

Rating Methodology – Power Distribution

[Issued in February 2021]

Background

Power distribution is a key link in the power sector value chain. Power distribution segment comprises supply and distribution of power purchased from generating companies across the regions to various end-use entities such as domestic consumers, industries, commercial users, agricultural consumers, railways, public utilities, etc., through different voltage levels, viz, 11kV/33kV/66kV. The distribution segment is thus the ultimate delivery point of service and is the originating source of collection and liquidity for power sector.

Over the years, the financial and operational performances of the power distribution sector in India (particularly the state-owned power distribution companies [DISCOMs] which dominate the distribution space in term of area covered and energy supplied) have been below satisfactory at aggregate level. In fact, the deterioration has been particularly more prominent in the last decade leading to roll out of number of schemes by the government of India to improve the sector. Few of the notable initiatives were the Ujwal DISCOM Assurance Yojana (UDAY) to achieve operational turnaround and debt restructuring, Deendayal Upadhyaya Gram Jyoti Yojana (DDUGJY) for feeder segregation to provide reliable power across various categories of load, Integrated Power Development Scheme (IPDS) for network upgradation and implementing IT systems for efficient auditing and billing systems. The latest support to the state-owned power distribution companies has been through working capital support of Rs.1.2 lakh crore proposed to be disbursed through Power Finance Corporation (PFC) and Rural Electrification Corporation (REC) under the Atmanirbhar Bharat scheme. Financial stability in the sector can be achieved only once the DISCOMs post significant improvement in aggregate AT&C losses and reduction in ACS-ARR gap to nil through successful implementation and commercialization of network upgradation plans, regular tariff hike by the regulator to ensure maximum pass-on of higher cost and rationalization of overheads through organizational restructuring. This shall aid in reducing the debt burden and the high payable days of the DISCOMs, which is the inherent problem in the industry.

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This rating methodology covers the essential credit perspectives analyzed for assessment of a distribution licensee (DL) and a distribution franchisee (DF). A distribution licensee is responsible for procuring power directly from gencos and other sources and sells it to consumers across various categories.

On the other hand, a DF is appointed by a DL to sell and collect the revenue from consumers on its behalf. In India, the DL business is predominantly being owned by the state-controlled entities with the presence of private players in few states and union territories. On the other hand, the DF business is being operated by private entities only.

Rating Methodology

CARE analyzes the credit risk of DISCOMs by evaluating the following broad parameters for arriving at the rating:

- Consumer category mix
- Operational performance
- Cost structure analysis and quality of service
- Regulatory compliance and support
- Extent of Government support
- Financial risk
- Quality/ adequacy in accounting compliance and disclosures
- Management risk
- Structural risk (in case of distribution franchisee)

Consumer category mix

Within its licensed area, the DISCOM supplies power to variety of customers, namely, domestic consumers, commercial users, industrial users, agricultural users, railways, etc. Higher proportion of power sales to commercial and industrial consumers is seen favorably vis-à-vis other consuming categories. It has been seen that there is moderate inverse correlation between proportion of industrial/ commercial load and Aggregate Technical and Commercial (AT&C) losses. Due to better metering, lower incidence of thefts, billing and collection efficiency is generally observed to be better for industrial and commercial (C&I) customers. Moreover, industrial load comprises high tension (HT) consumption which tend to reduce the line loss upon supply at higher voltage.

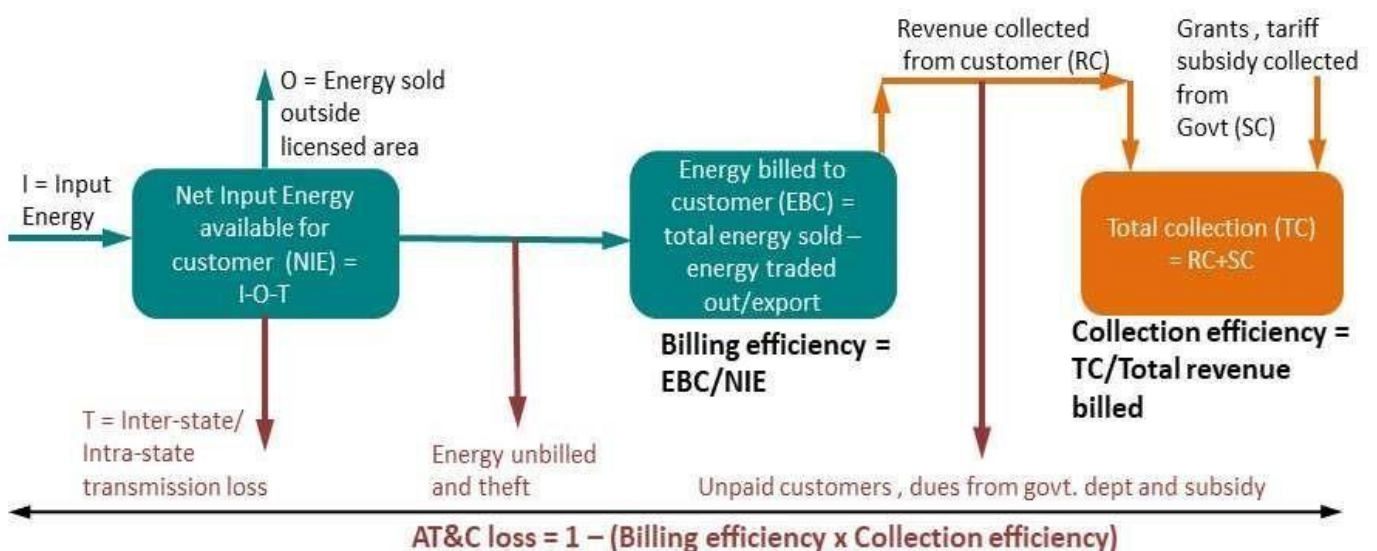
Licensed area with higher agricultural load generally have issues related to unmetered sales which increases the DISCOM's reliance on tariff subsidy support from the state government. This exposes the DISCOM to

