



Forum of Regulators (FOR)

Review of Status of Open Access in Distribution

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Glossary

- 'ABR' refers to Average Billing Rate
- 'AP' refers to the State of Andhra Pradesh
- 'ARR' refers to Annual Revenue Requirement
- 'AS' refers to the State of Assam
- 'CERC' refers to Central Electricity Regulatory Commission
- 'CG' refers to the State of Chhattisgarh
- 'CSS' refers to Cross Subsidy Surcharge
- 'FOR' refers to Forum of Regulators
- 'GJ' refers to the State of Gujarat
- 'HR' refers to the State of Haryana
- 'JH' refers to the State of Jharkhand
- 'LTOA' refers to Long Term Open Access
- 'MH' refers to the State of Maharashtra
- 'MTOA' refers to Medium Term Open Access
- 'NOC' refers to No Objection Certificate
- 'OA' refers to Open Access
- 'PB' refers to the State of Punjab
- 'PPC' refers to Power Purchase Cost
- 'RE' refers to Renewable Energy
- 'SERC' refers to State Electricity Regulatory Commission
- 'SLDC' refers to State Load Dispatch Center
- 'STOA' refers to Short Term Open Access
- 'STU' refers to State Transmission Utility
- 'TN' refers to the State of Tamil Nadu
- 'T&D' refers to Transmission and Distribution
- 'WB' refers to the State of West Bengal

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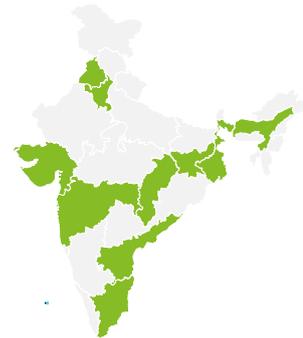
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Executive Summary

The Electricity Act 2003 introduced open access, whereby large consumers are allowed non-discriminatory access to the T&D network for obtaining electricity from sources other than their local Discom. However even after 15 years of implementation of open access, open access activity across various States has been limited. Various tariff and non-tariff constraints restrict the acceptance of open access by consumers. In order to deliberate on such issues impacting the open access, this report performs a detailed assessment of the status of Open access across ten shortlisted States.

Shortlisting of States

In order to perform a detailed analysis of status of open access, ten States are shortlisted in this study. The States are shortlisted based on parameters of potential of open access in the State, level of existing open access activity in the State and level of open access charges in the State. States of Haryana, Punjab, Chhattisgarh, Gujarat, Maharashtra, Andhra Pradesh, Tamil Nadu, Jharkhand, West Bengal and Assam are shortlisted for detailed review in this study. Representation of each region is ensured in the final shortlist.



An extensive data collection activity was undertaken for the shortlisted States as part of this study through secondary sources, primary sources and interviews with various stakeholders.

Detailed analysis of shortlisted States

Detailed review of the OA landscape in ten shortlisted States has been carried out on following areas:

Areas of review	Parameters Reviewed	
 Regulatory Review	<ul style="list-style-type: none"> Evolution of regulations Open access eligibility Application process Open access charges 	<ul style="list-style-type: none"> Status of implementation of FOR recommendations Other regulatory provisions Analysis of APTEL/ SERC cases
 OA Activity Review	<ul style="list-style-type: none"> Open access consumers Open access sales 	<ul style="list-style-type: none"> Type of open access consumer Open access applications
 Commercial Review	<ul style="list-style-type: none"> HT sales as % of overall sales 	<ul style="list-style-type: none"> Load profile of HT consumers
 Tariff and OA Charges Review	<ul style="list-style-type: none"> Review of retail tariffs Open access charges 	<ul style="list-style-type: none"> Impact on consumers (Break Even Power Purchase Cost)
 Impact on Discoms due to OA Migration	<ul style="list-style-type: none"> Per unit impact and Aggregate impact on Discom 	<ul style="list-style-type: none"> Scenario and Sensitivity analysis

Regulatory Review

While most open access regulations across States follow a similar structure, differences are observed in specific conditions related to open access eligibility, application process or methodology for determination of open access charges. Such peculiarities have been discussed in detail in this report.

Open access eligibility

The open access regulations provide for eligibility conditions for availing open access in terms of minimum load requirement, restrictions of feeder types, restrictions on voltage levels and other eligibility conditions. Most of the States have a minimum load requirement of 1 MW for availing open access, except for Haryana. States like Chhattisgarh and Assam, allow open access only on dedicated feeders only. The table below provides a summary of key eligibility conditions across shortlisted States for availing open access.

	Min Load	Feeder Conditions	Voltage Conditions	Other Conditions
CG	1 MW	• Only dedicated feeder	• Above 33 kV	-
AS	1 MW	• Only dedicated feeder	• Wheeling charges only for 33 kV	-
PB	1 MW	• Not allowed on urban pattern supply feeders, AP feeders & category 1 - mixed load feeders • Category 2 mixed load feeders subject to load shedding	• Above 11 kV	• RPO compliance in previous period
JH	1 MW	• Subject to load shedding on mixed feeders or on feeders at 33 kV or below	-	• Consumer taking bulk supply from Discom and supplying to multiple users, cannot take OA
TN	1 MW*	• Subject to SERC restrictions on mixed feeder	-	-
AP	1 MW	-	-	-
WB	1 MW	-	-	-
GJ	1 MW	-	-	-
HR	0.5 MW	• Subject to load shedding on mixed feeder	• Above 11 kV	-
MH	1 MW	-	-	-

*as informed by stakeholders, OA approvals are being granted for 1 MW and above only. Only in cases of Wind Power, OA approvals are being given for less than 1 MW also

Open access application process

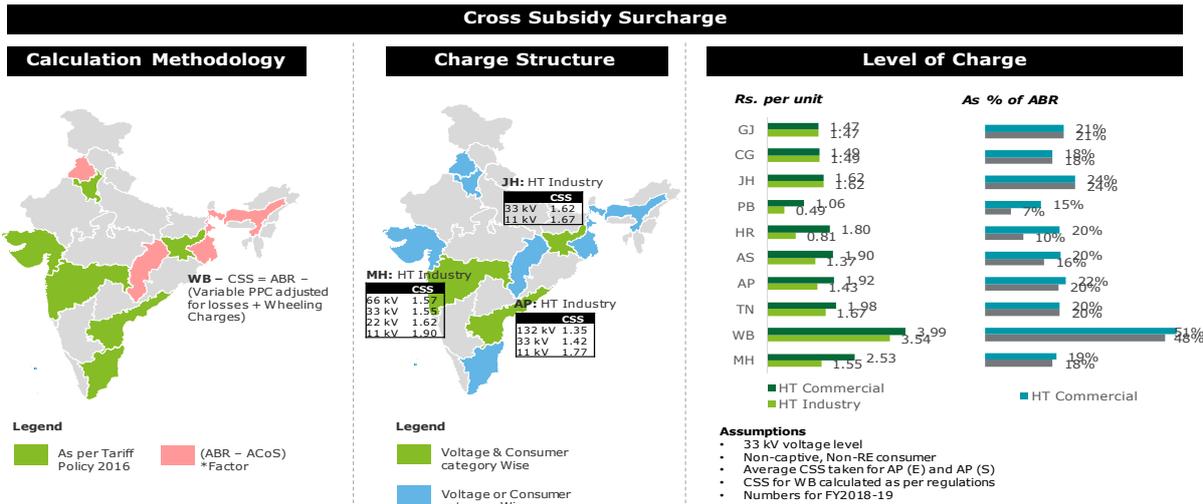
Review of open access application process in the shortlisted States is performed on following aspects:

- **Nodal Agency:** In most of the States, STUs are nodal agency for providing LTOA/ MTOA while SLDC is nodal agency for STO. Maharashtra and Chhattisgarh have State Discom itself as the nodal agency. Even in cases where SLDC is the nodal agency, the SLDCs are not independent, working as a department within STU.
- **Documents required for application:** Obtaining NOC from State utilities is the single largest impediment in getting open access approvals. In Chhattisgarh, Gujarat, Tamil Nadu and Jharkhand, NOC is required along with open access application itself, which may lead to delays or complications even before submission of open access application. Further the conditions for granting of NOC are subjective in nature and unverifiable by consumers.
- **Time period for processing of applications:** Significant variation is observed across States in the time period allowed for processing of open access applications. In Andhra Pradesh, deemed approval is given to LTOA applications at the end of 30 days.
- **Cost of application:** Charge structure for OA application fee differs across States based on period of application, load of application, point of connection and power source. While the application fee varies significantly across States, the cost on per unit basis is insignificant.

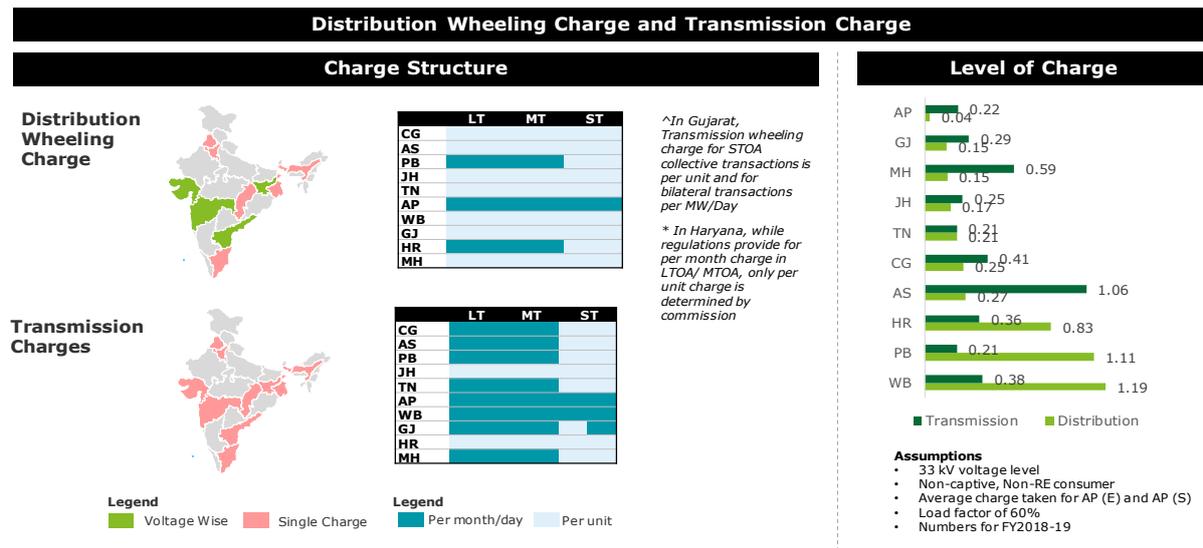
Open access charges

While open access charges and their applicability differs across States, the major open access charges include Cross Subsidy Surcharge, Distribution Wheeling Charges, Transmission Charges, Additional Surcharge, SLDC charges and Standby charges.

- **Cross Subsidy Surcharge:** SERCs are primarily guided by the CSS formula prescribed in the Tariff Policy 2016. Few States have determined voltage wise CSS.



- **Distribution Wheeling Charge and Transmission Charge:** Majority of the States determine per unit Distribution Wheeling Charge, even in LTOA/MTOA cases where network capacity is blocked for a certain period. Majority of the States determine capacity based transmission charges for LTOA/ MTOA and per unit charge for STOA.



- **Additional Surcharge:** while most of Discoms have filed to SERCs for determination of an additional surcharge, only Punjab, Haryana, Gujarat and Maharashtra (out of the shortlisted States) have allowed an additional surcharge. Each SERC has adopted their own methodology for determination of additional surcharge.
- **SLDC Charges:** SLDC charges are determined separately for LTOA/MTOA and STOA in most of the States. Tamil Nadu and Andhra Pradesh have different charges for fixed annual costs and variable costs.
- **Standby Charges:** Out of the shortlisted States, Haryana, Gujarat, Chhattisgarh, Jharkhand and Assam have provisions for Standby charges in open access regulations. Standby charges are defined as a factor of either ABR of respective consumer category or temporary tariffs. In absence of clear guidelines, consumers continue to maintain contract demand with Discom, as an industry wide practice.

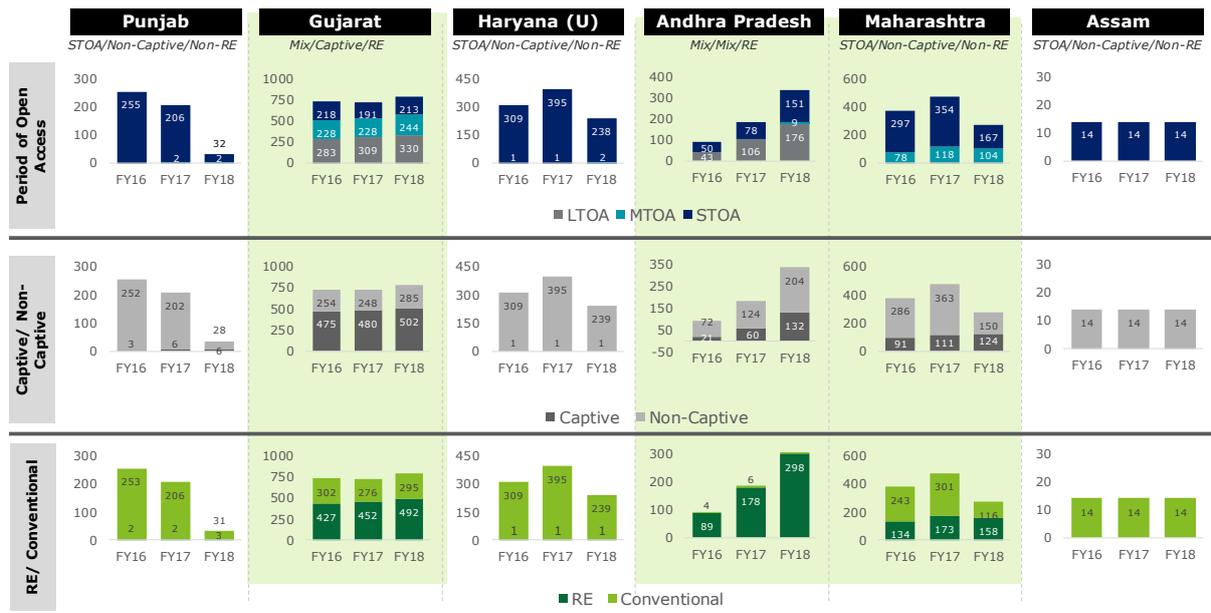
Apart from open access regulations, the provisions of banking across States have also been analysed. Banking facility for open access consumers procuring power from a third party is available in Haryana, Maharashtra, Andhra Pradesh, Tamil Nadu and Jharkhand out of the shortlisted States.

Haryana, Gujarat, Punjab and Tamil Nadu allow compensation for under-draw of open access power in case of unscheduled load shedding or non-availability of network.

Open access activity review

The existing level and past trend of open access activity is analysed across the ten shortlisted States, on following elements:

- Open access consumers and sales:** It can be observed that southern States like Tamil Nadu and Andhra Pradesh are showing increasing trend of open access activity, while the northern States like Haryana and Punjab are showing decreasing trend. Increased policy level push for renewable power coupled along with incentives offered on OA charges, has driven open access activity in RE power rich States like Tamil Nadu and Andhra Pradesh. The rise in OA activity in Tamil Nadu is also driven by significant decrease in OA charges.
- Type of open access consumers:** The type of open access activity in each State is dependent on several factors such as the regulatory provisions regarding eligibility, tariff and open access charges applicable to each type of consumer and the load profile of consumers in the State. Most of the States have a pre-dominant type of open access consumers. Andhra Pradesh and Gujarat have high proportion of LTOA/ MTOA consumers, while other states have STOA. Andhra Pradesh and Gujarat are also RE rich states and the proportion of RE power in OA quantum is considerably high as compared to the other States. The figure below provides the share of different types of open access consumers across States, based on the number of open access consumers.



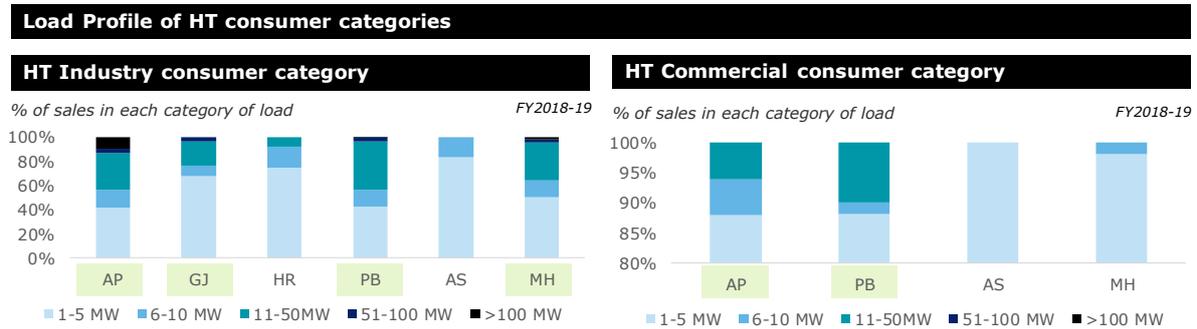
Basis number of consumers; Nil OA Activity in Jharkhand and West Bengal; Data not available for Tamil Nadu and Chhattisgarh

- Open access applications:** Based on the analysis of data of open access application for the States of Punjab, Gujarat, Assam and Chhattisgarh it is observed that the rate of rejection of open access applications has decreased in Gujarat and increased in other States. Non-compliance with RPO is cited as reason for all application rejections in Punjab. In Gujarat, upstream network constraint and denial of NOC by Discoms are the major reasons cited for open access application rejection.

Commercial Review

States with more number of HT consumers and with higher loads, would have higher potential of consumers migrating to open access. Therefore the share of HT Industrial and HT Commercial consumer categories in total sales of State and their load profile is reviewed to assess the potential of open access migration across States.

States of Gujarat, Haryana, Punjab, Chhattisgarh and Maharashtra have more than 30% share of HT Industrial and HT Commercial consumer categories in overall sales of the State. Further Andhra Pradesh, Gujarat, Punjab and Maharashtra have HT Industrial consumers with higher loads that may migrate to OA.



Tariff and Open Access Charges Review

High cross subsidies or non-cost reflective tariffs may result in a revenue gap for Discoms due to shift of subsidising consumers to open access. Out of the shortlisted States, the ACOS coverage of HT Industrial and HT Commercial consumers is more than 120% in Maharashtra, Tamil Nadu and Chhattisgarh.

Apart from non-cost reflective tariffs, the applicable tariff design and structures in most of the States do not reflect the actual fixed and variable cost of the Discom resulting in inadequate cost recoveries from the open access consumers. The fixed ACoS for shortlisted States is compared against the recovery from fixed charges, wheeling charges and additional surcharge for HT open access consumers. Better recovery is observed from Punjab, Maharashtra, Tamil Nadu and Harayana as compared to states like Jharkhand, Chhattisgarh and Anshra Pradesh. The recovery is even lower in case of renewable power procurement over open access due to various discounts offered on open access charges in most of the States.

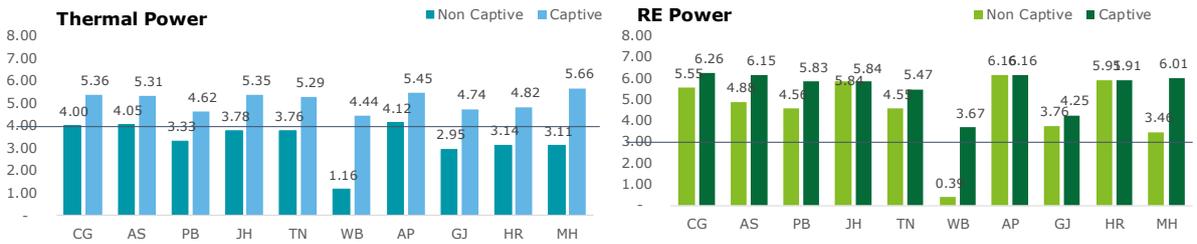
Tariff rationalization across the States is crucial for adequate fixed cost recovery of Discoms and safeguard the interest of Discom in case of movement of consumers to open access. Few SERCs like Punjab, West Bengal, Andhra Pradesh, Maharashtra and Assam have increased the fixed charges at a faster rate in recent years vis-à-vis the variable charges.

Apart from the impact of tariffs on Discoms, high open access charges has been stated as one of the primary reasons for the constrained growth of open access. Cross Subsidy Surcharge and Additional Surcharge, form major part of the open access charges across the States. States like West Bengal, Tamil Nadu, Jharkhand and Maharashtra have higher CSS (more than Rs. 1.50 per unit). On the basis of total open access charges for HT industrial and HT commercial consumers procuring power from conventional sources, Andhra Pradesh, Jharkhand, Chhattisgarh and Tamil Nadu have lower total open access charges. Detailed tables are provided in the report for open access charges applicable on various types of consumers across States.

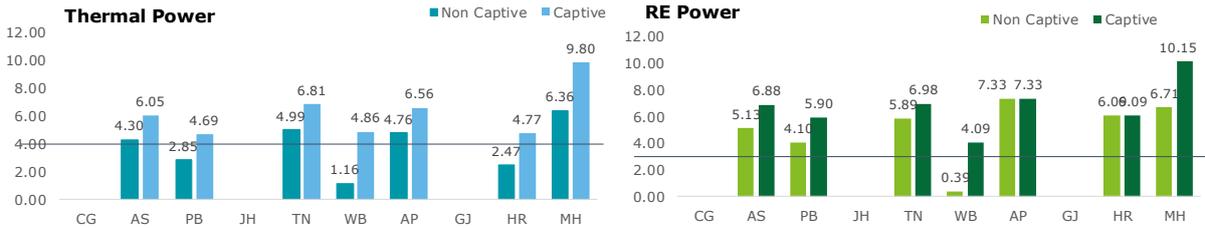
With a view to promote renewable energy, majority States are offering discount on Open Access charges for procurement of renewable power. No incentives/ discounts for procurement of renewable power is offered in case of Maharashtra and West Bengal. On the other hand 100% discount is being offered in States of Andhra Pradesh and Haryana on CSS, wheeling charges and additional surcharge. Impact of these discounts on overall open access charges is detailed out in the report for all States.

Further the gap between the energy tariff and total open access charges for a consumer, is analysed as the break-even power purchase cost. Getting power at a rate below this break even power purchase cost, can create savings for an open access consumer.

HT Industrial Consumers - Break Even Power Purchase Cost (Rs./Unit)



HT Commercial Consumers - Break Even Power Purchase Cost (Rs./Unit)



It can be observed that captive procurement and renewable energy procurement through open access is viable across all States, when compared against a benchmark power purchase of cost of Rs. 4.00 per unit for thermal power and Rs. 3.00 per unit for renewable power. Procurement of thermal power over non-captive route can be viable for HT Commercial consumers in Tamil Nadu and Maharashtra, due to high retail tariffs.

Impact on Discom due to open access migration

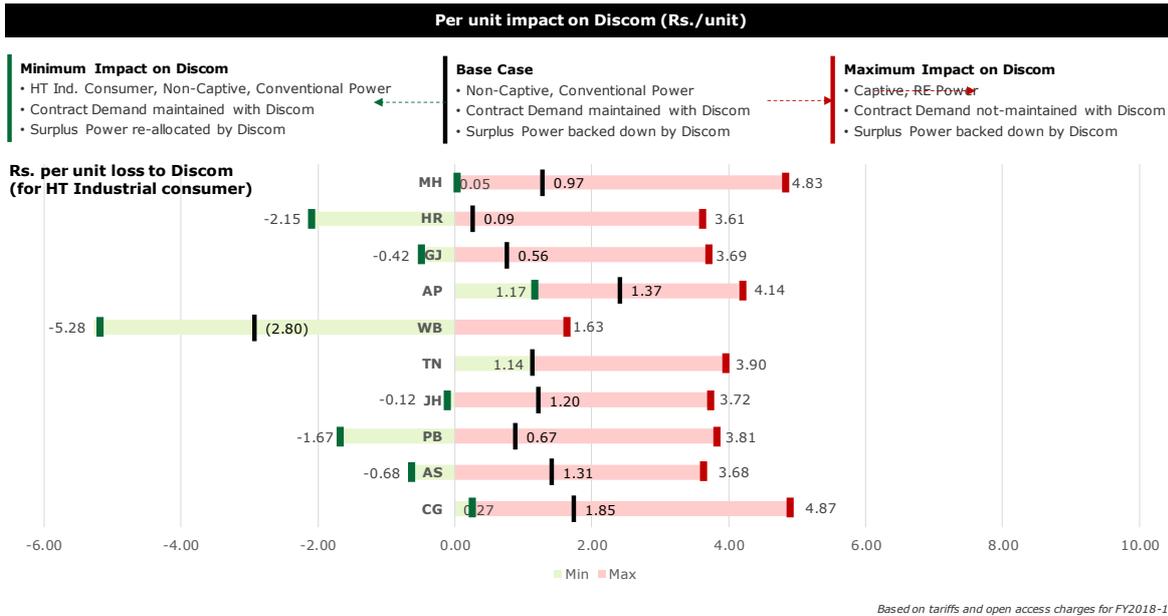
When a HT consumer migrates to Open Access, the Discom may be negatively impacted due to loss of its revenue (part or full) from such consumer, while still incurring certain fixed costs. This loss is generally recovered by way of various open access charges and avoidance of power purchase cost for such migrated consumers. The Per unit impact on Discom due to open access migration is calculated as follows –

$$\text{Per unit Impact on Discom} = \text{Tariff} - (\text{OA Charges} + \text{Avoided Power Purchase Cost})$$

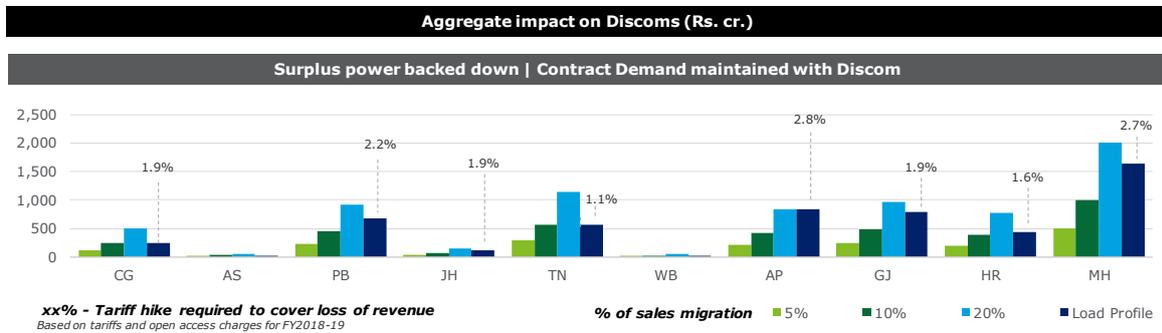
It is generally observed across States that the loss to Discom is higher when consumers opt for open access under captive or renewable type of open access power, due to lower open access charges for such consumers. Further, in case the consumers do not retain their contract demand with Discoms, the impact on Discom increases due to loss of fixed revenue also in addition to the loss of revenue from energy charges. The tariffs for HT Commercial consumers is generally higher than tariffs for HT Industrial consumers and therefore the Discoms are impacted more in case of migration of an HT Commercial consumer to open access as against an HT Industrial consumer.

With respect to the Discom’s perspective, migration of consumer to open access results in surplus power from PPAs / power procurement obligation from generating stations. Discom has an option to either back down the surplus power or re-allocate this power to under-served consumers in State i.e. domestic and agricultural consumers.

To account for such parameters, sensitivity and scenario analysis is conducted for the impact on Discom due to open access migration, based on the treatment of surplus power by Discom, treatment of their contract demand by consumers and the type of open access consumer migrating to open access. While detailed tables of per unit impact on Discom due to open access migration are provided in the report, the figure below presents a snapshot of this impact assessment.



This per unit impact, multiplied by the total sales that could migrate to open access, gives the 'Aggregate Impact on Discom of Open Access Migration'. Such aggregate loss would eventually be recovered from the consumers remaining with the Discoms, by way of a tariff increase. Therefore an average tariff hike required across consumer categories to cover the loss, has been computed. Sensitivity analysis of aggregate impact on Discoms is performed based on the percentage of HT sales that could migrate to open access. While detailed tables are provided in the report, the graph below presents the aggregate impact on Discoms and average tariff hike required for recovering this loss, for the base case wherein surplus power is backed down by Discoms and contract demand is maintained by consumers with Discoms.



Measures for effective implementation of open access

Based on the detailed review of open access, measures are recommended to enable wider adoption of open access in the country. All the suggestions have been clubbed under the following three areas:

- Standardisation of Regulations – regulatory measures required to enable wider adoption of open access
- Improvement in operational procedures - action items for SLDCs, STUs and Discoms to remove barriers to open access
- balancing the interest of consumers and Discoms - action items for both SERCs and utilities, to create a balance between the viability of open access and impact on revenue of Discoms due to open access migration

A detailed list of suggested measures is provided in the report.

The findings of the report were presented and discussed with the members of Forum of Regulators at the 68th Meeting held on 20th June 2019. It was decided during the meeting that the report shall be shared by FOR with all SERCs for their comments, basis which the report shall be taken up for finalization in the next FOR meeting. Post the circulation of the report, comments were received from the following states - Tamil Nadu, Karnataka, Punjab and Odisha. While most of the comments concurred with the findings of the report, few of the comments highlighted that recommendations could be considered based on the prevailing conditions in the respective states. Subsequently, the key findings of the report and the comments received from SERCs were discussed during the 69th Meeting of FOR held on 20.09.2019 and the report was accepted by the forum. The comments received from the SERCs and remarks on these comments are provided in the annexure to this report.

1. Introduction

The Forum of Regulators (FOR) has been constituted in 2005 by the Government of India in terms of Section 166 (2) of the Electricity Act, 2003 consisting of Chairpersons of the CERC and SERCs in the country. The Forum is responsible for harmonization, coordination and ensuring uniformity of approach amongst the Electricity Regulatory Commissions across the country, in order to achieve greater regulatory certainty in the electricity sector.

The Electricity Act 2003 introduced the reform of open access, whereby large consumers are allowed non-discriminatory access to the transmission and distribution (T&D) network for obtaining electricity from sources other than their local electricity distribution company. The objectives of introducing open access were two fold –

- Induce efficiency improvement in electricity distribution companies through healthy competition in power market
- Provide choice to consumers for procuring power from their preferred supplier

Further, the Act mandated introduction of open access in a phased manner by the State Regulatory Commissions (SERCs) by enacting enabling regulations and regular determination of open access charges to suitably compensate the power utilities, while ensuring competition in the sector.

Even after 15 years of implementation of open access, open access activity across various States has been limited. Various constraints both tariff (high cross subsidy surcharge, wheeling charges, additional surcharge, etc.) and non-tariff (conditions for eligibility, operational bottleneck, NOC approvals, etc) restrict the acceptance of open access by consumers. These constraints continue to be a deterrent in large scale adoption of open access by the eligible consumers and various stakeholders are working for standardization of these aspects to remove ambiguity and bring long-term certainty for open access consumers.

FOR has been deliberating on such issues concerning implementation of open access at regular intervals. In order to assess the status of Open access and challenges associated with it in various states of the country, a study on "Review the Status of Open Access in Distribution" has been initiated by FOR. Deloitte Touche Tohmatsu India LLP has been appointed by FOR to assist in carrying out the study.

1.1. Objective and Scope of work for the assignment

The objective of this study is to review the status of open access in electricity distribution sector. The study aims to analyse the success of open access till now, identify the challenges impacting open access in India and also analyse the way forward.

The scope of work for the assignment is provided below:

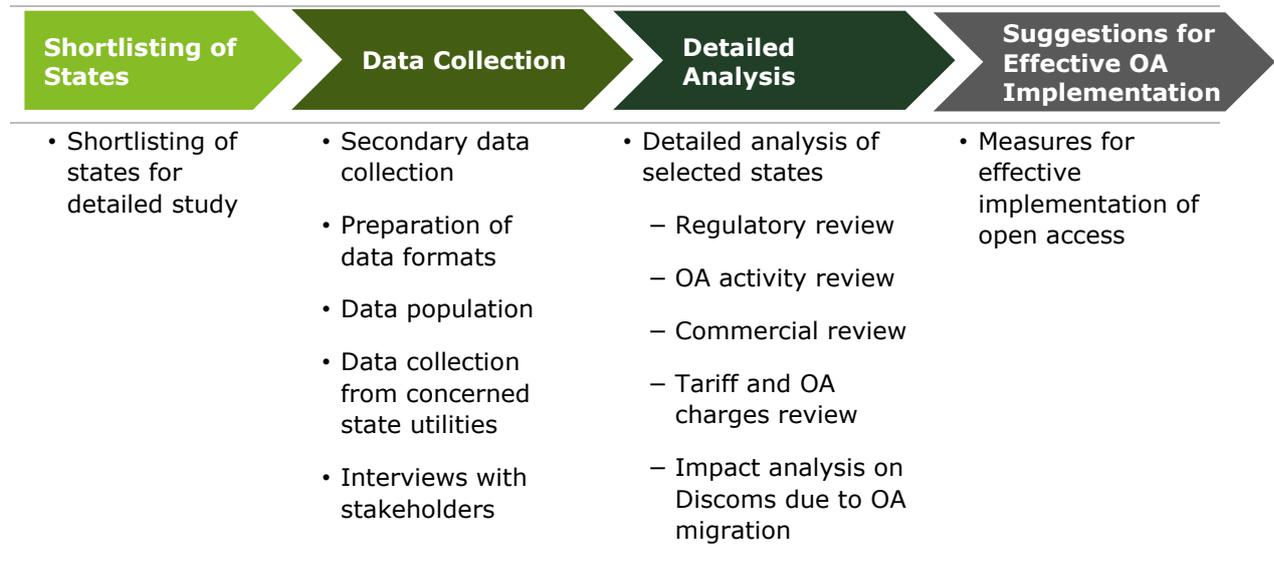
- Overview of the status of open access in States, including compilation of data on potential open access consumers (number, nature & capacity) etc., various charges payable for open access
- Status of implementation of open access (i.e. number of applications for open access, time taken for disposal of application, reasons for delay etc.)
- Primary data is to be collected and provided by the consultant for 10 (ten) Indian States, particularly 2 States from each region, to be identified in consultation with FOR Secretariat
- Statutory requirements to be fulfilled to obtain open access
- Role of different institutions/ agencies involved in the grant of open access to the customers in the selected States

- Identification and analysis of issues raised by different stakeholders (viz. Discoms, consumers etc.) on implementation of open access
- Identification of constraints in implementation of open access in different States
- Impact analysis on Discom and Consumers from Discom point of view
- Suggest measures for effective implementation of open access in States
- Any other task required in pursuance of achieving the objectives of the Committee

1.2. Approach adopted for the assignment

In line with the scope of work, the following module wise approach was adopted for execution of the assignment -

Figure 1 Approach adopted for the assignment



1.3. Context for the assignment

Open Access in electricity was one of the key provisions included in the Electricity Act 2003 to encourage competition in the power sector and enable the consumer to choose its supplier. The Act defined Open access as *non-discriminatory provision for the use of transmission lines or distribution system or associated facilities with such lines or system by any licensee or consumer or a person engaged in generation in accordance with the regulations specified by the Appropriate Commission.*

As per the Act, non-discriminatory open access was to be provided in case of transmission from the start, provision was included for adoption at the distribution level in a phased approach on payment of various open access charges including payment of surcharge towards cross-subsidies, etc.

While the enabling regulations for operationalizing open access was issued by number of state regulatory commissions, open access activity at the state level remained limited due to various hurdles. FOR formed a working group which came out with a report in Nov 2008 providing recommendations on issues pertaining to open access. FOR also came out with a Model Terms and Conditions of Intra-State Open Access Regulations in September 2010 for harmonization in the open access regulations across the States.

In order to ensure effective administration and efficient operations of open access in the power sector, the Ministry of Power (MoP) and the Forum of Regulators (FOR), have deliberated on the issues impacting open access in the past and have also made recommendations to resolve such issues. A consultative approach was adopted in preparation of these reports, with deliberations among various stakeholders and regulatory institutions. These reports identify range of tariff related issues and non-tariff related issues, impacting different stakeholders in the sector. The key findings

of these reports is discussed in the sub-sections below, along with the recommendations made. The status of implementation of these recommendations is analysed in later sections, while performing the detailed analysis of selected states.

MoP Consultation Paper on 'Issues Pertaining to Open Access'

In order to review the key issues behind the lack of effective open access implementation, the Ministry of Power (MoP) issued a Consultation Paper on the 'Issues Pertaining to Open Access' in August 2017. The consultation paper was based on the report submitted by a Committee constituted under Central Electricity Authority (CEA) with members from CERC, POSOCO, MSEDCL, GUVNL, PFFCL and Chief Engineers from relevant Divisions of CEA. The consultation paper discusses issues impacting various stakeholders including open access consumers, Power Sellers, Distribution Licensees and non-open access retail supply consumers of distribution licensees. The major issues identified by the consultation paper, impacting a fair play between consumers and utilities on open access/group captive, were –

- a) **Frequent shifting of open access Consumers:** DISCOMs are unable to manage power procurement efficiently due to the high frequency of shifting of open access consumers between DISCOM and other source of power
- b) **Cross Subsidy Surcharge:** The Cross Subsidy Surcharge calculated by State Electricity Regulatory Commissions (SERCs) and recovered from open access consumers is often insufficient to recover the entire loss of cross subsidy on account of consumers procuring power through the Open Access route
- c) **Additional Surcharge:** Majority of power procurement by DISCOMs is long term in nature. Additional surcharge to recover stranded cost on account of stranded Power Purchase Agreements (PPAs) and stranded assets due to consumers procuring power through open access have in most cases not been calculated appropriately. This has led to under recovery of power procurement expenses incurred by DISCOMs
- d) **Stand-By charges:** The methodology adopted by DISCOMs for calculation and structuring of Stand-By charges is inconsistent across States. Further, lack of periodic review of these charges can lead to revenue loss for DISCOMs
- e) **Tariff design and rationalisation:** Although two part tariff has been introduced in most States, the structuring of fixed and variable components of tariff is not reflective of the actual proportion of fixed and variable cost liability of the DISCOMs

Based on the detailed deliberations of these issues and review of prevalent practices related to open access, the MoP consultation paper provides proposals for resolving each of these major issue, as follows –

Table 1 Recommendations by MoP consultation paper on 'Issues Pertaining to Open Access'

OA Issue	Proposals by MoP
Frequent shifting of OA consumers	<ul style="list-style-type: none"> • OA consumers should schedule at-least 24 hours of power
Cross Subsidy Surcharge (CSS)	<ul style="list-style-type: none"> • Regulators are restricting CSS to 20% of tariff without reducing Cross Subsidy in tariffs to within +/-20% levels. Both reforms should be implemented simultaneously. • CSS should be determined on Category Wise Cost of Supply basis • Differential CSS should be determined based on ToD Tariffs
Additional Surcharge	<ul style="list-style-type: none"> • Additional Surcharge should have 3 components - stranded power under long term PPAs, stranded physical assets, cost of carrying regulatory assets • A methodology for determination of Additional Surcharge is suggested by MoP in the consultation paper, to bring about uniformity and certainty in the determination of open access charges • The consultation paper highlights the need to define the criteria for classifying an asset as "Stranded" and removing its cost from ARR of Discoms

OA Issue	Proposals by MoP
	<ul style="list-style-type: none"> The consultation paper states that the Discoms should maintain separate accounts for Regulatory Assets and that SERCs should ensure that open access consumer should not be required to pay for Regulatory Assets for a particular year, if the same has been paid earlier as part of cross subsidy surcharge
Stand By Charges	<ul style="list-style-type: none"> Standby tariffs should be in line with fixed and variable costs of Discom for supplying power Two part stand-by tariffs should be determined, limited to 125% of the retail tariff Standby charge should be determined annually by SERCs to reflect the variation in costs over time or Auto- indexation mechanism may be designed
Tariff Rationalization	<ul style="list-style-type: none"> Tariff design should progressively reflect break-up between fixed and variable costs of Discom, exempting domestic and small commercial consumers with low load factor If Fixed charges and wheeling charges paid by OA consumers, combined are more than fixed cost of Discom, OA consumer should get reduction in fixed charges

Source: MoP Consultation Paper on the 'Issues Pertaining to Open Access', August 2017

FOR Report on 'Open Access'

In the 55th Meeting of Forum of Regulators held on 22nd July 2016, issues affecting the implementation of open access were discussed. A decision was taken to carry out detailed examination of all the issues connected to open access for consumers, and consequently FOR constituted a Working Group, comprising of members from CERC and various SERCs.

In its first meeting held on 29th March 2017, the Working Group identified several tariff and non-tariff barriers to open access related to open access charges, restrictions imposed on consumers connected on mixed feeders, constraints related to scheduling of power and increased costs for installation of ABT meters and other infrastructure. The working group also highlighted the impact on Discoms due to open access migration.

On these issues related to open access, the FOR made following recommendations in the report –

- **Need for uniform methodology** for the determination of various charges such as open access charges, Cross Subsidy Surcharge and additional surcharge.
- **Leverage technology solutions** and automate processes for NOC issuance, energy scheduling and energy settlement.
- **Conduct impact assessment for DISCOMS** as well as open access users

In the 2nd Working Group meeting held on 11th October 2017, issues raised by MoP in their Consultation Paper on Open Access was discussed by the FOR Working Group. The Working Group made following recommendations against the issues identified and the proposals made by the MoP Consultation Paper -

Table 2 Recommendations by FOR Working Group on Open Access

Issue	Recommendations by FOR
Frequent shifting of OA consumers	<ul style="list-style-type: none"> Open access consumers should schedule minimum 8 hours of continuous supply through open access
Cross Subsidy Surcharge (CSS)	<ul style="list-style-type: none"> Determination of CSS based on category wise CoS or VCoS is not suitable, as CoS of industrial consumers is lower than ACOS SERCs must be guided by the philosophy of the Tariff Policy 2016, which uses ACoS
Additional Surcharge	<ul style="list-style-type: none"> The working group endorsed the proposal of MoP's consultation paper to have three components of Additional Surcharge

Issue	Recommendations by FOR
Stand By Charges	<ul style="list-style-type: none"> • Only 125% of variable charges for each category should be applicable as stand-by surcharge • Fixed charges are already recovered in the demand charges and is in line with Tariff policy 2016
Tariff Rationalization	<ul style="list-style-type: none"> • Tariff should reflect actual breakup of fixed and variable charges. SERCs may revise fixed charges gradually

Source: FOR Report on Open Access, December 2017

In context of the MoP Consultation Paper and the FOR Study on Open Access, this study report discusses in detail the Status of Open Access in 10 shortlisted States, along with the analysis of various issues impacting open access in such States and the impact on Discoms and open access consumers.

2. Shortlisting of 10 States for detailed analysis

In line with the scope of work, ten States were identified for detailed review of status of open access based on identified parameters and information collected from secondary sources. This Chapter provides a summary of the shortlisting methodology and the States which were selected for detailed analysis.

2.1. Shortlisting Methodology

The States have been shortlisted on the basis of two broad parameters – potential of open access in the state and the level of open access charges/activity in the state. The potential of open access in the state has been assessed considering HT industrial and HT commercial sales as % of the total sales in the state. These HT industrial and HT commercial sales could result in significant impact on the Discom due to migration to open access. Further open access charges and existing open access activity in the states are considered for short listing, which portray the factors, encouraging or discouraging open access in states.

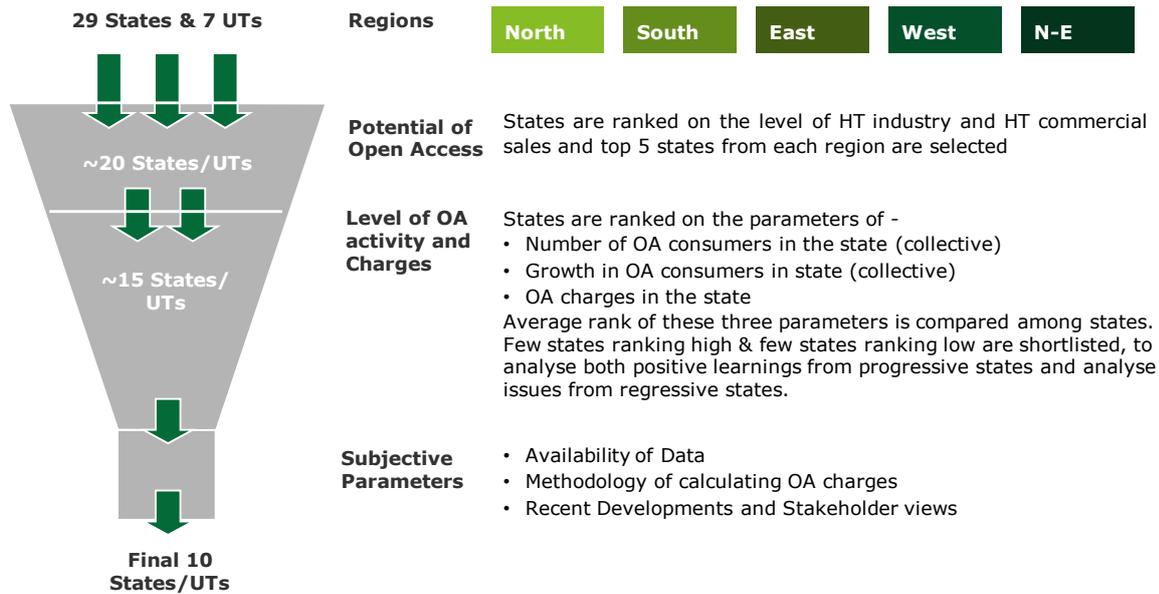
Table 3 Parameters for Shortlisting of 10 States

Parameter	Description	Data Captured
Potential of Open Access	States which have higher % of industrial and commercial sales would have more potential consumers which can shift to open access. Such States are selected for detailed analysis as the impact on Discom due to consumers moving to open access in such States would be high.	<ul style="list-style-type: none"> State wise HT industrial and HT commercial sales as a % of total sales, from Tariff Orders of SERCs
Level of OA Activity	States are ranked on the following parameters – <ul style="list-style-type: none"> Number of OA consumers on PXIL and IEX Growth in OA consumers on PXIL and IEX 	<ul style="list-style-type: none"> Number of open access consumers in the State (collective), from CERC Market Monitoring Report for FY15, FY16 and FY17
Level of OA Charges	States are ranked on the Landed cost of open access power assuming intra-state PPC of Rs. 4 per unit	<ul style="list-style-type: none"> Open access charges in the State, from Tariff Orders of SERCs

Using the parameters as listed above, the shortlisting of 10 States is undertaken at two levels. Firstly, States with higher potential of open access have been selected from each region i.e. North, South, East, West and North-East. Thereafter, selection of States have been done considering the combined effect of level of open access activity and the applicable open access charges. This would help in reviewing and analysing the diverse issues related to open access across the States which are enabling or discouraging open access in the respective States.

A summary of short-listing methodology is represented in table below:

Figure 2 Shortlisting methodology for 10 States



Further, inputs of FOR officials were sought for inclusion or exclusions of the selected States. The shortlisting of States was done to ensure representation of each region in the final 10 shortlisted States.

2.2. Selection of States

Level 1 – Potential of Open Access

The table below represents the sales of industrial and commercial categories as % of total sales for each State.

Table 4 State wise HT Industrial and HT Commercial sales as a % of total sales

Region	State	Year	Industrial Sales (MU)	Commercial Sales (MU)	Total Sales (MU)	%
North	Uttarakhand	FY19	6,063	1,320	11,888	62%
	Chandigarh	FY19	249	508	1,782	42%
	Himachal Pradesh	FY19	2,946	587	8,638	41%
	Haryana	FY18	9,030	4,388	36,449	37%
	Punjab	FY19	13,187	4,351	49,561	35%
	J&K	FY17	1,364	1,124	7,955	31%
	Rajasthan	FY19	13,046	5,273	60,682	30%
	Uttar Pradesh	FY19	12,499	4,250	1,18,163	14%
West	Dadra & Nagar Haveli	FY19	5,532	34	5,941	94%
	Daman & Diu	FY19	1,903	65	2,318	85%
	Goa	FY19	1,398	79	3,645	41%
	Chhattisgarh	FY19	7,809	953	21,675	40%
	Gujarat	FY19	24,829	-	73,561	34%
	Maharashtra	FY19	28,648	1,900	99,039	31%
	Madhya Pradesh	FY19	7,468	1,087	52,652	16%
South	Puducherry	FY19	857	73	2,606	36%
	Andhra Pradesh	FY19	14,125	1,458	54,392	29%

Region	State	Year	Industrial Sales (MU)	Commercial Sales (MU)	Total Sales (MU)	%
	Telangana	FY19	9,838	2,453	49,721	25%
	Tamil Nadu	FY19	17,331	3,231	88,780	23%
	Kerala	FY18	2,010	2,597	21,840	21%
	Andaman	FY19	19	39	279	21%
	Karnataka	FY19	7,345	3,032	50,699	20%
	Lakshadweep	FY19	0	3	68	5%
East	Odisha	FY17	5,412	0	10,855	50%
	West Bengal	FY17	5,593	1,254	25,324	27%
	Jharkhand	FY19	2,391	-	10,197	23%
	Bihar	FY19	1,784	1,889	22,100	17%
North East	Sikkim	FY19	196	43	472	51%
	Arunachal Pradesh	FY19	118	58	424	41%
	Nagaland	FY19	96	110	695	30%
	Assam	FY19	1,178	485	7,785	21%
	Meghalaya	FY19	142	29	1,016	17%
	Tripura	FY15	39	46	784	11%
	Mizoram	FY19	10	8	388	5%
	Manipur	FY19	9	6	560	3%

Source: Tariff Orders of respective SERCs

The States highlighted in green are selected for second level of shortlisting.

Level 2 – Level of open access activity and charges

In the second level of shortlisting, States were ranked in each region based on the growth in open access consumers over last three years, number of open access consumers and landed cost of power under open access to arrive at an average rank. The table below represents the region wise ranks of States on open access activity and open access charges in the State.

Table 5 State wise growth in OA consumers, number of OA consumers and OA landed cost

Region	State	Growth in OA consumer ¹	Rank	OA consumers (PXIL + IEX) ²	Rank	OA Landed Cost ³ (Rs./Kwh)	Rank	Average Rank
North	Haryana	25%	2	487	1	8.30	4	2.3
	Punjab	3%	4	485 ⁴	1	6.45	2	2.3
	Uttarakhand	8%	3	124	3	5.73	1	2.3
	Himachal Pradesh	55%	1	24	4	8.48	5	3.3
	Chandigarh	0%	5	0	5	7.11	3	4.3
West	Chhattisgarh	2%	3	80	2	6.49	1	2.0
	Gujarat	11%	2	627	1	6.98	4	2.3
	Maharashtra	21%	1	54	3	7.88	5	3.0
	Dadra & Nagar ⁵	0%	5	22	4	6.49	1	3.3

¹ From FY2014-15 to FY2016-17, as per CERC Market Monitoring Reports

² FY2016-17, as per CERC Market Monitoring Reports

³ For industrial consumers, assuming Rs. 4.00/ unit as power purchase cost and converting monthly OA charges to per unit, with unity load factor

⁴ Same rank is given to Haryana and Punjab, due to similar number of OA consumers

⁵ Maharashtra is taken instead of Dadra & Nagar Haveli as Maharashtra has significantly higher OA activity

Region	State	Growth in OA consumer ¹	Rank	OA consumers (PXIL + IEX) ²	Rank	OA Landed Cost ³ (Rs./Kwh)	Rank	Average Rank
	Goa	0%	5	0	5	6.85	3	4.3
South	Andhra Pradesh	3%	2	728	2	5.99	1	1.7
	Tamil Nadu	2%	3	1,001	1	6.58	3	2.3
	Kerala ⁶	26%	1	24	4	6.39	2	2.3
	Telangana	-19%	5	27	3	7.25	4	4.0
	Puducherry	0%	4	0	5	7.67	5	4.7
East	Odisha	41%	1	58	1	6.10	1	1.0
	Jharkhand	0%	2	0	2	6.50	2	2.0
	Bihar	0%	2	0	2	8.17	3	2.3
	West Bengal	-100%	3	0	2	9.50	4	3.0
North East	Assam	0%	2	14	1	6.93	4	2.7
	Nagaland	0%	2	0	4	4.00	1	2.3
	Arunachal	-100%	4	0	4	4.19	2	3.3
	Meghalaya	-100%	4	0	4	6.61	3	3.7
	Sikkim	-100%	4	0	4	8.53	5	4.3

Source: CERC Market Monitoring Reports and tariff orders of respective SERCs

Based on the ranking of the States, the selection of a high ranking State and a low ranking State was conducted for each region. Inputs from FOR staff was also considered while undertaking the final selection of the ten States.

Final Shortlist

Based on data availability with SLDCs/SERCs and unique characteristics of certain States in regards to open access, the following 10 States are shortlisted for detailed review in this assignment.

Table 6 List of final shortlisted States

Region	State	Reason for Shortlisting
North	Haryana	<ul style="list-style-type: none"> Higher number of open access consumers and their growth
	Punjab	<ul style="list-style-type: none"> Lower open access charges Higher number of open access consumers
West	Chhattisgarh	<ul style="list-style-type: none"> Lower open access charges
	Gujarat	<ul style="list-style-type: none"> Higher number of open access consumers even with higher open access charges
	Maharashtra	<ul style="list-style-type: none"> Higher growth in open access consumers even with high open access charges
South	Andhra Pradesh	<ul style="list-style-type: none"> Lower open access charges Higher number of open access consumers
	Tamil Nadu	<ul style="list-style-type: none"> Higher number of open Access consumers
East	Jharkhand	<ul style="list-style-type: none"> State has Nil open access consumers, however SERC has recently determined open access charges for the first time and its impact on open access is to be seen
	West Bengal	<ul style="list-style-type: none"> Higher open access charges, but has a significant share of industrial and commercial sales in total sales

⁶ Between Kerala and Tamil Nadu, Tamil Nadu is selected as it has significantly higher open access activity

Region	State	Reason for Shortlisting
North East	Assam	<ul style="list-style-type: none">• In terms of volume of sales, Assam is the biggest State in the region and therefore impact on Discom would be more. Also, open access activity was absent in other north eastern states

In the above mentioned ten States, the State owned power utilities have been analysed for a comprehensive review and analysis as detailed in subsequent chapters.

3. Data Collection

In order to perform a detailed analysis of the status of open access for the shortlisted States, an extensive data collection activity was undertaken as part of this study through secondary sources, primary sources and interviews with various stakeholders.

As part of the secondary research the following documents were collected from the websites of the respective State Electricity Regulatory Commission:

- i. Open Access Regulations and other related regulations
- ii. State policies relating to renewable power and other open access consumers
- iii. Procedural aspects for availing open access
- iv. Tariff Orders of Transmission , Distribution , SLDC
- v. Any other Orders relating to open access charges issued by the Commission
- vi. Order on cases relating to open access filed with the State Regulatory Commissions

The above sources of data were used for analysing the various aspects of open access in each of the shortlisted States. The tariff Orders issued by SERCs in the last three years were analysed to capture various data points including sales to various categories of consumers, applicable tariff, open access charges levied, etc.

Apart from the State specific information, data of open access volume, number of consumers, etc. were captured from CERC Market Monitoring reports which are issued periodically for reviewing open access activity in respective States.

The extensive data captured through secondary research, was used to undertake a detailed review of regulatory landscape of open access, review of applicable tariffs and review of open access charges in each of the shortlisted States. Further the data was also useful for estimating the impact of open access migration on Discoms.

Along with secondary research, primary data was collected from various State utilities, through the assistance of respective SERCs. Data regarding existing level of open access activity, past trends and type of open access activity in the respective areas of State owned utilities of shortlisted States was collected along with details of open access applications and the load details of HT consumers, to perform a detailed open access activity review and commercial review. Data formats were prepared and shared with utilities to ensure comprehensiveness and uniformity in data collected. For States where primary data could not be collected for open access sales and HT consumers, suitable appropriations have been made based on secondary data collected through SERC tariffs orders and petitions for the purpose of analysis.

Further, interviews/ discussions were held with stakeholders including large open access consumers, power generators, power traders and power utilities across shortlisted States to understand their views on the qualitative aspects of open access issues and implementation constraints. Also CERC/ SERC and APTEL cases related to open access were reviewed to identify key issues impacting the open access in shortlisted States.

The table below provides the details of data collected from various sources, for the shortlisted States in this study.

Table 7 Summary for type of data collected from various sources, for the shortlisted States

Sl.	Data Source	Data Collected	States
From Secondary Sources			
1.	Regulations (repealed, existing and amendments) on <ul style="list-style-type: none"> • Open Access • Renewable Energy • DSM 	Provisions regarding - <ul style="list-style-type: none"> • Open access eligibility • Application process • Constraints • Applicable charges • RPO 	All States

Sl.	Data Source	Data Collected	States
2.	Renewable Energy Policies	Provisions regarding - <ul style="list-style-type: none"> • Concessions available to RE power 	All States
3.	SERC Tariff Orders and petitions, from FY17 to FY19	<ul style="list-style-type: none"> • Retail Tariffs • OA charges • HT Sales and Revenue • Discom ARR and ACoS • Power Purchase Cost Merit Order 	All States
		<ul style="list-style-type: none"> • Category wise number of consumers • Category wise load of consumers 	CG, JH, MH
4.	CERC Market Monitoring Reports (monthly and Annual, for FY16 to FY18)	<ul style="list-style-type: none"> • OA volume through power exchanges • OA consumers on power exchanges 	All States
5.	Guidelines for availing open access, by utilities	<ul style="list-style-type: none"> • Application process for OA 	All States
From Primary Sources			
6.	Details of open access consumers	<ul style="list-style-type: none"> • OA sales • OA consumers • OA load • Type of OA <ul style="list-style-type: none"> - Captive/ Non-Captive - LTOA, MTOA or STOA - RE/ conventional 	AP, AS, MH, GJ, PB, HR (UHBVN)
7.	Details of open access applications	<ul style="list-style-type: none"> • Number of applications received • Type of OA <ul style="list-style-type: none"> - Captive/ Non-Captive - LTOA, MTOA or STOA - RE/ conventional • Status of application, along with reasons of rejection 	PB, AS, CG, GJ
8.	Details of HT consumers	<ul style="list-style-type: none"> • Load profile of HT Industrial and HT Commercial consumers in the state, including their sales, numbers and load 	AP, AS, MH, GJ, PB, HR (UHBVN), JH
Others			
9.	Interviews with various stakeholders	<ul style="list-style-type: none"> • Issues and constraints in open access 	All states
10.	Review of CERC/ SERC/ APTEL cases regarding open access	<ul style="list-style-type: none"> • Issues and constraints in open access 	All states

Using the data collected through this exercise, a detailed analysis of shortlisted States is performed in the subsequent sections of this report.

4. Detailed analysis of Shortlisted States

In this section a detailed comparison of the open access landscape in the ten shortlisted States has been carried out on the basis of the secondary and primary data collected from various sources. A detailed review of open access regulations, open access activity, applicable tariff and open access charges, etc. has been conducted separately for each State. Based on the review of each State, a comparison and analysis of the variables have been done for the ten States to identify the differential framework/ guidelines for open access, enabling factors and best practises for open access. Measures for effective implementation of open access across the country are suggested based on this detailed review of open access.

In line with the requirements of the assignment, the detailed review has been divided in the following five areas of assessment –

Table 8 Summary of areas of review performed on shortlisted States

Areas of review	Parameters Reviewed	Purpose of Review
 Regulatory Review	<ul style="list-style-type: none"> • Evolution of regulations • Open access eligibility • Application process • Open access charges • Status of implementation of FOR recommendations • Other regulatory provisions • Analysis of APTEL/ SERC cases 	This review presents a detailed analysis of various regulatory provisions, enabling or prohibiting adoption of open access in various states
 Open Access Activity Review	<ul style="list-style-type: none"> • Open access consumers • Open access sales • Type of open access consumer • Open access applications 	This review presents the existing level of open access activity across the states, along with their past trends
 Commercial Review	<ul style="list-style-type: none"> • HT sales as % of overall sales • Load profile of HT consumers 	This review analyses the presence of HT consumers in shortlisted states, which can potentially migrate to open access
 Tariff and Open Access Charges Review	<ul style="list-style-type: none"> • Review of retail tariffs • Open access charges • Impact on consumers (Break Even Power Purchase Cost) 	This review analyses the level of tariffs and open access charges in the states, along with their impact on consumers in terms of viability of migrating to open access
 Impact on Discoms due to Open Access Migration	<ul style="list-style-type: none"> • Per unit impact and Aggregate impact on Discom • Scenario and Sensitivity analysis 	This review performs a detailed assessment of impact on Discoms, due to open access migration of consumers, along with various scenarios and sensitivity analysis

As part of the first four areas of review as described in the table above, detailed review is conducted for existing open access framework/ regulations, open access activity in the ten States, applicable open access charges, etc. In the fifth area of review, a detailed computation has been undertaken by considering various scenarios and sensitivity options to assess the extent of impact on the Discom due to migration of HT consumers to open access in the selected States.

4.1. Regulatory Review

One of the key objectives of the Electricity Act 2003 was to reform the power sector by way of private sector participation and bring about competition. This was envisaged by introduction of open access in transmission and distribution. Section 2(47) of the Electricity Act defines open access as follows -

"non-discriminatory provision for the use of transmission lines or distribution system or associated facilities with such lines or system by any licensee or consumer or a person engaged in generation in accordance with the regulations specified by the Appropriate Commission."

While open access in transmission was made mandatory in the Act, option was provided to the SERCs for permitting open access in distribution in phases considering factors such as cross subsidies, other operational constraints, etc.

'42. (2) The State Commission shall introduce open access in such phases and subject to such conditions, (including the cross subsidies, and other operational constraints) as may be specified within one year of the appointed date by it and in specifying the extent of open access in successive phases and in determining the charges for wheeling, it shall have due regard to all relevant factors including such cross subsidies, and other operational constraints.'

'86. Provided that where open access has been permitted to a category of consumers under section 42, the State Commission shall determine only the wheeling charges and surcharge thereon, if any, for the said category of consumers'

Subsequently amendments to the Act was passed which prescribed a timeframe of 5 years for introducing distribution open access. Tariff Policy 2006 also provided guidance on judicious determination of open access charges in order to promote competition:

"8.5.1.

A consumer who is permitted open access will have to make payment to the generator, the transmission licensee whose transmission systems are used, distribution utility for the wheeling charges and, in addition, the cross subsidy surcharge. The computation of cross subsidy surcharge, therefore, needs to be done in a manner that while it compensates the distribution licensee, it does not constrain introduction of competition through open access. A consumer would avail of open access only if the payment of all the charges leads to a benefit to him. While the interest of distribution licensee needs to be protected it would be essential that this provision of the Act, which requires the open access to be introduced in a time-bound manner, is used to bring about competition in the larger interest of consumers."

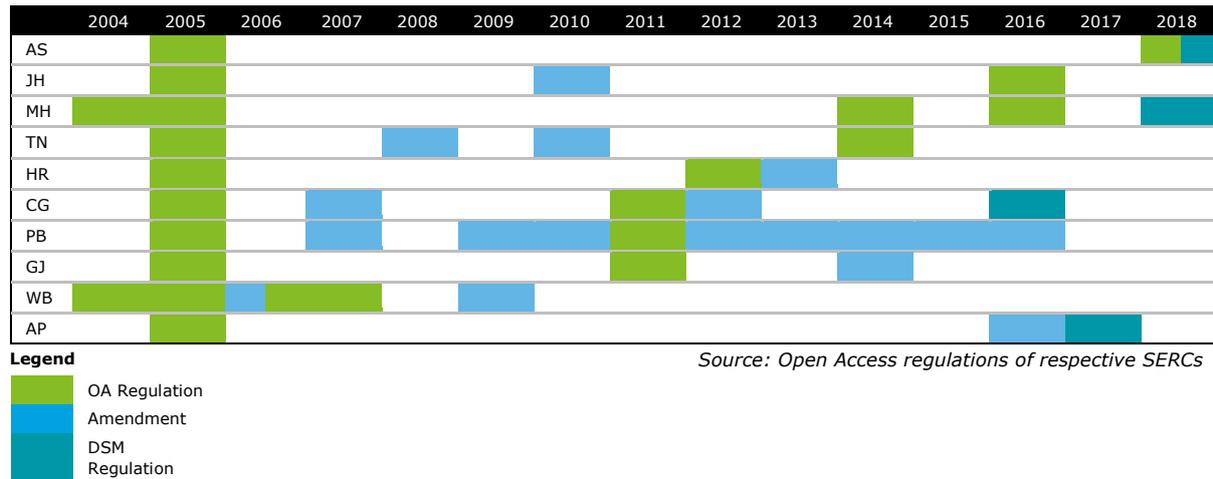
To this effect various SERCs have issued open access regulations in their respective states, and have amended these regulations from time to time based on specific operational and commercial issues being faced. Further, the SERCs have also been determining open access charges through their periodic tariff orders, in accordance with the Electricity Act and the guidelines given by Tariff Policy.

In the following sub-sections, a detailed review is performed of the open access regulations issued by SERCs for the shortlisted States, and other relevant regulations and policies.

4.1.1 Evolution of open access regulations

As per the Provisions of the Electricity Act, all SERCs came out with the Open Access Regulations early in 2004/05 period, with subsequent amendments from time to time. These regulations were broadly based on the open access regulations issued by CERC in 2004, along with suitable modifications for State specific aspects. With a view to harmonize the open access regulations applicable at intra-state level, the Forum of Regulators (FoR) developed Model Regulations for open access to the intra-state transmission and distribution system in 2010. These model regulations formed the basis on which several states amended their existing open access regulations for intra-state systems. The table below showcases the timeline of open access regulations and their amendments issued by various states.

Figure 3 Evolution of open access regulations across States



While most regulations across States follow a similar structure, differences can be observed in specific conditions related to open access eligibility, application process or methodology for determination of open access charges. Such peculiarities have been discussed in detail in further sub-sections of this report.

Further review of various amendments issued to open access regulations indicate that majority of the key amendments deal with aspects of applicability of open access charges, settlement of energy and open access eligibility of consumers. Punjab particularly has issued several amendments on frequent intervals to their open access regulations. In 2012, their regulations were amended to apply distribution wheeling charges on all consumers above 11 kV voltage, even those who were directly connected to transmission network. This led to a significant increase in the overall open access cost for consumers and was opposed by several consumer groups and associations. The matter is sub judice in the Hon'ble Supreme Court. In 2014, Punjab amended open access regulations to state that cross subsidy surcharge shall not be applicable on open access power to the extent of regulatory measures imposed due to shortage of power.

In regards to open access eligibility, Chhattisgarh amended its regulations in 2012, to allow only bulk consumers connected on dedicated feeders to get open access. While all states have a limit of 1 MW prescribed for consumers availing open access, Haryana SERC has amended the regulations in 2013 to lower minimum load requirement for getting open access from 1 MW to 0.5 MW.

4.1.2 Open access eligibility

While Electricity Act 2003 provides for allowing open access to all consumers who require a supply of electricity more than 1 MW, it also allows the SERCs to define the conditions for allowing such open access, based on State specific factors including cross subsidies, operational constraints, etc. Accordingly, SERCs have provided eligibility conditions for availing open access by the consumers. Some of the common aspects for availing open access have been reviewed across the shortlisted states to understand the difference in requirements. Aspects covered as part of eligibility review are:

- a) Minimum load requirements
- b) Feeder/ Voltage Level and other conditions
- c) Period of Open Access

Minimum Load Requirements

The open access regulations of respective States define the minimum load required by a consumers to become eligible for shifting to open access. In line with the provisions of Electricity Act 2003, most of the States have a minimum load requirement of 1 MW for availing open access, except for the State of Haryana where regulations allow consumers above 0.5 MW load to avail open access, who

are also consumers of Discom. Also, it allows multiple consumers (with load below the threshold specified in the regulations) to aggregate their load for the purpose of availing open access. Also the States of Gujarat and Jharkhand allow all captive consumers to avail open access, even with a load of less than 1 MW.

Table 9 State wise minimum load requirements to avail open access

	Minimum Load requirement for availing open access	Remarks
CG	1 MW	
AS	1 MW	-
PB	1 MW	-
JH	1 MW	Allowed for less than 1 MW for captive consumers
TN⁷	1 MW	-
AP	1 MW	-
WB	1 MW	-
GJ	1 MW	Allowed for less than 1 MW for captive consumers
HR	0.5 MW	Allowed for ≥ 0.5 MW, for discom consumers; Group of consumers meeting minimum load can take OA
MH	1 MW	-

Source: Open Access regulations of respective SERCs

Feeder/ Voltage Level and other conditions

The regulations provide for open access eligibility with respect to the type and voltage of the feeder to which the consumer availing open access is connected. While few States (like Chhattisgarh and Assam) allow open access only on dedicated feeders, other states like Punjab, Jharkhand and Haryana allow open access to consumers connected on mixed feeders subject to consumers agreeing to Discom’s load shedding schedule. Punjab does not allow open access connection through urban and agricultural feeders. In Tamil Nadu, consumers without independent feeder can be allowed open access subject to restrictions in feeders serving them in line with Commission Orders.

Also, few States place conditions on the voltage level at which the consumer can avail open access like Chhattisgarh where intra-state user is defined as consumer connected at 33kV voltage level.

Punjab does not allow open access in case the consumer has not complied with RPO obligation in the previous periods. In other states, only penalty provisions exist for non-compliance of RPO obligations and does not prohibit consumer from getting open access. The table below presents a summary of State-wise restrictions on open access eligibility.

Table 10 State wise feeder/ voltage level restrictions on open access

State	Feeder conditions	Voltage Level conditions	Other conditions
CG	• Only on dedicated feeder	• Allowed above 33 kV	-
AS	• Only on dedicated feeder	• Wheeling charges determined only for 33 kV	-
PB	• Not allowed on urban pattern supply feeders, AP feeders & category 1 - mixed load feeders • Category 2 mixed load feeders subject to load shedding	• Allowed above 11 kV	• If RPO compliance not met in previous period, OA permission may be withheld in next period
JH	• Subject to load shedding on mixed feeders or on feeders at 33 kV or below		• Consumer taking bulk supply from Discom and supplying to

⁷ While the open access regulations allow open access for all HT consumers, based on the discussions with various stakeholders, it was found that open access approvals (except for wind power) were being granted for more than 1 MW only due to a sub-judice matter in High Court.

State	Feeder conditions	Voltage Level conditions	Other conditions
			multiple users, cannot take OA
TN	• Consumers without independent feeder can be allowed open access subject to restrictions in feeders serving them in line with Commission Orders	-	-
AP	-	-	-
WB	-	-	-
GJ	-	-	-
HR	• Subject to load shedding on mixed feeder	• Allowed above 11 kV	-
MH	-	-	-

Source: Open Access regulations of respective SERCs

Period of open access

The open access regulations of respective States classify open access in different categories based on the period for which they are availing open access. Based on the classification of term of open access, the applicable charges and process of availing open access for a consumer is processed.

Most States have 3 types of open access defined based on the time period, with exceptions in case of Andhra Pradesh and West Bengal, where only Short Term and Long Term Open access types are defined. The table below showcases the classification of open access consumers in various States based on the time period for which open access is taken.

Table 11 State wise consumer classification basis period of open access

	LTOA	MTOA	STOA
CG	12-25yr	1yr – 7yr	<= 1m
AS	> 7 yr	3m – 5yr	<= 1m
PB	12-25yr	3m – 3yr	<= 1m
JH	12-25yr	3m – 3yr	<= 1m
TN	12-25yr	3m – 3yr	<= 1m
AP		>= 2 yr	<= 1yr
WB		>=15 yr	<= 4m
GJ	12-25yr	3m – 3yr	<= 1m
HR	12-25yr	3m – 3yr	<= 1m
MH	12-25yr	3m – 3yr	<= 1m

Source: Open Access regulations of respective SERCs

4.1.3 Open access application process

A review of the application process for availing open access in the shortlisted States has been undertaken based on the following aspects:

- Nodal Agency
- Documents required to be submitted for Open Access applications
- Time period for processing of application
- Cost of Open Access application

Nodal Agency

Consumers are required to submit their application for grant of open access to the appropriate Nodal Agency and the Nodal Agency is responsible for coordinating with the respective State and Inter-State utilities and/ or load dispatch centres involved for approval of open access application. The open access regulations of respective States, define the Nodal Agency, for availing different types of open access.

The table below highlights the designated nodal agency in various States which are required to be approached for applying for Intra-State open access, based on term of open access.

Table 12 State wise Nodal Agency for open access application

	LTOA	MTOA	STOA
CG⁸	STU / Discom	STU / Discom	SLDC/ Discom
AS	STU	STU	SLDC
PB	STU	STU	SLDC
JH	STU	SLDC	SLDC
TN⁹	STU/ SLDC	STU/ SLDC	SLDC
AP	STU		SLDC
WB	STU		SLDC
GJ¹⁰	STU/ SLDC	STU/ SLDC	SLDC
HR	STU	STU	STU
MH	Discom	Discom	Discom

Source: Open Access regulations of respective SERCs

In most of the States, State Transmission Utilities (STUs) are the nodal agency for providing long term and medium term open access to consumers while SLDC is designated nodal agency for short-term open access only. Further, States like Maharashtra and Chhattisgarh have State Discom as the nodal agency for grant of open access. In such cases, anticipated negative impact on the Discoms due to migration of consumers to open access, could influence nodal agencies and cause delays/ bottlenecks in the open access application process.

Even in cases where SLDC is the nodal agency for grant of open access, the SLDCs themselves are not independent and are working as an extended department within STU. Most of the SLDCs are housed within the STU, which may impact their independence for transparent evaluation of the open access applications. Operational and financial autonomy of SLDCs is one of key factors for ensuring non-discriminatory open access in the State. As per the 'Pradhan Committee' report, the functional autonomy for SLDCs can be ensured through following aspects -

- Independent governance structure
- Separate accounting
- Adequate number of skilled manpower
- Adequate logistics/infrastructure

It can be observed that none of the SLDCs in the shortlisted States, satisfy all of the above mentioned criteria to ensure their complete independence from State controlled power utilities. Most of the SLDCs do not have separate accounts from STUs or independent administration.

The table below provides remarks on the independence of SLDCs for shortlisted States -

⁸ based on the injection and drawl point of power

⁹ based on the injection and drawl point of power

¹⁰ based on the injection and drawl point of power

Table 13 State wise remarks on SLDC independence

State	Remarks on why SLDC are not independent in nature
CG	• Separate accounts are not being prepared as per True-up order of SLDC for FY17
AS	• No separate tariff order for SLDC; SLDC operated by AEGCL
PB	• SLDC operates as an administrative function of PSTCL
JH	• SLDC operates under working under administrative control of JUSNL
TN	• While separate tariff order is issued, separation of accounts still in progress, as per Tariff Order for SLDC for FY2017-18
AP	• SLDC operates as an administrative function of APTRANSCO
WB	• Functions and management of SLDC is managed by WBSETCL
GJ	• While independent accounts are maintained by SLDC, it still operates under administrative and managerial control of GETCO
HR	• SLDC operates as an administrative function of HVPNL
MH	• SLDC operates as an administrative function of Mahatransco

Documents required for open access application

The open access regulations of respective States and detailed guidelines issued by the nodal agencies/ state power utilities for processing of open access applications provide the list of documents that are required to be submitted by consumers for availing open access. High number of pre-requisite document to be submitted along with open access application or difficulties in getting specific document can cause delays in the open access application process and could lead to an operational barrier for availing open access.

It can be observed from the analysis of various regulatory provisions and from the interviews of various stakeholders, that obtaining No Objection Certificate (NOC) from State power utilities is the single largest impediment in getting open access applications approved from Nodal Agencies. In States like Chhattisgarh, Gujarat, Tamil Nadu and Jharkhand, NOC is required to be submitted along with open access application itself, which may lead to significant delays and complications for open access consumers even before they can submit an open access application.

Punjab SLDC has started online process for approval of NOC, on trial basis for open access consumers on IEX. Andhra Pradesh also has created online application process for STOA consumers, wherein the NOC is also granted online by concerned licensee. Maharashtra Discom has online open access application facility available on its website. Tamil Nadu SLDC provides online facility for open access application for captive consumers and Haryana STU provided online registration for STOA. Such initiatives can improve the transparency of open access application process and simplify the process for getting open access.

In Haryana and Punjab, while NOC is not required to be submit along with the open access application, applicants who are not consumer of Discom, are required to submit a feasibility clearance from STU/ Discom. Similarly in Maharashtra a Techno Commercial Report is required, issued by the concerned O&M Circle Office of Discom. Also in Haryana, clearance from HAREDA is required to be submitted along with open access application, in case of Power producers/ CPPs/Generators using non-conventional fuel.

A list of key documents requirement for availing open access in each of the shortlisted states is summarized in table below:

Table 14 State wise documents required along with OA application

	NOC ¹¹	PPA	Declaration/ Undertaking	Proof of Grid Connectivity	Others documents
CG	✓	✓	✓	✓	<ul style="list-style-type: none"> Registration certificate of SLDC, CSPTCL No Dues Certificate
AS			✓		<ul style="list-style-type: none"> Certificate from STU/ Discom that special energy meters are installed
PB		✓	✓	✓	<ul style="list-style-type: none"> Copy of Continuous process industry letter Board Resolution/ Authorization letter Other self-attested documents and undertakings (listed in annexure)
JH	✓		✓		-
TN	✓	✓		✓	-
AP		✓(LTOA)	✓		<ul style="list-style-type: none"> UI undertaking (STOA) RPO undertaking (STOA) If Captive usage, a Chartered Accountant Certificate required, exhibiting capital structure and compliance with regard to requirements under Electricity Act 2003
WB					-
GJ	✓	✓	✓	✓	-
HR			✓		<ul style="list-style-type: none"> Copy of Peak Load Exemption and/ or Continuous process industry letter Feasibility clearance from Transco/ Discom for customer who is not consumer of Discom Other self-attested documents and undertakings (listed in annexure)
MH	Only if injection point is outside MH	✓	✓	✓	<ul style="list-style-type: none"> Copy of MoU Consent from Seller/ Buyer Techno Commercial Report issued by the concerned O&M, Circle Office SEM Commissioning Certificate No Dues Certificate from Discom Documents related to RPO compliance

Source: Open Access regulations of respective SERCs; Procedures for OA by STU/ SLDC

Further the conditions for granting of NOC, such as availability of surplus capacity in the network, are subjective in nature and unverifiable by consumers. It has been pointed out that utilities misuse such subjective conditions for denying NOC to consumers. During stakeholder interviews also, network congestion was cited as a common reason for delay/ denial of NOC to consumers. Non-

¹¹ Required along with application to nodal agency

Compliance with RPO obligations was also cited as a reason for denial of NOC, during stakeholder interviews.

Table 15 State wise conditions for granting NOC

Conditions for granting NOC	
CG	<ul style="list-style-type: none"> Existence of necessary infra Availability of surplus capacity
AS	<ul style="list-style-type: none"> Existence of necessary infra Availability of surplus capacity Availability of RTU
PB	<ul style="list-style-type: none"> Existence of necessary infra Availability of surplus capacity
JH	<ul style="list-style-type: none"> Existence of necessary infra Availability of surplus capacity Availability of RTU
TN	Conditions provided only for grant of connectivity applications by generators
AP	No specific conditions provided
WB	No specific conditions provided
GJ	Conditions provided only for grant of connectivity applications by generators
HR	<ul style="list-style-type: none"> Existence of necessary infra Availability of surplus capacity
MH	<ul style="list-style-type: none"> Existence of necessary infra Availability of surplus capacity

Source: Open Access regulations of respective SERCs

In few States like Chhattisgarh, Assam and Gujarat, data on transmission network constraints is displayed on weekly/ monthly basis by the SLDC, thereby bringing transparency to certain extent relating to network congestion issues.

Table 16 Information on SLDC website regarding network availability

Information on network availability	
CG	<ul style="list-style-type: none"> Details of Transmission Constraints given in weekly SLDC reports
GJ	<ul style="list-style-type: none"> Report on available open access capacity issued by SLDC
AS	<ul style="list-style-type: none"> Monthly reports on Transmission System Availability, by SLDC
MH	<ul style="list-style-type: none"> Feeder outage information, by MSEDCL

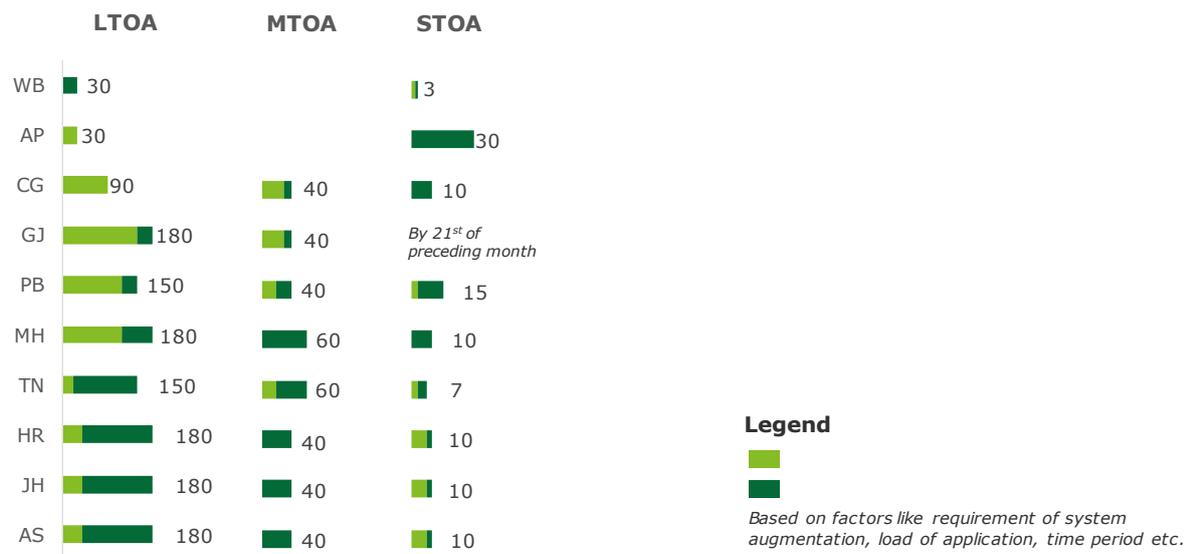
Source: Websites of respective SLDCs/ Discom

Time period for processing of open access applications

The open access regulations of respective States, define the maximum time limit within which nodal agencies are required to process and dispose-off open access applications. The time limit allowed for processing of applications depends upon factors such as the type of application (long-term, medium-term or short-term), requirement of system augmentation, load of application etc. Each State has a different set of time periods and factors on which such time period depends.

The figure below showcases the minimum and maximum time limits allowed as per regulations for processing of open access applications, across various States. Significant variation can be observed across States in the time period allowed for processing of open access applications.

Figure 4 State wise time period for processing of OA application



in days, as per regulation

Source: Open Access regulations of respective SERCs

In some States, the process of open access approval is accelerated through the provisions of deemed approval at the end of certain time limit. In Andhra Pradesh, deemed approval is given to long term open access applications at the end of 30 days. States like Chhattisgarh have kept time limits to respond to applications or conveying deficiencies if any, however there are no provisions for deemed approval in case of delay in grant of open access approval. The table below showcases the applicable deemed approval timelines in various States.

Table 17 State wise deemed approval timelines of OA applications

Deemed Approval Timelines of open access application	
WB	-
AP	• 30 days for LTOA approval
CG	• 10/ 30 days for NOC (for STOA/ LTOA) • 2/ 7 days for deficiency in OA application (for STOA/ LTOA)
GJ	• 3 days for NOC
PB	• 3 days for NOC
MH	-
TN	• 3 days for NOC
HR	• 5 days for NOC
JH	• 3 days for NOC
AS	• 3 days for NOC

Source: Open Access regulations of respective SERCs

Cost of open access application

The open access regulations of respective States require consumers to pay an application fees to nodal agency along with their open access applications. Different states have their own charge structure for open access application charges. In States like Andhra Pradesh, Assam, Haryana and Jharkhand, the open access application charge is defined based on period of open access (long-term, medium-term or short-term) on per application basis. In the States of Punjab, Tamil Nadu and Gujarat, apart from period of open access (LTOA /MTOA/ STOA), the open access application charges are also based on whether open access has been sought at distribution or transmission system. In Tamil Nadu and Gujarat, open access application charges are also dependent upon the load for which

open access is applied, while in Maharashtra the open access charges are only based on the open access load. In Chhattisgarh, open access charges are based on the number of utilities involved in proposed open access.

The table below the charge structure of open access application as per regulations, across various shortlisted states.

Table 18 State wise open access application charge structure

State	Open access application charges based on -				
	Time Period (LTOA/ MTOA/ STOA)	Load of application (basis MW)	Point of Connection (Dist./ or Trans.)	No. of utilities involved	Source of Power
WB	✓				✓
AP	✓				
CG	✓			✓	
GJ		✓	✓	✓	
PB	✓		✓		
MH		✓			
TN	✓	✓	✓		
HR	✓				
JH	✓				
AS	✓				

Source: Open Access regulations of respective SERCs

While the variables for levy of open access application fee varies significantly across States, the cost of application on per unit basis is insignificant. The cost of open access application in case of STOA is fixed in many states and is determined irrespective of the load application of the consumer. Therefore, such fixed cost for STOA may have a marginal effect on the overall viability for STOA consumers with low load requirements. The table below converts the per application cost into per unit cost, in different States, using following assumptions.

Assumptions -

	MW	Year	Load Factor
STOA	1	0.08	60%
MTOA	5	3.00	60%
LTOA	5	25.00	60%

Table 19 State wise per unit cost of OA application

Rs./Unit	LTOA	MTOA	STOA
AP		0.00	0.00
MH	0.00	0.00	0.02
WB		0.00	0.02
GJ	0.00	0.00	0.01
TN	0.00	0.00	0.01
AS	0.00	0.00	0.01
PB	0.00	0.00	0.01
HR	0.00	0.00	0.01
JH	0.00	0.00	0.01
CG	0.00	0.00	0.01

Source: Open Access regulations of respective SERCs and as per analysis performed in this report

4.1.4 Open access charges

Open access charges are applicable on consumers availing open access, for the use of transmission and distribution networks to wheel energy and regulatory surcharges as per open access regulations to cover any loss of cross subsidies or stranded costs of Discoms. Provisions of the Electricity Act 2003 authorize SERCs to approve such open access charges in line with section 42 of the Act:

“(2) The State Commission shall introduce open access in such phases and subject to such conditions, (including the cross subsidies, and other operational constraints) as may be specified within one year of the appointed date by it and in specifying the extent of open access in successive phases and in determining the charges for wheeling, it shall have due regard to all relevant factors including such cross subsidies, and other operational constraints:

Provided that such open access shall be allowed on payment of a surcharge in addition to the charges for wheeling as may be determined by the State Commission:

Provided further that such surcharge shall be utilised to meet the requirements of current level of cross subsidy within the area of supply of the distribution licensee :

Provided also that such surcharge and cross subsidies shall be progressively reduced in the manner as may be specified by the State Commission:

Provided also that such surcharge shall not be leviable in case open access is provided to a person who has established a captive generating plant for carrying the electricity to the destination of his own use:

Provided also that the State Commission shall, not later than five years from the date of commencement of the Electricity (Amendment) Act, 2003, by regulations, provide such open access to all consumers who require a supply of electricity where the maximum power to be made available at any time exceeds one megawatt.”

Open access regulations of the States cover the open access charges applicable on open access consumers. While the open access charges and their applicability differ from State to State, the major open access charges applicable on consumers are as follows -

- 1) Cross Subsidy Surcharge (CSS)
- 2) Distribution Wheeling Charges
- 3) Transmission Charges
- 4) Additional Surcharge
- 5) SLDC charges
- 6) Standby charges

Apart from these charges various open access regulations of different States have defined charges such as imbalance charges and reactive energy charges. State wise analysis of these charges is provided in the annexures. The sub-sections below provide a comparative analysis for the shortlisted States, of the regulatory provisions governing the key open access charges of Cross Subsidy Surcharge, Wheeling Charges, Additional Surcharge, SLDC Charges and Standby Charges.

Each of these open access charges have been assessed on the following aspects –

- Methodology for determination of open access charge
- Structure of the open access charge
- Level of the open access charge

Cross Subsidy Surcharge

Cross-subsidies have historically formed an integral part of the consumer tariffs in Indian power sector. Lower tariff recovery from domestic and agricultural categories was compensated by way of higher tariff from industrial and commercial consumers. In order to eliminate the cross subsidy and bring about competition in the sector, Electricity Act 2003 provided for recovery of cost of electricity in a reasonable manner. Also, considering the existing level of cross subsidies in the consumer tariff,

allowed State Regulatory Commissions to recover surcharge in order to compensate the Discoms for loss of cross subsidies due to migration of consumers to open access. At the same time, the Act also envisaged reduction of such surcharge and cross subsidies over a period of time for effective implementation of open access in the sector.

"42.

