

## Rating Methodology – Thermal Power Producers

[Issued in July 2020]<sup>1</sup>

### Background

Indian thermal power generation consists mainly of central or state utilities with growing participation from private sector following various regulatory and policy reforms including enactment of Electricity Act 2003 leading to de-licensing of thermal generation and introduction of competitive bidding mechanism, among others. Based on the source of energy, power generation companies may be classified as thermal (based either on coal, lignite, gas, or diesel), nuclear, hydro and renewable (including solar, wind, biomass and waste-to energy). The thermal power producers have continued to remain an important component of power generation capacity in India. As per Central Electricity Authority of India (CEA), the total installed capacity of electricity generation is 370.35 GW, with 237.38 GW (i.e., 64.10%) being contributed by thermal (including nuclear) as on April 30, 2020. In terms of generation, the share is even more. The thermal generation in India (including nuclear) was 1,089.21 BUs in FY20, which contributed to 84.85% of the energy supply.

Thermal power projects are capital intensive in nature, and for funding them, recourse of publicly issued debt would be necessary. CARE Ratings has developed a rating methodology for debt issues of thermal power projects. The rating procedure is designed to facilitate appropriate credit risk assessment, keeping in view the characteristics of the Indian thermal power sector. CARE's rating looks at a time horizon over the life of the debt instrument being rated and covers the following factors while rating thermal power projects.

1. Promoter group and management team
2. Project implementation risk
3. Project operations/ Business risks
4. Regulatory risk
5. Financial risk

### 1. Promoter group and management team

The evaluation of quality of management is an essential part of all rating assessments. CARE Ratings evaluates the management from different perspectives like financial capabilities, experience in the industry, track record in implementing and operating large projects and availability of technical manpower. Also, the commitment of the promoters/management to the business,

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<sup>1</sup> Please also refer to CARE's 'Rating Methodology – Private Power Producers' on our website [www.careratings.com](http://www.careratings.com)

strengths/weaknesses of other group entities and the group's plans on new projects, acquisitions, etc, demanding funding support from the operational power project being analysed is also critically examined.

For detailed note on evaluation of management risk: Refer to CARE's Rating Methodology-Infrastructure Sector Ratings (ISR) on our website [www.careratings.com](http://www.careratings.com).

### **2. Project implementation risk**

Project implementation risks assume significance in a power project due to the long gestation periods and large investments involved in such projects. CARE Ratings analyses the following factors in this regard:

#### **Availability of land and permitting risk**

Land acquisition and related approvals are considered to be very critical for timely implementation of thermal power project as this activity usually takes maximum time in the entire implementation schedule of the power project. The thermal power project requires approvals from a number of government institutions including Ministry of Environment and Forests (MoEF), Ministry of Civil Aviation and Pollution Control Board among others. The projects being developed under Case-I competitive bidding mechanism where land acquisition and all related approvals are to be obtained by the developer are considered to be relatively more riskier as compared to the projects under Case-II mechanism where responsibility of arranging land and project clearances/ approvals rests with government nodal agency.

Within the thermal power sector, the land requirement for gas-based projects is relatively lower and gas being environment friendly, the related approvals are also obtained easily as compared to coal-based projects.

Considering the challenges in land acquisition and related approvals, CARE evaluates the issues related to land acquisition and various statutory clearances as any delay beyond the expected timelines could result in escalation of both time and cost for the project.

#### **Construction risk**

The construction risk mainly involves analysis of location of the project, credentials of engineering, procurement & construction (EPC) contractor and past experience of the promoter in executing similar projects. The projects located in areas with the difficult rocky terrain are generally more prone to construction risk vis-à-vis projects which are located in the plains. Furthermore, the financial strength of EPC contractor coupled with track record of execution of similar kind of projects

in the past is also a key factor while evaluating the construction risk. CARE critically analyses the terms of the EPC contract to understand the obligations of the EPC contractor for timely completion of the project and liquidated damages (LD) clauses for any delay in completion of the project. CARE also evaluates the availability of associated infrastructure required for implementation of the thermal power plant which includes power evacuation line, water availability and railway siding for coal transportation among others.