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the vagaries of state finance and timeliness in subsidy realization. Furthermore, the tariffs in these categories are also cross-subsidized by industrial and commercial consumers. Cross-subsidization makes commercial & industrial (C&I) tariff less competitive, thus exposing the high-credit quality C&I clients to switch to open access of power from other sources. States with stringent open access norm with high switching cost will have lower churning of C&I clients. Licensed area with high C&I load mix along with consumption growth outpacing that of domestic and agricultural load in that area reduces the cross subsidization issues of the DISCOM and its reliance on tariff subsidy from the state government.

Operational performance

The most important operational efficiency parameter for a distribution licensee/ franchisee is the AT&C loss. It takes into account both the billing efficiency and the collection efficiency of the licensee/ franchisee. The billing efficiency indicates the fraction of energy purchased that is ultimately billed to the customer. It is a function of coverage and accuracy in metering, reading, high-voltage distribution, feeder segregation, network up-gradation to curb line loss and effectiveness of energy audit. Collection efficiency indicates the fraction of revenue actually collected from the consumers upon sale of power and from the state government (in form of tariff subsidy and grants if applicable) to the revenue billed by the entity. It depends on the awareness and recovery initiatives of the DISCOM, digitization of payment and ability to realize subsidy on time. Pictorial representation of the energy flow, losses and revenue collected and its linkage to AT&C loss is as given below:-



Source: CARE analysis

The absolute value and the trend in billing efficiency and collection efficiency over the years provides a fair representation of the operational efficiency of the entity. Several DLs will have a targeted transmission and distribution loss (T&D loss) and collection efficiency set by the regulator typically at the time of framing the

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multi-year tariff (MYT) for a particular control period. The regulatory commission of the respective state may also define the normative parameters for the ensuing year through the latest tariff order, if MYT guideline has not been issued. DISCOMs, which adhere to pre-determined loss reduction trajectory, are in a better position to book incentive income upon their over-achievement over the years. Likewise, underachievement of target increases power purchase cost beyond the approved level, thus leading to lower cash accrual.

Cost structure analysis

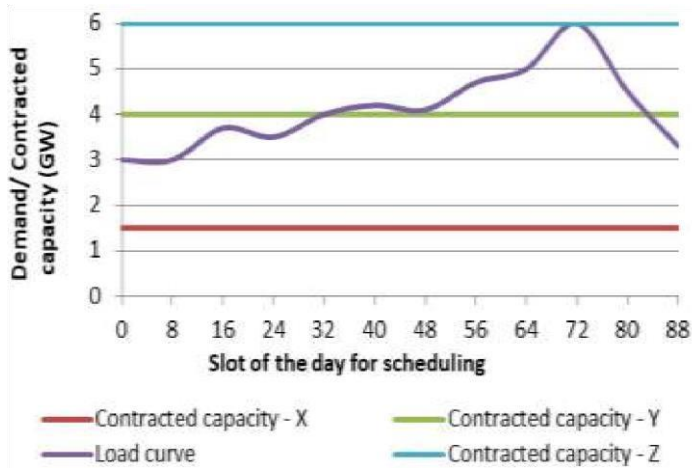
Power Purchase: The power purchase cost typically accounts for more than 70% of the total cost of a DISCOM and hence efficient management of power procurement through optimum mix of long term and short-term sources is very important. DISCOMs with inadequate long-term power source through power purchase agreements (PPAs) expose them to the price volatility in short-term power purchase, similar to scenario of DISCOM X in Graph 1 below. At times, the regulator may also not allow excessive price paid for short-term power purchase during true up, leading to lower cash accrual. On the corollary, tying a very large portion of power purchase through PPA increases fixed charge burden during lean demand periods and also reduces the flexibility of procuring short-term power at competitive rates. Similar situation is faced by DISCOM Z in Graph 1 below. Thus, a balanced mix of long-term power and short-term power purchase is desirable.