Provided further that such surcharge shall be utilised to meet the requirements of current level of cross subsidy within the area of supply of the distribution licensee :

Provided also that such surcharge and cross subsidies shall be progressively reduced in the manner as may be specified by the State Commission:

Provided also that such surcharge shall not be leviable in case open access is provided to a person who has established a captive generating plant for carrying the electricity to the destination of his own use"

Initially a formula for computation of CSS was provided in the Tariff Policy 2006, which was adopted by majority of the SERCs in their Open Access Regulations:

"Surcharge formula:

$$S = T - [C (1+ L / 100) + D]$$

Where

S is the surcharge

T is the Tariff payable by the relevant category of consumers;

C is the Weighted average cost of power purchase of top 5% at the margin excluding liquid fuel based generation and renewable power

D is the Wheeling charge

L is the system Losses for the applicable voltage level, expressed as a percentage"

However, in view of the shortages in the power availability and high prices of avoidable cost of power purchase, the CSS arrived in various states was not representative of the actual cross subsidy element. Therefore, the CSS formula was revised in the Tariff Policy 2016 which is represented below:

$$"S= T - [C/ (1-L/100) + D+ R]$$

Where

S is the surcharge

T is the tariff payable by the relevant category of consumers, including reflecting the Renewable Purchase Obligation

C is the per unit weighted average cost of power purchase by the Licensee, including meeting the Renewable Purchase Obligation

D is the aggregate of transmission, distribution and wheeling charge applicable to the relevant voltage level

L is the aggregate of transmission, distribution and commercial losses, expressed as a percentage applicable to the relevant voltage level

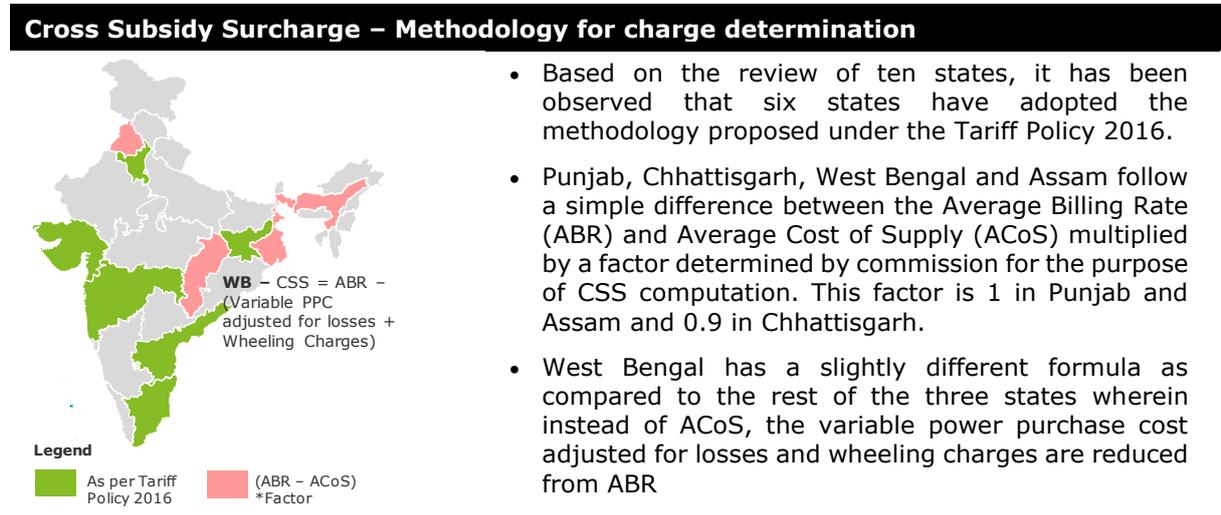
R is the per unit cost of carrying regulatory assets.

.....

Provided that the surcharge shall not exceed 20% of the tariff applicable to the category of the consumers seeking open access."

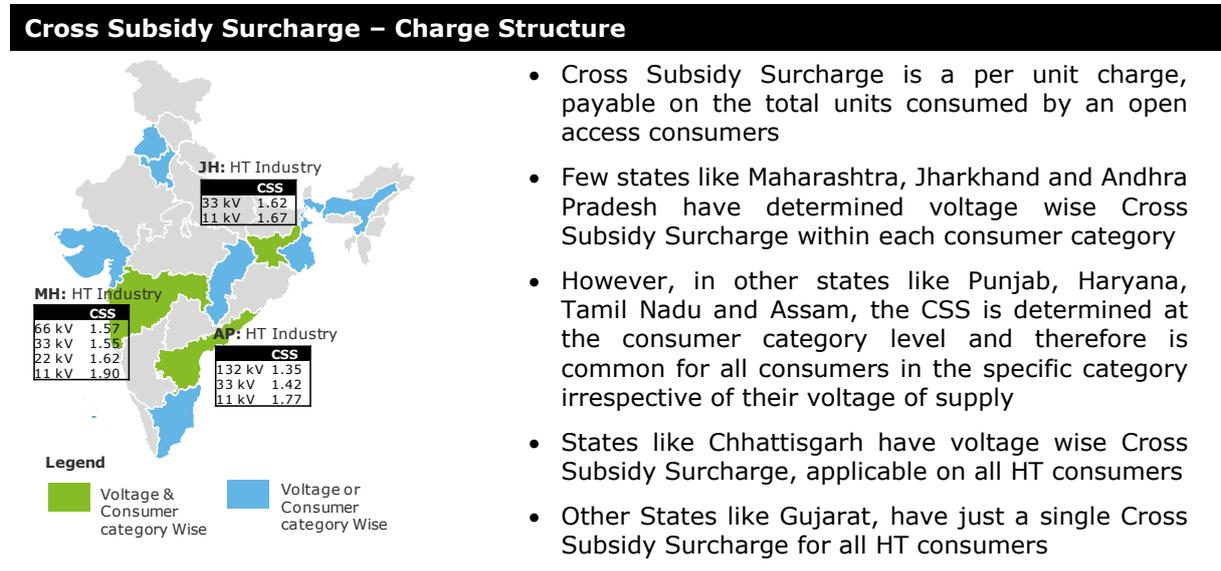
The revised formula also provides flexibility to the State Regulatory Commissions to undertake suitable modifications in the formula as per the requirements and circumstances applicable at the State level. Further, the Tariff Policy 2016 states that the computation of CSS needs to be done in a manner that it compensates the distribution licensee and at the same time it should not constrain introduction of competition through open access. Therefore, a limit of 20% on the applicable tariff of consumer availing open access has been provided to safeguard the interest of such open access consumers.

Figure 5 Cross Subsidy Surcharge - Methodology for charge determination



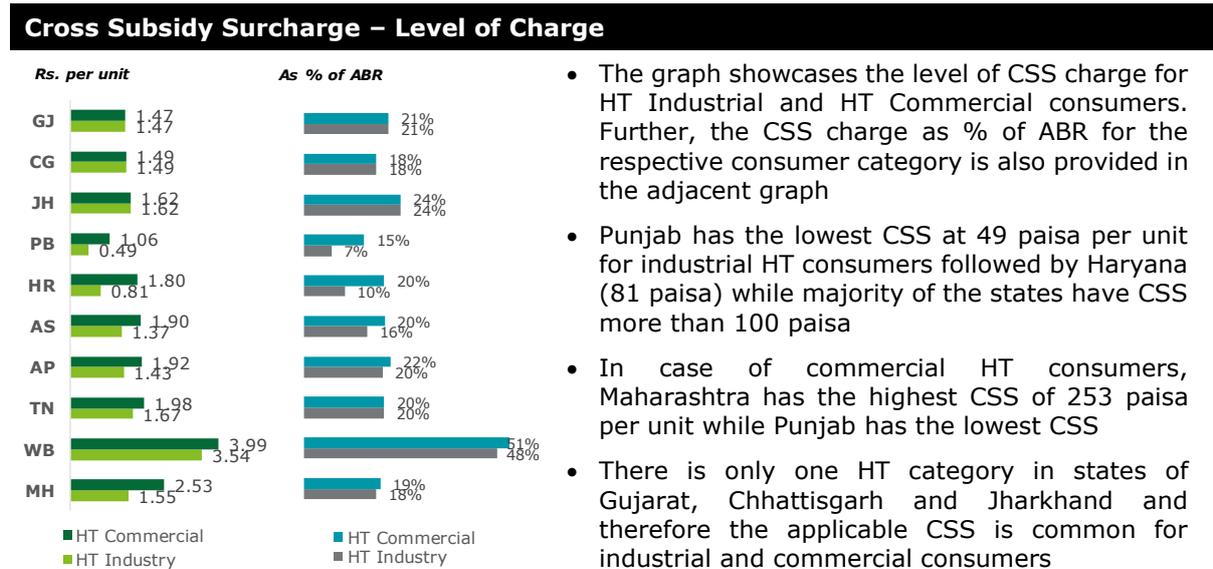
Source: Open Access regulations of respective SERCs

Figure 6 Cross Subsidy Surcharge - Charge Structure



Source: Open Access regulations and Tariff Orders of respective SERCs

Figure 7 Cross Subsidy Surcharge - Level of Charge



- The graph showcases the level of CSS charge for HT Industrial and HT Commercial consumers. Further, the CSS charge as % of ABR for the respective consumer category is also provided in the adjacent graph
- Punjab has the lowest CSS at 49 paisa per unit for industrial HT consumers followed by Haryana (81 paisa) while majority of the states have CSS more than 100 paisa
- In case of commercial HT consumers, Maharashtra has the highest CSS of 253 paisa per unit while Punjab has the lowest CSS
- There is only one HT category in states of Gujarat, Chhattisgarh and Jharkhand and therefore the applicable CSS is common for industrial and commercial consumers

Source: Open Access regulations and Tariff Orders of respective SERCs for FY19

The assumptions taken for preparing the comparative chart on cross subsidy level of charge are as follows -

- 33 kV voltage level
- Non-captive, conventional consumer
- Average CSS taken of APSPDCL and APEPDCL Discoms in Andhra Pradesh
- CSS for West Bengal (WBSEDCL) calculated as per regulations

The high level of cross subsidy surcharge across majority of the States manifests that cross subsidy continues to be one of the key tariff barriers in effective implementation of open access. While the Act envisaged progressive reduction of such surcharge and cross subsidies by the respective SERCs, a comparison of the past three years CSS of shortlisted States indicate uneven increase/ reduction in CSS and represents lack of a uniform policy at the State level for reduction of cross-subsidy and encouraging open access. The varying CSS on a yearly basis results in uncertainty for an open access consumer regarding viability under open access. Also, in absence of voltage-wise CSS across number of States, the open access consumers are being levied a generic charge which is high for consumers connected at higher voltage level, which may result in unviability of power procurement through open access.

Distribution Wheeling Charges and Transmission Charges

The Electricity Act 2003 allows Discoms and Transmission utilities to collect charges from open access consumers for using their network, and directs SERC to determine such charges. The Tariff Policy states that the fixed costs related to network assets should be recovered through wheeling charges.

'8.5.4.....

The fixed costs related to network assets would be recovered through wheeling charges.'

Accordingly the SERCs determine the wheeling charges for use of distribution network and transmission charges for use of transmission network, in their respective tariff orders.

The distribution wheeling charges are determined by SERCs by segregating the overall ARR of Discoms into wires and supply business through assumptions based allocation matrix. The wires business ARR is then allocated to the overall load or sales of the Discom to determine the wheeling charges. The assumptions for segregating the Discom ARR into wires and supply businesses varies from State to State. Similarly for the transmission charges, the ARR of transmission utility is allocated to the overall load served by the utility.

The Tariff Policy also States that the distribution wheeling charges should be determined using same principles as laid down for intra-state transmission system, and should be determined for each voltage level.

'8.5.5 Wheeling charges should be determined on the basis of same principles as laid down for intra-state transmission charges and in addition would include average loss compensation of the relevant voltage level.'

However it can be observed that while in most of the States, the intra-state transmission charge has a fixed charge structure i.e. rupees per month per kW or rupees per day per kW structure, the distribution wheeling charge is determined on a per unit basis. Also only a few States determine voltage wise wheeling charges.

Particularly in the case of Punjab it was observed that while voltage wise wheeling charges were applicable earlier, the open access regulations were amended in 2012 to create a single distribution wheeling charge on all consumers. The open access regulations issued in 2011, provided for different percentage of wheeling charges for each voltage level.

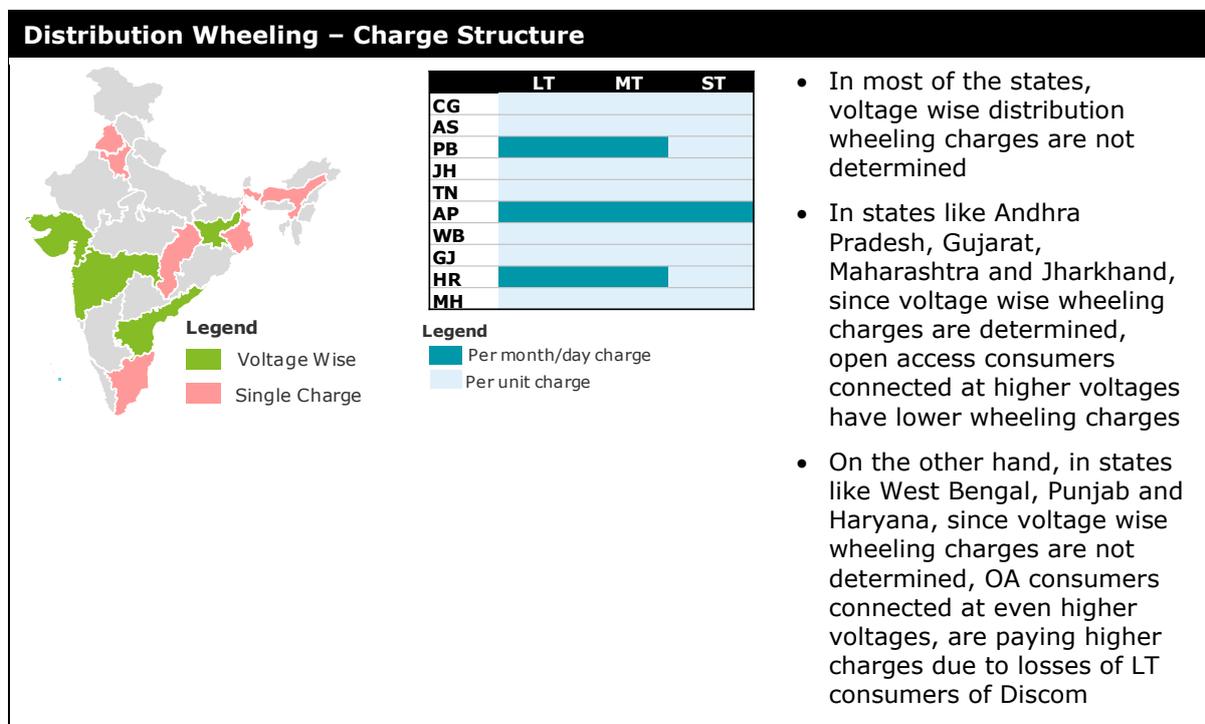
30. 2)

The open access customers availing supply at 132/220 KV, shall be required to bear only the transmission losses; whereas the customers availing supply at 33/66 KV shall bear 15% of the distribution losses in addition to transmission losses. The open access customers connected at 11 KV shall bear 40% of the distribution losses in addition to transmission losses'

The regulations were amended in 2012 to apply same distribution wheeling charges on all consumers above 11 kV voltage, even those who were directly connected to transmission network. This amendment was challenged by several consumers in APTEL and were provided relief. However the APTEL order has been stayed by Hon'ble Supreme Court and the matter is sub-judice.

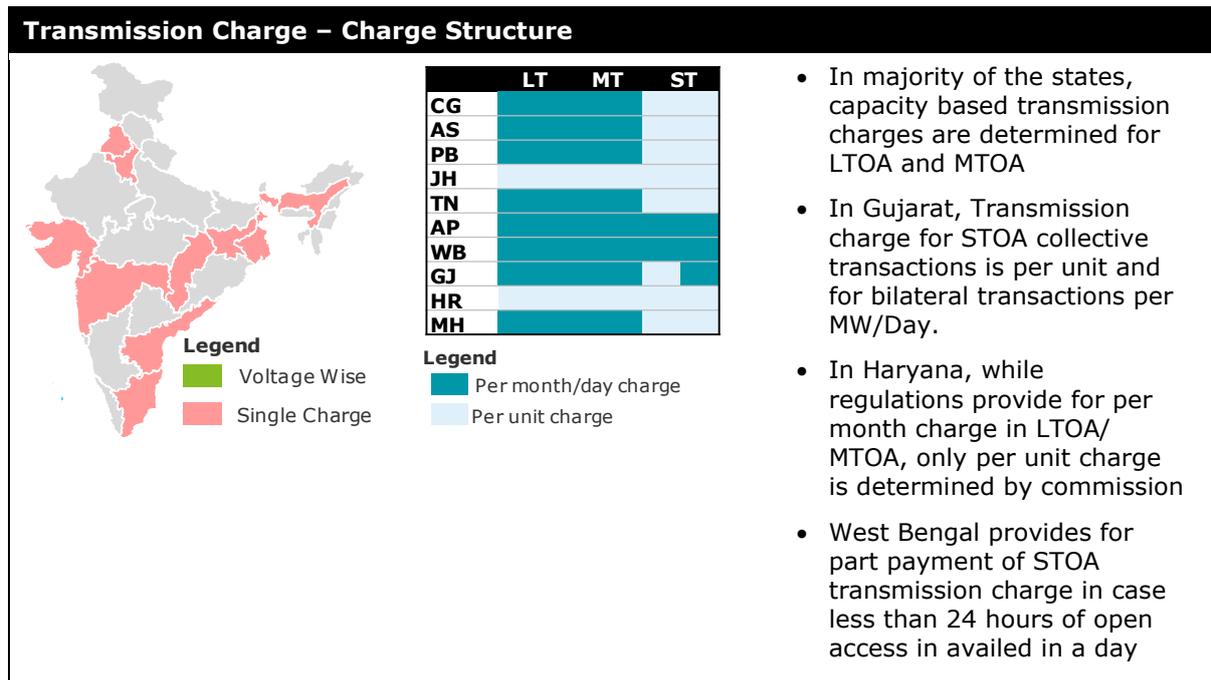
The details of distribution and transmission charge structures across States is given below.

Figure 8 Distribution Wheeling Charge - Charge Structure



Source: Open Access regulations and Tariff Orders of respective SERCs

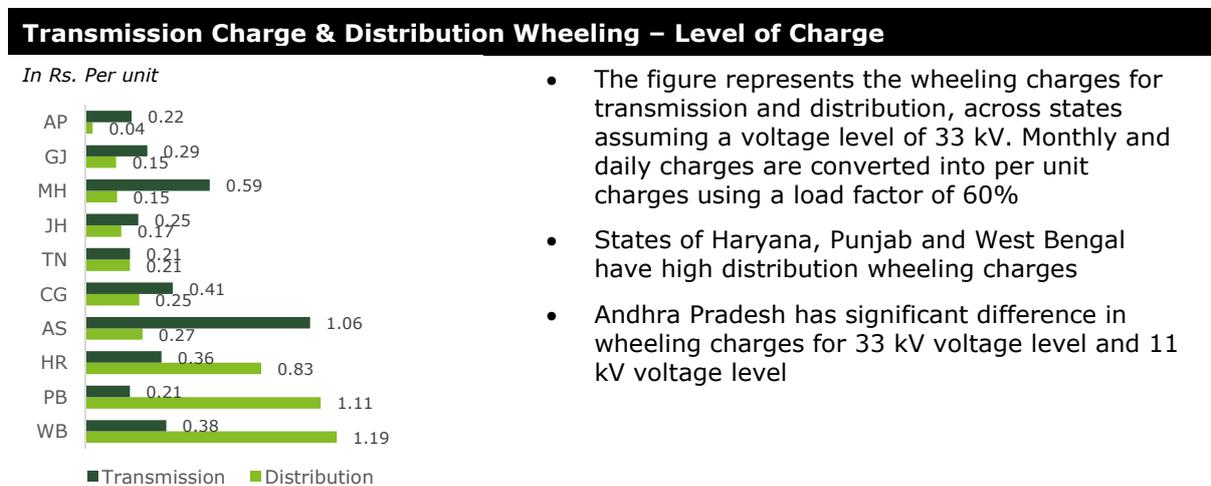
Figure 9 Transmission Charge - Charge Structure



Source: Open Access regulations and Tariff Orders of respective SERCs

Wide variation can be observed across States in the level of transmission charges and distribution wheeling charges. These charges on rupees per unit basis across States is presented below.

Figure 10 Transmission Charge & Distribution Wheeling - Level of Charge



Source: Open Access regulations and Tariff Orders of respective SERCs for FY19

Additional Surcharge

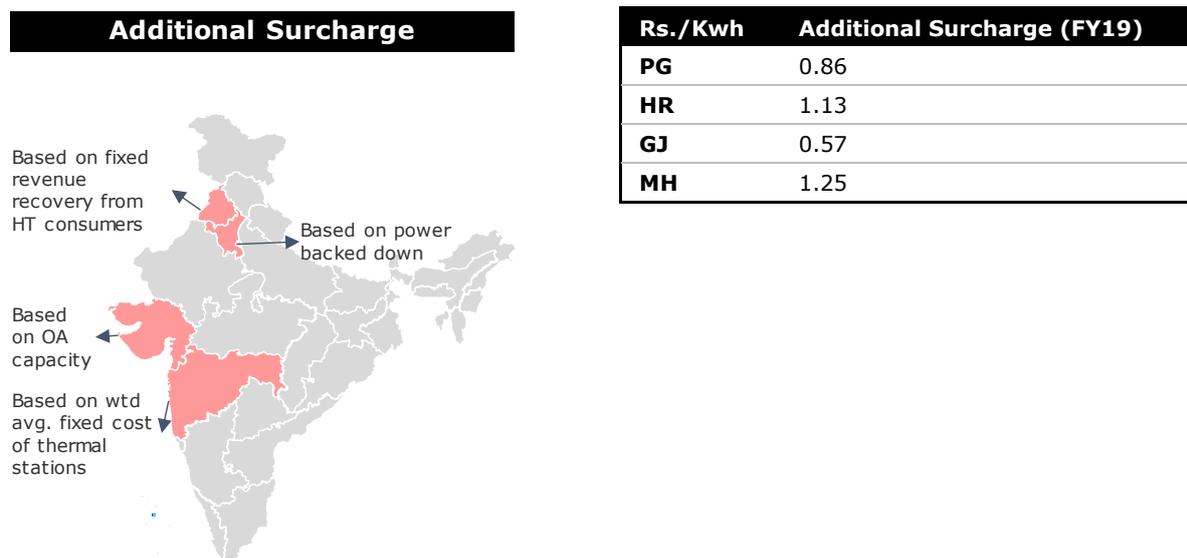
The National Electricity Policy 2005, apart from cross subsidy surcharge, also allowed the levy of an Additional Surcharge for or meeting the stranded fixed cost of the distribution licensee arising out of his obligation to supply in cases where consumers migrate on open access. Discoms have a universal supply obligation and therefore enter into long term power purchase agreements (PPA) to meet projected load demands. Such long term PPAs have fixed and variable tariff components. When a consumer migrates to open access, the Discom is left with surplus power from its tied up PPAs, for which it continues to bear the fixed costs. The regulations allow to recover such stranded costs from open access consumers through an Additional Surcharge.

The Tariff Policy 2006 clarifies that Additional Surcharge can be allowed only if it is conclusively demonstrated that a licensee’s fixed cost commitments have become stranded due to open access consumers.

'8.5.4 The additional surcharge for obligation to supply as per section 42(4) of the Act should become applicable only if it is conclusively demonstrated that the obligation of a licensee, in terms of existing power purchase commitments, has been and continues to be stranded, or there is an unavoidable obligation and incidence to bear fixed costs consequent to such a contract. The fixed costs related to network assets would be recovered through wheeling charges.'

Therefore while most of the State Discoms as part of their tariff petitions have filed to SERCs for determination of an additional surcharge, only states such as Punjab, Haryana, Gujarat and Maharashtra, among our set of shortlisted states, have allowed an additional surcharge.

Figure 11 Additional Surcharge - Structure and Level of Charge



Source: Tariff Orders of respective SERCs for FY19

Further there is no uniform methodology followed for calculation of additional surcharge across States. While individual State regulations provide for additional surcharge as an open access charge, they do not provide any set methodology for determination of the same. The open access regulations only specify that Discoms should submit detailed calculations of the stranded costs to SERCs for verification, basis which the SERCs would determine the requisite amount of additional surcharge.

The methodology followed for determination of additional surcharge by the SERCs of Punjab, Haryana, Gujarat and Maharashtra is shown in the table below.

Table 20 Methodology adopted by States for determination of Additional Surcharge

State	Methodology for determination of Additional Surcharge
Punjab	<ul style="list-style-type: none"> Ratio of fixed power purchase cost with fixed cost of Discom, is multiplied with per unit fixed revenue recovery from HT Consumers, for determination of additional surcharge Fixed cost of Discom is calculated as 50% of ARR minus variable power purchase cost and fuel cost
Gujarat	<ul style="list-style-type: none"> Fixed charges of stranded capacity is estimated by multiplying average open access capacity by fixed charges of power per MW. In turn fixed charges of power per MW is estimated by dividing total fixed charges for power by average power availability in MW Demand charges recoverable from open access sales is reduced from the calculated fixed charges of stranded capacity

State	Methodology for determination of Additional Surcharge
	<ul style="list-style-type: none"> Remaining fixed charges of stranded capacity is divided by scheduled open access energy, to calculate per unit additional surcharge
Haryana	<ul style="list-style-type: none"> Lower of, power quantum backed down or open access sales, is multiplied with average fixed power purchase cost to estimate total stranded cost. Total stranded cost is then divided by total open access sales to estimate Additional Surcharge
Maharashtra	<ul style="list-style-type: none"> Per Unit weighted average of fixed cost of thermal generating stations is taken as Additional Surcharge on open access sales

Source: Tariff Orders of respective SERCs

The consultation paper issued by Ministry of Power on the 'Issues Pertaining to Open Access' in August 2017, suggested a methodology for calculation of additional surcharge, with following key principles -

- Additional Surcharge could have three components to cover for
 - stranded power under long-terms PPAs
 - stranded physical assets
 - cost of carrying/ amortising regulatory assets
- Peak and Off-Peak assessment of additional surcharge
- Stranded Power, to be estimated as per formula given below, calculated separately for each time block and then averaged for all time blocks in a season

$$\text{Stranded Power} = \text{Minimum of (Unrequisitioned power} \\ \text{– quantum of load shedding) or quantum of open access}$$

Cost of stranded power calculated as weighted average of fixed per MW for all stations with un-requisitioned power.

However the States reviewed under this report, are yet to adopt these principles or methodology for determination of additional surcharge.

SLDC charges

The State open access regulations for open access also provide for SLDC charges to recover the scheduling and operating costs of SLDCs. The SLDC charges are determined separately for Long Term/ Medium Term open access and Short Term open access in most of the States. The charge is fixed in nature with a monthly, daily or yearly charge structure, except in the case of West Bengal where a per unit SLDC charge is determined.

The table below showcases the applicable SLDC charges for open access consumers, across various states. While SLDC charges form a comparatively smaller part of overall open access charges, the STOA charges for SLDC can be prohibitive for renewable energy with lower capacity utilization factor.

Table 21 State wise SLDC charges applicable on OA consumers for FY2018-19

State	LTOA/ MTOA	STOA
CG	-	Rs. 2,000/ day
AS	Rs. 46.87/ MW/ Day	Rs. 46.87/ MW/ Day
PB	Rs. 1,321/ MW/ Month	Rs. 2,000/ day
JH	-	Rs. 2,000/ day
TN	Scheduling – Rs. 160/ day System Operation - Rs. 33.74/ MW/ day	Scheduling – Rs. 160/ day System Operation - Rs. 1.41/ MW/ Hr
AP	Annual Fee – Rs. 4,214/MW/Year Operating – Rs. 2,343/MW/Month	Same as LTOA/ MTOA

State	LTOA/ MTOA	STOA
WB	Rs. 0.05/ Kwh plus 0.5% of T&D charges as handling charge	Rs. 0.05/ Kwh plus 0.5% of T&D charges as handling charge
GJ	Rs. 300/ MW/ Month	Rs. 2,000/ day
HR	-	Rs. 1,000/ day
MH	Rs. 658/ MW/ Month	Rs. 658/ MW/ Month

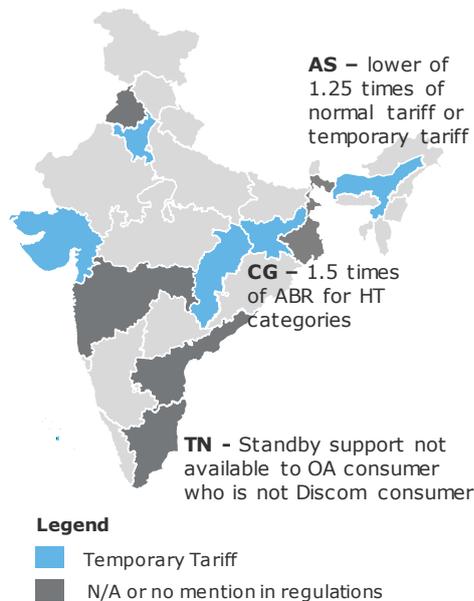
Source: Tariff Orders of respective SERCs

Standby charges

An open access consumer can require backup supply from Discom in case of outage of its open access power. The Tariff Policy 2006 provided for charging of temporary tariffs as standby charge by Discoms to provide this backup supply. The Tariff Policy 2016 further limits this standby charge to 125% of the normal tariff for respective consumer category.

'8.5.6 In case of outages of generator supplying to a consumer on open access, standby arrangements should be provided by the licensee on the payment of tariff for temporary connection to that consumer category as specified by the Appropriate Commission. Provided that such charges shall not be more than 125 percent of the normal tariff of that category.'

Figure 12 Standby charges



The consultation paper issued by Ministry of Power on the 'Issues Pertaining to Open Access' in August 2017, suggested that a two part standby charge should be determined by SERCs so as to truly reflect the fixed and variable costs of Discoms for providing back up supply.

However most of the states have defined standby charges either as a factor of the ABR applicable on respective consumer category or a temporary tariffs applicable in the State. The open access regulations in the State of West Bengal has a provision for agreement between Discom and open access consumer for standby power but does not specify any particular tariff for supply of standby power.

In absence of clear guidelines on standby provisions or two part standby charges, the consumers continue to maintain contract demand with Discom, as an industry wide practice, even after migrating to open access. This allows them to draw power from Discom as a normal consumer, whenever required.

4.1.5 Status of compliance to FOR Recommendations

The Working Group constituted by FOR, to carry out detailed examination of issues connected to Open Access, in its report issued in December 2017 had given recommendations on the various issues raised by consultation paper by Ministry of Power on 'Issues Pertaining to Open Access'. The table below showcases the status of these recommendations in the 10 shortlisted states.

Table 22 Status of compliance to FOR recommendations

Issue	Recommendations by FOR	HR	PB	GJ	MH	CG	JH	WB	AS	AP	TN
Frequent shifting of OA consumers	<ul style="list-style-type: none"> OA consumers should schedule minimum 8 hours of continuous supply through OA 	-	-	-	-	-	For embedded users taking STOA	-	-	-	-
Cross Subsidy Surcharge (CSS)	<ul style="list-style-type: none"> Determination of CSS based on category wise CoS or VCoS is not suitable, as CoS of industrial consumers is lower than ACOS SERCs must be guided by the philosophy of the Tariff Policy 2016, which uses ACoS 	✓	-	✓	✓	-	✓	-	-	✓	✓
Additional Surcharge	<ul style="list-style-type: none"> The working group endorsed the proposal of MoP's consultation paper to have three components of Additional Surcharge 	-	-	-	-	-	-	-	-	-	-
Tariff Design and Rationalization	<ul style="list-style-type: none"> Tariff should reflect actual breakup of fixed and variable charges. SERCs may revise fixed charges gradually 	-	-	-	-	-	-	-	-	-	-
Stand By Charges	<ul style="list-style-type: none"> Only 125% of variable charges for each category should be applicable as stand-by surcharge Fixed charges are already recovered in demand charges and is in line with Tariff policy 2016 	-	-	-	-	-	-	-	125% of normal tariff	-	-

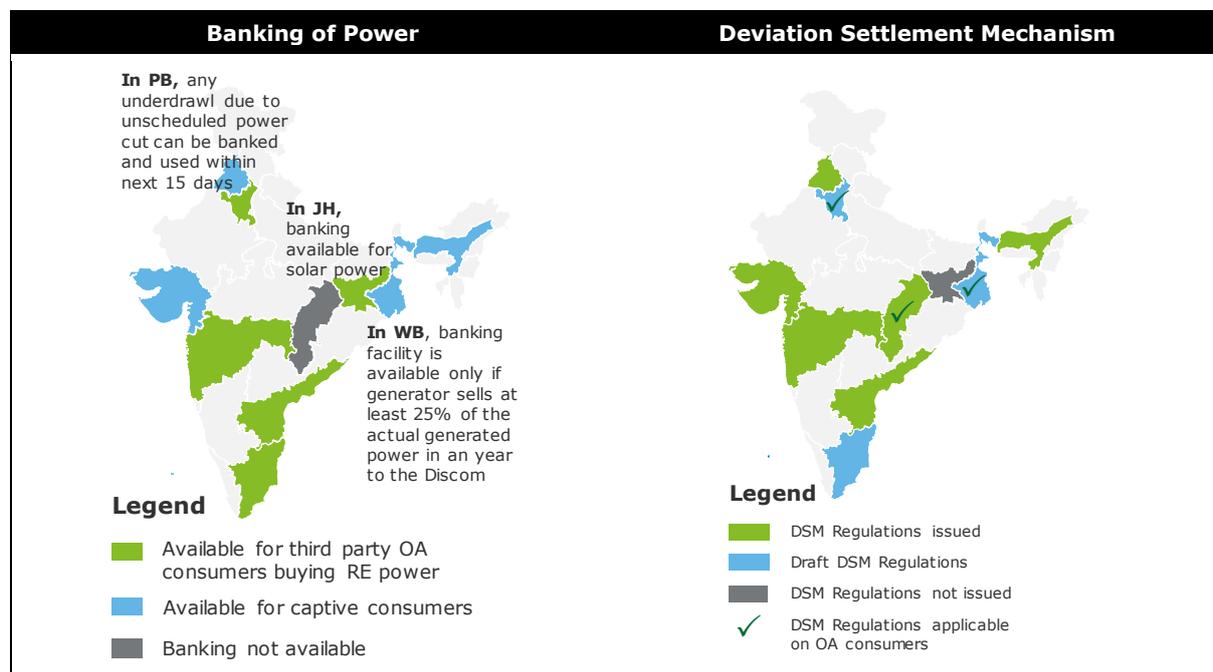
4.1.6 Other Regulatory Provisions

Apart from open access regulations, the provisions of banking and deviation settlement mechanism also have a bearing on open access consumers. Banking of Power allows consumers to utilise power injected but not consumed during a particular time period to be compensated against consumption later. Banking facility is major enabler for open access, especially for renewable power, wherein consumer’s demand schedule and power generation schedule cannot be matched.

Further the Deviation Settlement Mechanism apply penalties on open access consumers on deviating from their approved power scheduled. Applicability of Deviation Settlement Mechanism (DSM) on renewable based generation can be unfavourable for open access, due to difficulties in forecasting of renewable power.

The figure below highlights the states where banking is available for open access consumers and where deviation settlement regulations have been made applicable.

Figure 13 Other regulatory provisions



In few states like Haryana, Gujarat, Punjab and Tamil Nadu in case of unscheduled load shedding or non-availability of network, leading to under-drawl of power for open access consumers, either power injected is banked or compensated for.

In Punjab, while banking is not allowed for open access consumers, any underdrawl due to unscheduled power cut can be banked and used within next 15 days. In West Bengal, banking facility is available to captive consumers, only if generator sells at least 25% of the actual generated power in a year to the Discom. No compensation is provided to consumer for unutilised banked energy in Gujarat and Haryana. In other states, the unutilised energy is purchased by Discom at average pool purchase price.

The table below showcases the banking period allowed and banking charges for various states.

	Banking Period	Banking Charge
CG	-	-
AS	-	-
PB	-	-

	Banking Period	Banking Charge
JH	12 months (drawl not allowed in Apr-Jun and Feb-Mar)	2%
TN	1 month	-
AP	Apr-Mar	2%
WB	1 month	As agreed between Discom and consumer in banking agreement
GJ	-	-
HR	Apr-Mar	5%
MH	Apr-Mar	2%

It can be observed that the period of banking and charges differ from State to State. Also, restrictions of time of day settlement are also applicable for such consumers (where power banked during off-peak hours cannot be utilized during peak hours).

4.1.7 APTEL/ SERC cases regarding open access

In order to identify the issues faced by open access consumers, the APTEL/ SERC cases and disputes in recent years pertaining to open access have been reviewed in this section for the shortlisted States.

These cases give us an insight into the operational difficulties faced by consumers in availing open access, arising out of either lack of enabling regulatory provisions or un-supportive practices followed by Discoms. These issues create Tariff and Non-Tariff barriers for consumers, discouraging new consumers from migrating to open access.

Further some cases also highlight that how consumers also may mis-interpret the regulations, and demand relief which may negatively impact the Discoms. Such cases have also been analysed to identify the areas which probably require more regulatory clarity or deliberation.

The issues have been segregated into various areas of regulatory provisions, open access application processing and billing/ settlement based on the stages of life cycle for open access.

Regulatory Provisions

1. Determination of open access charges

Time and again consumers have approached regulatory bodies against the methodology followed by SERCs for open access charges and to protest against high level of open access charges in their respective states.

Cases related to determination of open access charges have been observed in Punjab, Gujarat, Andhra Pradesh and Tamil Nadu.

In Punjab, the consumers had moved to APTEL against an amendment made in open access regulations in 2012, which made applicable a single wheeling charge on all open access consumers irrespective of the voltage level they are connected at.

Similarly in Andhra Pradesh, a consumer association moved to APTEL to protest against the methodology adopted by SERC for determination of cross subsidy surcharge, which was not in line with the regulations.

In Tamil Nadu, several consumer associations had petitioned against wind tariff order issued by TNERC, in regards to the methodology followed for determination of open access charges, their charge structure and the high level of charges. APTEL made several observations and directed TNERC to re-consider the charges accordingly. Similarly a consumer association had filed petition with TNERC to re-determine cross subsidy surcharge in accordance with National Tariff Policy 2016, limiting it to 20% of applicable tariff. However the Commission noted that provisions of National Tariff Policy are not mandatory in nature.

2. Applicability of charges and rebates

In certain cases, the consumers have challenged the applicability of certain charges applied on them, such as -

- additional surcharge on consumers connected to Discom in the past
- connectivity charges on embedded consumers already connected to Discom network
- power factor rebate on open access consumption
- cross subsidy surcharge on open access power consumed during load shedding by Discom
- demand surcharge if power drawl exceeded admissible drawl under open access
- levy of ToD charge on open access power during peak hours
- levy of LTOA and STOA transmission charges together to a consumer
- levy of transmission charges on generator, without the start of supply of power

Such cases have been observed in states like Gujarat, Haryana, Punjab, Andhra Pradesh.

In a particular case in Punjab, a consumer challenged charging of cross subsidy surcharge to it on open access power while power cut was imposed by Discom. The state open access regulations prohibit collection of open access charges during such time when power cut is imposed by utility due to shortage of power, through advance notice. The Commission asked Discom to refund the CSS amount, citing the APTEL order dated 01.08.2014 and the amendments made in the open access regulations based on this order, barring Discoms from charging cross subsidy surcharge during power cut.

In a case in Maharashtra a generator had taken Long Term Open Access for supply of power. However during certain months, when demand of buyer was low, the generator sold power on power exchange through short term open access. The open access consumer was charged both LTOA and STOA transmission charges during such periods. The consumer appealed against charging of STOA and LTOA charges simultaneously, but the appeal was rejected by APTEL as the billing practice was in accordance with regulations.

Open access application processing

1. Delay/ Denial of NOC

Utilities cite unverifiable reasons for delaying NOC approvals or give arbitrary reasons for denial of NOC or have even cancelled already given NOCs to consumers. Consumers spent considerable time and resources to resolve such disputes and get approvals for open access. Some of the key reasons cited by utilities for delaying/ denying NOC or other approvals are

- Network Constraints
- RPO non-compliance
- Under-drawl of power in certain time slots

Cases related to delay/ denial of NOC and other approvals for open access have been observed in the states of Gujarat, Maharashtra and West Bengal. Several cases of denial of NOC have been observed in the state of Gujarat particularly.

2. Denial of open access because open access charges are not determined

Consumers have been denied open access in certain cases, citing reasons that open access charges for that particular consumer type or category have not been determined. Such gaps in tariff orders or open access regulations create confusion between Discoms and consumers on eligibility for open access.

In a particular case in Haryana, consumers were denied open access as the cross subsidy surcharge was not determined by the Commission for their particular consumer category.

On being approached by the consumers the Commission clarified that non-determination of open access charges is not a valid ground for denial of open access.

Billing and Settlement

1. Pro-rata charging of open access charges

In certain cases, consumers have approached regulatory commissions asking to be billed only part of open access charges based on the number of hours or days for which they have availed open access. The regulators in such cases have strictly referred to the charge structure as per regulations and denied any additional relief to consumers. Such cases have been observed in the state of Gujarat.

2. Adjustment of power from multiple sources

While the open access regulations cover the scheduling and billing mechanisms for open access, detailed billing procedures are prepared by utilities themselves in accordance with the relevant regulations. In some cases the consumers have approached regulators to claim relief from billing and adjustment practices followed by Discoms, which are in contravention to regulations, such as –

- Adjustment of renewable and conventional power, taken by a single consumer through open access
- Adjustment of open access power for embedded consumers

Such cases have been observed in the states of Haryana and Maharashtra.

Further in a case in Maharashtra, a consumer was taking both renewable and conventional power from different sources through open access. The Discom adjusted the renewable power first against the consumption of consumer, and conventional power later, leading to a loss of bankable power for consumer. On being approached the APTEL ruled in favour of the consumer.

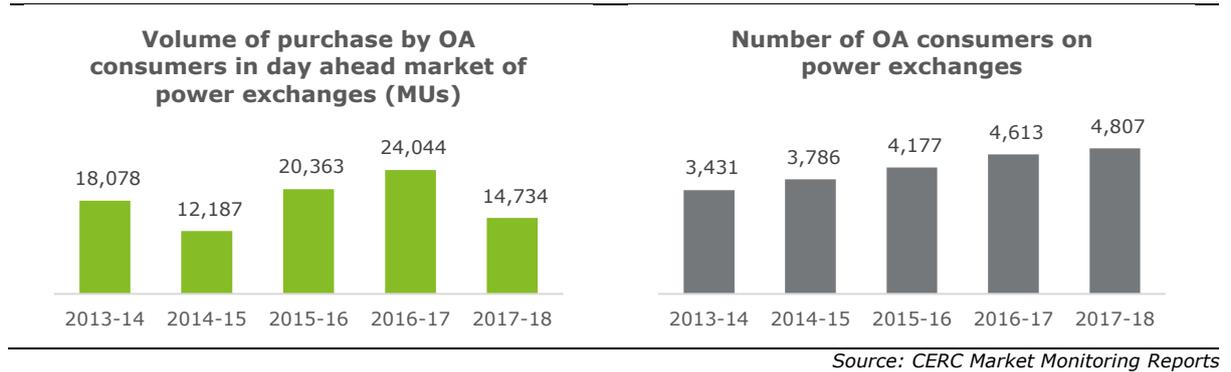
In a particular case in Haryana, DHBVNL issued a circular in Feb 2017 that embedded open access consumers shall be billed for their entire consumption and thereafter they are to claim refund separately for their open access power. On being approached by consumers the Regulator directed Discoms to adjust open access consumption in the same billing month as per open access regulations and charge consumers only for the remaining part of the consumption after adjustment.

In order to deal with the various issues impacting open access as discussed above, more regulatory clarity is required on certain aspects such as applicability of charges/rebates, open access application procedures and billing/ settlement process for different types of open access consumers. Specific measures for effective implementation of open access across states, are discussed in chapter 6 of this report.

4.2. Open access activity review

In accordance with the various regulatory provisions in relation to open access as discussed in the previous section, consumers can avail open access through either bilateral contracts with power generators, buy power from power exchanges or generate power for own consumption through captive plants. While the volume of short term power transactions through power exchanges has grown steadily at a CAGR of 5% over the last five years, the volume of open access transactions has shown varying trend year on year. States of Tamil Nadu, Andhra Pradesh, Gujarat, Haryana and Punjab are the top 5 States in terms of open access consumers.

Figure 14 Open access activity on power exchanges from FY14 to FY18



This section assesses in detail the existing level and past trend of open access activity across the 10 shortlisted States. The following elements have been analysed while assessing the level of open access activity in States –

- Open access consumers and sales
- Type of open access consumers
- Open access applications

The data required for this assessment was collected from various State utilities and from the CERC Market Monitoring Reports.

4.2.1 Open access consumers and sales

Based on the analysis of open access consumers and sales across the 10 shortlisted States, it can be observed that southern States like Tamil Nadu and Andhra Pradesh are showing increasing trend of open access activity, while the northern States like Haryana and Punjab are showing decreasing trend.

Increased policy level push for renewable power coupled along with incentives and discounts offered on open access charges, has driven open access activity in renewable power rich States like Tamil Nadu and Andhra Pradesh. The rise in open access activity in Tamil Nadu is also driven by significant decrease in the open access charges in the State, discussed in later sections. On the other hand rising short term prices on power exchanges has led to a decrease in open access activity in States such as Punjab and Haryana where consumers were availing open access due to the arbitrage available in terms of energy charges and low short-term electricity prices on the exchange.

The figures below showcases the trend of open access consumers and sales, across the 10 shortlisted States. The States have been classified based on the increasing or decreasing trend of open access activity, in the last three years. The analysis has been performed for the States of Punjab, Gujarat, Andhra Pradesh, Maharashtra and Assam based on the data shared by respective State Utilities. States of Jharkhand and West Bengal do not have open access activity currently in the State. For the remaining States the data of CERC Market Monitoring report has been considered.

Figure 15 State wise trend of open access consumers

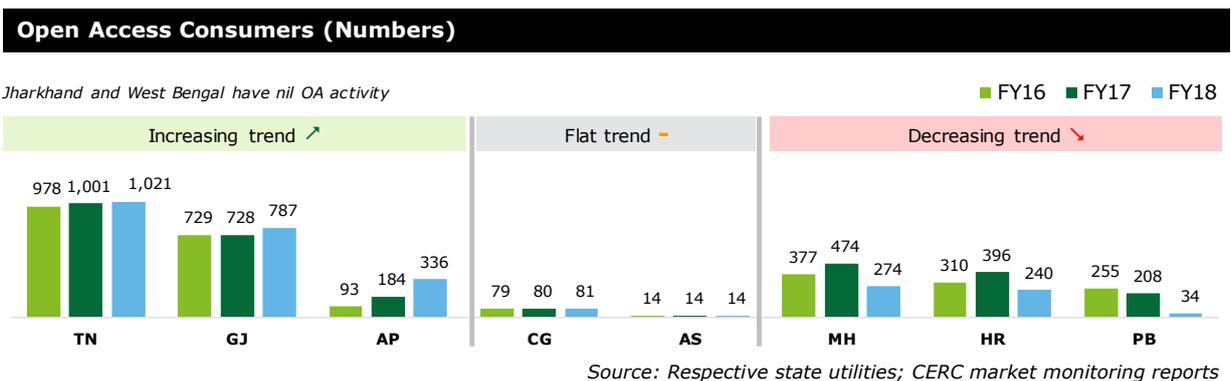
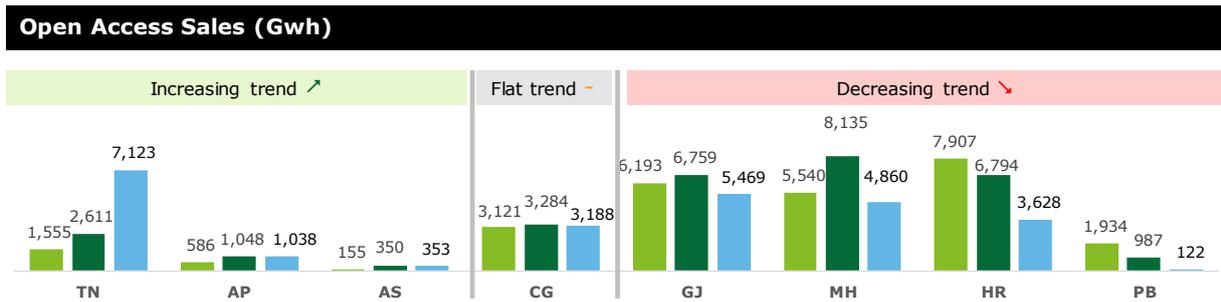


Figure 16 State wise trend of open access sales



Source: Respective state utilities; CERC market monitoring reports

4.2.2 Type of open access consumers

Open access activity can be segregated based on the following three parameters –

- LTOA, MTOA or STOA
- Captive or Non Captive
- Renewable or Conventional power

The type of open access activity in each State is dependent on several factors such as the regulatory provisions regarding eligibility, tariff and open access charges applicable to each type of consumer and the load profile of consumers in the State. While these factors have been discussed in detail in other sections of this report, this section assesses the key types of open access consumers present across States.

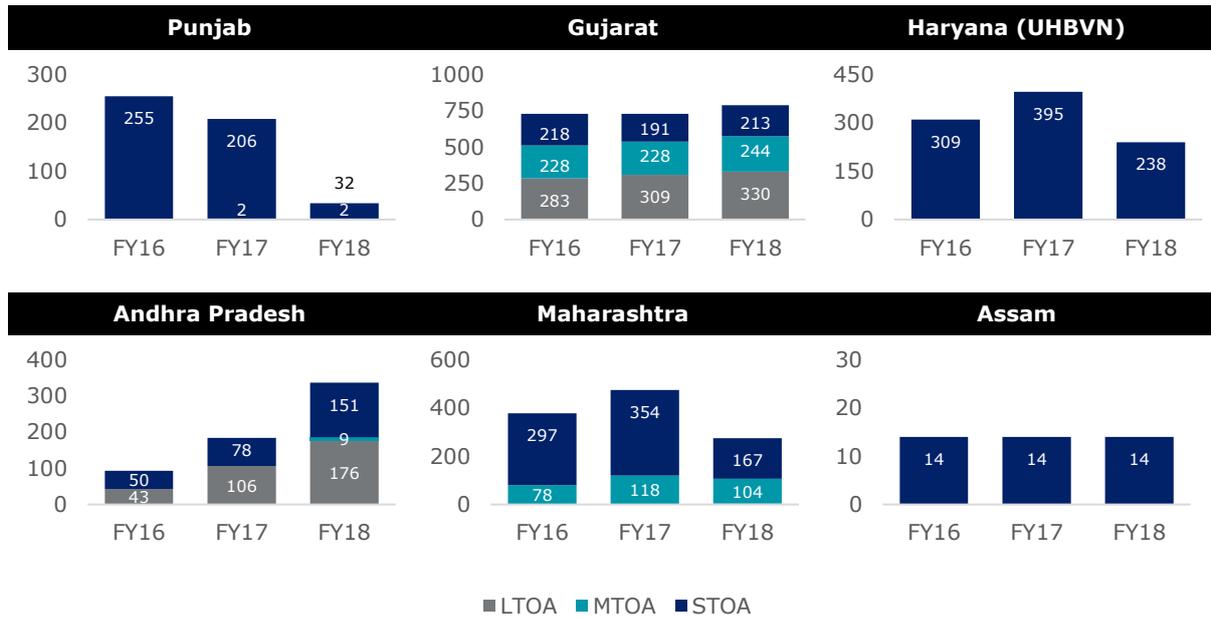
Data with respect to the type and term of open access is neither being reported by respective SLDC or compiled by any state/ central government agency. Therefore, the analysis has been performed for the states of Punjab, Gujarat, Haryana, Andhra Pradesh, Maharashtra and Assam based on the data shared by State Utilities. States of Jharkhand and West Bengal do not have any open access activity currently in the state.

Types of open access consumers - LTOA, MTOA or STOA

This sub-section presents the number of open access consumers based on the duration of open access (LTOA, MTOA and STOA) availed by the open access consumers in the last three years across the ten shortlisted States.

It can be observed that in States of Punjab, Haryana, Maharashtra and Assam, short term open access consumers form the majority. Also it can be observed that Gujarat and Andhra Pradesh have a good mix of LTOA/ MTOA consumers along with STOA consumers. These states (Andhra Pradesh & Gujarat) are also renewable rich states and the proportion of renewable power in open access quantum is considerably high as compared to the northern states.

Figure 17 State wise trend of number of open access consumers, by type (LTOA/ MTOA/ STOA)

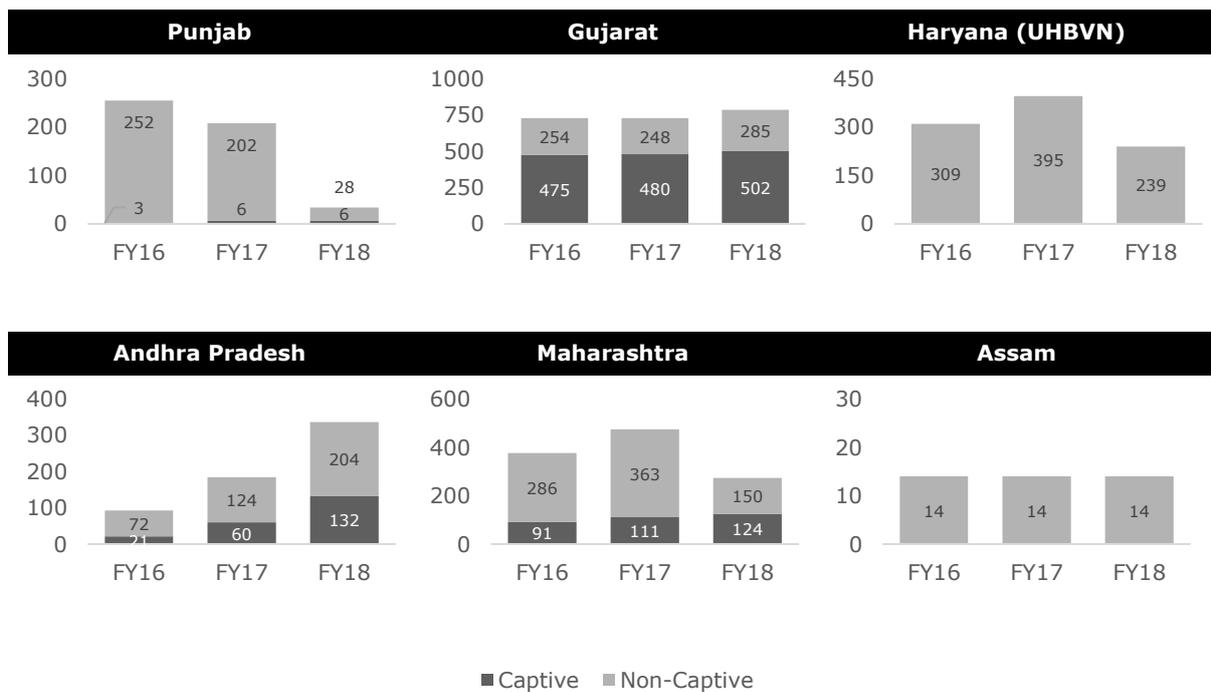


Source: Respective State utilities

Types of open access consumers - Captive or Non-Captive consumers

This sub-section presents the number of open access consumers, under captive and non-captive types of open access. Except for the State of Gujarat, non-captive power remains the dominant type of open access consumer across States. Captive open access is seen in States with significant industrial activity and surplus generation capacities. Limited captive open access is observed in northern States of Punjab, Haryana and NER State of Assam.

Figure 18 State wise trend of number of open access consumers, by type (Captive/ Non-Captive)

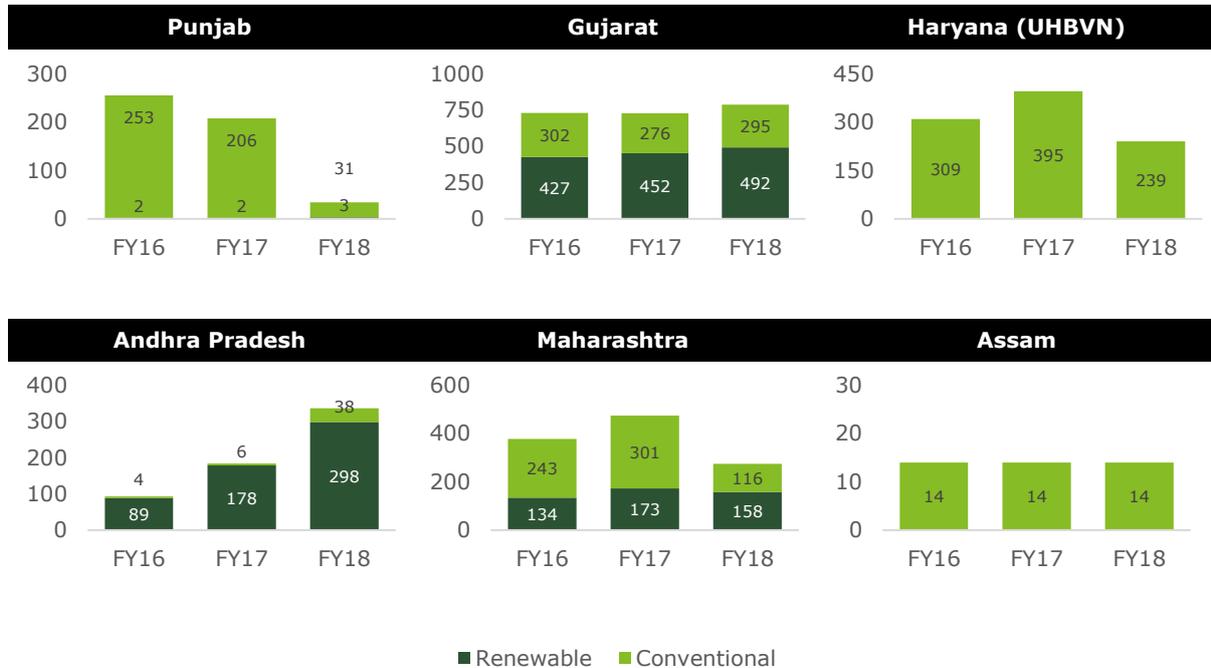


Source: Respective State utilities

Types of open access consumers – Renewable or Conventional

This sub-section presents the number of open access consumers purchasing renewable or conventional power through open access. It can be observed that States rich with renewable sources of power generation like solar and wind have high share of consumers taking open access power from renewable sources. States of Punjab, Haryana, Maharashtra and Assam which have majorly Non-Captive Short Term open access consumers are procuring conventional power which would include the electricity purchased through power exchanges as well.

Figure 19 State wise trend of number of open access consumers, by type (Renewable or Conventional)



Source: Respective State utilities

The table below lists down the predominant type of open access consumer in each State.

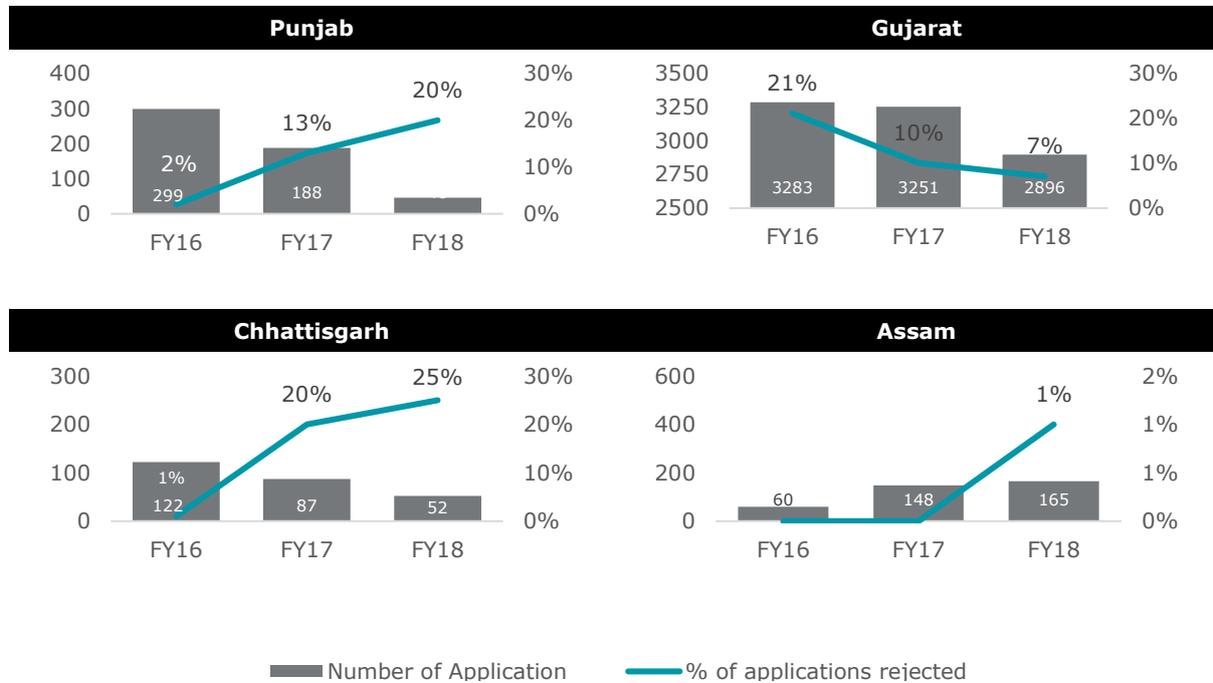
Table 23 State wise predominant type of open access consumer

State	LTOA/ MTOA or STOA	Captive or Non-Captive	Conventional or RE
PB	STOA	Non-Captive	Conventional
GJ	Mix of all types	Captive	RE
HR	STOA	Non-Captive	Conventional
AP	LTOA & STOA	Mix of all types	RE
MH	STOA	Non-Captive	Conventional
AS	STOA	Non-Captive	Conventional

4.2.3 Review of open access applications

This sub-section presents the assessment of number of open access applications received by nodal agencies. The data was available for States of Punjab, Assam, Chhattisgarh and Gujarat from the State SLDCs. The figure below presents the number of open access applications received in these States in last three years.

Figure 20 State wise number of open access applications received and % of applications rejected



Source: Respective State utilities

It can be observed that the rate of rejection of open access applications have increased across States except Gujarat. However, Gujarat receives significantly higher number of open access applications than the other states.

An analysis of the reasons for rejection of these application in these States provide the following insights:

- Non-compliance with RPO is cited as reason for all open access application rejections in case of Punjab
- As per the data provided by state SLDCs, in Chhattisgarh, majority of the applications with status 'Not Approved' are mentioned to be as per request of consumer
- Further in Gujarat, upstream network constraint and denial of NOC by Discoms are the biggest reasons cited for open access application rejection
- Reasons provided by Discoms for denial of NOC include ABT meter issues, load above contract demand, undertaking not submitted, etc.

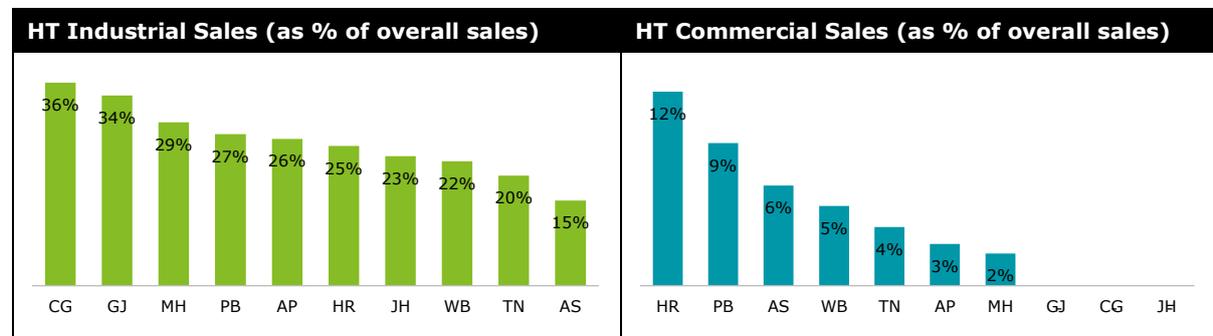
4.3. Commercial Review

As discussed in the regulatory review section of this report, majority of the States allow consumers with a load of 1 MW and above to avail open access. Therefore States with more number of HT consumers and with higher loads, would have higher potential of consumers migrating to open access. HT Industrial and HT Commercial categories generally have significant consumers with higher loads and better load factors. Therefore in this sub-section, the share of HT Industrial and HT Commercial consumer categories in total sales of State and their load profile is reviewed to assess the potential of open access migration across States.

Share of HT Industrial and HT Commercial consumers in overall sales

The figures below present the share of HT Industrial and HT Commercial consumer categories in the total sales of the State. States like Maharashtra, Chhattisgarh and Gujarat have the highest share (approx. 30%) of sales from industrial consumer. On the other hand States like Assam, which has limited open access activity, has a low share of HT industrial and HT commercial sales in the total sales.

Figure 21 State wise HT Industrial and HT Commercial sales as a % of total sales (FY19)



Source: Tariff Orders of respective states

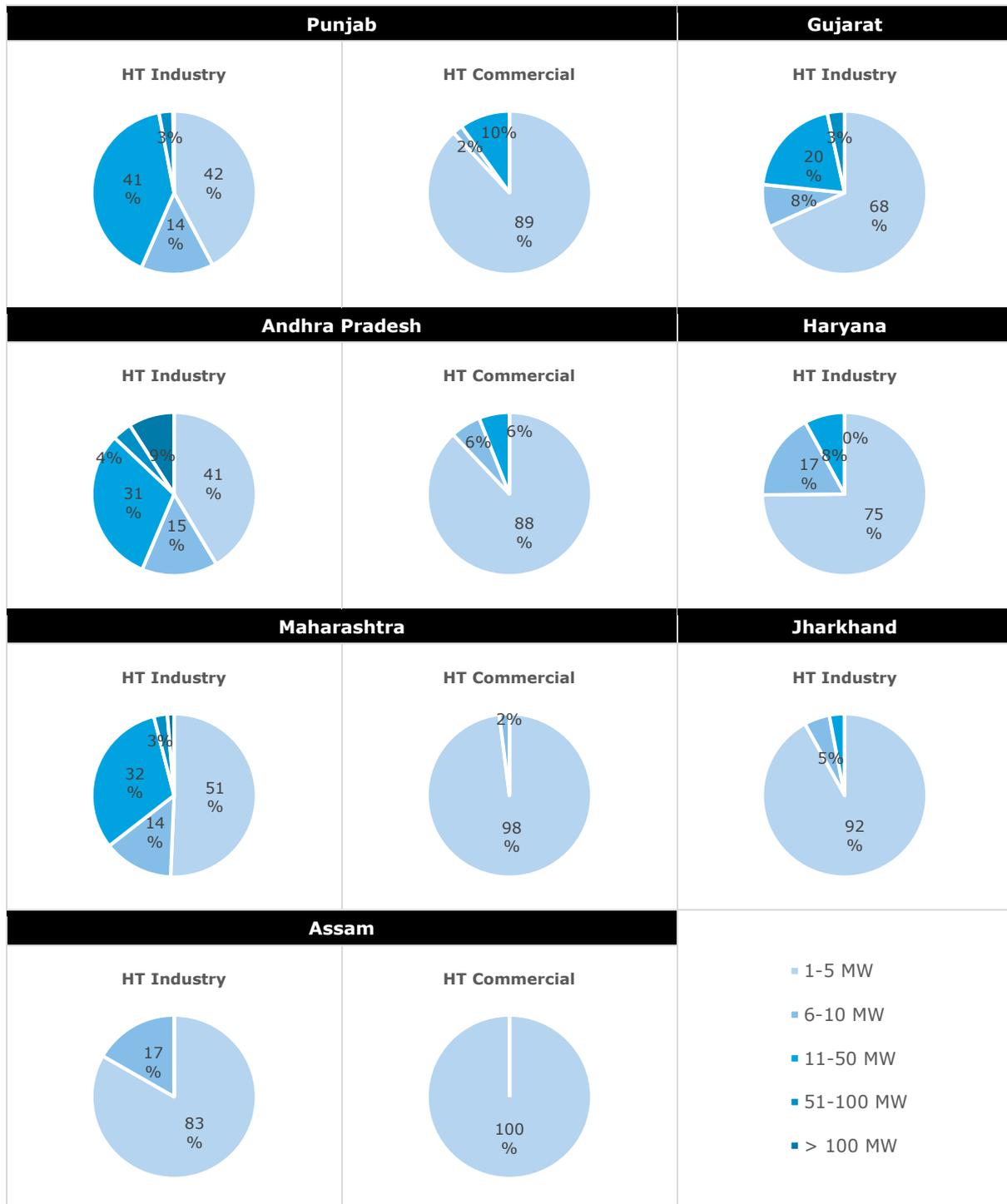
States like Punjab, Haryana, Jharkhand and West Bengal in spite of having over 20% share of industrial consumption in total sales, have very low or nil open access activity with a decreasing trend.

Load profile of HT consumers

Consumers with higher loads would have a higher probability of migrating to open access, as their higher consumption would lead to significant savings on energy bill, justifying the shift to open access. Therefore apart from the high share of HT industrial and HT commercial sales, an analysis of the average load of various consumers under each category is performed to assess the potential for such consumers of migrating to open access.

For the purpose of this analysis, the consumers have been classified into load wise bands of 1-5 MW, 6-10 MW, 11-50 MW, 51-100 MW and greater than 100 MW. Greater is the share of sales in higher bands of load, higher is the potential for migration of consumers to open access. The figures below present the share of sales in each band of load for HT consumers in the states of Punjab, Gujarat, Haryana (UHBVN), Andhra Pradesh, Maharashtra, Jharkhand and Assam wherein data was available.

Figure 22 State wise load profile of HT consumers, as % of sales in each category of load (FY19)



Source: Respective State utilities

It can be observed that Andhra Pradesh, Punjab, Gujarat and Maharashtra have more than 20% of HT Industrial consumers in the 11-50 MW load block, and therefore consumers in these States have higher potential of migrating to open access. HT Commercial consumers across States, predominantly are present in 1-5 MW load block, and therefore would have low potential of migrating to Open Access.

Further, the tariff order for State of Chhattisgarh provide the details of consumer category wise load and number of consumers. Using this data it can be observed that the average load of all HT

industrial consumers in Chhattisgarh is 0.87 MW. Therefore consumers in Chhattisgarh would also have a low potential of migrating to open access.

4.4. Tariff and Open Access Charges Review

In line with the agenda set forth in the Electricity Act 2003 for promotion of competition in the electricity sector, National Electricity Policy and Tariff Policy provides broad framework for various open access charges to be levied on open access consumers and emphasise upon determination of these charges in a reasonable and fair manner by the Regulatory Commission in order to protect the interest of the Discom and at the same time bring about competition. Various reviews and reports conducted by the Government and other agencies indicate that there exists apprehensions at the State level with respect to open access resulting in limited adoption of open access by the consumers. High open access charges has been stated as one of the primary reasons for the constrained growth and frequent shift of open access consumers. Further, the applicable tariff design and structures in most of the States do not reflect the actual fixed and variable cost of the Discom resulting in inadequate recoveries from the open access consumers.

High cross subsidies or non-cost reflective tariffs may result in a revenue gap for Discoms due to shift of subsidising consumers to open access. On the other hand, due to various limitations the open consumers continue to maintain their contract demand with the Discom and avail short term open access which results in payment of wheeling and other charges in addition to the fixed charges for contract demand to Discoms.

In this Chapter a review of retail tariffs applicable on HT consumers and charges applicable on open access consumers have been analysed in order to assess their bearing on Discoms as well as the consumers. The retail tariffs in the short-listed States have been analysed based on the following attributes:

- Cost coverage of retail tariffs
- Fixed/ variable breakup of retail tariffs

Also this section analyses the impact of open access charges on the consumers in the shortlisted States. The commercial viability of open access has been arrived considering the difference of variable retail tariff with the open access charges required to paid by HT consumers. This difference is termed as Break-even Power Purchase Cost for open access consumers. If a consumer is able to procure power at a rate below this break even power purchase cost, migration to open access can lead to savings on energy bill. Further the open access charges in the ten states have been reviewed with an objective to understand the variability in various open access charges. Large variations in open access charges generally create uncertainties on viability of open access and thus is a key impediment in migration of consumer to open access.

The data for retail tariffs and open access charges are captured from tariff orders of respective SERCs.

4.4.1 Review of cost coverage of retail tariffs

Section 61 (g) of the Electricity Act provided for tariff recovery considering the cost of supply of electricity. In view of the high level of existing cross-subsidies in the tariff, the Tariff Policy 2006 provided guidelines for gradual reduction of cross-subsidies across various consumer categories such that tariffs are aligned within +/- 20% of the Average Cost of Supply (ACoS) by 2010-11. While a number of SERCs have made efforts for rationalizing the consumer tariff, the cost reflective tariff propogated by the earlier Policy still remains to be fulfilled in some of the states. The Tariff Policy 2016 re-iterated this objective of aligning tariffs within +/- 20% of the ACoS.

Cost Covergae for a consumer category has been calculated as the ratio of tariff charged with the cost of supply of Discom. Over the years, many states have reduced cross subsidies to bring cost coverage (based on ACoS) of tariffs for HT consumers below 120%. However few states still have high level of cross-subsidies in their HT tariff to compensate for lower recovery from domestic and agricultural connsomers. Few of the shortlisted states which continue to have cost covergae beyond the prescribed limit of +/-20% as per Tariff Policy for industrial consumers include Maharashtra,

Tamil Nadu and Chhattisgarh. In case of HT commercial consumers, there are additional two states i.e. Andhra Pradesh and Assam which charge tariff beyond 120% cost coverage. The table showcases the movement of Cost Coverage over last three years for the shortlisted states:

Table 24 State wise movement of Cost Coverage for HT Industrial and HT Commercial consumer categories

ACOS Coverage ^{12 13}	HT Industrial			HT Commercial		
	FY17	FY18	FY19	FY17	FY18	FY19
PB	112%	103%	103%	115%	108%	108%
WB	107%	106%	106%	113%	113%	113%
MH	126%	128%	134%	193%	196%	208%
AS	124%	130%	119%	141%	142%	129%
TN	135%	143%	143%	163%	169%	170%
AP	120%	131%	124%	149%	152%	144%
HR	126%	126%	104%	143%	127%	117%
CG	132%	140%	132%	132%	140%	132%
JH	115%	105%	113%	115%	105%	113%
GJ	119%	121%	120%	119%	121%	120%

Source: Tariff Orders of respective SERCs

4.4.2 Review of Fixed/Variable breakup of retail tariffs

The Tariff Policy 2006 recommended two-part tariff structure i.e. fixed and variable from the Discom consumers. The objective of the two part tariff structure was to recover the fixed costs of the Discom by way of levying a fixed charge from the consumer while the variable costs was recovered through energy tariff. Guided by the provisions of the Tariff Policy majority of the SERCs had adopted the two part tariff structure for all consumer categories. Over the period, uneven revisions in variable tariff have resulted in an imbalance between the fixed costs of the Discom vis-a-vis the fixed charges recovered from the consumers. The mismatch in fixed tariff and fixed costs across States is significant and may result in financial loss for the Discom in case of switching of consumer to open access.

A review of the fixed cost of the Discoms in various States and the fixed charges recovered as part of tariff from HT industrial and commercial consumers is summarized below:

Table 25 State wise fixed share of ACOS and ABR (FY19)

State	Fixed ¹⁴ Share of ACoS	Fixed Share of ABR ¹⁵	
		HT Industrial	HT Commercial
PB	63%	7%	4%
WB	52%	12%	11%
MH	56%	10%	7%
AS	57%	5%	4%
TN	52%	11%	9%
AP	45%	15%	13%
HR	50%	5%	5%
CG	58%	12%	12%
JH	52%	10%	10%
GJ	48%	16%	16%

Source: Tariff Orders of respective SERCs

¹² States of Chhattisgarh, Jharkhand and Gujarat have a single consumer category for both HT Industrial and HT Commercial consumers. Same numbers have been assumed in both cases.

¹³ The ABR and ACOS as provided by SERCs in their respective tariff orders is considered. In cases where ABR is not provided the fixed tariff is converted into per unit charge assuming a 60% load factor

¹⁴ The fixed share has been computed based on the fixed ARR parameters of the Discom (O&M expense, depreciation, interest cost, etc.) as well as the fixed cost obligation with respect to the power procurement

¹⁵ The fixed monthly tariff across states is converted into per unit charge assuming a 60% load factor. This per unit fixed charge is added to per unit energy charge to estimate total ABR

From the above table it can be observed that the existing break-up of the fixed cost in the total ARR of the distribution companies is approximately 52% for all the utilities put together. On the contrary, the recovery from fixed tariffs of HT industrial consumers is about 10% across the shortlisted States with the highest percentage being charged by Gujarat (16%) and lowest recovery in case of Assam (5%).

Few SERCs like Punjab, West Bengal, Andhra Pradesh Maharashtra and Assam have noticed the anomaly in the fixed charges and have initiated correction of the same by increasing the fixed charges vis-à-vis the variable charges while other states continue to retain the variation.

Table 26 State wise movement of fixed and variable tariffs for HT Industrial consumers

HT Industry	Fixed Tariff (Rs./kW/Month)				Variable Tariff (Rs./kWh)				Tariff Rationalisation
	FY17	FY18	FY19	CAGR	FY17	FY18	FY19	CAGR	
PB	188	230	240	13%	6.35	6.08	6.21	-1%	✓
WB	320	384	384	10%	6.25	6.44	6.44	1%	✓
MH	235	250	350	22%	7.22	7.16	7.10	-1%	✓
AS	140	160	180	13%	6.85	7.50	7.20	3%	✓
TN	350	350	350	0%	6.35	6.35	6.35	0%	
AP	386	475	475	11%	5.51	6.18	6.18	6%	✓
HR	170	170	170	0%	6.37	6.89	6.89	4%	
CG	375	375	375	0%	6.00	6.68	6.63	5%	
JH	300	300	300	0%	6.25	6.25	6.05	-2%	
GJ	475	475	475	0%	5.68	5.91	5.97	3%	

Source: Tariff Orders of respective SERCs

Table 27 State wise movement of fixed and variable tariffs for HT Commercial consumers

HT Commercial	Fixed Tariff (Rs./kW/Month)				Variable Tariff (Rs./kWh)				Tariff Rationalisation
	FY17	FY18	FY19	CAGR	FY17	FY18	FY19	CAGR	
PB	171	100	110	-20%	6.54	6.68	6.82	2%	
WB	320	384	384	10%	6.63	6.89	6.89	2%	✓
MH	235	250	350	22%	11.44	11.49	11.65	1%	✓
AS	115	135	145	12%	7.55	8.30	8.00	3%	✓
TN	350	350	350	0%	8.00	8.00	8.00	0%	
AP	386	475	475	11%	7.07	7.35	7.35	2%	✓
HR	170	160	160	-3%	6.63	7.11	7.11	4%	✓
CG	375	375	375	0%	6.00	6.68	6.63	5%	
JH	300	300	300	0%	6.25	6.25	6.05	-2%	
GJ	475	475	475	0%	5.68	5.91	5.97	3%	

Source: Tariff Orders of respective SERCs

In order to align the disparity in fixed recovery from consumer tariff, the draft amendments to the Tariff Policy 2016 issued by Ministry of Power recommends tariff rationalisation such that the fixed tariffs charged to consumers should be able to cover at least 75% of the fixed costs of Discoms, except in case of domestic and agricultural consumers.

*'8.3A In order to reflect the actual share of fixed cost in the revenue requirement of Distribution licensees, there is need to enhance recovery through fixed charges. **The fixed charge shall be so set that it leads to recovery of at least 50% of the fixed costs in case of Domestic and Agriculture categories and at least 75% recovery of fixed costs in case of other categories progressively over next three years. The SERCs and JERCs shall lay down a roadmap to achieve the same.'***

Absence of appropriate tariff structure could result in uncovered fixed cost of the Discom in case of migration of consumer to open access. For example, in case of a HT consumer shifts to open access,

the fixed charges for maintaining its contract demand with the Discom would not be adequate to meet the fixed costs of the Discom. Even considering the wheeling charges collected by Discom along with the fixed charges for contract demand may be insufficient to cover the total fixed cost of the Discom.

The table below compares the fixed ACoS for shortlisted States with the recovery from fixed charges, wheeling charges and additional surcharge for HT Industrial and HT commercial consumers. From the analysis of the various cost elements recovered from the open access consumers, it is observed that an average recovery of approximately 60% of the fixed cost of Discom can be realized by the Discoms. Better recovery is observed from states like Punjab, Maharashtra, Tamil Nadu and Harayana as compared to states like Jharkhand, Chhattisgarh and Anshra Pradesh where this cost recovery is the least.

Table 28 Fixed cost recovery from fixed charges for HT Ind. consumers on OA, for conventional power (FY19)

HT Industrial	Fixed ACoS	Fixed ABR	Conventional Power			Fixed ABR + Fixed OA charges	Fixed Cost Recovery from Fixed Charges
			Dist. Wheeling Charge	Trans. Wheeling Charge	Additional Surcharge		
State	(A)	(B)	(C)	(D)	(E)	(F) = (B)+(C)+(D)+(E)	(F)/(A)
PB	4.11	0.47	1.11	0.21	0.86	2.66	65%
WB	3.55	0.89	1.19	0.38	0.00	2.46	69%
MH	3.60	0.81	0.15	0.59	1.25	2.80	78%
AS	4.17	0.42	0.27	1.06	0.00	1.74	42%
TN	3.01	0.81	0.21	0.21	0.00	1.23	41%
AP	2.65	1.10	0.03	0.22	0.00	1.35	51%
HR	3.85	0.39	0.83	0.36	1.13	2.71	70%
CG	3.59	0.87	0.25	0.41	0.00	1.54	43%
JH	3.08	0.69	0.17	0.25	0.00	1.11	36%
GJ	2.84	1.10	0.15	0.29	0.57	2.10	74%

Source: Tariff Orders of respective SERCs

Table 29 Fixed cost recovery from fixed charges for HT Comm. consumer on OA, for conventional power (FY19)

HT Commercial	Fixed ACoS	Fixed ABR	Conventional Power			Fixed ABR + Fixed OA charges	Fixed Cost Recovery from Fixed Charges
			Dist. Wheeling Charge	Trans. Wheeling Charge	Additional Surcharge		
State	(A)	(B)	(C)	(D)	(E)	(F) = (B)+(C)+(D)+(E)	(F)/(A)
PB	4.11	0.25	1.11	0.21	0.86	2.44	59%
WB	3.55	0.89	1.19	0.38	0.00	2.46	69%
MH	3.60	0.81	0.15	0.59	1.25	2.80	78%
AS	4.17	0.34	0.27	1.06	0.00	1.66	40%
TN	3.01	0.81	0.21	0.21	0.00	1.23	41%
AP	2.65	1.10	0.03	0.22	0.00	1.35	51%
HR	3.85	0.37	0.83	0.36	1.13	2.69	70%
CG	3.59	0.87	0.25	0.41	0.00	1.54	43%
JH	3.08	0.69	0.17	0.25	0.00	1.11	36%
GJ	2.84	1.10	0.15	0.29	0.57	2.10	74%

Source: Tariff Orders of respective SERCs

Further most of the States determine a per unit wheeling charge, and therefore revenue recovery from these charges is contingent upon the monthly consumption level of consumer. Ideally the fixed cost should be recovered through fixed charges and variable cost should be recovered through

energy charges of the tariff respectively. Only few states like Punjab and Andhra Pradesh determine monthly fixed distribution wheeling charges. The rest of the shortlisted States levy distribution wheeling charge on per unit basis.

One of the major contributors in the short-recovery on account of open access consumers are the incentives and discounts applicable to renewable sources of power. In an attempt to support the adoption of renewable power in the State both State Governments as well as SERCs have provided waivers/ discounts on cross-subsidy surcharge, wheeling and transmission charges, etc. States like Maharashtra and Assam allow recovery of wheeling charges in form of short-term wheeling charges even for long-term/ medium-term open access, for procuring power from renewable sources. The table below illustrates the existing recovery from fixed charges applicable on renewable sources vis-à-vis the fixed cost of the Discom.

Table 30 Fixed cost recovery from fixed charges for HT Ind. consumers on OA, taking RE power (FY19)

HT Industrial	Fixed ACoS	Fixed ABR	RE Power			Fixed ABR + Fixed OA charges	Fixed Cost Recovery from Fixed Charges
			Dist. Wheeling Charge	Trans. Wheeling Charge	Additional Surcharge		
State	(A)	(B)	(C)	(D)	(E)	(F) = (B)+(C)+(D)+(E)	(F)/(A)
PB	4.11	0.47	0.00	0.00	0.86	1.33	32%
WB	3.55	0.89	1.19	1.27	0.00	3.35	94%
MH	3.60	0.81	0.15	0.34	1.25	2.55	71%
AS	4.17	0.42	0.27	0.65	0.00	1.34	32%
TN	3.01	0.81	0.08	0.28	0.00	1.18	39%
AP	2.65	1.10	0.00	0.00		1.10	42%
HR	3.85	0.39	0.00	0.00	0.00	0.39	10%
CG	3.59	0.87	0.00	0.00	0.00	0.87	24%
JH	3.08	0.69	0.16	0.24	0.00	1.10	36%
GJ	2.84	1.10	0.15	0.97	0.57	2.78	98%

Source: Tariff Orders of respective SERCs

Table 31 Fixed cost recovery from fixed charges for HT Comm. consumers on OA, taking RE power (FY19)

HT Commercial	Fixed ACoS	Fixed ABR	RE Power			Fixed ABR + Fixed OA charges	Fixed Cost Recovery from Fixed Charges
			Dist. Wheeling Charge	Trans. Wheeling Charge	Additional Surcharge		
State	(A)	(B)	(C)	(D)	(E)	(F) = (B)+(C)+(D)+(E)	(F)/(A)
PB	4.11	0.25	0.00	0.00	0.86	1.11	27%
WB	3.55	0.89	1.19	1.27	0.00	3.35	94%
MH	3.60	0.81	0.15	0.34	1.25	2.55	71%
AS	4.17	0.34	0.27	0.65	0.00	1.26	30%
TN	3.01	0.81	0.08	0.28	0.00	1.18	39%
AP	2.65	1.10	0.00	0.00	0.00	1.10	42%
HR	3.85	0.37	0.00	0.00	0.00	0.37	10%
CG	3.59	0.87	0.00	0.00	0.00	0.87	24%
JH	3.08	0.69	0.16	0.24	0.00	1.10	36%
GJ	2.84	1.10	0.15	0.97	0.57	2.78	98%

Source: Tariff Orders of respective SERCs

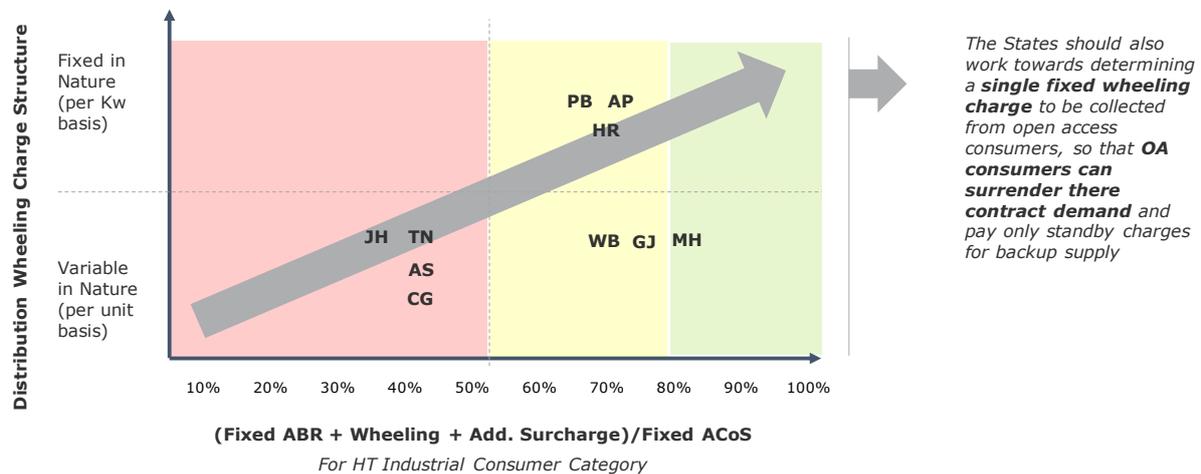
Transmission charge for Renewable power is higher than conventional power in some States due to lower load factor of Renewable power, thereby impacting conversion of per month charges into per unit charges.

Tariff rationalization across the States is crucial for adequate fixed cost recovery of Discoms and safeguard the interest of Discom in case of movement of consumers to open access. Also, incentives and discounts on open access charges can be gradually removed for renewable sources in order to limit the high losses incurred by Discom. Simultaneously, the states would be required to shift to a fixed nature of distribution wheeling charge recovery for long-term and medium term consumers. This would enable better recovery of their fixed costs from fixed charges.

Due to uncertainties with respect to movement of long-term / medium-term open access charges, majority of the open access consumers currently resort to short term open access while maintaining their contract demand with the Discom. It would be only after SERCs provide more clarity on the open access charges for a longer duration, that consumers would be encouraged to surrender their contract demand with Discom and adopt long/medium term open access. Any requirement for back-up power could be made available based on recovery of standby charges. However, in such cases the wheeling charges would be required to be determined in a manner that the Discoms are not at a financial loss.

The figure below depicts the current status of States in terms of their type of distribution wheeling charge and coverage of fixed ACoS against fixed charges.

Figure 23 Current status of fixed cost recovery and suggested path for States



4.4.3 Open access charges

As discussed in the regulatory review section earlier in this report, the major open access charges applicable on consumers are –

- Cross Subsidy Surcharge
- Distribution Wheeling Charge
- Transmission Charge
- Additional Surcharge
- SLDC Charge

The sub-sections below present these open access charges for various types of consumers, across States.

Open access charges for HT Industrial and HT Commercial consumers

This sub-section presents the open access charges for HT Industrial and HT Commercial consumers, procuring conventional power, across States. Apart from open access charges, Renewable Purchase Obligations (RPO) would be applicable on consumers buying conventional power on open access. Assuming a base rate of Rs. 1000/ REC certificate, the RPO charge is also determined across states, to be born by HT Industrial and Commercial open access consumers. The tables below reflect the

level of various open access charges for HT Industrial and HT Commercial consumers, across shortlisted states.

