on generation tariff.

The overall credit risk profile of the sector has deteriorated over the last 3-4 year period due to several sector specific issues including, delays in land acquisition and statutory clearances, fuel supply risks, political and regulatory risks in coal exporting countries, deterioration in counter-party credit quality, inadequate transmission connectivity and volatility in exchange rate (INR-USD).

For the sake of analytical convenience, the various credit risks are grouped under the following heads:

- Permitting risk
- Funding risk
- Construction risk
- Operating risk
- Demand risk
- Counter-party credit risk
- Force Majeure risk
- Political and Regulatory risk
- Legal Issues and Transaction Structure
- Management Quality
- Financial risk

Each of these risks is discussed in detail in this note, along with the possible risk mitigants.

ICRA’s rating methodology for Independent Power Producers (IPPs) and Power Generation Projects follows the traditional risk assessment framework for infrastructure projects, besides focusing on the fundamental competitiveness of the IPPs as a key credit determinant.

**Key Rating Criteria**

**Permitting Risk**

Permitting risk refers to risk pertaining to a company’s ability to secure all statutory clearances required for constructing and operating a power plant, as well as comply with the environmental norms applicable. ICRA evaluates issues related to land acquisition, rehabilitation and resettlement, and also examines the status of various environmental and forest clearances required in accordance with the laws of the land. Typically, these clearances are required from a variety of agencies, like the Ministry of Environment and Forest, Pollution Control Board, Central Electricity Authority, Department of Civil Aviation, and so on. Since the process of acquiring the various clearances has the potential of inordinate delays that cannot be budgeted for, permitting risk would have a major influence on the credit rating. Within the fuel mix, permitting risk for hydro project is relatively significant as compared with thermal project, given the geological risks involved as well as larger requirement of resettlement & rehabilitation for the affected areas in case of hydro project. Within thermal segment, permitting risk for gas based projects remain lower as compared with a coal based project, given that gas is environment friendly fuel & area requirement for such project is also relatively much lower. In case of coal based projects awarded through competitive bidding by any Government nodal agency, permitting risk for IPPs with projects based on Case II bidding route is likely to be relatively lower than those developed through Case I bidding route. Nonetheless, Case II

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3 An IPP is a non-state utility, which owns and operates a power generation project for sale of power to discoms
4 Case II: Fuel linkage & location for the project is pre-specified in bid document and the responsibility for a majority portion (at least 80%) of land acquisition at the time of hand over is with off-takers. Also, state nodal agency / state government provide assistance in securing the required statutory clearances for the project.
5 Case I: Entire responsibility of project development is with the developer.
based projects could be exposed to risk of delays in land acquisition and consequently hand-over to the winning bidder, if extent of land acquisition at the time of hand-over is lower than a pre-specified level.

**Funding Risk**
A project company’s ability to tie up the requisite finances and its planned capital structure are the focus of analysis here. Given the capital intensive nature of power generation projects and the regulatory normative debt: equity ratio allowed of 2.33 times, such projects tend to have a high leverage. The capital structure of an IPP is evaluated to assess whether the debt-equity ratio is in conformity with that of power projects of similar size and complexity. Equity funding sources comprise of a) sponsor contribution, b) equity raising from capital market through IPO or QIP and c) private placement of equity to strategic investors. For debt funding, IPP would be dependent on financial institutions and banks for arranging the debt component. Often, while in-principle sanctions by banks/ FIs are in place, final disbursements may be delayed on account of the IPPs’ inability to fulfil the pre-disbursement conditions specified by lenders. With increased risk profile of power generation projects, such pre-disbursement conditions (e.g. w.r.t. the receipt of statutory clearances / tie-up of fuel supply agreement) have been made more stringent by the banks/FIs in last 2-3 year period. In this context, the ability of IPP to comply with such conditions in a timely manner remains critical in assessing the funding risk. ICRA also considers the extent to which the funding is already in place and the likelihood of the balance funding being available in time, so that the project’s progress is not delayed on account of cash flow issues. Clearly, the strength of the sponsors is an important risk mitigator even though project finance is expected to be a ‘non-recourse’. The strength of the promoter would also impart financial flexibility in funding shortfalls for equity tie-up as well as funding for cost overruns or other contingencies.