Availability of power at competitive rates and passing through of any increased power purchase cost to consumers is viewed favorably by CARE. Let us assume that two DISCOMs – A and B have similar load curve in a day. “A” and “B” have scheduled 100 MW of power each to its respective gencos for its licensed area. The merit order trend for scheduling the gencos for DISCOM A and B is as shown in the Graph 2 below:-

Graph 1: Demand curve vs contracted capacity

Graph 2: Schematic representation of merit order

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Source: CARE analysis

DISCOM A's schedule is relatively more skewed towards lower cost plants as compared to DISCOM B's schedule. DISCOM A, by virtue of its competitive power purchase agreements (PPAs), will have a lower weighted average energy charge payable to its gencos than that of DISCOM B. Moreover, if AT&C losses of both DISCOMs are similar, DISCOM B will incur higher loss for every unit supplied in its licensed area in comparison to DISCOM A.

Efficient power procurement strategy improves the cost competitiveness for the DISCOM. It is desirable to have the actual average power purchase cost to be in line with the average power purchase cost approved by the regulator. The DISCOMs are also provided renewable purchase obligation (RPO) target by the regulator. More efficient DISCOMs will have better compliance to RPO targets through procurement of power from renewable sources at competitive rates.

Operations and Maintenance (O&M) expenses and Employee cost: It is desirable that DISCOMs have lower overhead cost per unit sold over the years. O&M cost depends on the geographical spread of the licensed area and the load density. One of the two DISCOMs with similar aggregate loads may have lower O&M cost if one has more urban load centers where the load density is much higher. Apart from O&M cost, employee cost is also an important part of the total cost for DISCOM and is analyzed for its efficiency.

DISCOMs can rationalize its employee cost through higher outsourcing of non-core activities. At instances, the existence of DF in a licensed area is seen as a positive considering the operational efficiency (in terms of higher billing/ collection efficiency, reduction in O&M cost as well as employee cost) brought in by the DF to the licensed area.

From quality of service perspective, reliability of power supply, extent of release of new connections/ modification in existing connections through transparent and prompt manner and the extent of adoption of digitization by the DISCOMs can be considered.

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Regulatory Risk

The DL operate in regulated cost plus regime where they have the opportunity to earn fixed return and incentives upon over-achievement of few normative parameters. In the cost-plus regime, the DISCOM also faces the risk of under-recovery of actual cost incurred if the same was due to shortfall in meeting normative parameter on account of operational inefficiencies.

The existence of MYT with the current period of appraisal being included in the control period provides more clarity in terms of revenue, expenses and capex trend for the DISCOM. Typically, in a MYT regime, the regulatory commission defines the trajectory for financial and operational parameters for the control period (e.g., T&D, collection efficiency, capex, interest rate, O&M cost). The distribution licensees have to regularly file petition for tariff with the respective State Electricity Regulatory Commission (SERC) which reviews the actual cost incurred in the past and estimates an Aggregate Revenue Requirement (ARR) for the next fiscal year. CARE analyzes the timeliness in filing of tariff petition by the DISCOM over the years and the timely release of tariff order by the SERC. Typically, for the tariff for the ensuing year, the DISCOM files petition for true-up of past audited accounts and tariff for the projected year by November 30. The SERC recognizes the actual accounts for the past year and sets tariff for the next financial year by March 30.

Non filing of tariff petition by the DISCOM or non-issuance of tariff order by SERC within the stipulated timeframe is viewed negatively from the credit perspective. Similarly, tariff order without true up of previous year audited account or significant underestimation of the revenue gap by the regulator for the past period of true up as well as for the projected period is negatively factored.

The regulator may only allow gradual recovery of the revenue gap to avoid tariff shock to the customers over several years. In such case, the DISCOM may book regulatory income during the year which is expected to be recovered in medium to long term. The DISCOM has to arrange for financing of such assets at reasonable borrowing cost and tenor to avoid liquidity mismatch. In such a case, the regulatory asset liquidation plan, the source of financing of such assets and the extent of carrying cost on the regulatory asset allowed by SERC may be evaluated.

At times, DISCOM can challenge the SERC's disallowance of various tariff parameters while arriving at the ARR, in various judicial and regulatory forums. Due to this, the DISCOM may recognize revenue gap in its books of account which may significantly vary from that recognized by the SERC. This revenue gap in excess of the quantum recognized by SERC is viewed negatively.