Table 32 State wise open access charges for HT Industrial Consumers, taking conventional power (FY19)

HT Industry (Conventional Power) (FY19)	CSS	Dist. Wheel.	Trans. Wheel	Add. Sur.	SLDC charge	RPO	Total
CG	1.49	0.25	0.41	-	-	0.11	2.27
AS	1.37	0.27	1.06	-	0.00	0.11	2.81
PB	0.49	1.11	0.21	0.86	0.00	0.07	2.74
JH	1.62	0.17	0.25	-	0.00	0.10	2.14
TN	1.67	0.21	0.21	-	0.01	0.14	2.24
WB	3.54	1.19	0.38	-	0.01	0.06	5.19
AP ¹⁶	1.43	0.03	0.22	-	0.01	0.11	1.80
GJ	1.47	0.15	0.29	0.57	0.00	0.13	2.60
HR	0.81	0.83	0.36	1.13	0.07	0.07	3.27
MH	1.55	0.15	0.59	1.25	0.00	0.14	3.68

Source: Tariff Orders of respective SERCs

Table 33 State wise open access charges for HT Commercial Consumers, taking conventional power (FY19)

HT Commercial ¹⁷ (Conventional Power) (FY19)	CSS	Dist. Wheel.	Trans. Wheel	Add. Sur.	SLDC/Sched. charge	RPO	Total
CG	1.49	0.25	0.41	-	-	0.11	2.27
AS	1.90	0.27	1.06	-	0.00	0.11	3.34
PB	1.06	1.11	0.21	0.86	0.00	0.07	3.31
JH	1.62	0.17	0.25	-	0.00	0.10	2.14
TN	1.98	0.21	0.21	-	0.01	0.14	2.55
WB	3.99	1.19	0.38	-	0.01	0.06	5.64
AP ¹⁸	1.92	0.03	0.22	-	0.01	0.11	2.28
GJ	1.47	0.15	0.29	0.57	0.00	0.13	2.60
HR	1.80	0.83	0.36	1.13	0.07	0.07	4.26
MH	2.53	0.15	0.59	1.25	0.00	0.14	4.66

Source: Tariff Orders of respective SERCs

It can be observed that Cross Subsidy Surcharge and Additional Surcharge, form major part of the open access charges across the States. Few States like West Bengal, Tamil Nadu, Jharkhand, Maharashtra, etc. have the highest CSS (more than Rs. 1.50 per unit). States like Punjab, Gujarat, Haryana and Maharashtra apply additional surcharge on open access consumers for recovery of stranded generation capacity.

As per total open access charges for HT industrial and commercial consumers procuring power from conventional sources, Andhra Pradesh, Jharkhand, Chhattisgarh and Tamil Nadu have the lowest open access charges. However, the variable charges applicable to these categories would help in ascertaining if the lower open access charges in these states encourage consumers to avail open access, which is analysed in subsequent sections of the chapter.

The following assumptions have been taken while populating the open access charges in the tables above -

- 1 MW load
- Non-Captive consumers
- Conventional power
- 60% load factor, for converting monthly/ daily charges into per unit charge

¹⁶ Average for APSPDCL and APEPDCL

¹⁷ States of Chhattisgarh, Jharkhand and Gujarat have a single consumer category for both HT Industrial and HT Commercial consumers. Same numbers have been assumed in both cases.

¹⁸ Average for APSPDCL and APEPDCL

- 33 kV Connected voltage
- Long Term Open Access (Except in case of Haryana, where only short term OA charges are determined)

Discounts/ incentives on open access charges for renewable power

With a view to promote renewable energy, majority States are offering discount on Open Access charges for procurement of renewable power. The table below showcases the discounts offered for renewable power in various States. It can be observed that, no incentives/ discounts for procurement of renewable power is offered in case of Maharashtra and West Bengal. On the other hand 100% discount is being offered in States of Andhra Pradesh and Haryana on CSS, wheeling charges and additional surcharge.

Table 34 State wise discounts offered on open access charges for procurement of solar power

Discount for RE Power (FY19)	CSS	Dist. Wheel.	Trans. Wheel	Add. Sur.	SLDC charge	T&D Losses
CG	50%	100%	100%	-	100%	6%
AS	-	67%	33%	-	-	-
PB	-	100%	100%	-	-	-
JH	100%	50%	50%	-	-	100%
TN	40%	60%	60%	-	60%	-
WB	-	-	-	-	-	-
AP	100%	100%	100%	-	-	100%
GJ	100%	-	-	-	-	-
HR	100%	100%	100%	100%	-	-
MH	-	-	-	-	-	-

Source: Tariff Orders and regulations of respective SERCs; State Policies on renewable power

Based on these discounts offered on open access charges, the open access charges applicable on open access HT industrial and commercial consumers procuring renewable power in the shortlisted States is as below:

Table 35 State wise open access charges for procurement of solar power by HT Ind. consumers (FY19)

HT Industry (RE Power) (FY19)	CSS	Dist. Wheel.	Trans. Wheel	Add. Sur.	SLDC charge	Total
CG	0.75	-	-	-	-	0.75
AS	1.37	0.09	0.43	-	0.01	1.90
PB	1.06	-	-	0.86	0.01	1.93
JH	-	0.09	0.13	-	0.00	0.21
TN	1.00	0.08	0.28	-	0.01	1.39
WB	3.54	1.19	1.27	-	0.01	6.02
AP ¹⁹	-	-	-	-	0.02	0.02
GJ	-	0.15	0.97	0.57	0.00	1.69
HR	-	-	-	-	0.07	0.07
MH	1.55	0.15	0.34	1.25	0.01	3.30

Source: as per analysis performed in this report

Table 36 State wise open access charges for procurement of solar power by HT Comm.l consumers (FY19)

HT Commercial ²⁰ (RE Power)	CSS	Dist. Wheel.	Trans. Wheel	Add. Sur.	SLDC charge	Total
CG	0.75	-	-	-	-	0.75

¹⁹ Average of APEPDCL and APSPDCL

²⁰ States of Chhattisgarh, Jharkhand and Gujarat have a single consumer category for both HT Industrial and HT Commercial consumers. Same numbers have been assumed in both cases.

HT Commercial ²⁰ (RE Power)	CSS	Dist. Wheel.	Trans. Wheel	Add. Sur.	SLDC charge	Total
AS	1.90	0.09	0.43	-	0.01	2.43
PB	0.49	-	-	0.86	0.01	1.36
JH	-	0.09	0.13	-	0.00	0.21
TN	1.19	0.08	0.28	-	0.01	1.57
WB	3.99	1.19	1.27	-	0.01	6.47
AP ²¹	-	-	-	-	0.02	0.02
GJ	-	0.15	0.97	0.57	0.00	1.69
HR	-	-	-	-	0.07	0.07
MH	2.53	0.15	0.34	1.25	0.01	4.28

Source: as per analysis performed in this report

The following assumptions have been taken while populating the open access charges in the tables above -

- 1 MW load
- Non-Captive consumers
- Solar power
- 18% load factor, for converting monthly/ daily charges into per unit charge
- 33 kV Connected voltage
- Long Term Open Access (Except in case of Haryana, where only short term OA charges are determined)

Trend of open access charges across states

State-wise movement of open access charges in the last three years along with their gap with respect to applicable energy tariff for HT Industrial and HT Commercial consumers have been analysed. It can be observed that the overall open access charges have increased in number of states, with a major increase in state of Assam where open access charges have increased by more than 30% over last three years. Total open access charges have reduced significantly in the state of Tamil Nadu and marginally in the States of Punjab and Haryana. The table below captures the trend in open access charges and reasons for any significant change during the three year period.

Table 37 State wise trend of open access charges and energy tariff

State	Open Access Charges and Energy Tariff		Remarks
	HT Industry	HT Commercial	
CG		-	<ul style="list-style-type: none"> • CSS increased by 23 paise in FY19 resulting in increase in overall OA charges
AS			<ul style="list-style-type: none"> • Substantial increase in OA charges during FY18 primarily on account of CSS and wheeling charge • CSS has more than doubled in the last 3 years

²¹ Average of APEPDCL and APSPDCL

State	Open Access Charges and Energy Tariff		Remarks
	HT Industry	HT Commercial	
PB			<ul style="list-style-type: none"> • Formula is not in accordance with the Tariff Policy • Overall OA charges have reduced • While CSS is a small element, Additional Sur. and Wheeling charge have high share in overall OA charges
JH		-	<ul style="list-style-type: none"> • OA charges determined for first time in FY19 Order • CSS of Rs. 1.62 per unit forms major OA charge
TN			<ul style="list-style-type: none"> • CSS significantly reduced in FY18 based on revised formula of Tariff Policy 2016 • Due to reduction in OA charges, OA activity increased significantly
WB			<ul style="list-style-type: none"> • Highest OA charges across states • CSS is calculated based on modified formula (ABR-ACoS) • High wheeling charge without provision for voltage wise losses
AP			<ul style="list-style-type: none"> • Total OA charges are increasing each year with tariff • CSS form major component • Major difference in 33 and 11kv wheeling charge
GJ		-	<ul style="list-style-type: none"> • CSS and Additional Surcharge form major component of OA charges • Increase in overall OA charges due to Trans. Wheeling and Add. Surcharge

State	Open Access Charges and Energy Tariff		Remarks
	HT Industry	HT Commercial	
HR			<ul style="list-style-type: none"> • Add. Surcharge contributes to high OA charges in state • CSS for HT Ind. has decreased in last 3 years from Rs. 1.57 to Rs. 0.81 resulting in decline in OA charges

Source: Tariff Orders of respective SERCs

Summary of open access charges and break-even power purchase cost

The table below summarizes the total open access charges for various types of consumers taking Long Term Open Access and Short Term Open Access. Open Access for renewable power and captive power is cheaper than conventional and non-captive power, because of incentives and discounts. Further due to absence of harmonization in short term and long term charges, it can be observed that in few States long term open access is expensive than short term.

Open Access Charges for Long Term Open Access

Table 38 State wise total open access charges for different types of LTOA HT Industrial consumers

State	Total Open Access Charges FY19, (Rs. Per unit)				HT Industrial Tariff FY19, (Rs. Per unit)	
	Non Captive, Non RE Power	Captive, Non RE Power	Non Captive, RE Power	Captive, RE Power	ABR	Energy Tariff
CG	2.27	0.78	0.75	0.00	7.50	6.63
AS	2.81	1.44	1.90	0.53	7.62	7.20
PB	2.74	1.39	1.36	0.01	6.63	6.16
JH	2.14	0.52	0.21	0.21	6.75	6.05
TN	2.24	0.57	1.39	0.38	7.16	6.35
WB	5.19	1.64	6.02	2.47	7.33	6.44
AP	1.79	0.37	0.02	0.02	7.28	6.18
GJ	2.60	0.56	1.69	1.12	7.06	5.97
HR	3.27	1.33	0.07	0.07	7.29	6.89
MH	3.68	0.88	3.30	0.50	7.91	7.10

Source: Tariff Orders of respective SERCs

Table 39 State wise total open access charges for different types of LTOA HT Commercial consumers

State	Total Open Access Charges FY19, (Rs. Per unit)				HT Commercial Tariff FY19 (Rs. Per unit)	
	Non Captive, Non RE Power	Captive, Non RE Power	Non Captive, RE Power	Captive, RE Power	ABR	Energy Tariff
CG	2.27	0.78	0.75	0.00	7.50	6.63
AS	3.34	1.44	2.43	0.53	8.34	8.00
PB	3.31	1.39	1.93	0.01	7.08	6.82
JH	2.14	0.52	0.21	0.21	6.75	6.05
TN	2.55	0.57	1.57	0.38	8.81	8.00
WB	5.64	1.64	6.47	2.47	7.78	6.89
AP	2.19	0.37	0.02	0.02	8.45	7.35
GJ	2.60	0.56	1.69	1.12	7.06	5.97
HR	4.26	1.33	0.07	0.07	7.48	7.11
MH	4.66	0.88	4.28	0.50	12.46	11.65

Source: Tariff Orders of respective SERCs

Open Access Charges for Short Term Open Access

Table 40 State wise total open access charges for different types of STOA HT Industrial consumers

State	Total Open Access Charges FY19, (Rs. Per unit)				HT Industrial Tariff FY19, (Rs. Per unit)	
	Non Captive, Non RE Power	Captive, Non RE Power	Non Captive, RE Power	Captive, RE Power	ABR	Energy Tariff
CG	2.34	0.85	0.75	0.00	7.50	6.63
AS	2.40	1.03	1.90	0.53	7.62	7.20

State	Total Open Access Charges FY19, (Rs. Per unit)				HT Industrial Tariff FY19, (Rs. Per unit)	
	Non Captive, Non RE Power	Captive, Non RE Power	Non Captive, RE Power	Captive, RE Power	ABR	Energy Tariff
PB	3.09	1.74	1.36	0.01	6.63	6.16
JH	3.77	0.66	0.67	0.67	6.75	6.05
TN	2.24	0.57	1.39	0.38	7.16	6.35
WB	4.66	1.11	4.82	1.28	7.33	6.44
AP	1.79	0.37	0.02	0.02	7.28	6.18
GJ	2.82	0.78	1.54	0.98	7.06	5.97
HR	3.27	1.33	0.07	0.07	7.29	6.89
MH	3.43	0.63	3.30	0.50	7.91	7.10

Source: Tariff Orders of respective SERCs

Table 41 State wise total open access charges for different types of STOA HT Commercial consumers

State	Total Open Access Charges FY19, (Rs. Per unit)				HT Commercial Tariff FY19, (Rs. Per unit)	
	Non Captive, Non RE Power	Captive, Non RE Power	Non Captive, RE Power	Captive, RE Power	ABR	Energy Tariff
CG	2.34	0.85	0.75	0.00	7.50	6.63
AS	2.93	1.03	2.43	0.53	8.34	8.00
PB	3.66	1.74	1.93	0.01	7.08	6.82
JH	3.77	0.66	0.67	0.67	6.75	6.05
TN	2.55	0.57	1.57	0.38	8.81	8.00
WB	5.11	1.11	5.27	1.28	7.78	6.89
AP	2.19	0.37	0.02	0.02	8.45	7.35
GJ	2.82	0.78	1.54	0.98	7.06	5.97
HR	4.26	1.33	0.07	0.07	7.48	7.11
MH	4.41	0.63	4.28	0.50	12.46	11.65

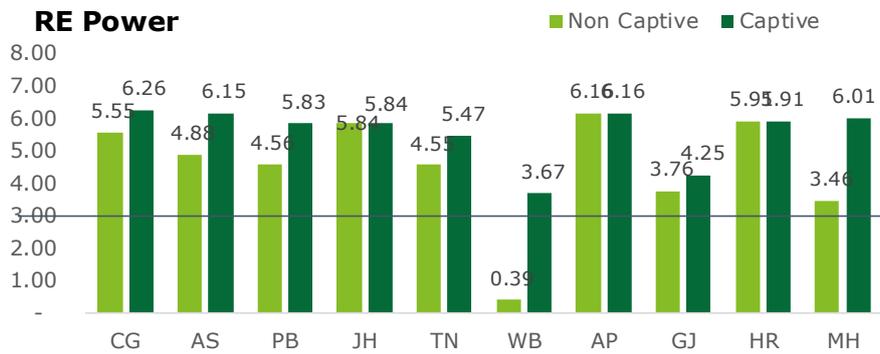
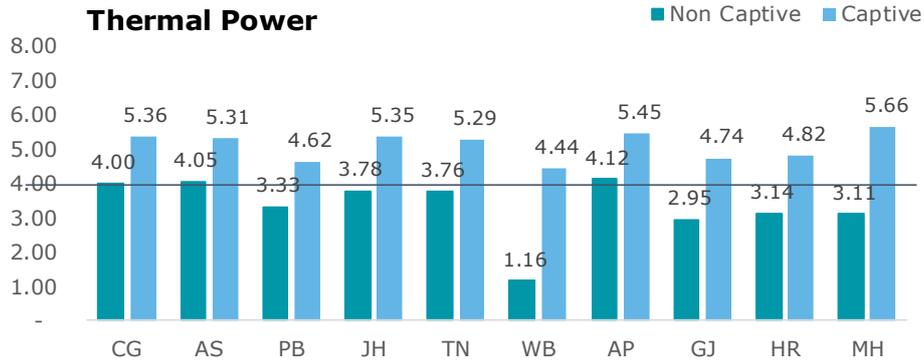
Source: Tariff Orders of respective SERCs

The gap between the energy tariff and total open access charges for a consumer, is the break even power purchase cost. Getting power at a rate below this break even power purchase cost, can create savings for an open access consumer.

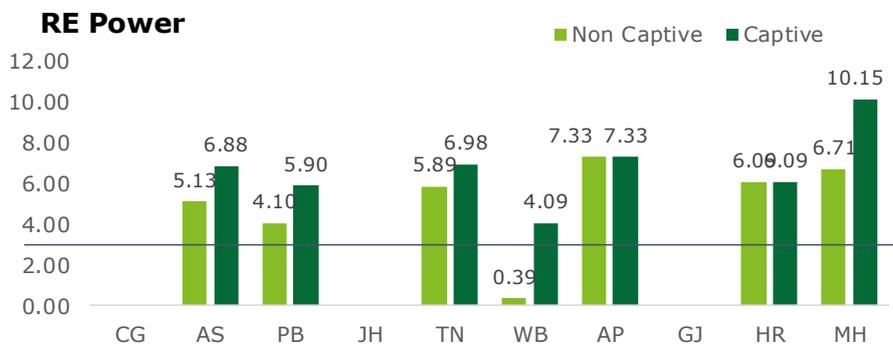
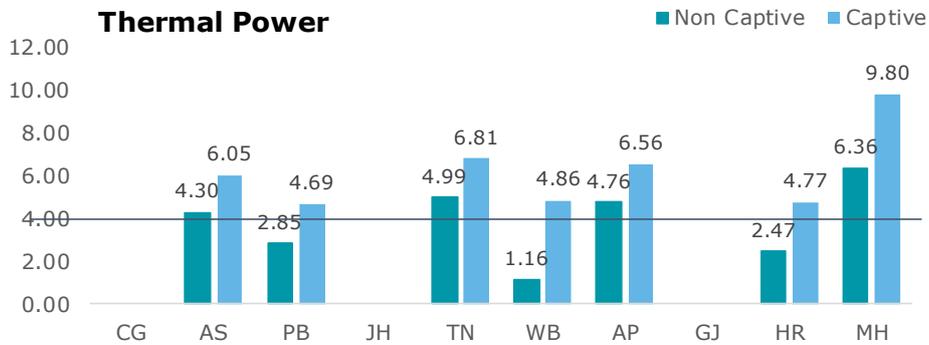
The graphs below showcase the break even power purchase cost for various types of open access consumers taking captive/ non-captive power or taking RE/ conventional power. States with higher break even power purchase cost would have higher probability of open access migration.

Figure 24 State wise break even power purchase cost for different types of open access procurement (FY19)

HT Industrial Consumer Category – Break Even Power Purchase Cost (Rs./Unit)



HT Commercial Consumer Category – Break Even Power Purchase Cost (Rs./Unit)

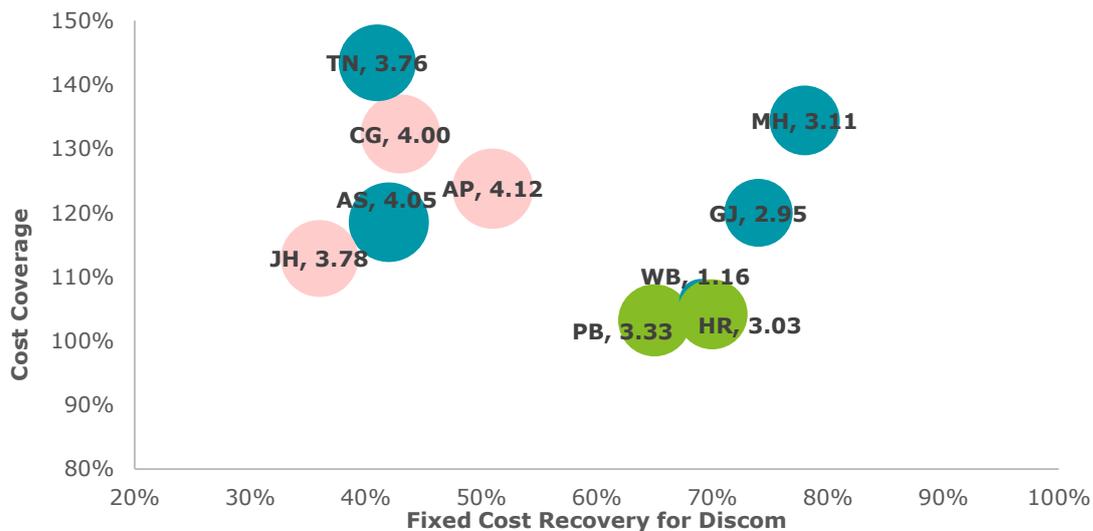


Source: as per analysis performed in this report

The high open access charges on conventional power procurement pose a challenge for operationalization of open access activity unless the power is being procured from captive plant. Maintaining demand with the utility (in absence of standby charges) also add to the overall cost of open access. However, procurement of renewable power under open access is viable in most states primarily on account of discounts on open access charges being allowed by the SERCs.

The figure below charts the states based on their cost coverage levels and fixed cost recovery from open access consumers. The bubble size represents the break-even power purchase cost for HT Industrial consumers. It can be observed that states of Jharkhand, Chhattisgarh and Andhra Pradesh, need to improve upon the fixed cost recovery from open access charges. Further the states of Tamil Nadu and Maharashtra need to reduce the cross subsidy levels.

Figure 25 State wise bubble chart on cost coverage, fixed cost recovery and break even power purchase cost



*For HT Industrial consumer, taking non-captive thermal power open access
Bubble size represents break even power purchase cost

Source: as per analysis performed in this report

4.5. Impact on Discom due to open access migration

In previous sections, a comparative analysis has been undertaken with respect to the open access framework and charges applicable across the ten shortlisted States. Based on the information analysed in the previous section an assessment has been undertaken to understand the financial implications on the Discom in case of migration of consumers to open access. The assessment would provide insights on whether the recovery from open access charges are adequate to cover the revenue shortfall created due to migration of consumers and at the same time would enable identification of suitable options required for addressing the tariff-related barriers in respect to open access.

In the 'Report on Open Access' issued by FOR in December 2017, deliberation has been done with regard to the loss of revenue to distribution utilities on account of the following factors:

- i. Loss of revenue of industrial and commercial consumers which migrate to open access and impact the overall revenue recovery of the Discom
- ii. Incentives / subsidies offered to open access consumers procuring power through renewable sources
- iii. Provisions for non-levy of surcharges from captive open access consumers

While the loss of revenue is partially compensated through recovery of open access charges from such migrating consumers, the extent of such recovery varies based on State to State and various other factors including source of open access (renewable or conventional), type of open access (regular or captive), category of consumer (HT industrial or HT commercial), applicable discounts

under the state policies, etc. Therefore, as part of this Chapter various scenarios have been analysed to have a better understanding of the impact on distribution utilities due to migration of HT consumers to open access.

4.5.1 Methodology adopted for Impact assessment on Discoms

When a HT consumer migrates to Open Access, the Discom may be negatively impacted due to loss of its revenue (part or full) from such consumer, while still incurring certain fixed costs. This loss is generally recovered by way of various open access charges i.e. wheeling charges, cross subsidy surcharge, etc. which are approved on regular intervals by the SERCs of respective States. Apart from these, costs related to stranded generation capacity are also being allowed to be recovered by few SERCs in order to compensate the Discoms for their fixed obligation to such generating plants. The table below illustrates the methodology for estimating the loss to Discom in terms of existing Average Billing Rate (ABR) from a consumer, compensated partly by way of avoiding variable power purchase cost and various open access charges (as approved by respective SERCs).

Table 42 Methodology for per unit impact assessment of open access migration on Discoms

Sl.	Parameter	Fixed (Rs./Unit)	Variable (Rs./Unit)	Total (Rs./Unit)
A	Tariff	1.10	6.89	7.99
B	Power Purchase Cost (avoided cost)	-	3.70	3.70
C	Open Access Charges	-	3.41	3.41
	• CSS	-	0.81	0.81
	• Distribution Wheeling Charges	-	0.83	0.83
	• Transmission Charges	-	0.52	0.52
	• Additional Surcharge	-	1.13	1.13
	• Others (SLDC, Reactive, RPO etc.)	-	0.12	0.12
D=B+C-A	Per Unit Impact on Discom of OA migration	(1.10)	0.22	(0.88)

The numbers used in the table above are for illustration purpose only to showcase the methodology for impact assessment. Detailed analysis of all States is presented further in this section.

As per the illustrative calculation above, the Discom would be negatively impacted by Rs. 0.88 per unit (revenue loss of Rs. 7.99 less avoided cost of power purchase Rs. 3.70 per unit less recover of Rs. 3.41 per unit through open access charges), due to migration of consumer to open access. Element 'D' represents the 'Per Unit Impact on Discom of Open Access Migration' in rupees per unit, assuming that the consumer does not retain its contract demand with Discom and the Discom loses entire ABR from consumer.

This per unit impact, multiplied by the total sales that migrate to open access, would give the 'Aggregate Impact on Discom of Open Access Migration' in rupees amount. Such aggregate loss would eventually be required to be additionally recovered from the net sales of the consumers remaining with the Discoms, by way of a tariff increase. Therefore an average tariff hike required across consumer categories to cover the loss has been computed. The Illustration below represents this 'Aggregate Impact on Discom of Open Access Migration' and 'Average tariff hike required to cover the revenue loss of Discom'.

Table 43 Methodology for aggregate impact assessment of open access migration on Discom

Sl.	Parameter	Unit	Amount
E	Per unit Impact on Discom of OA migration	Rs./Unit	(0.88)
F	Sales migrating to open access	Million Units	1000
G=E×F/10	Aggregate Impact on Discom of Open Access Migration	Rs. Crore	88
H	Remaining sales of Discom (after OA migration)	Million Units	20,000
I=H÷G	Average tariff hike required to cover loss of Discom	Rs./Unit	0.04

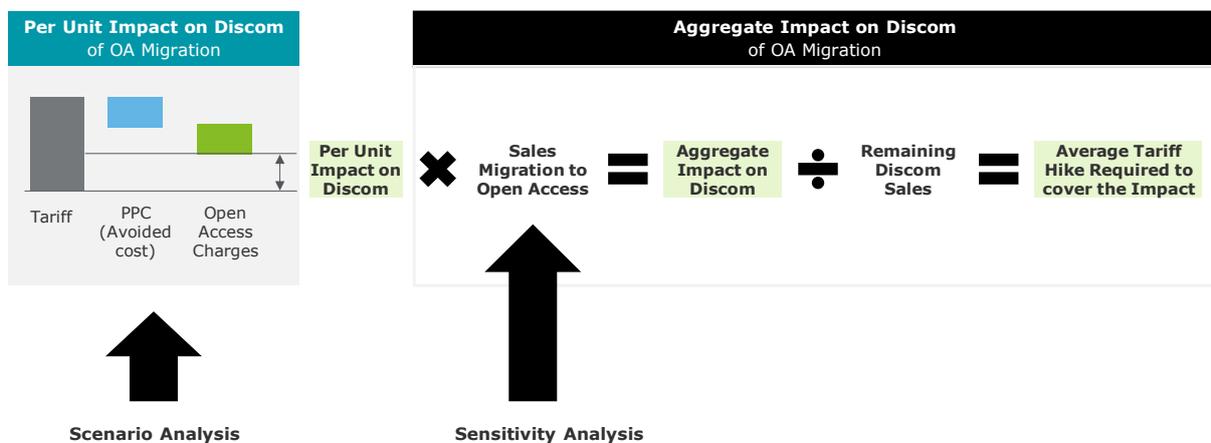
Sl.	Parameter	Unit	Amount
J	ACoS	Rs./Unit	7.31
K=I÷J	Average tariff hike required to cover loss of Discom	%	0.60%

The numbers used in the table above are for illustration purpose only to showcase the methodology for impact assessment. Detailed analysis of all States is presented further in this section.

In the subsequent section, a detailed analysis of such impact and tariff hike required to compensate for the impact is undertaken for each shortlisted State. The 'Per Unit Impact on Discom' is calculated separately for HT Industrial and HT Commercial Consumer. The 'Aggregate Impact on Discom' is calculated based on combined migration of HT Industrial and HT Commercial consumers from Discom.

The above stated impact assessment has been performed under several different scenarios and sensitivities, as highlighted in the diagram below:

Figure 26 Methodology for impact assessment of open access migration



When a consumer migrates to open access, there are several scenarios possible based on aspects like treatment of contract demand by consumer with Discom, treatment of surplus power by Discom, type of open access available by consumer etc. and therefore the financial impact on account of these scenarios can differ significantly for the Discom.

In addition the quantum of sales shifting to open access may have further implications on the overall impact on the Discom. Therefore, three scenarios have been studied for the purpose of impact assessment with sensitivity on sales migration to open access in each shortlisted State. The table below presents a summary of the parameters on which scenario analysis and sensitivity analysis is performed, the various possibilities of scenarios/ sensitivity and the difference in calculations of impact assessment due to the several options considered:

Table 44 Scenario and sensitivity analysis for impact assessment of open access migration

Parameter	Possibilities for Scenarios/ Sensitivity	Difference on impact assessment	
Scenario Analysis			
Treatment of surplus power by Discom	A1	• Surplus power backed down (as per merit order)	Variable PPC avoided by Discom
	A2	• Surplus Power re-allocated (to under-served consumer categories)	No change in PPC, additional revenue from sales
Treatment of contract demand by Consumer	B1	• Contract Demand maintained with Discom	Loss of only energy tariff to Discom
	B2	• Contract Demand not maintained with Discom	Loss of demand & energy tariff to Discom
Type of OA consumer	C1	• Type of OA consumer – Thermal, Non Captive	
	C2	• Type of OA consumer – Thermal, Captive	

Parameter	Possibilities for Scenarios/ Sensitivity	Difference on impact assessment
	C3 • Type of OA consumer – RE, Non-Captive	Different set of open access charges applicable in each case
	C4 • Type of OA consumer – RE, Captive	
Sensitivity Analysis		
Sales Migration to Open Access	D1 • 5% sales migration	The total impact amount in rupees would differ
	D2 • 10% sales migration	
	D3 • 20% sales migration	
	D4 • Estimated sales migration, as per load profile analysis of HT consumers	

In further sub-sections the Impact on Discoms under different scenarios and sensitivity possibilities is estimated for each shortlisted State.

4.5.2 Per unit impact on Discoms due to open access migration

In this section the per unit impact on Discoms is estimated under different scenarios including treatment of contracted load, power planning scenario and category of open access availed as discussed in the previous section. The per unit impact due to migration of a consumer to open access would subsequently be evaluated for assessing the aggregate impact considering the sensitivity on sales migrating to open access which has been covered in the subsequent section.

The per unit impact due to such migration would depend on number of factors as listed below:

- i. Applicable fixed and energy charges
- ii. Open access charges (including CSS, transmission and distribution wheeling charges, Additional surcharge, SLDC charges, etc.)
- iii. Incentives and discounts available to specific category of open access
- iv. Power purchase cost of the utility

As each of the above listed variables differ from State to State, the per unit impact has been computed under the discussed scenarios and compared across the ten shortlisted States. Based on the regulatory review and open access charges review conducted in section 4.4 of this report, it is observed that the loss to Discom is higher when consumers opt for open access under captive or renewable type of open access power. The waiver of CSS and additional surcharge enables viability of power under open access for the consumer in case of captive power. Similarly, the incentives and discounts on renewable energy offered by various States reduces the total open access charges significantly and increases the affordability of renewable power. Further, in case the consumers do not retain their contract demand with Discoms, the impact on Discom increases due to loss of fixed revenue also in addition to the loss of revenue from energy charges. The tariffs for HT Commercial consumers is generally higher than tariffs for HT Industrial consumers and therefore the Discoms are impacted more in case of migration of an HT Commercial consumer to open access as against an HT Industrial consumer.

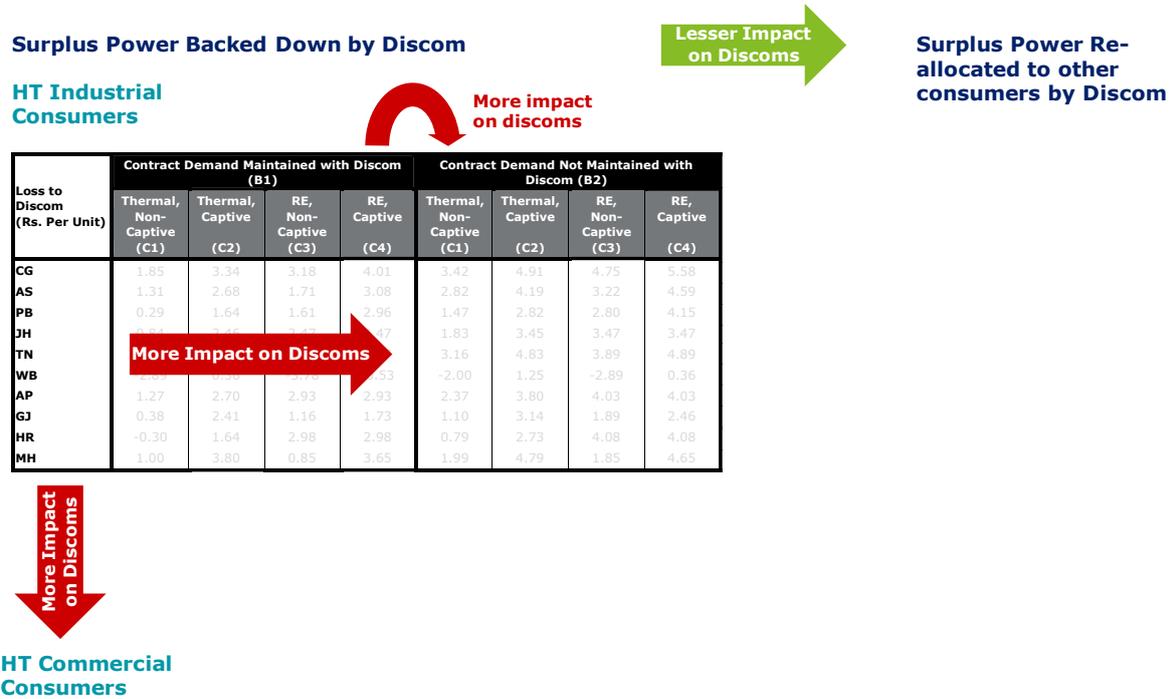
With respect to the Discoms perspective, migration of consumer to open access results in surplus power from PPAs / power procurement obligation from generating stations. Discom has an option to either back down the surplus power or re-allocate this power to under-served consumers in State i.e. domestic and agricultural consumers. The first option would result in power purchase cost savings from power stations with costlier variable charge (merit order principle). In case of second option of re-allocation of power to unserved consumers, while the power purchase would remain the same, the Discom would earn additional revenue from re-allocated sales. However limitations may exist for re-allocation of surplus power to unserved consumers, depending upon the power scenario in respective States.

As each of the scenarios have interlinkages and would have incremental change (positive or negative) with respect to impact in per unit rate, the representation has been done by combining the scenarios which would enable the assessment under each scenario. For example, the impact of

a consumer migrating to open access would wary considering the category (third-party or captive) and source of power (conventional or renewable). Further, the consumer may choose to surrender the contract demand which would lead to incremental loss to the Discom due to non-recovery of demand charges.

The figure below illustrates the effect of various scenarios/ sensitivity on the impact of open access migration as discussed above. Detailed State wise analysis and specific observations are provided further in this section.

Figure 27 Effect of various scenarios and sensitivities on impact of open access migration



Scenario A1 – Surplus Power is backed down by Discom

In this scenario the 'Per unit impact on Discom' due to open access migration by HT Industrial consumers have been computed assuming that the Discom backs down the surplus power available due to such migration. The type of open access which the consumer is availing has also been considered under the scenario to compute the differential impact on per unit sales of the Discom.

The table below summarizes the results of per unit impact due to migration of HT-industrial consumer under back-down scenario:

Table 45 Per unit impact on Discom of HT Ind. consumer migration to OA, with surplus power backed down

HT Industrial Consumer – Loss to Discom (Rs. Per Unit)	Contract Demand Maintained with Discom (B1)				Contract Demand Not Maintained with Discom (B2)			
	Thermal, Non-Captive (C1)	Thermal, Captive (C2)	RE, Non-Captive (C3)	RE, Captive (C4)	Thermal, Non-Captive (C1)	Thermal, Captive (C2)	RE, Non-Captive (C3)	RE, Captive (C4)
CG	1.85	3.34	3.26	4.01	2.72	4.21	4.13	4.87
AS	1.31	2.68	1.89	3.26	1.72	3.09	2.31	3.68
PB	0.67	2.02	1.99	3.34	1.14	2.49	2.46	3.81
JH	1.20	2.82	3.03	3.03	1.89	3.51	3.72	3.72
TN	1.14	2.81	1.87	2.87	1.95	3.62	2.68	3.68
WB	-2.80	0.74	-3.69	-0.15	-1.91	1.63	-2.80	0.74
AP	1.37	2.80	3.04	3.04	2.47	3.90	4.14	4.14

HT Industrial Consumer – Loss to Discom (Rs. Per Unit)	Contract Demand Maintained with Discom (B1)				Contract Demand Not Maintained with Discom (B2)			
	Thermal, Non-Captive (C1)	Thermal, Captive (C2)	RE, Non-Captive (C3)	RE, Captive (C4)	Thermal, Non-Captive (C1)	Thermal, Captive (C2)	RE, Non-Captive (C3)	RE, Captive (C4)
GJ	0.56	2.59	2.74	3.30	1.66	3.69	3.84	4.40
HR	0.09	2.03	3.22	3.22	0.48	2.42	3.61	3.61
MH	0.97	3.77	1.22	4.02	1.78	4.58	2.03	4.83

Source: as per analysis performed in this report

A broad analysis of the above table indicates that majority of the States would be negatively impacted by migration of an HT Industrial consumer to open access, except West Bengal. State of West Bengal remains an outlier across the various scenarios as the open access charges have not been revised regularly by the SERC. In case of thermal non-captive category, the impact on States with higher industrial tariffs (Chhattisgarh, Assam, Andhra Pradesh and Tamil Nadu) remains larger as compared to other States. However, in case of RE (non-captive) category, the higher per unit impact is observed in States with higher incentives and discounts (Chhattisgarh, Jharkhand, Andhra Pradesh and Haryana).

Further, the cells highlighted in red indicate those cases wherein the impact on Discom is higher than Rs. 3.00 per unit. These States would be significantly impacted due to migration of HT Industrial consumers to open access. Chhattisgarh particularly would be highly impacted in most of the scenarios, due to its comparatively higher retail tariffs for HT Industrial consumers and discounted open access charges in case of renewable and captive consumers. In case of consumers opting for open access without maintaining demand with the Discom, significant impact on Discom is observed in terms of per unit rate and shall result in inadequate recoveries from open access charges.

Similar to the analysis for HT Industrial consumers, the table below presents the 'Per unit impact on Discom' of open access migration for various types of HT Commercial consumers assuming surplus power is backed down by Discom. State of Chhattisgarh, Maharashtra, Tamil Nadu and Andhra Pradesh are particularly highly impacted in almost all scenarios.

Table 46 Per unit impact on Discom of HT Comm. consumer migration to OA, with surplus power backed down

HT Commercial Consumer ²² - Loss to Discom (Rs. Per Unit)	Contract Demand Maintained with Discom (B1)				Contract Demand Not Maintained with Discom (B2)			
	Thermal, Non-Captive (C1)	Thermal, Captive (C2)	RE, Non-Captive (C3)	RE, Captive (C4)	Thermal, Non-Captive (C1)	Thermal, Captive (C2)	RE, Non-Captive (C3)	RE, Captive (C4)
CG	1.85	3.34	3.26	4.01	2.72	4.21	4.13	4.87
AS	2.11	3.48	2.69	4.06	2.44	3.81	3.03	4.40
PB	1.33	2.68	2.65	4.00	1.58	2.93	2.91	4.26
JH	1.20	2.82	3.03	3.03	1.89	3.51	3.72	3.72
TN	2.79	4.46	3.52	4.52	3.60	5.27	4.33	5.33
WB	-2.35	1.19	-3.24	0.30	-1.46	2.08	-2.35	1.19
AP	2.54	3.97	4.21	4.21	3.64	5.07	5.31	5.31
GJ	0.56	2.59	2.74	3.30	1.66	3.69	3.84	4.40
HR	0.30	2.24	3.43	3.43	0.67	2.61	3.80	3.80
MH	5.52	8.32	5.77	8.57	6.33	9.13	6.58	9.38

Source: as per analysis performed in this report

Scenario A2 - Surplus Power is re-allocated by Discom

²² States of Chhattisgarh, Jharkhand and Gujarat have a single consumer category for both HT Industrial and HT Commercial consumers. Same numbers have been assumed in both cases.

Under this scenario the 'Per unit impact on Discom' due to open access migration, for various types of HT Industrial consumers has been computed assuming that the Discom re-allocates the surplus power available to domestic and agricultural consumers.

It is observed that as compared to the previous scenario of power back down, the cases of high impact on Discom have been reduced and the higher impact is limited to few States, only in cases when the consumer opts for open access from renewable power sources or captive sources. One of the prime reasons for the impact being lower under this scenario is because the average revenue realization from domestic and agriculture consumers is higher than the variable power purchase cost, that can be avoided by Discoms by power back down as per merit order. However contrary to other States, the impact in the state of Tamil Nadu has increased as the weighted average revenue collected from domestic and agricultural consumers in Tamil Nadu is lower than the cost of power that can be backed down as per merit order analysis.

It is to be noted that in this case of surplus power re-allocation, an increase in subsidy by State Governments amount would be necessary as majority of the State Governments subsidize the tariff of domestic and agricultural consumers. Also, limitations with regard to the quantum of re-allocation to these categories would exist considering the existing power scenario in the country.

Table 47 Per unit impact on Discom of HT Ind. consumer migration to OA, with surplus power re-allocated

HT Industrial Consumer – Loss to Discom (Rs. Per Unit)	Contract Demand Maintained with Discom (B1)				Contract Demand Not Maintained with Discom (B2)			
	Thermal, Non-Captive (C1)	Thermal, Captive (C2)	RE, Non-Captive (C3)	RE, Captive (C4)	Thermal, Non-Captive (C1)	Thermal, Captive (C2)	RE, Non-Captive (C3)	RE, Captive (C4)
CG	0.27	1.76	1.69	2.43	1.14	2.63	2.55	3.30
AS	-0.68	0.69	-0.09	1.28	-0.26	1.11	0.32	1.69
PB	-1.67	-0.32	-0.34	1.01	-1.19	0.16	0.13	1.48
JH	-0.12	1.50	1.71	1.71	0.58	2.20	2.41	2.41
TN	1.36	3.03	2.09	3.09	2.17	3.84	2.90	3.90
WB	-4.39	-0.84	-5.28	-1.73	-3.50	0.05	-4.39	-0.85
AP	1.17	2.60	2.84	2.84	2.27	3.70	3.93	3.93
GJ	-0.42	1.61	1.76	2.32	0.68	2.71	2.86	3.42
HR	-2.15	-0.21	0.98	0.98	-1.75	0.19	1.38	1.38
MH	0.05	2.85	0.29	3.09	0.86	3.66	1.10	3.90

Source: as per analysis performed in this report

Similar to the reasons mentioned in case of HT industrial consumers, the impact on Discoms in case of HT commercial consumer migration has also reduced under this scenario for all states excluding Tamil Nadu. However the impact in case of Andhra Pradesh and Maharashtra remains high due to high commercial tariffs.

Table 48 Per unit impact on Discom of HT Comm. consumer migration to OA, with surplus power re-allocated

HT Commercial Consumer ²³ – Loss to Discom (Rs. Per Unit)	Contract Demand Maintained with Discom (B1)				Contract Demand Not Maintained with Discom (B2)			
	Thermal, Non-Captive (C1)	Thermal, Captive (C2)	RE, Non-Captive (C3)	RE, Captive (C4)	Thermal, Non-Captive (C1)	Thermal, Captive (C2)	RE, Non-Captive (C3)	RE, Captive (C4)
CG	0.27	1.76	1.69	2.43	1.14	2.63	2.55	3.30
AS	0.12	1.49	0.71	2.08	0.46	1.83	1.04	2.41
PB	-1.00	0.35	0.32	1.67	-0.75	0.60	0.57	1.92
JH	-0.12	1.50	1.71	1.71	0.58	2.20	2.41	2.41
TN	3.01	4.68	3.74	4.74	3.82	5.49	4.55	5.55

²³ States of Chhattisgarh, Jharkhand and Gujarat have a single consumer category for both HT Industrial and HT Commercial consumers. Same numbers have been assumed in both cases.

HT Commercial Consumer ²³ – Loss to Discom (Rs. Per Unit)	Contract Demand Maintained with Discom (B1)				Contract Demand Not Maintained with Discom (B2)			
	Thermal, Non-Captive (C1)	Thermal, Captive (C2)	RE, Non-Captive (C3)	RE, Captive (C4)	Thermal, Non-Captive (C1)	Thermal, Captive (C2)	RE, Non-Captive (C3)	RE, Captive (C4)
WB	-3.94	-0.39	-4.83	-1.28	-3.05	0.50	-3.94	-0.40
AP	2.34	3.77	4.00	4.00	3.44	4.87	5.10	5.10
GJ	-0.42	1.61	1.76	2.32	0.68	2.71	2.86	3.42
HR	-1.94	0.00	1.19	1.19	-1.57	0.37	1.56	1.56
MH	4.60	7.40	4.84	7.64	5.41	8.21	5.65	8.45

Source: as per analysis performed in this report

4.5.3 Aggregate impact on Discoms due to open access migration

The aggregate impact on Discoms due to open access migration is estimated by considering the per unit impact on Discoms as estimated earlier with the quantum of sales that could potentially migrate to open access in each State. The analysis is performed for the possible scenarios based on the parameters of treatment of surplus power by Discom and whether open access consumers maintain their contract demand with Discom.

The aggregate impact on Discoms would also depend upon the type of consumer migrating to open access, as each consumer type has a different per unit impact on Discom. There can be a mix of following types of open access consumers in the State –

- Non captive consumer taking conventional power
- Captive consumer taking conventional power
- Non-captive consumer taking renewable power
- Captive consumer taking renewable power

The share of these consumer types in each State would depend upon the viability of migrating to open access for such consumers. Equal share of various consumer types is taken in States, for whom migrating to open access is viable in the respective States.

Based on the review performed earlier in this report, on the break even power purchase cost, the table below presents the consumer types for which migrating to open access is viable in each State. Based on this viability, the share of each consumer type in sales migrating to open access, is determined.

Table 49 State wise types of consumers for whom open access migration is viable

State	Viability of migrating to open access				Share of each consumer type in sales migrating to open access			
	Non Captive, Non RE	Captive, Non RE	Non Captive, RE	Captive, RE	Non Captive, Non RE	Captive, Non RE	Non Captive, RE	Captive, RE
CG		✓	✓	✓	-	33%	33%	33%
AS	✓	✓	✓	✓	25%	25%	25%	25%
PB		✓	✓	✓	-	33%	33%	33%
JH		✓	✓	✓	-	33%	33%	33%
TN		✓	✓	✓	-	33%	33%	33%
WB		✓		✓	-	50%	-	50%
AP	✓	✓	✓	✓	25%	25%	25%	25%
GJ		✓	✓	✓	-	33%	33%	33%
HR		✓	✓	✓	-	33%	33%	33%

State	Viability of migrating to open access				Share of each consumer type in sales migrating to open access			
	Non Captive, Non RE	Captive, Non RE	Non Captive, RE	Captive, RE	Non Captive, Non RE	Captive, Non RE	Non Captive, RE	Captive, RE
MH		✓	✓	✓	-	33%	33%	33%

Source: as per analysis performed in this report

Further sensitivity analysis is performed on the volume of HT Industrial and HT Commercial sales that can migrate to open access, with following scenarios –

- D1 - 5% migration of HT Industrial and HT Commercial sales to OA
- D2 - 10% migration of HT Industrial and HT Commercial sales to OA
- D3 - 20% migration of HT Industrial and HT Commercial sales to OA
- D4 – Estimated OA migration as per load profile of HT consumers

Under D4 scenario, the % of sales that could migrate to open access is determined based on the assumption that higher is the load of a consumer, more is its potential of shifting to open access. Based on the load profile of consumers in the State, it is assumed that consumers falling in a higher slab of load would have higher potential of shifting to open access.

To assess the probability of open access migration for consumers falling in each load slab, the historical data of open access applications received/ open access consumers was compared against the load slab wise data of HT consumers. Analysis was performed for states of Maharashtra, Punjab, Gujarat and Assam where requisite data was available. In line with this data, the following assumption for open access migration in each load slab is taken. Lower migration is assumed in case of HT Commercial consumers than HT Industrial consumers due to their seasonal/ daily variation in loads which prevent them from shifting to open access.

Table 50 Assumptions regarding % of sales that can migrate to open access from each load slab

Assumption regarding % of sales that can migrate to OA	
HT Industrial	
1-5 MW	10%
6-10 MW	20%
11-50 MW	30%
51-100 MW	40%
> 100 MW	50%
HT Commercial	
1-5 MW	0%
6-10 MW	5%
11-50 MW	10%
51-100 MW	15%
> 100 MW	20%

Source: as per analysis performed in this report

The above proportions have been applied on the HT sales falling under respective load category to estimate the total potential sales that could migrate to open access in case of HT Industrial and HT Commercial consumer categories. The load profile data of HT consumers (available for Punjab, Haryana, Andhra Pradesh, Gujarat, Assam, Jharkhand and Maharashtra) has been analysed under the Commercial Review section of this report earlier. The tables below present the % of sales that could potentially migrate to open access, for various States. For remaining States, for which load profile data was not available, 10% of sales migration to open access has been assumed.

Table 51 State wise HT sales that can migrate to open access

	% of sales that can migrate to Open Access		Sales (in MUs) that can migrate to Open Access	
	HT Industrial	HT Commercial	HT Industrial	HT Commercial
Punjab	20%	1%	2,696	45
Haryana (UHBVN)		13%		699
Andhra Pradesh (South)	18%	1%	1,305	5
Andhra Pradesh (East)	29%	2%	1,913	12
Assam	12%	0%	72	0
Gujarat (PGVCL)		16%		1,282
Gujarat (MGVCL)		18%		624
Gujarat (UGVCL)		13%		619
Gujarat (DGVCL)		18%		1,505
Maharashtra	19%	0%	5,448	2
Jharkhand		16%		379

Source: as per analysis performed in this report

The sections below present the Aggregate Impact on Discoms due to open access migration, for various scenarios and sensitivity.

Scenario A1 - Surplus Power is backed down by Discom

The 'Aggregate impact on Discom' due to open access migration considering the sensitivity scenarios of sales has been computed assuming that the Discom backs down the surplus power available due to such migration of consumers to open access. The table below summarizes the total impact under this scenario across the ten shortlisted States:

Table 52 Aggregate impact on Discom of OA migration, with surplus power backed down

Loss to Discom in Rs. Crores	Contract Demand Maintained with Discom (B1)				Contract Demand Not Maintained with Discom (B2)			
	5%	10%	20%	Load Profile Analysis	5%	10%	20%	Load Profile Analysis
Sensitivity Case (% of OA migration)								
CG	123	247	494	247	154	307	615	307
AS	15	29	58	16	17	33	67	19
PB	229	458	916	674	266	532	1,064	803
JH	35	71	141	112	44	87	175	139
TN	285	570	1,140	570	368	737	1,474	737
WB	11	23	46	23	40	80	160	80
AP	208	417	834	832	294	588	1,176	1,188
GJ	357	714	1,429	1,160	494	987	1,975	1,603
HR	194	388	775	438	220	439	879	496
MH	499	999	1,998	1,637	623	1,246	2,492	2,078

Source: as per analysis performed in this report

The scenarios wherein the impact on Discom is more than Rs. 500 crores in a year are highlighted in the table above. It can be observed that states of Maharashtra, Tamil Nadu, Andhra Pradesh, Gujarat and Haryana could be adversely impacted due to migration of open access consumers.

The above numbers need to correlate with respect to the ARR of the respective States to identify the overall impact in terms of the tariff increase required across remaining consumer sales. The table below presents the tariff hike that would be required across all remaining consumers of Discoms to cover the gap created by open access migration.

Table 53 Average tariff hike required due to OA migration, with surplus power backed down

Average Tariff Hike Required Sensitivity Case (% of OA migration)	Contract Demand Maintained with Discom (B1)				Contract Demand Not Maintained with Discom (B2)			
	5%	10%	20%	Load Profile Analysis	5%	10%	20%	Load Profile Analysis
CG	0.9%	1.9%	3.9%	1.9%	1.2%	2.4%	4.9%	2.4%
AS	0.3%	0.5%	1.0%	0.3%	0.3%	0.6%	1.2%	0.3%
PB	0.7%	1.5%	3.0%	2.2%	0.8%	1.7%	3.5%	2.6%
JH	0.6%	1.2%	2.4%	1.9%	0.7%	1.5%	3.0%	2.4%
TN	0.6%	1.1%	2.3%	1.1%	0.7%	1.5%	3.0%	1.5%
WB	0.1%	0.1%	0.3%	0.1%	0.2%	0.5%	1.0%	0.5%
AP	0.7%	1.3%	2.8%	2.8%	0.9%	1.9%	3.9%	3.9%
GJ	0.8%	1.7%	3.5%	2.8%	1.2%	2.4%	4.9%	3.9%
HR	0.7%	1.4%	3.0%	1.6%	0.8%	1.6%	3.4%	1.9%
MH	0.8%	1.6%	3.3%	2.7%	1.0%	2.0%	4.2%	3.5%

Source: as per analysis performed in this report

The scenarios wherein the tariff hike required is more than 2% are highlighted in red. Majority of the States would require a nominal tariff hike of less than 2% if open access migration is limited to 10% of the HT Industrial and HT Commercial sales. However, when 20% of sales migration is considered, most of the States would require tariff hike of over 2% over and above the normal increase to cover for losses from the migration to open access.

Scenario A2 - Surplus Power is re-allocated by Discom

In this scenario, the 'Aggregate impact on Discom' due to open access migration has been computed assuming that the Discom would be able to utilize the surplus power available due to such migration of consumers to open access and re-allocate to the domestic and agricultural categories. The table below summarizes the total impact under this scenario across the ten shortlisted States:

Table 54 Aggregate impact on Discom of OA migration, with surplus power re-allocated

Loss to Discom in Rs. Crores Sensitivity Case (% of OA migration)	Contract Demand Maintained with Discom (B1)				Contract Demand Not Maintained with Discom (B2)			
	5%	10%	20%	Load Profile Analysis	5%	10%	20%	Load Profile Analysis
CG	68	137	274	137	99	197	395	197
AS	4	7	14	2	6	11	23	5
PB	25	49	98	35	61	123	246	164
JH	20	39	79	62	28	56	112	89
TN	308	616	1,232	616	391	783	1,565	783
WB	-40	-79	-158	-79	-11	-22	-44	-22
AP	192	385	770	765	278	556	1,112	1,121
GJ	236	471	943	765	372	744	1,489	1,209
HR	44	88	176	99	70	140	279	157
MH	359	717	1,434	1,133	482	964	1,928	1,575

Source: as per analysis performed in this report

The aggregate impact on the States of Chhattisgarh, Punjab and Haryana in this scenario is significantly reduced as a result of lower per unit impact as discussed in previous section. However, States of Tamil Nadu and Maharashtra could still be impacted by over Rs. 500 Cr. in case of 10% sales in HT industrial and commercial shifts to open access. Additionally, States of Andhra Pradesh and Gujarat shall be impacted if more than 10% HT industrial and commercial sales shifts to open access. The table below presents the tariff hike that would be required across all remaining consumers of Discoms to cover the gap created by open access migration:

Table 55 Average tariff hike required due to OA migration, with surplus power re-allocated

Average Tariff Hike Required Sensitivity Case (% of OA migration)	Contract Demand Maintained with Discom (B1)				Contract Demand Not Maintained with Discom (B2)			
	5%	10%	20%	Load Profile Analysis	5%	10%	20%	Load Profile Analysis
CG	0.5%	1.1%	2.2%	1.1%	0.7%	1.5%	3.1%	1.5%
AS	0.1%	0.1%	0.3%	0.0%	0.1%	0.2%	0.4%	0.1%
PB	0.1%	0.2%	0.3%	0.1%	0.2%	0.4%	0.8%	0.5%
JH	0.3%	0.7%	1.4%	1.1%	0.5%	0.9%	1.9%	1.5%
TN	0.6%	1.2%	2.5%	1.2%	0.8%	1.5%	3.2%	1.5%
WB	-0.2%	-0.5%	-1.0%	-0.5%	-0.1%	-0.1%	-0.3%	-0.1%
AP	0.6%	1.2%	2.6%	2.5%	0.9%	1.8%	3.7%	3.7%
GJ	0.6%	1.1%	2.3%	1.9%	0.9%	1.8%	3.7%	3.0%
HR	0.2%	0.3%	0.7%	0.4%	0.3%	0.5%	1.1%	0.6%
MH	0.6%	1.2%	2.4%	1.9%	0.8%	1.6%	3.2%	2.6%

Source: as per analysis performed in this report

While it is observed that significant loss in aggregate terms could occur in Maharashtra, Andhra Pradesh and Tamil Nadu due to open access migration under this scenario, the loss can be covered through a tariff hike of less than 2% across consumer categories, barring few scenarios. In case of other States, the aggregate impact would result less than 2% tariff impact.

5. Hypothesis Testing

Based on the review of open access performed across shortlisted states, the following hypothesis have been tested, which are generally used to explain the situation of open access in India

1. **Hypothesis 1:** Higher HT sales leads to higher open access migration
2. **Hypothesis 2:** Lower Open Access charges results in higher open access activity
3. **Hypothesis 3:** Non-Captive consumers and thermal power forms significant OA activity
4. **Hypothesis 4:** Discoms are negatively impacted due to OA Migration

The table below showcases the result against each hypothesis for various states.

State	H1	H2	H3	H4
Punjab	True	False	True	False
Haryana	True	False	True	False
Gujarat	True	True	False	True
Maharashtra	True	True	True	True
Chhattisgarh	False	True	Data N/A	False
Jharkhand	True	N/A	Data N/A	False
West Bengal	True	N/A	Data N/A	False
Assam	True	True	True	False
Andhra Pradesh	False	False	False	True
Tamil Nadu	True	True	Data N/A	True

The following observations can be made for each hypothesis showcased above -

Hypothesis 1

If a State ranks in Top 5 States as per HT sales and also in top 5 States as per open access sales, the hypothesis is taken to be true for such State i.e. higher HT sales lead to higher open access migration. While this hypothesis holds true in most of the States, it fails in Chhattisgarh and Andhra Pradesh. In Chhattisgarh the open access activity is limited to few large industrial consumers and shows a flat trend in the past few years. In Andhra Pradesh, while the open access activity is still very small, it has picked up significantly in the last 3 years, not because of HT consumers in the state but because of increasing renewable activity.

Hypothesis 2

In States where open access charges and open access activity have moved inversely to each other in last three years, i.e. the open access activity has increased with falling open access charges, the hypothesis is taken to be true. This hypothesis does not hold true in the states of Haryana and Andhra Pradesh. While open access charges have reduced in Haryana marginally, the open access activity is still showing a decreasing trend because of increase in short term prices on power exchanges. On the other hand, in Andhra Pradesh, while open access charges have increased in the last three years, the open access activity also has increased, primarily due to incentives offered to renewable power. States of Jharkhand and West Bengal do not have any open access activity.

Hypothesis 3

Considering that the activity on power exchanges has risen steadily in the past few years and that a number of thermal power plants are facing low offtake and are therefore looking for buyers through open access route, hypothesis can be formed that most of the open access consumers would be non-captive and using conventional power. However this hypothesis does not hold true in the

renewable rich States of Gujarat and Andhra Pradesh, where majority of the consumers are taking renewable power through both captive and non-captive modes.

Hypothesis 4

From the detailed review of impact analysis on Discom of open access migration, it was observed that in the scenario of surplus power being re-allocated, and contract demand maintained by consumer with Discom, only states of Tamil Nadu, Andhra Pradesh, Maharashtra and Gujarat could have a loss of ~ Rs. 500 crore or more in year. Therefore for these states, the hypothesis is stated to be true.

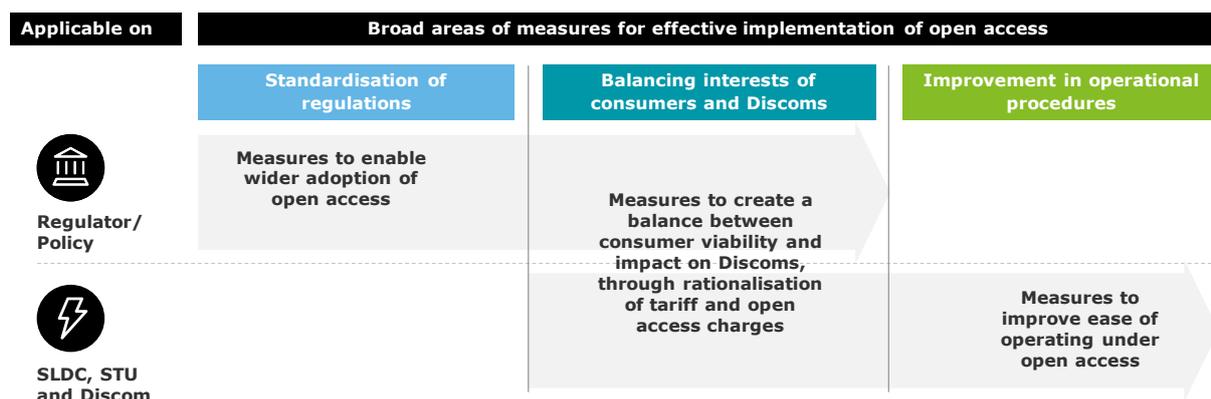
6. Measures for effective implementation of open access

Based on the detailed review of open access, this section discusses various measures that can lead to wider adoption of open access in the country. The recommendations have been classified into following broad areas -

- Standardisation of regulations
- Balancing the interest of consumers and Discoms
- Improvement in operational procedures

The measures discussed on 'standardisation of regulations' provide action items for consideration by respective SERCs, so as to enable wider adoption of open access. The measures under 'improvement in operational procedures' provide action items for SLDCs, STUs and Discoms. Further, the measures identified on 'balancing the interest of consumers and Discoms' provide action items for both SERCs and utilities, to create a balance between the viability of open access and impact on revenue of Discoms due to open access migration.

Figure 28 Areas of measures for effective implementation of open access



The detailed measures suggested and their description are detailed out below in this section.

6.1. Standardisation of regulations

The regulatory review discussed earlier, indicate several differences in the provisions of open access regulations across the States which may have a limiting effect on the adoption of open access. Such areas of regulations are discussed below, along with the measures for better enablement of open access in each of these areas.

1. Conditions in Eligibility restricting open access

Open access regulations provide for eligibility conditions required to be met by consumers for availing open access. These conditions are based on parameters like consumer's load, voltage level and type of feeder. States like Haryana allow consumers with more than 0.5 MW of load to avail open access and also allows a group of consumers connected on an independent feeder and meeting the minimum load requirement on combined demand basis to avail open access. Such measures provide an enabling environment for adoption of open access by smaller consumers (below 1 MW also). On the contrary a few states require consumers to be connected on dedicated feeder for availing open access, restricting certain consumers from availing open access.

Based on such instances of regulatory provisions across States, similar measures are suggested below which may widen the eligible consumer set availing open access.

Suggestions

- 1.1 Group of consumers connected on a feeder, meeting the minimum load requirement on a combined basis should be allowed to avail open access, similar to the case in Haryana
- 1.2 Reduction in 1MW minimum requirement may be considered for increasing the base of eligible consumers that can avail open access
- 1.3 As the power situation has improved across States, the voltage level and dedicated feeder level restrictions may be removed in a phased manner
- 1.4 Compliances with respect to other regulatory requirements established by regulation other than open access regulations, such as RPO, may be considered for disallowance of open access eligibility, only in cases where repeated non-compliance or non-payment of penalty by consumers is observed by the Commission

2. Independence of nodal agency

In case of LTOA/ MTOA open access, most of the State regulations specify STU/ Discom as the nodal agency which may impact the independence of process for granting open access approvals. Further, while in certain cases SLDC is specified as the nodal agency for granting open access (primarily for STOA), the SLDCs themselves are operating as an extended department within the STUs. Suggestions of Gireesh Pradhan Committee Report on independence of SLDC have not been implemented at the State level.

Suggestions

- 2.1 Recommendations of Gireesh Pradhan Committee for SLDC Independence should be implemented
- 2.2 SLDC should be the nodal agency for all types of open access, to ensure independence in the process of granting open access

3. Loss of open access power due to unscheduled outages

In case of un-scheduled power cuts, an open access consumer can lose out on the power scheduled through open access. From the regulatory review of the shortlisted States, it has been observed that few states have provisions to compensate open access consumers for such underdrawal due to unscheduled load shedding. For instance, in Punjab, the regulations allow any underdrawal due to unscheduled power cut to be banked and used within next 15 days. In the states of Haryana, Gujarat, Tamil Nadu and Jharkhand, the open access consumer is compensated for the open access power lost due to unscheduled power cuts. Similar provisions in other States would enable open access amongst intending open access consumers without limiting the feasibility due to absence of provisions with regard to unscheduled power cut.

Suggestions

- 3.1 Appropriate structure may be evolved as part of regulations (banking or adjustment in charges) for compensating the open access consumer for lower drawal during unscheduled power cuts.

4. Frequent shifting of consumers between open access and Discom

The FoR report on 'Open Access' issued in December 2017, discussed the issue of frequent shifting of short term open access consumers during the day, due to which Discoms face difficulty in scheduling of power. To resolve this issue, the report recommended that open access consumers could schedule a minimum continuous 8 hours of supply through open access. It has been observed based on the regulatory review of the shortlisted States that majority of the states do not have such regulatory provision. Open access regulations in the State of Jharkhand, require schedule of open access for an embedded consumer to remain uniform for at-least a period of 8 hours. Other States can also implement such provisions regarding minimum scheduling hours to curb the practice of frequent shifting of consumer.

Suggestions

- 4.1 Open Access Consumers should schedule minimum continuous 8 (eight) hours of supply through Open Access. Adequate amendments in the regulations may be incorporated for operationalizing the minimum hours of requirement.

5. Uniformity in time period for which open access is allowed

Most States have defined the types of open access consumers in line with the CERC open access regulations i.e long-term open access (LTOA), medium-term open access (MTOA) and short-term open access (STOA). However, few States i.e. Chhattisgarh and Assam have different definition of time periods allowed under LTOA, MTOA and STOA while States of Andhra Pradesh and West Bengal only have LTOA and STOA classification. Uniformity in time period would enable better coordination of open access at the Inter-State level.

Suggestions

- 5.1 The period of open access for LTOA, MTOA and STOA should be made uniform across States considering the time periods defined by CERC. This would simplify the procedures and enable ease of availing open access both at Intra-State and Inter-State level.

6.2. Balancing interests of consumers and Discoms

Improvements are required in both retail tariffs and open access charges to ensure adequate and efficient cost recovery for Discoms, without impeding commercial viability of open access.

As discussed in section 4.4 of this report, cross subsidies in retail tariffs and mismatch between fixed costs of Discoms vis-à-vis fixed tariffs charged to consumers, can lead to significant impact on Discoms due to open access migration. In line with the guidance provided by Ministry of Power, the Commissions need to stick to their tariff rationalisation programs to remove such irregularities from retail tariffs and ensure adequate and efficiency cost recovery for Discoms.

Also it is observed that the process of determination of open access charges is not uniform across the States. The applicable discounts/ incentives available to certain consumer types results in loss to Discom while the high variations in open access charges on an year-to-year basis results in uncertainty and viability issues for open access consumers. Uniform methodologies for determination of open access charges and mechanisms to stabilize the level of open access charges over medium to long term can help in creating a conducive environment for open access.

6. Progressive tariff rationalisation to reduce cross subsidies and improve fixed-variable breakup of tariffs

The existing tariff structure of Discom do not allow full recovery of fixed costs of the Discom from fixed tariffs. The fixed costs of the Discoms are at the level of 50-70% of total costs while the recovery through fixed/ demand charges is at a lower level of 10-15% of total revenue, across the states covered under this assessment. This results in loss to the Discoms in case a consumer shifts to open access, particularly in case of STOA or open access from renewable sources.

Also, the current level of cross subsidies in the tariff of HT consumers continue to remain high in few of the States and/ or consumer types, leading to high level of cross subsidy being charged from the consumer. While the Tariff Policy 2016, restricts CSS to 20% of average tariff from the category, the CSS continues to be a barrier especially for third-party open access consumer drawing power from conventional sources.

Suggestions

- 6.1 Reduce the number of tariff categories and slabs, so as to simplify the applicability of charges on various consumer types
- 6.2 Reduce the cross subsidies in HT category over a fixed time period to reflect average cost of supply of the Discom and progressively move towards voltage wise cost of supply
- 6.3 Fixed charges should be determined in a way that enables recovery of fixed costs of the Discom in an efficient manner from the HT consumers particularly

7. Methodology adopted for determination of open access charges

Different States have used different methodologies and charge structures for determination of open access charges in their respective tariff orders. Few of the States such as Punjab, Chhattisgarh, West Bengal and Assam are yet to adopt the formula prescribed by Tariff Policy 2016 for calculation of CSS. Also each State is following its own methodology for determination of Additional Surcharge. Further only few states such as Maharashtra, Andhra Pradesh and Jharkhand calculate voltage wise wheeling charges. Due to absence of appropriate data or studies submitted by the utilities, these charges have been contested at the level of SERC and APTEL from time to time.

Further, the recovery from wheeling charges is on per unit basis in most of the States which results in lower recovery against the fixed costs of distribution capacity availed by the open access consumer in case of lower consumption units from open access. Also in case of open access through renewable power, the recovery of the Discom from distribution network cost is significantly lower as the charges are based on per unit basis and several States offer incentives/ discounts on open access charges. Such incentives and lower recovery of wheeling charges pose a challenge on the viability of the Discom.

Suggestions

7.1 Uniformity in methodology for determination of open access charges

- Uniform formula to be considered for CSS computation with a specific roadmap for reduction
- Common methodology for computation of Additional Surcharge may be considered
- Two part standby charge should be determined

7.2 Determination of voltage wise open access charges

- Wheeling charges to be determined based on the voltage level of connected consumer
- Discoms to conduct technical studies for determining voltage wise losses and voltage wise assets, so as to provide SERCs with data for determining voltage wise wheeling charges

7.3 Determination of wheeling charges with fixed charge structure

- Charge structure for transmission and distribution wheeling charges, should be made fixed in nature (per kW and per month/ day). In case of renewable based open access adequate discounts may be provided considering the lower utilization factors and duration of power availability

8. Long Term certainty in Open Access charges

Open access charges are determined by SERCs in their respective tariff orders. High variations can be observed in the level of open access charges from year to year in some States such as Punjab, Assam, Tamil Nadu etc., either due to change in methodology, increase/ decrease in costs of Discoms, change in structure of charge or due to change in subsidy/ incentives. Such uncertainties in open access charges, impacts the viability of open access for consumers, making it difficult for them to plan for long term or medium term open access.

For instance in Punjab, the open access regulations were amended in 2012 to charge a single distribution wheeling charge instead of voltage wise wheeling charges determined earlier. This led to a steep increase in wheeling charges for consumers. Further in the case of Tamil Nadu it has been observed that discount on CSS for solar power has been reduced gradually in the past from 50% to 40% in 2018. In Assam the CSS has more than doubled for HT industrial consumers from FY17 to FY19, due to change in charge structure. As against a single CSS approved for all HT consumers earlier, category-wise CSS is being approved in the State of Assam.

While few States like Maharashtra and Andhra Pradesh have determined certain open access charges for a control period in their respective Multi-Year-Tariff (MYT) orders, a further long term outlook on charges can be provided for enabling wider adoption of open access.

Suggestions

- 8.1 Capping large variations in open access charges may be considered
- 8.2 Provide certainty to consumers over long-term and medium-term by determining open access charges for a block of 3-5 years (Control period)
- 8.3 A roadmap should be prepared by SERCs for phasing out of discounts/ incentives applicable on renewable power, to avoid shocks to consumers and provide a long term certainty of charges
- 8.4 Discounts for open access from renewable sources to be limited to a certain % of overall charges
- 8.5 Objective of driving efficiency in operations should be considered while determining the open access charges, through implementing performance standards

6.3. Improvement in operational procedures

There are several procedural aspects which require improvement through initiatives of SERC or Discoms/ SLDC. During the process of open access review, constraints were observed with respect to delay in getting open access approvals, lack of consumer awareness, complexity in procedure for undertaking open access, lack of determination of open access charges for a particular consumer category, etc. have been observed. These aspects impact the ease of availing open access by consumers. Efforts to improve information dissemination in regards to open access by utilities, SLDCs and regulators can provide the required impetus for acceptance of open access by the consumers.

9. Delay in grant of NOC/ OA approvals

NOC is an important part of the open access approval process. In few States such as Chhattisgarh, Jharkhand, Tamil Nadu and Gujarat regulations prescribe NOC as a prerequisite at the time of submission of application while in other cases the NOC is required during processing of the application. While majority of the open access regulations provide a standard time for NOC approval/ rejection, delay in getting approval for the NOC is a common reason causing delay in availing open access. The measures suggested below can assist in speeding up the process of getting open access approvals and reduce disputes among consumers and utilities.

Suggestions

- 9.1 Coordination for getting approvals/ NOC to be included as part of the responsibilities of nodal agency
- 9.2 Online portal can be created for applying for open access or granting of NOC. Use of technology and automation of procedures would help in eliminating delays and individual prejudices and help in simplifying the open access procedure for the consumers
- 9.3 Timelines should be set for various approvals / clearances required, beyond which provision for 'Deemed Approval' should be included as part of the Regulations, similar to that followed in Andhra Pradesh

10. Lack of information or misinterpretation of regulatory provisions

The procedures for availing open access in some cases are not clearly laid out in a simplified manner for different types of consumers. Further, certain aspects such as applicability of charges, scheduling of power or eligibility for open access regulations, are either not clear or are silent on some parts. The availability of information on SLDC/ STU website is also not uniform and comprehensive. Instead of providing direct and relevant information to open access consumers, in most cases simply provide link to appropriate Orders of the Commission on their websites. To resolve such issues, simplified and actionable information need to be published by various agencies.

Suggestions

- 10.1 Information with respect to eligibility, applicable charges, etc. for availing open access should be provided in simple manner for ease of comprehension by the consumer. This information should also include applicability and linkages with other regulations for any additional compliance. A model document in this regard could be prepared for standardization of information to be shared with the consumers with respect to Open Access uniformly across all States

- 10.2 Availability of information on the website of nodal agency regarding applicability of open access charges (separately for long-term/ short-term) on eligible categories of consumers. Regular updates regarding availability of network for short-term open access consumer
- 10.3 Efforts should be made to reduce and standardise the documentation required to be submitted along with open access application

11. Disputes with respect to provisions and applicability of Open Access regulations/ charges

Cases have been observed where Discom have adopted practices based on their own interpretations of provisions of the open access regulations which have been contested by the consumers. Such issues are in nature of eligibility related issues, settlement issues, applicability of open access charges on specific type of consumer, etc.

For instance in Maharashtra, an open access consumer was drawing both renewable and conventional sources of power from open access. However, the utility adjusted renewable power first followed by conventional power during various time slots resulting in a loss of unutilized units from conventional sources.

Further in case of Maharashtra, the consumers were being denied open access due to RPO non-compliance which was contested by the consumers and practise direction were issued by MERC to provide clarity to Discom and consumers in such cases.

DHBVNL issued a circular in Feb 2017 that embedded open access consumers shall be billed for their entire consumption and thereafter can claim refund separately for their open access power. On being approached by consumers, the Regulator directed Discoms to adjust open access consumption in the same billing month as per open access regulations and charge consumers only for the remaining part of the consumption after adjustment. To avoid such disputes, suggested are provided below.

Suggestions

- 11.1 Regulators can issue regular and detailed open access practice directions, similar to Maharashtra, to avoid ambiguities related to provisions of open access regulations

7. Annexures

7.1. Haryana

Haryana is among the northern states in India adjacent to national capital Delhi. Historically an agrarian state, Haryana today is a well-developed industrial state with an emerging base for the knowledge industry, including IT and biotechnology. The state had peak demand of 9,671 MW during FY2017-18 (as per CERC LGBR report, FY2018-19) and total energy sales of 36,449 Mus (HERC Tariff orders FY2018-19).

Haryana was the second state in India to initiate power sector reforms in 1997. Currently it has four state owned utilities including Haryana Power Generation Company Limited, Haryana Vidyut Prasaran Nigam Limited (responsible for transmission business) and two distribution utilities which are Uttar Haryana Bijli Vitran Nigam Limited (UHBVN) and Dakshin Haryana Bijli Vitran Nigam Limited (DHBVN). With significant addition of generation capacity by HPGCL, the state has been able to eliminate its historical demand-supply gaps. The two utilities serve approximately 57.9 lakh consumers in the state. Sale of power to HT industrial and commercial categories form approx. 37% of the overall sales in the state.

Key Parameters	
Peak demand	9,671 MW
Annual Units Available	50,775 Mus
Sales	36,449 Mus
Power Utilities	G - HPGCL T - HVPNL D - UHBVN and DHBVN

The analysis of open access status review is performed for UHBVN and DHBVN in Haryana.

7.1.1. Regulatory Review

In this section a detailed review is performed of the open access regulations issued by State Electricity Regulatory Commissions (SERCs) to analyse –

- Evolution of open access regulations in the state along with their key amendments
- Eligibility conditions and restrictions for availing open access, along with types of open access allowed
- Process of applying for open access
- Provisions for open access charges
- Any other regulation/ policies relevant to open access

Evolution of open access regulations

Haryana Electricity Regulatory Commission (HERC) notified the HERC (Terms and conditions for Open Access for Intra-state Transmission and Distribution system) Regulation, 2005 which was later repealed by HERC (Terms and conditions for grant of connectivity and open access for intra-State transmission and distribution system) Regulations, 2012.

The table summarizes the evolution of open access regulations and their amendments over time in the state of Haryana-

Year	Regulation/ Amendment	Key Amendment
2005	OA Regulation	-
2012	OA Regulation	<ul style="list-style-type: none"> Introduced 'Medium Term' category of open access Introduction of Stand-By charges, equivalent to temporary tariff Introduction of 'Limited Short Term Open Access' and 'Embedded Open Access' consumers
2013	Amendment	<ul style="list-style-type: none"> Minimum load for getting OA reduced from 1 MW to 0.5 MW Change in charge structure for Transmission charges Settlement of energy in case of under/over drawl

Open access eligibility

The Open Access regulations 2012 (amended in 2013) provide for key eligibility criteria's, based on various technical and commercial considerations, to be met by consumers for availing open access. The eligibility requirements prescribed in the state of Haryana include -

Contract Demand	- 1 MW or above (for persons other than consumers of Discom) - 0.5 MVA or above (for consumers of Discom)
Feeder level conditions	- Consumers who are not on independent feeders may also be allowed open access if they agree to system constraints as well as the power cut restrictions imposed by distribution licensee
Voltage level conditions	- Open access can be availed by consumers availing supply at 11KV and above
Additional Provisions	- A group of two or more consumers of a distribution licensee having a combined contract demand of 0.5 MVA, connected at same feeder, shall also be entitled for seeking open access together as one consumer

The relevant provisions of the regulations are reproduced below –

"8. Entitlement and other conditions for open access. – (1) Subject to the provisions of these regulations, any licensee, generating company, captive generating plant or a person other than consumer of the distribution licensee, connected at 11 KV or above and who has a capacity/maximum demand of 1 MW and above, shall be entitled for availing open access to the intra-State transmission system of STU and/or of any transmission licensee other than STU and/or distribution system of the distribution licensee on payment of various charges as per chapter VI of these regulations.

Provided that in case of generating plants based on non-conventional / renewable energy sources there will be no capacity restriction for availing open access for wheeling of power.

(2) Any consumer of a distribution licensee having a contract demand of 0.5 MVA or above and connected to the distribution system of the licensee or to the transmission system of STU or of a transmission licensee other than STU at 11 kV or above, shall be entitled for seeking open access provided he is connected through an independent feeder emanating from a grid sub-station. In case of more than one consumer on such independent feeder, the conditions as in (3) below shall apply.

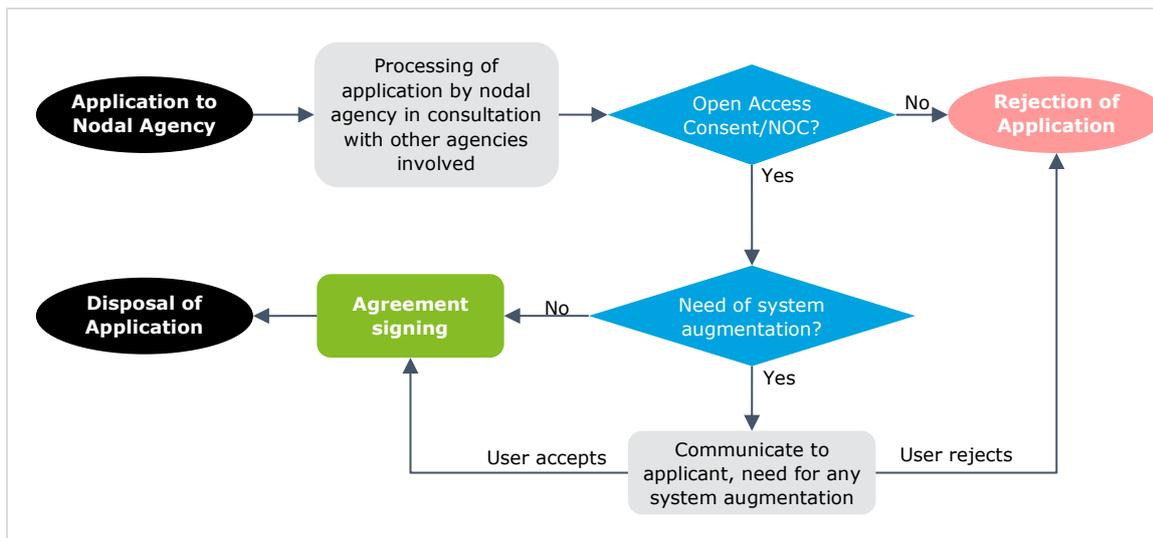
(3) A group of two or more consumers of a distribution licensee having a combined contract demand of 0.5 MVA or above and connected to the distribution system of licensee at 11 kV or above through an independent feeder emanating from a grid sub-station, shall also be entitled for seeking open access if all such consumers collectively apply for open access through a group representative

(4) If a group of industrial consumers of a distribution licensee who may or may not be connected on 11 KV but are all fed from the same 11 KV feeder with no other consumer connected to that feeder, get together to avail open access, the same shall be admissible provided such consumers agree for supply at a single point under HT industrial category with single point energy meter / ABT meter provided at the substation for billing purposes.....'

Open access application process

In the state of Haryana, as per the prevalent open access regulations, STU acts as the nodal agency for grant of intra-state open access while the grant of inter-state open access is governed by CERC open access regulations, with CTU or RLDC as the Nodal Agency.

As per regulation 11 of Open Access regulations 2012 in the state of Haryana, the procedure to apply for intra-state open access is represented below in the form of a flow chart.



The website of HVPNL provides detailed application procedures for short term open access only. The table below summarises the key aspects of the open access application process in Haryana -

	Long Term OA	Medium Term OA	Short Term OA
Nodal Agency	<ul style="list-style-type: none"> • CTU – if generator and buyer are in diff. states • STU – if generator and buyer are in Haryana 	<ul style="list-style-type: none"> • CTU – if generator and buyer are in diff. states • STU – if generator and buyer are in Haryana 	<ul style="list-style-type: none"> • RLDC – if generator and buyer are in diff. states • STU - if generator and buyer are in Haryana
Time-period	40 – 180 Days	40 days	7-10 days
Documents	<ul style="list-style-type: none"> • Application Fee • Bank Guarantee 	<ul style="list-style-type: none"> • Application Fee 	<ul style="list-style-type: none"> • Application Fee • Self-attested documents • Undertakings
Cost	<ul style="list-style-type: none"> • Application Fee: Rs. 2 Lac • Bank Guarantee: Rs. 2 Lacs 	<ul style="list-style-type: none"> • Application Fee: Rs. 1 Lacs 	<ul style="list-style-type: none"> • Application Fee: Rs. 5,000

The procedures for STOA prepared by HVPNL (Haryana Vidyut Prasaran Nigam Ltd., State Transmission Utility) require STOA consumers to submit following documents along with open access applications -

1. Self-attested documents:
 - a) Copy of proof showing Account No, sanctioned Load and CD.
 - b) Copy of Peak load exemption and/or continuous process industry letter.
 - c) Copy of latest energy bill issued by distribution licensee, in case customer is a consumer of distribution licensee.
 - d) Copy of stay granted by the competent authority, in case of disputes regarding outstanding dues pending with any Forum or Court.
 - e) HAREDA clearance in case of Power producers/ CPPs/Generators using non conventional fuel.
 - f) Feasibility clearance and connectivity details with transmission/distribution licensee in case of generators or a customer who is not a consumer of the Distribution licensee.
 - g) Single Line Diagram of the electrical system showing details of metering equipments if installed in case of generators or a customer who is not a consumer of the Distribution licensee.
 - h) Single Line Diagram of the electrical system showing details of metering equipments to be installed.

2. Undertakings by the firm/ Consumers regarding
 - a) regarding having not been declared insolvent or bankrupt
 - b) having no outstanding dues against the firm for more than two months billing of distribution/transmission licensee at the time of application.
 - c) to accept rostering restrictions imposed by the utility in case of not on independent feeder from group leader by embedded Open Access Customer who have combined CD of 1MVA or above.
 - d) to accept system constraints as well as the power cut restriction imposed by the utility in case of not on independent feeder by embedded Open Access Customer with contract demand of 1MVA or above.
3. Undertaking for Payment Security
4. Undertaking for Acceptance to Terms & Conditions

As per the application process for open access in the state, based on the prevalent regulations, it can be observed that the applicant is not required to take a separate NOC from Discom or Transco before applying for open access to the nodal agency. Instead the nodal agency itself coordinates with relevant agencies for granting of consent/ NOC to the applicant for open access. This is also due to the fact that the nodal agency in the state is the Transco itself. The nodal agency while processing the OA application, verifies the following before granting the consent/ NOC for open access –

- Existence of infrastructure necessary for time-block-wise energy metering and accounting in accordance with the provisions of the Haryana Grid Code in force
- Availability of capacity in the transmission and/ or distribution network

Also, the regulations provide for granting of deemed consent/NOC in case the nodal agency has not communicated any deficiency or defect in the application within 2 working days from the date of receipt of application or refusal/ consent within 5 working days from the date of receipt of the application.

Open access charges

The open access regulations in the state of Haryana, define the following types of open access charges –

- 1) Transmission charges
- 2) Wheeling charges
- 3) Scheduling and system operation charges
- 4) Cross Subsidy Surcharge
- 5) Additional Surcharge
- 6) Standby charges
- 7) Imbalance charge
- 8) Reactive energy charges

For **Standby Power**, the regulations entitle Discoms to charge applicable temporary tariff from open access consumers. **Imbalance Charges** are applicable only in cases of under/ over drawl of power based on UI charges notified by CERC (in case non-embedded consumers) or demand surcharge/ peak load violation charges as determined by HERC (in case of embedded consumer). The **Reactive Energy charges** are to be applied in accordance with Intra-State ABT Regulations and Haryana Grid Code, only for the reactive component of energy.

Apart from the charges discussed in the paragraph above, which are contingent upon the type of schedule and power drawn by open access consumers, the major open access charges in the state of Haryana, are discussed in detail in the sub-sections below.

Cross Subsidy Surcharge

The open access regulations do not provide any reference with respect to the CSS formula in the Tariff Policy or prescribe a methodology for the its calculation. The regulations instead mentions

applicability of CSS on open access consumers as per the rates determined by the Commission from time to time. Cross subsidy surcharge is approved by the Commission as part of the Retail Tariff Orders for the Discoms.

For the purpose of calculation of CSS, HERC has adopted the methodology prescribed by the Tariff Policy 2016 in its tariff order of FY2016-17 onwards. Prior to FY 2016-17, CSS was calculated as the difference between average consumer category wise tariff and Cost of Supply which was based on voltage-wise losses estimated by the Commission as per the approach prescribed by the APTEL in its judgement on the Appeal No. 102,103 and 112 of 2010.

The CSS is calculated separately for each HT consumer category. The table below represents the Cross Subsidy Surcharge for HT Industrial and HT Commercial consumer categories for the last three financial years.

Cross Subsidy Surcharge	Units	FY2016-17	FY2017-18	FY2018-19
HT Category				
Non Domestic	Rs./Kwh	1.78	1.73	1.80
HT Industrial	Rs./Kwh	1.57	1.63	0.81

A significant drop can be observed in the CSS for HT industrial consumer category in FY2018-19. This drop is due to decrease in Average Revenue Realisation of HT Industrial Category considered by the Commission for the calculation of CSS, from Rs. 8.54 per unit in FY2017-18 to Rs. 7.99 per unit in FY2018-19. This steep drop is despite the fact that tariff for HT Industrial category remained same in Haryana from FY2017-18 to FY2018-19.

Distribution Wheeling Charges

The open access regulations in Haryana state that wheeling charges are to be payable by open access consumers to the Discom, as determined by the Commission for the relevant financial year.

As per the open access regulations issued by HERC in 2012 and amended in 2013, the wheeling charge payable to the distribution licensee by long-term & medium-term open access consumers shall be in Rs./MW and shall be computed by dividing the approved ARR of the licensee for wheeling business by peak load demand in MW served by the licensee in the preceding year. For short term open access consumers, the regulations provide for a per unit distribution wheeling charge, to be determined by Commission in tariff order of relevant year.