**Construction Risk**
Construction risks refer to risks associated with the physical construction of a power plant as well as stabilisation of its process parameters. ICRA also highlights the construction risk associated with implementation of the associated power evacuation line for connectivity with the nearby grid substation of the transmission utility, even though the responsibility of setting up power evacuation connectivity may not rest with the project company directly. Delays in construction of either power plant or associated power evacuation network can lead to time and cost overruns. Fixed-price, fixed-time contracts, with adequate clauses for liquidated damages (LD), are usually the mitigants against construction risk (essentially, the risk gets transferred to the Engineering, Procurement & Construction, or EPC, contractor). However, in cases when a set of packages is awarded to a number of individual contractors, it requires a higher level of technical expertise to coordinate individual packages and manage the project execution. Usually, a reputed erection/construction supervisor is appointed for the purpose, and ICRA draws comfort from the reputation of the supervisor, unless, of course the sponsors have demonstrated their expertise in development and running of the power plants in the past. The cushion that is available in the completion schedule of the project vis-à-vis the provisions of the PPA also serve as a risk mitigator to some extent. However, as in all project ratings, ICRA carries out a sensitivity analysis to evaluate the impact of delay in commissioning or in stabilisation of process parameters on the projected cash flows and debt servicing ability. The LD clauses, which are part of the contract with the EPC contractor/ suppliers or the Operation & Maintenance (O&M) contractor are evaluated to assess their adequacy with respect to the loss of profits and/or liquidated damages payable by the developer to power off-takers.

**Operating Risk**
The operating risks for a power plant arise from two sources: uncertainty over fuel supply and possibility of plant performance being lower than the normative parameters as specified in the PPA. An assessment of fuel supply risks involves evaluation of the sources of supply, locational proximity to the sources, reserve availability, contractual obligation of the seller, and price of supply.
With increasing domestic coal shortages for the sector, coal distribution policy was amended by GoI in September 2013 and the model fuel supply agreement for Coal India Ltd was modified with restricted coal supplies mainly for the projects commissioned post March 2009. As a result, power projects based on domestic coal linkage especially in the private sector remain exposed to increased fuel supply risks resulting into a dependence on costlier import sources. For analysing fuel supply risk, ICRA focuses on the adequacy of fuel so as to declare the plant availability at normative level. Also, in cases where projects have won captive coal blocks, ICRA focuses on the ability of power generation companies/IPP to ensure the actual coal mining volumes in line with their requirements and the actual cost of mining (sum of operating and capital servicing) within the quoted bid price for the mine block won in auction.

Operating risk for a power plant also involves assessment of fuel price risk exposure in PPA. Unlike cost plus based projects where the cost is a pass-through subject to achieving the normative level, the extent of pass-through of costs in a competitively bid based PPA varies depending on the bid structure (escalable, non-escalable or mix of both). Changes in regulations led to availability of imported coal at market price only since September 2011. Consequently, imported coal based projects with competitively bid PPAs with exposure to fuel price risk were rendered unviable. Also, domestic coal linkage based projects with competitively bid PPAs with fuel price risk remain exposed to risk of under-recovery in fuel cost due to dependence on costlier imports. Thus in the case of projects supplying power under competitively bid tariffs with fuel price risk where energy charge quoted in PPA is either not entirely a pass-through or only non-escalable, the generating company/IPP remain exposed to risk of under-recovery in fuel cost. ICRA’s focus here is to evaluate the adequacy of both the fuel cost pass-through available in the terms of PPA as well as that of tariff compensation mechanism if approved by SERC. Projects with competitive bid based PPAs where the fuel cost is largely a pass-through based on quoted heat rate, are relatively less risky.

Given the introduction of competitive bidding for allocation of captive coal blocks by the GoI in December 2014, projects with Case I competitively bid PPAs remain better placed to mitigate risk of fuel cost under-recovery through the auction route. In case of such projects with competitively bid PPAs, the extent to which risk arising out of fuel cost under-recovery can be mitigated depends upon their ability to win the coal blocks in auction route and also their proximity to the blocks offered. For projects bidding for coal blocks through auction route, ICRA would view any aggressive bidding approach by cautiously, especially with most bidders having limited experience in mining operations.