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Regular tariff hike is desirable to absorb the increasing power purchase cost and the escalating O&M cost. Since a significant amount of expenses (capacity charge paid to gencos, interest, depreciation, overheads, etc) of the DISCOM are fixed in nature, a cost-reflective tariff will have higher proportion of fixed tariff. Also, the availability of provision for Fuel Price and Power Purchase Adjustment Charges (FPPAC) mechanism to factor in seasonal fluctuation in power purchase is factored favourably.

Extent of Government Support

The extent of support from the state government is derived by understanding few important aspects – quantum of tariff subsidy burden, the financial flexibility of the government, its past track record of releasing of subsidy, political environment in the state and arrangement of finance for the DISCOM. High tariff subsidy component is undesirable as the timely realization would depend on the state finances and would thus affect cashflows of the entity. The ability of the state to pay the entire tariff subsidy booked on time fairly depends on the cash flow position and leverage of the state. Lower realization of subsidy booked affects the AT&C loss of the DISCOM.

If the political environment is hostile to tariff hikes, it may impact the tariff determination process. Such situation where the tariffs are not cost reflective and are not transparent in terms of cost pass through to consumers would be negative from the credit perspective.

The extent of government support to the DISCOM can also be gauged through the financial support provided by the same to the DISCOM in the past. State governments having demonstrated support through infusion of equity, grants and loans with cumulative interest and longer tenor are viewed favourably for the DISCOM.

Financial Risk

The financial risk profile of the DISCOM is gauged through the following parameters:-

Revenue gap is the difference between the average cost of supply (ACS) and average revenue realised (ARR). Increase in the revenue gap over years would be negative from the credit perspective while negative revenue gap would be favored.

Leverage is important since DISCOMs have capex and working capital intensive business model. Due to its low profitability and frequent funding requirement, DISCOMs also tend to have higher creditor level. The utilization of any addition in debt or creditor during the year for working capital purpose, funding of loss or for capex is to be analysed.

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The trend of **Creditor days** for DISCOM over the years indicates the liquidity and the ability of clear dues on time. Accumulation of overdue creditor would attract higher late payment surcharge (LPSC) by the genco. DISCOMs may have high **Debtor days** due to long pending dues from several government departments. Any deviations or delays with respect to receivables would put pressure on the financial condition of the utility. Receivable days measures the amount of days it takes for the utility to collect the receivables. A shorter receivable period would be viewed positively by CARE.

The adequacy of projected free cash flow of the DISCOM post meeting the capex requirement in meeting the debt obligation, i.e., the **Coverage** metrics is checked. Cash flows could be adversely affected due to many reasons such as inadequacy of revenue with respect to average cost of supply which may be due to lower tariff, lower recoverability of dues due to higher AT&C losses and delays with respect to payment of dues from government.

Liquidity profile of the DISCOM is analyzed by CARE based on the broad guideline mentioned in the **Methodology on liquidity analysis**.

Quality/adequacy in Accounting Compliance and Disclosures

CARE reviews the accounting policies adopted and disclosed in the audited financial statements, the qualifications and legal disputes highlighted by the auditor, significant accumulation of statutory dues, nonpayment of employee-related liabilities. Instances of auditor not able to express fair opinion on the financial statement are negatively factored.

CARE also analyzes the contingent liabilities and off balance sheet commitments as a percentage of total net-worth and monitors any significant devolvement of such liability which may adversely affect the liquidity of the utility.

Structural Risk (in case of Distribution Franchisee)

For DFs, CARE reviews the key terms of the Distribution Franchisee agreement like tenor, annualized input rate to the DF, payment terms, minimum annual capex commitment and its period. The lengthier the tenor of agreement, greater is the headroom in garnering the benefits of capex for network upgradation (particularly reducing AT&C loss and thus improving the cash accrual). The DF's cash flow is highly sensitive to billing efficiency and collection efficiency.

Management Evaluation

The evaluation of quality of management is an important part of all credit rating assessments. CARE evaluates the quality of management from different perspectives such as experience in the industry,

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financial capabilities, accounting policies, etc. A management with strong commitment to the business, ability of promoter to provide financial support in stress situations and the extent of such support along with payment track record and dividend policy is also examined.

In case of entity providing regular upstream of cash flows to the parent which adversely affects the financial and liquidity position of the entity, it would be viewed negatively by CARE.

Detailed note on evaluation of management risk: **Refer to CARE's Rating Methodology – Infrastructure Sector Ratings.**

Conclusion

The rating outcome is ultimately an assessment of the fundamentals and the probabilities of change in the fundamentals. CARE's Rating committee analyses each of the above factors and their linkages to arrive at the overall assessment of credit quality of an issuer based on its holistic judgement.

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