As per MYT regulations of 2012 (Terms and Conditions for Determination of Tariff for Generation, Transmission, Wheeling and Distribution & Retail Supply under Multi Year Tariff Framework) the Discom are required to segregate the accounts of the licensed business into Wheeling Business and Retail Supply Business and submit separate ARRs for respective businesses to the HERC. The ARR for wheeling business is to be used to determine wheeling charges for open access consumers. In FY2016-17, the Commission had apportioned 8.32% of the Net ARR of Discom to Wheeling Business, while in FY2017-18 and FY2018-19, the Commission had apportioned 9.32% of the Net ARR to Wheeling Business, for the calculation of wheeling charges.

While regulations provide for a per MW wheeling charge for LTOA/MTOA consumers, in its respective tariff orders HERC calculates only a single distribution wheeling charge on per unit basis and does not separately calculates wheeling charge for LTOA/ MTOA. Further the data for peak demand is not available in the tariff orders. Therefore the distribution wheeling charges for LTOA and MTOA are estimated by dividing the total wheeling ARR of Discoms by the peak demand of preceding year as provided in the CERC LGBR report.

However since the LTOA and MTOA charges estimated as such and not provided for by HERC in its tariff orders, nor are they based on approved peak demand by HERC, for the analysis of open access charges in this report, STOA wheeling charges approved by HERC are taken for all types of open access transactions. Further as discussed with various stakeholders in the State, only STOA is being granted currently in the State. The State Transco too has prepared open access procedures for STOA only.

The table below represents the Distribution Wheeling charges determined by HERC for the last three financial years.

Wheeling charges	Units	FY2016-17	FY2017-18	FY2018-19
LTOA and MTOA (estimated)	Rs./MW/Month	1,74,475	2,08,508	2,24,549
STOA (approved)	Rs./Kwh	0.71	0.84	0.83

A single distribution wheeling charge is calculated by the HERC for open access consumers connected at all voltage levels. Exemption of wheeling charge is provided to solar and wind power procured through open access.

Transmission Charges

The open access regulations in Haryana state that open access consumer using intra-State transmission system shall pay transmission charges to the STU, as determined by the Commission for the relevant financial year.

The original open access regulations issued in 2012 did not specify any methodology for calculation of transmission charges. The amendment issued in 2013 to the open access regulations, specified that the annual transmission charges (or total transmission cost in case of multiple transmission licensees) as determined by the Commission for the relevant financial year shall be shared by all the beneficiaries i.e. distribution licensees, long-term open access consumers and medium-term open access consumers in the ratio of their allocated transformation capacity or contracted capacity. For Short Term Open Access, open access regulations say that the Commission is to determine a per unit transmission charge in their respective tariff orders.

However in its Tariff Orders, the Commission has not determined Transmission charges for Long-term /Medium Term open access consumers. The total transmission ARR is divided into monthly transmission tariff by considering the ratio of transformation capacity of only Discoms, TPTCL, NTPC, CRPCPL and Northern Railways as Long Term/ Medium Term users of Grid. The order states that in case any addition of new beneficiary, the transmission charges would be charged in proportion of the allotted capacity. However to estimate the transmission charges for LTOA/MTOA consumers, the total transformation capacity of open access consumers in the state was also not available in the tariff orders. While data of open access load was collected as part of this assignment from Discoms, only partial data was received which is further not approved by HERC.

The short term transmission charge for open access consumers is calculated in the respective tariff orders of HVPNL. In the absence of Transmission Charge for Long Term and Medium Term OA consumers, or the aggregate load of all open access consumers in the state, the short term transmission charges are considered for all types of open access consumers in Haryana, for the purpose of analysis in this report.

The table below represents the Transmission charges for short term open access consumers, for the last three financial years.

Transmission charges	Units	FY2016-17	FY2017-18	FY2018-19
Short Term	Rs./Kwh	0.33	0.36	0.36

Additional Surcharge

The open access regulations in Haryana provide for charging of Additional Surcharge from open access consumers to recover obligation of the Discoms in terms of fixed power purchase commitments that have become stranded due to migration of consumer load to open access. However, no specific methodology or approach for determination of additional charge is provided in the open access regulations.

In its Tariff Orders, HERC has considered the lower of power quantum backed down or open access sales and multiplied it with average fixed power purchase cost of the Discoms, to estimate the total stranded cost. Total stranded cost is then divided by total open access sales to estimate Additional Surcharge.

Additional Surcharge = Per Unit Fixed Cost of Power Purchase X Average Monthly Quantum considered for Addl. Surcharge (lower of the power backed down/surrendered and open access power)

Monthly Open Access Power

The table below represents the Additional surcharges as determined by HERC, applicable on all open access consumers, for the last three financial years.

Additional Surcharge	Units	FY2016-17	FY2017-18	FY2018-19
For all OA consumers	Rs./Kwh	1.17	0.99	1.13

Scheduling and system operation charges surcharge

The open access regulations in Haryana require OA consumers to pay SLDC charges for scheduling and system operation, as determined by the Commission from time to time in its Tariff Orders. The table below represents the SLDC surcharges, determined by the Commission, for the last three financial years. Similar to Transmission Charges, the Commission has determined SLDC charge for only short term OA transactions. In the absence of SLDC Charge for Long Term and Medium Term OA consumers, or the aggregate load of all OA consumers in the state, the short term SLDC charges are considered for all types of OA consumers in Haryana, for the purpose of analysis in this report.

SLDC surcharge	Units	FY2016-17	FY2017-18	FY2018-19
For Short Term OA	Rs./Day	1000	1000	1000

Energy Losses

Apart from Open Access charges, the regulations also provide for losses to be made applicable on OA transactions, as determined by Commission from time to time. The table below represents the voltage wise T&D losses adopted by Commission in its tariff orders for OA consumer over the last three financial years.

T&D losses	Units	FY2016-17	FY2017-18	FY2018-19
HT Level	%	22%	18%	15%
LT Level	%	27%	24%	21%

RPO Obligation

Renewable Purchase Obligations (RPO) are applicable on open access consumers taking supply from conventional sources. As per HERC (Terms and Conditions for determination of Tariff from Renewable Energy Sources, Renewable Purchase Obligation and Renewable Energy Certificate) Regulations of 2017, RPO Obligations applicable for all OA consumer categories in the last three financial years is detailed in table below. The cost of RPO compliance is estimated considering the base price of REC certificates at Rs. 1000 per Mwh.

RPO Obligation	Units	FY2016-17	FY2017-18	FY2018-19
Solar	%	1.00%	3.00%	4.00%
Non-Solar	%	2.75%	2.75%	2.75%
Total	%	3.75%	5.25%	6.75%

Other Regulatory Provisions

Banking of Power Facility

Banking facility is provided in the state of Haryana under the Haryana Electricity Regulatory Commission (Terms and Conditions for determination of Tariff from Renewable Energy Sources, Renewable Purchase Obligation and Renewable Energy Certificate) Regulations, issued in 2017. As per clause no. 58 the banking facility is available for RE power for both captive and third party open access consumers.

'58. Banking of RE Power – A generator or a captive power producer or a Consumer in the State may bank power on payment of the banking charges along with the transmission and distribution losses for availing the open access on the transmission or distribution network of

the licensees for banking and drawl of banked power from the Discoms after entering into the banking agreement with the concerned Discoms at the terms and condition specified in the agreement.

The banking charges applicable in the state of Haryana, as per clause 58 is as follows –

- 1. The solar power shall be allowed to be banked with the distribution licensee(s) subject to the condition that 5% of power banked in (kind) shall be deducted toward banking charges.....'*

The table below summarises the applicability of banking provisions and banking charges for various types of consumers.

<i>Applicability and Charges for Banking of Power</i>	Non-RE Power	RE Power
Captive consumer	<ul style="list-style-type: none"> • Not available 	<ul style="list-style-type: none"> • Available (for solar) • 5% banking charge
Third party open access	<ul style="list-style-type: none"> • Not available 	<ul style="list-style-type: none"> • Available (for solar) • 5% banking charge

Further regulation 24 of the Open Access Regulations in the State of Haryana, provide for compensation to open access consumers if the open access consumers was unable to draw power due to un-notified transmission/ distribution system outage.

'24

.....

In case an intra-State open access consumer is unable to receive power scheduled from a generating company in the State of Haryana due to unnotified transmission / distribution system outage and if the generating company has generated and injected scheduled power into the grid for use by such intra-State open access consumer then the transmission / distribution licensee shall pay such intra-State open access consumer the charges payable by him to the generating company or the lowest tariff applicable to the consumer category, to which such intra-State open access consumer belongs, whichever is lower.

.....'

Deviation Settlement Mechanism

As per the draft regulations on 'deviation, settlement mechanism and related matters' issued by HERC in 2018, the settlement for open access consumers with demand of below 10 MW would be covered as per applicable Open access regulations which provide for recovered of imbalance charges as per the following framework:

" Over drawal by open access consumer / under injection by generating company:

(i) An open access consumer who is not consumer of the distribution licensee:

UI charges as notified by CERC or highest tariff (other than temporary metered supply) including FSA and PLEC etc. as determined by the Commission for the relevant financial year for any consumer category, whichever is higher.

(ii) An open access consumer who is a consumer of the distribution licensee:

When the recorded drawal of the consumer is within his sanctioned contract demand during non peak load hours no imbalance charges shall be leviable. However, when the recorded drawal of the consumer is more than his sanctioned contract demand during non peak load hours he will be liable to pay demand surcharge as per the relevant schedule of tariff approved by the Commission.

When the recorded drawal is more than the entitled drawal during peak load hours he will be liable to pay peak load violation charges in addition to demand surcharge, if applicable

(iii) Under injection by generating company: UI charges as notified by CERC or highest tariff (other than temporary metered supply) including FSA and PLEC etc. as determined

by the Commission for the relevant financial year for any consumer category, whichever is higher.

(b) Under draw by open access consumer / over injection by generating company: The open access consumer / generating company shall be paid by the licensee UI charges as notified by CERC or lowest tariff as determined by the Commission for the relevant financial year for any consumer category (excluding agriculture power supply) or power purchase price / sale price contracted by the open access consumer / generating company whichever is lower.”

For full open access consumers with demand of more than 10MW would be covered under the Deviation Settlement Mechanism as mentioned below:

'4. *Applicability: These regulations shall apply to the transactions of conveyance of electricity through short- term open access or medium-term open access or long-term open access using intra-State transmission system or distribution system of electricity (including inter-state wheeling of power), subject to following conditions:-*

(A) *Deviation Settlement Mechanism under these Regulations shall be applicable for all Seller(s), including Open Access Generators, Captive Generators re-generators with capacity 10 MW and above (excluding In-Situ Captive Generators) connected to Intra-State Transmission system but excluding Wind and Solar Generating Station(s).'*

7.1.2. Open access activity review

In this section, a detailed review is performed of the existing level and past trend of Open Access activity in the respective State. As a part of this assignment, a data collection exercise was conducted to collected data with respect to the open access activity in the shortlisted states. Data was sought from the respective Discoms and SLDCs for the number of OA consumers in the state, their type (captive/ non-captive and long/ medium or short term), and OA sales over the last 3 financial years. For the state of Haryana, partial data related to open access activity was received for number of open access consumers and their type, from UHBVN. In the absence of complete data from Discoms, the data from CERC Market Monitoring Reports, has also been analysed to review of the open access activity in the State of Haryana.

Number of open access consumers and open access sales

Based on the information shared by UHBVN, the details of number of open access consumers is shown in the table below.

UHBVN - No. of OA Consumers	Units	FY2015-16	FY2016-17	FY2017-18
Long Term	Nos.	1	1	1
Medium Term	Nos.	0	0	1
Short Term	Nos.	309	395	238
Total	Nos.	310	396	240
Captive	Nos.	1	1	1
Non-Captive	Nos.	309	395	239
Total	Nos.	310	396	240
RE	Nos.	1	1	1
Non-RE	Nos.	309	395	239
Total	Nos.	310	396	240

It can be observed from the above data that the open access consumers have reduced significantly in the recent years. Also, it can be observed that primarily the open access consumers are short term, non-captive consumers which are drawing conventional power. One of the reasons for this reduction of number of STOA consumers is the increase in short-term power purchase cost on power exchanges.

Data from CERC Market Monitoring reports has also been reviewed to analyse the open access activity in the state of Haryana. The table below represent the number of open access consumers and open access sales as per CERC Market Monitoring Reports.

Number of OA consumers – CERC Market Monitoring Reports	Units	FY16	FY17	FY18
IEX	Nos.	375	468	483
PXIL	Nos.	18	19	20
Total	Nos.	393	487	503

OA Sales – CERC Market Monitoring Reports	Units	FY2015-16	FY2016-17	FY2017-18
Bilateral Sale (A1)	Gwh	3,069	1,499	3,460
Bilateral Purchase (A2)	Gwh	5,908	5,182	2,594
Bilateral Net (A)	Gwh	2,839	749	-866
Exchange Sale (B1)	Gwh	841	2,361	446
Exchange Purchase (B2)	Gwh	1,999	1,612	1,033
Exchange Net (B)	Gwh	1,158	1,612	587
DSM Over Drawal (C1)	Gwh	789	886	477
DSM Under Drawal (C2)	Gwh	941	426	890
DSM Net (C)	Gwh	152	-459	413
OA Purchase (A2+B2)	Gwh	7,907	6,794	3,628
Net Purchase (A+B+C)	Gwh	4,150	4,835	135

The data from CERC Monitoring Reports is for the entire state while from data received from Discom is for only one Discom (UHBVN) and therefore the two are not comparable. However, the data from CERC monitoring report also indicate similar finding of reduction in open access activity on the exchange.

7.1.3. Commercial Review

In this section, the consumer category wise sales and the load profile of consumers is analysed in order to understand the potential of open access migration in the state. Potential of open access migration would be higher in states with higher share of HT industrial and HT commercial sales, along with a profile of consumers with higher loads.

The consumer category wise sales data is taken from respective tariff orders of the Commission. The data for load profile of HT consumers is collected from respective Discoms. This data for load profile was received from UHBVN, as a part of data collection exercise performed in this assignment, and has been represented in the further sub-sections.

HT sales as a % of total sales

The table below represents the consumer category wise sales in the state of Haryana, combined for UHBVN and DHBVN.

	Units	FY2016-17	FY2017-18	FY2018-19
HT Sales				
Non Domestic	Gwh	3,598	4,375	4,388
HT Industry	Gwh	10,169	9,267	9,030
HT Others	Gwh	-	-	-
HT Sub-Total	Gwh	13,767	13,642	13,418
LT Sales				
LT Sub-Total	Gwh	22,214	22,931	23,031

Total	Gwh	35,981	36,573	36,449
HT Commercial Sales (as % of total sales)	%	10%	12%	12%
HT Industrial Sales (as % of total sales)	%	28%	25%	25%

As per the sales data, HT industrial and commercial sales form approx. 37% of the overall sales in the state.

Load Profile of HT Consumers

The tables below showcase the load profile of HT Industrial consumers in UHBVN's distribution area, as provided by the Discom. Consumers falling in the category of 1-5 MW form 75% of the overall HT Industrial sales and 94% of the overall HT Industrial consumers. The HT industrial consumers in Haryana with greater than 5 MW of load are lower in overall numbers.

		Load Profile - Sales of HT Industrial Consumers			
Load category	Units	FY2015-16	FY2016-17	FY2017-18	FY2018-19
1-5 MW	Gwh	905	1,028	2,283	1,951
6-10 MW	Gwh	129	171	536	449
11-50 MW	Gwh	118	164	256	207
51-100 MW	Gwh	0	0	0	0
> 100 MW	Gwh	0	0	0	0
1-5 MW	%	79%	75%	74%	75%
6-10 MW	%	11%	13%	17%	17%
11-50 MW	%	10%	12%	8%	8%
51-100 MW	%	0%	0%	0%	0%
> 100 MW	%	0%	0%	0%	0%

		Load Profile - Number of HT Industrial Consumers			
Load Category	Units	FY2015-16	FY2016-17	FY2017-18	FY2018-19
1-5 MW	Nos.	217	310	557	552
6-10 MW	Nos.	10	13	25	25
11-50 MW	Nos.	9	11	11	10
51-100 MW	Nos.	0	0	0	0
> 100 MW	Nos.	0	0	0	0
1-5 MW	%	92%	93%	94%	94%
6-10 MW	%	4%	4%	4%	4%
11-50 MW	%	4%	3%	2%	2%
51-100 MW	%	0%	0%	0%	0%
> 100 MW	%	0%	0%	0%	0%

7.1.4. Tariff and open access charges review

In this section a detailed review of the retail tariff applicable on HT Industrial and HT Commercial consumers and open access charges is performed.

The breakup of fixed and variable tariff is analysed and compared against the fixed and variable cost of Discom to ascertain if fixed costs of Discom are being recovered through the fixed charges from the consumers.

Further the gap between retail tariff applicable on HT consumers and open access charges is analysed to understand the probability of consumers to migrate to open access. Generally a large gap between

open access charges and applicable retail tariff would support consumers migration to open access due to better financial viability.

Review of retail tariff charged to HT consumers

Based on the data provided in the Tariff Order, the ACoS Coverage for HT consumers in the State has improved. For both HT industrial and commercial categories, the cross subsidy level in the tariff is within +/-20% as per the provisions of the Tariff Policy. However, the fixed tariff (i.e. demand charges) for HT consumers is not sufficient to cover the fixed costs of Discom. The average realization from fixed charges in FY2018-19 was just 5% for HT Industrial and Commercial consumers, as against 50% fixed component of ACoS.

The table below showcases the fixed/ variable breakup of ACoS along with their corresponding fixed-variable breakup of ABR and ACoS average for HT Industrial and HT commercial consumers. The ACoS is calculated as combined average of UHBVN and DHBVN. Since breakup of fixed and variable ARR of Discoms was not available in the tariff orders, 60% of the total power purchase cost is assumed variable part of the ARR. For the estimation of ABR, the variable tariff of respective consumer category is added to an estimated per unit charge for fixed tariffs. The fixed tariff of respective consumer category is converted into per unit charge assuming a load factor of 60%. Further the variable tariffs for HT categories is determined in per KVAh terms by HERC. Power Factor of 95% is assumed for estimating variable tariff in per kwh terms. The ACoS coverage is taken as per the tariff orders of respective years.

	FY2016-17	FY2017-18	FY2018-19
ACoS			
Total	6.24	6.80	7.67
Fixed	49%	51%	50%
Variable	51%	49%	50%
HT Industrial ABR			
Total	6.76	7.29	7.29
Fixed	6%	5%	5%
Variable	94%	95%	95%
HT Commercial ABR			
Total	7.03	7.48	7.48
Fixed	6%	5%	5%
Variable	94%	95%	95%
ACoS Coverage			
HT industrial	108%	107%	95%
HT commercial	113%	110%	97%

Open Access Charges

In this sub-section, the open access charges applicable on various types of open access consumers is analysed. The open access charges for following types of consumers are discussed below –

- Conventional power through Non-Captive mode
- Conventional power through Captive mode
- Renewable power through Non Captive mode
- Renewable power through Captive mode

The open access charges differ significantly based on the type of open access (third party or captive) as well as based on the source of power (conventional or renewable) for these different types of open access consumers. While charges like CSS and Additional Surcharge are not applicable on captive consumers, discounts/ incentives on CSS / wheeling charges are offered to consumers availing open access from RE sources.

Section 4.3 of the Haryana Solar Policy 2016, provides for exemption of open access charges to solar power projects in the State.

'4.3 Exemption of Electricity Duty & Electricity Taxes & Cess, Wheeling, Transmission & distribution, cross subsidy charges, surcharges and Reactive Power Charges: All electricity taxes & cess, electricity duty, wheeling charges, cross subsidy charges, Transmission & distribution charges and surcharges will be totally waived off for Ground mounted and Roof Top Solar Power Projects.'

Further section 60(1) of the HERC (Terms and Conditions for determination of Tariff from Renewable Energy Sources, Renewable Purchase Obligation and Renewable Energy Certificate) Regulations of 2017, in accordance with the Solar Policy, provides exemption on open access charges for solar power projects.

'60(1) Notwithstanding anything contained in any other Regulation(s) notified by the Commission, Wheeling Charges, Cross Subsidy Charges, Transmission & distribution charges and Additional Surcharge shall be totally waived of, for third party sale /Open Access consumers for energy from ground mounted / Roof Top Solar power, commissioned during the control period under these Regulations.'

The discounts applicable for consumers availing open access through renewable Power as per Haryana Solar Policy 2016, are summarized in the table below:

Discounts for Solar Power	Unit	FY2016-17	FY2017-18	FY2018-19
Cross Subsidy Surcharge	%	100%	100%	100%
Distribution Wheeling	%	100%	100%	100%
Transmission Charge	%	100%	100%	100%
Additional surcharge	%	100%	100%	100%
SLDC Charge	%	-	-	-

**Further, in order to facilitate transmission of wind power from States to other States/UTs provisions have been made in the Revised Tariff Policy published in the Gazette of India on 28 January 2016, to waive off the inter-state transmission charges and losses for inter-state sale of wind power.*

The following assumptions are taken while analysing the open charges for various consumer types:

- 1 MW load
- 60% load factor for Non-RE power
- 18% load factor for RE Power
- 33 kV Connected voltage
- Long Term Open Access
- Solar power in case of renewable power procurement

Based on the applicable open access charges applicable for different type of consumers, the total open access charges for HT Industrial consumer over the last three years is summarized below:

HT Industrial Consumers (Conventional, Non-Captive)

OA Charges	Unit	FY2016-17	FY2017-18	FY2018-19
Cross Subsidy Surcharge	Rs./Kwh	1.57	1.63	0.81
Distribution Wheeling	Rs./Kwh	0.71	0.84	0.83
Transmission Charge	Rs./Kwh	0.33	0.36	0.36
Additional surcharge	Rs./Kwh	1.17	0.99	1.13
SLDC Charge	Rs./Kwh	0.07	0.07	0.07
RPO	Rs./Kwh	0.04	0.05	0.07
Total	Rs./Kwh	3.89	3.94	3.27

The total open access charges for HT Industrial consumer has reduced in FY 2018-19 primarily due to reduction of cross subsidy surcharge.

HT Industrial Consumers (RE, Non-Captive)

OA Charges	Unit	FY2016-17	FY2017-18	FY2018-19
Cross Subsidy Surcharge	Rs./Kwh	0.00	0.00	0.00
Distribution Wheeling	Rs./Kwh	0.00	0.00	0.00
Transmission Charge	Rs./Kwh	0.00	0.00	0.00
Additional surcharge	Rs./Kwh	0.00	0.00	0.00
SLDC Charge	Rs./Kwh	0.07	0.07	0.07
RPO	Rs./Kwh			
Total	Rs./Kwh	0.07	0.07	0.07

In case open access through RE sources, waiver of applicable OA charges including CSS, transmission and distribution wheeling, additional surcharge result in negligible OA charge applicability on HT consumers.

HT Industrial Consumers (Conventional, Captive)

OA Charges	Unit	FY2016-17	FY2017-18	FY2018-19
Cross Subsidy Surcharge	Rs./Kwh	-	-	-
Distribution Wheeling	Rs./Kwh	0.71	0.84	0.83
Transmission Charge	Rs./Kwh	0.33	0.36	0.36
Additional surcharge	Rs./Kwh	-	-	-
SLDC Charge	Rs./Kwh	0.07	0.07	0.07
RPO	Rs./Kwh	0.04	0.05	0.07
Total	Rs./Kwh	1.15	1.32	1.33

HT Industrial Consumers (RE, Captive)

Charges	Unit	FY2016-17	FY2017-18	FY2018-19
Cross Subsidy Surcharge	Rs./Kwh	-	-	-
Distribution Wheeling	Rs./Kwh	0.00	0.00	0.00
Transmission Charge	Rs./Kwh	0.00	0.00	0.00
Additional surcharge	Rs./Kwh	0.00	0.00	0.00
SLDC Charge	Rs./Kwh	0.07	0.07	0.07
RPO	Rs./Kwh	-	-	-
Total	Rs./Kwh	0.07	0.07	0.07

Based on the applicable open charges applicable for different type of consumers, the total open access charges for HT Commercial consumer over the last three years is summarized below:

HT Commercial Consumers(Non-Captive, Non-RE)

Charges	Unit	FY2016-17	FY2017-18	FY2018-19
Cross Subsidy Surcharge	Rs./Kwh	1.78	1.73	1.80
Distribution Wheeling	Rs./Kwh	0.71	0.84	0.83
Transmission Charge	Rs./Kwh	0.33	0.36	0.36
Additional surcharge	Rs./Kwh	1.17	0.99	1.13
SLDC Charge	Rs./Kwh	0.07	0.07	0.07
RPO	Rs./Kwh	0.04	0.05	0.07
Total	Rs./Kwh	4.10	4.04	4.26

HT Commercial Consumers(Non-Captive, RE)

OA Charges	Unit	FY2016-17	FY2017-18	FY2018-19
Cross Subsidy Surcharge	Rs./Kwh	0.00	0.00	0.00
Distribution Wheeling	Rs./Kwh	0.00	0.00	0.00
Transmission Charge	Rs./Kwh	0.00	0.00	0.00
Additional surcharge	Rs./Kwh	0.00	0.00	0.00
SLDC Charge	Rs./Kwh	0.07	0.07	0.07
RPO	Rs./Kwh			
Total	Rs./Kwh	0.07	0.07	0.07

HT Commercial Consumers(Captive, Non-RE)

Charges	Unit	FY2016-17	FY2017-18	FY2018-19
Cross Subsidy Surcharge	Rs./Kwh			
Distribution Wheeling	Rs./Kwh	0.71	0.84	0.83
Transmission Charge	Rs./Kwh	0.33	0.36	0.36
Additional surcharge	Rs./Kwh	0.00	0.00	0.00
SLDC Charge	Rs./Kwh	0.07	0.07	0.07
RPO	Rs./Kwh	0.04	0.05	0.07
Total	Rs./Kwh	1.15	1.32	1.33

HT Commercial Consumers (Captive, RE)

Charges	Unit	FY2016-17	FY2017-18	FY2018-19
Cross Subsidy Surcharge	Rs./Kwh			
Distribution Wheeling	Rs./Kwh	0.00	0.00	0.00
Transmission Charge	Rs./Kwh	0.00	0.00	0.00
Additional surcharge	Rs./Kwh	0.00	0.00	0.00
SLDC Charge	Rs./Kwh	0.07	0.07	0.07
RPO	Rs./Kwh			
Total	Rs./Kwh	0.07	0.07	0.07

Break Even Power Purchase Cost

The table below compares the retail tariff applicable on HT consumers against the open access charges applicable on such consumers. It can be observed that significant gap exists between retail tariffs and open access charges for HT Industrial consumers and HT Commercial Consumers in case of RE Non-Captive and captive power, Conventional Captive, making it economically beneficial for them to migrate to open access.

Table: Comparison of OA charges & Break-even PPC for FY18-19 (HT-Industrial)

Parameters		Conventional Non-Captive	RE Non-Captive	Conventional Captive	RE Captive
Open Access Charges	A	3.27	0.07	1.33	0.07
Tariff (Variable)	B	6.89	6.89	6.89	6.89
Break Even PPC	C=B-A	3.63	6.83	5.57	6.83
Break Even PPC after losses	$C/(1+T\&D \text{ Loss})$	3.14	5.91	4.82	5.91

Table: Comparison of OA charges & Break-even PPC for FY18-19 (HT-Commercial)

Parameters		Conventional Non-Captive	RE Non-Captive	Conventional Captive	RE Captive
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Review of Status of Open Access in Distribution

Open Access Charges	A	4.26	0.07	1.33	0.07
Tariff (Variable)	B	7.11	7.11	7.11	7.11
Break Even PPC	C=B-A	2.85	7.04	5.78	7.04
Break Even PPC after losses	$C/(1+T\&D \text{ Loss})$	2.47	6.09	4.77	6.09

7.1.5. APTEL/ SERC cases regarding open access

In order to understand the issues faced by open access consumers in the state of Haryana, various APTEL and SERC cases related to open access were analysed. The table below provides a summary of such APTEL/ SERC cases.

Commission	Case No.	Year	Utility	OA Consumer	Brief description of case
HERC	HERC/PR O – 70 of 2017 HERC/PR O – 47 of 2017	2018	DHBVNL , HVPNL	M/s DCM Textiles Hisar M/s Jindal Stainless Limited, Hisar	<ul style="list-style-type: none"> The Petition is directed against the changed practice of raising bills by DHBVNL on the embedded open access consumer without upfront adjustment of drawl of power under Open Access mechanism HERC is of opinion that that the billing of the Petitioners should strictly be done as per the provision of OA Regulations. HERC observed that the distribution licensee has contained the analysis only to the Open Access units and accepted schedule at State periphery whereas the financial analysis has not been carried out while making the proposal for adjusting 80 % of accepted schedule. https://herc.gov.in/writereaddata/orders/o20180521a.pdf
APTEL	254 of 2013	2015	DHBVNL	M/s Toshiba Corporation	<ul style="list-style-type: none"> Appeal filed by DHBVNL against HERC order stating that Toshiba Corp can supply power from its proposed generating plant to the industrial consumer through dedicated transmission line considering the load centre as a consumer and shall be liable to pay cross subsidy surcharge to the distribution licensee and additional surcharge as applicable under the Regulations DHBVNL stated that HERC knowing well that Toshiba was not eligible for a distribution license yet allowed to supply power to industrial consumers and indulge in cherry picking of consumers APTEL dismissed the appeal stating that 'Toshiba' has clearly stated that it shall not use the distribution or transmission network of distribution or transmission licensee of the area of supply, and also that a proper arrangement has been made to ensure that the distribution licensee, would be properly compensated through the payment of cross subsidy surcharge and additional surcharge http://aptel.gov.in/judgements/Judq2015/APPEAL%20NO.%20254%20of%202013.pdf

Commission	Case No.	Year	Utility	OA Consumer	Brief description of case
APTEL	103 OF 2012	2015	DHBVNL , HERC	Maruti Suzuki India Limited,	<ul style="list-style-type: none"> Judgement was towards methodology for determination of cross subsidy surcharge, as HERC had failed to determine the cross subsidy surcharge as per its Regulations and the Tariff Policy APTEL decided that in the circumstances of the case where only average cost of supply of the distribution licensee is available, it would be prudent to determine cross subsidy surcharge as a difference of average tariff as applicable to the Appellant's category and the average cost of supply for the Distribution licensee. This will not be contrary to the Regulation as both the retail supply tariff and cost of supply is based on overall average cost of supply of the distribution licensee. Accordingly, Maruti will be entitled to claim refund if payment had been made by the Appellant for cross subsidy surcharge as per that claimed in the order http://aptel.gov.in/judgements/Judg2015/APPEAL%20NO.%20103%20OF%202012_24.03.pdf
HERC	HERC/PR O-02 of 2014 HERC/PR O-04 of 2014 HERC/PR O-02 of 2014	2014	HVPNL, DHBVNL , UHBVNL	Hindustan National Glass & Industries Limited. Punjab General Industries Pvt. Ltd Escorts Ltd. Agri Machinery- Tractor Plant	<ul style="list-style-type: none"> Application seeking clarification on levy of Connectivity Charges The Petitioners further stated that HVPNL is recovering Connectivity Charges, even from the consumers who are covered under the supply agreement with the licensee. To demand such charges from an embedded consumer who has been released connection under a valid supply contract in pursuance to the HERC Regulations 12/2005 is totally illegal. The petitioners have asked for required clarification on the payment of connectivity charges by the existing consumers who are already connected with the Distribution /Transmission System under the power supply contract. and direct HPVNL to immediately refund the connectivity charges levied/recovered from the Petitioner as the Petitioner is already connected to the system under power supply contract. The Commission is of the considered view that the Petitioners have been given connectivity to the intra-state transmission system after the notification of these Regulations and further they are using the connectivity for the purpose of open access also, levy of one time connectivity fee on the petitioners by the Respondent-1 is in line with the HERC ibid Regulations and is payable. The Commission accordingly finds that the non-refundable connectivity fee levied by the Respondent-1 on the Petitioners is in order https://herc.gov.in/writereaddata/orders/o20140722c.pdf

Commission	Case No.	Year	Utility	OA Consumer	Brief description of case
HERC	HERC/PR O - 28 of 2013	2014	DHBVNL	M/s Artemis Medicare Services Ltd. Gurgaon	<ul style="list-style-type: none"> Petition regarding clarification for short term Open Access through IEX HERC observes that M/s Artemis Medicare Service Ltd. Gurgaon (A/c No. IND 6 - 0019) and M/s Artemis Medicare Service Ltd. Gurgaon (A/c No. IND 6 - 0002) were eligible for grant of Open Access as a group of two consumers with combined contract demand of more than 1 MVA in line with Regulation 8(3) of the HERC Regulations, 2012 In ultimate analysis the Commission holds that HERC (Terms and Conditions for grant of connectivity and open access for intra - state transmission and distribution system) Regulations, 2013 and the 1st Amendment Regulations notified on 3rd December, 2013 is self-explanatory on the issue raised by the Petitioner Nigam and no further clarification is required in the matter. The petitioner Nigam is directed to take necessary action on the application for grant of Open Access in accordance with the Regulations https://herc.gov.in/writereaddata/orders/o20141125.pdf
APTEL	231 OF 2012	2013	DHBVNL , HERC	Jindal Stainless Limited	<ul style="list-style-type: none"> Jindal filed appeal against HERC order dismissing the Petition filed by the Appellant seeking recovery of the power factor rebate allowed earlier on Cross Subsidy Surcharge levied on Open Access Customer and for setting-aside the sales Circular issued by the DISCOM Power factor rebate is payable to the consumer who also avails open access and is extended to encourage the consumer to maintain high power factor and to minimize the system losses. APTEL directed HERC to remit the amount recovered from the Appellant as power factor rebate along with interest at 9% per annum on account of incorrect methodology adopted by the State Commission as regards the Active Energy figures recorded for the entire month which cannot be compared with the reactive energy recorded for the specific time duration corresponding to the specific variation in voltage at the metering point. http://aptel.gov.in/judgements/Judq2014/Judgment in Appeal No. 231 of 2012 14.11.2013.pdf

7.2. Punjab

Punjab is the 19th largest state in terms of area, (area of 50362 km²) and the 15th largest by population (as per census 2011) with total population of 277.04 lakhs. It is one of the most prosperous states in India with its agricultural based economy and its per capita income is twice the national average.

Punjab today is a well-developed industrial state with existence of pharmaceutical and automobile industries, thus with the mix of demand in form of both agricultural and industrial the consumption of power has grown gradually which is evident from the total energy sales in the state which has increased in the last 3 years from 44724 MUs to 49,561 MUs.

Punjab is a power surplus state. The power utilities in Punjab are segregated into generation & distribution (Punjab State Power Corporation Ltd., PSPCL) and Transmission (Punjab State Transmission Corporation Ltd., PSTCL). The state's SLDC function is housed within PSTCL. The state had peak demand of 11,705 MW in FY2017-18 (as per CERC LGBR report, FY2018-19). The state had an installed power generation capacity of 13432.44 MW as on Feb 2019.

Key Parameters	
Peak demand	11,705 MW
Annual Units Available	54,812 MUs
Sales	49,561 MUs
Power Utilities	G,D - PSPCL T - PSTCL

The analysis of open access status review is performed for PSPCL in Punjab.

7.2.1. Regulatory Review

In this section a detailed review is performed of the open access regulations issued by State Electricity Regulatory Commissions (SERCs) to analyse –

- Evolution of open access regulations in the state along with their key amendments
- Eligibility conditions and restrictions for availing open access, along with types of open access allowed
- Process of applying for open access
- Provisions for open access charges
- Any other regulation/ policies relevant to open access

Evolution of open access regulations

In line with the provisions of Electricity Act 2003, the state of Punjab issued Open Access Regulations in the year 2005. These regulations were amended in the years 2007, 2009 and 2010 and thereafter replaced with a new set of regulations in the year 2011 namely 'Terms and Conditions for Intra-state Open Access'. The table summarizes the evolution of open access regulations in the state of Punjab along with the key amendments made thereof.

Year	Regulation/ Amendment	Key Amendment/Provisions
2005	OA Regulation	-
2007	Amendment	<ul style="list-style-type: none"> LTOA consumers to pay 1/3rd T&D wheeling charges and STOA 1/5th OA consumers to bear 30% of agg. T&D losses above 66 kV and 50% of agg. T&D below 66 kV 98% discount on T&D wheeling charges for RE power
2009	Amendment	<ul style="list-style-type: none"> Congestion charges applied on OA consumers for overdraw In case of unscheduled outage, OA power banked for 3 months Settlement of power demand in case of embedded consumers defined Phasing of OA delayed. OA less than 1 MW to be allowed from 2010 Stand-by power allowed for 6 weeks in a year at highest HT tariff
2010	Amendment	<ul style="list-style-type: none"> SLDC may cancel any OA transaction to prevent network constraint

Year	Regulation/ Amendment	Key Amendment/Provisions
2011	OA Regulation	-
2012	Amendment	• Same wheeling charges applicable on all OA consumers above 11 kV, in addition to transmission charges
2012	Amendment	• Discount for renewable power limited to wheeling of power within the state
2013	Amendment	• Defined Unauthorised Open Access Transaction
2014	Amendment	• CSS not leviable to the extent of regulatory measures imposed due to shortage of power
2015	Amendment	• Drawl of OA consumer from Discom during any time block shall not exceed admissible drawl wherein OA schedule is maximum
2016	Amendment	• No levy of Trans. and Dist. wheeling charges for RE power, for 10 yr from COD, for plants commissioned btw Jul 15 to Mar 17
2016	Amendment	• In case OA consumer fails to meet RPO obligation, OA approval may be withheld until RPO compliance is met

Open access eligibility

The Open Access regulations issued by the Commission in 2011 define eligibility criteria's for consumers that can avail open access, based on various technical and commercial considerations. In 2016, the Commission amended the open access regulations, to include a condition that consumers who have not met their RPO requirements in the previous period, shall not be allowed open access. Based on the prevalent regulations, these eligibility requirements and restrictions in the state of Punjab are as follows –

Contract Demand	- 1 MW or above
Feeder level conditions	- Open access not allowed on urban pattern supply feeders, AP feeders and category - I feeders serving mixed loads of urban / industrial consumers - Open access allowed on category-II industrial feeders with no agricultural load, subject to rostering restrictions imposed by the utility
Voltage level conditions	- Open access can be availed by consumers availing supply at 11KV or above
Additional Provisions	- Consumers who have not met their RPO requirements in the previous period, shall not be allowed open access

The relevant provisions of the regulations are reproduced below –

'10 (3) Subject to the provisions of these Regulations, open access shall be permissible to a customer having demand of 1 MW and above (except generating plants), connected at 11 KV or above, on all feeders except urban pattern supply feeders, AP feeders and category - I feeders serving mixed loads of urban / industrial consumers.

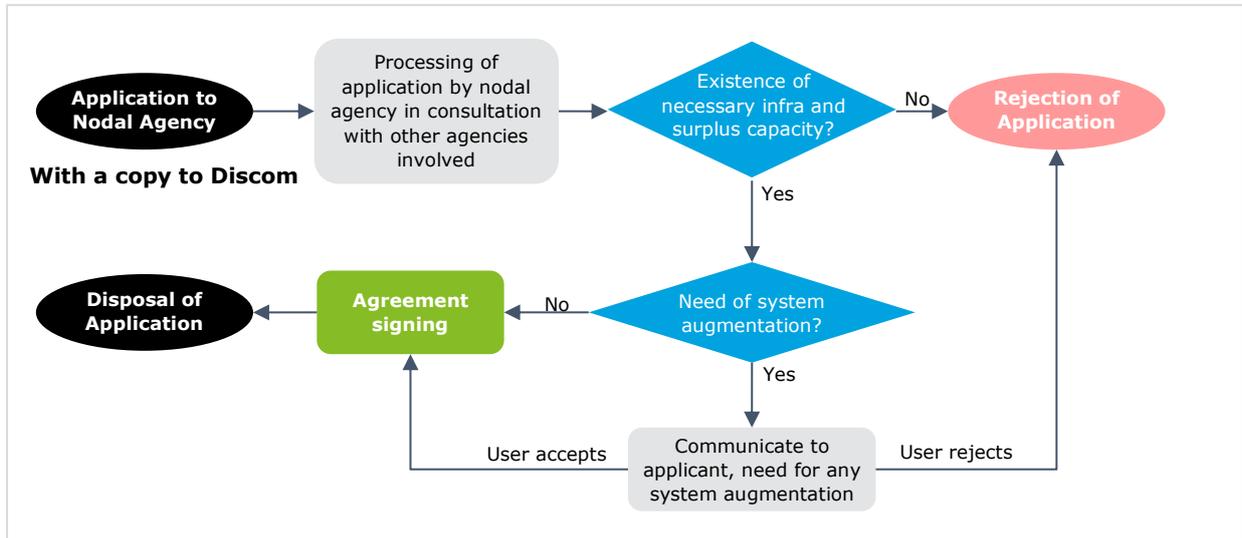
Provided that the customers connected to Category - II industrial feeders, with no agricultural load on the feeder, shall be allowed open access subject to the condition that they agree to rostering restrictions imposed by the utility on such feeders.'

'42 (2) In case, the Open Access customer fails to comply with the RPO as specified by the Commission in the Punjab State Electricity Regulatory Commission (Renewable Purchase Obligation and its compliance) Regulations, 2011 as amended from time to time, for the period/year during which open access has been availed, the distribution licensee(s) shall withhold permission to such Open Access customer to avail open access during the next period/year till the shortfall in RPO compliance is made.'

Open access application process

In Punjab, either the PSTCL or SLDC (housed within PSTCL) acts as the Nodal Agency for accepting open access applications, depending upon the injection/drawal point of power.

As per **regulation 15 of OA regulations 2011**, the complete procedure to get open access for the state of Punjab is represented below in the form of a flow chart.



The table below summarises the key features of the process related to getting Open Access -

	Long Term OA	Medium Term OA	Short Term OA
Nodal Agency	<ul style="list-style-type: none"> • CTU – if generator and buyer are in diff. states • STU – for other cases 	<ul style="list-style-type: none"> • CTU – if generator and buyer are in diff. states • STU – for other cases 	<ul style="list-style-type: none"> • CTU – if generator and buyer are in diff. states • NLDC – for day ahead market • SLDC – for other cases
Time-period	120–150 days	20-40 days	3-15 days
Documents	<ul style="list-style-type: none"> • Application Fee • PPA • Documentary evidence for completion of the connectivity to grid of generating station 	<ul style="list-style-type: none"> • Application Fee • PPA • Documentary evidence for completion of the connectivity grid of generating station 	<ul style="list-style-type: none"> • Application Fee • Self-Attested Documents • Undertakings
Cost	<ul style="list-style-type: none"> • Application Fee: Rs. 0.5-2 Lacs, basis location of drawal/ injection point • Bank Guarantee: Rs. 10,000 per MW 	<ul style="list-style-type: none"> • Application Fee: Rs. 0.5-2 Lacs, basis location of drawal/ injection point • Bank Guarantee: Rs. 10,000 per MW 	<ul style="list-style-type: none"> • Application Fee: Rs. 2,000 – 5,000, basis location of drawal/ injection point

The procedures for STOA application prepared by PSTCL, require the following documents to be submitted along with STOA applications –

1. Self-attested documents:
 - a) Copy of A&A form showing Account No., sanctioned Load and CD.
 - b) Copy of continuous process industry letter.
 - c) Copy of latest energy bill issued by distribution licensee, in case customer is a consumer of distribution licensee.

- d) Copy of stay granted by the competent authority, in case of disputes regarding outstanding dues pending with any Forum or Court.
 - e) PEDDA clearance in case of Power producers/ CPPs/Generators using NRSE fuel(s).
 - f) Feasibility clearance and connectivity details with transmission/distribution licensee in case of generators or a customer who is not a consumer of the Distribution licensee.
 - g) Single Line Diagram of the electrical system showing details of metering equipments installed.
 - h) Copy of Board Resolution/ Power of Attorney/ Authorization Letter of the applicant certifying Name & Signatures of the Authorized Signatory (preferably in the format attached at Appendix-VIII).
 - i) Copy of Registrar of Companies (ROC) letter certifying name of the Industrial Open Access Customer, in case the applicant is not a consumer of distribution licensee.
 - j) In case of wheeling of power from one unit to another unit of same company, proof of being units of same company.
 - k) In case of Captive Power Plants (CPPs), Certificate from the competent authority, regarding captive status, in line with Electricity Act, 2003 & Electricity Rules, 2005.
2. Undertakings by the applicant regarding
 - a) Undertaking regarding having not been declared insolvent or bankrupt
 - b) Undertaking having no outstanding dues against the applicant for more than two months billing of distribution/transmission licensee at the time of application.
 - c) Undertaking to accept rostering restrictions imposed by the utility in case of Category II mixed industrial feeders
 3. Undertaking for Payment Security
 4. Undertaking for Acceptance of Terms & Conditions

From the table above and the application process for open access in the state, based on the prevalent regulations, it can be observed that the applicant is not required to take a separate NOC from Discom or Transco, before applying for open access to the nodal agency. Instead the nodal agency itself coordinates with relevant agencies for granting of consent/ NOC to the applicant for open access. This is also due to the fact that the nodal agency in the state is the Transco itself. The nodal agency while processing the open access application, verifies the following before granting the consent/ NOC for open access –

- Existence of infrastructure necessary for time-block-wise energy metering and accounting in accordance with the provisions of the State Grid Code in force
- Availability of capacity in the distribution network

It should also be noted that, as per prevalent regulations, in case the nodal agency has not communicated any deficiency or defect in the application within 2 working days from the date of receipt of application, or refusal/ consent within 3 working days from the date of receipt of the application, consent/ NOC shall be deemed to have been granted.

Punjab SLDC has provided facility for online filling of NOC, on trial basis for open access customers of IEX.

Open access charges

The open access regulations in the state of Punjab, define the following types of open access charges –

- 1) Transmission charges
- 2) Scheduling and System Operation Charges
- 3) Wheeling charges
- 4) Cross Subsidy Surcharge
- 5) Additional Surcharges
- 6) Imbalance Charge
- 7) Reactive Energy Charges

8) Voltage Surcharge

Imbalance Charges are applicable to open access consumers considering its deviation with respect to actual injection/drawl, sanctioned load. UI charges along with congestion charges are levied on consumers as decided by commission from time to time based on 'Terms and Conditions for Intra-state Open Access' 2011 regulations.

The payment for the **Reactive energy charges** for the Open Access customers shall be calculated in accordance with Punjab State Electricity Regulatory Commission (Terms and Conditions for Determination of Generation, Transmission, Wheeling and Retail Supply Tariff) Regulations approved by the Commission. Provided that no additional power factor surcharge/incentive shall be leviable on the energy drawn through open access.

Voltage surcharge is applicable on open access consumer based on their drawl of power from licensee higher/lower than sanctioned contract demand to cater their load requirements. Voltage surcharge is levied as specified in the General Condition of Tariff.

Apart from the charges discussed in above, which are contingent upon the type of schedule and power drawn by open access consumers, the major open access charges in the State of Punjab, are discussed in detail in the sub-sections below.

Cross Subsidy Surcharge

As per section 26 (2) of the Open Access Regulations issued by PSERC in 2011, the cross subsidy surcharge is determined in accordance with the following formula:

$$S = T - C$$

Where, S is the cross subsidy surcharge, T is the average per unit realization from the relevant category of consumers, C is the combined average cost of supply of distribution licensee.

Further the open access regulations were amended in 2014, to state that CSS shall not be levied on open access consumers to the extent of regulatory measures imposed due to shortage of power in the state.

'26(1) Provided further that such surcharge shall not be leviable on power available with consumer(s) through open access to the extent of regulatory measures imposed due to shortage of power, other than peak load hour restrictions put by the distribution licensee, on the consumer(s) through advance notification.'

The table below represents the Cross Subsidy Surcharge determined by PSERC for HT Industrial and HT Commercial consumer categories for the last three financial years –

Cross Subsidy Surcharge	Units	FY2017	FY2017-18	FY2018-19
Large Supply				
General Industry	Rs./Kwh	0.70	0.71	0.49
PIU/Arc Furnace	Rs./Kwh	0.70	0.71	0.69
Domestic	Rs./Kwh	0.95	1.23	0.44
Non-Residential	Rs./Kwh	1.14	1.28	1.06
Bulk Supply	Rs./Kwh	0.65	0.91	0.55
Railway Traction	Rs./Kwh	0.86	0.93	1.03

Distribution Wheeling Charges

Section 25 of the open access regulations issued by PSERC in 2011 provided for determination of distribution wheeling charges for LTOA/ MTOA by dividing the annual wheeling charges of Discom by total capacity in MW terms served by the Discom. The regulations provided for determination of distribution wheeling charges for STOA in per unit terms.

The methodology used for calculation of distribution wheeling charges is as follows -

- **For STOA:** Revenue requirement for distribution excluding PPC & Transmission Charges of PSTCL/ Energy requirement at the distribution periphery during FY 2018-19
- **For LTOA/MTOA:** Revenue requirement for distribution excluding PPC & Transmission Charges of PSTCL/ Contracted capacity of PSPCL*12.

Further the regulations allowed voltage wise distribution wheeling charges, wherein consumers at each voltage level were to pay a % of total wheeling charges. However this provisions was amended in 2012 and a single distribution wheeling charge was made applicable on all open access consumers availing supply at 220 KV, 132 KV, 66 KV, 33 KV or 11 KV.

The table below represents the Distribution Wheeling charges for all open access consumer categories for the last three financial years -

Distribution Wheeling charges	Units	FY2016-17	FY2017-18	FY2018-19
LTOA and MTOA consumers	Rs./MW/Month	4,29,160	4,68,468	4,80,155
STOA consumers	Rs./Kwh	1.32	1.42	1.32

Transmission Charges

As per section 23 (2) a) of the open access regulations issued by PSERC in 2011, the transmission charges for open access are to be determined by the Commission in their respective tariff orders for PSTCL. Further section 23 (2) d) of the open access regulations, provide for a per unit transmission charge for STOA transactions.

The table below represents the Transmission charges for open access consumers as determined by the PSERC for the last three financial years -

Transmission charges	Units	FY2016-17	FY2017-18	FY2018-19
Long Term/ Medium Term	Rs./MW/Month	87,628	82,593	90,940
Short Term	Rs./Kwh	0.23	0.22	0.22

Energy losses

Section 30 of the open access regulations in the state define the methodology for calculation of voltage wise losses as follows –

'30 (2) The open access customers availing supply at 132/220 KV, shall be required to bear only the transmission losses; whereas the customers availing supply at 33/66 KV shall bear 15% of the distribution losses in addition to transmission losses. The open access customers connected at 11 KV shall bear 40% of the distribution losses in addition to transmission losses. These losses shall also be applicable to NRSE generators.'

Accordingly voltage wise energy losses are determined by the commission in their respective tariff orders.

Further the state provides full exemption on the wheeling and transmission charges for wheeling of New and Renewable Sources of Power (NRSE) within the state. Instead the regulations provide for transmission and Wheeling charges for wheeling of NRSE power for consumption within the State @ 2% of the energy injected into the State Grid, irrespective of distance.

'25.

In case of wheeling of power generated from NRSE project, transmission and wheeling charges shall be levied @ 2% of the energy injected into the State Grid, irrespective of the distance i.e. additional 2% of the total energy shall be injected at injection point(s).'

Therefore the energy losses for NRSE power is increased by 2% over the voltage wise losses determined. The table below represents the energy losses approved by the Commission in their respective tariff orders for open access consumer in the last three financial years.

T&D Losses	Units	FY2016-17	FY2017-18	FY2018-19
For Non-RE Power				
132/220 kV	%	2.50%	2.50%	2.50%
66/33 kV	%	4.36%	4.31%	4.28%
11 kV	%	7.47%	7.32%	7.26%
For RE Power (for 2% charge in terms of energy injected, instead of wheeling and transmission charges, for intra-state wheeling of power)				
132/220 kV	%	4.50%	4.50%	4.50%
66/33 kV	%	6.36%	6.31%	6.28%
11 kV	%	9.47%	9.32%	9.26%

Additional Surcharge

Section 27 of the open access regulations issued by PSERC in 2011, allow for charging of an Additional Surcharge to open access consumers in case the obligation of the licensee in terms of power purchase commitments has been and continues to be stranded or there is an unavoidable obligation and incidence to bear fixed costs. The regulations do not define any specific methodology for calculation of additional surcharge and state that the Commission shall determine additional surcharge from time to time.

In the orders issued by PSERC for the calculation of Additional Surcharge, the ratio of Fixed power purchase cost with Fixed Cost of Discom, is multiplied with per unit Fixed Revenue recovery from HT Consumers. The Fixed cost of Discom is calculated as 50% of ARR minus variable power purchase and fuel cost.

The table below represents the Additional surcharges as determined by PSERC, for all open access consumer categories for the last three financial years –

Additional Surcharges	Units	FY2016-17	FY2017-18	FY2018-19
HT consumer	Rs./Kwh	1.25	0.93	0.86

SLDC charges

Section 24 of the open access regulations in Punjab require LTOA/ MTOA consumers to pay SLDC charges for scheduling and system operation, as determined by the Commission from time to time in its Tariff Orders. For STOA consumers the regulations define a composite operating charge of Rs, 2,000 per day. The table below represents the SLDC surcharges, determined by the Commission, for the last three financial years. The SLDC charge, as determined by the Commission, for Long term/medium term and short term OA transactions, for last three years is provided in the table below.

SLDC surcharge	Units	FY2016-17	FY2017-18	FY2018-19
Long Term/ Medium Term	Rs./MW/Month	2,145	1,213	1,321
Short Term	Rs/Day	2,000	2,000	2,000

RPO Obligation

Renewable Purchase Obligations (RPO) are applicable on open access consumers taking supply from Conventional sources. Regulation 3 of the Renewable Purchase Obligation and its compliance regulations issued by PSERC in 2011, defines the RPO quantum. RPO Obligations applicable for all open access consumer categories in the last three financial years is detailed in table below.

RPO Obligation	Units	FY2016-17	FY2017-18	FY2018-19
Solar	%	1.30%	1.80%	2.20%
Non-Solar	%	4.10%	4.20%	4.30%
Total	%	5.40%	6.00%	6.50%

Other Regulatory Provisions

Banking of Power Facility

Section 8 of the PSERC (Harnessing of Captive Power Generation) Regulations of 2009, provide banking facility for captive consumers.

'8. Banking of Energy:

(1) For NRSE based CPPs

Banking of Energy will be permitted as per the NRSE policy, 2006 notified by the Govt. of Punjab.

(2) For Other CPPs

The facility of banking will be provided free of cost by a Licensee. However, the banked energy will be permitted to be drawn subject to the condition that:

- it will be drawn within one year from the date of banking failing which the Licensee will effect payment therefor to the CPP in accordance with Reg. 5(2) above.*
- it will be not be drawn during the peak load hours.'*

While the banking facility is not extended to open access consumers in the state, the open access regulations in Punjab, allow banking of unutilised power due to unscheduled power cut or failure of T&D system, which can be used by open access consumer within next 15 days.

'31 (1) c) If an Open Access customer is unable to draw the scheduled energy due to unscheduled cut or failure of transmission/distribution system of the licensee, the power injected will be treated as banked power and the Open Access customer will be allowed to draw the same within a period of 15 days with an advance notice of 48 hours to the licensee. The power will in no case be drawn during peak load hours, unless banked during peak load hours. In case the Open Access customer is unable to draw the banked power, then he will be paid by the licensee as per (b) above.'

The table below summarises the applicability of banking provisions and banking charges for various types of consumers.

<i>Applicability and Charges for Banking of Power</i>	Non-RE Power	RE Power
Captive consumer	<ul style="list-style-type: none"> • Available • No charge 	<ul style="list-style-type: none"> • Available • No charge
Third party open access	<ul style="list-style-type: none"> • Not available • Only to the extent of unscheduled power cut/failure 	<ul style="list-style-type: none"> • Not available • Only to the extent of unscheduled power cut/failure

Deviation Settlement Mechanism

PSERC issued 'Forecasting, Scheduling, Deviation Settlement and Related Matters of Solar and Wind Generation Sources' Regulations in 2019. As per these regulations, the Deviations Settlement Mechanism is applicable on Open Access consumers according to clause 3.2 of the regulation.

'3.2 Applicability: These Regulations shall be applicable to all wind and solar generators with individual capacity of 5 MW and above connected to the State Transmission System or distribution system or wind and solar generators of any capacity connected through pooling stations to the State Transmission System or distribution system with combined capacity of 5 MW and above, supplying power to the distribution company (ies) or to the third party through open access or for captive consumption through open access within or outside the State.'

Deviation Charges in case of under or over-injection, for sale of power within the State:

Absolute Error in the 15-minute time block	Deviation Charges payable to State Deviation Pool Account
< = 10%	None
>10% but <=20%	At Rs. 0.50 per unit for the shortfall or excess energy for absolute error beyond 10% and upto 20%
>20% but <=30%	At Rs. 0.50 per unit for the shortfall or excess energy beyond 10% and upto 20%+ Rs. 1.0 per unit for balance energy beyond 20% and upto 30%
> 30%	At Rs. 0.50 per unit for the shortfall or excess energy beyond 10% and upto 20% + Rs. 1.0 per unit for shortfall or excess energy beyond 20% and upto 30% + Rs. 1.50 per unit for balance energy beyond 30%

Deviation Charges in case of under injection by Wind/Solar Generating Stations as State Entities undertaking Inter-state transactions

Absolute Error in the 15-minute time block	Deviation Charges payable to State Deviation Pool Account
< = 15%	At the Fixed Rate for the shortfall energy for absolute error upto 15%
>15% but <=25%	(At the Fixed Rate for the shortfall energy for absolute error upto 15%) + (110% of the Fixed Rate for balance energy beyond 15% and upto 25%)
>25% but <=35%	(At the Fixed Rate for the shortfall energy for absolute error upto 15%) + (110% of the Fixed Rate for balance energy beyond 15% and upto 25%) + (120% of the Fixed Rate for balance energy beyond 25% and upto 35%)
> 35%	(At the Fixed Rate for the shortfall energy for absolute error upto 15%) + (110% of the Fixed Rate for balance energy beyond 15% and upto 25%) + (120% of the Fixed Rate for balance energy beyond 25% and upto 35%) + (130% of the Fixed Rate for balance energy beyond 35%)

Deviation Charges in case of over injection by Wind/Solar Generating Stations as State Entities undertaking Interstate transactions

Absolute Error in the 15-minute time block	Deviation Charges payable to State Deviation Pool Account
< = 15%	At the Fixed Rate for the excess energy upto 15%
>15% but <=25%	(At the Fixed Rate for the excess energy upto 15%) + (90% of the Fixed Rate for excess energy beyond 15% and upto 25%)
>25% but <=35%	(At the Fixed Rate for the excess energy upto 15%) + (90% of the Fixed Rate for excess energy beyond 15% and upto 25%) + (80% of the Fixed Rate for excess energy beyond 25% and upto 35%)
> 35%	(At the Fixed Rate for the excess energy upto 15%) + (90% of the Fixed Rate for excess energy beyond 15% and upto 25%) + (80% of the Fixed Rate for excess energy beyond 25% and upto 35%) + (70% of the Fixed Rate for excess energy beyond 35%)

7.2.2. Open access activity review

Number of open access consumers and open access sales

In this section a detailed review is performed of the existing level and past trend of Open Access activity in the respective state. As a part of this assignment, a data collection exercise was conducted to collect data with respect to the open access activity in the shortlisted states. Data was sought from the respective Discoms and SLDCs for the number of open access consumers in the State, their type (captive/ non-captive and long/ medium or short term), and open access sales over the last 3 financial years. For the State of Punjab, partial data related to open access activity was received for number of open access consumers and their type, from PSPCL.

Based on the information shared by Discom, the details of number of open access consumers is as below:

No. of OA Consumers	Units	FY2015-16	FY2016-17	FY2017-18
Long Term	Nos.	0	0	0
Medium Term	Nos.	0	2	2
Short Term	Nos.	255	206	32
Total	Nos.	255	208	34
Captive	Nos.	3	6	6
Non-Captive	Nos.	252	202	28
Total	Nos.	255	208	34
RE	Nos.	2	2	3
Non-RE	Nos.	253	206	31
Total	Nos.	255	208	34

Based on the information shared by Discom, the details of open access sales is as below:

OA sales	Units	FY2015-16	FY2016-17	FY2017-18
Long Term	Nos.	0	0	0
Medium Term	Nos.	0	26	71
Short Term	Nos.	1,934	961	51
Total	Nos.	1,934	987	122
Captive	Nos.	62	71	100
Non-Captive	Nos.	1,872	916	22
Total	Nos.	1,934	987	122
RE	Nos.	16	20	28
Non-RE	Nos.	1,918	967	94

OA sales	Units	FY2015-16	FY2016-17	FY2017-18
Total	Nos.	1,934	987	122

As per the above tables, it is observed that the open access consumers and open access sales have been reducing in recent years. Also, a large part of the open access consumers are non-captive consumers which are drawing conventional power. Based on the discussions with various stakeholders, it was learnt that the reason for this reduction in open access consumers could be the increase in short term power purchase cost on power exchanges.

Review of open access applications

As per the information collected from State utilities, the table below provides the number of open access applications received (based on unique open access IDs issued by SLDC) in the State of Punjab for last three financial years.

Unique open access IDs issued	Inter-state	Intra-state	Total
FY2015-16	292	6	299
FY2016-17	182	6	188
FY2017-18	39	7	46

It can be observed that the number of open access applications has decreasing significantly in the recent years. Also most of the applications are for inter-state open access.

Also from the data of open access applications provided by the State utilities, the analysis is performed on the percentage of applications rejected by nodal agency and the major reasons for their rejection. The table below provides the number and percentage of open access applications rejected in the past years. Non-compliance with RPO is cited as reason for rejections of open access applications in Punjab.

	FY16	FY17	FY18
Number of OA applications received	299	188	46
Number of OA applications rejected	6	24	9
% of OA applications rejected	2%	13%	20%

7.2.3. Commercial Review

In this section, the consumer category wise sales and the load profile of consumers is analysed in order to understand the potential of open access migration in the State. Potential of open access migration would be higher in States with higher share of HT industrial and HT commercial sales, along with a profile of consumers with higher loads.

HT sales as a % of total sales

The consumer category wise sales data is taken from respective tariff orders of the Commission. The data for load profile of HT consumers is collected from respective Discoms.

	Units	FY2016-17	FY2017-18	FY2018-19
HT Commercial & Industrial (C&I)				
Non-Residential	Gwh	3,699	4,191	4,351
Large Supply	Gwh	11,611	12,073	13,187
HT others	Gwh	3017	3203	3338
Sub-Total	Gwh	18,327	19,467	20,877
LT Sales				
Sub-Total	Gwh	26,397	27,865	28,684

	Units	FY2016-17	FY2017-18	FY2018-19
Total	Gwh	44,724	47,332	49,561
HT commercial Sales (as % of total sales)	%	8%	9%	9%
HT Industrial Sales (as % of total sales)	%	26%	26%	27%

As per the sales data, HT industrial and commercial sales form approx. 36% of the overall sales in the state. This percentage is consistent over last three financial years.

Load Profile of HT Consumers

The tables below showcase the load profile of HT Industrial consumers in PSPCL, as provided by the Discom. Consumers falling in the category of 1-5 MW form 42% of the overall HT Industrial sales and 85% of the overall HT Industrial consumers, whereas in case of HT commercial consumers consumer category of 1-5MW form 89% of overall HT Commercial sales and 96% of HT commercial consumers. These consumers have a lower potential of migrating to open access.

Load category- HT Industrial	Units	FY16	FY17	FY18	FY19
1-5 MW	Gwh	3,423	3,667	4,152	2,242
6-10 MW	Gwh	950	1,047	1,332	755
11-50 MW	Gwh	2,573	3,033	3,835	2,150
51-100 MW	Gwh	116	175	254	146
> 100 MW	Gwh	103	20	17	12
1-5 MW	%	48%	46%	43%	42%
6-10 MW	%	13%	13%	14%	14%
11-50 MW	%	36%	38%	40%	41%
51-100 MW	%	2%	2%	3%	3%
> 100 MW	%	1%	0%	0%	0%

Load category – HT commercial	Units	FY16	FY17	FY18	FY19
1-5 MW	Gwh	234	270	271	161
6-10 MW	Gwh	6	6	6	3
11-50 MW	Gwh	14	15	17	17
51-100 MW	Gwh	0	0	0	0
> 100 MW	Gwh	0	0	0	0
1-5 MW	%	92%	93%	92%	89%
6-10 MW	%	2%	2%	2%	2%
11-50 MW	%	5%	5%	6%	10%
51-100 MW	%	0%	0%	0%	0%
> 100 MW	%	0%	0%	0%	0%

Load category- HT industrial	Units	FY16	FY17	FY18	FY19
1-5 MW	Nos.	1,484	1,170	1,047	1,002
6-10 MW	Nos.	108	107	69	86
11-50 MW	Nos.	131	126	93	92
51-100 MW	Nos.	3	3	2	2
> 100 MW	Nos.	1	1	1	1
1-5 MW	%	86%	83%	86%	85%
6-10 MW	%	6%	8%	6%	7%

Load category- HT industrial	Units	FY16	FY17	FY18	FY19
11-50 MW	%	8%	9%	8%	8%
51-100 MW	%	0%	0%	0%	0%
> 100 MW	%	0%	0%	0%	0%

Load category- HT Commercial	Units	FY16	FY17	FY18	FY19
1-5 MW	Nos.	155	124	124	125
6-10 MW	Nos.	4	3	3	3
11-50 MW	Nos.	2	2	2	2
51-100 MW	Nos.	0	0	0	0
> 100 MW	Nos.	0	0	0	0
1-5 MW	%	96%	96%	96%	96%
6-10 MW	%	2%	2%	2%	2%
11-50 MW	%	1%	2%	2%	2%
51-100 MW	%	0%	0%	0%	0%
> 100 MW	%	0%	0%	0%	0%

The number of consumers in the category 1-50 add up to 100%. The consumers in the higher load category (>50MW) are not availing for the open access.

7.2.4. Tariff and open access charges review

In this section a detailed review of the retail tariff applicable on HT Industrial and HT Commercial consumers and open access charges applicable on them is performed.

The breakup of fixed and variable tariff is analysed and compared against the fixed and variable cost of Discom. Higher is the gap between the fixed cost of Discom and fixed tariff collected from consumers, higher could be the impact on Discom due to open access migration, as the fixed tariff recovered from consumers would not be sufficient to cover the fixed cost of Discom.

Further the gap between retail tariff applicable on HT consumers and open access charges is analysed to understand the probability of consumers to migrate to open access. Higher is the gap between open access charges and the retail tariff, higher is the probability of consumers to migrate to open access.

Review of retail tariff charged to HT consumers

Based on the data provided in the Tariff Order, the ACOS Coverage for HT consumers in the State has improved in the last three years. For both HT industrial and commercial categories, the cross subsidy level in the tariff is within +/-20% as per the provisions of the Tariff Policy. However, the fixed tariff (i.e. demand charges) for HT consumers is not sufficient to cover the fixed costs of Discom. The average realization from fixed charges in FY2018-19 was just 7% for HT Industrial and 4% for HT Commercial consumers, as against 63% fixed component of ACoS.

The table below showcases the fixed/ variable breakup of ACOS along with their corresponding fixed-variable breakup of ABR and ACoS average for HT Industrial and HT commercial consumers. As per the tariff orders of respective years, the variable power purchase cost and variable cost of generation are taken as part of variable ARR for PSPCL. For the estimation of ABR, the variable tariff of respective consumer category is added to an estimated per unit charge for fixed tariffs. The fixed tariff of respective consumer category is converted into per unit charge assuming a load factor of 60%. Further the variable tariffs for HT categories is determined in per KVAh terms by PSERC. Power Factor of 95% is assumed for estimating variable tariff in per kwh terms.

	FY2016-17	FY2017-18	FY2018-19
ACoS			
Total	6.03	6.42	6.55
Fixed	61%	70%	63%
Variable	39%	30%	37%
HT Industrial ABR			
Total	6.78	6.49	6.63
Fixed	6%	7%	7%
Variable	94%	93%	93%
HT Commercial ABR			
Total	6.93	6.92	7.08
Fixed	6%	3%	4%
Variable	94%	97%	96%
ACoS Coverage			
HT industrial	112%	103%	103%
HT commercial	115%	108%	108%

Open access charges

In this sub-section, the open access charges applicable on various types of consumers is analysed. The open access charges for following types of consumers are discussed below –

- Conventional power through Non-Captive mode
- Conventional power through Captive mode
- Renewable power through Non Captive mode
- Renewable power through Captive mode

The open access charges differ for these different types of consumers, as charges like CSS and Additional Surcharge are not applicable on captive consumers. Further consumers taking renewable power, are offered discounts on open access charges by the Commission as renewable promotion measures.

As per note to section 25 of Open Access Regulations issued by PSERC in 2011, in case of renewable power transmission and wheeling charges shall be levied @ 2% of the energy injected into the State Grid.

'25. Note:- In case of wheeling of power generated from NRSE project, transmission and wheeling charges shall be levied @ 2% of the energy injected into the State Grid, irrespective of the distance i.e. additional 2% of the total energy shall be injected at injection point(s). 10% of the average revenue realized by distribution licensee from such additional injection shall be passed on to the STU/Transmission licensee for compensating on account of transmission charges.'

Further the regulations were amended in 2016, to add that for NRSE projects commissioned between 09.07.2015 and 31.03.2017, no transmission and wheeling charges shall be leviable.

'Note:- Provided that in case of wheeling of power for consumption within the State, generated from NRSE project in the State, achieving commercial operation (COD) from 09.07.2015 to 31.03.2017, no transmission and wheeling charges shall be leviable, irrespective of the distance, for a period of 10 (ten) years from its date of commercial operation (COD).'

Therefore a 100% discount is taken on transmission and distribution charges, for renewable power and an additional 2% charge is built in energy losses. The discounts available for renewable power on various open access charges is showcased in the table below.

Discounts for RE Power	Unit	FY2016-17	FY2017-18	FY2018-19
Cross Subsidy Surcharge	%	0%	0%	0%
Distribution Wheeling	%	100%	100%	100%
Transmission Charge	%	100%	100%	100%
SLDC Charges	%	0%	0%	0%
Energy Losses	%	0%	0%	0%

The following general assumptions are taken while analysing the open access charges for various consumer types -

- 1 MW load, Non-Captive consumers
- Non-RE power
- 60% load factor
- 33 kV Connected voltage
- Long Term Open Access

HT Industrial Consumers (Non-Captive, conventional)

OA Charges	Unit	FY2016-17	FY2017-18	FY2018-19
Cross Subsidy Surcharge	Rs./Kwh	0.70	0.71	0.49
Transmission Charge	Rs./Kwh	0.20	0.19	0.21
Distribution Wheeling	Rs./Kwh	0.99	1.08	1.11
SLDC Charge	Rs./Kwh	0.00	0.00	0.00
Additional surcharge	Rs./Kwh	1.25	0.93	0.86
RPO	Rs./Kwh	0.05	0.06	0.07
Total OA Charges	Rs./Kwh	3.21	2.98	2.74

HT Industrial Consumers (Non-Captive, RE)

OA Charges	Unit	FY2016-17	FY2017-18	FY2018-19
Cross Subsidy Surcharge	Rs./Kwh	0.70	0.71	0.49
Transmission Charge	Rs./Kwh	0.00	0.00	0.00
Distribution Wheeling	Rs./Kwh	0.00	0.00	0.00
SLDC Charge	Rs./Kwh	0.02	0.01	0.01
Additional surcharge	Rs./Kwh	1.25	0.93	0.86
RPO	Rs./Kwh			
Total	Rs./Kwh	1.97	1.65	1.36

HT Industrial Consumers (Captive, Conventional)

Charges	Unit	FY2016-17	FY2017-18	FY2018-19
Cross Subsidy Surcharge	Rs./Kwh			
Transmission Charge	Rs./Kwh	0.20	0.19	0.21
Distribution Wheeling	Rs./Kwh	0.99	1.08	1.11
SLDC Charge	Rs./Kwh	0.00	0.00	0.00
Additional surcharge	Rs./Kwh			
RPO	Rs./Kwh	0.05	0.06	0.07
Total	Rs./Kwh	1.26	1.34	1.39

HT Industrial Consumers (Captive,RE)

Charges	Unit	FY2016-17	FY2017-18	FY2018-19
Cross Subsidy Surcharge	Rs./Kwh			
Transmission Charge	Rs./Kwh	0.00	0.00	0.00
Distribution Wheeling	Rs./Kwh	0.00	0.00	0.00
SLDC Charge	Rs./Kwh	0.02	0.01	0.01
Additional surcharge	Rs./Kwh			
RPO	Rs./Kwh			
Total	Rs./Kwh	0.02	0.01	0.01

HT Commercial Consumers(Non-Captive, Conventional)

Charges	Unit	FY2016-17	FY2017-18	FY2018-19
Cross Subsidy Surcharge	Rs./Kwh	1.14	1.28	1.06
Transmission Charge	Rs./Kwh	0.20	0.19	0.21
Distribution Wheeling	Rs./Kwh	0.99	1.08	1.11
SLDC Charge	Rs./Kwh	0.00	0.00	0.00

Charges	Unit	FY2016-17	FY2017-18	FY2018-19
Additional surcharge	Rs./Kwh	1.25	0.93	0.86
RPO	Rs./Kwh	0.05	0.06	0.07
Total	Rs./Kwh	3.65	3.55	3.31

HT Commercial Consumers(Non-Captive, RE)

OA Charges	Unit	FY2016-17	FY2017-18	FY2018-19
Cross Subsidy Surcharge	Rs./Kwh	1.14	1.28	1.06
Transmission Charge	Rs./Kwh	0.00	0.00	0.00
Distribution Wheeling	Rs./Kwh	0.00	0.00	0.00
SLDC Charge	Rs./Kwh	0.02	0.01	0.01
Additional surcharge	Rs./Kwh	1.25	0.93	0.86
RPO	Rs./Kwh			
Total	Rs./Kwh	2.41	2.22	1.93

HT Commercial Consumers(Captive, Conventional)

Charges	Unit	FY2016-17	FY2017-18	FY2018-19
Cross Subsidy Surcharge	Rs./Kwh			
Transmission Charge	Rs./Kwh	0.20	0.19	0.21
Distribution Wheeling	Rs./Kwh	0.99	1.08	1.11
SLDC Charge	Rs./Kwh	0.00	0.00	0.00
Additional surcharge	Rs./Kwh			
RPO	Rs./Kwh	0.05	0.06	0.07
Total	Rs./Kwh	1.26	1.34	1.39

HT Commercial Consumers(Captive, RE)

Charges	Unit	FY2016-17	FY2017-18	FY2018-19
Cross Subsidy Surcharge	Rs./Kwh			
Transmission Charge	Rs./Kwh	0.00	0.00	0.00
Distribution Wheeling	Rs./Kwh	0.00	0.00	0.00
SLDC Charge	Rs./Kwh	0.02	0.01	0.01
Additional surcharge	Rs./Kwh			
RPO	Rs./Kwh			
Total	Rs./Kwh	0.02	0.01	0.01

Break Even Power Purchase Cost

The table below compares the retail tariff applicable on HT consumers against the open access charges applicable on such consumers. It can be observed that significant gap exists between retail tariffs and open access charges for HT Industrial consumers in case of renewable captive power, making it economically beneficial for them to migrate to open access.

Table: Comparison of OA charges & Break-even PPC for FY18-19 (HT-Industrial)

Parameters		Conventional Non-Captive	RE Non-Captive	Conventional Captive	RE Captive
Open Access Charges	A	2.74	1.36	1.39	0.01
Tariff (Variable)	B	6.21	6.21	6.21	6.21
Break Even PPC	C=B-A	3.47	4.85	4.82	6.20

Parameters		Conventional Non-Captive	RE Non-Captive	Conventional Captive	RE Captive
Break Even PPC after losses	$C/(1+T\&D \text{ Loss})$	3.33	4.56	4.62	5.83

Table: Comparison of OA charges & Break-even PPC for FY18-19 (HT-Commercial)

Parameters		Conventional Non-Captive	RE Non-Captive	Conventional Captive	RE Captive
Open Access Charges	A	3.31	1.93	1.39	0.01
Tariff (Variable)	B	6.28	6.28	6.28	6.28
Break Even PPC	$C=B-A$	2.97	4.35	4.89	6.27
Break Even PPC after losses	$C/(1+T\&D \text{ Loss})$	2.85	4.10	4.69	5.90

7.2.5. APTEL/ SERC cases regarding open access

Commission	Case No.	Year	Utility	OA Consumer	Brief description of case
PSERC	52 of 2017	2018	PSPCL	Vardhman Special Steels Ltd.	<ul style="list-style-type: none"> Petition filed by Vardhman citing non-compliance by PSPCL related to cross subsidy surcharge wrongly charged on open access power when mandatory power cut imposed by PSPCL and sought directions to PSPCL for release of payment/ refund of CSS paid, payment of Rs. 16,96,408/- along with due interest from FY 2011 onwards PSERC referred to APTEL's Order (issued towards Steel Furnace in 2013)- that no cross subsidy charge would be levied on power available with consumers through open access to the extent of restrictions/power cuts imposed by the Distribution Licensee and directed PSPCL to refund the entire amount http://www.pserc.in/pages/Order%20in%20Petition%20No.%2052%20of%202017.pdf
PSERC	03 of 2017	2018	PSPCL	Indian Railways	<ul style="list-style-type: none"> Railways applied for grant of MTOA & STOA for purchase of power from JITPL under bilateral transactions and drawl of the power purchased at its upcoming Railway Traction SubStation (TSS) points situated in Punjab PSPCL filed the present petition with the prayer that necessary conditions may be imposed upon Railways, to follow while getting open access and the terms and conditions required to be followed while getting STOA and MTOA as per regulations of PSERC PSERC' laid down its observations for PSPCL to adhere to w.r.t. Standby charges, highest single part tariff, fixed charges, (FCA) and Time of Day (ToD)/Peak Load Exemption Charges, Transmission losses, Metering Arrangement, Available Transfer Capacity (ATC) limit, RPO compliance and directed PSTCL to process the application of Railways for issuance of NOC for availing MTOA and STOA, as per the provisions contained in CERC/PSERC Regulations http://www.pserc.in/pages/Order%20Petition%20No.%2003%20of%202017.pdf
PSERC	75 of 2016	2017	PSPCL	Hero Future Energies Pvt. Ltd.	<ul style="list-style-type: none"> Petition was filed to Clarify and/or amend Regulation 28(3) Open Access Regulation to exclude procurement of electricity through open access from non-firm sources like solar plants PSERC claimed that it doesnot allow for preferential treatment to the RE Generator, and is not inclined to allow any exemption to a particular category of Generator/consumers. http://www.pserc.in/pages/order-in-pt-no-75-of-2016.pdf

Commission	Case No.	Year	Utility	OA Consumer	Brief description of case
PSERC	58 of 2016	2017	PSPCL		<ul style="list-style-type: none"> Petition seeking clarifications and directions in regard to Open Access for import of electricity by the Petitioner using the transmission system of the Respondent, Punjab State Transmission Corporation Limited From provisions of Regulation 22 of PSERC (Terms and Conditions for Intra-state Open Access) Regulations, 2011, specifying priority to PSPCL over open access consumers (whether long-term, medium-term or short-term) is applicable only for grant of intra-state open access. Regarding grant of inter-state open access, provisions of CERC (Open Access in Inter-state Transmission) Regulations, 2008, as amended from time to time, are applicable The Commission has also perused the 'Procedure for scheduling' as per CERC Open Access Regulations of Power Grid Corporation of India Limited (CTU), wherein responsibility of allocation and scheduling of capacity in respect of inter-State transactions lies with NLDC/RLDC, and SLDC has no role in the same. http://www.pserc.in/pages/Order%20in%20petition%20no.%2058%20of%202016.pdf
PSERC	73 of 2015	2016	PSPCL	Shiva Companies, India Yarn, Yogindera Worsted	<ul style="list-style-type: none"> PSERC directed PSPCL to refund the wrongly charged `3/- per unit under ToD Tariff recovered by PSPCL on the power brought in by the petitioners during Peak Load hours under Open Access along with interest at the bank rate w.e.f. 20.05.2015 on the reducing balance http://www.pserc.in/pages/Order%20in%20Petition%20No.%2073%20of%202015.pdf
PSERC	50 of 2015	2016	PSPCL	Nahar Industrial Enterprises Limited	<ul style="list-style-type: none"> Petition filed by NIEL for applicability of ToD Tariff on power wheeled by Captive Co-gen NRSE Plants for own use by the Petitioner under open access PSERC stated that ToD charge of Rs.3 per unit is not applicable on open access power bought during peak period of 4 hours during applicability of ToD tariff. Accordingly PSPCL was restrained from levying ToD peak charges on the petitioner any further. PSPCL was further directed to refund/ adjust only such charges already levied by PSPCL in the bills of the petitioner in violation of the Order dated Submissions made by NIEL regarding exemption from levy of UI charges at generation end for deviation from schedules and to adjust the aggregate energy injected on whole day basis against drawl at destination after accounting the losses and charges was not considered as NIEL runs a captive co-gen NRSE plant, which is a "must run" power plant and hence cannot be exempted http://www.pserc.in/pages/Order%20Petition%20No.%2050%20of%202015.pdf http://www.pserc.in/pages/Order%20in%20I.A.%20No.%209%20of%202015%20in%20Petition%20No.%2050%20of%202015.pdf

Commission	Case No.	Year	Utility	OA Consumer	Brief description of case
PSERC	48 of 2015	2016	PSPCL	Trishala Alloys Pvt. Ltd	<ul style="list-style-type: none"> PSERC amended the Open Access Regulations, 2011 vide 5th amendment dated 01.06.2015 and added clause 28.3, but nowhere stated therein that in case drawl of power by open access consumer exceeds its admissible drawl, then it is liable to pay Demand Surcharge for maximum over drawl than admissible drawl. Petition was filed by Trishala Alloys on the pretext that PSPCL on its own has issued Commercial Circular No. 29/2015 and misinterpreted the 5th amendment carried out by the Commission, mentioned therein that an open access consumer would be liable to pay demand surcharge, in case it exceeds its admissible drawl. PSERC stated that in regulation 31(2) it is clearly stated that when the drawal of an Open Access consumer exceeds the admissible drawal or sanctioned contract demand, as the case may be, the consumer will be liable to pay demand surcharge and OA consumer will be governed by General Conditions of Tariff and relevant Schedule of Tariff approved by PSERC http://www.pserc.in/pages/Petition-no-48-of-2015.pdf
PSERC	47 of 2015	2016	PSPCL, PSTCL	Open Access Users Association	<ul style="list-style-type: none"> Petition filed by OAU for intra-State Short Term Open Access for directing the Transmission Licensee/SLDC to exempt penalty on the power drawn above the admissible drawl and up to contract demand for curtailment of bilateral schedules under Force Majeure condition and removal of other difficulties in Open Access arising in consequence to Amendment No. 5 of PSERC Open Access Regulations, 2011 PSERC decided that in case the Open Access consumer over draws power above the admissible drawl for the day after 4th time block, then such consumer shall be charged as per regulation 31(1)(a) of the Open Access Regulations, 2011, for the excess power drawn from PSPCL during the period of curtailment. The certification of such an event along with duration of curtailment shall be done by SLDC. PSERC decided that actual value of average power factor achieved by the Open Access customer during the billing period be used by PSPCL for working out the admissible drawl from PSPCL in kVA, during the day PSERC directed PSPCL to follow regulation that in case an open access customer is unable to draw the scheduled energy due to reasons mentioned in regulation 31(1)(c) of the Open Access Regulations, 2011, such banked power shall be allowed to be drawn by an OA customer within a period of 15 days with an advance notice of 48 hours to the licensee, by the OA customer http://www.pserc.in/pages/Petition%20No.%2047%20of%202015.pdf
PSERC	3 of 2015	2015	PSPCL	M/s Nahar Spinning Mills Ltd.	<ul style="list-style-type: none"> Petition filed by Nahar Spinning on applicability of ToD Tariff on Power brought in by the Petitioner under open access and power factor & formula to be taken by PSPCL for converting power under open access in kWh to kVAh

Commission	Case No.	Year	Utility	OA Consumer	Brief description of case
					<ul style="list-style-type: none"> • PSERC issued PSPCL has wrongly charged ₹3 per kVAh on power purchased through open access during peak load hours from 06.00 PM to 10.00 PM. PSPCL is directed to refund the amount charged to Nahar Spinning on this account through the subsequent energy bills. • PSERC also clarified that no rebate is admissible in respect of power purchased through open access open access consumers during off peak hours from 10.00 PM to 06.00 AM (next day) • PSERC in Tariff Order for FY 2014-15 approved rebate of ₹1/kWh (or kVAh) on the category wise tariffs for all categories, except street lighting and AP categories, on consumption exceeding threshold limit during the financial year • PSERC also issued to apply actual power factor with three or four digit format to work out Open Access Power in kVAh • http://www.pserc.in/pages/Petition%203%20of%202015.pdf
PSERC	01 of 2015	2015	PSPCL	SIEL Chemical Complex	<ul style="list-style-type: none"> • The main issue raised in the Petition filed before the Commission was with regard to imposition of a charge of ` 3 per kVAh of open access power consumed during peak load hours. • PSERC concluded that there is no regulation to justify imposition of ToD charges on power purchased through open access by Siel Chemical Complex during peak load hours and held that the PSPCL was not right in levy of ` 3 per kVAh. • PSPCL in the review petition stated that the refund of excess charges recovered from LS Consumers who opted for ToD Tariff would result in burden of ` 25 crore on all the consumers of Punjab • http://www.pserc.in/pages/Order%20in%20Review%20Petition%20No.%203%20in%20Petition%20No.%201%20of%202015.pdf
PSERC	56 of 2014	2015	PSPCL	Steel Furnace Association of India, Mawana Sugars Ltd, Open Access Users Association and Mandi	<ul style="list-style-type: none"> • Tariff Order 2012-13 was challenged in terms of open access charges for Long term, Medium term and short term OA customers availing supply at 220 kV, 132 kV, 66 kV, 33 kV or 11 kV • APTEL Judgement directed PSERC to redetermine the wheeling charges applicable to Open Access customers, to pass on the consequential orders granting the relief to the Appellants and other Open Access customers and to retrospective revision of the intra-State transmission charges and wheeling charges for short term inter-State open access transactions by the Open Access. Also, towards non-segregation of cost of generation from distribution, APTEL directed PSERC to correct the discrepancies and true up stationwise/function-wise expenditure after prudence check

Commission	Case No.	Year	Utility	OA Consumer	Brief description of case
				Gobindgarh Induction Furnace Association	<ul style="list-style-type: none"> PSERC passed the Tariff Order dated 05.05.2015 for PSPCL for FY 2015- 16 highlighting the issues of compliance of directions of Hon'ble APTEL http://www.pserc.in/pages/Order%20in%20Suo-Motu%20Petition%20No.56%20of%202014%20on%20remand%20by%20APTEL.pdf
APTEL	38 of 2013 Appeal No.245 of 2012, 176, 237, OF 2012 AND 191 of 2012	2014	PSPCL	Steel Furnace Association	<ul style="list-style-type: none"> Steel Furnace filed petition no. 65 of 2011 before PSERC, challenging imposition of cross subsidy surcharge, when power cut was imposed by PSPCL with the plea that cross subsidy surcharge is paid to PSPCL to compensate the loss of cross subsidy, when power is not purchased from it. In case of power cut imposed by PSPCL, there is no power to supply to the consumers, and thus no loss of cross subsidy to PSPCL. PSERC, however, rejected the petition. Steel Furnance filed an appeal to APTEL, Hon'ble APTEL vide its Order dated 01.08.2014 set aside the impugned PSERC Order dated 08.08.2012 and directed PSERC to pass consequential order that no cross subsidy charge would be levied on power available with consumers through open access to the extent of restrictions/power cuts imposed by the Distribution licensee http://aptel.gov.in/judgements/Appeal%20No.245,%20176,%20237%20and%20191%20of%202012_12.09.2014.pdf
APTEL	Appeal Nos. 142 of 2013 & 168 of 2013	2014	PSPCL	M/s Mawana Sugars Ltd.	<ul style="list-style-type: none"> Regarding the Cross-subsidy, APTEL noted that PSERC has correctly and legally calculated the cross-subsidy based on combined average cost of supply as per Reg 7 as amended by PSERC Regarding Wheeling charges, similar to the Steel Furnance Appeal, APTEL directed PSERC to re-determine the wheeling charges applicable to open access customers as per the above findings within 90 days of communication of this judgment and pass on the consequential relief to the Appellants and other open access customers. http://aptel.gov.in/judgements/Appeal%20Nos.%20142%20of%202013%20&%20168%20of%202013_17.12.2014.pdf
PSERC	18/2013	2013		Bhawani Castings Pvt. Ltd	<ul style="list-style-type: none"> Petition regarding extension of time to install CT/PT meters in line with the metering guidelines Approx. 60 No. Open Access consumers had not fulfilled the requirement of installation of CTs/PTs of 0.2S and 0.2 accuracy, PSERC directed action as per regulations be taken against the Open Access consumers

Commission	Case No.	Year	Utility	OA Consumer	Brief description of case
					<p>who have failed to place orders on vendors for purchase of CT/PTs as per liberty given by the Commission vide Order dated 02.04.2013</p> <ul style="list-style-type: none"> http://www.pserc.in/pages/Order%20in%20Petition%20No.18%20of%202013.pdf
PSERC	16/2013	2013	PSPCL		<ul style="list-style-type: none"> Petition regarding amendment in Open Access Regulation by PSERC PSPCL claimed that sudden variation in drawl by the open access consumers in various time slots of the day certainly affects the quality of power supply to other consumers Further, the varying load of open access consumers also increases the per unit generation cost, which leads to increase in tariff of various categories of consumers PSPCL is acting as a standby supplier for the open access consumers, who are availing the best of both worlds by availing power at any given point of time from a source, which is cheaper to them i.e. either through open access or from PSPCL PSERC added a sub-clause to this effect – “The quantum of drawl of electricity by an Open Access Consumer from the distribution licensee during any time block of a day shall not exceed the admissible drawl of electricity by the Open Access Consumer from the distribution licensee in such time block wherein the schedule for Open Access drawl is the maximum.” http://www.pserc.in/pages/Order%20in%20petition%2016%20of%202013.pdf
PSERC	16/2013	2015	PSPCL	Mandi Gobindgarh Induction Furnace Association	<ul style="list-style-type: none"> Petition regarding amendment in Open Access Regulation, PSERC added a new clause 28(3) in the Punjab State Electricity Regulatory Commission (Terms and Conditions for Intra-State Open Access) Regulations, 2011 on 01.06.2015 OA consumers of the State had already submitted their bids on 31.05.2015 for the delivery date on 01.06.2015 and on 01.06.2015 for delivery date on 02.06.2015, so they requested the Commission to order the implementation of the 5th Amendment in the regulations from bidding date 03.06.2015 and delivery date 04.06.2015 as getting open access power through Power Exchange on day ahead basis got adversely affected Commission agreed for notification be made applicable with effect from 03.06.2015 http://www.pserc.in/pages/Order%20in%20Pet%20No.%2016%20of%202013%20dated05.06.15.pdf

Commission	Case No.	Year	Utility	OA Consumer	Brief description of case
PSERC	1/2013	2013	PSTCL	M/s A.R. Castings Pvt. Ltd.	<ul style="list-style-type: none"> Seeking necessary provisions / amendments in the PSERC (Terms & Conditions for Intra-state Open Access) Regulations, 2011 to check / avoid Unauthorised purchase of Power and seeking directions in respect of unethical action by M/s A.R. Castings Pvt. Ltd. by purchasing unauthorized Open Access power through a forged NOC Commission decided to issue separate notification with regard to the amendments to PSERC (Terms and Conditions for Intra-State Open Access) Regulations, 2011 http://www.pserc.in/pages/Order%20in%20Petition%20No.1%20of%202013.pdf

7.3. Maharashtra

Situated in the western part of India, Maharashtra is the second most populous State with over 110 million inhabitants and area of 3.08 lakh square km. Maharashtra is the 5th most urbanized State in the country.