In terms of physical operations, an IPP would need to attain at least the PPA-stipulated norms for availability and heat rate. The risks related to availability and heat rate get mitigated to the extent that they are borne by the O&M contractor (through the relevant liquidated damage clauses). In case of sourcing of power generation equipment from overseas EPC contractor / equipment supplier, ICRA assesses the operating track record of such equipment in a similar operating environment. If the equipment suppliers/O&M contractors take an equity exposure in the project, the same is viewed positively. 

**Demand Risk**

Demand risk is normally sought to be mitigated through PPA provisions, which include availability-linked capacity payments and payment security mechanisms. However, considering the weak financial position of most state owned distribution utilities which remain the key off-takers, ICRA’s analysis goes beyond examination of the PPA provisions alone. Some of the key areas assessed are discussed here.

**Projected demand-supply scenario:** While energy shortages continue to prevail in the country, the situation varies considerably across states. ICRA therefore estimates the likely demand and supply levels under reasonable assumptions of projected capacity additions, both by IPPs and existing units (through expansion/modernisation). While estimating demand growth, the composition of the
customer base and the likely drivers of demand growth are also examined. While projecting supplies, ICRA, also takes into account anticipated fuel shortages for the existing/planned units since non-availability of feedstock at economical prices could lead to stranded capacity. With the gradual strengthening of the Inter-Regional Grid and the likelihood of a National Grid being established, ICRA also factors in the possibility of export of surplus power from power surplus regions to power deficient ones.

**Cost Competitiveness:** As per distribution tariff regulatory framework, power procurement by the distribution utilities is approved by State Electricity Regulatory Commissions (ERCs) based on “merit order dispatch” principles. An IPP’s projected variable cost of generation and its likely position in the “merit order”, in ICRA’s opinion, is the single most important protective factor against demand risks. Further, given the changing structure of the industry, a generating company with a competitive cost structure can also explore other avenues for sale of power, including sales to bulk customers and trading companies, which can significantly reduce the demand and payment risks associated with selling to state owned distribution utilities. An evaluation of an IPP’s cost competitiveness is therefore, one of the most important components of risk assessment of an IPP.

Given that the sector’s dependence on costlier import based sources, an issuer’s vulnerability arises from both volatility in international coal prices and the INR-USD exchange rates. For analysing cost competitiveness of projects, ICRA assess the impact of varying fuel mix and exchange rates on the merit order positioning of the generator. Within the thermal fuel mix, ICRA views captive coal based power generation to be the most cost competitive source however, availability of such coal could be a key challenge for the power producers, given the long gestation period & execution related issues for coal block development. On the contrary, liquid fuel & R-LNG (Regassified–liquefied natural gas) is the most expensive source for power generation and despite this, utilities have availed in some states, especially where power deficits have remained high and also to meet the peak demand.

**Counter-party Credit Risk**
In assessing counter-party credit risk, ICRA evaluates the counter-party and the extent of capacity contracted through a long term PPA. Most long term PPAs with state owned distribution utilities provide for a three-tier payment security mechanism (PSM) consisting of Letter of Credit, Default Escrow agreement and Right for third party sale of power, which is a source of comfort. While the structure of the PSM provides comfort, ICRA’s focus is to assess the past performance record of such mechanisms for operational projects. In case of PPAs with trading entities, counter-parties could be either distribution utilities or industrial consumers. State owned distribution utilities are key off-takers for IPPs/power generation projects and in such PPAs, ICRA focuses on the overall financial position of the distribution utilities. While credit quality of state owned distribution utility is linked with the intrinsic credit quality of State Government, ICRA analyses the distribution utility’s financial position in terms of trends in cost coverage ratio⁶, adequacy of subsidy release by State Government, extent of cost reflective tariffs and ability to improve the efficiency levels & keep actual costs in line with regulatory targets.

**Force Majeure Risk**
Usually, projects are more vulnerable to force-majeure events owing to the single-asset nature of their operations. The force majeure risks are therefore mitigated through insurance contracts and, to an extent, through specific provisions in the PPA that guard against such events. The type of insurance cover with respect to the risk covered and its adequacy in the event of catastrophic losses and disruption of normal business are therefore evaluated. Also assessed are the provisions in the PPA with respect to force majeure events, and the termination clauses in the PPA.