***Evacuation infrastructure***

CARE analyses the availability of evacuation infrastructure and in case of under-development transmission line, the timelines for completion of line vis-à-vis project's scheduled commercial operations date (SCOD) are looked into. Any delay in the construction of transmission infrastructure can cause the plant to remain idle despite becoming ready to generate power.

**Financial closure**

For timely completion of the project, financial closure is positively considered by CARE. Thermal power projects are capital intensive in nature and are generally funded in debt-equity ratio of 70:30 and therefore tend to have high leverage. CARE critically evaluates the status of infusion of promoter funds, status of debt tie-up, pre-disbursement conditions and critical covenants of tied-up debt (viz, interest rate, moratorium period, repayment period, structuring of repayments, cash flow waterfall mechanism, TRA, subordination of promoter's contribution infused in other than equity form, etc). The strong track record of the promoter in executing such projects and its financial strength are important risk mitigants, not only in terms of timely execution but also in terms of arrangements of finances in cases of increase in project cost due to contingencies.

*Credit assessment of the thermal power projects critically factors promoter group and the aforesaid project risks when it is at the project stage. However, once it becomes operational, weightage to the promoter group is relatively on the lower side as an infrastructure project is financed without any recourse to the promoter group. Accordingly, for an operational project, higher weightage is given to the quality of the asset as explained in the business risks below.*

### 3. Project operations/ Business Risks

#### Demand-supply risk

The base and peak power deficit in India has been narrowing down in the last decade on account of subdued demand from industrial sector, higher capacity additions and reluctance from off-takers to purchase power beyond certain cost. The peak deficit in India which stood at 12.7% in 2009-10 has significantly reduced in the recent times to 0.7% in 2019-20 with the increase in supply aided by significant capacity addition which has outpaced the demand growth. CARE evaluates the demand risk for the project by analysing the mix of long/medium/short-term PPAs tied up by the project. CARE also evaluates the projected demand-supply scenario considering the assumptions including likely capacity additions and drivers of demand growth.

#### Power Purchase Agreements (PPAs)

PPA is a crucial document outlining the rights and responsibilities of the power producer and evaluation of the same forms a critical part of the rating exercise. CARE looks at the tenor of the contract to assess the horizon of revenue visibility. The PPAs can be long term, medium term and short term in tenure. The long-term PPAs may be executed on cost-plus basis or on competitively bid basis and carry low sales risk with pre-agreed pricing and generally leading to lesser volatility in revenues. The long-term PPAs on cost-plus basis covering the full loan tenor are viewed more positively by CARE as compared with medium/short PPAs. Furthermore, the medium-term PPAs may be executed with Discoms or Nodal agency/trading company having back-to-back selling arrangement with Discoms. Medium-term PPAs can be either competitively bid or based on mutually-agreed tariff for bulk industrial customers. These PPAs carry relatively higher risk as these generally do not cover the full loan tenor and the company's ability to timely renew the same at remunerative tariff is evaluated. Furthermore, the power projects may also sell power on short-term basis/power exchanges at spot tariff rates and remains exposed to vagaries of price fluctuation and quantum of power off-take and bears highest sales risk. PPAs having escalation or indexation clauses may provide further comfort as against those not having such clauses.

The tariff rates are critically analysed to determine their adequacy to ensure the profitability and debt servicing capability of the power projects at the minimum performance level.

The revenue and profitability of a project is largely dependent on the nature of the PPA as well as the cost of the fuel. In case of a cost-plus based PPA, the profitability depends upon the project's ability to declare the plant availability and maintain the actual costs within the normative

benchmarks. In case of a 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 cost-plus and competitively bid PPAs, CARE evaluates the extent of under-recovery (if any) in capacity charges and energy charges. In case of short-term PPAs, the company's profitability remains exposed to volatility in volume and tariff in the short-term market as well as the volatility in fuel price level.