Maharashtra is highly industrialized with a mix of various industries including technology, automobile, textiles etc. Moreover it is the financial capital of India, thus it is evident that the energy requirement to cater such demand will be humungous.

Maharashtra is one of the largest energy producing and consuming state of India. The state has 4 power distribution utilities – Tata Power, Adani Electricity Mumbai (earlier Reliance Infrastructure – Distribution Mumbai) and BEST serving the Mumbai region and MSEDCL serving rest of the state. The state also has a Transmission Company, MAHATRANSCO. The SLDC function is placed within MAHATRANSCO.

Key Parameters	
Peak demand	22,542 MW
Annual Units Available	1,49,531 MUs
Sales	1,01,006 MUs
Power Utilities	G – MAHAGENCO T – MAHATRANSCO D – MSEDCL, TATA Power, Adani Electricity

The state has close to 43,797 MW of installed capacity as on Feb 2019 and total sales of 1,08,695 MUs in FY2017-18, combined for all 4 Discoms. Out of these MSEDCL accounts for 93% of the sales i.e. 1,01,006 Mus. The peak demand of Maharashtra (as per CERC LGBR report, FY2018-19) was 22,542 MW in FY2017-18.

The analysis of open access status review is performed for MSEDCL in Maharashtra as it is the largest Discom in the state with private distribution utilities serving only the area of Mumbai.

7.3.1. Regulatory Review

In this section a detailed review is performed of the open access regulations issued by State Electricity Regulatory Commissions (SERCs) to analyse –

- Evolution of open access regulations in the state along with their key amendments
- Eligibility conditions and restrictions for availing open access, along with types of open access allowed
- Process of applying for open access
- Provisions for open access charges
- Any other regulation/ policies relevant to open access

Evolution of open access regulations

The MERC has issued two different set of open access regulations, distribution open access regulations and transmission open access regulations, to avail open access on distribution and transmission networks respectively. In line with the provisions of Electricity Act 2003, the state of Maharashtra issued Distribution Open Access Regulations and Transmission Open Access regulations in the year 2004. These regulations were replaced with a new set of regulations in the year 2005, in 2014 and subsequently in 2016. The table summarizes the evolution of Distribution Open Access Regulations over time along with the key amendments made thereof –

Year	Regulation/ Amendment	Key Amendment
2004	OA Regulation	-
2005	OA Regulation	<ul style="list-style-type: none"> Defined process for open access application Apart from CSS and Additional Surcharge OA charges defined earlier in 2004 regulations, transmission charges and wheeling charges added as OA charges Provision added for security deposit

Year	Regulation/ Amendment	Key Amendment
2014	OA Regulation	<ul style="list-style-type: none"> Provision to avail OA from multiple generating companies only to the extent to meet their RPO Limitation of 1MW contract demand not applicable to avail OA from RE generating power Section added for grant of connectivity to generating plants Categories of open access consumers defined based on the period of open access sought and location of injection/ drawl point
2016	OA Regulation	<ul style="list-style-type: none"> Contract demand for 1MW and above to avail OA restored for all consumers Provision to avail OA from multiple generating station removed Provision of banking for RE power introduced

Open access eligibility

The Distribution Open Access regulations issued by the MERC in 2016 define the eligibility criteria’s for consumers that can avail open access, based on various technical and commercial considerations. Based on the prevalent regulations, these eligibility requirements and restrictions in the State of Maharashtra are as follows –

Contract Demand	- 1 MW or above
Feeder level conditions	-
Voltage level conditions	-
Additional Provisions	-

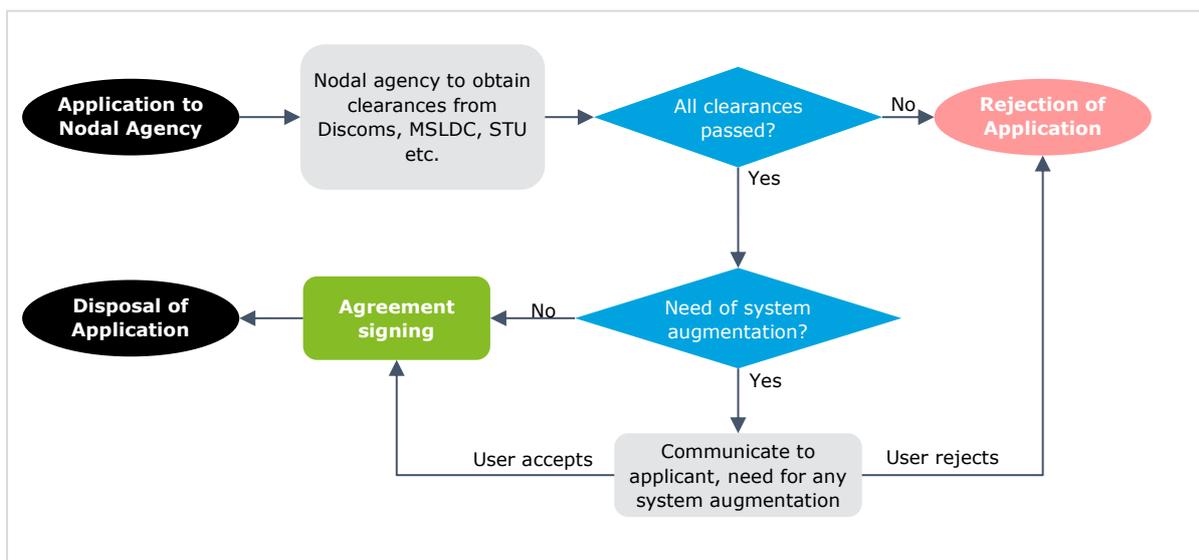
The relevant provisions of the regulations are reproduced below –

‘3.2 Subject to the provisions of these Regulations, a Consumer having Contract Demand of 1 MW and above with a Distribution Licensee shall be eligible for Open Access.....’

Open access application process

In the State of Maharashtra, as per the Distribution Open Access Regulations 2016, DISCOM acts as the nodal agency for grant of intra-state open access on distribution system.

As per **Clause 9 of OA regulations 2016**, the complete procedure to get open access for the state of Maharashtra is represented below in the form of a flow chart.



The table below summarises the various issues identified in the state in relation to open access –

	Long Term OA	Medium Term OA	Short Term OA
Nodal Agency	• Discom	• Discom	• Discom
Time-period	120–180 days	60 days	10 days
Documents	<ul style="list-style-type: none"> • Application Fee • Bank Gaurantee • Supply Agreement • Consent from SLDC and Discom (if injection point is other than Maharashtra) • Consent from seller/buyer • Copy of Memorandum of association • Copy of trading license • SEM Commissioning Certificate • No Dues Certificate from Discom • Techno Commercial Report issued by the concerned O & M, Circle Office • Documents related to RPO compliance 	<ul style="list-style-type: none"> • Application Fee • Supply Agreement • Consent from SLDC and Discom (if injection point is other than Maharashtra) • Consent from seller/buyer • Copy of Memorandum of association • Copy of trading license • SEM Commissioning Certificate • No Dues Certificate from Discom • Techno Commercial Report issued by the concerned O & M, Circle Office • Documents related to RPO compliance 	<ul style="list-style-type: none"> • Application Fee • Supply Agreement • Copy of latest bill • Consent from SLDC and Discom (if injection point is other than Maharashtra) • Power exchange related documents (if power purchased through exchange) • Consent from seller/buyer • Copy of Memorandum of association • Copy of trading license • SEM Commissioning Certificate • No Dues Certificate from Discom • Techno Commercial Report issued by the concerned O & M, Circle Office • Documents related to RPO compliance
Cost	<ul style="list-style-type: none"> • Application Fee: <ul style="list-style-type: none"> ○ Load upto 1 MW: Rs. 10,000 ○ Load 1-5 MW: Rs. 15,000 ○ Load 5-20 MW: Rs. 30,000 ○ Load >20 MW: Rs. 50,000 • Bank Guarantee: <ul style="list-style-type: none"> Rs. 5,000 per MW (for RE power) Rs. 10,000 per MW (for Non-RE power) 	<ul style="list-style-type: none"> • Application Fee: <ul style="list-style-type: none"> ○ Load upto 1 MW: Rs. 10,000 ○ Load 1-5 MW: Rs. 15,000 ○ Load 5-20 MW: Rs. 30,000 ○ Load >20 MW: Rs. 50,000 	<ul style="list-style-type: none"> • Application Fee: <ul style="list-style-type: none"> ○ Load upto 1 MW: Rs. 10,000 ○ Load 1-5 MW: Rs. 15,000 ○ Load 5-20 MW: Rs. 30,000 ○ Load >20 MW: Rs. 50,000

The Distribution Open Access Procedures prepared by MSEDCL, the following documents are to be submitted along with open access applications –

1. Self-Certified copy of Power sale/purchase agreement
2. In case of open access through Trader, copy of valid Trading License, the copy of Power Purchase Agreement (PPA) between Open Access Consumer & Trader and between Trader & generator
3. Latest HT Connection Monthly Energy bill (last 3 months) of open access consumer

4. Latest 3 Monthly Generation Credit Notes (GCN) in case applicant is non-firm energy generator
5. Confirmation / Letter from MSEDCL Testing Department for installation of SEM & CT/PT with required specifications
6. No Dues Certificate issued by the concerned O & M Circle Office
7. Consent letter of consumer / applicant for reduction in Contract Demand in case of partial OA consumers
8. Techno Commercial Report issued by the concerned O & M, Circle Office
9. In case of Open Access is intended through multiple generators, the same shall be mentioned with details of all such generators/suppliers and OA quantum sought from each generator
10. Documents related to Renewable Purchase Obligations compliance
11. Open Access Permission/Consent from the concerned Distribution Licensee, in case Open Access Consumer is located in other Licensee area.
12. In case of Captive Generating Plant,
 - a) Memorandum of Association and Articles of Association
 - b) Chartered Accountant's certificate for 100% ownership or equity shareholding with voting rights as per Electricity Rules, 2005
 - c) Undertaking on non-judicial stamp paper stating that, more than 51% of the generated power shall be self consumed on annual basis, as mandated in Electricity Rules, 2005
 - d) Solvency certificate
13. In case of purchase of power from power exchange:
 - e) Registration/ Membership details
 - f) Member – Client Agreement
14. Copy of prevailing and previous Open Access permission, if any.
15. Undertaking of consumer for not scheduling power on the staggering day, if applicable.
16. Security Deposit in the form of L/C or BG.
17. In case of long term open access, Bank Guarantee

From the table above and the application process for open access in the State, it can be observed that the applicant is required to submit the application with all necessary documents as per applicability to the distribution licensee. The distribution licensee itself coordinates with relevant agencies for granting of consent/ NOC to the applicant for open access. The nodal agency while processing the open access application, verifies the following before granting the consent/ NOC for open access:

- Infrastructure necessary for time-block-wise energy metering and accounting in accordance with the provisions of the State Grid Code, and
- Capacity in the Distribution System.

The Nodal Agency shall convey its decision on the grant of Open Access within prescribed days as per prevailing open access regulations with respect to different categories of open access consumers if system augmentation is not required, or otherwise, provided further that no Application shall be rejected by the Nodal Agency without communicating the reasons in writing.

Open access charges

The Transmission Open Access Regulations and Distribution Open Access Regulations issued by MERC in 2016, define the following types of open access charges –

- 1) Wheeling charges
- 2) Transmission charges
- 3) Cross Subsidy Surcharge

- 4) Additional Surcharge on the charges for wheeling
- 5) MSLDC fees and charges

Further part F of the Distribution Open Access Regulations define imbalance charges and reactive energy charges for open access power. Also part E of the Distribution Open Access Regulations define the treatment of energy losses for open access transactions.

Imbalance Charges are applicable to open access consumers considering its deviation with respect to actual injection/drawl, sanctioned load. UI charges along with penal charges are levied on consumers if applicable as decided by commission from time to time based on Intra state ABT mechanism and Inter-State Deviation Settlement Mechanism on pro-rata basis respectively.

The methodology for payment for the **reactive energy charges** by an Open Access Consumer, Generating Station or Licensee with load 5 MW or more shall be in accordance with the State Grid Code and the Regulations of the Commission governing Multi-Year Tariff or relevant orders of the Commission as applicable accordingly.

Apart from the charges discussed in above, which are contingent upon the type of schedule and power drawn by open access consumers, the major open access charges in the state of Maharashtra, are discussed in detail in the sub-sections below.

Cross Subsidy Surcharge

The open access regulations in the State of Maharashtra, do not prescribe a set methodology for the calculation of Cross Subsidy Surcharge (CSS), instead the regulations state that the CSS shall be leviable at the rates as determined by the Commission from time to time. The MERC determines cross subsidy surcharge in its Retail Tariff Orders for Discoms.

For the calculation of CSS, the MERC has adopted the methodology prescribed by the National Tariff Policy 2016 in its tariff order of FY2016-17 onwards.

The CSS is calculated separately for each HT consumer category and voltage level. The table below represents the Cross Subsidy Surcharge determined by the Commission for HT Industrial and HT Commercial consumer categories for the last three financial years.

Cross Subsidy Surcharge	Units	FY2016-17	FY2017-18	FY2018-19
HT Industrial				
66 kV	Rs./Kwh	1.62	1.63	1.57
33 kV	Rs./Kwh	1.64	1.65	1.55
22 kV	Rs./Kwh	1.79	1.80	1.62
11 kV	Rs./Kwh	1.79	1.80	1.90
HT Commercial				
66 kV	Rs./Kwh	2.63	2.65	2.52
33 kV	Rs./Kwh	2.53	2.55	2.53
22 kV	Rs./Kwh	2.67	2.70	2.55
11 kV	Rs./Kwh	2.67	2.70	3.08

A drop can be observed in the CSS for HT industrial consumer category in FY2018-19. This drop is due to decrease in tariff payable by HT Industrial Category, considered by the Commission for the calculation of CSS, from Rs. 8.25 per unit in FY2017-18 to Rs. 7.76 per unit in FY2018-19.

Distribution Wheeling Charges

The open access regulations in Maharashtra states that wheeling charges are to be payable by open access consumers to the Discom, as determined by the Commission for the relevant financial year. While no specific methodology has been prescribed in the open access regulations for the calculation of the wheeling charges, the regulations define that wheeling charges are to be paid by open access consumers on the basis of actual energy drawal at the consumption end, as may be determined under the Regulations of the Commission governing Multi-Year Tariff.

The Commission in its tariff orders determines the Wheeling Charge in 'Rs./kW/month' terms by dividing the wheeling cost of each voltage category by the average of Coincident peak demand and Non-Coincident peak demand for that voltage level as per the latest Tariff Order, and dividing it by 12 for per month computation. Further this per kW/month charge is converted into a per unit charge assuming a 66% load factor.

The wheeling charges determined by the Commission for last three financial years is showcased in the table below:

Wheeling charges	Units	FY2016-17	FY2017-18	FY2018-19
33 kV	Rs./Kwh	0.09	0.09	0.15
22 kV	Rs./Kwh	0.82	0.83	0.38
11 kV	Rs./Kwh	0.82	0.83	0.78
LT	Rs./Kwh	1.18	1.21	1.30

Transmission Charges

The open access regulations in Maharashtra state that Open access consumer using intra-State transmission system shall pay transmission charges to the STU, as determined by the Commission for the relevant financial year. The exact method of calculation of transmission charges is not described in the Transmission Open access regulation.

In its Tariff Orders, the Commission has determined Transmission charges separately for Long Term/ Medium Term OA consumers and Short term OA consumers. For Short Term Open Access consumers and for open access consumers taking renewable power, transmission charges are determined on per unit basis. The table below represents the Transmission charges for the last three financial years.

Transmission charges	Units	FY2016-17	FY2017-18	FY2018-19
LTOA	Rs./KW/month	204	240	254
STOA & RE	Rs./Kwh	0.28	0.32	0.34

Additional Surcharge

The Distribution Open Access Regulations in Maharashtra provide for charging of Additional Surcharge from open access consumers, to recover obligation of the Discoms in terms of fixed power purchase commitments that have become stranded due to migration of consumer load to open access. The regulations state the following principles to be adhered while calculating the additional surcharge –

- The cost must have been incurred by or be expected, with reasonable certainty, to be incurred by the Distribution Licensee on account of such Consumer; and
- The cost has not been or cannot be recovered from such Consumer, or from other Consumers who have been given supply from the same assets or facilities, through Wheeling Charges, stand-by charges or other charges approved by the Commission:

As per the MYT order issued by the Commission, per Unit Weighted Average Fixed Cost per unit for all contracted capacity is considered as Additional Surcharge on OA sales. The table below represents the Additional surcharges, applicable on all OA consumers, for the last three financial years.

Additional Surcharges	Units	FY2016-17	FY2017-18	FY2018-19
For all OA consumers	Rs./Kwh	1.11	1.11	1.25

Scheduling and system operation charges surcharge

The open access regulations in Maharashtra require open access consumers to pay SLDC charges for scheduling and system operation, as determined by the Commission from time to time in its Tariff Orders for SLDC. The Commission has determined SLDC charge for only short term OA transactions. Further the regulations state that LTOA/ MTOA consumers shall bear MSLDC fees and

charges payable by the Licensee, in the ratio of scheduled demand of Open Access sought to the total demand of the Distribution Licensee on a pro-rata basis. However in the absence of SLDC Charge for LTOA/ MTOA consumers, or the aggregate load of all open access consumers in the state, the short term SLDC charges are considered for all types of open access consumers in Maharashtra, for the purpose of analysis in this report. The table below represents the SLDC surcharges, determined by the Commission, for the last three financial years.

SLDC surcharge	Units	FY2016-17	FY2017-18	FY2018-19
For Short Term OA	Rs./MW/Month	651	777	658

Energy Losses

Apart from open access charges, the regulations also provide for losses to be made applicable on open access transactions, as determined by Commission from time to time. The table below represents the voltage wise T&D losses adopted by Commission in its MYT tariff order for MSEDCL from FY17 to FY20.

T&D losses	Units	FY2016-17	FY2017-18	FY2018-19
Transmission Losses	%	3.92%	3.92%	3.92%
Distribution Losses (33 kV)	%	6.00%	6.00%	6.00%

RPO Obligation

Renewable Purchase Obligations (RPO) are applicable on open access consumers taking supply from conventional sources. Section 7 of the RPO REC Regulations issued by MERC in 2016, define the RPO Obligations applicable on open access consumer in the last three financial years is detailed in table below.

RPO Obligation	Units	FY2016-17	FY2017-18	FY2018-19
Solar	%	1.00%	2.00%	2.75%
Non-Solar	%	10.00%	10.50%	11.00%
Total	%	11.00%	12.50%	13.75%

Other Regulatory Provisions

Banking of Power Facility

Banking facility is provided in the state of Maharashtra under the Maharashtra Electricity Regulatory Commission (distribution open access) regulations, 2016. As per clause no. 58 the banking facility is available for renewable power for both captive and third party open access consumers. As per clause no. 20, the banking facility is available for renewable power. Banking of energy shall be permitted during all twelve months of the year and Banking Charges shall be adjusted in kind @ 2% of the energy banked.

'20. Banking of RE Power:

20.2 The surplus energy from a 'non-firm' Renewable Energy Generating Station after set-off shall be banked with the Distribution Licensee.

20.3 The banking year shall be the financial year from April to March.

20.4 Provided that the credit for banked energy shall not be permitted during the months of April, May, October and November, and the credit for energy banked in other months shall be as per the energy injected in the respective Time of Day ('TOD') slots determined by the Commission in its Orders determining the Tariffs of the Distribution Licensees

Provided further that the energy banked during peak TOD slots may also be drawn during off-peak TOD slots, but the energy banked during off-peak TOD slots may not be drawn during peak TOD slots.

20.6 The unutilised banked energy at the end of the financial year, limited to 10% of the actual total generation by such Renewable Energy generator in such financial year, shall be considered

as deemed purchase by the Distribution Licensee at its Pooled Cost of Power Purchase for that year

Provided that such deemed purchase shall not be counted towards the Renewable Purchase Obligation of the Distribution Licensee, and the Generating Station would be entitled to Renewable Energy Certificates to that extent.

The table below summarises the applicability of banking provisions and banking charges for various types of consumers.

<i>Applicability and Charges for Banking of Power</i>	Non-RE Power	RE Power
Captive consumer	<ul style="list-style-type: none"> • Not Available 	<ul style="list-style-type: none"> • Available • 2% charge
Third party open access	<ul style="list-style-type: none"> • Not available 	<ul style="list-style-type: none"> • Available • 2% charge

Deviation Settlement Mechanism

Regulations on 'deviation, settlement mechanism and related matters' were issued by MERC in 2019. As per section 4 of these regulations, the Deviations Settlement Mechanism is applicable on Open Access consumers.

'4. (A) Deviation Settlement Mechanism under these Regulations shall be applicable for all Seller(s) having installed generating capacity above 25 MW (or such other threshold capacity), including renewable energy generators but excluding wind and solar generating stations(s), open access generators, captive generators (excluding in-situ captive generators) connected to intra-state transmission system.'

Section 9 of the Deviation Settlement Regulations state that charges for deviation shall be worked out on the average frequency of a time-block by considering the Price Vector for Deviation Charges as specified in the Central Electricity Regulatory Commission (Deviation Settlement Mechanism and related matters) Regulations, 2014.

'9 (1) The Charges for Deviation for all the time-blocks shall be payable for over-drawal by the Buyer and under-injection by the Seller and receivable for under-drawal by the Buyer and overinjection by the Seller, which are State entities, and shall be worked out on the average frequency of a time-block by considering the Price Vector for Deviation Charges as specified in the Central Electricity Regulatory Commission (Deviation Settlement Mechanism and related matters) Regulations, 2014....'

7.3.2. Open access activity review

In this section a detailed review is performed of the existing level and past trend of Open Access activity in the respective State. As a part of this assignment, a data collection exercise was conducted to collect data with respect to the open access activity in the shortlisted States. Data was sought from the respective Discoms and SLDCs for the number of open access consumers in the State, their type (captive/ non-captive and long/ medium or short term), and open access sales over the last 3 financial years.

Number of open access consumers and open access sales

Based on the information shared by MSEDCL, the details of number of open access consumers is shown in the table below.

MSEDCL - No. of OA Consumers	Units	FY2015-16	FY2016-17	FY2017-18
Long Term	Nos.	2	2	3
Medium Term	Nos.	78	118	104

MSEDCL - No. of OA Consumers	Units	FY2015-16	FY2016-17	FY2017-18
Short Term	Nos.	297	354	167
Total	Nos.	377	474	274
Captive	Nos.	91	111	124
Non-Captive	Nos.	286	363	150
Total	Nos.	377	474	274
RE	Nos.	134	173	158
Non-RE	Nos.	243	301	116
Total	Nos.	377	474	274

MSEDCL - OA sales	Units	FY2015-16	FY2016-17	FY2017-18
Long Term	Gwh	3	5	6
Medium Term	Gwh	1,100	1,534	1,160
Short Term	Gwh	4,436	6,597	3,695
Total	Gwh	5,540	8,135	4,860
Captive	Gwh	2,693	4,141	3,886
Non-Captive	Gwh	2,846	3,994	974
Total	Gwh	5,540	8,135	4,860
RE	Gwh	442	615	544
Non-RE	Gwh	5,098	7,520	4,316
Total	Gwh	5,540	8,135	4,860

It can be observed from the above data that the open access consumers have reduced significantly in the recent years. Also it can be observed that primarily the open access consumers are short term, captive consumers which are drawing renewable power.

7.3.3. Commercial Review

In this section, the consumer category wise sales and the load profile of consumers is analysed in order to understand the potential of open access migration in the State. Potential of open access migration would be higher in States with higher share of HT industrial and HT commercial sales, along with a profile of consumers with higher loads.

The consumer category wise sales data is taken from respective tariff orders of the Commission. The data for load profile of HT consumers is collected from respective Discoms. This data for load profile was received from MSEDCL, as a part of data collection exercise performed in this assignment, and has been represented in the further sub-sections.

HT sales as a % of total sales

The table below represents the consumer category wise sales in the state of Maharashtra. As per the sales data, HT industrial and commercial sales form approx. 30% of the overall sales in the State.

Consumer Category Wise Sales	Units	FY2016-17	FY2017-18	FY2018-19
HT Sales				
HT Industry	Gwh	23,629	24,934	28,648
HT Commercial	Gwh	2,232	2,406	1,840
HT Others	Gwh	3,888	4,389	4,101
Sub-Total	Gwh	29,749	31,729	34,589
LT Sales				

Consumer Category Wise Sales	Units	FY2016-17	FY2017-18	FY2018-19
Sub-Total	Gwh	57,108	63,023	64,450
Total	Gwh	86,857	94,752	99,039
HT Commercial Sales (as % of total sales)	%	3%	3%	2%
HT Industrial Sales (as % of total sales)	%	27%	26%	29%

Load Profile of HT Consumers

The tables below showcase the load profile of HT Industrial consumers in MSEDCL, as provided by the Discom. Consumers falling in the category of 1-10 MW form 65% of the overall HT Industrial sales and 94% of the overall HT Industrial consumers. These consumers have a lower potential of migrating to open access.

Load Profile - Sales of HT Industrial Consumers					
Load category	Units	FY2015-16	FY2016-17	FY2017-18	FY2018-19
1-5 MW	Gwh	8,929	8,790	10,706	7,772
6-10 MW	Gwh	2,400	2,483	3,031	2,107
11-50 MW	Gwh	3,741	3,745	5,939	4,846
51-100 MW	Gwh	176	289	485	409
> 100 MW	Gwh	498	595	371	200
1-5 MW	%	59%	57%	53%	51%
6-10 MW	%	16%	16%	15%	14%
11-50 MW	%	25%	24%	29%	32%
51-100 MW	%	1%	2%	2%	3%
> 100 MW	%	3%	4%	2%	1%

Load Profile - Number of HT Industrial Consumers					
Load Category	Units	FY2015-16	FY2016-17	FY2017-18	FY2018-19
1-5 MW	Nos.	1,575	1,599	1,687	1,744
6-10 MW	Nos.	100	102	107	105
11-50 MW	Nos.	81	85	91	103
51-100 MW	Nos.	3	4	4	4
> 100 MW	Nos.	3	2	2	2
1-5 MW	%	90%	89%	89%	89%
6-10 MW	%	6%	6%	6%	5%
11-50 MW	%	5%	5%	5%	5%
51-100 MW	%	0%	0%	0%	0%
> 100 MW	%	0%	0%	0%	0%

The tables below showcase the load profile of HT Commercial consumers in MSEDCL, as provided by the Discom. Consumers falling in the category of 1-10 MW form 100% of the overall HT Commercial sales and 100% of the overall HT Commercial consumers. These consumers have a lower potential of migrating to open access.

Load Profile - Sales of HT Commercial Consumers					
Load category	Units	FY2015-16	FY2016-17	FY2017-18	FY2018-19
1-5 MW	Gwh	968	723	709	194
6-10 MW	Gwh	46	48	37	4
11-50 MW	Gwh	13	17	13	-

Load category	Units	Load Profile - Sales of HT Commercial Consumers			
		FY2015-16	FY2016-17	FY2017-18	FY2018-19
51-100 MW	Gwh	-	-	-	-
> 100 MW	Gwh	-	-	-	-
1-5 MW	%	94%	92%	93%	98%
6-10 MW	%	4%	6%	5%	2%
11-50 MW	%	1%	2%	2%	0%
51-100 MW	%	0%	0%	0%	0%
> 100 MW	%	0%	0%	0%	0%

Load Category	Units	Load Profile - Number of HT Industrial Consumers			
		FY2015-16	FY2016-17	FY2017-18	FY2018-19
1-5 MW	Nos.	260	246	246	122
6-10 MW	Nos.	4	3	4	1
11-50 MW	Nos.	4	1	1	
51-100 MW	Nos.	-	-	-	-
> 100 MW	Nos.	-	-	-	-
1-5 MW	%	97%	98%	98%	99%
6-10 MW	%	1%	1%	2%	1%
11-50 MW	%	1%	0%	0%	0%
51-100 MW	%	0%	0%	0%	0%
> 100 MW	%	0%	0%	0%	0%

7.3.4. Tariff and open access charges review

In this section a detailed review of the retail tariff applicable on HT Industrial and HT Commercial consumers and open access charges is performed.

The breakup of fixed and variable tariff is analysed and compared against the fixed and variable cost of Discom. Higher is the gap between the fixed cost of Discom and fixed tariff collected from consumers, higher could be the impact on Discom due to open access migration, as the fixed tariff recovered from consumers would not be sufficient to cover the fixed cost of Discom.

Further the gap between retail tariff applicable on HT consumers and open access charges is analysed to understand the probability of consumers to migrate to open access. Higher is the gap between open access charges and the retail tariff, higher is the probability of consumers to migrate to open access.

Review of retail tariff charged to HT consumers

Based on the data provided in the Tariff Order, the ACOS Coverage for HT consumers in the State has moved away from +/-20% of ACOS in the last three years. Also the fixed tariff (i.e. demand charges) for HT consumers is not sufficient to cover the fixed costs of Discom. The average realization from fixed charges in FY2018-19 was just 10% for HT Industrial and 7% for HT Commercial consumers, as against 56% fixed component of ACoS.

The table below showcases the fixed/ variable breakup of ACOS along with their corresponding fixed-variable breakup of ABR and ACoS average for HT Industrial and HT commercial consumers. As per the tariff orders of respective years, the variable power purchase cost is taken as part of variable ARR for MSEDCL. For the estimation of ABR, the variable tariff of respective consumer category is added to an estimated per unit charge for fixed tariffs. The fixed tariff of respective consumer category is converted into per unit charge assuming a load factor of 60%. The ACoS coverage is taken as per the tariff orders of respective years.

	FY2016-17	FY2017-18	FY2018-19
ACoS			
Total	6.81	6.74	6.42
Fixed	55%	58%	56%
Variable	45%	42%	44%
HT Industrial ABR			
Total	7.76	7.74	7.91
Fixed	7%	7%	10%
Variable	93%	93%	90%
HT Commercial ABR			
Total	11.98	12.07	12.46
Fixed	5%	5%	7%
Variable	95%	95%	93%
ACoS Coverage			
HT industrial	126%	128%	134%
HT commercial	193%	196%	208%

Open access charges

In this sub-section, the open access charges applicable on various types of open access consumers is analysed. The open access charges for following types of open access consumers are discussed below –

- Conventional power through Non-Captive mode
- Conventional power through Captive mode
- Renewable power through Non Captive mode
- Renewable power through Captive mode

The open access charges differ for these different types of consumers, as charges like CSS and Additional Surcharge are not applicable on captive consumers. Further consumers taking renewable power, are offered any discounts on open access charges by the Commission as renewable promotion measures in some states.

In the State of Maharashtra, no exemption is given on open access charges to consumers procuring power through renewable sources. However as per the schedule of open access charges published in Maharashtra, the transmission charges (on per unit basis) determined for STOA transactions are also applicable for renewable energy.

The following general assumptions are taken while analysing the open access charges for various consumer types -

- 1 MW load
- 60% load factor for conventional power
- 18% load factor for renewable Power
- 33 kV Connected voltage
- Long Term Open Access

The tables below showcase the open access charges applicable on various types of consumers as discussed above.

HT Industrial Consumers (Non-Captive, Conventional)

OA Charges	Unit	FY2016-17	FY2017-18	FY2018-19
Cross Subsidy Surcharge	Rs./Kwh	1.64	1.65	1.55
Distribution Wheeling	Rs./Kwh	0.09	0.09	0.15

OA Charges	Unit	FY2016-17	FY2017-18	FY2018-19
Transmission Charge	Rs./Kwh	0.47	0.56	0.59
Additional Surcharge	Rs./Kwh	1.11	1.11	1.25
SLDC Charge	Rs./Kwh	0.00	0.00	0.00
RPO	Rs./Kwh	0.11	0.13	0.14
Total	Rs./Kwh	3.42	3.53	3.68

HT Industrial Consumers (Non-Captive, RE)

OA Charges	Unit	FY2016-17	FY2017-18	FY2018-19
Cross Subsidy Surcharge	Rs./Kwh	1.64	1.65	1.55
Distribution Wheeling	Rs./Kwh	0.09	0.09	0.15
Transmission Charge	Rs./Kwh	0.28	0.32	0.34
Additional Surcharge	Rs./Kwh	1.11	1.11	1.25
SLDC Charge	Rs./Kwh	0.01	0.01	0.01
RPO	Rs./Kwh			
Total	Rs./Kwh	3.13	3.18	3.30

HT Industrial Consumers (Captive, Conventional)

OA Charges	Unit	FY2016-17	FY2017-18	FY2018-19
Cross Subsidy Surcharge	Rs./Kwh			
Distribution Wheeling	Rs./Kwh	0.09	0.09	0.15
Transmission Charge	Rs./Kwh	0.47	0.56	0.59
Additional Surcharge	Rs./Kwh			
SLDC Charge	Rs./Kwh	0.00	0.00	0.00
RPO	Rs./Kwh	0.11	0.13	0.14
Total	Rs./Kwh	0.67	0.77	0.88

HT Industrial Consumers (Captive,RE)

Charges	Unit	FY2016-17	FY2017-18	FY2018-19
Cross Subsidy Surcharge	Rs./Kwh	0.00	0.00	0.00
Distribution Wheeling	Rs./Kwh	0.09	0.09	0.15
Transmission Charge	Rs./Kwh	0.28	0.32	0.34
Additional Surcharge	Rs./Kwh	0.00	0.00	0.00
SLDC Charge	Rs./Kwh	0.01	0.01	0.01
RPO	Rs./Kwh			
Total	Rs./Kwh	0.38	0.42	0.50

HT Commercial Consumers (Non-Captive, Conventional)

Charges	Unit	FY2016-17	FY2017-18	FY2018-19
Cross Subsidy Surcharge	Rs./Kwh	2.53	2.55	2.53
Distribution Wheeling	Rs./Kwh	0.09	0.09	0.15
Transmission Charge	Rs./Kwh	0.47	0.56	0.59
Additional Surcharge	Rs./Kwh	1.11	1.11	1.25
SLDC Charge	Rs./Kwh	0.00	0.00	0.00
RPO	Rs./Kwh	0.11	0.13	0.14
Total	Rs./Kwh	4.31	4.43	4.66

HT Commercial Consumers (Non-Captive, RE)

OA Charges	Unit	FY2016-17	FY2017-18	FY2018-19
Cross Subsidy Surcharge	Rs./Kwh	2.53	2.55	2.53
Distribution Wheeling	Rs./Kwh	0.09	0.09	0.15
Transmission Charge	Rs./Kwh	0.28	0.32	0.34
Additional Surcharge	Rs./Kwh	1.11	1.11	1.25
SLDC Charge	Rs./Kwh	0.01	0.01	0.01
RPO	Rs./Kwh			
Total	Rs./Kwh	4.02	4.08	4.28

HT Commercial Consumers (Captive, Conventional)

Charges	Unit	FY2016-17	FY2017-18	FY2018-19
Cross Subsidy Surcharge	Rs./Kwh			
Distribution Wheeling	Rs./Kwh	0.09	0.09	0.17
Transmission Charge	Rs./Kwh	0.09	0.09	0.15
Additional Surcharge	Rs./Kwh			
SLDC Charge	Rs./Kwh	0.00	0.00	0.00
RPO	Rs./Kwh	0.11	0.13	0.14
Total	Rs./Kwh	0.67	0.77	0.88

HT Commercial Consumers (Captive, RE)

Charges	Unit	FY2016-17	FY2017-18	FY2018-19
Cross Subsidy Surcharge	Rs./Kwh	0.00	0.00	0.00
Distribution Wheeling	Rs./Kwh	0.09	0.09	0.15
Transmission Charge	Rs./Kwh	0.28	0.32	0.34
Additional Surcharge	Rs./Kwh	0.00	0.00	0.00
SLDC Charge	Rs./Kwh	0.01	0.01	0.01
RPO	Rs./Kwh			
Total	Rs./Kwh	0.38	0.42	0.50

Break Even Power Purchase Cost

The table below compares the retail tariff applicable on HT consumers against the open access charges applicable on such consumers. It can be observed that significant gap exists between retail tariffs and open access charges for HT Industrial consumers in case of conventional and RE captive power in case of making it economically beneficial for them to migrate to open access.

Whereas for HT Commercial consumers significant gap exists between retail tariffs and open access charges for both Non captive and captive consumers making it economically beneficial for them to migrate to open access.

Table: Comparison of OA charges & Break-even PPC for FY18-19 (HT-Industrial)

Parameters		Conventional Non-Captive	RE Non-Captive	Conventional Captive	RE Captive
Open Access Charges	A	3.68	3.30	0.88	0.50
Tariff (Variable)	B	7.10	7.10	7.10	7.10
Break Even PPC	C=B-A	3.42	3.80	6.22	6.60
Break Even PPC after losses	$C/(1+T\&D \text{ Loss})$	3.11	3.46	5.66	6.01

Table: Comparison of OA charges & Break-even PPC for FY18-19 (HT-Commercial)

Parameters		Conventional Non-Captive	RE Non- Captive	Conventional Captive	RE Captive
Open Access Charges	A	4.66	4.28	0.88	0.50
Tariff (Variable)	B	11.65	11.65	11.65	11.65
Break Even PPC	$C=B-A$	6.99	7.37	10.77	11.15
Break Even PPC after losses	$C/(1+T\&D$ Loss)	6.36	6.71	9.80	10.15

7.3.5. APTEL/ SERC cases regarding open access

Commission	Case No.	Year	Utility	OA Consumer	Brief description of case
APTEL	16	2016	MSETCL, MSLDC	Gupta Energy	<ul style="list-style-type: none"> Gupta Energy (a generator) got LTOA from MSETCL for supplying power to Tata Power. However for some months in between the Generator sold power on power exchange, for which SLDC charged STOA charges to generator, while MSETCL kept on charging LTOA charges too. Gupta Energy appealed against charging of LTOA and STOA together APTEL dismissed the petition of Gupta Energy
APTEL	366	2017	MSEDCL	Ultra Tech Cement	<ul style="list-style-type: none"> Ultra Tech Cement was taking non-RE power through MTOA from a captive plant and RE power through STOA from a third party generator While billing, MSEDCL first credited the RE units and then Non-RE units for OA Consumer appealed against MSEDCL billing practice. Consumers pleaded that since banking was allowed for RE power, first Non-RE units should be settled, and surplus RE power should be banked APTEL ruled in favour of consumer
MERC	163	2017	MSEDCL	Cleanmax	<ul style="list-style-type: none"> Consumer was taking power through open access already and had applied for net-metering approval The Discom denied net-metering approval citing difficulties in settlement of net-metering and open access power injected simultaneously The consumer approach the Commission but the application was rejected
MERC	131	2016	MSEDCL	Cosmo Films Ltd.	<ul style="list-style-type: none"> An Application was made by Cosmo to MSEDCL seeking its No Objection for STOA MSEDCL denied NOC stating that consumer had not mentioned the product for which STOA is being sought and that the application was not made under the correct procedure The Commission directed MSEDCL to refund the application fee of consumer <p>http://www.mercindia.org.in/pdf/Order%2058%2042/Order-131%20of%202016-25012018.pdf</p>

Commission	Case No.	Year	Utility	OA Consumer	Brief description of case
MERC	173	2017	MSEDCL	Serum Institute of India Pvt. Ltd. (SI IPL)	<ul style="list-style-type: none"> Open Access Consumers had applied to MSEDCL under STOA for getting wind power from SI IPL. Some were partially approved and some were rejected MSEDCL responded that NOC was denied due to network constraint. The utility asked consumers to submit an undertaking that their load would not exceed contract demand in any case, which they failed to submit The Commission took cognisance of the rationale given by MSEDCL and accepted their submissions <p>http://www.mercindia.org.in/pdf/Order%2058%2042/Order-173%20of%202017-07072018.pdf</p>

7.4. Gujarat

Gujarat, with a geographical spread of 196244 km² is the 6th largest state of Indian union in terms of area, and the 9th largest by population (as per census 2011) with total population of 6.04 Crores. One of India's most industrialized states, Gujarat maintains a variety of industries, the principal ones being general and electrical engineering and the manufacture of textiles, vegetable oils, chemicals, soda ash, and cement.

Gujarat is one of India's most prosperous states, having a per-capita GDP significantly above India's average. At present, GUVNL (Holding Company and single bulk buyer and supplier of power to DISCOMS), GSECL (Generation Company), GETCO (State Transmission utility), PGVCL (DISCOM for western Gujarat), UGVCL (DISCOM for Northern Gujarat), MGVCL (DISCOM for Central Gujarat), DGVCL (DISCOM for southern Gujarat) are functioning as the State owned generation, transmission and distribution utilities, respectively.

Key Parameters	
Peak demand	16,590 MW
Annual Units Available	7753
Sales	1,09,973 MUs
Power Utilities	G - GSECL T - GETCO D - UGVCL, DGVCL, MGVCL and PGVCL

The state is energy adequate with an increase in energy sales from 66267 MUs to 73561 Mus in the last 3 years. The installed capacity and Peak demand of Gujarat is 31,579 MW as on Feb 2019 and 16,590 MW (for FY2017-18 as per CERC LGBR report, FY2018-19) respectively.

The analysis of open access status review is performed for state owned Discoms i.e. UGVCL, DGVCL, MGVCL and PGVCL in Gujarat as private distribution utilities serve limited areas of Ahmedabad or SEZs within Gujarat which would have lower potential of open access migration.

7.4.1. Regulatory Review

In this section a detailed review is performed of the open access regulations issued by State Electricity Regulatory Commissions (SERCs) to analyse –

- Evolution of open access regulations in the state along with their key amendments
- Eligibility conditions and restrictions for availing open access, along with types of open access allowed
- Process of applying for open access
- Provisions for open access charges
- Any other regulation/ policies relevant to open access

Evolution of open access regulations

In line with the provisions of Electricity Act 2003, the state of Gujarat issued Open Access Regulations in the year 2005 namely 'Gujarat Electricity Regulatory Commission (Open Access in Intra-state Transmission and Distribution) Regulations, 2005'. These regulations were replaced with a new set of regulations in the year 2011 namely 'Gujarat Electricity Regulatory Commission (Terms and Conditions of Intra-State Open Access) Regulations, 2011.' in order to align with CERC regulation on Grant of Connectivity Regulations for Long Term and Medium Term Open Access. These regulations were amended in the year 2014. The table summarizes the evolution of open access regulations over time along with the key amendments made thereof –

Year	Regulation/ Amendment	Key Amendment/Provisions
2005	OA Regulation	-
2011	OA Regulation	<ul style="list-style-type: none"> Limitation of 1 MW not be applicable for Captive OA consumers
2014	Amendment	<ul style="list-style-type: none"> Short term open access period reduced from less than 6 months to less than 1 month Methodology for transmission charges of Short Term OA re-defined (defined in Rs./MW/Day)

Open access eligibility

The Open Access regulations issued by GERC in 2011, define eligibility criteria’s for consumers that can avail open access, based on various technical and commercial considerations. Based on the prevalent regulations, these eligibility requirements and restrictions in the state of Gujarat are as follows –

Contract Demand	- 1 MW or above - Limitation of 1MW not applicable for captive generating plants
Feeder level conditions	-
Voltage level conditions	-
Additional Provisions	-

The relevant provisions of the regulations are reproduced below –

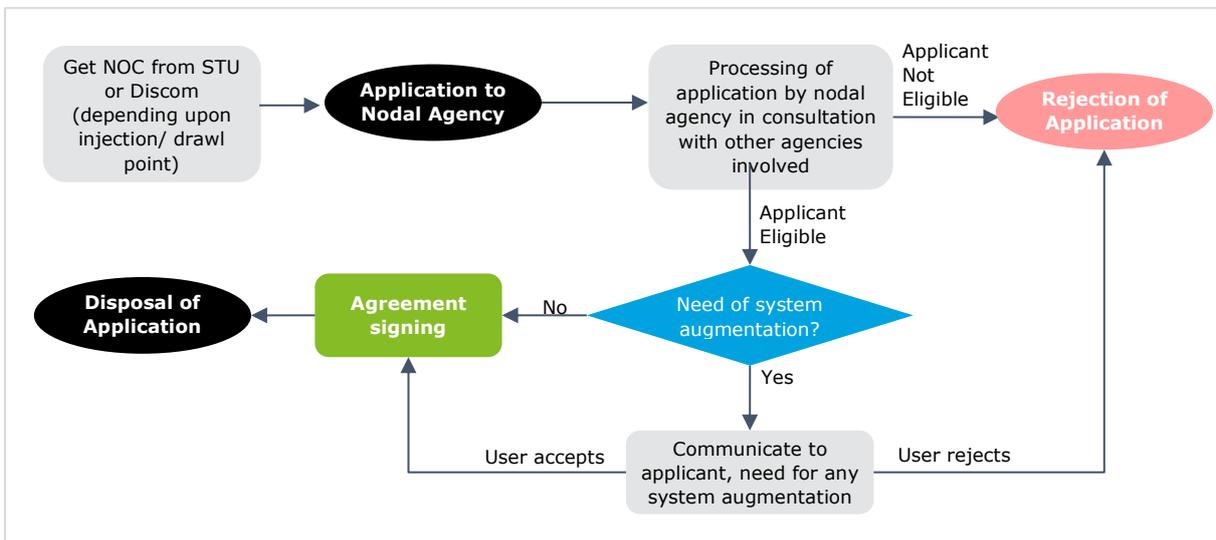
'9 (3) Subject to the provisions of these regulations, open access shall be permissible to the consumers seeking open access for a capacity of 1 MW and above.

Provided that when a person, who has established a captive generating plant, opts for open access for carrying the electricity to the destination of his own use, the limitation of 1 MW shall not be applicable'

Open access application process

In Gujarat, either the STU or SLDC acts as the Nodal Agency for accepting open access applications, depending upon the injection/drawl point of power.

As per **Chapter 4 of open access regulations 2011**, the procedure to get open access for the State of Gujarat is represented below in the form of a flow chart.



The table below summarises the key features of the process related to getting Open Access –

	Long Term OA	Medium Term OA	Short Term OA
Nodal Agency	• CTU – if generator and buyer are in diff. states	• CTU – if generator and buyer are in diff. states	• RLDC – if generator and buyer are in diff. states

	<ul style="list-style-type: none"> • STU – if generator and buyer within in Gujarat, but different Discom • SLDC – if both generator and buyer within same Discom 	<ul style="list-style-type: none"> • STU – if generator and buyer within in Gujarat, but different Discom • SLDC – if both generator and buyer within same Discom 	<ul style="list-style-type: none"> • SLDC – if generator and buyer are in Gujarat
Time-period	120-150 Days	30-40 Days	By 21 st of preceding month
Documents	<ul style="list-style-type: none"> • Consent of Transco/ Discom (depending upon drawal/injection point) • Application Fee • Bank Guarantee • PPA • Documentary Evidence of grid connectivity • Declaration of not having entered into PPA or bilateral agreement for the capacity on which Open Access is sought 	<ul style="list-style-type: none"> • Consent of Transco/ Discom (depending upon drawal/injection point) • Application Fee • PPA • Documentary Evidence of grid connectivity • Declaration of not having entered into PPA or bilateral agreement for the capacity on which Open Access is sought 	<ul style="list-style-type: none"> • Consent of Transcom/ Discom (depending upon drawal/injection point) • Application Fee • Declaration of not having entered into PPA or bilateral agreement for the capacity on which Open Access is sought
Cost	<ul style="list-style-type: none"> • Application Fee: Rs.50000-1 Lacs, basis location of drawal/ injection point • Bank Guarantee: Rs. 10,000 per MW 	<ul style="list-style-type: none"> • Application Fee: Rs.25000-50000, basis location of drawal/ injection point 	<ul style="list-style-type: none"> • Application Fee: Rs.5,000

From the table above and the application process for open access in the State, it can be observed that the applicant is required to take a separate NOC from Discom or Transco, before applying for open access to the nodal agency. Therefore the timelines for processing of open access applications as provided in the regulations, could further stretch out due to time required to get NOCs.

Further the open access regulations say that while processing the application from a generating station seeking consent for open access, the distribution licensee shall verify the following, namely-

- Existence of infrastructure necessary for time-block-wise energy metering and accounting in accordance with the provisions of the State Grid Code in force,
- Availability of capacity in the distribution network, and.
- Availability of RTU and communication facility to transmit real- time data to SLDC.

Open access charges

The open access regulations in the state of Gujarat, define the following types of open access charges:

- 1) Transmission charges
- 2) Scheduling and system operation charges
- 3) Wheeling charges
- 4) Cross Subsidy Surcharge
- 5) Additional Surcharge
- 6) Standby charges
- 7) Other Charges

Also open access consumers are to bear energy losses as per section 31 of the open access regulations.

Further chapter 8 of the regulations provide for **Imbalance and Reactive Energy charges** on open access transactions. Section 32 of the regulations state that in case an open access consumer is not a consumer of Discom, shall come under the purview of intra-state ABT and any deviation of such consumers from their approved schedule shall attract imbalance charges.

Also section 33 of the regulations state that open access consumers below 4 MW of load, shall bear **reactive energy charges** in accordance with provisions of intra-state ABT order and consumers below 4 MW shall bear reactive energy charges calculated on their power factor.

Section 26 of the regulations say that Discom may charge temporary tariff to open access consumers for supply of **standby power**, in cases of generator outage.

Apart from the charges discussed above, the sub-sections below discuss in detail the major open access charges in the State of Gujarat.

Cross Subsidy Surcharge

The open access regulations in the state of Gujarat, do not prescribe a set methodology for the calculation of Cross Subsidy Surcharge (CSS), but only define the applicability of this charge. The GERC determines cross subsidy surcharge in its Retail Tariff Orders for Discoms. In its tariff orders FY 2016-17 onwards, the GERC has adopted the methodology prescribed by the National Tariff Policy 2016.

Since the retail tariffs for all four State Owned Discoms is same in the State of Gujarat, the Commission approves a common CSS for all of them. Further the CSS is not calculated separately for each HT consumer category, instead a single CSS is calculated for all HT consumers. The table below presents the Cross Subsidy Surcharge determined by the Commission for the last three financial years.

Cross Subsidy Surcharge	Units	FY2016-17	FY2017-18	FY2018-19
All HT Category	Rs./Kwh	1.45	1.44	1.47

It can be observed that the CSS is nearly constant over all three financial year without any significant change.

Distribution Wheeling Charges

The open access regulations in Gujarat state that wheeling charges are to be payable by open access consumers to the Discom, as determined by the Commission for the relevant financial year. No specific methodology has been prescribed in the open access regulations for the calculation of the wheeling charges, and the regulations state that Commission may determine any combination of fixed/ demand charges and variable charges as wheeling charge.

In its tariff orders, the GERC calculates a separate distribution wheeling charge for open access consumers connected at different voltage levels. A combined distribution wheeling charge is calculated for all four State owned Discoms by dividing their total distribution costs with total energy input. Separate wheeling charges are not specified for long-term, medium-term or short-term open access consumers. The table below presents the Distribution Wheeling charges for open access consumers according to the voltage levels for the last three financial years.

Wheeling charges	Units	FY2016-17	FY2017-18	FY2018-19
11 kV	Rs./Kwh	0.14	0.14	0.15
400V	Rs./Kwh	0.51	0.54	0.56

Transmission Charges

The open access regulations in Gujarat state that transmission charges are to be payable by open access consumers to the Discom, as determined by the Commission for the relevant financial year.

Specific methodology has been prescribed in the open access regulations for the calculation of the Transmission charges. For LTOA and MTOA consumers, the regulations state that the total

transmission charge is to be shared by all LTOA and MTOA consumers in the ratio of their allotted capacities, as per the following formula -

$$\text{Monthly Transmission tariff (MTT)} = \text{TTC} / (\text{ACs} \times 12)$$

Where

TTC = Total Transmission Cost determined by the Commission for the transmission system for the concerned year (in Rs), and

ACs = sum of capacities allocated to all long-term and medium-term open access customers in MW.

For STOA consumers the principle regulations issued in 2011, provided for a 1/4th transmission charge as applicable to LTOA/ MTOA consumers. However the regulations were amended in the year 2014 to define transmission charges applicable on STOA consumers as a per day charge calculated as the total transmission cost of utility divided by sum of allocated capacities divided by 365, as follows -

$$\text{Transmission charges payable by Short-term open access customers} = 24 \times \text{TTC} / (\text{ACs} \times 8760)$$

(In Rs./MW/day)

Where;

TTC = Total Transmission Cost determined by the Commission for the transmission system for the relevant year (in Rs.) and

ACs = Sum of capacities allocated to all long-term and medium-term open access customers in MW.

Further section 72.3 of the GERC MYT Regulations issued in 2016, provide for a separate transmission charge for short term collective open access transactions through power exchanges, as follows -

$$\text{TC (Rs/kWh)} = \text{Transmission ARR} \div \text{Total units wheeled,}$$

Where,

TC (Rs/kWh) = Transmission Charges payable in the case of short-term collective transactions through power exchanges;

Transmission ARR = Aggregate Revenue Requirement of the Transmission Licensee, determined in accordance with Regulation 68 of these Regulations;

Total units wheeled = total energy units wheeled through the transmission system, which shall be equal to the total energy input into the intra-State transmission system during the financial year.

In accordance with the various regulatory provisions as discussed above the Commission has approved a separate transmission charges specified for long-term, medium-term or short-term open access consumers in its respective tariff orders, as shown in the table below.

Transmission charges	Units	FY2016-17	FY2017-18	FY2018-19
Short Term (Collective)	Rs./Kwh	0.31	0.33	0.37
Short Term (Bilateral)	Rs./MW/day	2,845	3,822	4,207
Long/ Medium Term	Rs./MW/month	85,364	1,14,659	1,26,215

Additional Surcharge

The open access regulations in Gujarat provide for charging of Additional Surcharge from open access consumers, to meet out the fixed cost of Discoms arising out of their obligation to supply as provided under sub-section (4) of section 42 of the Act, that have become stranded due to migration

of consumer load to open access. No specific methodology is defined in the regulations for determination of Additional Surcharge.

GERC in its Tariff Orders, for calculating the Additional Surcharge, divides the fixed charges of stranded capacity by scheduled open access energy. Fixed charges of stranded capacity is estimated by multiplying average open access capacity by fixed charges of power per MW. In turn fixed charges of power per MW is estimated by dividing total fixed charges for power by average power availability in MW. The demand charges recoverable from open access sales is reduced from the calculated fixed charges of stranded capacity.

GERC issues a separate order for calculation of Additional Surcharge in each half-year, combined for all four State Owned Discoms. Average of Additional Surcharge determined for two half years in a financial year, is taken for the purpose of analysis in this report, as presented in the table below.

Additional Surcharges	Units	FY2016-17		FY2017-18		FY2018-19	
		H1	H2	H1	H2	H1	H2
Half-Yearly	Rs./Kwh	0.44	0.49	0.61	0.49	0.69	0.44
Annual Average	Rs./Kwh	0.47		0.55		0.57	

Scheduling and system operation charges

The open access regulations in Gujarat require LTOA and MTOA consumers to pay SLDC charges for scheduling and system operation, as determined by the Commission from time to time in its Tariff Orders. Further the STOA consumers are required to pay a composite operating charge of Rs. 2,000 per day or part of the day.

In its tariff orders for SLDC, the GERC determines the total ARR in Rs. Lakhs, to be recovered by SLDC. This total ARR is divided by the total transmission loading capacity used for calculation of LTOA/ MTOA transmission charges by GERC.

The table below represents the SLDC surcharges, determined by the Commission, for the last three financial years.

SLDC charges	Units	FY2016-17	FY2017-18	FY2018-19
LTOA/ MTOA	Rs/MW/Month	728	1,104	300
STOA	Rs./Day	2,000	2,000	2,000

The high variations observed in the SLDC charges for LTOA/ MTOA consumers, is primarily due to revenue surplus/ deficit added onto the ARR of SLDCs for true-up of previous years. In FY2017-18, an additional revenue of Rs. 1,978 crores was allowed over the ARR of Rs. 1,258 crores of SLDC due to truing up of FY2015-16. On the other hand, in FY2018-19, a surplus of Rs. 632 crores was reduced from ARR of Rs. 1,559 crores of SLDC due to truing up of FY2016-17.

Energy Losses

Apart from Open Access charges, the regulations also provide for losses to be made applicable on open access transactions, as determined by Commission from time to time. The table below represents the voltage wise T&D losses adopted by Commission in its tariff orders, for open access consumer over the last three financial years.

T&D losses	Units	FY2016-17	FY2017-18	FY2018-19
Transmission Loss	%	4.12%	4.12%	3.85%
Distribution Loss (11 kV, 22 kV and 33 kV)	%	10%	10%	10%
Distribution Loss (400 Volts)	%	9.55%	7.01%	6.28%

RPO Obligation

Renewable Purchase Obligations (RPO) are applicable on open access consumers taking supply from conventional sources. As per the 'Procurement of Energy from Renewable Sources' Regulations issued by GERC in 2010 and amended in 2014 and 2018, the RPO Obligations applicable on open access consumer in the last three financial years is detailed in table below.

RPO Obligation	Units	FY2016-17	FY2017-18	FY2018-19
Solar	%	1.75%	1.75%	4.25%
Non-Solar	%	7.75%	7.75%	7.95%
Others	%	0.50%	0.50%	0.50%
Total	%	10.00%	10.00%	12.70%

Other Regulatory Provisions

Banking of Power Facility

Banking facility is provided in the state of Gujarat under the Gujarat Solar Power Policy, issued in 2015. As per section no. 9.2 of the Solar Policy, the banking facility is available for non-REC registered solar captive plants, within a billing cycle, where the solar power is not being used to meet RPO requirements.

'9.2

Energy Accounting:

If not registered under REC mechanism:

(i) Case 1: If the Consumer does not take renewable attribute of solar energy for meeting its RPO, banking of the energy shall be allowed within the Consumer's billing cycle, wherein set-off may be given during a billing cycle. However, peak charges shall be applicable for consumption during peak hours.

(ii) Case 2 (a) : If the Consumer takes renewable attributes of the solar energy consumed for meeting its RPO, then energy accounting shall be based on 15 minute time block-basis.'

Further section 9.6 of the Solar Policy, allows banking of solar power by plants selling power to third party under open access, if the plant is not REC registered and the renewable attribute is given to the Discom i.e. the power is not used by consumer for meeting its RPO obligations.

'9.6

Energy Accounting:

If not registered under REC mechanism:

(i) Case 1: If the Consumer does not take credit of the generated solar energy towards its RPO and renewable attribute is given to the DisCom, the adjustment of energy shall be allowed within the Consumer's billing cycle, wherein set-off may be given against energy consumed at any time of the billing cycle. However peak charges shall be applicable for consumption during peak hours.

(ii) Case 2 (a): If the Consumer takes Credit of the solar energy consumed towards its RPO, then energy accounting shall be based on 15-minute time blockbasis.

(iii) Case-2 (b): If registered under REC mechanism: Energy accounting shall be based on 15-minute time block-basis.'

However the Solar Tariff Order issued by GERC in 2015 allows banking for captive solar plants only, not operating under third party sale mode.

'4.7 Banking

.....

All solar power projects that are commissioned under captive generating mode and not operating under the REC route or third party sale shall be eligible for banking of energy for one month period only.....'

While banking facility is not available for open access consumers in the State of Gujarat, clause 32 of the Open Access Regulations 2011 in the State, provide for compensation to open access consumers in case of under-drawl due to non-availability of distribution system.

'32.

....

Provided that in case of underdrawal as a result of non-availability of the distribution system or unscheduled load shedding, the open access customer shall be compensated by the distribution licensee at the average power purchase cost of the distribution licensee.'

The table below summarises the applicability of banking provisions and banking charges for various types of consumers.

Applicability and Charges for Banking of Power	Non-RE Power	RE Power
Captive consumer	• Not available	• Available • Nil charge
Third party open access	• Not available	• Not available

Deviation Settlement Mechanism

'Gujarat Electricity Regulatory Commission (Forecasting, Scheduling, Deviation Settlement and Related Matters of Solar and Wind Generation Sources) Regulations, 2019' were issued by GERC in 2019. As per section 2 of these regulations, the Deviations Settlement Mechanism is applicable on wind and solar generators in the State.

'2. These Regulations shall apply to all wind and solar generators having combined installed capacity above 1 MW connected to the State grid/substation, including those connected via pooling stations, and selling generated power within or outside the State or consuming power generated for self-consumption.'

The wind or solar generators who deviate from its given schedule shall be liable to pay deviation charges as per the provisions of these Regulations given at below mentioned tables.

Wind Generator:

Absolute Error in the 15-minute time block	Deviation Charges payable to State DSM Pool
< = 12%	None
>12% but <=20%	At Rs. 0.25 per unit for the shortfall or excess energy for absolute error beyond 12% and up to 20%
>20% but <=28%	At Rs. 0.25 per unit for the shortfall or excess energy beyond 12% and up to 20% + Rs. 0.50 per unit for balance energy beyond 20% and up to 28%
> 28%	At Rs. 0.25 per unit for the shortfall or excess energy beyond 12% and up to 20% + Rs. 0.50 per unit for balance energy beyond 20% and up to 28% + Rs. 0.75 per unit for balance energy beyond 28%

Solar Generator:

Absolute Error in the 15-minute time block	Deviation Charges payable to State DSM Pool
< = 7%	None

>7% but <=15%	At Rs. 0.25 per unit for the shortfall or excess energy for absolute error beyond 7% and up to 15%
>15% but <=23%	At Rs. 0.25 per unit for the shortfall or excess energy beyond 7% and up to 15% + Rs. 0.50 per unit for balance energy beyond 15% and up to 23%
>23%	At Rs. 0.25 per unit for the shortfall or excess energy beyond 7% and up to 15% + Rs. 0.50 per unit for balance energy beyond 15% and up to 23% + Rs. 0.75 per unit for balance energy beyond 23%

7.4.2. Open access activity review

In this section a detailed review is performed of the existing level and past trend of open access activity in the State of Gujarat. As a part of this assignment, a data collection exercise was conducted to collect data with respect to the open access activity in the shortlisted States. Data was sought from the respective Discoms and SLDCs for the number of open access consumers in the state, their type (captive/ non-captive and long/ medium or short term), and open access sales over the last 3 financial years. For the state of Gujarat, data related to open access activity was received for all four State owned Discoms of MGVL, PGVL, UGVL and DGVCL.

Number of open access consumers and open access sales

Based on the information shared by DGVCL, PGVL, MGVL and UGVL, the details of total number of open access consumers for all four Discoms combined is shown in the table below.

No. of OA Consumers	Units	FY2015-16	FY2016-17	FY2017-18
Long Term	Nos.	283	309	330
Medium Term	Nos.	228	228	244
Short Term	Nos.	218	191	213
Total	Nos.	729	728	787
Captive	Nos.	475	480	502
Non-Captive	Nos.	254	248	285
Total	Nos.	729	728	787
RE	Nos.	427	452	492
Non-RE	Nos.	302	276	295
Total	Nos.	729	728	787

It can be observed from the above data that the number of open access consumers in the State have remained similar in the recent years. Also it can be observed that primarily the open access consumers are long term, captive consumers which are drawing renewable power.

Review of open access applications

As per the information collected from State utilities, the table below provides the number of open access applications received in the State of Gujarat for last three financial years. It should be noted that the number of applications received is significantly higher than the number of open access consumers as majority of the applications are of short-term in nature, with each consumer submitting multiple applications in a year.

Number of OA applications	Inter-state	Intra-state	Total
FY2015-16	2,975	308	3,283
FY2016-17	3,056	195	3,251
FY2017-18	2,527	369	2,896

Also from the data of open access applications provided by the State utilities, the analysis is performed on the percentage of applications rejected by nodal agency and the major reasons for

their rejection. The table below provides the number and percentage of open access applications rejected in the past years.

	FY16	FY17	FY18
Number of OA applications received	3,283	3,251	2,896
Number of OA applications rejected	675	338	203
% of OA applications rejected	21%	10%	7%

It can be observed that the rejection rate of open access applications has reduced significantly in recent years. Denial by Discom and Network Constraints are the two major reasons provided by nodal agencies for rejection of open access applications. The table below provides the breakup of major reasons given for rejection of open access applications.

Number of OA application rejected for each major reason	Units	FY16	FY17	FY18
Denial by Discom	Nos.	140	118	113
Network constraint	Nos.	416	109	15
Application deficiency or request withdrawl	Nos.	48	18	67
Others	Nos.	71	93	8
Total	Nos.	675	338	203
Denial by Discom	%	21%	35%	56%
Network constraint	%	62%	32%	7%
Application deficiency or request withdrawl	%	7%	5%	33%
Others	%	11%	28%	4%
Total	%	100%	100%	100%

7.4.3. Commercial Review

In this section, the consumer category wise sales and the load profile of consumers is analysed in order to understand the potential of open access migration in the state. Potential of open access migration would be higher in states with higher share of HT industrial and HT commercial sales, along with a profile of consumers with higher loads.

The consumer category wise sales data is taken from respective tariff orders of the Commission. The data for load profile of HT consumers is collected from respective Discoms.

HT sales as a % of total sales

The table below represents the consumer category wise sales in the state of Gujarat, combined for all four Discoms of PGVCL, DGVCL, UGVCL and MGVCL.

Consumer Category Wise Sales	Units	FY2016-17	FY2017-18	FY2018-19
HT Sales				
Industrial HT	Gwh	23,158	23,972	24,829
Railway Traction	Gwh	0	0	0
Sub-Total	Gwh	23,158	23,972	24,829
LT sales				
Sub-Total	Gwh	43,109	45,849	48,732
Total	Gwh	66,267	69,821	73,561
HT industrial Sales (as % of total sales)	%	35%	34%	34%

As per the sales data, HT industrial form 34% of the overall sales in the state.

Load Profile of HT Consumers

The tables below showcase the load profile of HT Industrial consumers in Gujarat, combined for all four Discoms of PGVCL, DGVCL, UGVCL and MGVCL. Consumers falling in the load category of 1-10 MW form 73% of the overall HT sales and 97% of overall HT consumers.

HT Industrial	Units	Load Profile - Number of HT Industrial Consumers			
		FY2015-16	FY2016-17	FY2017-18	FY2018-19
1-5 MW	Gwh	10,128	11,241	13,110	10,299
6-10 MW	Gwh	2,977	2,294	2,754	2,154
11-50 MW	Gwh	5,071	4,697	5,644	4,279
51-100 MW	Gwh	0	498	499	336
> 100 MW	Gwh	0	0	0	0
1-5 MW	%	56%	60%	60%	60%
6-10 MW	%	16%	12%	13%	13%
11-50 MW	%	28%	25%	26%	25%
51-100 MW	%	0%	3%	2%	2%
> 100 MW	%	0%	0%	0%	0%

The tables below showcase the load profile of HT industrial consumers in Gujarat, as provided by the Discoms. Consumers falling in the category of 1-10 MW form 97% of the overall number of HT consumers. These consumers have a lower potential of migrating to open access.

HT Industrial	Units	Load Profile - Number of HT Industrial Consumers			
		FY2015-16	FY2016-17	FY2017-18	FY2018-19
1-5 MW	Nos.	3,155	3,382	3,633	3,795
6-10 MW	Nos.	107	116	116	118
11-50 MW	Nos.	69	76	76	78
51-100 MW	Nos.	0	1	1	56
> 100 MW	Nos.	0	0	0	0
1-5 MW	%	95%	95%	95%	94%
6-10 MW	%	3%	3%	3%	3%
11-50 MW	%	2%	2%	2%	2%
51-100 MW	%	0%	0%	0%	1%
> 100 MW	%	0%	0%	0%	0%

7.4.4. Tariff and open access charges review

In this section a detailed review of the retail tariff applicable on HT Industrial consumers and open access charges is performed.

The breakup of fixed and variable tariff is analysed and compared against the fixed and variable cost of Discom. Higher is the gap between the fixed cost of Discom and fixed tariff collected from consumers, higher could be the impact on Discom due to open access migration, as the fixed tariff recovered from consumers would not be sufficient to cover the fixed cost of Discom.

Further the gap between retail tariff applicable on HT consumers and open access charges is analysed to understand the probability of consumers to migrate to open access. Higher is the gap between open access charges and the retail tariff, higher is the probability of consumers to migrate to open access.

Review of retail tariff charged to HT consumers

Based on the data provided in the Tariff Order, the ACoS Coverage for HT consumers in the State has remained at 120% for the last three years. Also the fixed tariff (i.e. demand charges) for HT consumers is not sufficient to cover the fixed costs of Discom. The average realization from fixed charges in FY2018-19 was just 16% for HT consumers, as against 48% fixed component of ACoS.

The table below showcases the fixed/ variable breakup of ACoS along with their corresponding fixed-variable breakup of ABR and ACoS average for HT Industrial consumers. For the estimation of variable part of ARR, 60% of the total power purchase cost is taken as variable ARR for Gujarat Discoms. For the estimation of ABR, the variable tariff of respective consumer category (including FPPPA charge) is added to an estimated per unit charge for fixed tariffs. The fixed tariff of respective consumer category is converted into per unit charge assuming a load factor of 60%.

	FY2016-17	FY2017-18	FY2018-19
ACoS			
Total	5.69	5.81	5.87
Fixed	51%	51%	51%
Variable	49%	49%	49%
HT Industrial ABR			
Total	6.77	7.00	7.06
Fixed	16%	16%	16%
Variable	84%	84%	84%
ACoS Coverage			
HT Industrial	119%	121%	120%

Open access charges

In this sub-section, the open access charges applicable on various types of open access consumers is analysed. The open access charges for following types of consumers are discussed below –

- Conventional power through Non-Captive mode
- Conventional power through Captive mode
- Renewable power through Non Captive mode
- Renewable power through Captive mode

The open access charges differ for these different types of consumers, as charges like CSS and Additional Surcharge are not applicable on captive consumers. Further consumers taking renewable power, are offered discounts on open access charges by the Commission as renewable promotion measures.

Section 11 of the 'Procurement of Energy from Renewable Sources' Regulations issued by GERC in 2010, state that cross subsidy surcharge shall be exempt for third party sale from renewable energy sources.

'11. Third Party Sale from renewable energy sources shall be exempted from the cross-subsidy surcharge determined by the Commission from time to time.'

As per section 4.6 of the Solar FIT Tariff Order issued by GERC in 2015, no cross subsidy surcharge is to be levied on procurement of solar power from Non-REC projects, in case of third-party sale or captive use. However the order also specifies that transmission and wheeling charges would be levied.

'4.6 As a promotional measure for solar power, which is still in its nascent stage and not operating under REC mechanism, no cross-subsidy surcharge would be levied in case of third-party sale or captive use. However, normal open-access charges as specified in the Section titled "Transmission/ Wheeling Charges" would be levied from Consumers/ Users.'

On the other hand section 4.1 of the Wind FiT Order issued by GERC in 2016, allows 50% exemption on cross subsidy surcharge, additional surcharge and 50% exemption on distribution wheeling charges.

'4.1

.....

The third-party sale through open access is a commercial decision of the generator. Whenever any WTG sells the electricity under Third Party Sale, he shall be liable to pay transmission and wheeling charges and other charges as stated below:

(iii) 50% of Cross Subsidy Surcharge and Additional Surcharge, as applicable to normal open access consumers.

....

b) Wheeling of power to consumption site below 66 KV voltage level: In case the injection of power is at 66 kV or above and drawl is at below 66 kV , wheeling of electricity generated from wind power projects to the desired location(s) within the State, shall be allowed on payment of transmission charges and transmission losses applicable to normal open access consumers and 50% of wheeling charges and 50% of distribution losses of the energy fed into the grid as applicable to normal open access consumers.'

The discounts available for Solar and Wind Power on various open access charges in Gujarat is showcased in the table below.

Discount for Solar Power

Discounts for RE Power	Unit	FY2016-17	FY2017-18	FY2018-19
Cross Subsidy Surcharge	%	100%	100%	100%
Distribution Wheeling	%	0%	0%	0%
Transmission Charge	%	0%	0%	0%
Reactive energy Charge	%	0%	0%	0%
T&D losses	%	0%	0%	0%
Additional surcharge	%	0%	0%	0%

Discount for Wind Power

Discounts for RE Power	Unit	FY2016-17	FY2017-18	FY2018-19
Cross Subsidy Surcharge	%	50%	50%	50%
Distribution Wheeling	%	0%	0%	0%
Transmission Charge	%	50%	50%	50%
Reactive energy Charge	%	0%	0%	0%
T&D losses	%	0%	0%	0%
Additional surcharge	%	50%	50%	50%

The following general assumptions are taken while analysing the open access charges for various consumer type -

- 1 MW load
- 60% load factor for Non-RE power
- 18% load factor for RE Power
- 33 kV Connected voltage
- Long Term Open Access
- Solar in case of renewable power

The tables below showcase the open access charges applicable on various types of consumers as discussed above.

HT Industrial Consumers (Non-Captive, Conventional)

OA Charges	Unit	FY2016-17	FY2017-18	FY2018-19
Cross Subsidy Surcharge	Rs./Kwh	1.45	1.44	1.47
Transmission Charge	Rs./Kwh	0.20	0.27	0.29
Distribution Wheeling	Rs./Kwh	0.14	0.14	0.15
Reactive energy Charge	Rs./Kwh	0.00	0.00	0.01
Additional surcharge	Rs./Kwh	0.47	0.55	0.57
SLDC charges	Rs./Kwh	0.00	0.00	0.00
RPO	Rs./Kwh	0.10	0.10	0.13
Total	Rs./Kwh	2.35	2.50	2.60

HT Industrial Consumers (Non-Captive, RE)

OA Charges	Unit	FY2016-17	FY2017-18	FY2018-19
Cross Subsidy Surcharge	Rs./Kwh	0.00	0.00	0.00
Transmission Charge	Rs./Kwh	0.66	0.88	0.97
Distribution Wheeling	Rs./Kwh	0.14	0.14	0.15
Reactive energy Charge	Rs./Kwh	0.00	0.00	0.01
Additional surcharge	Rs./Kwh	0.47	0.55	0.57
SLDC charges	Rs./Kwh	0.01	0.01	0.00
RPO	Rs./Kwh	0.00	0.00	0.00
Total	Rs./Kwh	1.27	1.58	1.69

HT Industrial Consumers (Captive, Conventional)

OA Charges	Unit	FY2016-17	FY2017-18	FY2018-19
Cross Subsidy Surcharge	Rs./Kwh	0.00	0.00	0.00
Transmission Charge	Rs./Kwh	0.20	0.27	0.29
Distribution Wheeling	Rs./Kwh	0.14	0.14	0.15
Reactive energy Charge	Rs./Kwh	0.00	0.00	0.01
Additional surcharge	Rs./Kwh	0.00	0.00	0.00
SLDC charges	Rs./Kwh	0.00	0.00	0.00
RPO	Rs./Kwh	0.10	0.11	0.12
Total	Rs./Kwh	0.44	0.51	0.57

HT Industrial Consumers (Captive,RE)

Charges	Unit	FY2016-17	FY2017-18	FY2018-19
Cross Subsidy Surcharge	Rs./Kwh			
Transmission Charge	Rs./Kwh	0.66	0.88	0.97
Distribution Wheeling	Rs./Kwh	0.14	0.14	0.15
Reactive energy Charge	Rs./Kwh	0.00	0.00	0.01
Additional surcharge	Rs./Kwh			
SLDC charges	Rs./Kwh	0.01	0.01	0.00
RPO	Rs./Kwh			
Total	Rs./Kwh	0.80	1.03	1.12

Break Even Power Purchase Cost

The table below compares the retail tariff applicable on HT consumers against the open access charges applicable on such consumers. It can be observed that significant gap exists between retail tariffs and open access charges for HT Industrial consumers in case of conventional captive power, making it economically beneficial for them to migrate to open access.

Table: Comparison of OA charges & Break-even PPC for FY18-19 (HT-Industrial)

Parameters		Conventional Non-Captive	RE Non-Captive	Conventional Captive	RE Captive
Open Access Charges	A	2.60	1.69	0.57	1.12
Tariff (Variable)	B	5.97	5.97	5.97	5.97
Break Even PPC	C=B-A	3.36	4.28	5.40	4.84
Break Even PPC after losses	$C/(1+T\&D \text{ Loss})$	2.95	3.76	4.74	4.25

7.4.5. APTEL/ SERC cases regarding open access

Commission	Case No.	Year	Utility	OA Consumer	Brief description of case
APTEL	264 OF 2016	2017	PGVCL, GERC	GOKUL AGRO RESOURCES LTD.	<ul style="list-style-type: none"> Gokul sought NOC to obtain Open Access which was denied by PGVCL on the ground that the same legal entity having two separate connections need to merge the connections and for a premises there can be only one connection. PGVCL was supplying electricity to the two connections separately and was billing accordingly. Gokul claims that GERC (Electricity Supply Code) Regulations, 2005 do not provide for merger of two connections and due to non-merger of two connections, Gokul was incurring loss equivalent to 11.11% units consumption in individual connections, hence filed petition regarding the recovery of 11.11% charges in addition to monthly energy bill. PGVCL raised a preliminary objection that the State Commission has no jurisdiction to entertain the petition the dispute raised before it being a dispute between the consumer and the distribution licensee. However, APTEL opines that a consumer will be entitled to approach the State Commission in cases where there is a violation of the provisions of the said Act or the regulations framed by the State Commission or orders passed by the State Commission. The present case involves complex issues of merger of connections and 11% additional amount on energy bill not covered by the tariff order, therefore, the State Commission has jurisdiction to entertain Gokul's petition. http://aptel.gov.in/judgements/Judg2017/A.No.%20264%20of%202016%20&%20A%20No.%20667%20of%202016.pdf
GERC	1589 of 2016 1584 of 2016 1585 of 2016 1588 of 2016 1590 of 2016	2017	SLDC, UGVCL, GETCO	Bhagwati Autocast Limited, N. K Industries Limited, N. K. Proteins Limited, Pradip Overseas Limited, Steelcast Limited	<ul style="list-style-type: none"> Petition against notice issued by SLDC for cancellation of consent granted for Short-Term Open Access and subsequent abrupt granting/denial of NOC for STOA. That the NOC for Short-Term Open Access granted to the Petitioner by the Respondents, was cancelled on the ground that the drawal of power by the Petitioner had been less than 1 MW during certain time blocks in the month of January 2016. GERC stated that the withdrawal of the open access by the Respondent SLDC is not as per the provisions of the Open Access Regulations notified by the Commission. And also decided that the Respondents are not liable to pay compensation as claimed by the Petitioner. http://www.gercin.org/uploaded/document/e8e574c0-22ef-497e-a508-8c45e52c80be.pdf http://www.gercin.org/uploaded/document/11b0e8bf-cf6a-4001-a5be-9f284d3e2236.pdf

Commission	Case No.	Year	Utility	OA Consumer	Brief description of case
GERC	1515 of 2015 1516 of 2015	2016	SLDC, PGVCL	Saanika Industries Private Limited Kejriwal Geotech Private Limited	<ul style="list-style-type: none"> Petition against for illegal levy of transmission charges for non-traded days and short traded days in case of collective transactions. GERC claimed that petitioners are liable to pay transmission charges as per the GERC Open Access Regulations, 2011 and the first amendment. The claim of the petitioners that the CERC Open Access Regulations is applicable to the Collective Transactions for Transmission Charges is not legal, valid and acceptable and the same is rejected. The claim of the petitioners that they are not liable to pay transmission charges for non-traded/short-traded days and SLDC is required to refund the same is also not legal and valid and the same is rejected. The recovery of transmission charges for non-traded days and short-traded days by SLDC is legal and valid. http://www.gercin.org/uploaded/document/6d13d865-82b5-4ec4-8360-2d0c4ba7ba3b.pdf
APTEL	70 of 2015 Petition 1421 of 2014	2016	SLDC, PGVCL, GERC	Steelcast Limited	<ul style="list-style-type: none"> SLDC & PGVCL Filed appeal against GERC order wherein Steelcast had applied for grant of open access, the same was not provided by SLDC & PGVCL for the reason as operational constraints in the transmission and distribution network of the PGVCL, NOC was denied, hence Steelcast filed a petition which was admitted by GERC which claimed denial of Short Term Open Access was illegal and not in accordance with the State Commission's OA Regulations. APTEL opined that any dispute arising due to non-issuance of NOC by the Appellants has to be brought before the State Commission. In view of above, APTEL dismissed the appeal and agreed with the State Commission's finding that the action on the part of the Appellants in denying Short Term Open Access was neither right nor in accordance with the prevailing Regulations. http://aptel.gov.in/judgements/Judq2016/A.No.%2070%20of%202015.pdf
APTEL	84 OF 2015 Petition No. 1362 of 2013	2015	GUVNL, DGVCL, GERC	Essar Steel India Limited	<ul style="list-style-type: none"> Appeal against order where by the State Commission has allowed petition filed by Essar that the Distribution Licensee, is not entitled to claim Additional Surcharge whereas the appellants claimed that connectivity to Intra-State Network is not a pre requisite for levy of Additional Surcharge APTEL was in full agreement with the findings recorded by the State Commission in the Impugned Order and dismissed the present appeal for the reasons stated that the premises of Essar is located within the licensed area of the GUVNL, DGVCL and ceased to be connected to Intra-State Network and not a consumer of them

Commission	Case No.	Year	Utility	OA Consumer	Brief description of case
					<ul style="list-style-type: none"> The State Commission directed in view that there is no wheeling of power as Essar is not utilizing the transmission or distribution system and, therefore, is not liable to pay Additional Surcharge. http://aptel.gov.in/judgements/Judg2015/A.No.%2084%20of%202015.pdf Petition - http://www.gercin.org/uploaded/document/en_1421411514.pdf
GERC	1407, 1408, 1409, 1410, 1416, 1417, 1419, 1425, 1426, 1427 of 2014	2015	SLDC, GETCO, DGVCL	Sumeet Industries, Filatex India, Videocon Industries, Devika Fibers P, N. J. Textile I, Coulrtex Industries L, Mohit Industries	<ul style="list-style-type: none"> Petition filed against Withdrawal/denial of Short-Term Open Access due to rise in the Demand leading to grid constraint in the upstream network and denial of STOA by SLDC & GETCO for collective transaction GERC decided that the action of the respondent SLDC for curtailment of open access is unwarranted, illegal, arbitrary and in contravention of provisions of the Act and regulations framed under it Commission found that the contention of SLDC that there was upstream transmission congestion is incorrect and invalid and has failed to act in unbiased and independent manner. As regards compensation due to denial of open access by the respondents, in this regard it is to state that there is no provision in the regulations for such compensation in case of denial of open access http://www.gercin.org/uploaded/document/en_1421925729.pdf
APTEL	6 OF 2015 Petition no. 1301 of 2013	2015	GETCO, GERC	OPGS Power Gujarat Private Limited	<ul style="list-style-type: none"> GETCO filed appeal against GERC order in petition filed by OPG whereby it had revised the Long Term Open Access in BPTA entered between GETCO and OPG and rejected the claim of GETCO for payment of transmission charges by OPG not to encash the bulk guarantee upto period spec. APTEL allowed appeal and set aside GERC order holding GETCO responsible for delay in implementation of the dedicated transmission line which is not correct OPG has reserved capacity of 275 MW on the Intra-State Transmission Network. has not terminated the BPTA or surrendered the capacity. The above capacity has been blocked for the OPG by GETCO and cannot be given to others. In terms of the Open Access Regulations, OPG is liable to pay the transmission charges as determined by the State Commission based on per MW capacity booked irrespective of the actual use of the transmission line and is bound to pay the transmission charges as per the Regulation irrespective of whether it had used the transmission or not and other related payments applicable under the BPTA

Commission	Case No.	Year	Utility	OA Consumer	Brief description of case
					<ul style="list-style-type: none"> http://aptel.gov.in/judgements/Judg2015/A.No.%206%20of%202015.pdf
GERC	1430 of 2014	2014	SLDC, PGVCL, GETCO	Investment & Precision Casting Ltd	<ul style="list-style-type: none"> Petition filed against against not granting of NOC for Short Term Open Access for the month of June 2014 by SLDC GERC was of the opinion that action of the respondents to deny open access to the petitioner for the period of May, June and July, 2014 was illegal, arbitrary and contrary to the provisions of the Act and Regulations framed by the Commission. Since there is no provision in the Open Access Regulations for such compensation in case of denial of open access. Therefore, the claim for compensation is not accepted and the same is rejected. http://www.gercin.org/uploaded/document/en_1428137440.pdf
GERC	1412 of 2014 1413 of 2014 1414 of 2014	2014	PGVCL,	M. D. Inducto Cast P. Ltd, Gujarat Granito Asso. K B Ispat P. Ltd.	<ul style="list-style-type: none"> Petition filed against the notice issued by PGVCL for withdrawal of consent granted for short term open access under provisions of CERC (DSM and Related matters) Regulations, 2014. GERC decided that the present petitions succeed. The actions of respondents for denial of open access on grounds of underdrawal of more than 12 % from the schedule energy and underdrawal of power less than 1 MW is illegal and invalid and notices issued by them to the petitioners are without authority and in contravention of the Commission's Open Access Regulations. http://www.gercin.org/uploaded/document/en_1409034711.pdf

Commission	Case No.	Year	Utility	OA Consumer	Brief description of case
CERC	278/2010	2013	PGCIL, GUVNL, MPPTCL, WRPC, CSPDC, MSEDCL,	Torrent Power Limited	<ul style="list-style-type: none"> • Petition filed by Torrent against WRPC decision of Sharing of Transmission Charges for Inter-regional Links and claims that while availing long-term open access on the inter-State transmission system, it is not the beneficiary and is not liable for sharing of the transmission charges for inter-regional assets; the generating station itself cannot be its own beneficiary because it cannot purchase power from itself. • CERC directed that the petitioner is not liable to share the transmission charges for interregional links. The recoveries on this count already made from the petitioner shall be refunded to it within six months. • The petitioner as a long-term open access customer of the Western Region Transmission System is liable to bear the wheeling charges for the transmission lines of GETCO and MSETCL used for conveyance of Central Sector power outside the concerned States • http://www.cercind.gov.in/2013/orders/SO278%20 %202010.pdf

7.5. Chhattisgarh

Chhattisgarh is one of the mineral rich states in India having major reserves of precious stones, diamonds, iron ore, coal, limestone, dolomite, tin ore, bauxite and gold, making it an industry intensive state.

The power utilities in Chhattisgarh are segregated into generation (Chhattisgarh State Power Generation Company Ltd., CSPGCL), Transmission (Chhattisgarh State Power Transmission Company Ltd., CSPTCL) and Distribution (Chhattisgarh State Power Distribution Company Ltd., CSPDCL). Also there is Chhattisgarh SLDC (CSLDC) for intra-state grid monitoring and operations.

Key Parameters	
Peak demand	4,169 MW
Annual Units Available	25,832 MUs
Sales	21,675 MUs
Power Utilities	G - CSPGCL T - CSPTCL D - CSPDCL

The State has an installed capacity of 13,527 MW as on Feb 2019 and had a peak demand of 4,169 MW in FY2017-18 (as per CERC LGBR report, FY2018-19). The total energy sales in the state has increased in the last 3 years from 19,831 MUs to 21,675 MUs.

The analysis of open access status review is performed for State owned Discom i.e. CSPDCL in Chhattisgarh.