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⁶ Cost Coverage Ratio = Annual Revenue Realisation (ARR) less Average Cost of Supply (ACS); ARR = Cash Collection inclusive of subsidy receipts / Units Input ; ACS = Total expenditure / Units Input
**Political & Regulatory Risks**

Given that majority of state owned distribution utilities depend on subsidy support from their respective state governments, ICRA assesses the past trend in timeliness & adequacy of such subsidy payments to the utilities. Further while assessing the political risk, the extent of funding support and political will of the State Governments to implement distribution reforms are evaluated. ICRA also analyses the regulatory environment in terms of timeliness and adequacy of tariff determination by SERCs. Any delays in tariff determination process (which can be attributed to either delays in tariff petition filing by utility or issuance of tariff order by SERC) or non-implementation (or roll-back by state government) of either the tariff order or fuel and power purchase cost adjustment framework is a credit concern given that it has an adverse impact on the cash flows of the utilities. While CERC/SERCs have issued favourable orders for imported / domestic coal linkage based projects with competitively bid based PPAs allowing tariff compensation in few cases, uncertainty over implementation of such orders pose a key regulatory risk, due to litigation challenges by the affected state owned utilities.

**Legal Issues & Transaction Structure**

Legal risks involve an analysis of the contracts to ensure that all risks have been identified and allocated amongst the project participants. Also, contracts should be clear, comprehensive and enforceable. A related area involves a review of the transaction structure to evaluate features available to provide additional protection to the bondholders. This could include

- Creation of reserve funds for debt servicing
- Stipulation on minimum coverage ratios that must be met before payment to sub-ordinate debt holders or declaration of dividends
- Credit enhancement features like cash collateral for payment of interest during construction period, completion guarantees by sponsors and guarantee for debt servicing by other external entities
- Restriction on the ability of the project company to take on additional debt

**Management Quality**

All ratings necessarily incorporate an assessment of the quality of the issuer’s management, as well as the strengths/weaknesses arising from the issuer’s being a part of a “group”. Also of importance are the issuer’s likely cash outflows arising from the possible need to support other group entities, in case the issuer is among the stronger entities within the group. Usually, a detailed discussion is held with the management of the issuer to understand its business objectives, plans and strategies, and views on past performance, besides the outlook on the (issuer’s) industry.

Some of the other points assessed are:

- Experience of the promoter/management in the line of business concerned
- Commitment of the promoter/management to the line of business concerned
- Attitude of the promoter/management to risk taking and containment
- The issuer’s policies on leveraging, interest risks and currency risks
- The issuer’s plans on new projects, acquisitions, expansion, etc.
- Strength of the other companies belonging to the same group as the issuer
- The ability and willingness of the group to support the issuer through measures such as capital infusion, if required

**Financial Risk**

In order to assess the issuer’s current financial position, trends in profitability, gearing, coverage, liquidity & adequacy of future cash flows are also analysed. These are discussed below.
**Profitability:** The profitability for power project is critically dependent upon nature of PPA and the mix of PPAs for capacity tie-up which determines net realisation. A PPA can be \ cost-plus based, competitively bid or bilateral short term based / spot tariff based. In case of cost-plus based PPA, profitability depends upon the issuer’s ability to declare the plant availability and maintain the actual costs within the normative benchmarks. Further, a company with a cost plus based PPA can achieve higher than allowed level of returns, if it’s actual operating and financial performance (related to plant efficiency, working capital requirement & cost of funding) is better than the normative benchmarks. In case of competitively bid based PPA, actual returns for a company would be dependent upon its ability to keep actual operating and cost parameters within the tariff bid levels. Thus, for a company with a competitively bid PPA with fuel price exposure, ICRA evaluates the extent of under-recovery as well as the adequacy of risk mitigants which can be either a tariff compensation made available by SERCs with the consent of off-takers and/or an access to captive coal block won through an auction/allotment route. In case of PPA based on mutually negotiated short term tariff, the company’s profitability remains exposed to volatility in the fuel price level. Further, vulnerability of profitability remains the highest in case of merchant sales on power exchange where power tariffs are volatile.