**Fuel Supply Risk**

The coal-based plants face the challenges of mining output and logistic issues, while gas-based stations also face gas supply challenges which makes fuel supply a significant risk for thermal power plants necessitating rigorous assessment of the same. CARE Ratings evaluates the adequacy of fuel supply so as to declare the capacity at normative levels. CARE Ratings also analyses the extent of tie-up of the fuel requirement through long-term arrangements, the level of current despatch from the vendor, proximity of the plant to the mines, mode of transportation and associated costs. The fuel cost pass through risk is assessed by analysing the escalation in energy charge quoted in the PPAs. A plant, having full fuel cost pass through is perceived to be less risky than one which has partial/no cost pass through. Furthermore, in case the power project is using imported fuel without having forex variation as pass through in PPA, foreign currency risks are also assessed.

The thermal power plants which do not have fuel supply agreements rely largely on auctions/imported fuel to meet their fuel needs. In such cases, fuel cost as well as distance from fuel (affecting fuel transportation costs) plays an important role for not only continuing to bid in auctions feasibly, but also securing PPAs.

Apart from availability, quality of fuel is also assessed as lack of uniformity in the fuel mix has a significant bearing on the operational performance of the power project.

**Plant efficiency and cost competitiveness**

As per current regulatory framework, apart from purchase from must run status of few power plants, viz, solar, wind, waste-to-energy, small hydro power plants, etc, state distribution utilities (Discoms) are required to procure power based on a merit order despatch, wherein highest variable costs are given least priority. In such a scenario, lower fuel costs ensure a higher priority in merit order thereby contributing to higher actual generation. Though fixed costs might be recoverable based on plant availability, higher actual generation leads to higher contributions over and above the availability-based compensation.

CARE, in its analysis, takes into account the cost per unit generated for past years including fixed and variable cost. Furthermore, CARE also takes into account other operational metrics driving such costs like auxiliary consumption, station heat rate among others. CARE assesses the merit order positions of thermal power producers for analysing the cost competitiveness of the project.

**Off-taker risk**

**Quality of off-taker & diversification:** Counter party risk could significantly impact the credit quality of the project as there is long-term tie-up of the project with off-taker with minimal chances to move out of it. Accordingly, off-taker plays a critical role in arriving at the rating for the project. Off-takers are broadly classified into three categories, viz., State distribution companies (Discoms), Nodal Agency/trading company having back-to-back selling arrangement with Discoms and industrial consumers. For assessing the quality of first category of off-taker, CARE relies on various parameters, viz, past financial performance of off-taker, their credit rating, past payment track record, health of respective state government, movement in the level of AT&C losses over a period of time, trend of cost coverage & tariff revision, their past stance of honouring PPA commitments, etc. Also, various credit support mechanisms offered by off-taker such as revolving letters of credit, escrow accounts and guarantees aids the quality of the issue and its rating. In case of assessing the quality of nodal agency/trading company and industrial consumers, CARE relies on the business fundamentals of the entity, their credit rating, analysis of past performance, market standing, expected performance of the industry in which the entity operates, etc. CARE considers contractual sales agreement with multiple off-takers as a better proposition in general when compared to a single off-taker as it provides benefits of diversification.

**Payment track record:** Apart from analysing fundamental credit quality of the off-taker, CARE also analyses the payment track record of the off-taker and attaches due weightage for timely payment track record of the off-taker. For an operational project, CARE analyses the monthly billing & payment track record for a reasonable time period (6 - 12 months on case-to-case basis). Barring a few state Discoms, majority of the state Discoms in India have a weak financial profile and they demonstrate delayed payment track record for varying period of delays which typically constrain the rating for a project.

**Force Majeure Risk**

The impact of force majeure event is usually higher for infrastructure projects including power projects given the single asset nature of the operations. This may be mitigated to a large extent

through insurance or adequate provisions in contractual agreements. In case of insurance claim, the extent of coverage, quantum of admissible claim and timely receipt of claim proceeds is evaluated.

**Other Operational Risks**

Operating risk covers the ability of the project to achieve the performance as envisaged. Following additional factors are considered in this regard:

- O&M arrangements with a reputed vendor
- Administrative efficiencies – employee costs, admin overheads etc.
- Capability to comply with revision in compliances including enhanced environmental emission norms. CARE assesses the impact of the increasing cost of compliance and the ability of project to pass on the increase in cost to the off-takers under the change in law.