7.5.1. Regulatory Review

In this section a detailed review is performed of the open access regulations issued by State Electricity Regulatory Commissions (SERCs) to analyse –

- Evolution of open access regulations in the state along with their key amendments
- Eligibility conditions and restrictions for availing open access, along with types of open access allowed
- Process of applying for open access
- Provisions for open access charges
- Any other regulation/ policies relevant to open access

Evolution of open access regulations

In line with the provisions of Electricity Act 2003, the state of Chhattisgarh issued Open Access Regulations in the year 2005 and subsequently replaced them with a set of new regulations namely 'Chhattisgarh State Electricity Regulatory Commission (Connectivity and Intra-State Open Access) Regulations, 2011'. These regulations were amended in the year 2012. The table summarizes the evolution of open access regulations over time along with the key amendments made thereof.

Year	Regulation/ Amendment	Key Amendment/Provisions
2005	OA Regulation	-
2011	OA Regulation	-
2012	Amendment	<ul style="list-style-type: none"> Bulk consumers who are not connected through dedicated feeders disallowed open access Requirement added to submit NOC along with open access application Distribution wheeling charge for inter-state LTOA/ MTOA, to be paid on the basis of energy approved considering 100% load factor on the allotted capacity

Open access eligibility

The Open Access regulations issued by CSERC in 2011 and its amendment thereof in 2012 define the eligibility criteria's for consumers that can avail open access, based on various technical and commercial considerations. Based on the prevalent regulations, these eligibility requirements and restrictions in the state of Chhattisgarh are as follows –

Contract Demand	- 1 MW or above
Feeder level conditions	- Bulk consumers who are not connected through dedicated feeders, not allowed open access
Voltage level conditions	- Open access can be availed by consumers availing supply at 33KV or above and is connected to grid
Additional Provisions	-

The relevant provisions of the regulations are reproduced below –

'5 (1) Subject to the provisions of these regulations, intra-State users or an applicant seeking open access for one MW and above shall be eligible for open access...'

(5) Provided that the bulk consumers who are not connected through dedicated feeders shall not be allowed open access unless exempted by the Commission for reasons to be recorded in writing .Bulk consumers availing open access shall be subject to load-restriction, if required.'

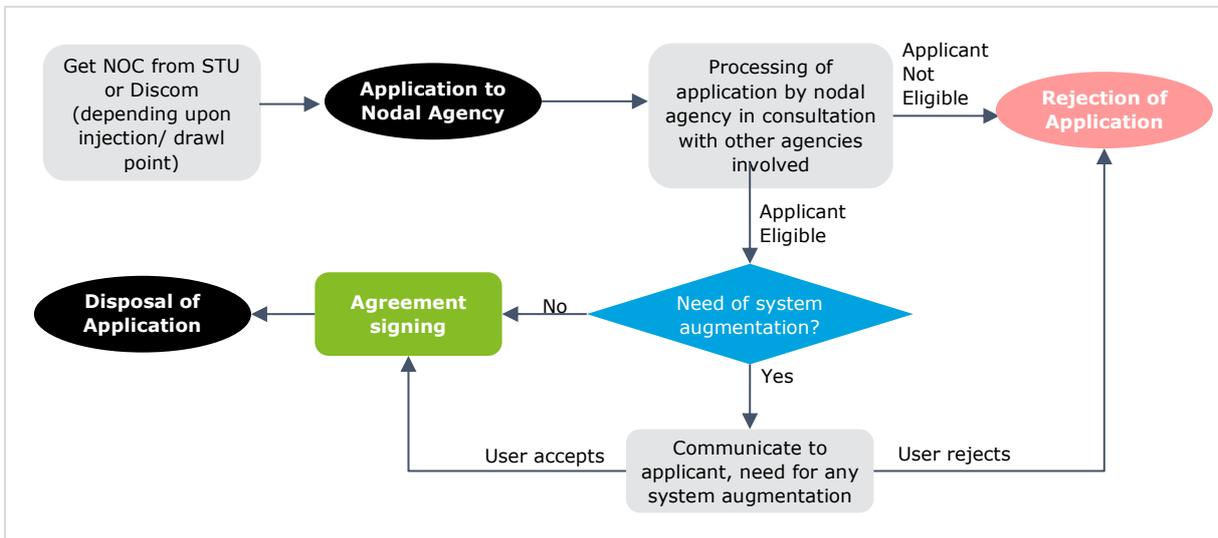
Further it is noted that the procedures for availing open access prepared by state SLDC, allow only those consumers connected above 33 kV to avail open access.

'1.3.1 Applicant should have connectivity through a dedicated feeder emanating from a grid sub-station (33 kV and above) of license with on-line data (metering and monitoring) communication facility to SLDC'

Open access application process

In Chhattisgarh, either the STU or Discom acts as the Nodal Agency for accepting open access applications, depending upon the injection/drawal point of power.

As per **clause 12 & 13 of open access regulations 2011 (Amended 2012)**, the complete procedure to get open access for the State of Chhattisgarh is represented below in the form of a flow chart.



The table below summarises the key features of the process related to getting Open Access -

	Long Term OA	Medium Term OA	Short Term OA
Nodal Agency	<ul style="list-style-type: none"> • CTU – if generator and buyer are in diff. states • STU – if generator and buyer are in Chhattisgarh 	<ul style="list-style-type: none"> • CTU – if generator and buyer are in diff. states • STU – if generator and buyer are in Chhattisgarh 	<ul style="list-style-type: none"> • RLDC – if generator and buyer are in diff. states • SLDC – if generator and buyer are in Chhattisgarh

	Long Term OA	Medium Term OA	Short Term OA
	<ul style="list-style-type: none"> • Discom – if generator and buyer are in Chhattisgarh & STU is not involved 	<ul style="list-style-type: none"> • Discom – if generator and buyer are in Chhattisgarh & STU is not involved 	<ul style="list-style-type: none"> • Discom – if generator and buyer are in Chhattisgarh & STU is not involved
Time-period	90 Days	30-40 days	10 days
Documents	<ul style="list-style-type: none"> • Consent of Transco/ Discom (depending upon drawal/injection point) • Application Fee • Bank Guarantee • PPA • Documentary Evidence of grid connectivity • Declaration of not having entered into PPA or bilateral agreement for the capacity on which Open Access is sought 	<ul style="list-style-type: none"> • Consent of Transco/ Discom (depending upon drawal/injection point) • Application Fee • Bank Guarantee • PPA • Documentary Evidence of grid connectivity • Declaration of not having entered into PPA or bilateral agreement for the capacity on which Open Access is sought 	<ul style="list-style-type: none"> • Consent of Transcom/ Discom (depending upon drawal/injection point) • Application Fee • Declaration of not having entered into PPA or bilateral agreement for the capacity on which Open Access is sought • Registration certificate of SLDC, CSPTCL • PPA • No Dues Certificate
Cost	<ul style="list-style-type: none"> • Consent from Discom/Tranco: Rs. 2 Lacs • Application Fee: Rs. 2-4 Lacs, basis location of drawal/ injection point • Bank Guarantee: Rs. 10,000 per MW 	<ul style="list-style-type: none"> • Consent from Discom/Tranco: Rs. 1 Lacs • Application Fee: Rs. 1-2 Lacs, basis location of drawal/ injection point • Bank Guarantee: Rs. 10,000 per MW 	<ul style="list-style-type: none"> • Consent from Discom/Tranco: Rs. 2,500 • Application Fee: Rs. 2,500 – 5,000, basis location of drawal/ injection point

From the table above and the application process for open access in the State, based on the prevalent regulations, it can be observed that the applicant is required to take a separate NOC from Discom or Transco, before applying for open access to the nodal agency. The nodal agency scrutinizes the application along with the no objection certificate and then communicates any deficiency if there to the applicant or grants consent of Open access based on the time frame and nature of open access as per the regulations.

The Discom/ STU verifies the following before granting the consent/ NOC for open access –

- Existence of infrastructure necessary for time-block-wise energy metering and accounting in accordance with the provisions of the State Grid Code in force;
- Availability of capacity in the distribution network

It should also be noted that, as per prevalent regulations, in case the nodal agency has not communicated any deficiency or defect in the application within 2-7 working days from the date of receipt of application, or refusal/ consent within 10-30 working days from the date of receipt of the application, consent/ NOC shall be deemed to have been granted.

Open access charges

The open access regulations in the state of Chhattisgarh, define the following types of open access charges –

- 1) Transmission charges
- 2) Wheeling charges
- 3) SLDC charges
- 4) Unscheduled Interchange (UI) charges
- 5) Reactive energy charges
- 6) Cross Subsidy Surcharge
- 7) Additional Surcharge
- 8) Standby charge

9) Energy losses

Unscheduled Interchange (UI) Charges are applicable to open access consumers based on the mismatch between the scheduled and the actual drawl at drawl points and scheduled and the actual injection at injection points. UI charges levied on consumers shall be governed by the CERC (UI charges and related matters), Regulation, 2009 till the notification of CSERC (Intra-State ABT, Unscheduled Interchange charges and related matters) Regulations and thereafter it will be as per the regulations to be notified and amendments, if any.

The billing and payment of the **reactive energy charges** by the open access customers shall be as approved by the Commission from time to time.

Apart from the charges discussed in above, which are contingent upon the type of schedule and power drawn by open access consumers, the major open access charges in the State of Chhattisgarh, are discussed in detail in the sub-sections below.

Cross Subsidy Surcharge

The open access regulations in the State of Chhattisgarh, prescribe a set methodology for the calculation of Cross Subsidy Surcharge (CSS). The regulations state that the CSS shall be calculated based on the average cost method by taking the difference between the average tariff for such supply voltage for the consumer of subsidizing category and the average cost of supply for the licensee.

'33 (6) b) iii) Such surcharge shall be based on the current level of cross-subsidy of the tariff category / tariff slab and / or voltage level to which such consumer, belong or are connected to, as the case may be. It is to be calculated based on the average cost method by taking the difference between the average tariff for such supply voltage for the consumer of subsidizing category and the average cost of supply for the licensee'

In the tariff orders issued by CSERC, the CSS is calculated separately for each voltage level. The table below represents the Cross Subsidy Surcharge for various voltage levels for the last three financial years.

Cross Subsidy Surcharge	Units	FY2017	FY2017-18	FY2018-19
220/132 kV	Rs./Kwh	1.16	1.68	1.23
33 kV	Rs./Kwh	1.21	1.26	1.49

Distribution Wheeling Charges

The open access regulations in the state of Chhattisgarh, does not prescribe a set methodology for the calculation of distribution wheeling charges, however it states that, these charges shall be as determined by the Commission under section 62(1)(c) of the Act, and shall be applicable as per the tariff order issued by the Commission from time to time.

Further the open access regulations in Chhattisgarh provide that for LTOA/ MTOA consumers using inter-state open access, the distribution wheeling charges payable shall be computed by considering 100% load factor on the allotted capacity.

'33 (2) Provided that the wheeling charges for using State grid by the long-term or medium-term open access customers for inter-State power transaction shall be payable on the basis of energy approved by the Central Transmission Utility (CTU). The energy approved shall be computed by considering 100 % load factor on the allotted capacity for bilateral transaction by the Central Transmission Utility (CTU).'

The table below represents the Distribution Wheeling charges applicable on all open access consumer categories for the last three financial years –

Distribution Wheeling charges	Units	FY2016-17	FY2017-18	FY2018-19
For all OA consumers	Rs./Kwh	0.28	0.24	0.25

Transmission Charges

The open access regulations issued in 2012, in the state of Chhattisgarh state that the transmission charges determined by Commission from time to time are to be shared among all long-term open access customers and medium-term open access customers as per allotted capacity proportionately.

33 (1) (a) The transmission charges for use of the intra-State transmission system shall be recovered from the long-term open access customers and the medium-term open access customers in accordance with terms and conditions of tariff specified by the Commission from time to time. These charges shall be as determined by the Commission under section 62(1)(b) of the Act, and shall be applicable as per the tariff order issued by the Commission from time to time. These charges shall be shared by the long-term open access customers and medium-term open access customers as per allotted capacity proportionately.

Accordingly for the purpose of analysis in this report, the transmission charges determined by the Commission are divided by the total load of utility to determine Transmission Charges for LTOA/MTOA consumers.

For Short Term Open Access, the open access regulations define the following formula for calculation of transmission charges –

$ST_RATE = TSC / \text{Net annual estimated energy input to the transmission system of STU/transmission licensee for the relevant year,}$

Where:

ST_RATE is the rate for short-term open access customer in Rs per kwh or in Rs/MWh

"TSC" means the annual transmission charges or annual revenue requirement on account of the transmission system as determined by the Commission.

The Commission determines transmission charges for STOA in its respective tariff orders. The table below represents the Transmission charges for OA consumer categories for the last three financial years –

Transmission charges	Units	FY2016-17	FY2017-18	FY2018-19
STOA	Rs./Kwh	0.29	0.24	0.35
LTOA/MTOA	Rs/MW/month	1,69,156	1,48,844	1,78,422

Energy losses

The open access regulation in the State of Chhattisgarh state that open access consumers shall bear energy losses for transmission and distribution networks, as approved by Commission from time to time.

Further the regulations also provide that for procuring renewable power through open access, the transmission and distribution charges would be charged as 6% of the energy injected.

'33 (14) The charges related to transmission and wheeling charges shall be 6% of the energy input into the system for the consumer using State grid for procuring power from renewable energy based power generating stations located in the State. Other than these charges, they shall not be liable to pay any transmission charges or wheeling charges either in cash or kind.'

The table below represents the energy losses for all open access consumer categories for the last three financial years –

T&D Losses	Units	FY2016-17	FY2017-18	FY2018-19
For Conventional Power				
Distribution 33kV	%	6%	6%	6%
Transmission	%	3.22%	3.22%	3.22%
Total	%	9.22%	9.22%	9.22%

T&D Losses	Units	FY2016-17	FY2017-18	FY2018-19
For Renewable Power				
Total	%	6%	6%	6%

Additional Surcharge

The open access regulations in the State of Chhattisgarh, allow for charging of an Additional Surcharge to allow Discoms to recover power purchase commitments, that has been and continues to be stranded due to migration of consumers to open access.

The regulations however does not prescribe a set methodology for the calculation of additional surcharge, and states that the additional surcharge shall be decided by the Commission on case to case basis after due regulatory process. The Commission has not approved any additional surcharge for Discoms in the last three years.

Standby Charge

The open access regulations issued by CSERC in 2011, provide for standby arrangements that can be availed by open access consumers on payment of stand-by charges for energy drawn. The regulations define standby charges as 1.5 times of per unit average tariff of HT and EHT consumers, in case of drawl upto contracted capacity of open access and 2 times of per unit average tariff for HT and EHT consumers for drawl above contracted capacity of open access.

'33 (11) In case of outages of generator supplying to a consumer through open access, standby arrangements should be provided by the distribution licensee on the payment of charges as specified by the Commission.....

For drawl of power up to the contracted capacity of open access, the tariff for availing stand by support from the distribution licensee shall be 1.5 times of the per unit average tariff of HT and EHT consumers as decided by the Commission in tariff order from time to time.

For drawl of power in excess of the contracted capacity of open access, the tariff for availing stand by support from the distribution licensee shall be two times of the per unit average tariff of HT and EHT consumers as decided by the Commission in tariff order from time to time.'

The table below represents the Standby charges applicable for open access consumers for the last three financial years –

Standby Charge	Units	FY2016-17	FY2017-18	FY2018-19
For all OA consumers	Rs./Kwh	11.27	11.44	11.06

SLDC surcharge

Section 33 (3) of the open access regulations in Chhattisgarh, states that open access consumers shall pay scheduling and system operation charges to SLDC, as determined by the Commission. The Commission in its tariff orders have determined Rs. 2000 per day of SLDC charge, applicable on STOA consumers. The table below represents the SLDC surcharges for open access consumer categories for the last three financial years –

SLDC surcharge	Units	FY2016-17	FY2017-18	FY2018-19
Operating Charges for STOA	Rs./day	2,000	2,000	2,000

RPO Obligation

Section 4.3 of the CSERC Renewable Purchase Obligation and REC Framework Implementation Regulations of 2016, provide for RPO Obligations applicable for open access consumers procuring conventional power, as follows -

RPO Obligation	Units	FY2016-17	FY2017-18	FY2018-19
Solar	%	1.50%	2.00%	3.50%
Non-Solar	%	6.50%	7.00%	7.50%
Total	%	8.00%	9.00%	11.00%

7.5.2. Open access activity review

In this section a detailed review is performed of the existing level and past trend of Open Access activity in the respective state. In the absence of detailed data from State utilities, the data from CERC market monitoring report has been analysed for the State of Chhattisgarh in the sub-sections below.

Number of open access consumers and open access sales

The tables below provide the number of open access consumers and open access sales in the State of Chhattisgarh as per the CERC Market Monitoring Reports.

Number of OA consumers	Units	FY2015-16	FY2016-17	FY2017-18
IEX	Nos.	45	45	45
PXIL	Nos.	34	35	36
Total	Nos.	79	80	81

OA Sales	Units	FY2015-16	FY2016-17	FY2017-18
Bilateral Sale (A1)	Gwh	583	1,933	203
Bilateral Purchase (A2)	Gwh	2,432	2,957	2,970
Bilateral Net (A)	Gwh	1,849	1,024	2,767
Exchange Sale (B1)	Gwh	1,102	980	741
Exchange Purchase (B2)	Gwh	689	327	218
Exchange Net (B)	Gwh	-413	-653	-522
DSM Over Drawal (C1)	Gwh	422	445	429
DSM Under Drawal (C2)	Gwh	548	444	259
DSM Net (C)	Gwh	126	-1	-170
OA Purchase (A2+B2)	Gwh	3,122	3,284	3,188
Net Purchase (A+B+C)	Gwh	1,562	370	2,075

It can be observed from the data gathered from CERC market monitoring report that the open access activity in the State of Chhattisgarh has shown a flat trend in last three years.

Review of open access applications

As per the information collected from State utilities, the table below provides the number of open access applications received in the State of Chhattisgarh for last three financial years. It should be noted that the number of applications received is significantly higher than the number of open access consumers as majority of the applications are of short-term in nature, with each consumer submitting multiple applications in a year.

	Inter-state	Intra-state	Total
FY2015-16	122		122
FY2016-17	70	17	87
FY2017-18		52	52

The number of open access applications is decreasing in recent years. Most of the consumers were from inter-state category initially, in recent time more consumers are from Intra state open access.

Also from the data of open access applications provided by the State utilities, the analysis is performed on the percentage of applications rejected by nodal agency and the major reasons for their rejection. The table below provides the number and percentage of open access applications rejected in the past years.

	FY16	FY17	FY18
Number of OA applications received	122	87	52
Number of OA applications rejected	1	17	13
% of OA applications rejected	1%	20%	25%

It can be observed that the rejection rate of open access applications has increased significantly in recent years. Majority of the applications with status 'Not Approved' are mentioned to be as per request of consumer.

7.5.3. Commercial Review

In this section, the consumer category wise sales and the load profile of consumers is analysed in order to understand the potential of open access migration in the state. Potential of open access migration would be higher in states with higher share of HT industrial and HT commercial sales, along with a profile of consumers with higher loads.

The consumer category wise sales data is taken from respective tariff orders of the Commission.

HT sales as a % of total sales

The table below represents the consumer category wise sales in the state of Chhattisgarh for CSPDCL.

Consumer category wise sales	Units	FY17	FY18	FY19
HT Sales				
HV-2: Mines	Gwh	1,855	604	828
HV-3: Other Industrial	Gwh	1,474	2,750	2,208
HV-4: Steel Industries	Gwh	4,044	4,587	4,773
HV others	Gwh	1,232	1,409	1,411
Sub-Total	Gwh	8,605	9,350	9,220
LT Sales				
Sub-Total	Gwh	11,227	12,441	12,455
Total	Gwh	19,831	21,791	21,675
HT industrial Sales (HV-2, HV-3 and HV-4) as % of total sales	%	37%	36%	36%

As per the sales data, HT industrial sales form approx. 36% of the overall sales in the state.

7.5.4. Tariff and open access charges review

In this section a detailed review of the retail tariff applicable on HT Industrial and HT Commercial consumers and open access charges is performed.

The breakup of fixed and variable tariff is analysed and compared against the fixed and variable cost of Discom. Higher is the gap between the fixed cost of Discom and fixed tariff collected from cosnumers, higher would be the impact on Discom due to open access migration, as the fixed tariff recovered from consumers would not be sufficient to cover the fixed cost of Discom.

Further the gap between retail tariff applicable on HT consumers and open access charges is analysed to understand the probability of consumers to migrate to open access. Higher is the gap between open access charges and the retail tariff, higher is the probability of consumers to migrate to open access.

Review of retail tariff charged to HT consumers

Based on the data provided in the Tariff Order, the ACoS Coverage for HT consumers in the State has deteriorated and is above the limit of 120%. Also the fixed tariff (i.e. demand charges) for HT consumers is not sufficient to cover the fixed costs of Discom. The average realization from fixed charges in FY2018-19 was just 12% for HT consumers, as against 58% fixed component of ACoS.

The table below showcases the fixed/ variable breakup of ACoS along with their corresponding fixed-variable breakup of ABR and ACoS average for HT Industrial consumers. For the estimation of variable part of ARR, 60% of the total power purchase cost is taken as variable ARR for CSPDCL. For the estimation of ABR, the variable tariff of respective consumer category is added to an estimated per unit charge for fixed tariffs. The fixed tariff of respective consumer category is converted into per unit charge assuming a load factor of 60%. Further the variable tariffs for HT categories is determined in per KVAh terms by HERC. Power Factor of 95% is assumed for estimating variable tariff in per kwh terms. The ACoS coverage is taken as per the tariff orders of respective years.

OA Charges	FY2016-17	FY2017-18	FY2018-19
ACoS			
Total	6.04	6.41	6.20
Fixed	55%	56%	58%
Variable	45%	44%	42%
HV other Industrial ABR			
Total	6.87	7.55	7.50
Fixed	13%	11%	12%
Variable	87%	89%	88%
ACoS Coverage			
HV Other Industrial	132%	140%	132%

Open access charges

In this sub-section, the open access charges applicable on various types of consumers is analysed. The open access charges for following types of consumers are discussed below –

- Conventional power through Non-Captive mode
- Conventional power through Captive mode
- Renewable power through Non Captive mode
- Renewable power through Captive mode

The open access charges differ for these different types of consumers, as charges like CSS and Additional Surcharge are not applicable on captive consumers. Further consumers taking renewable power, are offered discounts on open access charges by the Commission as renewable promotion measures.

As per Section 33 (6) of the open access regulations issued by CSERC in 2011, 50% exemption on CSS is available to open access consumers procuring renewable power.

'33 (6) b) (v) For consumers procuring power through renewable energy based power generating plant, the cross subsidy surcharge shall be 50% of the cross subsidy surcharge determined for that year.'

Further the regulations also provide that for procuring renewable power through open access, the transmission and distribution charges would be charged as 6% of the energy injected. Therefore 100% exemption is taken on transmission charges and distribution wheeling charges for the purpose

of analysis in this report and instead a 6% loss is assumed for procuring renewable power through open access.

'33 (14) The charges related to transmission and wheeling charges shall be 6% of the energy input into the system for the consumer using State grid for procuring power from renewable energy based power generating stations located in the State. Other than these charges, they shall not be liable to pay any transmission charges or wheeling charges either in cash or kind.'

Further as per the clause 14 of terms and conditions of HV tariff specified in the tariff order by CSERC for FY2018-19 for CSPDCL, SLDC charge is also exempted for renewable power procurement.

'14. Intra-State Open Access Charges for Renewable Energy transactions

- a) Transmission Charges in cash for long-term/medium-term/short-term open access - NIL*
- b) Wheeling Charges in cash for long-term/medium-term/short-term open access - NIL*
- c) SLDC Charges (Operating Charges) for long-term/medium-term/short-term open access - NIL*
- d) Total Transmission Charges or Wheeling Charges or Combination thereof in kind (energy losses) for long-term/medium-term/short-term open access - 6%*
- e) Cross-Subsidy Surcharge -*

.....

iii. The Cross Subsidy Surcharge payable is 50% of the Cross Subsidy Surcharge determined for that year.....'

The discounts available for renewable power on various open access charges according to Chhattisgarh open access regulations and Tariff orders are showcased in the table below.

Discounts for RE Power	Unit	FY2016-17	FY2017-18	FY2018-19
Cross Subsidy Surcharge	%	50%	50%	50%
Distribution Wheeling	%	100%	100%	100%
Transmission Charge	%	100%	100%	100%
SLDC Charge	%	100%	100%	100%

The following general assumptions are taken while analysing the open access charges for various consumer type -

Assumptions

- 1 MW load, Non-Captive consumers
- Non-RE power
- 60% load factor
- 33 kV Connected voltage
- Long Term Open Access
- Solar in case of renewable power

HV Other industrial Consumers (Non-Captive, Conventional)

The tables below showcase the level of various OA charges for HT Industrial consumers:

OA Charges	Unit	FY2016-17	FY2017-18	FY2018-19
Cross Subsidy Surcharge	Rs./Kwh	1.21	1.26	1.49
Distribution Wheeling	Rs./Kwh	0.28	0.24	0.25
Transmission Charge	Rs./Kwh	0.39	0.34	0.41
SLDC Operating charge	Rs./Kwh	0.00	0.00	0.00
RPO	Rs./Kwh	0.08	0.09	0.11
Total	Rs./Kwh	1.96	1.93	2.27

HV Other industrial Consumers (Non-Captive, RE)

OA Charges	Unit	FY2016-17	FY2017-18	FY2018-19
Cross Subsidy Surcharge	Rs./Kwh	0.61	0.63	0.75
Distribution Wheeling	Rs./Kwh	0.00	0.00	0.00
Transmission Charge	Rs./Kwh	0.00	0.00	0.00
SLDC Operating charge	Rs./Kwh	0.00	0.00	0.00
RPO	Rs./Kwh	0.00	0.00	0.00
Total	Rs./Kwh	0.61	0.63	0.75

HV Other industrial Consumers (Captive,Conventional)

Charges	Unit	FY2016-17	FY2017-18	FY2018-19
Cross Subsidy Surcharge	Rs./Kwh	0.00	0.00	0.00
Distribution Wheeling	Rs./Kwh	0.28	0.24	0.25
Transmission Charge	Rs./Kwh	0.39	0.34	0.41
SLDC Operating charge	Rs./Kwh	0.00	0.00	0.00
RPO	Rs./Kwh	0.08	0.09	0.11
Total	Rs./Kwh	0.75	0.67	0.78

HV Other industrial Consumers (Captive,RE)

Charges	Unit	FY2016-17	FY2017-18	FY2018-19
Cross Subsidy Surcharge	Rs./Kwh	0.00	0.00	0.00
Distribution Wheeling	Rs./Kwh	0.00	0.00	0.00
Transmission Charge	Rs./Kwh	0.00	0.00	0.00
SLDC Operating charge	Rs./Kwh	0.00	0.00	0.00
RPO	Rs./Kwh	0.00	0.00	0.00
Total	Rs./Kwh	0.00	0.00	0.00

HV Mines Consumers (Non-Captive, Conventional)

The tables below showcase the level of various OA charges for HT Industrial consumers:

OA Charges	Unit	FY2016-17	FY2017-18	FY2018-19
Cross Subsidy Surcharge	Rs./Kwh	1.21	1.26	1.49
Distribution Wheeling	Rs./Kwh	0.28	0.24	0.25
Transmission Charge	Rs./Kwh	0.39	0.34	0.41
SLDC Operating charge	Rs./Kwh	0.00	0.00	0.00
RPO	Rs./Kwh	0.08	0.09	0.11
Total	Rs./Kwh	1.96	1.93	2.27

HV Mines Consumers (Non-Captive, RE)

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Cross Subsidy Surcharge	Rs./Kwh	0.61	0.63	0.75
Distribution Wheeling	Rs./Kwh	0.00	0.00	0.00
Transmission Charge	Rs./Kwh	0.00	0.00	0.00
SLDC Operating charge	Rs./Kwh	0.00	0.00	0.00
RPO	Rs./Kwh	0.00	0.00	0.00
Total	Rs./Kwh	0.61	0.63	0.75

HV Mines Consumers (Captive, Conventional)

Charges	Unit	FY2016-17	FY2017-18	FY2018-19
Cross Subsidy Surcharge	Rs./Kwh	0.00	0.00	0.00
Distribution Wheeling	Rs./Kwh	0.28	0.24	0.25
Transmission Charge	Rs./Kwh	0.39	0.34	0.41
SLDC Operating charge	Rs./Kwh	0.00	0.00	0.00
RPO	Rs./Kwh	0.08	0.09	0.11
Total	Rs./Kwh	0.75	0.67	0.78

HV Mines Consumers (Captive,RE)

Charges	Unit	FY2016-17	FY2017-18	FY2018-19
Cross Subsidy Surcharge	Rs./Kwh	0.00	0.00	0.00
Distribution Wheeling	Rs./Kwh	0.00	0.00	0.00
Transmission Charge	Rs./Kwh	0.00	0.00	0.00
SLDC Operating charge	Rs./Kwh	0.00	0.00	0.00
RPO	Rs./Kwh	0.00	0.00	0.00
Total	Rs./Kwh	0.00	0.00	0.00

HV Steel industries Consumers (Non-Captive, Conventional)

The tables below showcase the level of various OA charges for HT Industrial consumers:

OA Charges	Unit	FY2016-17	FY2017-18	FY2018-19
Cross Subsidy Surcharge	Rs./Kwh	1.21	1.26	1.49
Distribution Wheeling	Rs./Kwh	0.28	0.24	0.25
Transmission Charge	Rs./Kwh	0.39	0.34	0.41
SLDC Operating charge	Rs./Kwh	0.00	0.00	0.00
RPO	Rs./Kwh	0.08	0.09	0.11
Total	Rs./Kwh	1.96	1.93	2.27

HV Steel industries Consumers (Non-Captive, RE)

OA Charges	Unit	FY2016-17	FY2017-18	FY2018-19
Cross Subsidy Surcharge	Rs./Kwh	0.61	0.63	0.75
Distribution Wheeling	Rs./Kwh	0.00	0.00	0.00
Transmission Charge	Rs./Kwh	0.00	0.00	0.00
SLDC Operating charge	Rs./Kwh	0.00	0.00	0.00
RPO	Rs./Kwh	0.00	0.00	0.00
Total	Rs./Kwh	0.61	0.63	0.75

HV Steel industries Consumers (Captive, Conventional)

Charges	Unit	FY2016-17	FY2017-18	FY2018-19
Cross Subsidy Surcharge	Rs./Kwh			
Distribution Wheeling	Rs./Kwh	0.28	0.24	0.25
Transmission Charge	Rs./Kwh	0.39	0.34	0.41
SLDC Operating charge	Rs./Kwh	0.00	0.00	0.00
RPO	Rs./Kwh	0.08	0.09	0.11

Total	Rs./Kwh	0.75	0.67	0.78
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HV Steel industries Consumers (Captive,RE)

Charges	Unit	FY2016-17	FY2017-18	FY2018-19
Cross Subsidy Surcharge	Rs./Kwh	0.00	0.00	0.00
Distribution Wheeling	Rs./Kwh	0.00	0.00	0.00
Transmission Charge	Rs./Kwh	0.00	0.00	0.00
SLDC Operating charge	Rs./Kwh	0.00	0.00	0.00
RPO	Rs./Kwh	0.00	0.00	0.00
Total	Rs./Kwh	0.00	0.00	0.00

Break Even Power Purchase Cost

The table below compare the retail tariff applicable on HT consumers against the open access charges applicable on such consumers. IT can be observed that significant gap exists between retail tariffs and open access charges for HV-mines, HV-other industrial and HV steel industries, making it economically beneficial for them to migrate to open access.

Table: Comparison of OA charges & Break-even PPC for FY18-19 (HV-Other Industrial)

Parameters		Conventional Non-Captive	RE Non-Captive	Conventional Captive	RE Captive
Open Access Charges	A	2.27	0.75	0.78	0.00
Tariff (Variable)	B	6.63	6.63	6.63	6.63
Break Even PPC	C=B-A	4.36	5.89	5.85	6.63
Break Even PPC after losses	$C/(1+T\&D \text{ Loss})$	4.00	5.55	5.36	6.26

Table: Comparison of OA charges & Break-even PPC for FY18-19 (HV-Mines)

Parameters		Conventional Non-Captive	RE Non-Captive	Conventional Captive	RE Captive
Open Access Charges	A	2.27	0.75	0.78	0.00
Tariff (Variable)	B	6.74	6.74	6.74	6.74
Break Even PPC	C=B-A	4.47	5.99	5.96	6.74
Break Even PPC after losses	$C/(1+T\&D \text{ Loss})$	4.09	5.65	5.46	6.36

Table: Comparison of OA charges & Break-even PPC for FY18-19 (HV-Steel Industries)

Parameters		Conventional Non-Captive	RE Non-Captive	Conventional Captive	RE Captive
Open Access Charges	A	2.27	0.75	0.78	0.00
Tariff (Variable)	B	6.16	6.16	6.16	6.16
Break Even PPC	C=B-A	3.89	5.41	5.38	6.16
Break Even PPC after losses	$C/(1+T\&D \text{ Loss})$	3.56	5.11	4.93	5.81

7.5.5. APTEL/ SERC cases regarding open access

In order to understand the issues faced by open access consumers in the state of Chhattisgarh, various APTEL and SERC cases related to open access were analysed. The table below provides a summary of such APTEL/ SERC cases.

Commission	Case No.	Year	Utility	OA Consumer	Brief description of case
APTEL	APPEAL NO.210 of 2012	2013	CSPTCL	Bharat Aluminium Company Limited	<ul style="list-style-type: none"> • Appeal filed by Bharat Aluminium Company Limited against CSPTCL and SLDC seeking for the refund of the excess amount paid in form of transmission charges against the rate of Rs.270/MW with respect to the state commission issued tariff order for the FY 2011-12. • The appellant claims that it is not liable to pay Transmission Charges as the same is against the provisions of the Central Commission's Open Access Regulations, 2008; moreover, the scheduling of OA was done in advance prior to 09.04.2011. Thus the Appellant is liable to pay the Transmission Charges as existed on the date of the scheduling i.e. transmission charges as specified by the Central Commission in Regulation 16 of the Central Commission's Open Access Regulations, 2008. • APTEL dismissed the appeal stating that Appellant has to pay the transmission charges for use of the intra-state transmission system at the rate determined by the State Commission by its transmission tariff order dated 31.3.2011 with effect from 9.4.2011. • APTEL also mentioned that In case of any revision in transmission charges by the state commission from the date of advance scheduling but before the date of actual use, the difference has to be paid by the user of the transmission system. However, the transmission charges cannot be revised after actual use of the system. • In this case, there is no retrospective revision of the intra-State transmission charges by the State Commission. Therefore, the transmission charges for intra-State transmission as applicable on the date of actual use of transmission system has to be paid for by the Appellant. • http://aptel.gov.in/judgements/Judg2014/Appeal_No.210_of_2012.pdf

Commission	Case No.	Year	Utility	OA Consumer	Brief description of case
APTEL	Appeal No. 89 of 2014	2014	CSPDCL,CSP TCL,CSERC	M/S Vandana Vidhyut Limited Raipur, M/s R.R. Energy Limited Raigarh, M/s Shree Nakoda Ispat Limited Raipur and M/s Indra PowerGen Private Limited Raipur	<ul style="list-style-type: none"> • Appeal filed by M/S Vandana Vidhyut Limited Raipur, M/s R.R. Energy Limited Raigarh, M/s Shree Nakoda Ispat Limited Raipur and M/s Indra PowerGen Private Limited Raipur against the order dated 06.02.2014 passed by CSERC claiming initiation against revoking punishment for non-compliance of directions by State Commission for under injection of the electricity generated by them as declared by the state commission in the above mentioned order. • According to respondents, CSPDCL and SLDC under injections were made by the appellants (generating companies) between April 2011 to December 2011 without informing nodal agency about the reasons and the period. Moreover, appellants did not surrender the non-utilized capacity making the grid uncertain. • However the appellants also claimed that they are not sure about their stand in the case and also the CSERC has no jurisdiction over the matter • APTEL decided as per CERC amended regulations 2009 of Central Commission's (open access in inter-State transmission) Regulations 2008 all disputes arising under these regulations shall be decided by Central Commission based on an application made by the aggrieved person and the state commission is not legally competent to adjudicate in case of any violation. Thus dismissing the under injection charges levied against the appellants by the state commission. • http://aptel.gov.in/judgements/Judg2015/A.No.%2089%20of%202014.pdf

Commission	Case No.	Year	Utility	OA Consumer	Brief description of case
APTEL	APPEAL NO. 75 OF 2015	2015	CSPDCL	M/S Jindal Power Steel Limited	<ul style="list-style-type: none"> • Appeal filed by CSPDCL against Jindal Power Steel Limited in reference to the impugned order 02.01.15 passed by the state commission. In the above-mentioned order, the state commission has decided to accord the captive status to all the 4 units of 135 MW of Jindal Power Steel. • However according to CSPDCL out of the 4 units set up by Jindal Power Steel Limited, unit 1 & 2 are connected to the steel plant under captive mode, however, the other 2 units i.e. unit 3 & 4 are not connected with the industrial load rather they are connected to the switchyard of the power plant. Hence as per CSPDCL units 3 & 4 of DCPD are not in captive mode but maintaining a merchant Status. • According to CSPDCL unit 3 & 4 of DCPD should have been treated as merchant power rather than categorizing the same under captive use resulting into loss of revenue on account of non-recovery of cross subsidy surcharge since the same would not be applicable to the captive units. • APTEL dismissed the appeals filed by CSPDCL as it did not find any ground to consider units 3 & 4 of DCPD not under captive status. Thus no CSS would be levied on Units 3 & 4 of Jindal Power steel limited. • http://aptel.gov.in/judgements/Judg2016/A.No.%2075%20of%202015%20&%2069%20of%202015%20&%20IA%20No.%20105%20of%202015.pdf
APTEL	APPEAL NO. 72 OF 2015	2015	CSPDCL	M/S Salasar Steel & Power Ltd.	<ul style="list-style-type: none"> • Appeal filed by M/S Salasar Steel & Power challenging the impugned order dated 23.12.2014 passed by the State Commission. The order states that POC and cross subsidy charges are for different purposes and may be recovered at the same time for the same period if the Captive Power Plan (CPP) is not fulfilling the criteria for captive status. • Appellant has power plant of 15MW and 65 MW along with 2x100 TPD sponge iron manufacturing unit which for the period January, 2009 to May, 2013 could not qualify as a Captive Power Plant (CPP), thus resulting in levying both Parallel operation charges and CSS for the above mentioned time period on the appellant.

Commission	Case No.	Year	Utility	OA Consumer	Brief description of case
					<ul style="list-style-type: none"> • APTEL dismissed the appeals filed by the appellant since POC, cross subsidy surcharge are for different reasons, and the same can be recovered at the same time as per situation. It withheld the order of the state commission and provided its consent on levying both the charges on M/S Salasar Steel & Power over the period in question i.e., January 2009 to May 2013. • http://aptel.gov.in/judgements/Judg2016/A.No.%2072%20of%202015.pdf

7.6. Jharkhand

Situated in the eastern part of India, Jharkhand, known as the “land of forests” was carved out as a separate State from the southern part of Bihar in 2000. The state has a population of 3,29,88,134 (2011 census) and 79,716 square km of area.

The State of Jharkhand, in January, 2014 has unbundled the erstwhile Jharkhand State Electricity Board (JSEB) into Jharkhand Urja Vikas Nigam Limited (JUVNL – Holding Company), Jharkhand Urja Utpadan Nigam Limited (JUUNL – State Genco), Jharkhand Urja Sancharan Nigam Limited (JUSNL – State Transco) and Jharkhand Bijli Vitaran Nigam Limited (JBVNL – State Discom).

Key Parameters	
Peak demand	1,322 MW
Annual Units Available	7753
Sales	10,197 MUs
Power Utilities	G - JUUNL T - JUSNL D - JBVNL, DVC, Tata Steel, JUSCO, SAIL Bokaro

The state had peak demand of 1,332 MW in FY2017-18 (as per CERC LGBR report, FY2018-19). The state had an installed power generation capacity of 1764 MW as on 31st March 2018. The total energy sales in the state has increased from 8,651 MUs to 10,197 MUs.

The state is being served by multiple distribution licensee’s viz. JBVNL, DVC, Tata Steel, JUSCO and SAIL Bokaro. Two licensees, viz. DVC and JUSCO have overlapping geographical boundaries with the State distribution utility, JBVNL. Out of the total load at the State level, about 60% is being served by JBVNL while remaining 40% is being served by the other 4 distribution licensees. JSERC is also working on the draft regulations for operation of parallel distribution licensee in the state.

The analysis of open access status review is performed for state owned Discom i.e. JBVNL in Jharkhand, as private distribution utilities serve limited areas falling under their respective SEZs or parallel operation areas.

7.6.1. Regulatory Review

In this section a detailed review is performed of the open access regulations issued by State Electricity Regulatory Commissions (SERCs) to analyse –

- Evolution of open access regulations in the state along with their key amendments
- Eligibility conditions and restrictions for availing open access, along with types of open access allowed
- Process of applying for open access
- Provisions for open access charges
- Any other regulation/ policies relevant to open access

Evolution of open access regulations

In line with the provisions of Electricity Act 2003, the state of Jharkhand issued Open Access Regulations in the year 2005 namely ‘JERC (Open Access in Intra-State Transmission & Distribution) Regulations’. This regulation was amended in the year 2010. Further in 2010 a Balancing and Settlement Regulations for open access was issued by JSERC in 2010. The open access regulations in the State were replaced with a new set of regulations in the year 2016 namely ‘Jharkhand State Electricity Regulatory Commission (Terms and Conditions for Intra-State Open Access) Regulations’ in order to align with CERC regulation on Grant of Connectivity Regulations for Long Term and Medium Term Open Access. The table summarizes the evolution of open access regulations over time along with the key amendments made thereof.

Year	Regulation/ Amendment	Key Provisions/ Amendment
2005	OA Regulation	-
2010	Amendment	• Open Access customer defined as Open Access Consumer (OAC) or Open Access Generator (OAG) including captive plants

Year	Regulation/ Amendment	Key Provisions/ Amendment
2016	OA Regulation	<ul style="list-style-type: none"> Eligibility to avail Open Access: 1 MW and above (not applicable in case of captive generating plants that is availing Open Access for its own use). Requirement of minimum scheduling of eight hours for STOA consumers in OA regulations

Open access eligibility

The Open Access regulations issued by JSERC in 2016, define the eligibility criteria's for availing open access, based on various technical and commercial considerations. Based on the prevalent regulations, these eligibility requirements and restrictions in the state of Jharkhand are as follows –

Contract Demand	<ul style="list-style-type: none"> - 1 MW or above - Limitation of 1MW not applicable for generating plants including captive as well
Feeder level conditions	<ul style="list-style-type: none"> - In case of consumers connected at 33 KV or below or to common feeder can avail open access subject to restriction imposed by licensee - Consumers connected at 66KV or above or Independent feeders, shall not be subject to power cuts
Voltage level conditions	-
Additional Provisions	- Consumer taking bulk supply from Discom and supplying to multiple users, cannot take OA

The relevant provisions of the regulations are reproduced below –

'10.3 Subject to the provisions of these Regulations, Open Access shall be permissible to all Consumer having demand of 1 MW and above (except generating plants):

Provided that when a person, who has established a captive generating plant, opts for Open Access for carrying the electricity to the destination of his own use, the limitation of 1 MW shall not be applicable'

10.6 Subject to the provisions of these Regulations, consumers who are connected at 33 kV or below Sub Station or connected on common feeder irrespective of their voltage of supply, shall be allowed open access subject to the condition that they agree to rostering restrictions including power cut imposed by the licensee on the feeders serving them.

10.8 The consumers availing single point supply from the distribution licensee and making electricity available to multiple users shall not be eligible to avail open access'

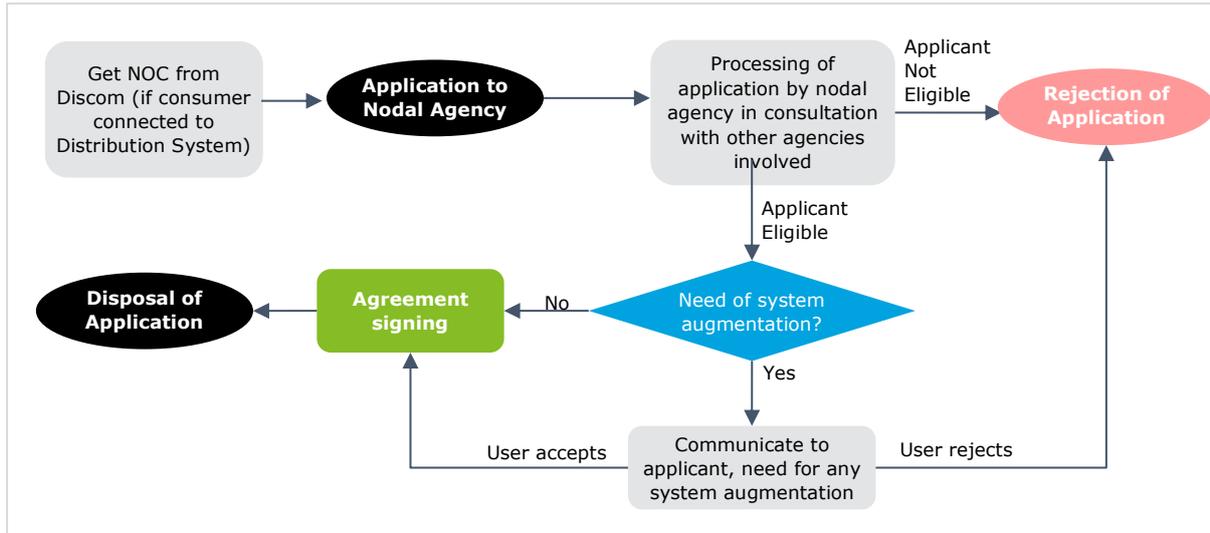
Open access application process

In Jharkhand, either STU or SLDC (housed within STU) acts as the Nodal Agency for accepting open access applications, depending upon the type of open access.

The procedure to apply for open access is defined in **regulation 15 of Open Access Regulations 2016**. In addition to the requirements mentioned under regulation 15, as per clause 16.2 of the Open Access Regulations, NOC is required from Discom if consumer connected to distribution systems seeks to avail open access.

'16.2 In respect of a Consumer connected to a distribution system seeking Open Access, such Consumer shall be required to submit the consent of the distribution licensee concerned. The distribution licensee shall convey its consent to the applicant by email or fax or by any other usually recognised mode of communication, within three (3) working days of receipt of the application.'

The procedure to get open access in the State of Jharkhand is represented below in the form of a flow chart.



The table below summarises the key features of the process related to getting open access -

	Long Term OA	Medium Term OA	Short Term OA
Nodal Agency	<ul style="list-style-type: none"> • STU – for intra-state open access • CTU – for inter-state open access 	<ul style="list-style-type: none"> • SLDC – for intra-state open access • CTU – for inter-state open access 	<ul style="list-style-type: none"> • SLDC – for intra-state open access • RLDC – for inter-state open access
Time-period	40–180 days	40 days	7-10 days
Documents	<ul style="list-style-type: none"> • Application Fee • Undertaking of not having entered into PPA or any other bilateral agreement with more than one person for the capacity for which Open Access is sought • Consent from Discom (if consumer connected to Distribution System) 	<ul style="list-style-type: none"> • Application Fee • Undertaking of not having entered into PPA or any other bilateral agreement with more than one person for the capacity for which Open Access is sought • Consent from Discom (if consumer connected to Distribution System) 	<ul style="list-style-type: none"> • Application Fee • Undertaking of not having entered into PPA or any other bilateral agreement with more than one person for the capacity for which Open Access is sought • Consent from Discom (if consumer connected to Distribution System)
Cost	<ul style="list-style-type: none"> • Application Fee: Rs. 2 Lacs • Bank Guarantee: Rs. 10,000 per MW 	<ul style="list-style-type: none"> • Application Fee: Rs. 1 Lac • Bank Guarantee: Rs. 10,000 per MW 	<ul style="list-style-type: none"> • Application Fee: Rs. 5,000
Minimum Scheduling hours	<ul style="list-style-type: none"> • NA 	<ul style="list-style-type: none"> • NA 	<ul style="list-style-type: none"> • Minimum 8 hours

No separate procedures for open access applications are issued by STU/ SLDC in West Bengal.

From the table above and the application process for open access in the State, it can be observed that the applicant is not required to take a separate NOC in case of LTOA or MTOA, before applying to the nodal agency. Instead the nodal agency itself coordinates with relevant agencies for granting of consent/ NOC to the applicant for open access. This is also due to the fact that the nodal agency for LTOA/ MTOA in the State is the Transco itself.

However in case of STOA, consent from Discoms is to be submitted along with the application to nodal agency.

'15.21

.....

Provided that in respect of a Consumer connected to a distribution system seeking inter-State short-term Open Access, the SLDC, before giving its consent to the RLDC as required under the Central Commission's regulations, shall require the Consumer to submit the consent of the distribution licensee concerned.'

As per clause 16.3 of the Open Access Regulations 2016, the Discom while processing the open access application of generating stations, shall verify the following before granting the consent/ NOC for open access –

- Existence of infrastructure necessary for time-block-wise energy metering and accounting in accordance with the provisions of the State Grid Code in force;
- Availability of capacity in the distribution network, and.
- Availability of RTU and communication facility to transmit real- time data to SLDC.

It should also be noted that, as per clause 16.7 of the Open Access Regulations 2016, in case the nodal agency has not communicated any deficiency or defect in the application within 2 working days from the date of receipt of application, or refusal/ consent within 3 working days from the date of receipt of the application, consent/ NOC shall be deemed to have been granted.

Open access charges

The open access regulations in the state of Jharkhand, define the following types of open access charges –

- i. Transmission/ Distribution charges
- ii. Scheduling and system operation charges
- iii. Cross Subsidy Surcharge
- iv. Additional Surcharge
- v. Standby charges
- vi. Imbalance charge
- vii. Reactive energy charges
- viii. Parallel operation charges

In case of **Standby Power**, the regulations entitle Discoms to charge applicable temporary supply tariff to open access consumers.

Imbalance Charges are applicable only in cases of deviations between the schedule and the actual injection/drawal in respect of an open access consumer, who is not an embedded open access consumer, based on intra-state ABT as notified by Commission. Embedded Consumers are required to pay deviation charges as per procedure specified under JSERC Balancing & Settlement Mechanism for Open Access) Regulations, 2010 and as amended from time to time.

The **Reactive Energy charges** are to be applicable in terms of VAR compensation in such a way that there is no drawl/ injection of reactive power from the transmission/distribution network.

Parallel operation charges shall be applicable on open access consumers having a captive power plant running in parallel to the grid of distribution and transmission licensees. The parallel operation charges shall be charged at Rs. per KVA per month basis as determined by the Commission from time to time.

Apart from the charges discussed in above, which are contingent upon the type of schedule and power drawn by open access consumers, the major open access charges in the State of Jharkhand, are discussed in detail in the sub-sections below.

Cross Subsidy Surcharge

As per clause 21.5 of the Open Access Regulations 2016, the Cross Subsidy Surcharge shall be determined by Commission in accordance with the principles and formula stipulated in National Tariff Policy. The Commission for the first time determined the cross subsidy surcharge in its Tariff Order

for FY 2018-19. The table below represents the Cross Subsidy Surcharge for HT Industrial and HT Commercial consumer categories for the last financial year.

Cross Subsidy Surcharge	Units	FY2018-19
LT Industry	Rs./Kwh	0.51
HTS		
11 kV	Rs./Kwh	1.67
33 kV	Rs./Kwh	1.62
HTSS		
11 kV	Rs./Kwh	0.71
33 kV	Rs./Kwh	1.24
MES, RTS and Others		
11 kV	Rs./Kwh	0.8
33 kV	Rs./Kwh	1.26
132 kV	Rs./Kwh	1.23

Distribution Wheeling Charges

Clause 19.1 of the Open Access Regulations 2016 in the State of Jharkhand define a common methodology for determination of transmission/ distribution charges. For LTOA/ MTOA consumers, the regulations state that the charges for use of intra-state transmission system/ distribution system, after deducting the adjustable revenue from the short-term Consumers, shall be shared by the LTOA and MTOA Consumers as per allotted capacity proportionately.

'19.1 (a) The charges for use of the intra-state transmission system/ distribution system shall be determined by the Commission in accordance with the terms and conditions of tariff notified by the Commission from time to time and after deducting the adjustable revenue from the short-term Consumers, these charges shall be shared by the long-term open access Consumers and medium-term open access Consumers as per allotted capacity proportionately;'

Further for determining a Rs. per MW per Day transmission/ distribution charges for STOA consumers, the Open Access Regulations 2016 define the following formula -

$$ST_RATE = 0.5 \times [AFC/ Av_CAP] / 365$$

Where:

"ST_RATE" is the rate for short-term access Consumer in Rs per MW per day.

"AFC" means the Annual Fixed Transmission/Distribution Charges of the S.T.U transmission or distribution licensee for the previous financial year determined by the Commission.

"Av_CAP" means the average electrical power in MW served by the system during the previous financial year.

In its Tariff Order for Discom for FY2018-19, the Commission has determined a per unit wheeling charge by dividing the wires business ARR by energy sales. Different wheeling charge is calculated for each voltage level. The table below represents the Distribution Wheeling charges determined by Commission in its Tariff Order.

Wheeling charges	Units	FY2018-19
LT	Rs./Kwh	1.07
11 kV	Rs./Kwh	0.45
33 kV and above	Rs./Kwh	0.17

Transmission Charges

As discussed in the previous sub-section of Distribution Wheeling Charges, clause 19.1 of the Open Access Regulations 2016 in the State of Jharkhand define a common methodology for determination of transmission/ distribution charges. For LTOA/ MTOA consumers, the regulations state that the charges for use of intra-state transmission system/ distribution system, after deducting the adjustable revenue from the short-term Consumers, shall be shared by the LTOA and MTOA Consumers as per allotted capacity proportionately. Further a formula is prescribed in the regulations for determination of Rs. per MW per day transmission/ distribution charge for STOA consumers.

However in its Tariff Order for STU for FY2016-17, the Commission has determined a per unit transmission charge by dividing the total ARR of STU by projected transmission units in MUs. The Order also mentions that the tariff shall remain applicable till amended or modified or extended by an Order of the Commission.

Transmission charges	Units	FY2016-17	FY2017-18	FY2018-19
Transmission Tariff	Rs./Kwh	0.25	0.25	0.25

Scheduling and System Operation Charges

As per regulation 20.1 of the Open Access Regulations 2016, LTOA and MTOA Consumers shall be liable to pay SLDC fees and charges as determined by the Commission from time to time. SLDC is functioning under STU in the State of Jharkhand. The Commission in its Tariff Order for STU for FY2016-17, did not approve ARR for SLDC or SLDC charges, citing failure of STU to submit separate accounts of SLDC.

Further the regulations state that a composite operating charge @ Rs.2,000/- per day or part of the day shall be payable by a STOA Consumer for each transaction to the SLDC or as determined by the Commission from time to time.

Energy Losses

Apart from Open Access charges, the regulations also provide for losses to be made applicable on open access transactions, as determined by Commission from time to time.

Section 29.4 of the Open Access Regulations 2016 in the State of Jharkhand define different level of losses applicable on different voltage levels as follows -

'29.4 The Open Access Consumers availing supply at 220/132 kV, shall be required to bear only the transmission losses whereas the Consumers availing supply at 66/33 kV shall bear 15% of the distribution losses in addition to transmission losses. The Open Access Consumers connected at 11 KV shall bear 40% of the distribution losses in addition to transmission losses.'

However in its recent tariff order for Discom for FY2018-19, the Discom has approved voltage wise losses itself, instead of calculating a single aggregate Distribution Loss on which the percentages as per clause 29.4 of the Open Access Regulations would have been applied. The table below represents the voltage wise T&D losses adopted by Commission in its tariff orders for FY2018-19.

T&D losses	Units	FY2018-19
LT	%	17.61%
11 kV	%	8.31%
33 kV and above	%	3.43%

RPO Obligation

Renewable Purchase Obligations (RPO) are applicable on open access consumers taking supply from Conventional sources, according to clause 5.1 of the 'Jharkhand State Electricity Regulatory Commission (Renewable Energy Purchase Obligation and its compliance) Regulations' of 2016.

'5.1 The minimum percentage of Renewable Energy Purchase Obligation (RPO) as specified under Clause 5.2 of these Regulations shall be applicable to all Distribution Licensees in the State as well as to open access consumers and captive users within the State, subject to following conditions:'

Further clause 5.2 of the RPO Obligations define the quantum of RPO obligations as follows -

RPO Obligation	Units	2016-17	2017-18	FY2018-19
Solar	%	1.80%	3.75%	5.50%
Non-Solar	%	3.50%	4.00%	4.50%
Total	%	5.30%	7.75%	10.00%

Other Regulatory Provisions

Banking of Power Facility

Banking facility is provided in the state of Jharkhand under the Jharkhand State Solar Power Policy, issued in 2015. As per clause H, the banking facility is available for renewable power for both captive and third party open access consumers.

'H) Banking

Banking of 100% energy shall be permitted for all Captive and Open Access/Scheduled consumers during 12 months of the year. Banking charges shall be adjusted in kind @ 2% of the energy delivered at the point of drawl. The banking shall be from April to March'

Further the clause 5.22 of the JSERC (Determination of Tariff for Procurement of Power from Solar PV Power Project and Solar Thermal Power Project) Regulations of 2015, provide banking for all captive and open access/ scheduled consumers.

'5.22 Banking of 100% energy shall be permitted for all Captive and Open Access/Scheduled Consumers during all 12 months of the year. Banking charges shall be adjusted in kind @2% of the energy delivered at the point of drawal. The banking year shall be from April to March.

5.23 Drawals from banked energy shall not be permitted during five (5) month period from 1st April to 30th June and 1st February to 31st March of each financial year. In addition, drawls of banked energy during the Time of the Day (ToD) applicable during the peak hours, as specified in the respective Retail Supply Tariff Order, shall also not be permitted throughout the year. However, the provisions on banking pertaining to drawal restrictions shall be reviewed based on the power supply position in the state.'

Further the JSERC (Utilization of Surplus Capacity of Captive Power Plants based on conventional fuel) Regulation of 2010, provides banking facility for captive power plants.

'9.1 The banking of electricity shall be the process under which the CPP shall supply power to the grid, not with the intention of selling it to a third party but with the intention of exercising its eligibility to draw back this power from the grid in future.

9.2 The banking charges shall be 10% of the energy banked for the firm power and 20% of the energy banked for the infirm power by the CPP with the Licensee and the period of banking shall be of ten months starting from 1st of May every year.'

The table below summarises the applicability of banking provisions and banking charges for various types of consumers.

Applicability and Charges for Banking of Power	Non-RE Power	RE Power
Captive consumer	<ul style="list-style-type: none"> Available 10% for firm power and 20% for infirm power 	<ul style="list-style-type: none"> Available (for solar) 2% banking charge
Third party open access	<ul style="list-style-type: none"> Not available 	<ul style="list-style-type: none"> Available (for solar) 2% banking charge

7.6.2. Open access activity review

In this section a detailed review is performed of the existing level and past trend of Open Access activity in the respective State. As per CERC Market Monitoring Report, no open access consumers are registered on power exchanges in the State of Jharkhand.

Number of OA consumers – CERC Market Monitoring Reports	Units	FY19
IEX	Nos.	-
PXIL	Nos.	-
Total	Nos.	NIL

7.6.3. Commercial Review

In this section, the consumer category wise sales and the load profile of consumers is analysed in order to understand the potential of open access migration in the state. Potential of OA migration would be higher in states with higher share of HT industrial and HT commercial sales, along with a profile of consumers with higher loads.

The consumer category wise sales data is taken from respective tariff orders of the Commission. The data for load profile of HT consumers is collected from respective Discoms.

HT sales as a % of total sales

The table below represents the consumer category wise sales for JBVNL. As per the sales data, HT industrial sales form approx. 23% of the overall sales in the State.

JBVNL	Units	FY2016-17	FY2017-18	FY2018-19
HT Sales				
HT Industrial	Gwh	2,368	2,357	2,391
Railways and MES	Gwh	238	119	119
HT Others	Gwh	-	-	-
Sub-Total	Gwh	2,606	2,476	2,510
LT Sales				
Sub-Total	Gwh	6,045	6,746	7,686
Total	Gwh	8,651	9,223	10,197
HT Industrial Sales (as % of total sales)	%	27%	26%	23%

Load Profile of HT Consumers

The tables below showcase the load profile of HT Industrial consumers in Jharkhand for JBVNL for FY2018-19. Consumers falling in the load category of 1-10 MW form 73% of the overall HT sales and 97% of overall HT consumers.

Load Profile of HT consumers (FY2018-19)		
HT Industrial	Sales (Gwh)	No. of consumers (Gwh)
1-5 MW	483	127
6-10 MW	130	7
11-50 MW	162	4
51-100 MW	0	0
> 100 MW	0	0
1-5 MW	62%	92%

Load Profile of HT consumers (FY2018-19)		
HT Industrial	Sales (Gwh)	No. of consumers (Gwh)
6-10 MW	17%	5%
11-50 MW	21%	3%
51-100 MW	0%	0%
> 100 MW	0%	0%

7.6.4. Tariff and open access charges review

Review of retail tariff charged to HT consumers

The ACOS Coverage for HT consumers in the State has remained at 120% for the last three years. The fixed tariff (i.e. demand charges) for HT consumers is not sufficient to cover the fixed costs of Discom. The average realization from fixed charges in FY2018-19 was just 10% for HT consumers, as against 52% fixed component of ACoS.

The table below showcases the fixed/ variable breakup of ACOS along with their corresponding fixed-variable breakup of ABR and ACoS average for HT Industrial consumers. For the estimation of variable part of ARR, 60% of the total power purchase cost is taken as variable ARR for JBVNL. For the estimation of ABR, the variable tariff of respective consumer category is added to an estimated per unit charge for fixed tariffs. The fixed tariff of respective consumer category is converted into per unit charge assuming a load factor of 60%. Further the variable tariffs for HT categories is determined in per KVAh terms by PSERC. Power Factor of 95% is assumed for estimating variable tariff in per kwh terms.

	FY2016-17	FY2017-18	FY2018-19
ACoS			
Total	6.06	6.63	5.98
Fixed	39%	50%	52%
Variable	61%	50%	48%
HT Industrial ABR			
Total	6.94	6.94	6.75
Fixed	10%	10%	10%
Variable	90%	90%	90%
ACoS Coverage			
HT industrial	115%	105%	113%

Open access charges

In this sub-section, the open access charges applicable on various types of consumers is analysed. The open access charges for following types of HT Industrial and HT Commercial consumers are discussed below –

- Conventional power through Non-Captive mode
- Conventional power through Captive mode
- Renewable power through Non Captive mode
- Renewable power through Captive mode

The open access charges differ for these different types of consumers, as charges like CSS and Additional Surcharge are not applicable on captive consumers. Further consumers taking renewable power, are offered discounts on open access charges by the Commission as renewable promotion measures.

Section 5.1 of the JSERC (Determination of tariff for procurement of power from solar PV power project and solar thermal power project) Regulations of 2015, provide 50% discount on wheeling charges.

'5.1 To promote investment in solar PV and solar thermal power projects and encourage third party sale and Captive Power Plants, a 50% discount on wheeling charges and other surcharge on wheeling charges applicable to conventional form of generation shall be applicable for solar PV and solar thermal power projects in Jharkhand.'

Further section 10 of the Jharkhand State Solar Power Policy 2015 provides for discounts on CSS, wheeling charges, transmission charges and energy losses, as follows –

'10. Incentives

F) Wheeling Charges

Transmission and Distribution charges for wheeling of power generated from solar power projects through State Transco/ Discoms shall be as per wheeling charges specified by JSERC for wheeling within the State. The Govt. of Jharkhand will provide a grant of 4% of wheeling charges in terms of energy injected and the balance wheeling charges shall be borne by the project developer.

G) Cross Subsidy Surcharge

Cross subsidy surcharge shall be exempted from third party sale, provided the source of power is from solar power projects setup within the State.

N) Distribution Losses

Distribution losses shall be exempted only for solar power projects injecting at 33 kV or below irrespective of voltage level of the delivery point within Discom.'

For the purpose of analysis of open access charges in this report, 100% exemption on CSS and energy losses is taken as per the Solar Energy Policy 2015 and 50% discount on wheeling charges is taken as per the JSERC (Determination of tariff for procurement of power from solar PV power project and solar thermal power project) Regulations of 2015.

Discounts for Solar Power	Unit	FY2018-19
Cross Subsidy Surcharge	%	100%
Distribution Wheeling	%	50%
Transmission Charge	%	50%
Energy losses	%	100%

The following general assumptions are taken while analysing the OA charges for various consumer types -

- 1 MW load
- 60% load factor for Non-RE power
- 18% load factor for RE Power
- 33 kV Connected voltage
- Long Term Open Access
- Solar in case of renewable power

The tables below showcase the open access charges applicable on various types of consumers as discussed above.

HT Industrial Consumers (Non-Captive, conventional)

OA Charges	Unit	FY2018-19
Cross Subsidy Surcharge	Rs./Kwh	1.62
Distribution Wheeling	Rs./Kwh	0.17
Transmission Charge	Rs./Kwh	0.25

OA Charges	Unit	FY2018-19
RPO	Rs./Kwh	0.10
Total	Rs./Kwh	2.14

HT Industrial Consumers (Non-Captive, RE)

OA Charges	Unit	FY2018-19
Cross Subsidy Surcharge	Rs./Kwh	0.00
Distribution Wheeling	Rs./Kwh	0.09
Transmission Charge	Rs./Kwh	0.13
RPO	Rs./Kwh	0.00
Total	Rs./Kwh	0.21

HT Industrial Consumers (Captive, Conventional)

OA Charges	Unit	FY2018-19
Cross Subsidy Surcharge	Rs./Kwh	
Distribution Wheeling	Rs./Kwh	0.17
Transmission Charge	Rs./Kwh	0.25
RPO	Rs./Kwh	0.10
Total	Rs./Kwh	0.52

HT Industrial Consumers (Captive, RE)

OA Charges	Unit	FY2018-19
Cross Subsidy Surcharge	Rs./Kwh	0.00
Distribution Wheeling	Rs./Kwh	0.09
Transmission Charge	Rs./Kwh	0.13
RPO	Rs./Kwh	0.00
Total	Rs./Kwh	0.21

Break Even Power Purchase Cost

The table below compares the retail tariff applicable on HT consumers against the open access charges applicable on such consumers. It can be observed that significant gap exists between retail tariffs and open access charges for HT Industrial consumers in case of renewable and captive power, making it economically beneficial for them to migrate to open access.

Table: Comparison of OA charges & Break-even PPC for FY18-19

Parameters		Conventional Non-Captive	RE Non-Captive	Conventional Captive	RE Captive
Open Access Charges	A	2.14	0.21	0.52	0.21
Tariff (Variable)	B	6.05	6.05	6.05	6.05
Break Even PPC	C=B-A	3.91	5.84	5.53	5.84
Break Even PPC after losses	$C/(1+T\&D\text{ Loss})$	3.78	5.84	5.35	5.84

7.7. West Bengal

Situated in the eastern part of India, West Bengal has total population of 9,13,47,736 (census 2011) and area of 88,752 square km. West Bengal shares international borders with Bangladesh, Bhutan and Nepal. West Bengal is primarily dependent on agriculture and medium-sized industry, although services and heavy industries play an increasingly significant role in the economy of the state.

Electricity sector has been of great significance to the State, the state government along with the centre has taken key initiatives to increase the electricity access within the state in order to provide availability of reliable power to all households, industrial, commercial and all other electricity consuming entities. The state has three power distribution utilities – CESC Ltd. (in Kolkata region), India Power (in Asansol) and WESEDCL (in rest of the state). The state also has a Transmission Company, WBSETCL. The SLDC function is placed within WBSETCL itself.

Key Parameters	
Peak demand	8,137 MW
Annual Units Available	50,570 MUs
Sales	25,324 MUs
Power Utilities	G,D - WBSEDCL, CESC, India Power T - WBSETCL

The total energy sales in the state is around 35,800 MUs, combined of all three distribution utilities. Out of these WBSEDCL accounts for 70% of the sales i.e. 25,324 MUs. Due to non-availability of data for consumer category wise sales for CESC and India Power in tariff orders, and because WBSEDCL accounts for majority of the sales in the state, the analysis in this section has been limited to WBSEDCL.

The state had close to 1,0550 MW of installed capacity as on Feb 2019 and had a peak demand of 8,137 MW in FY2017-18 (as per CERC LGBR report, FY2018-19). The total energy sales in the State has increased in the last 3 years from 22655 MUs to 25324 Mus.

The analysis of open access status review is performed for state owned Discom i.e. WBSEDCL in West Bengal, as private distribution utilities serve limited areas of Kolkata or SEZs.

7.7.1. Regulatory Review

In this section a detailed review is performed of the open access regulations issued by State Electricity Regulatory Commissions (SERCs) to analyse –

- Evolution of open access regulations in the state along with their key amendments
- Eligibility conditions and restrictions for availing open access, along with types of open access allowed
- Process of applying for open access
- Provisions for open access charges
- Any other regulation/ policies relevant to open access

Evolution of open access regulations

In line with the provisions of Electricity Act 2003, introducing non-discriminatory open access to power networks and mandating SERCs to come with the enabling regulations, the WBERC issued regulations in the year 2004 which defined the phasing of open access and open access regulations in the year 2005 which defined terms and conditions of availing open access. These regulations were replaced with a new set of regulations namely WBERC (Phasing for Open Access in Distribution/ Sale of Electricity) Regulations, 2006 and West Bengal Electricity Regulatory Commission (Open Access) Regulations, 2007. The open access regulations of 2007 were further amended in 2009 to introduce reactive energy charges on open access consumers. The table summarizes the evolution of open access regulations over time along with the key amendments made thereof –

Year	Regulation/ Amendment	Key Amendment/provision
2004	OA Regulation	• Defined phasing of open access

Year	Regulation/ Amendment	Key Amendment/provision
2005	OA Regulation	• Defined terms and Conditions of availing open access
2006	Amendment	• Defined schedule of charges, fees & formats for open access
2006	OA Regulation	• Re-defined phasing of open access
2007	OA Regulation	-
2009	Amendment	• Introduced reactive energy charge for open access

Open access eligibility

The Open Access regulations issued by WBSERC in 2007 and the regulations issues in 2006 namely 'Phasing For Open Access in Distribution / Sale of Electricity', define eligibility criteria for availing open access, based on various technical and commercial considerations. Based on the prevalent regulations, these eligibility requirements and restrictions in the state of West Bengal are as follows –

Contract Demand	- 1 MW or above
Feeder level conditions	-
Voltage level conditions	-
Additional Provisions	-

The relevant provisions of the 'Phasing for Open Access in Distribution' regulations are reproduced below –

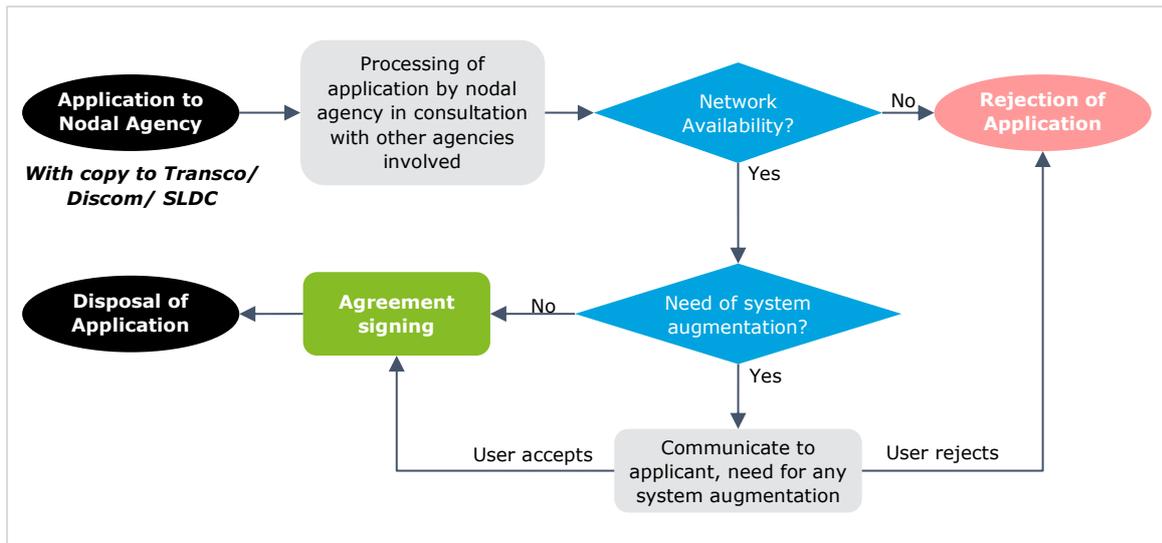
'3. Phasing of Open Access in Distribution / Sale of Electricity:

Sl.	Phase	Category of consumer	Time frame from which open access is allowed
<i>i</i>	1 st	Power from Co-Generation & Non-Conventional Source of Energy	1.04.2006
<i>ii</i>	2 nd	Consumers with connected load of 10 MW and exceeding 10 MW in single premises.	1.04.2007
<i>iii</i>	3 rd	Consumers with connected load of 5 MW and exceeding 5 MW in single premises	1.04.2008
<i>iv</i>	4 th	Consumers with connected load exceeding 1 MW in single premises	1.01.2009

Open access application process

In the State of West Bengal, as per the prevalent open access regulations, DISCOM/STU acts as the nodal agency for grant of intra-state open access, in accordance with the prevalent open access Regulations.

As per **Clause 9 and 10 of open access regulations 2017**, the complete procedure to get open access for the state of West Bengal is represented below in the form of a flow chart.



The open access regulations in the State define the following factors basis which capacity available for open access shall be considered by nodal agency –

- 1) Maximum load on distribution and associated systems recorded during previous year vis-à-vis Safe Capacity of the systems
- 2) Appropriate load growth potential on such systems
- 3) Additional investment planning on new or such distribution systems or impact of improvement in the distribution systems
- 4) Capacity already allotted for open access for the relevant period
- 5) Requirement, if any, of the State Grid Code or SLDC
- 6) Future availability of power
- 7) Load flow anticipated on network with outage of any one circuit running in parallel
- 8) Sensitivity of load
- 9) Network augmentation / reorganization plan to provide reliability in supply
- 10) Other factors, which are essential and may be required to be considered to ensure safe and economic operation of the systems and safety of grid or in the interest of consumer, if any

The table below summarises the key features of the process related to getting Open Access –

	Long Term OA	Short Term OA
Nodal Agency	<ul style="list-style-type: none"> • STU – if STU system is used • Discom – for other consumers 	<ul style="list-style-type: none"> • SLDC
Time-period	30 days if system strengthening not required	2- 3 days
Documents	<ul style="list-style-type: none"> • Application Fee • Format I 	<ul style="list-style-type: none"> • Application Fee • Format I
Cost	<ul style="list-style-type: none"> • Application Fee: Rs. 5,000 - 1 Lacs, basis Nature of open access source for supply and location of draw/ injection point 	<ul style="list-style-type: none"> • Application Fee: Rs. 1,000 – 20,000, basis Nature of open access source for supply and location of draw/ injection point

No separate procedures for open access applications are issued by STU/ SLDC in West Bengal.

From the table above and the application process for open access in the state, based on the prevalent regulations, it can be observed that the applicant not required to submit NOC along with the application to the Nodal Agency. The Nodal Agency shall itself coordinate with relevant agencies for granting of consent to the applicant for open access.

Open access charges

The open access regulations in the state of West Bengal, define the following types of OA charges:

- i. Transmission charges
- ii. Wheeling charges
- iii. Scheduling and system operation charges
- iv. Cross Subsidy Surcharge
- v. Energy losses

Apart from the open access charges specified above, Section 12 c) of the open access regulations issued in 2007 says that an open access consumer may enter into an agreement with a generator or Discom for the supply of standby power, at an agreed tariff. The regulations do not prescribe any fix tariff for standby power or methodology for its calculation.

The major open access charges in the state of West Bengal, are discussed in detail in the sub-sections below. The tariff order for FY2018-19 was not available therefore period from FY2015-16 to FY2017-18 is covered in the tables for open access charges provided in sub-sections below.

Cross Subsidy Surcharge

Section 14.3.10 of the open access regulations issued by the WBERC in 2007 define that CSS shall be computed as the difference between tariff applicable for the category of consumers being allowed open access and the cost avoided (per unit) by the Licensee in this regard.

The regulations further define that the cost avoided shall be calculated as follows –

$$\frac{\text{Weighted average of unit cost of pooled power purchase variable cost* and own generation fuel cost (against sent out energy), if any per unit}}{(100 - T \& D \text{ Loss in percentage as case allocable for the relevant open access case}) \times 0.01} + \text{Wheeling charges per unit as applicable to the relevant open access case}$$

However unlike other States, the WBERC does not determine a fixed Cross Subsidy Surcharge in its respective tariff orders for WBSEDCL. For the purpose of analysis in this report, the CSS is calculated for HT industrial and HT commercial consumers, based on the formula described above as per regulations. The table below represents the Cross Subsidy Surcharge for HT Industrial and HT Commercial consumer categories for the last three financial years.

Cross Subsidy Surcharge	Units	FY2015-16	FY2016-17	FY2017-18
HT Industrial	Rs./Kwh	3.36	3.67	3.54
HT Commercial	Rs./Kwh	3.74	4.12	3.99

Distribution Wheeling Charges

The open access regulations in West Bengal state that wheeling charges are to be payable by open access consumers to the Discom, as determined by the Commission for the relevant financial year in the tariff order.

A single distribution wheeling charge is calculated by the WBERC, for open access consumers connected at all voltage levels. As per section 14.3.2 (d) of the Open Access regulations issued by WBERC in 2007, STOA consumers shall be charged 80% of the wheeling charge applicable on LTOA consumers. The table below represents the Distribution Wheeling charges for open access consumers for the last three financial years. The Distribution charges for LTOA consumers provided in the table below are from respective tariff orders for WBSEDCL and 80% of LTOA's wheeling charges is taken as wheeling charges for STOA consumers.

Wheeling charges	Units	FY2015-16	FY2016-17	FY2017-18
LTOA	Rs./Kwh	1.03	1.04	1.19
STOA	Rs./Kwh	0.82	0.83	0.95

Transmission Charges

The open access regulations in West Bengal state that Open access consumer using intra-State transmission system shall pay transmission charges to the transmission licensee, as determined by the Commission for the relevant financial year.

Section 14.3.1 of the open access regulations in the State define the methodology for determination of Transmission charges. The regulations provide for transmission charges in Rs/MW/month for Long Term Customers and in Rs/MW/day for Short Term Customers.

The regulations further state that Transmission Service Charges payable by a Short Term Customer shall be calculated in accordance with the following methodology: -

$$ST_RATE = 0.25 \times [TSC / Av_CAP] / 365$$

Where,

ST_RATE is the rate for Short Term Customer in Rs. Per MW per day

ST_RATE shall be calculated and applied for transmission system of the STU or any other Transmission Licensee forming part of intra-State transmission system.

"TSC" means the Annual Transmission Service Charges as specified in the Tariff Regulations

"Av_CAP" means the average capacity that is actually transmitted for Long Term Customer in MW as will be decided by the Commission or as will be determined in the relevant transmission tariff order, if any, by the Commission in accordance with the Tariff Regulations

The Commission in its tariff orders for WBSETCL determines a transmission tariff applicable on long term users. The tariff for short term users is derived from transmission tariff for long term users using formula provided in open access regulations. The transmission charges for last three financial years is showcased in the table below:

Transmission charges	Units	FY2015-16	FY2016-17	FY2017-18
Long term	Rs./Mw/month	1,66,783	1,63,374	1,64,926
Short term	Rs./Mw/day	1,390	1,361	1,374

Scheduling and system operation charges surcharge

The open access regulations in West Bengal require open access consumers to pay SLDC charges for scheduling and system operation, as determined by the Commission from time to time in its Tariff Orders. The table below represents the SLDC surcharges, determined by the Commission, for the last three financial years. Similar to Wheeling Charges, the Commission has determined a single SLDC charge for all open access consumers.

Further Schedule C of the Open Access regulations issued by WBERC in 2007, state that a handling charge at the rate of 0.5% of the sum of transmission charges and wheeling charges shall be payable to SLDC by open access consumers taking co-generation or non-conventional/ renewable power.

SLDC surcharge	Units	FY2015-16	FY2016-17	FY2017-18
For all consumers	Rs./Kwh	0.005	0.005	0.005
Handling charge	% of T&D charge	0.5%	0.5%	0.5%

Energy Losses

Apart from Open Access charges, the regulations also provide for losses to be made applicable on open access transactions, as determined by Commission from time to time. As per section 14.5 of the open access regulations issued by WSERC in 2007, voltage wise losses are set at 4% for EHV level and 8% for HV level. For LV & MV levels, the regulations state that the Commission shall determine the losses level from time to time.

'14.5

The technical loss for transmission and distribution system for different voltage level will be as under for the purpose of these regulations:

EHV - 4% of the energy at the point of injection at this voltage level.

HV - 8% of the energy at the point of injection at this voltage level.

LV & MV - As will be determined by the Commission from time to time'

The table below represents the voltage wise T&D losses adopted by Commission in its tariff orders, for open access consumer over the last three financial years.

T&D losses	Units	FY2015-16	FY2016-17	FY2017-18
EHV	%	4.00%	4.00%	4.00%
HV	%	8.00%	8.00%	8.00%
LV & MV	%	17.50%	17.50%	17.50%

RPO Obligation

As per section 3 of the (Cogeneration and Generation of Electricity from Renewable Sources of Energy) Regulations issued by WBERC in 2013, the RPO Obligations applicable in the last three financial years is detailed in table below.

RPO Obligation	Units	FY2015-16	FY2016-17	FY2017-18
Solar	%	0.20%	0.25%	0.30%
Non-Solar	%	4.80%	5.25%	5.70%
Total	%	5.00%	5.50%	6.00%

Other Regulatory Provisions

Banking

As per clause 4.6.2 of the Term and Conditions of Tariff Regulations issued by WBERC in 2011, banking facility is available for captive generating plants, if at least 25% of its annual actual generation of such captive generating station is sold to the distribution licensee.

'4.6.2 A captive generating station shall be allowed to bank its generation with a distribution licensee, if at least 25% of its annual actual generation of such captive generating station is sold to the distribution licensee provided that such distribution licensee agrees to such banking mechanism through PPA and subject to the conditions as specified in clause (i), (ii), (iii) and (iv) of regulation 4.6.1.

Provided that such banked energy can be drawn by the owner of the captive generation at its drawal point in a barter mode in accordance with the terms and conditions as laid down in the PPA.

Provided also that for such banking arrangement and subsequent drawal in barter mode of energy from the distribution licensee the Transmission and Distribution losses of energy and wheeling charges for using distribution network of the distribution licensee can be mutually settled by the distribution licensee and the owner of the captive generation in their PPA, so long it is not against the interest of the consumer and after finalization of the PPA the same shall be sent to the Commission for concurrence.'

The table below summarises the applicability of banking provisions and banking charges for various types of consumers.

Applicability and Charges for Banking of Power	Non-RE Power	RE Power
Captive consumer	• Available	• Available

<i>Applicability and Charges for Banking of Power</i>	Non-RE Power	RE Power
	<ul style="list-style-type: none"> Charge for T&D of banked power to be mutually decided by Discom and consumer 	<ul style="list-style-type: none"> Charge for T&D of banked power to be mutually decided by Discom and consumer
Third party open access	<ul style="list-style-type: none"> Not available 	<ul style="list-style-type: none"> Not available

7.7.2. Open access activity review

In this section, review is performed of the existing level and past trend of Open Access activity in the respective State. As per CERC Market Monitoring Report, no open access consumers are registered on power exchanges in the State of Est Bengal.

Number of OA consumers – CERC Market Monitoring Reports	FY18-19
IEX	0
PXIL	0
Total	0

7.7.3. Commercial Review

In this section, the consumer category wise sales is analysed in order to understand the potential of open access migration in the State. Potential of open access migration would be higher in States with higher share of HT industrial and HT commercial sales, along with a profile of consumers with higher loads.

The consumer category wise sales data is taken from respective tariff orders of the Commission.

HT sales as a % of total sales

The table below represents the consumer category wise sales in the state of West Bengal for WBSSEDCL. As per the sales data, HT industrial and commercial sales form approx. 27% of the overall sales.

WBSSEDCL	Units	FY2015-16	FY2016-17	FY2017-18
HT Sales				
HT Commercial²⁴	Gwh	1,279	1,218	1,254
HT Industrial	Gwh	5,484	5,538	5,593
HT Others	Gwh	1,464	1,647	1,692
Sub-Total	Gwh	8,226	8,403	8,539
LT Sales				
Sub-Total	Gwh	14,429	15,380	16,785
Total	Gwh	22,655	23,783	25,324
HT Commercial Sales (as % of total sales)	%	6%	5%	5%
HT Industrial Sales (as % of total sales)	%	24%	23%	22%

7.7.4. Tariff and open access charges review

In this section a detailed review of the retail tariff applicable on HT Industrial and HT Commercial consumers and open access charges is performed.

The breakup of fixed and variable tariff is analysed and compared against the fixed and variable cost of Discom. Higher is the gap between the fixed cost of Discom and fixed tariff collected from

²⁴ Consisting of tariff categories HT Commercial, Sports Complex, Commercial Plantation and Cold Storage

consumers, higher would be the impact on Discom due to open access migration, as the fixed tariff recovered from consumers would not be sufficient to cover the fixed cost of Discom.

Further the gap between retail tariff applicable on HT consumers and open access charges is analysed to understand the probability of consumers to migrate to open access. Higher is the gap between OA charges and the retail tariff, higher is the probability of consumers to migrate to open access.

Review of retail tariff charged to HT consumers

The ACoS Coverage for HT consumers in the State has remained within +/- 20% for the last three years. The fixed tariff (i.e. demand charges) for HT consumers is not sufficient to cover the fixed costs of Discom. The average realization from fixed charges in FY2018-19 was just 12% for HT Industrial consumers and 11% from HT Commercial consumers, as against 52% fixed component of ACoS.

The table below showcases the fixed/ variable breakup of ACOS along with their corresponding fixed-variable breakup of ABR and ACoS average for HT Industrial consumers. For the estimation of variable part of ARR, the variable power purchase cost is taken as variable ARR for WBSEDCL as provided in the tariff order for FY2017-18. For previous years the same ratio of variable power purchase cost to total power purchase cost is taken for calculating variable power purchase cost.

For the estimation of ABR, the variable tariff of respective consumer category is added to an estimated per unit charge for fixed tariffs. The fixed tariff of respective consumer category is converted into per unit charge assuming a load factor of 60%.

	FY2015-16	FY2016-17	FY2017-18
ACoS			
Total	6.55	6.89	6.89
Fixed	49%	52%	52%
Variable	51%	48%	48%
HT Industrial ABR			
Total	6.99	7.33	7.33
Fixed	11%	12%	12%
Variable	89%	88%	88%
HT Commercial ABR			
Total	7.37	7.78	7.78
Fixed	10%	11%	11%
Variable	90%	89%	89%
ACoS Coverage			
HT industrial	107%	106%	106%
HT commercial	113%	113%	113%

Open access charges

In this sub-section, the open access charges applicable on various types of consumers is analysed. The open access charges for following types of consumers are discussed below –

- Conventional power through Non-Captive mode
- Conventional power through Captive mode
- Renewable power through Non Captive mode
- Renewable power through Captive mode

The open access charges differ for these different types of consumers, as charges like CSS and Additional Surcharge are not applicable on captive consumers. Further consumers taking renewable power, are offered discounts on open access charges by the Commission as renewable promotion measures.

However currently no discounts are offered to open access consumers taking supply from renewable power sources in the State of West Bengal. The discounts available for renewable Power on various open access charges is showcased in the table below.

Discounts for RE Power	Unit	FY2015-16	FY2016-17	FY2017-18
Cross Subsidy Surcharge	%	0%	0%	0%
Distribution Wheeling	%	0%	0%	0%
Transmission Charge	%	0%	0%	0%
SLDC Charge	%	0%	0%	0%

The following general assumptions are taken while analysing the OA charges for various consumer types -

- 1 MW load
- 60% load factor for conventional power
- 18% load factor for Renewable Power
- 33 kV Connected voltage
- Long Term Open Access
- Solar in case of renewable power

The tables below showcase the open access charges applicable on various types of consumers as discussed above.