**Gearing & Coverage Indicators:** Given the capital intensity of a power project and the normative debt: equity ratio allowed by CERC of 2.33 times, leveraging levels (Total Debt / Tangible Net Worth) in the sector are inherently high. ICRA in its analysis compares the capital cost and leverage of a power project with that of its peers as well as with the normative benchmarks to assess its relative position. Generally, a conservative leverage ratio is viewed favourably as it reflects a lower quantum of committed outflows, while a long maturity profile and lower cost of borrowing can partially offset the risk associated with a high financial leverage. Also, a back ended or ballooning structure of debt repayment can partially mitigate the risk of cash flow mismatches in the initial period, post commencement of operations. The other debt coverage indicators that ICRA also examines include Interest Coverage Ratio, ratio of Net Cash Accruals to Total Debt, and Debt Service Coverage Ratio (DSCR). ICRA also does scenario analysis to assess the average DSCR over the debt repayment period as well as the project IRR, with the key sensitive variables being project cost overrun, plant efficiency (heat rate and auxiliary consumption), receivable days and cost of debt (only for average DSCR). Further in case of projects with competitively bid based PPAs, additional sensitivity factors include the actual cost of fuel, fuel price escalation in the PPA and exchange rate (in case of projects with foreign currency debt as well as projects using imported coal).

**Liquidity & Financial Flexibility:** For an issuer with an operational project, ICRA assesses liquidity by analysing trends in cash collections from the counter-party, trends in working capital limit utilisation as well as extent of dependence on short term debt to meet the working capital requirements. ICRA also evaluates the issuer’s relationships with banks, financial institutions and other intermediaries, its financial flexibility—as reflected by its unutilised bank/credit limits, liquid investments – as well as financial strength of the promoter group to infuse funds (either equity capital or unsecured debt ) to meet cash flow shortfall, if any.

**Adequacy of Future Cash Flows:** Since the prime objective of the rating exercise is to assess the adequacy of the issuer’s debt servicing capability, ICRA draws up projections on the likely financial position of the issuer under various scenarios. Future cash flows are projected after taking into account the tariff structure, PLF, O&M cost, interest cost, debt repayment schedule, working capital funding requirements, other funding requirements related to expansion capital expenditure and available funding options. These cash flows are then used to determine the company’s future debt servicing capability. In the cash flow projections, ICRA also analyses other ratios such as Fund Flow from Operations debt coverage and Retained Cash Flows debt coverage, as inputs to the credit rating.
Tenure mismatches, and risks relating to interest rates and refinancing: Large dependence on short-term borrowings to fund long term investments can expose an issuer to significant re-financing risks, especially during periods of tight liquidity. The existence of adequate buffers of liquid assets/bank lines to meet short-term obligations is viewed positively. Similarly, the extent to which an issuer would be impacted by movements in interest rates is also evaluated.

Foreign currency related risks: Such risks arise if an issuer’s major costs and revenues are denominated in different currencies. The foreign currency risk can also arise from unhedged liabilities and from unhedged foreign currency borrowings pertaining to part-funding of capital expenditure and/or working capital requirements. The focus here is on assessing the hedging policy of the issuer concerned in the context of the tenure and nature of its PPA with the off-takers.

Accounting quality: The Accounting Policies, Notes to Accounts, and Auditor’s Comments are reviewed. Any deviation from the Generally Accepted Accounting Practices is noted and the financial statements of the issuer are adjusted to reflect the impact of such deviations.

Contingent liabilities/Off-balance sheet exposures: In this case, the likelihood of devolvement of contingent liabilities/off-balance sheet exposures and the financial implications of the same are evaluated.

Summing Up:
ICRA’s credit ratings are a symbolic representation of its current opinion on the relative credit risk associated with the instrument being rated. This opinion is arrived at following a detailed evaluation of the issuer’s business and financial risks, its likely cash flows over the life of the instrument being rated, and the adequacy of such cash flows vis-à-vis its debt servicing obligations. As revenues and profitability for a power project remain sensitive to the structure of the PPA and the extent of pass-through adequacy of fuel cost in tariff, various scenarios are drawn up to assess the impact of key variables on the key debt servicing metrics. While key sensitive variables vary depending upon the PPA structure, most commonly used are tariff, operating efficiency, receivables days, exchange rate and financing cost for power projects. Even though the financial projections enable ICRA to assess the adequacy of cash flows from the debt servicing perspective, the final rating assigned is also critically dependent upon the strength of the sponsors and the track record of the sponsor group in power project development and operations.
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