**4. Regulatory Risk**

The power sector in India is governed by regulators both at central and state levels including Central Electricity Authority (CEA), Central Electricity Regulatory Commission (CERC) and State Electricity Regulatory Commissions (SERCs). The power projects involved in sale of power in more than one state are required to adhere to CERC guidelines, while other projects are required to follow the SERCs guidelines.

SERCs work broadly as guided by CERC and are responsible for framing guidelines for state generation, transmission and distribution utilities as well as determining tariffs as payable by state Discoms.

In assessment of regulatory risks, CARE analyses timeliness and adequacy of tariff determination/revision applicable for regulator-determined tariff PPAs. Any delay in such determination/ revision could be credit concern and may have arisen as a result of delay in petition filing by the power producer or delays in issuance of order by the regulator. Furthermore, the regulatory orders by CERC/SERC are critically analysed even for competitively bid PPAs with respect to various regulations such as change in law, domestic fuel shortages, tariff compensation, etc.

**5. Financial risk****Future cash flows**

CARE carries out analysis of the projected operations of a project to get clear insights on the power project's ability to service debt. The analysis would involve critical examination of the underlying assumptions, location of possible stress points and the extent of flexibility available to tide over

difficulties. CARE Ratings evaluates the strength of key assumptions and trends in the projected free cash flow to arrive at a base case cover against the scheduled debt payment. CARE also sensitizes the projected free cash flow through stress scenarios to assess the extent of buffer available for debt coverage. Any refinance risk is analysed in relation to overall debt profile and the future earning capacity of the asset at the time of refinance.

### **Leverage**

Generally, thermal power projects are financed at a debt equity ratio of 70:30. For an operational project, capital structure of the company would depend more on the depreciation policy adopted by it apart from its revenue generation potential. Accordingly, capital structure of the company is seen in consonance with its depreciation policy. Furthermore, CARE also looks at the Total debt / PBILDT to nullify the effect of depreciation on leverage indicators.

### **Debt Service Coverage Ratio (DSCR)**

CARE considers DSCR as one of the critical ratios to assess the relative debt servicing capability of the project as it largely captures all the critical aspects of the project. CARE analyses average DSCR for the tenure of the debt, minimum DSCR during the tenure of the debt and DSCR during the next three to five years while analysing the debt repaying capability of the developer. CARE also sensitizes the base case DSCR for the key variables of project like PAF, PLF, tariff rates, fuel cost, finance cost, payment delay from off-taker, etc.

### **Liquidity back-ups**

As power from thermal projects is supplied to state DISCOMs, there exists counter party-delayed payment risk. CARE considers that adequate liquidity back-up as an important rating consideration as debt repayments are normally evenly spread out (monthly/quarterly basis). The higher the delay by the counter party, the greater the liquidity buffer the developer needs to maintain to curtail the off-taker payment risk. For a thermal power project, liquidity back-ups are created primarily in the form of DSRA which cover 1-2 quarters debt repayment obligations in the form of FD / bank guarantee and working capital limits. Also, the stipulation and compliance of maintenance of designated accounts (viz., escrow accounts, TRA for maintaining priority in payment, etc.) is seen positively in credit analysis.

For evaluating detailed credit metrics, CARE Ratings follows its standard ratio analysis methodology in order to assess the financial risk of companies (Please refer to *CARE's Financial ratios – Non-Financial Sector on our website [www.careratings.com](http://www.careratings.com)* ).



CARE Ratings analyses each of the above factors and their linkages to arrive at the overall assessment of credit quality. Peer comparisons are carried out as an integral part of the financial analysis. Mitigation of credit risk due to any credit enhancement provided is carefully evaluated before assigning the final rating.

### Conclusion

The rating outcome is ultimately an assessment of the fundamentals and the probabilities of change in the fundamentals. CARE Ratings analyses each of the above factors and their linkages to arrive at the overall assessment of credit quality, by taking into account the industry scenario. While the methodology encompasses comprehensive financial, commercial, economic and management analysis, credit rating is an overall assessment of all aspects of the issuer.

#### **CARE Ratings Limited**

4th Floor, Godrej Coliseum, Somaiya Hospital Road, Off Eastern Express Highway, Sion (East), Mumbai - 400022.  
Tel: +91-22-6754 3456, Fax: +91-22- 6754 3457, E-mail: care@careratings.com

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