HT Industrial Consumers (Non-Captive, Conventional)

OA Charges	Unit	FY2015-16	FY2016-17	FY2017-18
Cross Subsidy Surcharge	Rs./Kwh	3.36	3.67	3.54
Distribution Wheeling	Rs./Kwh	1.03	1.04	1.19
Transmission Charge	Rs./Kwh	0.39	0.38	0.38
SLDC Charge	Rs./Kwh	0.01	0.01	0.01
RPO	Rs./Kwh	0.05	0.06	0.06
Total	Rs./Kwh	4.83	5.16	5.19

HT Industrial Consumers (Non-Captive, RE)

OA Charges	Unit	FY2015-16	FY2016-17	FY2017-18
Cross Subsidy Surcharge	Rs./Kwh	3.36	3.67	3.54
Distribution Wheeling	Rs./Kwh	1.03	1.04	1.19
Transmission Charge	Rs./Kwh	1.29	1.26	1.27
SLDC Charge	Rs./Kwh	0.01	0.01	0.01
RPO	Rs./Kwh			
Total	Rs./Kwh	5.68	5.98	6.02

HT Industrial Consumers (Captive, Conventional)

OA Charges	Unit	FY2015-16	FY2016-17	FY2017-18
Cross Subsidy Surcharge	Rs./Kwh			
Distribution Wheeling	Rs./Kwh	1.03	1.04	1.19
Transmission Charge	Rs./Kwh	0.39	0.38	0.38
SLDC Charge	Rs./Kwh	0.01	0.01	0.01
RPO	Rs./Kwh	0.05	0.06	0.06
Total	Rs./Kwh	1.48	1.48	1.64

HT Industrial Consumers (Captive,RE)

OA Charges	Unit	FY2015-16	FY2016-17	FY2017-18
Cross Subsidy Surcharge	Rs./Kwh			
Distribution Wheeling	Rs./Kwh	1.03	1.04	1.19
Transmission Charge	Rs./Kwh	1.29	1.26	1.27
SLDC Charge	Rs./Kwh	0.01	0.01	0.01
RPO	Rs./Kwh			
Total	Rs./Kwh	2.33	2.31	2.47

HT Commercial Consumers(Non-Captive, Conventional)

OA Charges	Unit	FY2015-16	FY2016-17	FY2017-18
Cross Subsidy Surcharge	Rs./Kwh	3.74	4.12	3.99
Distribution Wheeling	Rs./Kwh	1.03	1.04	1.19
Transmission Charge	Rs./Kwh	0.39	0.38	0.38
SLDC Charge	Rs./Kwh	0.01	0.01	0.01
RPO	Rs./Kwh	0.05	0.06	0.06
Total	Rs./Kwh	5.21	5.61	5.64

HT Commercial Consumers(Non-Captive, RE)

OA Charges	Unit	FY2015-16	FY2016-17	FY2017-18
Cross Subsidy Surcharge	Rs./Kwh	3.74	4.12	3.99
Distribution Wheeling	Rs./Kwh	1.03	1.04	1.19
Transmission Charge	Rs./Kwh	1.29	1.26	1.27
SLDC Charge	Rs./Kwh	0.01	0.01	0.01
RPO	Rs./Kwh			
Total	Rs./Kwh	6.06	6.43	6.47

HT Commercial Consumers(Captive, Conventional)

OA Charges	Unit	FY2015-16	FY2016-17	FY2017-18
Cross Subsidy Surcharge	Rs./Kwh			
Distribution Wheeling	Rs./Kwh	1.03	1.04	1.19
Transmission Charge	Rs./Kwh	0.39	0.38	0.38
SLDC Charge	Rs./Kwh	0.01	0.01	0.01
RPO	Rs./Kwh	0.05	0.06	0.06
Total	Rs./Kwh	1.48	1.48	1.64

HT Commercial Consumers (Captive, RE)

OA Charges	Unit	FY2015-16	FY2016-17	FY2017-18
Cross Subsidy Surcharge	Rs./Kwh			
Distribution Wheeling	Rs./Kwh	1.03	1.04	1.19
Transmission Charge	Rs./Kwh	1.29	1.26	1.27
SLDC Charge	Rs./Kwh	0.01	0.01	0.01
RPO	Rs./Kwh			
Total	Rs./Kwh	2.33	2.31	2.47

Break Even Power Purchase Cost

The table below compares the retail tariff applicable on HT consumers against the open access charges applicable on such consumers. It can be observed that significant gap exists between retail

tariffs and open access charges for HT Industrial consumers and HT Commercial Consumers only in case of captive consumers, making it economically viable for them to migrate to open access.

Table: Comparison of OA charges & Break-even PPC for FY17-18 (HT Industrial)

Parameters		Conventional Non-Captive	RE Non-Captive	Conventional Captive	RE Captive
Open Access Charges	A	5.19	6.02	1.64	2.47
Tariff (Variable)	B	6.44	6.44	6.44	6.44
Break Even PPC	C=B-A	1.25	0.42	4.80	3.97
Break Even PPC after losses	$C/(1+T\&D \text{ Loss})$	1.16	0.39	4.44	3.67

Table: Comparison of OA charges & Break-even PPC for FY17-18 (HT Commercial)

Parameters		Conventional Non-Captive	RE Non-Captive	Conventional Captive	RE Captive
Open Access Charges	A	5.64	6.47	1.64	2.47
Tariff (Variable)	B	6.89	6.89	6.89	6.89
Break Even PPC	C=B-A	1.25	0.42	5.25	4.42
Break Even PPC after losses	$C/(1+T\&D \text{ Loss})$	1.16	0.39	4.86	4.09

7.7.5. APTEL/ SERC cases regarding open access

Commission	Case No.	Year	Utility	OA Consumer	Brief description of case
CERC	197/MP/2015	2015	WBSEDC L	Indian Railways	<ul style="list-style-type: none"> Indian Railways filed the present petition before CERC for Grant of Connectivity, Long Term Open Access and Medium Term Open Access in the interState Transmission and related matters under Regulations, 2009 CERC accorded its approval and directed all concerned RLDCs, State Transmission Utilities and SLDCs to facilitate long term access and medium term access in terms of Connectivity Regulations from the generating stations or other sources to the facilities and network of Indian Railways. http://www.cercind.gov.in/2015/orders/SO197N.pdf
APTEL	I.A. NO.445 OF 2015 IN APPEAL NO.276 OF 2015	2015	WBSEDC L	Indian Railways	<ul style="list-style-type: none"> Indian Railways filed Petition No.197/MP/2015 before CERC to direct that they are entitled to the grant of open access for the power to be procured from WBSETCL, Jharkhand Urja and other generating stations or sources through the Inter-State Transmission Network of CTU and Transmission Network of the Respondent States namely Gujarat, Maharashtra, Jharkhand and West Bengal CERC allowed the petition and held that Indian Railways is a deemed licensee and directed all concerned RLDCs, State Transmission Utilities (STUs) and SLDCs to facilitate long term access and medium term access WBSEDCL challenged CERC's approval, APTEL provided its prima facie opinion that Indian Railways will be entitled to open access if it fulfils the conditions and there can be no valid objection to its entitlement http://aptel.gov.in/judgements/A.No.%20445%20of%202015%20in%20IA%20No.%20276%20of%202015.pdf
WBERC	WBERC/8-11/22	2019	WBSEDC L	Railways	<ul style="list-style-type: none"> Order in the matter of (i) status of railways as deemed Licensee in the state (ii) financial burden of surplus Contracted power, loss of revenue sharing and (iii) APR Burden of unsettled orders due to open access of Railways WBSEDCL prays not to allow open access to Railways as deemed licensee till the matter is settled; and b) Consequent to granting open access to Railways, not to pass any financial burden arising out of surplus contacted power, loss of revenue sharing and ARR burden of unsettled orders in order to save the consumers from future tariff shock

Commission	Case No.	Year	Utility	OA Consumer	Brief description of case
					<ul style="list-style-type: none"> CERC on the petition filed by Railways (petition No 197/MP/2015) passed an order on 05.11.2015 granting Railways 'deemed licensee' status for drawal of power through open access However, WBSEDCL and several other State DISCOMs such as GRIDCO, TANGEDCO, MPPMCL etc. have already challenged the order of CERC before APTEL Their appeal before APTEL wherein Deemed Licensee status of Railways has been challenged is still pending before APTEL http://wberc.gov.in/sites/default/files/WBSEDCL%20order_01.2.19.pdf
WBERC	WBERC/8-11/22	2019	WBSEDC L	Railways	<ul style="list-style-type: none"> Order in the matter of (i) status of railways as deemed Licensee in the state (ii) financial burden of surplus Contracted power, loss of revenue sharing and (iii) APR Burden of unsettled orders due to open access of Railways WBSEDCL prays not to allow open access to Railways as deemed licensee till the matter is settled; and b) Consequent to granting open access to Railways, not to pass any financial burden arising out of surplus contacted power, loss of revenue sharing and ARR burden of unsettled orders in order to save the consumers from future tariff shock CERC on the petition filed by Railways (petition No 197/MP/2015) passed an order on 05.11.2015 granting Railways 'deemed licensee' status for drawal of power through open access However, WBSEDCL and several other State DISCOMs such as GRIDCO, TANGEDCO, MPPMCL etc. have already challenged the order of CERC before APTEL Their appeal before APTEL wherein Deemed Licensee status of Railways has been challenged is still pending before APTEL
CERC	153/MP/2018	2018	Damodar Valley Corporation		<ul style="list-style-type: none"> Deliberated on the Formulae used to determine the Transmission/ Wheeling charge for the financial years 2017-18 and 2018-19 only - (i) Charges for Long/Medium Term customers: "Transmission Charges (Rs/MW/month) = ((Transmission ARR ÷ SCC) ÷ 12) (ii) Charges for Short-Term customers : "Transmission Charges (paise/kWh) = ((Transmission ARR ÷ SCC) ÷ (365*24*10)) Further, a power factor of 0.97 has been considered to convert the MVA contracted capacity to MW contracted capacity

Commission	Case No.	Year	Utility	OA Consumer	Brief description of case
CERC	73/MP/2016	2017	WBSLDC	Millennium Cement Co. Pvt. Ltd.	<ul style="list-style-type: none"> A consumer of WBSEDCL intended to purchase power through open access to meet the load of its manufacturing facility. WBSLDC denied no objection on the ground of limitation in transmission capability for inter-State import by STU (WBSETCL). Petition was filed challenging the denial of short term open access by SLDC, to CERC which found that the reasons cited by WBSLDC for denial of open access i.e. constraint in inter-State transfer of power cannot be sustained, particularly in view of the clarification of ERLDC that there was no constraint in the ISTS for meeting the load; IEX also submitted that there was not even one open access consumer participation then on the Exchange platform which inter-alia suggests that the regulatory environment and utilities have not been forthcoming in allowing open access to consumers in the State CERC directed WBSLDC to consider the application for grant of open access as per the Open Access Regulations of the Commission
CERC	153/MP/2017	2017	Damodar Valley Corporation		<ul style="list-style-type: none"> Petition filed to determine transmission/ wheeling charge for open access customers in West Bengal and Jharkhand region under the DVC command area for the financial years 2017-18 and 2018-19 pursuant to the Appellate Tribunal for Electricity judgment dated 23.11.2007 in Appeal Nos. 271, 272, 273, 275 of 2006 and 8 of 2007 wherein it was held that all transmission systems of DVC be considered as a unified inter-State transmission System Petition to understand approval of Open Access charges for transmission and wheeling of power using Transmission and Distribution network of DVC
CERC	228/MP/2016	2017	WBSLDC	OCL India Limited	<ul style="list-style-type: none"> OCL intended to wheel power from its captive plant at Rajganjpur, Odisha to its unit in West Bengal; but was denied short term open access by State Load Despatch Centre, West Bengal (WBSLDC) on the ground of constraint in inter-State network Previously also, on 11.8.2015, OCL made an application to WBSLDC for grant of prior standing clearance for bilateral transactions, through inter-State open access; but was denied no objection on the ground of insufficient transmission capability of WBSETCL system It was concluded that the Petitioner's application for open access for 10 MW power cannot be rejected by WBSLDC on the ground of the non-availability of room in CTU-STU corridor and non-receipt of clearance from PTP, and directed that WBSLDC shall consider the application of the Petitioner for no objection for open access in accordance with the provisions of Regulation 8 of Open Access Regulation

Commission	Case No.	Year	Utility	OA Consumer	Brief description of case
CERC	304/MP/2015	2016	DVC	Super Smelters Limited	<ul style="list-style-type: none"> Petition was filed towards refusal of open Access by Damodar Valley Corporation, petition was also filed petition before WBERC WBERC informed that DVC`s transmission and distribution system are an integrated one and treated as a deemed inter-State transmission system and thus the transmission charge for these system are being determined by CERC DVC settled the issue bilaterally on the mutual agreed basis across the table and granted permission to the SSL to avail open access
CERC	74/MP/2014	2015	WBSLDC	Bhushan Power and Steel Limited	<ul style="list-style-type: none"> Bhushan sought direction to WBSLDC and WBSETCL to grant concurrence for the proposed Long Term Open Access in 2013, applied to WBSETCL for grant of NOC for LTOA for sourcing 14.9 MVA power from its CPP in Odisha The insistence of WBSLDC asking the Bhushan to obtain NOC from WBSEDCL and the failure of WBSEDCL to issue NOC resulted in Bhushan being denied open access for more than 11 months CERC directed that Bhushan`s application for open access for 14.9 MVA power cannot be rejected by the respondents on the ground of transmission constraints as the requirement is accommodated within the existing transmission and distribution capacity of WBSETCL and WBSEDCL respectively
APTEL	Appeal No. 34 of 2006	2006	WBERC	M/s Bhushan Limited	<ul style="list-style-type: none"> Bhushan applied for open access for wheeling of electricity from its CPP in the State of Orissa to the steel plant in West Bengal through the inter-State transmission system of OPTCL, PGCIL and WBSEB, and already secured the required permission from the OERC, hence applied to WBERC seeking open access No provision in the Act which mandates that the consumer, like the appellant, should cease to be a consumer of electricity from the area distribution licensee or sever its connection as a consumer with the said area distribution licensee merely because open access is applied and allowed. APTEL directed WBERC to allow open access to Bhushan and lay the standards for fixing Energy Accounting
APTEL	Appeal No. 1 of 2006	2006	WBERC	M/s Indian Aluminium Company	<ul style="list-style-type: none"> WBERC allowed open access to IACL to wheel power as applied for but at the same time the Commission held that the appellant shall cease to be a consumer of CESC and its status as such vis-à-vis CESC, from which it has earlier drawn power. APTEL set aside the direction of WBERC and asked appellant to continue its contractual relationship as a consumer of CESC and it need not cease its consumership status

Commission	Case No.	Year	Utility	OA Consumer	Brief description of case
				Limited (since known as HINDALCO Industries Limited)	<ul style="list-style-type: none"> • WBERC further held that the appellant is being granted open access cannot claim supply of backup power from CESC as a matter of right and it would be liable to pay additional surcharge to CESC in terms of proviso to Section 42(4) of the Act. • WBERC fixed the wheeling charges at 83.54 paise/kwh for the year 2005-06 which is being challenged as irrational. • APTEL directed WBERC to issue appropriate directions and lay down the energy accounting after affording opportunity to the appellant and all connected parties.
WBERC	TP -56 / 13-14	2015	CESC Ltd.	OA consumers inc. Captive Generating Plants	<ul style="list-style-type: none"> • WBERC fixed the rate of wheeling charges to be recovered by CESC during the year 2015 – 2016 from different categories of open access customers including captive generators for conveyance of electricity through its distribution system for long term open access 175.55 paise/kWh • For short term open access, the wheeling charge shall be realized as per Open Access Regulations • The avoided cost for the concerned open access customers will be @ 388.12 paise/kWh plus wheeling charges per unit as applicable to the relevant open access case • http://www.wberc.gov.in/sites/default/files/Order%2015-16_CESC.pdf
WBERC	TP -56 / 13-14	2015	CESC Ltd.	OA consumers inc. Captive Generating Plants	<ul style="list-style-type: none"> • WBERC fixed the rate of wheeling charges to be recovered by CESC during the year 2014 – 2015 from different categories of open access customers including captive generators for conveyance of electricity through its distribution system for long term open access 160.59 paise/kWh • For short term open access, the wheeling charge shall be realized as per Open Access Regulations • The avoided cost for the concerned open access customers will be @ 392.38 paise/kWh plus wheeling charges per unit as applicable to the relevant open access case • http://www.wberc.gov.in/sites/default/files/CESC_14-15_Wheeling.pdf
WBERC	TP -48 / 11-12	2014	CESC Ltd.	OA consumers inc. Captive Generating Plants	<ul style="list-style-type: none"> • WBERC fixed the rate of wheeling charges to be recovered by CESC during the year 2013 – 2014 from different categories of open access customers including captive generators for conveyance of electricity through its distribution system for long term open access 135.79 paise/kWh • For short term open access, the wheeling charge shall be realized as per Open Access Regulations

Commission	Case No.	Year	Utility	OA Consumer	Brief description of case
					<ul style="list-style-type: none"> The avoided cost for the concerned open access customers will be @ 346.42 paise/kWh plus wheeling charges per unit as applicable to the relevant open access case http://www.wberc.gov.in/sites/default/files/CESC_Wheeling%20order_2013-14.pdf
WBERC	TP -48 / 11-12	2012	CESC Ltd.	OA consumers inc. Captive Generating Plants	<ul style="list-style-type: none"> WBERC fixed the rate of wheeling charges to be recovered by CESC during the year 2011 – 2012 from different categories of open access customers including captive generators for conveyance of electricity through its distribution system for long term open access 117.56 paise/kWh For short term open access, the wheeling charge shall be realized as per Open Access Regulations The avoided cost for the concerned open access customers will be @ 332.76 paise/kWh plus wheeling charges per unit as applicable to the relevant open access case http://www.wberc.gov.in/sites/default/files/Order_on_Wheeling_charge_2012.pdf
WBERC	TP - 37/ 08 - 09	2010	CESC Ltd.	OA Consumers	<ul style="list-style-type: none"> WBERC fixed the rate of wheeling charges to be recovered by CESC during the year 2010 – 2011 from different categories of open access customers including captive generators for conveyance of electricity through its distribution system for long term open access 95.67 paise/kWh For short term open access, the wheeling charge shall be realized as per Open Access Regulations The avoided cost for the concerned open access customers will be @ 266.56 paise/kWh plus wheeling charges per unit as applicable to the relevant open access case http://www.wberc.gov.in/sites/default/files/Wheeling%20Charge%202010-11%20CESC.pdf
WBERC	TP - 37/ 08 - 09	2009	CESC Ltd.	OA consumers inc. Captive Generating Plants	<ul style="list-style-type: none"> WBERC fixed the rate of wheeling charges to be recovered by CESC during the year 2009 – 2010 for long term open access at 95.66 paise/kWh and for short term customers at 76.53 paise/kWh Incentivized the captive generators with cogeneration and non-conventional/renewable energy sources allowing them to pay @1/3rd (one-third) of the rate chargeable to the OA Customers at 31.89 paise/kWh for long term and 25.51 paise/kWh for short term customers http://www.wberc.gov.in/sites/default/files/CESC.pdf
WBERC	TP-37/08-09	2008	CESC Ltd.	OA consumers inc.	<ul style="list-style-type: none"> WBERC fixed the rate of wheeling charges to be recovered by CESC during the year 2008 – 2009 for long term open access at 92.99 paise/kWh and for short term customers at 74.39 paise/kWh

Commission	Case No.	Year	Utility	OA Consumer	Brief description of case
				Captive Generating Plants	<ul style="list-style-type: none"> Incentivized the captive generators with cogeneration and non-conventional/renewable energy sources allowing them to pay @1/3rd (one-third) of the rate chargeable to the OA Customers at 31 paise/kWh for long term and 24.80 paise/kWh for short term customers http://www.wberc.gov.in/sites/default/files/wheeling%20charges%20for%20cesc%2020080-09.pdf
WBERC	TP-30/ 07-08	2007	CESC Ltd.	OA consumers inc. Captive Generating Plants	<ul style="list-style-type: none"> WBERC fixed the rate of wheeling charges to be recovered by CESC during the year 2007 – 2008 for long term open access at 78.78 paise/kWh and for short term customers at 63.02 paise/kWh Incentivized the captive generators with cogeneration and non-conventional/renewable energy sources allowing them to pay @1/3rd (one-third) of the rate chargeable to the OA Customers at 26.26 paise/kWh for long term and 21.01 paise/kWh for short term customers http://www.wberc.gov.in/sites/default/files/CESC%20order%20on%20wheeling%20charges%202007-08.pdf
WBERC	TP-27/06-07	2007	CESC Ltd.	OA consumers inc. Captive Generating Plants	<ul style="list-style-type: none"> WBERC fixed the rate of wheeling charges to be recovered by CESC during the year 2006 – 2007 for long term open access at 80.31 paise/kWh Incentivized the captive generators with cogeneration and non-conventional/renewable energy sources allowing them to pay charge of 26.77 paise/kWh or 7.5% of the cost of energy fed into the distribution system, whichever is higher http://www.wberc.gov.in/sites/default/files/wberc.net_wberc_tariff_Cesc_Tariff_ordnpet2001_further_order_cover_page.pdf
WBERC	TP – 53/11-12	2014	WBSEDCL	OA consumers inc. Captive Generating Plants	<ul style="list-style-type: none"> WBERC fixed the rate of wheeling charges to be recovered by WBSEDCL during the year 2013 – 2014 from different categories of open access customers including captive generators for conveyance of electricity through its distribution system for long term open access at 75.13 paise/kWh For short term open access, the wheeling charge shall be realized as per Open Access Regulations The avoided cost for the concerned open access customers will be @ 330.27 paise/kWh plus wheeling charges per unit as applicable to the relevant open access case http://www.wberc.gov.in/sites/default/files/WBSEDCL_Wheeling%20order_2013-14%20%281%29.pdf

Commission	Case No.	Year	Utility	OA Consumer	Brief description of case
WBERC	TP – 53/11-12	2013	WBSEDC L	OA consumers inc. Captive Generating Plants	<ul style="list-style-type: none"> WBERC fixed the rate of wheeling charges to be recovered by WBSEDC L during the year 2012 – 2013 from different categories of open access customers including captive generators for conveyance of electricity through its distribution system for long term open access 82.24 paise/kWh For short term open access, the wheeling charge shall be realized as per Open Access Regulations The avoided cost for the concerned open access customers will be @ 315.14 paise/kWh plus wheeling charges per unit as applicable to the relevant open access case http://www.wberc.gov.in/sites/default/files/Wheel%20Order_SEDC_L_12-13.pdf
WBERC	TP – 53 / 11 – 12	2013	WBSEDC L	OA consumers inc. Captive Generating Plants	<ul style="list-style-type: none"> WBERC fixed the rate of wheeling charges to be recovered by WBSEDC L during the year 2011 – 2012 from different categories of open access customers including captive generators for conveyance of electricity through its distribution system for long term open access 92.39 paise/kWh For short term open access, the wheeling charge shall be realized as per Open Access Regulations The avoided cost for the concerned open access customers will be @ 291.90 paise/kWh plus wheeling charges per unit as applicable to the relevant open access case http://www.wberc.gov.in/sites/default/files/Wheel%20Order_SEDC_L_2011-2012.pdf
WBERC	TP – 41/08 – 09	2010	WBSEDC L	OA consumers inc. Captive Generating Plants	<ul style="list-style-type: none"> WBERC fixed the rate of wheeling charges to be recovered by WBSEDC L during the year 2010 – 2011 from different categories of open access customers including captive generators for conveyance of electricity through its distribution system for long term open access 85.91 paise/kWh For short term open access, the wheeling charge shall be realized as per Open Access Regulations The avoided cost for the concerned open access customers will be @ 237.43 paise/kWh plus wheeling charges per unit as applicable to the relevant open access case http://www.wberc.gov.in/sites/default/files/Wheeling%20Charge%202010-11%20WBSEDC_L.pdf
WBERC	TP – 41/08 – 09	2009	WBSEDC L	OA consumers inc. Captive Generating Plants	<ul style="list-style-type: none"> WBERC fixed the rate of wheeling charges to be recovered by WBSEDC L during the year 2009 – 2010 for long term open access at 69.27 paise/kWh and for short term customers at 55.42 paise/kWh Incentivized the captive generators with cogeneration and non-conventional/renewable energy sources allowing them to pay @1/3rd (one-third) of the rate chargeable to the OA Customers at 23.09 paise/kWh for long term and 18.47 paise/kWh for short term customers

Commission	Case No.	Year	Utility	OA Consumer	Brief description of case
					<ul style="list-style-type: none"> http://www.wberc.gov.in/sites/default/files/WBSEDCL_0.pdf
WBERC	TP-41/08-09	2008	WBSEDCL	OA consumers inc. Captive Generating Plants	<ul style="list-style-type: none"> WBERC fixed the rate of wheeling charges to be recovered by WBSEDCL during the year 2008 – 2009 for long term open access at 69.19 paise/kWh and for short term customers at 55.35 paise/kWh Incentivized the captive generators with cogeneration and non-conventional/renewable energy sources allowing them to pay @1/3rd (one-third) of the rate chargeable to the OA Customers at 23.06 paise/kWh for long term and 18.45 paise/kWh for short term customers http://www.wberc.gov.in/sites/default/files/WBSEDCL%20order%20on%20wheeling%20charges%2007-08.pdf
WBERC	TP – 35/07-08	2007	WBSEDCL	OA Consumers	<ul style="list-style-type: none"> WBERC fixed the rate of wheeling charges to be recovered by WBSEDCL during the year 2007 – 2008 for long term open access at 72.01 paise/kWh and for short term customers at 57.61 paise/kWh Incentivized the captive generators with cogeneration and non-conventional/renewable energy sources allowing them to pay @1/3rd (one-third) of the rate chargeable to the OA Customers at 24 paise/kWh for long term and 19.20 paise/kWh for short term customers http://www.wberc.gov.in/sites/default/files/WBSEDCL%20order%20on%20wheeling%20charges%2007-08.pdf
WBERC	TP – 55/13-14	2015	Durgapur Projects Limited (DPL)	OA consumers inc. Captive Generating Plants	<ul style="list-style-type: none"> WBERC fixed the rate of wheeling charges to be recovered by DPL during the year 2015 – 2016 from different categories of open access customers including captive generators for conveyance of electricity through its distribution system for long term open access at 22.65 paise/kWh For short term open access, the wheeling charge shall be realized as per Open Access Regulations The avoided cost for the concerned open access customers will be @ 234.51 paise/kWh plus wheeling charges per unit as applicable to the relevant open access case http://www.wberc.gov.in/sites/default/files/Order%2015-16_DPL.pdf
WBERC	TP – 55/13-14	2015	Durgapur Projects Limited (DPL)	OA consumers inc. Captive	<ul style="list-style-type: none"> WBERC fixed the rate of wheeling charges to be recovered by DPL during the year 2014 – 2015 from different categories of open access customers including captive generators for conveyance of electricity through its distribution system for long term open access at 27.34 paise/kWh

Commission	Case No.	Year	Utility	OA Consumer	Brief description of case
				Generating Plants	<ul style="list-style-type: none"> For short term open access, the wheeling charge shall be realized as per Open Access Regulations The avoided cost for the concerned open access customers will be @ 233.24 paise/kWh plus wheeling charges per unit as applicable to the relevant open access case http://www.wberc.gov.in/sites/default/files/DPL_14-15_Wheeling.pdf
WBERC	TP – 49/11-12	2014	Durgapur Projects Limited (DPL)	OA consumers inc. Captive Generating Plants	<ul style="list-style-type: none"> WBERC fixed the rate of wheeling charges to be recovered by DPL during the year 2013 – 2014 from different categories of open access customers including captive generators for conveyance of electricity through its distribution system for long term open access at 29.19 paise/kWh For short term open access, the wheeling charge shall be realized as per Open Access Regulations The avoided cost for the concerned open access customers will be @ 187.06 paise/kWh plus wheeling charges per unit as applicable to the relevant open access case http://www.wberc.gov.in/sites/default/files/DPL_Wheeling%20Order%202013-14.pdf
WBERC	TP – 49/11-12	2014	Durgapur Projects Limited (DPL)	OA consumers inc. Captive Generating Plants	<ul style="list-style-type: none"> WBERC fixed the rate of wheeling charges to be recovered by DPL during the year 2012 – 2013 from different categories of open access customers including captive generators for conveyance of electricity through its distribution system for long term open access at 27.46 paise/kWh For short term open access, the wheeling charge shall be realized as per Open Access Regulations The avoided cost for the concerned open access customers will be @ 184.69 paise/kWh plus wheeling charges per unit as applicable to the relevant open access case http://www.wberc.gov.in/sites/default/files/DPL_Wheeling%20Order%202012-13.pdf
WBERC	TP – 49/11-12	2014	Durgapur Projects Limited (DPL)	OA consumers inc. Captive Generating Plants	<ul style="list-style-type: none"> WBERC fixed the rate of wheeling charges to be recovered by DPL during the year 2011 – 2012 from different categories of open access customers including captive generators for conveyance of electricity through its distribution system for long term open access at 26.55 paise/kWh For short term open access, the wheeling charge shall be realized as per Open Access Regulations The avoided cost for the concerned open access customers will be @ 187.69 paise/kWh plus wheeling charges per unit as applicable to the relevant open access case http://www.wberc.gov.in/sites/default/files/DPL_Wheeling%20Order%202011-12.pdf

Commission	Case No.	Year	Utility	OA Consumer	Brief description of case
WBERC	TP – 38/08 – 09	2010	Durgapur Projects Limited (DPL)	OA consumers inc. Captive Generating Plants	<ul style="list-style-type: none"> WBERC fixed the rate of wheeling charges to be recovered by DPL during the year 2010 – 2011 from different categories of open access customers including captive generators for conveyance of electricity through its distribution system for long term open access at 28.39 paise/kWh For short term open access, the wheeling charge shall be realized as per Open Access Regulations The avoided cost for the concerned open access customers will be @ 169.31 paise/kWh plus wheeling charges per unit as applicable to the relevant open access case http://www.wberc.gov.in/sites/default/files/Wheeling%20Charge%202010-11%20DPL.pdf
WBERC	TP – 51/11 – 12	2014	DPSC LIMITED (DPSCL)	OA Consumers	<ul style="list-style-type: none"> WBERC fixed the rate of wheeling charges to be recovered by DPSCL during the year 2013 – 2014 from different categories of open access customers including captive generators for conveyance of electricity through its distribution system for long term open access at 64.75 paise/kWh For short term open access, the wheeling charge shall be realized as per Open Access Regulations The avoided cost for the concerned open access customers will be @ 466.64 paise/kWh plus wheeling charges per unit as applicable to the relevant open access case http://www.wberc.gov.in/sites/default/files/DPSC_L_Wheeling%20order_2013-14.pdf
WBERC	TP – 51/11 – 12	2014	DPSC LIMITED (DPSCL)	OA consumers inc. Captive Generating Plants	<ul style="list-style-type: none"> WBERC fixed the rate of wheeling charges to be recovered by DPSCL during the year 2012 – 2013 from different categories of open access customers including captive generators for conveyance of electricity through its distribution system for long term open access at 58.35 paise/kWh For short term open access, the wheeling charge shall be realized as per Open Access Regulations The avoided cost for the concerned open access customers will be @ 450.44 paise/kWh plus wheeling charges per unit as applicable to the relevant open access case http://www.wberc.gov.in/sites/default/files/DPSC_L_Wheeling%20order%202012-2013.pdf
WBERC	TP – 51/11 – 12	2014	DPSC LIMITED (DPSCL)	OA consumers inc. Captive Generating Plants	<ul style="list-style-type: none"> WBERC fixed the rate of wheeling charges to be recovered by DPSCL during the year 2011 – 2012 from different categories of open access customers including captive generators for conveyance of electricity through its distribution system for long term open access at 44.86 paise/kWh For short term open access, the wheeling charge shall be realized as per Open Access Regulations

Commission	Case No.	Year	Utility	OA Consumer	Brief description of case
					<ul style="list-style-type: none"> The avoided cost for the concerned open access customers will be @ 422.62 paise/kWh plus wheeling charges per unit as applicable to the relevant open access case http://www.wberc.gov.in/sites/default/files/DPSC_L_Wheeling%20order_2011-2012.pdf
WBERC	TP – 40/08 – 09	2010	DPSC LIMITED (DPSC)	OA consumers inc. Captive Generating Plants	<ul style="list-style-type: none"> WBERC fixed the rate of wheeling charges to be recovered by DPSC during the year 2010 – 2011 from different categories of open access customers including captive generators for conveyance of electricity through its distribution system for long term open access at 46.88 paise/kWh For short term open access, the wheeling charge shall be realized as per Open Access Regulations The avoided cost for the concerned open access customers will be @ 361.51 paise/kWh plus wheeling charges per unit as applicable to the relevant open access case http://www.wberc.gov.in/sites/default/files/Wheeling%20Charge%202010-11%20DPSC.pdf
WBERC	TP – 40/08 – 09	2010	DPSC LIMITED (DPSC)	OA consumers inc. Captive Generating Plants	<ul style="list-style-type: none"> WBERC fixed the rate of wheeling charges to be recovered by DPSC during the year 2009 – 2010 for long term open access at 45.73 paise/kWh and for short term customers at 36.58 paise/kWh Incentivized the captive generators with cogeneration and non-conventional/renewable energy sources allowing them to pay @1/3rd (one-third) of the rate chargeable to the OA Customers at 15.24 paise/kWh for long term and 12.19 paise/kWh for short term customers http://www.wberc.gov.in/sites/default/files/DPSC.pdf

7.8. Assam

Assam is one of the 7 states in the North Eastern Region (NER) of India, surrounded by six sister states of the NER and shares international boundaries with Bhutan and Bangladesh. The Economy of Assam is largely agriculture based with 69% of the population engaged in it. The state has few industries of significance primarily dominated by crude oil, natural gas and chemical industries.

Assam is an energy deficit state and at present, the Assam Power Generation Company Limited (APGCL), Assam Electricity Grid Corporation Limited (AEGCL) and Assam Power Distribution Company Limited (APDCL) are functioning as the State owned generation, transmission and distribution utilities, respectively.

Key Parameters	
Peak demand	1,822 MW
Annual Units Available	8,779 MUs
Sales	7785 MUs
Power Utilities	G – APGCL T – AEGCL D – APDCL

Several Initiatives from Government of India such as 24x7 power for all, SAUBHAGYA has led to availability of reliable power to all households, industrial, commercial and all other electricity consuming entities. As a result of which the total energy sales in the state has increased in the last 3 years from 7525 MUs to 7785 Mus. The state had close to 1577 MW of installed capacity as of Feb 2019 and had a peak demand of 1,822 MW in FY2017-18 (as per CERC LGBR report, FY2018-19).

The analysis of open access status review is performed for state owned Discom i.e. APDCL in Assam.

7.8.1. Regulatory Review

In this section a detailed review is performed of the open access regulations issued by State Electricity Regulatory Commissions (SERCs) to analyse –

- Evolution of open access regulations in the state along with their key amendments
- Eligibility conditions and restrictions for availing open access, along with types of open access allowed
- Process of applying for open access
- Provisions for open access charges
- Any other regulation/ policies relevant to open access

Evolution of open access regulations

In line with the provisions of Electricity Act 2003, introducing non-discriminatory open access to power networks and mandating SERCs to come with the enabling regulations, the state of Assam issued Open Access Regulations in the year 2005 namely 'Assam Electricity Regulatory Commission (Terms and Conditions for Open Access) Regulations 2005'. These regulations were replaced with a new set of regulations in the year 2018. The table summarizes the evolution of open access regulations over time along with the key amendments made thereof –

Year	Regulation/ Amendment	Key Amendment/Provision
2005	OA Regulation	<ul style="list-style-type: none"> Availability of open access to consumers with connected load of 3MW and above. Below that open access to be provided only under conditions when benefits to consumers outweigh the costs Categorization of open access consumers into Long term and short term
2018	OA Regulation	<ul style="list-style-type: none"> Open access permissible to all consumers having contract demand of 1MW and above Categorization of open access consumers into long term, medium term and short term Provisions for day ahead open access introduced

Open access eligibility

The Open Access regulations issued by the Commission in 2018, define eligibility criteria’s for availing open access, based on various technical and commercial considerations. Based on the prevalent regulations, these eligibility requirements and restrictions in the state of Assam are as follows –

Contract Demand	- 1 MW or above
Feeder level conditions	- There is mandatory requirement of independent/dedicated feeder for availing open access
Voltage level conditions	- Wheeling charges are determined only for 33 kV and above
Additional Provisions	-

The relevant provisions of the regulations are reproduced below –

‘4.3 Subject to the provisions of these Regulations, Open Access shall be permissible to all Consumers having Contract Demand of 1 MW and above only’

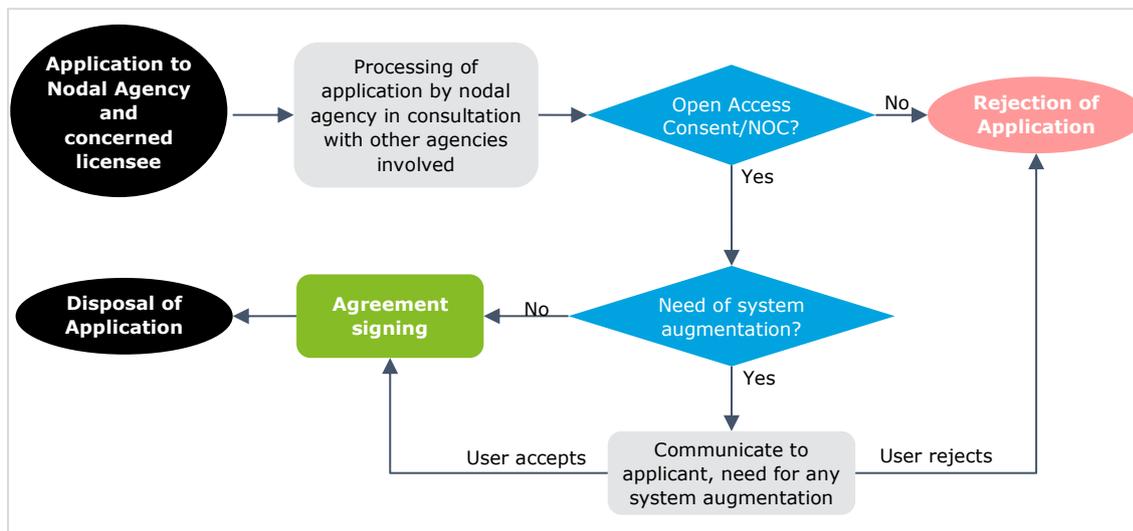
4.4 Subject to the provisions of these Regulations, consumers who are connected by dedicated feeders irrespective of their voltage of supply, and where there is no operational constraint shall be allowed open access.’

Further the Commission in its tariff order of APDCL for FY2018-19, has determined wheeling charges for 33 kV and above only.

Open access application process

In the state of Assam, as per the prevalent open access regulations, STU acts as the nodal agency for grant of intra-state open access while the grant of inter-state open access is governed by CERC open access regulations, with CTU or RLDC as the Nodal Agency.

As per **Clause 9 of open access regulations 2018**, the complete procedure to get open access for the state of Assam is represented below in the form of a flow chart.



The website of AERC provides detailed application procedures for short term open access only. The table below summarises the key aspects of the open access application process in Assam -

	Long Term OA	Medium Term OA	Short Term OA
Nodal Agency	<ul style="list-style-type: none"> • STU – in case injection & drawl points are within the state • CTU – in case injection & drawl points are in diff. state 	<ul style="list-style-type: none"> • STU – in case injection & drawl points are within the state • CTU – in case injection & drawl points are in diff. state 	<ul style="list-style-type: none"> • SLDC – in case injection & drawl points are within the state • CTU – in case injection & drawl points are in diff. state
Time-period	40-180 Days	40 days	7-10 days
Documents	<ul style="list-style-type: none"> • Copy of application to the discom. • Application Fee • Bank Guarantee • PPA • Registration certificate. 	<ul style="list-style-type: none"> • Copy of application to the discom. • Application Fee • PPA • Registration certificate. 	<ul style="list-style-type: none"> • Copy of application to the discom. • Application Fee • Registration certificate.
Cost	<ul style="list-style-type: none"> • Application Fee: Rs. 1 Lac • Bank Guarantee: Rs. 10,000 per MW (Rs. 5,000 per MW for Renewable Power) 	<ul style="list-style-type: none"> • Application Fee: Rs. 50,000 	<ul style="list-style-type: none"> • Application Fee: Rs. 5,000

No separate procedures for open access applications are issued by STU/ SLDC in Assam.

From the table above and the application process for open access in the state, based on the prevalent regulations, it can be observed that the applicant is not required to take a separate NOC from Discom or Transco, before applying for open access to the nodal agency. However the consumer intending to avail open access shall also submit a copy of his application to the distribution licensee. The nodal agency itself coordinates with relevant agencies for granting of consent/ NOC to the applicant for open access. This is also due to the fact that the nodal agency in the state is the Transco itself. The nodal agency while processing the OA application, verifies the following before granting the consent/ NOC for open access –

- Availability of capacity in the transmission and or distribution network
- Existence of infrastructure necessary for time-block-wise energy metering and accounting in accordance with the provisions of the state grid code in force
- Availability of RTU and communication facility to transmit real-time data to SLDC

The concerned distribution license shall convey to SLDC any deficiency or defect in the application within 2 working days from the date of receipt of application, or refusal/consent within 3 working days from the date of receipt of application otherwise consent shall be deemed to have been granted.

Open access charges

The open access regulations in the state of Assam, define the following types of open access charges –

- Transmission/Distribution charges
- Scheduling and System Operation Charges
- Cross Subsidy Surcharge
- Additional Surcharge
- Standby Charges
- Deviation Charge
- Reactive energy charge

Standby Charges are levied on consumers acquiring power from the distribution licensee due to outage of the generator supplying power. According to prevailing open access regulations of Assam licensee shall be entitled to collect charges under temporary rate of charge for that category of consumer or 125% of the normal tariff for that category in the prevailing rate schedule.

Deviation Charges are levied on consumers based on the difference between the applicable scheduled open access load and the actual drawl with reference to IEGC and state grid code. Charges will be applicable based on 125% and 150% of applicable tariff for embedded consumer and full open access consumer respectively.

Reactive energy charges are levied on open access consumers in accordance with the provisions stipulated in the Indian Electricity Grid Code.

Apart from the charges discussed in the paragraph above, which are contingent upon the type of schedule and power drawn by open access consumers, the major open access charges in the State of Assam, are discussed in detail in the sub-sections below.

The tariff order for FY2016-17 for APDCL and AEGCL was not available on AERC website. Therefore the analysis below has been performed for years FY2015-16, FY2017-18 and FY2018-19.

Cross Subsidy Surcharge

The open access regulations issued by AERC in 2018, do not define a set methodology for the calculation of Cross Subsidy Surcharge (CSS), instead the regulations state that the CSS shall be leviable at the rates as determined by the Commission from time to time in its respective tariff orders.

In its retail tariff orders for APDCL, the AERC calculated CSS as the difference between average consumer category wise tariff (ABR) and Cost of Supply.

The CSS is calculated separately for each HT consumer category. The table below represents the Cross Subsidy Surcharge for HT Industrial and HT Commercial consumer categories for the last three financial years.

Cross Subsidy Surcharge	Units	FY2015-16	FY2017-18	FY2018-19
HT Industry	Rs./Kwh	0.54	1.31	1.37
HT Commercial	Rs./Kwh	0.54	1.31	1.90

A significant rise can be observed in the CSS for HT industrial & HT commercial consumer category from FY 2016-17 to FY2018-19. This trend is due to increase in ABR for HT Industries-II from Rs. 7.42/Kwh in FY2016-17 to Rs. 8.71/Kwh in FY2018-19. Similarly the ABR for HT commercial consumer category has increased from Rs. 8.46/Kwh to Rs. 9.48/Kwh.

Distribution Wheeling Charges

The open access regulations in Assam state that wheeling charges are to be payable by open access consumers to the Discom, as determined by the Commission in its tariff order for the relevant financial year.

No specific methodology has been prescribed in the open access regulations for the calculation of the wheeling charges. However the wheeling charge is computed by dividing Distribution Cost for Wires Business for 33 kV Voltage level (assuming 35% of cost at 33 kV) in Rs. crore with Total Energy Input into Distribution System in MU.

A single distribution wheeling charge is calculated by the AERC, for open access consumers connected at 33KV voltage levels. There is no separate wheeling charges specified for long-term, medium-term or short-term open access consumers approved by the Commission. The table below represents the Distribution Wheeling charges for all open access consumer categories for the last three financial years.

Wheeling charges	Units	FY2015-16	FY2017-18	FY2018-19
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For all OA consumers	Rs./Kwh	0.22	0.23	0.27
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Transmission Charges

The open access regulations in Assam state that open access consumer using intra-State transmission system shall pay transmission charges to the STU, as determined by the Commission for the relevant financial year.

While no specific methodology is prescribed in the open access regulations for the calculation of Transmission charges, the regulations do mention the structuring of Transmission Charges. As per the regulations, transmission charges shall be payable on the basis of contracted capacity in case of long term and medium term open access consumers and on the basis of scheduled load in case of short term open access consumers. For open access for a part of a day, the transmission charges shall be payable on pro-rata basis.

However in its Tariff Orders, the Commission has determined Transmission charges only for STOA consumers. The transmission charges for LTOA/ MTOA consumers is estimated by dividing the net ARR of Transmission Utility by annual maximum peak in the State. The table below represents the Transmission charges for both LTOA/MTOA & STOA consumers, for the last three financial years.

Transmission charges	Units	FY2015-16	FY2017-18	FY2018-19
Short Term	Rs./Kwh	0.69	0.72	0.65
Long Term/ Medium Term	Rs./Kw/Month	305	555	457

SLDC Charge

The open access regulations in Assam require open access consumers to pay SLDC charges for scheduling and system operation, as determined by the Commission from time to time in its Tariff Orders. The Commission in its tariff orders for State Transmission Utility AEGCL, determines charges for SLDC also.

The table below represents the SLDC surcharges, determined by the Commission, for the last three financial years.

SLDC surcharge	Units	FY2015-16	FY2017-18	FY2018-19
SLDC Fees	Rs./MW/Day	49.36	39.8	46.87

Energy Losses

Apart from Open Access charges, the regulations also provide for losses to be made applicable on open access transactions, as determined by Commission from time to time. The table below represents the voltage wise T&D losses adopted by Commission in its tariff orders, for open access consumer over the last three financial years.

T&D losses	Units	FY2015-16	FY2017-18	FY2018-19
Transmission	%	3.64%	3.49%	3.44%
Distribution (33 Kv)	%	5%	5%	5%
Distribution (11 Kv)	%	11%	11%	11%

RPO Obligation

Renewable Purchase Obligations (RPO) are applicable on open access consumers taking supply from Non-RE sources. RPO Obligations in the last three financial years, as per AERC Renewable Purchase Obligation and its Compliance Regulations of 2010, along with its amendments, is detailed in table below.

RPO Obligation	Units	FY2015-16	FY2017-18	FY2018-19
Solar	%	1.50%	4.00%	5.00%

RPO Obligation	Units	FY2015-16	FY2017-18	FY2018-19
Non-Solar	%	6.50%	5.00%	6.25%
Total	%	8.00%	9.00%	11.00%

Other Regulatory Provisions

Banking of Power Facility

Banking facility is provided in the State of Assam under the Assam Electricity Regulatory Commission (Co-generation and Generation of Electricity from Renewable Sources of Energy) Regulations, 2015. As per clause no. 9. f) of the regulation:

'9 f) The Generator shall be allowed to bank power within a period of one calendar year, for the purpose of withdrawal of the banked power in the event of emergency or shut down or maintenance of the plant.

Provided that for Small Hydro Projects shall be allowed to bank power for a period upto six months as provided in the Assam 'Small Hydro Policy, 2007'.

Banking of power shall subject to following conditions:

(i) Banking of energy up to 100%, as agreed between generator and the distribution licensee, shall be allowed during the period declared by the Commission as peak hours from time to time.

(ii) Withdrawal of power shall be allowed only during the period other than the period declared by the Commission as peak hours from time to time in its Tariff Orders.

The plants shall provide ABT compliant Special Energy Meters and the monthly settlement of energy sales shall be done based on Power supplied during the peak hours as per SEM meter readings shall be considered as banked power.

Banking charge for wind and small hydro 2% energy injected. For solar power generation- there will be no banking charges.'

Deviation Settlement Mechanism

Regulations on 'deviation, settlement mechanism and related matters' were issued by AERC in 2018. As per these regulations, the Deviations Settlement Mechanism is applicable on Open Access consumers.

'4. These Regulations shall apply to the transactions of conveyance of electricity through short-term open access or medium-term open access or long-term open access using intra-State transmission system or distribution system of electricity (including inter-state wheeling of power), subject to following conditions:

A) Deviation Settlement Mechanism under these Regulations shall be applicable for all Seller(s) including Generators, Captive Generators etc. connected to Intrastate Transmission system. Provided that Forecasting, Scheduling and Deviation settlement related matters in respect of solar and wind generation shall be governed as per the provisions of "Assam Electricity Regulatory Commission (Forecasting, Scheduling and Deviation Settlement and related matters of Solar and Wind Generation Sources) Regulations, 2018" and its amendments thereof.

B) Deviation Settlement Mechanism under these Regulations shall be applicable for all Buyer(s) including Distribution Licensee(s), Deemed Distribution Licensee(s) located in the State.

Provided that, Deviation charges for Settlement of Open Access Consumers (both full and embedded) connected to Intra-State Transmission system and all Open Access Consumers connected to Distribution Network shall be in accordance with the provisions of Assam Electricity

Regulatory Commission (terms and conditions for open Access), 2018 and its amendment thereof

The deviation charges for Sellers and Buyers applicable are as follows:

The charges for the Deviations for all the time-blocks shall be payable for over-drawl by the Buyer and under-injection by the Seller and receivable for under-drawl by the Buyer and over-injection by the Seller, which are State Entities, and shall be worked out on the average frequency of a time-block by considering the Price Vector for Deviation Charges as specified in the Central Electricity Regulatory Commission (Deviation Settlement Mechanism and related matters) Regulations, 2014. Charges for deviation for each 0.01 Hz step is equivalent to 35.60 Paisa/kwh in the frequency range of 50.05 to 50.00 Hz, and 20.84 Paisa/kWh in frequency range 'below 50 Hz to 'below 49.70 Hz.

7.8.2. Open access activity review

In this section a detailed review is performed of the existing level and past trend of open Access activity in the respective state. As a part of this assignment, a data collection exercise was conducted to collected data with respect to the open access activity in the shortlisted States. Data was sought from the respective Discoms and SLDCs for the number of open access consumers in the State, their type (captive/ non-captive and long/ medium or short term), and open access sales over the last 3 financial years. For the State of Assam, data related to open access activity was received for number of open access consumers, their sales and their type, from APDCL.

Number of open access consumers and sales

Based on the information gathered from APDCL, the details of number of open access consumers is shown in the table below.

APDCL - No. of OA Consumers	Units	FY2015-16	FY2016-17	FY2017-18
Long Term	Nos.	0	0	0
Medium Term	Nos.	0	0	0
Short Term	Nos.	14	14	14
Total	Nos.	14	14	14
Captive	Nos.	0	0	0
Non-Captive	Nos.	14	14	14
Total	Nos.	14	14	14
RE	Nos.	0	0	0
Non-RE	Nos.	14	14	14
Total	Nos.	14	14	14

APDCL - OA Sales	Units	FY2015-16	FY2016-17	FY2017-18
Long Term	Gwh	0	0	0
Medium Term	Gwh	0	0	0
Short Term	Gwh	155	350	353
Total	Gwh	155	350	353
Captive	Gwh	0	0	0
Non-Captive	Gwh	155	350	353
Total	Gwh	155	350	353
RE	Gwh	0	0	0
Non-RE	Gwh	155	350	353
Total	Gwh	155	350	353

It can be observed from the above data that there is no change in the number of open access consumers for the past three years. Also it can be observed that primarily the open access consumers are short term, non-captive consumers which are drawing conventional power.

7.8.3. Commercial Review

In this section, the consumer category wise sales and the load profile of consumers is analysed in order to understand the potential of open access migration in the state. Potential of open access migration would be higher in states with higher share of HT industrial and HT commercial sales, along with a profile of consumers with higher loads.

The consumer category wise sales data is taken from respective tariff orders of the Commission. The data for load profile of HT consumers is collected from respective Discoms. This data for load profile was received from APDCL, as a part of data collection exercise performed in this assignment, and has been represented in the further sub-sections.

HT sales as a % of total sales

The table below represents the consumer category wise sales in the state of Assam. As per the sales data, HT industrial and HT commercial sales form approx. 21% of the overall sales in the state.

APDCL	Units	FY2015-16	FY2017-18	FY2018-19
HT Sales				
HT commercial 25 kVA and above	Gwh	358	395	485
HT Industries ²⁵	Gwh	1,355	1,417	1,178
HT others	Gwh	725	758	807
HT Sub-Total	Gwh	2,438	2,570	2,470
LT Sales				
LT Sub-Total	Gwh	4,248	4,955	5,315
Total	Gwh	6,686	7,525	7,785
HT Commercial Sales (as % of total sales)	%	5%	5%	6%
HT Industrial Sales (as % of total sales)	%	20%	19%	15%

Load Profile of HT Consumers

The tables below showcase the load profile of HT Industrial consumers in APDCL, as provided by the Discom. Consumers falling in the category of 1-5 MW form 83% of the overall HT Industrial sales and 100% of the overall HT Industrial consumers. These consumers have a lower potential of migrating to open access.

Load category	Units	Load Profile - Sales of HT Industrial Consumers			
		FY2015-16	FY2016-17	FY2017-18	FY2018-19
1-5 MW	Gwh	253	380	414	305
6-10 MW	Gwh	21	40	60	61
11-50 MW	Gwh	0	0	0	0
51-100 MW	Gwh	0	0	0	0
> 100 MW	Gwh	0	0	0	0
1-5 MW	%	92%	90%	87%	83%
6-10 MW	%	8%	10%	13%	17%
11-50 MW	%	0%	0%	0%	0%

²⁵ Consists consumer categories of HT Industries – II (above 150 kVA), Tea, Coffee and Rubber and Oil and Coal

Load Profile - Sales of HT Industrial Consumers					
Load category	Units	FY2015-16	FY2016-17	FY2017-18	FY2018-19
51-100 MW	%	0%	0%	0%	0%
> 100 MW	%	0%	0%	0%	0%

Load Profile - Number of HT Industrial Consumers					
Load Category	Units	FY2015-16	FY2016-17	FY2017-18	FY2018-19
1-5 MW	Nos.	121	131	157	166
6-10 MW	Nos.	8	8	9	9
11-50 MW	Nos.	0	0	0	0
51-100 MW	Nos.	0	0	0	0
> 100 MW	Nos.	0	0	0	0
1-5 MW	%	94%	94%	95%	95%
6-10 MW	%	6%	6%	5%	5%
11-50 MW	%	0%	0%	0%	0%
51-100 MW	%	0%	0%	0%	0%
> 100 MW	%	0%	0%	0%	0%

Load Profile - Sales of HT Commercial Consumers					
Load category	Units	FY2015-16	FY2016-17	FY2017-18	FY2018-19
1-5 MW	Gwh	18	30	38	31
6-10 MW	Gwh	0	0	0	0
11-50 MW	Gwh	0	0	0	0
51-100 MW	Gwh	0	0	0	0
> 100 MW	Gwh	0	0	0	0
1-5 MW	%	100%	100%	100%	100%
6-10 MW	%	0%	0%	0%	0%
11-50 MW	%	0%	0%	0%	0%
51-100 MW	%	0%	0%	0%	0%
> 100 MW	%	0%	0%	0%	0%

Load Profile - Number of HT Commercial Consumers					
Load Category	Units	FY2015-16	FY2016-17	FY2017-18	FY2018-19
1-5 MW	Nos.	12	14	20	21
6-10 MW	Nos.	0	0	0	0
11-50 MW	Nos.	0	0	0	0
51-100 MW	Nos.	0	0	0	0
> 100 MW	Nos.	0	0	0	0
1-5 MW	%	100%	100%	100%	100%
6-10 MW	%	0%	0%	0%	0%
11-50 MW	%	0%	0%	0%	0%
51-100 MW	%	0%	0%	0%	0%
> 100 MW	%	0%	0%	0%	0%

7.8.4. Tariff and open access charges review

In this section a detailed review of the retail tariff applicable on HT Industrial and HT Commercial consumers and OA charges is performed.

The breakup of fixed and variable tariff is analysed and compared against the fixed and variable cost of Discom. Higher is the gap between the fixed cost of Discom and fixed tariff collected from consumers, higher would be the impact on Discom due to open access migration, as the fixed tariff recovered from consumers would not be sufficient to cover the fixed cost of Discom.

Further the gap between retail tariff applicable on HT consumers and OA charges is analysed to understand the probability of consumers to migrate to open access. Higher is the gap between open access charges and the retail tariff, higher is the probability of consumers to migrate to open access.

Review of retail tariff charged to HT consumers

The ACoS Coverage for HT consumers in the State has moved within +/- 20% in the last three years for HT Industrial consumers but is still more than 120% for HT Commercial consumer category. The fixed tariff (i.e. demand charges) for HT consumers is not sufficient to cover the fixed costs of Discom. The average realization from fixed charges in FY2018-19 was just 5% for HT Industrial consumers and 4% from HT Commercial consumers, as against 57% fixed component of ACoS.

The table below showcases the fixed/ variable breakup of ACoS along with their corresponding fixed-variable breakup of ABR and ACoS average for HT Industrial consumers. For the estimation of variable part of ARR, 60% of the power purchase cost is taken as variable ARR for APDCL.

For the estimation of ABR, the variable tariff of respective consumer category is added to an estimated per unit charge for fixed tariffs. The fixed tariff of respective consumer category is converted into per unit charge assuming a load factor of 60%.

	FY2015-16	FY2017-18	FY2018-19
ACoS			
Total	6.00	6.69	7.35
Fixed	52%	51%	57%
Variable	48%	49%	43%
HT Industrial ABR			
Total	7.17	7.87	7.62
Fixed	5%	5%	5%
Variable	95%	95%	95%
HT Commercial ABR			
Total	7.82	8.61	8.34
Fixed	3%	4%	4%
Variable	97%	96%	96%
ACoS Coverage			
HT industrial	124%	130%	119%
HT commercial	141%	142%	129%

Open access charges

In this sub-section, the open access charges applicable on various types of consumers is analysed. The open access charges for following types of consumers are discussed below –

- Conventional power through Non-Captive mode
- Conventional power through Captive mode
- Renewable power through Non Captive mode
- Renewable power through Captive mode

The open access charges differ for these different types of consumers, as charges like CSS and Additional Surcharge are not applicable on captive consumers. Further consumers taking RE power, are offered discounts on open access charges by the Commission as renewable promotion measures.

Section 12 of AERC Grid Interactive Solar PV Systems Regulations 2015, wheeling and cross subsidy surcharge is exempt for solar plants installed under net-metering arrangement on consumer premises.

'12. Wheeling and Open Access:

The grid solar system under net metering, whether self-owned or third party owned installed on eligible consumer premises, shall be exempted from wheeling and cross subsidy surcharges when open access is allowed to the concerned entity.'

The AERC Terms and Conditions for Open Access Regulations 2018, do not provide any exemption to consumers on open access charges.

Further section 9 e) of the AERC (Co-generation and Generation of Electricity from Renewable Sources of Energy) Regulations of 2015, provides discount on transmission and wheeling charges as mentioned below. The regulations also provided exemption on CSS, but for only plants commissioned within three years of notification of the regulations. However discounts are not available if plant is registered under REC mechanism.

'9. e) Charges for Open Access

All open access charges shall be payable as per AERC (Terms and Condition of Open Access) Regulations, 2005 and Tariff Regulations except that -

i) Transmission Charges:

Transmission charges payable for open access availed by renewable energy power generation shall be two-third of the rate of such charges applicable for open access customers for long term and short term open access as determined in relevant tariff order.

ii) Wheeling Charges:

Wheeling charges applicable for use of distribution system or associated facilities of a licensee by open access customers for conveyance of electricity from renewable energy power generation shall be one-third of the wheeling charges calculated as per tariff order under Tariff Regulations.

All solar generations in the State achieving commercial operation date (COD) within three years of notification of these Regulations and selling power to consumer within the State on open access or wheeling shall be exempted from payment of transmission, wheeling and banking charges and cross subsidy surcharge within the state for a period of ten years from the date of commissioning. This is also applicable for captive solar power plants availing open access within the state.

However, all renewable generation opting for Renewable Energy Certificate shall pay the normal wheeling and other charges , as may be determined by the AERC.

The discounts available for renewable power on various open access charges according to regulations in the State of Assam are showcased in the table below.

Discounts for RE Power	Unit	FY2015-16	FY2017-18	FY2018-19
Cross Subsidy Surcharge	%	-	-	-
Distribution Wheeling	%	67%	67%	67%
Transmission Charge	%	33%	33%	33%

Discounts for RE Power	Unit	FY2015-16	FY2017-18	FY2018-19
SLDC Charge	%	-	-	-

The following general assumptions are taken while analysing the open access charges for various consumer types -

- 1 MW load
- 60% load factor for conventional power
- 18% load factor for Renewable Power
- 33 kV Connected voltage
- Long Term Open Access
- Solar in case of renewable power

Further it is observed that per month Transmission Charges for LTOA/ MTOA consumers, when converted into per unit charge for renewable consumers, with a lower load factor of 18%, leads to a very high transmission charge of more than Rs. 3 per unit. Therefore for open access consumers taking renewable power, transmission charges for STOA are considered.

The tables below showcase the open access charges applicable on various types of consumers as discussed above.

HT Industrial Consumers (Non-Captive, conventional)

OA Charges	Unit	FY2015-16	FY2017-18	FY2018-19
Cross Subsidy Surcharge	Rs./Kwh	0.54	1.31	1.37
Distribution Wheeling	Rs./Kwh	0.22	0.23	0.27
Transmission Charge	Rs./Kwh	0.71	1.29	1.06
SLDC Charge	Rs./Kwh	0.00	0.00	0.00
RPO	Rs./Kwh	0.08	0.09	0.11
Total	Rs./Kwh	1.55	2.92	2.81

HT Industrial Consumers (Non-Captive, RE)

OA Charges	Unit	FY2015-16	FY2017-18	FY2018-19
Cross Subsidy Surcharge	Rs./Kwh	0.54	1.31	1.37
Distribution Wheeling	Rs./Kwh	0.07	0.08	0.09
Transmission Charge	Rs./Kwh	0.46	0.48	0.43
SLDC Charge	Rs./Kwh	0.01	0.01	0.01
RPO	Rs./Kwh	-	-	-
Total	Rs./Kwh	1.08	1.88	1.90

HT Industrial Consumers (Captive, conventional)

OA Charges	Unit	FY2015-16	FY2017-18	FY2018-19
Cross Subsidy Surcharge	Rs./Kwh	-	-	-
Distribution Wheeling	Rs./Kwh	0.22	0.23	0.27
Transmission Charge	Rs./Kwh	0.71	1.29	1.06
SLDC Charge	Rs./Kwh	0.00	0.00	0.00
RPO	Rs./Kwh	0.08	0.09	0.11
Total	Rs./Kwh	1.01	1.61	1.44

HT Industrial Consumers (Captive,RE)

Charges	Unit	FY2015-16	FY2017-18	FY2018-19
Cross Subsidy Surcharge	Rs./Kwh	-	-	-

Charges	Unit	FY2015-16	FY2017-18	FY2018-19
Distribution Wheeling	Rs./Kwh	0.07	0.08	0.09
Transmission Charge	Rs./Kwh	0.46	0.48	0.43
SLDC Charge	Rs./Kwh	0.01	0.01	0.01
RPO	Rs./Kwh	-	-	-
Total	Rs./Kwh	0.54	0.57	0.53

HT Commercial Consumers(Non-Captive, conventional)

Charges	Unit	FY2015-16	FY2017-18	FY2018-19
Cross Subsidy Surcharge	Rs./Kwh	0.54	1.31	1.90
Distribution Wheeling	Rs./Kwh	0.22	0.23	0.27
Transmission Charge	Rs./Kwh	0.71	1.29	1.06
SLDC Charge	Rs./Kwh	0.00	0.00	0.00
RPO	Rs./Kwh	0.08	0.09	0.11
Total	Rs./Kwh	1.55	2.92	3.34

HT Commercial Consumers(Non-Captive, RE)

OA Charges	Unit	FY2015-16	FY2017-18	FY2018-19
Cross Subsidy Surcharge	Rs./Kwh	0.54	1.31	1.90
Distribution Wheeling	Rs./Kwh	0.07	0.08	0.09
Transmission Charge	Rs./Kwh	0.46	0.48	0.43
SLDC Charge	Rs./Kwh	0.01	0.01	0.01
RPO	Rs./Kwh	-	-	-
Total	Rs./Kwh	1.08	1.88	2.43

HT Commercial Consumers(Captive, conventional)

Charges	Unit	FY2015-16	FY2017-18	FY2018-19
Cross Subsidy Surcharge	Rs./Kwh			
Distribution Wheeling	Rs./Kwh	0.22	0.23	0.27
Transmission Charge	Rs./Kwh	0.71	1.29	1.06
SLDC Charge	Rs./Kwh	0.00	0.00	0.00
RPO	Rs./Kwh	0.08	0.09	0.11
Total	Rs./Kwh	1.01	1.61	1.44

HT Commercial Consumers (Captive, RE)

Charges	Unit	FY2015-16	FY2017-18	FY2018-19
Cross Subsidy Surcharge	Rs./Kwh	-	-	-
Distribution Wheeling	Rs./Kwh	0.07	0.08	0.09
Transmission Charge	Rs./Kwh	0.46	0.48	0.43
SLDC Charge	Rs./Kwh	0.01	0.01	0.01
RPO	Rs./Kwh	-	-	-
Total	Rs./Kwh	0.54	0.57	0.53

Break Even Power Purchase Cost

The table below compares the retail tariff applicable on HT consumers against the open access charges applicable on such consumers. It can be observed that significant gap exists between retail

tariffs and open access charges for HT Industrial and HT Commercial consumers in most of the cases making it economically beneficial for them to migrate to open access.

Table: Comparison of OA charges & Break-even PPC for FY17-18 (HT Industrial)

Parameters		Conventional Non-Captive	RE Non-Captive	Conventional Captive	RE Captive
Open Access Charges	A	2.81	2.12	1.44	0.75
Tariff (Variable)	B	7.20	7.20	7.20	7.20
Break Even PPC	C=B-A	4.39	5.08	5.76	6.45
Break Even PPC after losses	$C/(1+T\&D \text{ Loss})$	4.05	4.68	5.31	5.95

Table: Comparison of OA charges & Break-even PPC for FY17-18 (HT Commercial)

Parameters		Conventional Non-Captive	RE Non-Captive	Conventional Captive	RE Captive
Open Access Charges	A	3.34	2.65	1.44	0.75
Tariff (Variable)	B	8.00	8.00	8.00	8.00
Break Even PPC	C=B-A	4.66	5.35	6.56	7.25
Break Even PPC after losses	$C/(1+T\&D \text{ Loss})$	4.30	4.93	6.05	6.68

7.8.5. APTEL/ SERC cases regarding open access

In order to understand the issues faced by open access consumers in the state of Assam, various APTEL and SERC cases related to open access were analysed. The table below provides a summary of such APTEL/ SERC cases.

Commission	Case No.	Year	Utility	OA Consumer	Brief description of case
AERC	FILE NO. AERC. 631/2017 Petition No.:12/2017 & IA No 2/2017	2017	APDCL	M/S R.K.Dispo Products	<ul style="list-style-type: none"> The Petition is directed against APDCL claiming reconnection of the disconnected dedicated distribution line by APDCL connecting Ecotech Papers Ltd and R K Dispo Products on 29.06.2017 for availing open access power. After concurrence from APDCL, R K Dispo Products has been purchasing power of 500 KW through the dedicated line and paying CSS and wheeling charges from 18.08.2015. However on 19.06.2017 APDCL withdrew the concurrence citing sale & purchase of power from Ecotech Papers Ltd to R K Dispo Products Lts was allowed as a special case though there was no rule for allowing Open Access to consumer having connected load less than 1 MW and presently such special allowance is in violation to the existing network Based on the observations, the Commission (AERC) decided that the power sale between the Petitioner (R. K. Dispo Products) and the Pro-forma Respondent (Ecotech Papers) is not as per prevailing sets of Regulations and hence the same need to be discontinued. APDCL is accordingly directed to take necessary steps and simultaneously ensure availability of power to the existing consumer i.e. M/S R K Dispo Products (the Petitioner) through its Distribution Network, as per the prevailing Regulations. http://www.aerc.gov.in/Order%20dated%2015.09.2017.pdf

7.9. Andhra Pradesh

Andhra Pradesh is situated in the south-eastern India with a population of over 5 Crore and area of 160,205 square km. Andhra Pradesh became the third State in the country after Gujarat and Punjab to achieve 100% electrification of households in FY2016-17.

The state has well-developed social, physical and industrial infrastructure and virtual connectivity. It also has good power, airport, IT and port infrastructure. Andhra Pradesh has a growing economy with immense potential. Primarily it is an agricultural driven economy but recently industrialization is growing at a rapid pace. As of July 2018, the state had 19 operational SEZs across diversified sectors which include textiles and apparel, food processing, footwear and leather products, multi-product, pharma, IT SEZs etc. Thus it is evident that energy is an important aspect for Andhra Pradesh to progress in near future.

Andhra Pradesh is an energy sufficient state. The erstwhile Andhra Pradesh State Electricity Board (APSEB) was unbundled into six entities to focus on the core operation of Power Generation (APGENCO), Power Transmission (APTRANSCO) and 4 Distribution (APDISCOMS). In FY2014-15 the Telangana state was carved out of Andhra Pradesh and the state of Andhra Pradesh was left with two distribution utilities – Andhra Pradesh Southern Power Distribution Company Limited (APSPDCL) and Andhra Pradesh Eastern Power Distribution Company Limited (APEPDCL).

Key Parameters	
Peak demand	8,993 MW
Annual Units Available	58,290 MUs
Sales	54,392 MUs
Power Utilities	G – APGENCO T – APTRANSCO D – SPDCL, EPDCL

The total energy sales of these two Discoms combined has grown at a slow pace from 49,991 MUs in FY2015-16 to 54,392 MUs in FY2018-19. The state had total installed generation capacity of 23,974 MW as on Feb 2019 and had a peak demand 8,993 MW in FY2017-18 (as per CERC LGBR Report FY2018-19).

The analysis of open access status review is performed for state owned Discoms i.e. SPDCL and EPDCL in Andhra Pradesh.

7.9.1. Regulatory Review

In this section a detailed review is performed of the open access regulations issued by State Electricity Regulatory Commissions (SERCs) to analyse –

- Evolution of open access regulations in the state along with their key amendments
- Eligibility conditions and restrictions for availing open access, along with types of open access allowed
- Process of applying for open access
- Provisions for open access charges
- Any other regulation/ policies relevant to open access

Evolution of open access regulations

In line with the provisions of Electricity Act 2003, the state of Andhra Pradesh issued Open Access Regulations in the year 2005 namely 'Terms and conditions for Open Access for Intra-state Transmission and Distribution System, Regulation'. These were amended in 2016. The table summarizes the evolution of open access regulations over time along with the key amendments made thereof.

Year	Regulation/ Amendment	Key Amendment
2005	OA Regulation	-
2016	Amendment	<ul style="list-style-type: none"> Deemed approval of open access application after 30 days Solar and wind power for use within the state, exempted from transmission charges, distribution wheeling charges, CSS and Additional Surcharge

Year	Regulation/ Amendment	Key Amendment
		• Distribution Losses exempted for solar power injecting <= 33 kV voltage

Open access eligibility

The Open Access regulations issued by APERC in 2005 define eligibility criteria’s for availing open access, based on various technical and commercial considerations. Based on the prevalent regulations, these eligibility requirements and restrictions in the state of Andhra Pradesh are as follows –

Contract Demand	- 1 MW or above
Feeder level conditions	-
Voltage level conditions	-
Additional Provisions	-

The relevant provisions of the regulations are reproduced below –

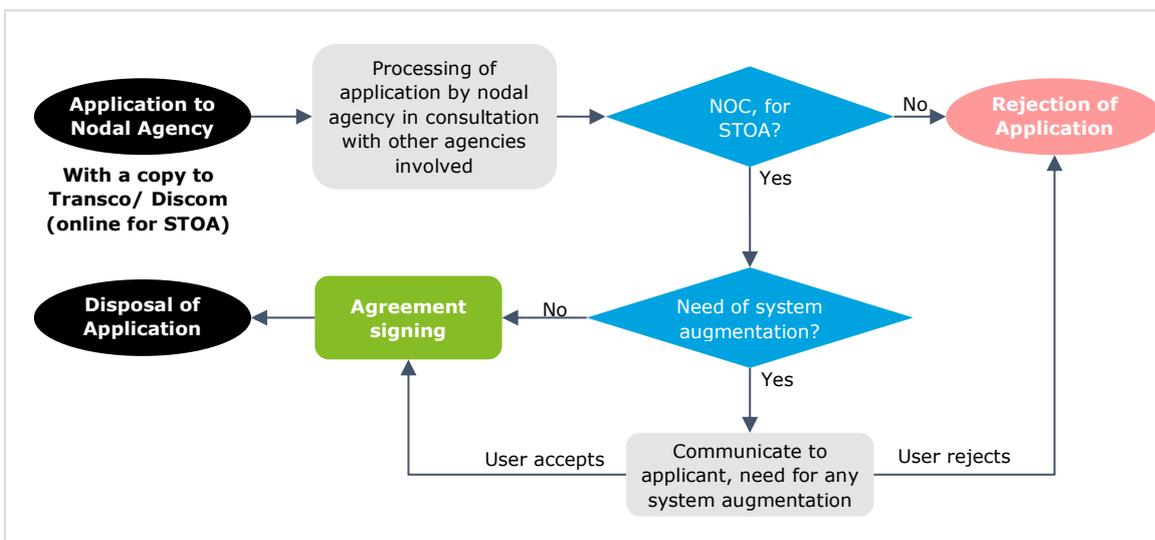
'8.1 Where open access to the Transmission and/or Distribution systems is sought by any user, the Nodal Agency shall permit such open access strictly in accordance with the following phases:

Phase	Eligibility Criteria	Commencement Date
1	Consumers availing of power from NCE developers irrespective of the quantum of contracted capacity	Sep, 2005
2	Contracted capacity being greater than 5 MW	Sep, 2005
3	Contracted capacity being greater than 2 MW	Sep, 2006
4	Contracted capacity being greater than 1 MW	Apr, 2008

Open access application process

In Andhra Pradesh, the SLDC (ring-fenced within APTRANSCO) acts as Nodal Agency for STOA applications and APTRANSCO acts as the Nodal Agency for LTOA Applications.

As per **regulation 10 of open access regulations 2005**, the procedure to get open access for the State of Andhra Pradesh is represented below in the form of a flow chart.



All open access application received in a month, are deemed to be received simultaneously on the day of closure of application submission window of that month.

'10.5 All applications received within a calendar month e.g. during 1st April to 30th April, shall be considered to have been filed simultaneously. This window of a calendar month shall keep rolling over i.e. after the expiry of a monthly window, another window of the duration of the next calendar month shall commence.'

The Amendments to Open Access regulations issued by APERC in 2016, provide for a deemed approval of long term open access application within 30 days time period.

'10.6 Provided that in the absence of any response or intimation from the Nodal Agency to the applicant within 30 days of closure of a window, then such application shall be deemed to have been allowed Open Access by the Nodal Agency in terms of such application.'

Online application process is created for STOA consumers, wherein the NOC is also granted online by concerned licensee. APTRANSCO has provided detailed procedures for availing short term open access and a form for LTOA applications, on its website. The documents required to be submitted along with the open access application are listed down in the table below, on the basis of these procedures/ forms. The table below summarises the key features of the process related to getting Open Access -

	Long Term OA	Short Term OA
Nodal Agency	APTRANSCO	SLDC
Time-period	<ul style="list-style-type: none"> • 30 days (if no system strengthening is required) • If system strengthening is required, the Nodal Agency to inform consumer of expected time frame 	<ul style="list-style-type: none"> • For OA upto 1 day: 12 hours • For OA upto 1 week: 2 days • For OA upto 1 month: 7 days • For OA upto 1 year: 30 days
Documents	<ul style="list-style-type: none"> • Application Fee • If Captive usage, a Chartered Accountant Certificate required, exhibiting capital structure and compliance with regard to requirements under Electricity Act 2003 • Copy of PPA/ MoU 	<ul style="list-style-type: none"> • Application Fee • No Dues Certificate • UI undertaking • RPO undertaking
Cost	<ul style="list-style-type: none"> • Application Fee: Rs. 10,000 	<ul style="list-style-type: none"> • Application Fee: Rs. 1,000

From the table above and the application process for open access in the State, based on the prevalent regulations, it can be observed that the applicant is not required to take a separate NOC from Discom or Transco, before applying for open access to the nodal agency. Instead the nodal agency itself coordinates with relevant agencies for granting NOC to the applicant for open access. This is also due to the fact that the nodal agency in the State is the Transco itself.

It should also be noted that, as per prevalent regulations, in case the nodal agency has not communicated any deficiency or defect in the application within 30 working days from the date of receipt of application, or refusal/ consent within 30 working days from the date of receipt of the application, consent/ NOC shall be deemed to have been granted.

Open access charges

The open access regulations in the State of Andhra Pradesh, define the following types of open access charges -

- 1) Transmission charges
- 2) Wheeling charges
- 3) Scheduling and system operation charges
- 4) Cross Subsidy Surcharge
- 5) Additional Surcharge

The open access regulations allow for recovery of an Additional Surcharge from consumers, determined by the Commission from time to time, to meet the fixed cost of the distribution licensee arising out of his obligation to supply. However the Commission has not determined any Additional Surcharge for Discoms. Apart from Additional Surcharge, other major open access charges in the State of Andhra Pradesh are discussed in detail in the sub-sections below.

Cross Subsidy Surcharge

The open access regulations in the state of Andhra Pradesh, do not prescribe a set methodology for the calculation of Cross Subsidy Surcharge (CSS), instead the regulations state that the CSS shall be leviable at the rates as determined by the Commission from time to time. The APERC determines cross subsidy surcharge in its Retail Tariff Orders for Discoms.

For the calculation of CSS, the APERC has adopted the methodology prescribed by the National Tariff Policy 2016 in its tariff orders of FY2016-17 onwards.

The CSS is calculated separately for each HT consumer category, at different voltage levels. The table below represents the Cross Subsidy Surcharge for HT Industrial and HT Commercial consumer categories for the last three financial years, separately for APSPDCL and APEPDCL.

Cross Subsidy Surcharge-SPDCL	Units	FY2016-17	FY2017-18	FY2018-19
HT Industrial				
11 kV	Rs./Kwh	1.61	1.65	1.77
33 kV	Rs./Kwh	1.36	1.43	1.42
132 kV	Rs./Kwh	1.30	1.35	1.35
HT others				
11 kV	Rs./Kwh	1.88	1.96	2.04
33 kV	Rs./Kwh	1.83	1.75	1.82
132 kV	Rs./Kwh	1.54	1.59	1.64
HT Public Infra (Aviation)				
11 kV	Rs./Kwh	1.59	1.87	1.84
33 kV	Rs./Kwh	1.70	1.38	2.10
132 kV	Rs./Kwh	-	-	-

It can be observed from the above table that there is no major variation in the cross subsidy charges for APSPDCL at 33 kV voltage level for the HT Industrial and HT others category. However for the HT Public infra it can be observed that there is major variation in the CSS at 33 kV voltage level. The reason of such variation is the change in average realization in this category with respect to FY17 to FY 19. The average realization while calculating CSS for HT public infrastructure at 33 kV voltage level has varied from Rs.8.49/unit in FY2016-17 to Rs.10.49/unit in FY2018-19.

Cross Subsidy Surcharge-EPDCL	Units	FY2016-17	FY2017-18	FY2018-19
HT Industrial				
11 kV	Rs./Kwh	1.54	1.72	1.61
33 kV	Rs./Kwh	1.35	1.57	1.44
132 kV	Rs./Kwh	1.29	1.38	1.41
HT others				
11 kV	Rs./Kwh	1.99	2.17	2.08
33 kV	Rs./Kwh	1.75	1.76	2.01
132 kV	Rs./Kwh	1.93	1.74	1.80
HT Public Infra (Aviation)				
11 kV	Rs./Kwh	1.56	1.84	1.84
33 kV	Rs./Kwh	1.54	1.59	1.56
132 kV	Rs./Kwh	1.46	-	-

Source: APERC Tariff Orders and Orders for CSS

It can be observed from the above table that unlike APSPDCL, there is no major variation in the cross subsidy charges for AESPDCL at 33 kV voltage level for HT Public Infra category. The reason of such variation is the change in average realization in this category with respect to FY17 to FY 19. The average realization while calculating CSS for HT Industrial category at 33 kV voltage level has varied from Rs. 6.75/unit in FY2016-17 to Rs. 7.21/unit in FY2018-19. The average realization while calculating CSS for HT Others Category at 33 kV voltage level has varied from Rs. 8.76/unit in FY2016-17 to Rs. 10.05/unit in FY2018-19.

Distribution Wheeling Charges

The open access regulations in Andhra Pradesh State that wheeling charges are to be payable by open access consumers to the Discom, as determined by the Commission for the relevant financial year.

No specific methodology has been prescribed in the open access regulations for the calculation of the wheeling charges. The Commission has issued an MYT order for calculation of wheeling tariffs from FY2014-15 to FY2018-19. In this order, the Commission has calculated voltage wise ARR for Discoms and divided it with voltage wise contract demand (gross up by voltage wise losses) to calculate a per kW per month wheeling charge.

There is no separate wheeling charges specified for long-term, medium-term or short-term open access consumers approved by the Commission. The table below represents the Distribution Wheeling charges for all OA consumer categories for the last three financial years.

Wheeling charges-SPDCL	Units	FY2016-17	FY2017-18	FY2018-19
11 kV	Rs./Kw/month	227.14	232.26	240.68
33 kV	Rs./Kw/month	15.59	15.11	15.17

Wheeling charges-EPDCL	Units	FY2016-17	FY2017-18	FY2018-19
11 kV	Rs./Kw/month	247.55	262.96	279.50
33 kV	Rs./Kw/month	11.38	11.80	12.22

Transmission Charges

The open access regulations in Andhra Pradesh State that open access consumer using intra-State transmission system shall pay transmission charges to the STU, as determined by the Commission for the relevant financial year.

No specific methodology is prescribed in the open access regulations for the calculation of Transmission charges. The Commission has issued an MYT order for calculation of transmission tariffs from FY2014-15 to FY2018-19. In this order, the Commission has divided the net ARR of APTRANSCO with the generation capacity in the State, to calculate a per kW per month transmission tariff.

The Commission has not determined separate transmission charges for Long Term and Medium Term open access consumers. The table below represents the Transmission charges for the last three financial years.

Transmission charges-APTRANSCO	Units	FY2016-17	FY2017-18	FY2018-19
All OA consumers	Rs./Kw/month	91.36	95.37	94.44

Scheduling and system operation charges

The open access regulations in Andhra Pradesh require open access consumers to pay SLDC charges for scheduling and system operation, as determined by the Commission from time to time in its Tariff Orders. The open access regulations do not prescribe any specific methodology for determination of open access charges. The Commission has issued a MYT order for determination of

SLDC charges for FY2014-15 to FY2018-19. In this order, the Commission has calculated an Annual SLDC Fee and a Monthly Operating Charge for SLDC. The Annual SLDC Fee is calculated by dividing the annual capital cost of SLDC by the generation capacity in the State. The monthly operating charge is calculated by dividing the monthly operating cost of SLDC by the generation capacity in the State.

The table below represents the SLDC surcharges, determined by the Commission, for the last three financial years.

SLDC charges	Units	FY2016-17	FY2017-18	FY2018-19
Annual Fee	Rs./MW/Year	3,533	3,995	4,214
Operating Charges	Rs./MW/Month	2,248	2,300	2,343

Energy Losses

Apart from Open Access charges, the regulations also provide that the open access agreement signed by the licensee and open access consumer, shall mention the transmission and distribution losses to be deducted on open access power. The table below represents the voltage wise T&D losses adopted by Commission in its tariff orders over the last three financial years.

T&D losses-SPDCL	Units	FY2016-17	FY2017-18	FY2018-19
Distribution LT	%	4.75%	4.50%	4.40%
Distribution 11kV	%	3.65%	3.47%	3.38%
Distribution 33kV	%	3.61%	3.44%	3.35%
Transmission	%	3.34%	3.03%	3.27%

T&D losses-EPDCL	Units	FY2016-17	FY2017-18	FY2018-19
Distribution LT	%	4.74%	4.27%	4.16%
Distribution 11kV	%	3.80%	3.42%	3.33%
Distribution 33kV	%	3.22%	2.90%	2.82%
Transmission	%	3.34%	3.03%	3.27%

RPO Obligation

Renewable Purchase Obligations (RPO) are applicable on open access consumers taking supply from conventional sources.

The APERC issued Renewable Purchase Obligation Regulations in 2012 which defined 5% as the total RPO requirement with 0.25% as solar requirement and rest from non-solar renewable sources. The Commission issued a new set of RPO regulations in 2017 which defined increasing RPO requirements from year FY2017-18 to FY2021-22.

RPO Obligations applicable for open access consumer in the last three financial years is detailed in table below.

RPO Obligation	Units	FY2016-17	FY2017-18	FY2018-19
Solar	%	0.25%	6.00%	7.00%
Non-Solar	%	4.75%	3.00%	4.00%
Total	%	5.00%	9.00%	11.00%

Other Regulatory Provisions

Banking of Power Facility

The open access regulations in the State of Andhra Pradesh do not have any specific provision for banking facility. However clause 4 of the Andhra Pradesh Solar Power Policy of 2015, provides banking facility for both captive and third party open access consumers in the State.

'4. c) Energy Banking

Banking of 100% of energy shall be permitted for all Captive and Open Access/ Scheduled Consumers during all 12 months of the year. Banking charges shall be adjusted in kind @ 2% of the energy delivered at the point of drawal. The banking year shall be from April to March.'

Based on the provisions of open access regulations and solar policy, the table below summarises the applicability of banking provisions and banking charges for various types of consumers.

Applicability and Charges for Banking of Power	Conventional Power	RE Power
Captive consumer	<ul style="list-style-type: none"> • Not available 	<ul style="list-style-type: none"> • Available • 2% banking charge
Third party open access	<ul style="list-style-type: none"> • Not available 	<ul style="list-style-type: none"> • Available • 2% banking charge

Deviation Settlement Mechanism

Regulations on 'APERC forecasting scheduling and deviation settlement for Solar and wind generation' were issued by APERC in 2017. As per clause 3.2 of these regulations, the Deviations Settlement Mechanism is applicable on Open Access consumers.

'3.2 Applicability: This regulation is applicable to all wind and solar generators connected through pooling stations and supplying power to the DISCOMs, or to the third parties through open access or for captive consumption through open access, and selling power within or outside the State.'

Deviation Charges in case of under or over-injection, for sale/supply of power within the State, are as follows:

Absolute Error in the 15-minute time block	Deviation Charges payable to State Deviation Pool Account
< = 15%	None
>15% but <=25%	At Rs. 0.50 per unit for the shortfall or excess energy for absolute error beyond 15% and up to 25%
>25% but <=35%	At Rs. 0.50 per unit for the shortfall or excess energy beyond 15% and up to 25%+ Rs. 1.0 per unit for balance energy beyond 25% and up to 35%
> 35%	At Rs. 0.50 per unit for the shortfall or excess energy beyond 15% and upto 25% + Rs. 1.0 per unit for shortfall or excess energy beyond 25% and upto 35% + Rs. 1.50 per unit for balance energy beyond 35%

Deviation Charges in case of under injection, for sale/supply of power outside the State, are as follows:

Absolute Error in the 15-minute time block	Deviation Charges payable to State Deviation Pool Account
< = 15%	At the fixed rate for the shortfall energy for absolute error up to 15%
>15% but <=25%	At the fixed rate for the shortfall energy for absolute error up to 15%+110% of fixed rate for balance energy beyond 15% and up to 25%

>25% but <=35%	At the fixed rate for the shortfall energy for absolute error up to 15%+110% of fixed rate for balance energy beyond 15% and up to 25%+120% of the fixed rate for balance energy beyond 25% and upto 35%
> 35%	At the fixed rate for the shortfall energy for absolute error up to 15%+110% of fixed rate for balance energy beyond 15% and up to 25%+120% of the fixed rate for balance energy beyond 25% and upto 35%+130% of the fixed rate for balance energy beyond 35%

Deviation Charges in case of over injection, for sale/supply of power outside the State, are as follows:

Absolute Error in the 15-minute time block	Deviation Charges payable to State Deviation Pool Account
< = 15%	At the Fixed Rate for excess energy upto 15%
>15% but <=25%	At the Fixed Rate for excess energy upto 15% + 90% of the Fixed Rate for excess energy beyond 15% and upto 25%
>25% but <=35%	At the Fixed Rate for excess energy upto 15% + 90% of the Fixed Rate for excess energy beyond 15% and upto 25% + 80% of the Fixed Rate for excess energy beyond 25% and upto 35%
> 35%	At the Fixed Rate for excess energy upto 15% + 90% of the Fixed Rate for excess energy beyond 15% and upto 25% + 80% of the Fixed Rate for excess energy 11 beyond 25% and upto 35% + 70% of the Fixed Rate for excess energy beyond 35%

7.9.2. Open access activity review

In this section a detailed review is performed of the existing level and past trend of open access activity in Andhra Pradesh. As a part of this assignment, a data collection exercise was conducted to collect data with respect to the open access activity in the shortlisted States. Data was sought from the respective Discoms and SLDCs for the number of open access consumers in the State, their type (captive/ non-captive and long/ medium or short term), and open access sales over the last 3 financial years.

Number of open access consumers and sales

Based on the information shared by Discoms, the details of number of open access consumers is shown in the table below.

No. of OA Consumers for both Discoms	Units	FY2015-16	FY2016-17	FY2017-18
Long Term	Nos.	43	106	176
Medium Term	Nos.	-	-	9
Short Term	Nos.	50	78	151
Total	Nos.	93	184	336
Captive	Nos.	21	60	132
Non-Captive	Nos.	72	124	204
Total	Nos.	93	184	336
RE	Nos.	89	178	298
Conventional	Nos.	4	6	38
Total	Nos.	93	184	336

OA sales for both Discoms	Units	FY2015-16	FY2016-17	FY2017-18
Long Term	Gwh	277	572	606
Medium Term	Gwh	-	-	-

OA sales for both Discoms	Units	FY2015-16	FY2016-17	FY2017-18
Short Term	Gwh	309	476	431
Total	Gwh	586	1,048	1,038
Captive	Gwh	164	295	366
Non-Captive	Gwh	422	753	671
Total	Gwh	586	1,048	1,038
RE	Gwh	533	981	896
Conventional	Gwh	53	68	142
Total	Gwh	586	1,048	1,038

It can be observed from the above data that the open access consumers has increased significantly between FY16 and FY18. One of the major reasons for this increase could be increase in the renewable generation capacity in the State and incentives being provided on open access charges for renewable energy.

Also it can be observed that primarily the open access consumers in the State are non-captive consumers which are drawing renewable power, with a mix of LTOA and STOA consumers.

7.9.3. Commercial Review

In this section, the consumer category wise sales and the load profile of consumers is analysed in order to understand the potential of open access migration in the State. Potential of open access migration would be higher in States with higher share of HT industrial and HT commercial sales, along with a profile of consumers with higher loads.

The consumer category wise sales data is taken from respective tariff orders of the Commission. The data for load profile of HT consumers is collected from respective Discoms of APSPDCL and APEPDCL.

HT sales as a % of total sales

The table below represents the consumer category wise sales in the State of Andhra Pradesh for APSPDCL and APEDCL. As per the sales data, HT industrial and commercial sales form approx. 29% of the overall sales in the state, combined for the two Discoms.

APSPDCL	Units	FY2016-17	FY2017-18	FY2018-19
HT Sales				
HT Industry	Gwh	8,915	8,745	7,425
HT Others (Commercial)	Gwh	743	861	814
Others	Gwh	2,536	1,523	3,683
Sub-Total	Gwh	12,194	11,129	11,878
LT Sales				
Sub-Total	Gwh	20,614	21,492	23,044
Total	Gwh	32,808	32,621	34,922
HT Industrial Sales (as % of total sales)	%	27%	27%	21%
HT Others Sales (as % of total sales)	%	3%	3%	3%

APEDCL	Units	FY2016-17	FY2017-18	FY2018-19
HT Sales				
HT Industry	Gwh	5,956	5,702	6,699
HT Others (Commercial)	Gwh	673	727	644
Others	Gwh	1,504	1,305	1,750

APEDCL	Units	FY2016-17	FY2017-18	FY2018-19
Sub-Total	Gwh	8,133	7,734	9,093
LT Sales				
Sub-Total	Gwh	9,050	9,722	10,377
Total	Gwh	17,183	17,456	19,470
HT Industrial Sales (as % of total sales)	%	34%	35%	34%
HT Others Sales (as % of total sales)	%	4%	4%	4%

Load Profile of HT Consumers

The tables below showcase the load profile of HT Industrial consumers in Andhra Pradesh, as provided by the Discom. Consumers falling in the category of 1-10 MW form 56% of the overall HT Industrial sales and 98% of the overall HT Industrial consumers. These consumers have a lower potential of migrating to open access.

Load Profile - Sales of HT Industrial Consumers					
Load category	Units	FY2015-16	FY2016-17	FY2017-18	FY2018-19
1-5 MW	Gwh	5,072	4,981	5,281	4,166
6-10 MW	Gwh	1,427	1,593	1,748	1,501
11-50 MW	Gwh	2,917	3,115	3,589	3,097
51-100 MW	Gwh	549	718	972	384
> 100 MW	Gwh	532	607	493	910
1-5 MW	%	48%	45%	44%	41%
6-10 MW	%	14%	14%	14%	15%
11-50 MW	%	28%	28%	30%	31%
51-100 MW	%	5%	7%	8%	4%
> 100 MW	%	5%	6%	4%	9%

Load Profile - Number of HT Industrial Consumers					
Load Category	Units	FY2015-16	FY2016-17	FY2017-18	FY2018-19
1-5 MW	Nos.	3,634	3,794	3,956	4,027
6-10 MW	Nos.	48	51	57	61
11-50 MW	Nos.	37	38	41	47
51-100 MW	Nos.	2	2	2	2
> 100 MW	Nos.	1	1	1	2
1-5 MW	%	98%	98%	98%	97%
6-10 MW	%	1%	1%	1%	1%
11-50 MW	%	1%	1%	1%	1%
51-100 MW	%	0%	0%	0%	0%
> 100 MW	%	0%	0%	0%	0%

The tables below showcase the load profile of HT Commercial consumers in Andhra Pradesh, as provided by the Discom. Consumers falling in the category of 1-10 MW form 94% of the overall HT Commercial sales and 100% of the overall HT Commercial consumers. These consumers have a lower potential of migrating to open access.

Load Profile - Sales of HT Commercial Consumers

Load category	Units	FY2015-16	FY2016-17	FY2017-18	FY2018-19
1-5 MW	Gwh	705	754	833	725
6-10 MW	Gwh	122	108	107	53
11-50 MW	Gwh	79	44	41	49
51-100 MW	Gwh	-	-	-	-
> 100 MW	Gwh	-	-	-	-
1-5 MW	%	78%	83%	85%	88%
6-10 MW	%	13%	12%	11%	6%
11-50 MW	%	9%	5%	4%	6%
51-100 MW	%	0%	0%	0%	0%
> 100 MW	%	0%	0%	0%	0%

Load Category	Units	Load Profile - Number of HT Commercial Consumers			
		FY2015-16	FY2016-17	FY2017-18	FY2018-19
1-5 MW	Nos.	1,498	1,585	1,946	2,190
6-10 MW	Nos.	6	4	4	4
11-50 MW	Nos.	3	1	1	3
51-100 MW	Nos.	-	-	-	-
> 100 MW	Nos.	-	-	-	-
1-5 MW	%	99%	100%	100%	100%
6-10 MW	%	0%	0%	0%	0%
11-50 MW	%	0%	0%	0%	0%
51-100 MW	%	0%	0%	0%	0%
> 100 MW	%	0%	0%	0%	0%

7.9.4. Tariff and open access charges review

In this section a detailed review of the retail tariff applicable on HT Industrial and HT Commercial consumers and open access charges is performed.

The breakup of fixed and variable tariff is analysed and compared against the fixed and variable cost of Discom. Higher is the gap between the fixed cost of Discom and fixed tariff collected from consumers, higher would be the impact on Discom due to open access migration, as the fixed tariff recovered from consumers would not be sufficient to cover the fixed cost of Discom.

Further the gap between retail tariff applicable on HT consumers and open access charges is analysed to understand the probability of consumers to migrate to open access. Higher is the gap between open access charges and the retail tariff, higher is the probability of consumers to migrate to open access.

Review of retail tariff charged to HT consumers

The ACOS Coverage for HT consumers in the State has remained outside +/- 20% for the last three years. The fixed tariff (i.e. demand charges) for HT consumers is not sufficient to cover the fixed costs of Discom. The average realization from fixed charges in FY2018-19 was just 15% for HT Industrial consumers and 13% from HT Commercial consumers, as against 55% fixed component of ACoS.

The table below showcases the fixed/ variable breakup of ACOS along with their corresponding fixed-variable breakup of ABR and ACoS average for HT Industrial consumers and HT Commercial

consumers. For the estimation of variable part of ARR, the variable power purchase cost is taken as variable ARR for Discom as provided in the respective tariff orders.

For the estimation of ABR, the variable tariff of respective consumer category is added to an estimated per unit charge for fixed tariffs. The fixed tariff of respective consumer category is converted into per unit charge assuming a load factor of 60%. The variable tariffs in Rs. per Kvah are converted into Rs. per kwh using a power factor of 95%.

	FY2016-17	FY2017-18	FY2018-19
ACoS			
Total	5.33	5.54	5.88
Fixed	49%	45%	45%
Variable	51%	55%	55%
HT Industrial ABR			
Total	6.40	7.28	7.28
Fixed	14%	15%	15%
Variable	86%	85%	85%
HT Others ABR			
Total	7.97	8.45	8.45
Fixed	11%	13%	13%
Variable	89%	87%	87%
ACoS Coverage			
HT industrial	120%	131%	124%
HT commercial	149%	152%	144%

Open access charges

In this sub-section, the open access charges applicable on various types of open access consumers is analysed. The open access charges for following types of consumers are discussed below –

- Conventional power through Non-Captive mode
- Conventional power through Captive mode
- Renewable power through Non Captive mode
- Renewable power through Captive mode

The open access charges differ for these different types of consumers, as charges like CSS and Additional Surcharge are not applicable on captive consumers. Further consumers taking renewable power, are offered discounts on open access charges by the Commission, as renewable promotion measures.

The amendment to open access regulations issued by APERC in 2016, provide exemption on open access charges for power wheeled from solar and wind projects, for use within the state.

'17.1 (i) Provided further that the Transmission and Wheeling charges shall be exempted for wheeling of power generated from such Solar and Wind Power Projects and for such operative periods as mentioned in G.O.Ms.No.8, Dated 12-02-2015 and G.O.Ms.No.9, Dated 13-02-2015 respectively for only captive use / third party sale within the State.

Provided also that the Distribution losses shall be exempted for such Solar Power Projects and for such operative period as mentioned in G.O.Ms.No.8, Dated 12-02- 2015 injecting at 33 kV or below irrespective of voltage-level of the delivery point within the Discom for such projects'

'17.1 (iii) Provided further that the Cross Subsidy Surcharge and additional surcharge shall be exempted for third party sale if the source of power is from such Solar Power Projects set up

within the State as mentioned in G.O.Ms.No.8, Dated 12-02-2015 for a period of five (5) years from the date of commissioning of such projects'

The discounts available for renewable power on various open access charges according to prevailing Andhra Pradesh open access regulations are showcased in the table below.

Discounts for Renewable Power	Unit	FY2016-17	FY2017-18	FY2018-19
Solar Power				
Cross Subsidy Surcharge	%	100%	100%	100%
Distribution Wheeling	%	100%	100%	100%
Transmission Charge	%	100%	100%	100%
SLDC Charge	%	-	-	-
Distribution loss	%	100%	100%	100%
Transmission Loss	%	-	-	-
Wind Power				
Cross Subsidy Surcharge	%	-	-	-
Distribution Wheeling	%	100%	100%	100%
Transmission Charge	%	100%	100%	100%
SLDC Charge	%	-	-	-
Distribution loss	%	-	-	-
Transmission Loss	%	-	-	-

The following general assumptions are taken while analysing the open access charges for various consumer types -

- 1 MW load
- 60% load factor for conventional power
- 18% load factor for renewable Power
- 33 kV Connected voltage
- Long Term Open Access
- Solar in case of renewable power

The tables below showcase the open access charges applicable on various types of consumers as discussed above.

HT Industrial Consumers (Non-Captive, conventional)

OA Charges - SPDCCL	Unit	FY2016-17	FY2017-18	FY2018-19
Cross Subsidy Surcharge	Rs./Kwh	1.36	1.43	1.42
Distribution Wheeling	Rs./Kwh	0.04	0.03	0.04
Transmission Charge	Rs./Kwh	0.21	0.22	0.22
SLDC Annual Fee	Rs./Kwh	0.00	0.00	0.00
SLDC Operating Charge	Rs./Kwh	0.01	0.01	0.01
RPO	Rs./Kwh	0.05	0.09	0.11
Total	Rs./Kwh	1.66	1.78	1.79

OA Charges - EPDCL	Unit	FY2016-17	FY2017-18	FY2018-19
Cross Subsidy Surcharge	Rs./Kwh	1.35	1.57	1.44
Distribution Wheeling	Rs./Kwh	0.03	0.03	0.03
Transmission Charge	Rs./Kwh	0.21	0.22	0.22
SLDC Annual Fee	Rs./Kwh	0.00	0.00	0.00
SLDC Operating Charge	Rs./Kwh	0.01	0.01	0.01

OA Charges - EPDCL	Unit	FY2016-17	FY2017-18	FY2018-19
RPO	Rs./Kwh	0.05	0.09	0.11
Total	Rs./Kwh	1.64	1.91	1.80

HT Industrial Consumers (Non-Captive, RE)

OA Charges - SPDCL	Unit	FY2016-17	FY2017-18	FY2018-19
Cross Subsidy Surcharge	Rs./Kwh	0.00	0.00	0.00
Distribution Wheeling	Rs./Kwh	0.00	0.00	0.00
Transmission Charge	Rs./Kwh	0.00	0.00	0.00
SLDC Annual Fee	Rs./Kwh	0.00	0.00	0.00
SLDC Operating Charge	Rs./Kwh	0.02	0.02	0.02
RPO	Rs./Kwh	-	-	-
Total	Rs./Kwh	0.02	0.02	0.02

OA Charges - EPDCL	Unit	FY2016-17	FY2017-18	FY2018-19
Cross Subsidy Surcharge	Rs./Kwh	0.00	0.00	0.00
Distribution Wheeling	Rs./Kwh	0.00	0.00	0.00
Transmission Charge	Rs./Kwh	0.00	0.00	0.00
SLDC Annual Fee	Rs./Kwh	0.00	0.00	0.00
SLDC Operating Charge	Rs./Kwh	0.02	0.02	0.02
RPO	Rs./Kwh	-	-	-
Total	Rs./Kwh	0.02	0.02	0.02

HT Industrial Consumers (Captive, conventional)

OA Charges - SPDCL	Unit	FY2016-17	FY2017-18	FY2018-19
Cross Subsidy Surcharge	Rs./Kwh	-	-	-
Distribution Wheeling	Rs./Kwh	0.04	0.03	0.04
Transmission Charge	Rs./Kwh	0.21	0.22	0.22
SLDC Annual Fee	Rs./Kwh	0.00	0.00	0.00
SLDC Operating Charge	Rs./Kwh	0.01	0.01	0.01
RPO	Rs./Kwh	0.05	0.09	0.11
Total	Rs./Kwh	0.30	0.35	0.37

OA Charges - EPDCL	Unit	FY2016-17	FY2017-18	FY2018-19
Cross Subsidy Surcharge	Rs./Kwh	-	-	-
Distribution Wheeling	Rs./Kwh	0.03	0.03	0.03
Transmission Charge	Rs./Kwh	0.21	0.22	0.22
SLDC Annual Fee	Rs./Kwh	0.00	0.00	0.00
SLDC Operating Charge	Rs./Kwh	0.01	0.01	0.01
RPO	Rs./Kwh	0.05	0.09	0.11
Total	Rs./Kwh	0.29	0.34	0.36

HT Industrial Consumers (Captive,RE)

OA Charges - SPDCL	Unit	FY2016-17	FY2017-18	FY2018-19
Cross Subsidy Surcharge	Rs./Kwh	-	-	-
Distribution Wheeling	Rs./Kwh	0.00	0.00	0.00
Transmission Charge	Rs./Kwh	0.00	0.00	0.00
SLDC Annual Fee	Rs./Kwh	0.00	0.00	0.00
SLDC Operating Charge	Rs./Kwh	0.02	0.02	0.02
RPO	Rs./Kwh	-	-	-
Total	Rs./Kwh	0.02	0.02	0.02

OA Charges - EPDCL	Unit	FY2016-17	FY2017-18	FY2018-19
Cross Subsidy Surcharge	Rs./Kwh	-	-	-
Distribution Wheeling	Rs./Kwh	0.00	0.00	0.00
Transmission Charge	Rs./Kwh	0.00	0.00	0.00
SLDC Annual Fee	Rs./Kwh	0.00	0.00	0.00
SLDC Operating Charge	Rs./Kwh	0.02	0.02	0.02
RPO	Rs./Kwh	-	-	-
Total	Rs./Kwh	0.02	0.02	0.02

HT Others Consumers (Non-Captive, conventional)

OA Charges - SPDCL	Unit	FY2016-17	FY2017-18	FY2018-19
Cross Subsidy Surcharge	Rs./Kwh	1.83	1.75	1.82
Distribution Wheeling	Rs./Kwh	0.04	0.03	0.04
Transmission Charge	Rs./Kwh	0.21	0.22	0.22
SLDC Annual Fee	Rs./Kwh	0.00	0.00	0.00
SLDC Operating Charge	Rs./Kwh	0.01	0.01	0.01
RPO	Rs./Kwh	0.05	0.09	0.11
Total	Rs./Kwh	2.13	2.10	2.19

OA Charges - EPDCL	Unit	FY2016-17	FY2017-18	FY2018-19
Cross Subsidy Surcharge	Rs./Kwh	1.75	1.76	2.01
Distribution Wheeling	Rs./Kwh	0.03	0.03	0.03
Transmission Charge	Rs./Kwh	0.21	0.22	0.22
SLDC Annual Fee	Rs./Kwh	0.00	0.00	0.00
SLDC Operating Charge	Rs./Kwh	0.01	0.01	0.01
RPO	Rs./Kwh	0.05	0.09	0.11
Total	Rs./Kwh	2.04	2.10	2.37

HT others Consumers (Non-Captive, RE)

OA Charges - SPDCL	Unit	FY2016-17	FY2017-18	FY2018-19
Cross Subsidy Surcharge	Rs./Kwh	0.00	0.00	0.00
Distribution Wheeling	Rs./Kwh	0.00	0.00	0.00
Transmission Charge	Rs./Kwh	0.00	0.00	0.00
SLDC Annual Fee	Rs./Kwh	0.00	0.00	0.00
SLDC Operating Charge	Rs./Kwh	0.02	0.02	0.02

OA Charges - SPDCL	Unit	FY2016-17	FY2017-18	FY2018-19
RPO	Rs./Kwh	-	-	-
Total	Rs./Kwh	0.02	0.02	0.02

OA Charges - EPDCL	Unit	FY2016-17	FY2017-18	FY2018-19
Cross Subsidy Surcharge	Rs./Kwh	0.00	0.00	0.00
Distribution Wheeling	Rs./Kwh	0.00	0.00	0.00
Transmission Charge	Rs./Kwh	0.00	0.00	0.00
SLDC Annual Fee	Rs./Kwh	0.00	0.00	0.00
SLDC Operating Charge	Rs./Kwh	0.02	0.02	0.02
RPO	Rs./Kwh	-	-	-
Total	Rs./Kwh	0.02	0.02	0.02

HT others Consumers (Captive, Conventional)

OA Charges - SPDCL	Unit	FY2016-17	FY2017-18	FY2018-19
Cross Subsidy Surcharge	Rs./Kwh	-	-	-
Distribution Wheeling	Rs./Kwh	0.04	0.03	0.04
Transmission Charge	Rs./Kwh	0.21	0.22	0.22
SLDC Annual Fee	Rs./Kwh	0.00	0.00	0.00
SLDC Operating Charge	Rs./Kwh	0.01	0.01	0.01
RPO	Rs./Kwh	0.05	0.09	0.11
Total	Rs./Kwh	0.30	0.35	0.37

OA Charges - EPDCL	Unit	FY2016-17	FY2017-18	FY2018-19
Cross Subsidy Surcharge	Rs./Kwh	-	-	-
Distribution Wheeling	Rs./Kwh	0.03	0.03	0.03
Transmission Charge	Rs./Kwh	0.21	0.22	0.22
SLDC Annual Fee	Rs./Kwh	0.00	0.00	0.00
SLDC Operating Charge	Rs./Kwh	0.01	0.01	0.01
RPO	Rs./Kwh	0.05	0.09	0.11
Total	Rs./Kwh	0.29	0.34	0.36

HT others Consumers (Captive, RE)

OA Charges - SPDCL	Unit	FY2016-17	FY2017-18	FY2018-19
Cross Subsidy Surcharge	Rs./Kwh	-	-	-
Distribution Wheeling	Rs./Kwh	0.00	0.00	0.00
Transmission Charge	Rs./Kwh	0.00	0.00	0.00
SLDC Annual Fee	Rs./Kwh	0.00	0.00	0.00
SLDC Operating Charge	Rs./Kwh	0.02	0.02	0.02
RPO	Rs./Kwh	-	-	-
Total	Rs./Kwh	0.02	0.02	0.02

OA Charges - EPDCL	Unit	FY2016-17	FY2017-18	FY2018-19
Cross Subsidy Surcharge	Rs./Kwh	-	-	-

OA Charges - EPDCL	Unit	FY2016-17	FY2017-18	FY2018-19
Distribution Wheeling	Rs./Kwh	0.00	0.00	0.00
Transmission Charge	Rs./Kwh	0.00	0.00	0.00
SLDC Annual Fee	Rs./Kwh	0.00	0.00	0.00
SLDC Operating Charge	Rs./Kwh	0.02	0.02	0.02
RPO	Rs./Kwh	-	-	-
Total	Rs./Kwh	0.02	0.02	0.02

Break Even Power Purchase Cost

The table below compares the retail tariff applicable on HT consumers against the open access charges applicable on such consumers.

APSPDCL

Table: Comparison of OA charges & Break-even PPC for FY17-18 (HT Industrial)

Parameters		Conventional Non-Captive	RE Non-Captive	Conventional Captive	RE Captive
Open Access Charges	A	1.79	0.02	0.37	0.02
Tariff (Variable)	B	6.18	6.18	6.18	6.18
Break Even PPC	C=B-A	4.39	6.16	5.81	6.16
Break Even PPC after losses	$C/(1+T\&D \text{ Loss})$	4.12	6.16	5.45	6.16

Table: Comparison of OA charges & Break-even PPC for FY17-18 (HT Commercial)

Parameters		Conventional Non-Captive	RE Non-Captive	Conventional Captive	RE Captive
Open Access Charges	A	2.19	0.02	0.37	0.02
Tariff (Variable)	B	7.35	7.35	7.35	7.35
Break Even PPC	C=B-A	5.16	7.33	6.98	7.33
Break Even PPC after losses	$C/(1+T\&D \text{ Loss})$	4.84	7.33	6.54	7.33

APEPDCL

Table: Comparison of OA charges & Break-even PPC for FY17-18 (HT Industrial)

Parameters		Conventional Non-Captive	RE Non-Captive	Conventional Captive	RE Captive
Open Access Charges	A	1.80	0.02	0.36	0.02
Tariff (Variable)	B	6.18	6.18	6.18	6.18
Break Even PPC	C=B-A	4.38	6.16	5.82	6.16
Break Even PPC after losses	$C/(1+T\&D \text{ Loss})$	4.12	6.16	5.48	6.16

Table: Comparison of OA charges & Break-even PPC for FY17-18 (HT Commercial)

Parameters		Conventional Non-Captive	RE Non-Captive	Conventional Captive	RE Captive
Open Access Charges	A	2.37	0.02	0.36	0.02
Tariff (Variable)	B	7.35	7.35	7.35	7.35
Break Even PPC	C=B-A	4.97	7.33	6.98	7.33

Parameters		Conventional Non-Captive	RE Non-Captive	Conventional Captive	RE Captive
Break Even PPC after losses	$C/(1+T\&D \text{ Loss})$	4.69	7.33	6.58	7.33

From the above tables it can be observed that for both APSPDCL and APEPDCL significant gap exists between retail tariffs and open access charges for HT Industrial and HT Commercial consumers in almost all cases, making it economically beneficial for consumers to migrate to open access.

7.9.5. APTEL/SERC cases regarding open access

Commission	Case No.	Year	Utility	OA Consumer	Brief description of case
APTEL	230 of 2017	2018	APERC, APEPDCL, ASPDCL	K.S.K. Mahanadi Power Company Limited	<ul style="list-style-type: none"> • After bifurcation of states of Andhra Pradesh & Telangana, KSK filed a petition before CERC submitting that it would withdraw the petitions from the State Commissions of Andhra Pradesh and Telangana as per APTEL's decision "that in a case where a generating company supplies electricity to two or more States, all disputes fall within the purview of CERC" which was challenged by APERC opining "that it has jurisdiction over the matter, notwithstanding the fact of supply of power to two or more States" • KSK filed appeal to APTEL which was allowed stating that a PPA, which deals with generation and supply of electricity, will either have to be governed by the State Commission or the Central Commission. The State Commission's jurisdiction is only where generation and supply takes place within the State. On the other hand, the moment generation and sale takes place in more than one State, the Central Commission becomes the appropriate Commission under the Act. • Since the generating company supplies electricity to other States as well, i.e. Tamil Nadu, Uttar Pradesh and Telangana apart from Andhra Pradesh and Chattisgarh, it falls under CERC • http://aptel.gov.in/judgements/Judg2018/A.No.%20230%20of%202017_J.pdf
CERC	6/MP/2019 252/MP/2018	2019 2018	SRLDC, SRPC	Meenakshi Energy Limited	<ul style="list-style-type: none"> • Meenakshi filed petition for commissioning and testing of Phase-II (Unit-III) of thermal power project near in AP for a further period of six months i.e from 1.1.2019 to 30.6.2019, stating it has made all efforts to ensure completion of activities of Unit-III within stipulated time but could not succeed for reasons beyond its control - stating boiler is a crucial and essential component of the unit and due to dissolution of the Boiler OEM, it was not able to complete testing including full load testing within the allowed time. • The Fourth Proviso to Regulation 8 (7) of the Connectivity Regulations, as amended from time to time, provides as under: "Provided that the Commission may in exceptional circumstances, allow extension of the period for inter-change of power beyond the period as prescribed in this clause, on an application made by the generating station at least two months in advance of completion of the prescribed period: Provided further that the concerned Regional Load Despatch Centre while granting such permission shall keep the grid security in view." • Taking into consideration the difficulties expressed by the Petitioner and in terms of the proviso to Regulation 8(7) of the Connectivity Regulations injection of infirm power into the

Commission	Case No.	Year	Utility	OA Consumer	Brief description of case
					<p>grid for commissioning tests including full load test of Unit-III upto 30.6.2019 or actual date of commercial operation, whichever is earlier was allowed.</p> <ul style="list-style-type: none"> http://www.cercind.gov.in/2019/orders/6-MP-2019.pdf
APERC	14 of 2017	2018	SLDC, APSPDCL	M/s. Tirumala Cotton & Agro Products Pvt. Ltd.	<ul style="list-style-type: none"> Petition filed to allow scheduling to wheel the banked energy generated from its wind project near Vajrakaroor, Uravakonda Mandal, Anantapur District from the date of synchronization i.e. 31-03-2015 to 22-06-2015 to its scheduled customers and to permit the petitioner to wheel the energy accordingly The net generation after deducting 2% banking charges was worked out for the period at 5,23,447 units, which was requested to be adjusted to the petitioner's scheduled consumers petitioner is entitled under Appendix-3 clause 3 proviso to (f) of Regulation 2 of 2016 / Regulation 2 of 2006 [Andhra Pradesh Electricity Regulatory Commission (Interim Balancing and Settlement Code) Regulation 2 of 2006] to Rs.18,00,658/- (Rupees eighteen lakhs six hundred and fifty eight only) from the 2nd respondent towards 5,23,447 units @ Rs.3.44 ps per unit generated during the relevant period and the Original Petition http://aperc.gov.in/admin/upload/OPNO14of2017.pdf
CERC	103/MP/2017 I.A. No. 28/2017	2017	PGCIL	Simhapuri Energy Limited (SEL)	<ul style="list-style-type: none"> SEL sought suspension of payment of PoC charges on account of not having a long term PPA which as per CERC cannot be the reason for non-payment of transmission charges corresponding to the LTA granted irrespective of whether the LTA is actually availed or not SEL having power plants in AP, entered into a Bulk Power Transmission Agreement with PGCIL for 491 MW which was amended and raised the LTA quantum to 546 MW, signed the Power Supply Agreement (PSA) with the AP DISCOMs for sale of 400 MW power, pursuant to a tariff based competitive bidding process, with commencement of power supply envisaged to commence from June 2016. CERC opined that since SEL has been granted LTA to target regions and is under statutory as well as contractual obligations to pay transmission charges after COD of the transmission system executed based on the LTA, SEL is liable to pay the transmission charges, irrespective of whether it actually avail the long term access or not. Accordingly, no relief can be granted on the prayers of the Petitioner. http://www.cercind.gov.in/2017/orders/103.pdf

Commission	Case No.	Year	Utility	OA Consumer	Brief description of case
APERC	31 of 2016	2017	SLDC, APSPDCL	Rain Cements Limited	<ul style="list-style-type: none"> • APERC allowed petition that power generated by the petitioner from co-generation process through waste heat received from flue gases stands exempted from Renewable Power Purchase Obligation under Regulation 1 of 2012 of this Commission • APERC referred to APTEL's order that concluded that co-generation being promotable irrespective of the nature of the fuel used, has to be exempted from the RPPO obligation, if necessary, even in relaxation of Regulation 1 of 2012 • http://aperc.gov.in/admin/upload/OP.No.31-of-2016.pdf
CERC	224/MP/2016	2017	SLDC Karnataka	Dalmia Cements (Bharat) Limited,	<ul style="list-style-type: none"> • Levy of Back-Up Supply in violation of the Central Electricity Regulatory Commission (Open Access in Inter-State Transmission) Regulations, 2008. • Dalmia owns and operates a thermal power plant in Karnataka and supplies power to Andhra Pradesh by availing inter-State open access, alleged that the actions of the SLDC Karnataka are in gross violation of Regulation 20 (6) of the 2008 Open Access Regulations as they billed Dalmia for BPS Charges whereas no such charges are payable • CERC stated that since there is no allegation that Dalmia failed to meet the contracted supply, therefore levy of the BPS Charges on the petitioner is not justified • http://www.cercind.gov.in/2017/orders/224.pdf
APERC	32 of 2015	2017	SLDC, APTransco	ITC Limited	<ul style="list-style-type: none"> • Petition to direct SLDC to refund Rs.1,51,44,360/- collected from the petitioner as transmission charges from October, 2014 to December, 2014 and to direct SLDC & Aptransco not to collect any further transmission charges in respect of wind energy generated by the petitioner • APERC stated that the demand of the petitioner for exemption from wheeling and transmission charges since 10-11-2014 was initially denied due to the stand against retrospectivity and later denied notwithstanding the order dated 09-05-2014 being unambiguous and the payments were made by the petitioner throughout under protest • Hence granting interest should apply to the transaction, APERC directing SLDC & Aptransco to pay Rs.14,40,990/- towards interest on the refundable transmission charges from the dates of payment to the date of refund • http://aperc.gov.in/admin/upload/15131560732338634095a30ede97ec13.pdf

Commission	Case No.	Year	Utility	OA Consumer	Brief description of case
APERC	11 of 2016	2016	APTRANS CO, APEPDCL	M/s. Sarvaraya Sugars Ltd.	<ul style="list-style-type: none"> • Petition filed towards arbitrary, illegal and unjust collection from the petitioner on account of maintenance charges towards interconnection facility and refund of `9,21,206/- deduction from the monthly bill of the petitioner in April, 2015 • APERC declared that the respondents cannot levy and collect maintenance charges from the petitioner in the manner in which they levied and collected or attempted to levy and collect such maintenance charges for the bay, line and metering points connected to the petitioner's co-generation plant at 132/33 kV sub-station at Ramachandrapuram and consequently the respondents shall refund the amount of `9,21,206/- deducted from the monthly bill for power purchase for April 2015 to the petitioner within three (3) months from the date of this order. • http://aperc.gov.in/admin/upload/OP.No.11-of-2016.pdf
APTEL	232 OF 2015	2016	APERC	Open Access Users Association	<ul style="list-style-type: none"> • OUA challenged order passed by APERC wherein it fixed the surcharge and additional surcharge by applying embedded cost method. • APTEL set aside the order and directed the Andhra Commission for computation of cross subsidy surcharge for use of open access will be as per the formula given in the National Tariff Policy • http://aptel.gov.in/judgements/Judg2016/A.No.%20232%20of%202015%20&%20IA%20No.%20380%20of%202015%20&%20381%20of%202015.pdf
APERC	35 of 2014 & I.A.No.8 of 2014	2016	APTransco	M/s. RVK Energy Pvt. Ltd.	<ul style="list-style-type: none"> • A petition for refund of `45,41,001/- deducted by APTRansco from the payments to be made to the petitioner for the supplied power towards line and bay maintenance expenses in the months of Nov-Dec, 2012 and Jan-Feb, 2013 with interest @24% per annum from the date of deduction • RVK is already paying wheeling charges under the Wheeling Agreement, also, APTRANSCO did not prove through any documentary evidence that any installation or maintenance works were carried out by them on the feeder of the petitioner or incurred any expenditure towards the line and bay expenses, hence in light of the admitted contractual obligations between the parties and in the absence of any proof that the parties acted to the contrary on any aspect, APERC directed APTransco to refund the sum within 3 months, while not awarding any interest or costs on the same • http://aperc.gov.in/admin/upload/RVKEnergy.pdf

Commission	Case No.	Year	Utility	OA Consumer	Brief description of case
APERC	14 of 2015	2015	APTransco	M/s. Hetero Wind Power Ltd.	<ul style="list-style-type: none"> Petition to direct the respondent not to compel or insist the petitioner to pay the transmission and wheeling charges on the electric power generated by it, to refund an amount of ` 2,32,00,000/- paid to the respondent from 01-06-2014 till 31-01-2015 along with interest in respect of 54 MW Wind Power Project This is on account of Commission's policy of no transmission and wheeling charges for non-conventional energy generators using wind, solar and mini-hydel. APERC directed Hetero to refund the amount collected from the petitioner towards transmission and wheeling charges in monthly instalments of ` 25 lakhs each till the entire amount is repaid, and in default of payment of any instalment, the defaulted amount shall be paid with interest at 6% per annum thereon from the date of default till the date of payment and not hereafter collect any further transmission and wheeling charges exempted by the Commission <p>• http://aperc.gov.in/admin/upload/HeteroWindPower.pdf</p>
APTEL	280 OF 2014 56 of 2013	2015	APERC, M/s Roshni Powertech Private Limited	APSLDC	<ul style="list-style-type: none"> APSLDC filed the appeal against APERC order that Roshni Powertech is liable to receive accreditation under the Renewable Energy Certificate (REC) mechanism for receiving RECs against the power supplied by them to the state distribution licensees through the trading licensee, PTC, on the pretext that Roshni sells power at a price higher than the average pooled power purchase cost and hence is not liable to claim accreditation and REC benefits Regulation 6(b) of the APERC RPO Regulations, 2012 states that a generating company including CPP is eligible for obtaining accreditation from APSLDC on fulfilling the conditions namely, not having any PPA with any of the distribution licensees in the State of AP, and selling power under open access under a power trading agreement at a cost more than the pooled power purchase cost <p>• http://aptel.gov.in/judgements/Judg2015/A.No.%20280%20of%202014.pdf</p>
APTEL	222 of 2013	2014	APERC, APTransco, APSPDCL, APCPDCL, APNDPCL, APEPDCL	M/s. GMR Vemagiri Power Generation Limited	<ul style="list-style-type: none"> GMR filed a Petition before the APERC for a declaration that the term "Fuel" as referred to in the PPA which is defined as a "Natural Gas only" would include the Re-gasified Liquefied Natural Gas. This Petition was dismissed by the State Commission. Hence, made an appeal to APTEL which allowed the appeal stating that definition of "Fuel" under the PPA includes natural gas in all its forms including the Regasified Liquefied Natural Gas on account of At the request of the Discoms, GMR generated power on Regasified Liquefied Natural Gas. For the sale of supply on Regasified Liquefied Natural Gas, the Discoms paid both the

Commission	Case No.	Year	Utility	OA Consumer	Brief description of case
					<p>capacity charges as well as energy charges without resorting to any amendment to the definition of "Fuel"</p> <ul style="list-style-type: none"> • Also, APTRANSSCO acting on behalf of the Discoms wrote a letter to the Petroleum Board in connection with the grant of open access to various generating companies in the State of A.P. for transportation of Regasified Liquefied Natural Gas through East-West pipelines • Thus, the term "Natural Gas" would include Regasified Liquefied Natural Gas • http://aptel.gov.in/judgements/Judg2014/Appeal%20No.222%20of%202013_30.06.2014.pdf

7.10. Tamil Nadu

Tamil Nadu is situated in the southern peninsula of Indian subcontinent with a population of over 7 Crore and an area of 130,058 sq.km. It has the second largest economy in India, urbanization in Tamil Nadu is highest in the country with urban areas accounting for as high as 48.4% of State's population, as against national average of 31.2%. Being one of the most urbanised state of India the demand of energy within the state has increased which can be well observed from the increase in total energy sales from 64,844 MUs to 88,780 MUs within the past three years.

Power utilities in Tamil Nadu are segregated into generation & distribution (Tamil Nadu Generation and Distribution Corporation Ltd., TANGEDCO) and Transmission (Tamil Nadu Transmission Corporation Ltd., TANTRANSCO). The state SLDC is ring-fenced within TANTRANSCO. The state has an installed capacity of 30485 MW as on Feb 2019 and had a peak demand of 14,975 MW in FY2017-18 (as per CERC LGBR report, FY2018-19).

Key Parameters	
Peak demand	14,975 MW
Annual Units Available	1,05,839 MUs
Sales	88,780 MUs
Power Utilities	G,D – TANGEDCO T – TANTRANSCO

The analysis of open access status review is performed for state owned Discom i.e. TANGEDCO in Tamil Nadu.

7.10.1. Regulatory Review

In this section a detailed review is performed of the open access regulations issued by State Electricity Regulatory Commissions (SERCs) to analyse –

- Evolution of open access regulations in the state along with their key amendments
- Eligibility conditions and restrictions for availing open access, along with types of open access allowed
- Process of applying for open access
- Provisions for open access charges
- Any other regulation/ policies relevant to open access

Evolution of open access regulations

In line with the provisions of Electricity Act 2003, the State of Tamil Nadu issued Open Access Regulations in the year 2005 namely 'Intra State Open Access Regulations'. These regulations were amended in years 2008 and 2010. These were replaced with a new set of regulations in the year 2014 namely 'Grid connectivity and Intra-State Open Access Regulations'. The table summarizes the evolution of open access regulations over time along with the key amendments made thereof -

Year	Regulation/ Amendment	Key Amendment
2005	OA Regulation	-
2008	Amendment	• Changes in billing and payment for open access charges to consumers
2008	Amendment	• Provision of Standby power; Standby power to be charged at temporary tariff till ABT regime is implemented • Revision in application fee for open access
2010	Amendment	• Phasing of open access re-determined; OA allowed to all HT consumers irrespective of load in fourth and final phase
2014	OA Regulation	-

Open access eligibility

The Open Access regulations impose certain eligibility criteria's and restrictions on consumers that can avail open access, based on various technical and commercial considerations. Based on the

prevalent regulations, these eligibility requirements and restrictions in the State of Tamil Nadu are as follows –

Contract Demand	- All HT and EHT consumers within their contracted demand - Approvals are being given for 1 MW and above only
Feeder level conditions	- consumers with no independent feeder shall be allowed OA subject to restrictions in feeders serving them in line with Commission Orders
Voltage level conditions	-
Additional Provisions	-

The relevant provisions of the regulations are reproduced below –

'9 (3) Subject to the provisions of these Regulations, open access shall be permissible to the consumers seeking open access capacity up to which the Commission has introduced open access and are connected through an independent feeder emanating from a sub-station of licensee:

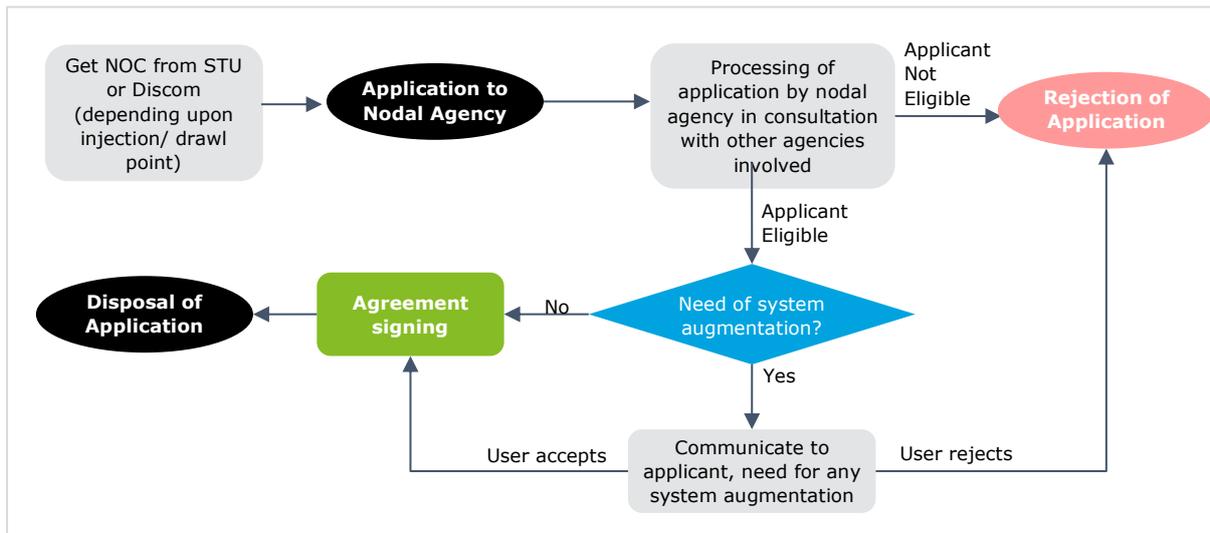
Provided that the consumers who are not on independent feeders, shall be allowed open access subject to the restrictions in the feeders serving them in line with the Commission's Regulations / Codes / Orders:

The open access regulations in the State of Tamil Nadu do not restrict open access below 1 MW for HT consumers. However based on the discussions with various stakeholders it was found that in practice open access approvals are being granted for more than 1 MW of load only (except for wind power).

Open access application process

In Tamil Nadu, either the SLDC (ring-fenced within TANTRANSCO) or TANTRANSCO acts as the Nodal Agency for accepting open access applications, depending upon the injection/drawal point of power.

As per **regulation 12 to regulation 15 of open access regulations 2014**, the procedure to get open access in the State of Tamil Nadu is represented below in the form of a flow chart below.



The table below summarises the key features of the process related to getting Open Access.

	Long Term OA	Medium Term OA	Short Term OA
Nodal Agency	<ul style="list-style-type: none"> • SLDC – Injection and Drawl point within same Discom • CTU – for inter-state • STU – for other cases 	<ul style="list-style-type: none"> • SLDC – Injection and Drawl point within same Discom • CTU – for inter-state • STU – for other cases 	<ul style="list-style-type: none"> • RLDC – for inter state • SLDC – for all other cases
Time-period	20-150 days	20-40 days	3-7 days
Documents	<ul style="list-style-type: none"> • Application Fee • Consent from SLDC/ Discom • PPA • Documentary Evidence of grid connectivity 	<ul style="list-style-type: none"> • Application Fee • Consent from SLDC/ Discom • PPA • Documentary Evidence of grid connectivity 	<ul style="list-style-type: none"> • Application Fee • Consent from SLDC/ Discom
Cost	<ul style="list-style-type: none"> • Application Fee: Rs. 0.25 - 1 Lacs, basis location of drawal/ injection point and capacity of open access • Bank Guarantee: Rs. 10,000 per MW 	<ul style="list-style-type: none"> • Application Fee: Rs. 0.25 - 1 Lacs, basis location of drawal/ injection point and capacity of open access • Bank Guarantee: Rs. 2,000 per MW 	<ul style="list-style-type: none"> • Application Fee: Rs. 2,000 – 5,000, basis capacity of open access

No separate procedures for open access applications are issued by STU/ SLDC in Tamil Nadu.

From the table above and the application process for open access in the State, it can be observed that the applicant is required to take a separate NOC from Discom, before applying for open access to the nodal agency.

'16 (2) Intra-State Open Access. - (a) In respect of a consumer connected to a distribution system seeking Open access, such consumer shall be required to submit the consent of the distribution licensee concerned. The distribution licensee shall convey its consent to the applicant by e-mail or fax or by any other usually recognized mode of communication, within three (3) working days of receipt of the application.'

Further the regulations say that while processing the application from a generating station seeking consent for open access, the distribution licensee shall verify the following, namely-

- Existence of infrastructure necessary for time-block-wise energy metering and accounting in accordance with the provisions of the State Grid Code in force; and
- Availability of capacity in the distribution network; and
- Availability of Remote Terminal Unit (RTU) and communication facility to transmit real-time data to the SLDC or Distribution Control Centre (DCC);

Open access charges

The open access regulations in the State of Tamil Nadu, define the following types of open access charges –

- 1) Transmission charges
- 2) Wheeling charges
- 3) Scheduling and system operation charges
- 4) Cross Subsidy Surcharge
- 5) Additional Surcharge
- 6) Restoration Charge
- 7) Imbalance Charge
- 8) Reactive Energy Charge

The open access regulations provide for a **Reactive Energy Charge** in accordance with the provisions stipulated in the Commission's State Grid Code or Regulations or Orders in force.

Further the open access regulations provide for charging of an **Imbalance Charge** as per intra-state ABT, for deviations between the schedule and the actual injection/drawal. Till the implementation of intra-state ABT, the regulations say that imbalance charge as per UI rate of CERC shall be applicable for open access consumers who are not consumers for Discom. For open access consumers who are also consumers of Discom, applicable tariff rates shall apply for overdrawl of power till the permitted energy/ demand and excess energy/demand charges beyond that.

The open access regulations in the State of Tamil Nadu prescribe that any default in payment of the various charges specified in these regulations, within the time stipulated by the Commission will result in the discontinuance of the open access and restoration of such discontinued open access shall require payment of **Restoration Charges**, determined by the Commission as reconnection charges in its respective tariff orders.

The open access regulations also provide for an Additional Surcharge to allow Discom recovery of fixed costs arising out of Discom's obligation to supply as per subsection (4) of section 42 of the Act. However the Commission has not determined Additional Surcharge in last three financial years for Discom.

Apart from the charges discussed above, the major open access charges in the State of Tamil Nadu, are discussed in detail in the sub-sections below.

Cross Subsidy Surcharge

The open access regulations in the State of Tamil Nadu, do not prescribe a set methodology for the calculation of Cross Subsidy Surcharge (CSS). The TNERC determines cross subsidy surcharge in its Retail Tariff Orders for Discoms.

For the calculation of CSS, the TNERC has adopted the methodology prescribed by the National Tariff Policy in its respective tariff orders. In its tariff order dated 11.12.2014 the Commission had determined CSS basis formula prescribed by NTP 2006. In its tariff order dated 11.08.2017 the Commission adopted the revised formula for CSS as per National Tariff Policy 2016.

In its tariff order dated 12.12.2015 the Commission determined CSS separately for each HT consumer category based on the voltage level of injection/ drawl. However in tariff order dated 11.08.2017 the Commission determined a single CSS for each HT consumer category, without differentiation for voltage level.

The table below represents the Cross Subsidy Surcharge for HT Industrial and HT Commercial consumer categories for the last three financial years. For FY2016-17, drawl voltage of 33 kV and highest injection voltage of 230 kV is assumed.

Cross Subsidy Surcharge	Units	FY2016-17	FY2017-18	FY2018-19
HT Category				
Non Domestic	Rs./Kwh	3.44	1.67	1.67
HT Industrial	Rs./Kwh	5.17	1.98	1.98

A significant drop can be observed in the CSS for both HT industrial consumer and HT commercial Consumer category in FY2017-18. This drop is due to the determination methodology of CSS, before 2017-18 CSS was computed based on the formula prescribed in National Tariff Policy 2006 whereas in FY 2017-18 CSS was computed based on the modified formula prescribed in the National Tariff Policy 2016.

Wheeling Charges

The open access regulations in Tamil Nadu state that wheeling charges are to be payable by open access consumers to the Discom, as determined by the Commission for the relevant financial year.

No specific methodology has been prescribed in the open access regulations for the calculation of the wheeling charges. However wheeling charge was computed by dividing total annual wheeling charges in Rs. Crore with energy input at distribution periphery in MUs.

A single distribution wheeling charge is calculated by the TNERC, for open access consumers connected at all voltage levels. There is no separate wheeling charges specified for long-term, medium-term or short-term open access consumers approved by the Commission. The table below represents the Distribution Wheeling charges for all open access consumer categories for the last three financial years.

Wheeling charges	Units	FY2016-17	FY2017-18	FY2018-19
For all OA consumers	Rs./Kwh	0.19	0.21	0.21

Transmission Charges

The open access regulations in Tamil Nadu state that Open access consumer using intra-State transmission system shall pay transmission charges to the STU, as determined by the Commission for the relevant financial year. Specific methodology for calculation of Transmission charges are mentioned within the prevalent open access regulations which are as follows:

$$\text{Transmission Charges} = \text{ATC} / (\text{ACs} \times 365) \text{ (in Rs./MW-day)}$$

Where,

ATC = Annual Transmission Charges determined by the Commission for the transmission system of the STU / Transmission Licensee for the relevant year

ACs = Sum of Capacities allocated to all Long-term and Medium-term Open Access customers in MW

In its tariff orders for TANTRANSCO, the Commission has determined transmission charges for LTOA consumers by dividing the net ARR of TANTRANSCO by a weighted average allotted capacity to various types of open access consumers. The per MW per Day transmission charge for LTOA consumers is converted into a per MW per Hr charge for STOA consumers by dividing the charge for LTOA consumers by 24 hours.

The regulations further provide that the transmission charges payable by the Open Access Customer utilizing the Intra-State Transmission system for part of a day shall be on pro-rata basis.

The regulation describes a separate transmission charge for short term and long term OA consumers.

Transmission charges	Units	FY2016-17	FY2017-18	FY2018-19
LTOA/MTOA	Rs./MW/day	2,903	3,037	3,037
STOA	Rs./MW/Hr	120.96	126.55	126.55

Scheduling and system operation charges surcharge

The open access regulations in Tamil Nadu require open access consumers to pay SLDC charges for scheduling and system operation, as determined by the Commission from time to time in its Tariff Orders.

In its tariff order dated 11.12.2014 for TANTRANSCO, the Commission had allowed a Scheduling and System Operating Charges of Rs. 2,000 per day or part of the day for LTOA as well as STOA consumers, in the absence of separate ARR filing for SLDC by the STU.

On 11.08.2017, the Commission issued a separate Order for SLDC, determining charges for FY2017-18 onwards. Two charges are determined as SLDC charges – Scheduling Charge and System

Operation Charge. Scheduling Charge is computed by dividing 30% of SLDC’s net ARR by an assumed number of 2000 transactions per day and 365 days in a year. The System Operation Charge is computed by dividing 70% of the SLDC’s net ARR by a weighted average allotted capacity to various types of open access consumers.

The table below represents the SLDC charges, determined by the Commission, for the last three financial years.

SLDC surcharge	Units	FY2016-17	FY2017-18	FY2018-19
Scheduling Charge	Rs./MW/day	2,000	160	160
System Operation - LTOA	Rs./MW/day	-	33.74	33.74
System Operation - STOA	Rs./MW/Hr	-	1.41	1.41

Energy Losses

Apart from Open Access charges, section 32 of the open access regulations also provide for transmission and distribution losses on open access transactions, as determined by Commission from time to time.

'32. Losses -

(1) Transmission losses -

(a) Inter-State transmission -

The open access customers shall bear the energy losses in the transmission system in accordance with the provisions specified by the Central Commission.

(b) Intra-State transmission -

The open access customers shall bear average energy losses in the transmission system as estimated by the State Load Dispatch Centre. The information regarding average energy losses for the previous fifty two weeks shall be posted on the website of the State Load Dispatch Centre. Fortnightly average transmission loss in the system on all open access customers shall be monitored by the SLDC.

(2) Distribution loss. -

In case of distribution open access, the Licensee shall estimate the losses for each category of voltages and furnish to the Commission. These losses as approved by Commission shall be borne by the open access customer.'

The Commission in its respective tariff orders for TANGEDCO has determined voltage wise losses depending upon the injection and drawl voltage. For TANTRASCO the Commission has determined a total transmission loss in its tariff orders.

The table below presents the Distribution losses adopted by Commission in its tariff orders for 230 kV voltage injection and 33 kV voltage drawl, along with transmission losses for the last three financial years.

T&D losses	Units	FY2016-17	FY2017-18	FY2018-19
Distribution (33KV/230KV)	%	2.07%	5.27%	5.27%
Transmission	%	4.01%	3.91%	3.81%

RPO Obligation

Renewable Purchase Obligations (RPO) are applicable on open access consumers taking supply from conventional sources. TNERC had issued Renewable Purchase Obligations Regulations in 2010. Amendment to the Regulations were issued in the year 2016 which define RPO applicable from year FY2015-16 onwards.

RPO Obligations applicable for all open access consumer categories in the last three financial years is detailed in table below.

RPO Obligation	Units	FY2016-17	FY2017-18	FY2018-19
Solar	%	2.50%	5.00%	5.00%
Non-Solar	%	9.00%	9.00%	9.00%
Total	%	11.50%	14.00%	14.00%

Other Regulatory Provisions

Banking of Power Facility

As per the energy accounting and billing procedures defined in the Comprehensive Solar Tariff Order issued by TNERC in 2019, clause 11.5.4 states that till such time DSM is implemented if a solar power generator utilizes power for captive use or if he sells it to a third party, the distribution licensee shall raise the bill at the end of the billing period for the net energy supplied. This billing practice effectively translates into banking facility for a period of one month.

'11.5.4 Till such time the DSM is implemented in the State, if a solar power generator utilizes power for captive use or if he sells it to a third party, the distribution licensee shall raise the bill at the end of the billing period for the net energy supplied.'

7.10.2. Open access activity review

In this section a detailed review is performed of the existing level and past trend of open access activity in Tamil Nadu. In the absence of availability of data from TANGEDCO in regards to the open access sales and number of consumers in the State of Tamil Nadu, the data from CERC Market Monitoring Reports, has been analysed to review level and trend of open access activity in the State of Tamil Nadu.

The table below represent the number of open access consumers and open access sales as per CERC Market Monitoring Report, in the State of Tamil Nadu in past 3 years.

Number of OA consumers – CERC Market Monitoring Reports	Units	FY16	FY17	FY18
IEX	Nos.	805	827	845
PXIL	Nos.	173	174	176
Total	Nos.	978	1001	1021

OA Sales – CERC Market Monitoring Reports	Units	FY2015-16	FY2016-17	FY2017-18
Bilateral Sale	Gwh	0	237	99
Bilateral Purchase	Gwh	1,162	2,433	5,822
Bilateral Net	Gwh	1,162	229	5,723
Exchange Sale	Gwh	0	178	211
Exchange Purchase	Gwh	393	-51	1,301
Exchange Net	Gwh	393	-51	1,090
DSM Over Drawal	Gwh	468	368	916
DSM Under Drawal	Gwh	815	1,198	915
DSM Net	Gwh	-535	-831	1
Net Purchase	Gwh	1,019	1,314	6,814

A moderate increase in the number of open access consumers in the State can be observed and a significant increase is observed in the bilateral purchase and exchange purchase over the last three years. The reason for such movement is primarily due to decrease in open access charges and increase in renewable power generation in the State.

7.10.3. Commercial Review

HT sales as a % of total sales

In this section, the consumer category wise sales is analysed in order to understand the potential of open access migration in the state. Potential of open access migration would be higher in States with higher share of HT industrial and HT commercial sales. The consumer category wise sales data is taken from respective tariff orders of the Commission.

As per the sales data, HT industrial and commercial sales form approx. 24% of the overall sales in the state. This percentage has increased in the last three years from 20% to 24%.

Consumer Category Wise Sales	Units	FY2016-17	FY2017-18	FY2018-19
HT Sales				
HT Industry	Gwh	12,730	15,232	17,331
HT Commercial	Gwh	2,160	2,667	3,231
HT Others	Gwh	2,919	3,100	3,337
Sub-Total	Gwh	17,809	20,999	23,899
LT Sales				
Sub-Total	Gwh	55,998	60,717	64,881
Total	Gwh	73,807	81,716	88,780
HT Commercial Sales (as % of total sales)	%	3%	3%	4%
HT Industrial Sales (as % of total sales)	%	17%	19%	20%

7.10.4. Tariff and open access charges review

In this section a detailed review of the retail tariff applicable on HT Industrial and HT Commercial consumers and open access charges is performed.

The breakup of fixed and variable tariff is analysed and compared against the fixed and variable cost of Discom. Higher is the gap between the fixed cost of Discom and fixed tariff collected from consumers, higher would be the impact on Discom due to open access migration, as the fixed tariff recovered from consumers would not be sufficient to cover the fixed cost of Discom.

Further the gap between retail tariff applicable on HT consumers and open access charges is analysed to understand the probability of consumers to migrate to open access. Higher is the gap between open access charges and the retail tariff, higher is the probability of consumers to migrate to open access.

Review of retail tariff charged to HT consumers

The ACOS Coverage as per tariff orders for HT consumers in the State has remained significantly outside +/- 20% for the last three years. The fixed tariff (i.e. demand charges) for HT consumers is not sufficient to cover the fixed costs of Discom. The average realization from fixed charges in FY2018-19 was just 11% for HT Industrial consumers and 9% from HT Commercial consumers, as against 52% fixed component of ACoS.

The table below showcases the fixed/ variable breakup of ACOS along with their corresponding fixed-variable breakup of ABR and ACoS average for HT Industrial consumers and HT Commercial consumers. For the estimation of variable part of ARR, the variable power purchase cost is taken as variable ARR for Discom as provided in the respective tariff orders.

For the estimation of ABR, the variable tariff of respective consumer category is added to an estimated per unit charge for fixed tariffs. The fixed tariff of respective consumer category is converted into per unit charge assuming a load factor of 60%.

	FY2016-17	FY2017-18	FY2018-19
ACoS			
Total	6.09	5.85	5.84
Fixed	54%	53%	52%
Variable	46%	47%	48%
HT Industrial ABR			
Total	7.16	7.16	7.16
Fixed	11%	11%	11%
Variable	89%	89%	89%
HT Commercial ABR			
Total	8.81	8.81	8.81
Fixed	9%	9%	9%
Variable	91%	91%	91%
ACoS Coverage			
HT industrial	135%	143%	143%
HT commercial	163%	169%	170%

Open access charges

In this sub-section, the open access charges applicable on various types of open access consumers is analysed. The open access charges for following types of consumers are discussed below –

- Conventional power through Non-Captive mode
- Conventional power through Captive mode
- Renewable power through Non Captive mode
- Renewable power through Captive mode

The open access charges differ for these different types of consumers, as charges like CSS and Additional Surcharge are not applicable on captive consumers. Further consumers taking renewable power, are offered discounts on open access charges by the Commission as renewable promotion measures.

In its Comprehensive Tariff Order for Solar Power issued on 28.03.2016, discounts are given for solar power on open access charges as follows.

'12.1.1

....

as a promotional measure, under sections 61(h) and 86(1) (e) of the Act, the Commission decides to adopt 30% in each of the transmission, wheeling, scheduling and system operation charges to solar power on the respective charges specified in the relevant orders issued by the Commission from time to time.'

'12.2.1

....

The Commission in its earlier tariff orders relating to different renewable power including Solar, has ordered to levy 50% of the cross subsidy surcharge for third party open access consumers,

as a promotional measure, under sections 61(h) & 86(1) (e), of the Act. The Commission decides to adopt the same for Solar power in this order also.'

These discounts have been revised by the Commission in their subsequent Comprehensive Tariff Order for Solar Power issued on 28.03.2017 and 28.03.2017. The discounts available for Solar Power on various open access charges is showcased in the table below.

Discounts for Solar Power	Unit	FY2016-17	FY2017-18	FY2018-19
Cross Subsidy Surcharge	%	50%	50%	40%
Distribution Wheeling	%	70%	70%	60%
Transmission Charge	%	70%	70%	60%
SLDC Charge	%	70%	70%	60%

Similarly TNERC issued Comprehensive Tariff Orders for Wind Power as well. The Commission in its Orders for Wind Power issued on 31.03.2016 and 13.04.2018, provides for following discounts on open access charges.

Discounts for Wind Power	Unit	FY2016-17	FY2017-18	FY2018-19
Cross Subsidy Surcharge	%	50%	50%	40%
Distribution Wheeling	%	60%	60%	50%
Transmission Charge	%	60%	60%	50%
SLDC Charge	%	60%	60%	50%

It can be observed that the Commission is gradually reducing the discounts available for renewable power on open access charges.

The following general assumptions are taken while analysing the open access charges for various consumer types -

- 1 MW load
- 60% load factor for conventional power
- 18% load factor for RE Power
- 33 kV Connected voltage
- Long Term Open Access
- Solar in case of renewable power

The tables below showcase the open access charges applicable on various types of consumers as discussed above.

HT Industrial Consumers (Non-Captive, Conventional)

OA Charges	Unit	FY2016-17	FY2017-18	FY2018-19
Cross Subsidy Surcharge	Rs./Kwh	3.44	1.67	1.67
Distribution Wheeling	Rs./Kwh	0.19	0.21	0.21
Transmission Charge	Rs./Kwh	0.20	0.21	0.21
Scheduling charge	Rs./Kwh	0.14	0.01	0.01
System Op Charge	Rs./Kwh	0.00	0.00	0.00
RPO	Rs./Kwh	0.12	0.14	0.14
Total	Rs./Kwh	4.09	2.24	2.24

HT Industrial Consumers (Non-Captive, RE)

OA Charges	Unit	FY2016-17	FY2017-18	FY2018-19
Cross Subsidy Surcharge	Rs./Kwh	1.72	0.84	1.00
Distribution Wheeling	Rs./Kwh	0.06	0.06	0.08
Transmission Charge	Rs./Kwh	0.20	0.21	0.28
Scheduling charge	Rs./Kwh	0.14	0.01	0.01
System Op Charge	Rs./Kwh	0.00	0.00	0.00
RPO	Rs./Kwh	-	-	-
Total	Rs./Kwh	2.12	1.12	1.39

HT Industrial Consumers (Captive, Conventional)

OA Charges	Unit	FY2016-17	FY2017-18	FY2018-19
Cross Subsidy Surcharge	Rs./Kwh	-	-	-
Distribution Wheeling	Rs./Kwh	0.19	0.21	0.21
Transmission Charge	Rs./Kwh	0.20	0.21	0.21
Scheduling charge	Rs./Kwh	0.14	0.01	0.01
System Op Charge	Rs./Kwh	0.00	0.00	0.00
RPO	Rs./Kwh	0.12	0.14	0.14
Total	Rs./Kwh	0.65	0.57	0.57

HT Industrial Consumers (Captive,RE)

Charges	Unit	FY2016-17	FY2017-18	FY2018-19
Cross Subsidy Surcharge	Rs./Kwh	-	-	-
Distribution Wheeling	Rs./Kwh	0.06	0.06	0.08
Transmission Charge	Rs./Kwh	0.20	0.21	0.28
Scheduling charge	Rs./Kwh	0.14	0.01	0.01
System Op Charge	Rs./Kwh	0.00	0.00	0.00
Reactive Energy Charge	Rs./Kwh	0.01	0.01	0.01
RPO	Rs./Kwh	-	-	-
Total	Rs./Kwh	0.40	0.29	0.38

HT Commercial Consumers(Non-Captive, Conventional)

Charges	Unit	FY2016-17	FY2017-18	FY2018-19
Cross Subsidy Surcharge	Rs./Kwh	5.17	1.98	1.98
Distribution Wheeling	Rs./Kwh	0.19	0.21	0.21
Transmission Charge	Rs./Kwh	0.20	0.21	0.21
Scheduling charge	Rs./Kwh	0.14	0.01	0.01
System Op Charge	Rs./Kwh	0.00	0.00	0.00
RPO	Rs./Kwh	0.12	0.14	0.14
Total	Rs./Kwh	5.82	2.55	2.55

HT Commercial Consumers(Non-Captive, RE)

OA Charges	Unit	FY2016-17	FY2017-18	FY2018-19
Cross Subsidy Surcharge	Rs./Kwh	2.59	0.99	1.19
Distribution Wheeling	Rs./Kwh	0.06	0.06	0.08

OA Charges	Unit	FY2016-17	FY2017-18	FY2018-19
Transmission Charge	Rs./Kwh	0.20	0.21	0.28
Scheduling charge	Rs./Kwh	0.14	0.01	0.01
System Op Charge	Rs./Kwh	0.00	0.00	0.00
RPO	Rs./Kwh	-	-	-
Total	Rs./Kwh	2.98	1.28	1.57

HT Commercial Consumers(Captive, Conventional)

OA Charges	Unit	FY2016-17	FY2017-18	FY2018-19
Cross Subsidy Surcharge	Rs./Kwh	-	-	-
Distribution Wheeling	Rs./Kwh	0.19	0.21	0.21
Transmission Charge	Rs./Kwh	0.20	0.21	0.21
Scheduling charge	Rs./Kwh	0.14	0.01	0.01
System Op Charge	Rs./Kwh	0.00	0.00	0.00
RPO	Rs./Kwh	0.12	0.14	0.14
Total	Rs./Kwh	0.65	0.57	0.57

HT Commercial Consumers (Captive, RE)

Charges	Unit	FY2016-17	FY2017-18	FY2018-19
Cross Subsidy Surcharge	Rs./Kwh	-	-	-
Distribution Wheeling	Rs./Kwh	0.06	0.06	0.08
Transmission Charge	Rs./Kwh	0.20	0.21	0.28
Scheduling charge	Rs./Kwh	0.14	0.01	0.01
System Op Charge	Rs./Kwh	0.00	0.00	0.00
RPO	Rs./Kwh	-	-	-
Total	Rs./Kwh	0.40	0.29	0.38

Break Even Power Purchase Cost

The table below compares the retail tariff applicable on HT consumers against the open access charges applicable on such consumers. It can be observed that significant gap exists between retail tariffs and open access charges for HT Industrial consumers in case of conventional and renewable captive power in case of making it economically beneficial for them to migrate to open access.

Whereas for HT Commercial consumers significant gap exists between retail tariffs and open access charges for both Non captive and captive consumers making it economically beneficial for them to migrate to open access.

Table: Comparison of OA charges & Break-even PPC for FY17-18 (HT Industrial)

Parameters		Conventional Non-Captive	RE Non-Captive	Conventional Captive	RE Captive
Open Access Charges	A	2.24	1.39	0.57	0.38
Tariff (Variable)	B	6.35	6.35	6.35	6.35
Break Even PPC	C=B-A	4.11	4.96	5.78	5.97
Break Even PPC after losses	$C/(1+T\&D\text{ Loss})$	3.76	4.55	5.29	5.47

Table: Comparison of OA charges & Break-even PPC for FY17-18 (HT Commercial)

Parameters		Conventional Non-Captive	RE Non-Captive	Conventional Captive	RE Captive
Open Access Charges	A	2.55	1.57	0.57	0.38

Parameters		Conventional Non-Captive	RE Non- Captive	Conventional Captive	RE Captive
Tariff (Variable)	B	8.00	8.00	8.00	8.00
Break Even PPC	$C=B-A$	5.45	6.43	7.43	7.62
Break Even PPC after losses	$C/(1+T\&D$ Loss)	4.99	5.89	6.81	6.98

7.10.5. APTEL/ SERC cases regarding open access

Commission	Case No.	Year	Utility	OA Consumer	Brief description of case
APTEL	Appeal No. 59 of 2015 & IA No. 274 of 2016	2017	TANGEDCO, TNERC, CERC, TNEB, PGCIL, APTransco , KSEB, KPTCL, SRPC	IL & FS Tamil Nadu Power Company Ltd	<ul style="list-style-type: none"> IL&FS filed appeal to APTEL to challenge CERC order about the denial of Transmission License for its 48 km dedicated transmission line from its Cuddalore thermal power project (TN) to Nagapattinam pooling station of PGCIL APTEL concluded that IL&FS has not been able to establish that the subject transmission line will be used by other generator(s) or user(s) for transmission of power except the generating station of the petitioner. Therefore, the subject transmission line remains a dedicated transmission line for evacuation of power from the generating station of the petitioner till the pooling station of PGCIL Also, since the subject line is a dedicated line based on Regulations, 2004 used by IL&FS only for point to point injection of power generated from its generating station at Cuddalore to Nagapattinam pooling substation. Thus the contention of treating as ISTS does not sustain. APTEL directed that the appeal had no merit, that the twin provisions of Regulation 6 (c) i.e. use of transmission line as a main transmission line and treatment of line as ISTS of the Transmission License Regulations were not fulfilled by IL&FS for the grant of transmission license to it. Hence, the Impugned Order issued by CERC was in order. http://aptel.gov.in/judgements/A.No.%2059%20of%202015%20&%20IA%20No.%20274%20of%202016.pdf
CERC	81/TL/2014	2014		IL&FS Tamil Nadu Power Company Limited	<ul style="list-style-type: none"> Petition filed by IL&FS for grant of transmission licence for 48 km dedicated transmission line i.e 400 kV Quad Moose D/C transmission line from Cuddalore thermal power project to Nagapattinam Pooling Station of PGCIL and bay work at Nagapattinam Pooling Station for termination of the line CERC rejected the petition stating that IL&FS does not fulfill the requirement of Regulation 6 (c) of the Transmission Licence Regulations- <ul style="list-style-type: none"> - When a dedicated transmission line constructed by a generating company is intended to be used as the main transmission line and part of the Inter State transmission system, the generating company may be considered for grant of transmission licence for such dedicated transmission line. - Two conditions need to be fulfilled for grant of the transmission licence in such cases i.e. (a) use of the transmission line as a main transmission line and (b) treatment of the line as

Commission	Case No.	Year	Utility	OA Consumer	Brief description of case
					<p>inter-State transmission system. The transmission line of IL&FS will be used only for the purpose of evacuation of power from its generating station. The bus bar of the generating station is not connected to any other transmission line or to other generator. Therefore, the transmission line is not being used by other users so as to be treated as a main transmission line. As regards the treatment of the transmission line as ISTS, it is noted that it does not fulfill any of the condition of Section 2 (36) of the Act- where the dedicated transmission line is not owned, operated, maintained or controlled by CTU but by the project developer, it remains a dedicated transmission line. Therefore, the transmission line cannot be treated as ISTS.</p> <ul style="list-style-type: none"> • http://www.cercind.gov.in/2014/orders/SO81.pdf
TNERC	R.A. No.6 of 2013	2016	TANGEDCO, TNERC, TANTRAN SCO	Beta Wind Farm Pvt. Ltd., Indian Wind Power Association, Southern India Mills Association, IWTMA, Tamil Nadu Spinning Mills Association, India Spinning Mill Owners Association	<ul style="list-style-type: none"> • Basis APTEL order, TNERC directed Insurance charges be allowed as a percentage of capital cost as decided in the previous tariff order dated 20.03.2009, For Time Value for money, As per directions of the Hon'ble APTEL, the Wind energy tariff is recomputed on levelised basis - Abnormal rise in banking charges: After hearing the stake holders, this has been reconsidered by the Commission and banking charges has been fixed at 10% of the energy banked. - Transmission and wheeling charges and line loss: The benefit of redetermination of transmission charges passed in Order No.2 of 2012 for the intra state transmission tariff that accrue will be passed on to the Remand Applicants as and when the respective Order of this Commission is pronounced. - Deemed Demand charges: After due consideration to the views of all the persons concerned and in the light of the earlier tariff orders, this Commission decides that as the concept of deemed demand has been withdrawn and not extended to any consumer, the benefit of deemed demand cannot be extended to the Wind Generators as well. - Encashment of lapsed unit by REC captive users: As per directions of the Hon'ble APTEL one year banking facility benefit applicable to non REC captive users is extended to REC Captive Users as well and the encashment of lapsed unit may be made at 75% of the applicable rate for REC users. • http://www.tnerc.gov.in/orders/commn%20order/2016/Tariff-R%20A%20No.6%20of%202013.pdf

Commission	Case No.	Year	Utility	OA Consumer	Brief description of case
APTEL	197, 198, 200, 201 & 208 of 2012 AND 6 of 2013	2013	TANGEDCO, TNERC, TANTRAN SCO	Beta Wind Farm Pvt. Ltd., Indian Wind Power Association, Southern India Mills Association, IWTMA, Tamil Nadu Spinning Mills Association, India Spinning Mill Owners Association	<ul style="list-style-type: none"> • OA consumers filed appeal against TNERC Order as they were aggrieved by the abnormal increase in transmission charges, wheeling charges, losses, banking charges and system operation charges on the energy from the wind energy generators wheeled on Intra State Transmission System and Distribution System for the captive use or 3rd (d) The wind Energy Generators supplying energy for captive use or to 3 party sale • Also accused TNERC of not circulating the Consultative paper before issuing the order which led to abnormal increase in the charges for transmission and wheeling from Rs.79.06 p/kWh to Rs.178.32 p/kWh; APTEL felt that TNERC should have circulated the Consultative paper to hear the concerns of OA consumers and have remanded TNERC to reconsider certain issues- <ul style="list-style-type: none"> - Directed the State Commission to allow the same O&M charges and insurance charges as a percentage of Capital Cost as decided in the previous tariff order dated 20.3.2009 - Time value of money- the Wind energy tariff to be recomputed on levelised basis. - Abnormal Rise of Banking Charges- TNERC is directed to reconsider the computation of the charges after hearing the stakeholders and decide the issue afresh keeping in view the observations made by this Tribunal in Appeal No.98 of 2010 - Deemed Demand Charges and Encashment or lapsed Units by REC Captive users to be reconsidered after stakeholder consultations • http://aptel.gov.in/judgements/Judgement%20Appeal%20Nos.197,%20198,%20200,%20201%20&%20208%20of%202012%20AND%206%20of%202013_24052013.pdf
APTEL	278 OF 2015 & IA NO.455 OF 2015, 293 OF 2015 & IA NO. 476 OF 2015, 23 OF 2016 & IA NO. 61 OF 2016,	2019	TNERC,	M/s JSW Steel Limited, Tamil Nadu Newsprint and Papers Limited, TANFAC Industries Ltd.	<ul style="list-style-type: none"> • Petition filed by captive co-generators, who had approached TNERC seeking a declaration that captive co-generation plant of the Appellants is not required to procure power from renewable sources of energy in order to meet their Renewable Purchase Obligation (RPO obligation) who had ordered that they would not be entitled to the relief as claimed by them • APTEL ordered that a co-generation facility irrespective of fuel is to be promoted in terms of section 86(1)(e) of the Electricity Act, 2003; an entity which is to be promoted in terms of section 86(1)(e) of the Electricity Act, 2003 cannot be fastened with renewable purchase obligation under the same provision; and as long as the co-generation is in excess of the RPO, there can be no additional purchase obligation placed on such entities • APTEL therefore held that Appellants herein, being co-generation plants, are not under a legal obligation to purchase power from renewable sources of energy in order to meet their Renewable Purchase obligation in the interest of justice and equity

Commission	Case No.	Year	Utility	OA Consumer	Brief description of case
	62 OF 2016 & IA NO. 155 OF 2016 AND 24 OF 2016 & IA NO. 65 OF 2016				<ul style="list-style-type: none"> Hence, the Impugned Orders dated 15.09.2014 in Petition No. M.P. No. 25 of 2012 and the Order dated 16.09.2015 in R.P. No. 1 of 2014; Impugned Order dated 15.09.2014 in Petition Nos. M.P. No. 25 of 2012; Impugned Orders dated 13.11.2015 & 28.01.2016 in Petition Nos. M.P. No. 24 of 2012 & M.P. No. 36 of 2014 respectively and Impugned Order dated 13.11.2015 in Petition No. M.P. No. 12 of 2013 passed by Tamil Nadu Electricity Regulatory Commission were hereby set aside http://aptel.gov.in/judgements/A.No.%20278%20of%202015%20&%20IA%20No.%20455%20of%202015.%20A.No.%20293%20of%202015%20&%20IA%20No.%20476%20of%202015%20&%20Batch_02.01.19.pdf
TNERC	20 of 2011	2019	TANGEDCO M/s.PTC India Ltd.	M/s. MMS Steel & Power Pvt. Ltd	<ul style="list-style-type: none"> MMS filed petition for consideration to be entitled to payment for the energy injected into the grid in the absence of a valid agreement between MMS & TANGEDCO for supply of energy during the period when GoTN had issued directives to all generating stations in TN to – To operate and maintain the generating stations to maximum capacity and PLF, ii) To supply all exportable electricity generated to the State Grid or to any other HT consumer within the State of Tamil Nadu as per the Regulations notified by the TNERC MMS claims that it was left with no option but to inject the energy into the grid of TANGEDCO in view of GoTN order, which is challenged by CERC claiming that the GoTN order prohibited only the export of energy outside the State of TN and there was no prohibition with regard to Intra-State Open Access which MMS could have very well attempted before injecting the energy into the grid of TANGEDCO especially without adhering to the regulations of agreement. Hence the petition was rejected http://www.tnerc.gov.in/orders/commn%20order/2019/MMS-DRPNo20of2011.pdf
TNERC	10 of 2018	2019	TANGEDCO	E.I.D. Parry (India) Ltd., Seshasayee Paper & Boards, Sree Rengaraj Ispat Industries (P) Ltd, Kamachi Industries Ltd., The	<ul style="list-style-type: none"> Petition filed to confirm the methodology adopted by TANGEDCO on collection of Parallel Operation Charges (POC) in accordance with the Grid Connectivity Intra State Open Access Regulations, 2014 and as per the tariff order dated 11-08-2017 TNERC confirmed that POCs is applicable to CPP, that when, a captive generator with co-existing load or a co-generator is synchronized with the Licensee's grid for any purpose be it for start up purpose, export or import power under open access, or consume power as a consumer, or supply the excess power to the grid as in the case of co-generators, it is the point of common coupling where they are electrically connected to the grid and hence utilize all the benefits of absorption of harmonics, negative phase sequence current, improvement

Commission	Case No.	Year	Utility	OA Consumer	Brief description of case
				Ramco Cements Ltd, Dalmia Cement (Bharat) Ltd., Chettinad Cement Corporation Ltd., Tamil Nadu Power Producers Association, The South India Sugar Mills Association, Biomass Power Producers Association Tamil Nadu	<p>in power factor, metering fluctuations and providing reactive power support and hence liable to pay POC</p> <ul style="list-style-type: none"> • TNERC said that Demand charges are to be levied on the consumers for the quantum of contracted demand with the distribution licensee. Open Access charges are levied on the quantum of power agreed upon as per Energy wheeling Agreement between open access customer (generator or consumer) and the Distribution Licensee for injection by a generator/ drawal by a consumer as the case may be. Concluded that POC are payable on the installed capacity of the Captive generating plant/ Co-generating plants less the Open access quantum (whether injected or not) agreed upon with the distribution licensee as per the EWA. • TNERC suggested that a CGP executes an Energy wheeling agreement with the distribution licensee for the OA quantum to be wheeled to its consumers outside the premises. It is then is liable to pay Transmission charges, scheduling & system operation charges etc., even in case no power is injected. Hence POC cannot be applied on OA quantum in case no energy is injected. • http://www.tnerc.gov.in/orders/commn%20order/2019/EID-MPNo10of2018.pdf
TNERC	4 of 2011	2019	TANGEDC O	JSW Steel Ltd	<ul style="list-style-type: none"> • JSW filed this petition to seek from TNERC making rules of grid support to consumers who are having Captive Power Plant within their premises, in a similar manner as has been done for CPP which are located outside the premises of consumer • TNERC defined that the generating units of JSW shall have Special Energy Meters installed in accordance to the CEA's (Installation and Operation of Meters) Regulations 2006 to record consumption/generation details of the generating plants and loads of the Steel plant as per req. • Charges as applicable for the energy supplied for startup purposes and that supplied for the Steel plant industry at normal times and as standby supply during generator outages may be levied in accordance to relevant provisions in the Open Access Regulations, Supply code • TNERC shall issue Intra State Deviation Settlement Mechanism(DSM) Regulations, Until then, JSW may avail supply from TANGEDCO or take recourse to procure power through open access to meet the load requirements.

Commission	Case No.	Year	Utility	OA Consumer	Brief description of case
					<ul style="list-style-type: none"> Whenever, Restriction and Control measures are in force, the petitioner can procure power through Inter-State or Intra-State open access upto the sanctioned demand http://www.tnerc.gov.in/orders/commn%20order/2019/JSW-DRPNo4of2011.pdf
TNERC	5 of 2011	2019	TANGEDCO	Saheli Exports Pvt. Ltd	<ul style="list-style-type: none"> Saheli Exports filed the Dispute Resolution Petition for a direction to TANGEDCO to pay for the 4,115,180 units of power which was injected into the grid by the its plant on various occasions GoTN had issued directives to all generating stations in TN i) To operate and maintain the generating stations to maximum capacity and PLF, ii) To supply all exportable electricity generated to the State Grid or to any other HT consumer within the State of Tamil Nadu as per the Regulations notified by the TNERC TNERC stated that even while directing that all the exportable energy generated within the State shall be supplied to the State Grid or to any other HT consumers, at the same time, made it obligatory to comply with the regulations notified by TNERC The violations committed by the Saheli in injecting energy into the Grid cannot be cured by the mere fact that the energy injected was accepted by the TANGEDCO. TNERC claimed that TANGEDCO had no other go but to accept the energy and could not have prevented Saheli from injecting energy into the grid in an unauthorized manner The injection of energy into the grid without schedule arrangements and without the consent of the respondent herein or the approval of the Commission goes against the provisions of Electricity Act, 2003 and the regulations made thereunder. Hence, the petition was dismissed. http://www.tnerc.gov.in/orders/commn%20order/2019/Saheli-DRPNo5of2011.pdf
TNERC	82of 2013	2018		SESA STERLITE LIMITED	<ul style="list-style-type: none"> Sesa had filed petition to consider its waste heat based cogenration plant as co-generation power plants eligible for accounting for RPO. Commission directed that Sesa's plant is a waste heat based cogeneration plant using fossil fuel. The use of waste heat for power generation was treated on par with nonconventional energy source in the Commission's Order dated 12-01-2009, but not as a renewable energy source. Since the petitioner's co-generation plant is not satisfying the eligibility criteria for the purpose of accounting the energy generated therefrom for RPO as per the Hon'bleAPTEL's

Commission	Case No.	Year	Utility	OA Consumer	Brief description of case
					<p>order on Appeal No: 53 of 2012 dated 02-12-2013 and the Commission's Renewable Energy Purchase Obligation Regulations, 2010, TNERC declared that the power generated from the petitioner's co-generation Power Plant is not entitled to account for RPO.</p> <ul style="list-style-type: none"> http://www.tnerc.gov.in/orders/commn%20order/2018/SESA-MPNo82of2013.pdf
TNERC	I.A.Nos.1 and 2 of 2018 in M.P.No.20 of 2018	2018	TANGEDCO		<ul style="list-style-type: none"> TANGEDCO filed amendment petition for procurement of both STOA and MTOA power Commission was inclined to the revised proposal of the petitioner to procure the short term power for the restricted period at a rate not exceeding the lowest of Rs.5.29 per unit at ex-bus discovered in the tender and for the quantity upto 1000 MW. As regards the approval for procurement of 1000 MW under MTOA already given by the Commission in its daily order dated 16.10.2018, the same stands modified now to the extent as prayed for by TANGEDCO in the amendment petition dated 20.11.2018 by limiting to 550 MW through PTC at Rs.4.24 per unit (ex-bus) at 55% PLF. http://www.tnerc.gov.in/orders/commn%20order/2018/TANGEDCO-MPNo20of2018.pdf
TNERC	12 of 2017	2018	TANGEDCO	Regen Powertech Private Limited	<ul style="list-style-type: none"> Regen filed petition to re-calculate the tariff for windmills with accelerated depreciation benefit for the period from 01-04-2017 for the balance of the control period with respect to Tariff Order No.3 of 2016, consequent on the amendment issued to rule 5 of the Income Tax Rules, 1962 which was amended to provide the highest rate of depreciation under the Income Tax Act, and was restricted to 40% with effect from 01.04.2017. The windmills with AD benefit were entitled to a tariff of Rs.3.70 per unit and windmills without AD benefit were entitled to a tariff of Rs.4.16 per unit. TNERC initiated the process for issue of the next tariff order by floating a consultative paper on issue of "comprehensive tariff order on wind energy" on 25.9.2014, inviting comments/suggestions from stakeholders on various parameters related to determination of wind energy tariff and on other issues related to power purchase by the distribution licensee and open access Also, TNERC stated that Certainty of the tariff for the given period, viz, control period is an essential ingredient for the investors to commit investments. If the certainty factor is removed, the investors will have no visibility and cannot blindly invest on projects. Hence, it disposed of petition on account of fact that control period cannot be altered without any justifiable reasons.

Commission	Case No.	Year	Utility	OA Consumer	Brief description of case
					<ul style="list-style-type: none"> http://www.tnerc.gov.in/orders/commn%20order/2018/Regen-.MPNo12of2017.pdf
TNERC	19 of 2016 20 of 2016 21 of 2016	2018	TANGEDCO	Open Access Users Association Ski Carbon Black (India) Pvt. Ltd., Palladam Hitech Weaving Park	<ul style="list-style-type: none"> OAU filed petition to re-determine the Cross Subsidy Surcharge with the ceiling limit of 20% of the tariff for the relevant category of consumer in accordance with the National Tariff Policy There is no provision in the regulations of the Commission which makes it mandatory to implement the NTP from the date of its implementation The regulation 87 provides that till such time cross subsidy is eliminated, the open access consumer shall pay surcharge in addition to wheeling charges. Thus, a comprehensive reading of the regulations of the Commission make it patently clear that the surcharge shall be computed as per the TNERC Open Access Regulations and there is no stipulation that the NTP is to be given effect from the date of its notification in the matter of cross subsidy surcharge or for that matter any other or all the provisions in the NTP. Commission in regard to the implementation of cross subsidy surcharge shall take effect only from the date as mentioned in the order in T.P.No.1 of 2017 dated 11-08-2017 and not for the period prior thereto. The prayer of the petitioner for determination of cross subsidy surcharge for the period 2016-17 in line with NTP, therefore fails. http://www.tnerc.gov.in/orders/commn%20order/2018/Open-MPNo19of2016.pdf
APTEL	Appeal No. 59 of 2015 & IA No. 274 of 2016	2017	TANGEDCO, TNEB	M/s. Century Flour Mills Ltd	<ul style="list-style-type: none"> Appeal filed by TANGEDCO in relation to adjustment of the energy generated from the Wind Energy Generators in context with M/s Century Flour TNERC order states that TANGEDCO should first adjust the wheeled energy generated from the Century Flour's WEG under REC scheme which has an adjustment or banking period of one month and then adjust the energy generated from other captive/third party generators which have a banking period of one year. Regulation 8 of the "Power Procurement from New and Renewable Sources of Energy Regulations 2008" gives power to the State Commission to decide on the issue of mode of adjustment of wind energy of REC and Preferential mechanism. APTEL deliberated that State Commission decided the issues in the Impugned Order in right perspective. iii. Hence this issue was decided against the Appellant

Commission	Case No.	Year	Utility	OA Consumer	Brief description of case
					<ul style="list-style-type: none"> http://aptel.gov.in/judgements/A.No.%2053%20of%202016%20&%20IA%20No.%20138%20of%202016.pdf
TNERC		2017	TANGEDCO		<ul style="list-style-type: none"> TANGEDCO filed petition to extend the Medium Term PPA with M/s. Jindal Power Ltd. and M/s. Adani Enterprises Ltd. for a period of two years in view of shortage of power and to meet the demand for the present and for the near future The terms of PPA stated Medium Term Open Access will be granted from the sixth month from the date of submission of application, subject to availability of ATC (Available Transer Capability). Based on availability of ATC, MTOA will be granted for RTC quantum only and it will not be truncated as in the case of Short Term Open Access. Hence, the uncertainties of STOA are eliminated and power sources under MTOA will meet the base demand. TNERC accorded approval for purchase of power by TANGEDCO from M/s.Jindal Power Limited and M/s.Adani Enterprises Limited for the period from 01.09.2017 to 31.08.2019 at a revised rate of Rs.3.50/kwh at injection point comprising of non-escalable capacity charges - Rs.1.50/kwh and escalable energy charges - Rs.2.00/kwh totally amounting to Rs.3.50/kwh. http://www.tnec.gov.in/orders/commn%20order/2017/TANGEDCO-MPNo5of2017.pdf
APTEL	Appeal No. 120 of 2016 & IA No. 272 of 2016	2017	TANGEDCO, TNERC	Kamachi Sponge & Power Corporation Ltd.	<ul style="list-style-type: none"> Kamachi had filed a petition against TNERC on the issue of treating the entire energy pumped by it during the periods 21.10.2011 to 00.00 hours on 16.11.2011, 00.00 hours on 16.11.2011 to 22.11.2011 and 23.11.2011 to 27.11.2011 and supplied to TANGEDCO, which was claimed by TNERC as unauthorized and denied the payment thereof. Aggrieved by the Impugned Order passed TNERC, Kamachi preferred the present appeal which was dismissed by APTEL that a generator cannot pump electricity into the grid without having consent/ contractual agreement with the distribution licensee and without the approval/ scheduling of the power by the SLDC. Injection of such energy by a generator is not entitled for any payments. http://aptel.gov.in/judgements/A.No.%20120%20of%202016%20&%20IA%20No.%20272%20of%202016.pdf
CERC	96/MP/2015	2017	PGCIL	Chettinad Power	<ul style="list-style-type: none"> Petition filed by CPCL seeking direction to PGCIL not to encash the bank guarantee of Rs. 1.11 crore furnished by the petitioner in favour of CTU

Commission	Case No.	Year	Utility	OA Consumer	Brief description of case
				Corporation Ltd.	<ul style="list-style-type: none"> CPCL made an application to CTU for grant of connectivity and long term access for 1110 MW accompanied by application fee and a bank guarantee of Rs. 1.10 crore at the rate of Rs. 10,000/MW. CTU, after carrying out the necessary system studies, decided to grant long term access to CPCL, CPCL approached the MoEF for environmental clearance to ensure compliance with the Terms of Reference as well as Environment Impact Assessment Notification, 2006. Based on the recommendation of the Environment Assessment Committee, the project was accorded Environmental Clearance (EC) but the grant of EC was challenged before the National Green Tribunal (NGT), where the appeal was pending. Since it is yet to receive the clearance from the MOEF and matter is still pending before the NGT, the petitioner apprised CTU about the development with regard to the grant of EC and sought extension to sign the LTA Agreement CERC rejected the petition stating that the provisions of Connectivity Regulations and Detailed Procedure clearly provide that failure to sign the LTA Agreement within the stipulated period will result in encashment of BG. Since CPCL failed to sign the LTA Agreement within the stipulated period, even within the extended period, issuing restrain on invocation of BG is rejected http://www.cercind.gov.in/2017/orders/96.pdf
CERC	M.P.No.10 of 2015	2017	TANGEDC O	Tamil Nadu Spinning Mills Association	<ul style="list-style-type: none"> TANGEDCO filed petition before CERC seeking clarification on collection of grid support charges for back up during the outage of generator payable by the open access consumer CERC clarified that in case of outage of generator supplying to an open access consumer, the open access consumer is liable to pay the grid support charges at the applicable tariff rates of that category of Consumer considering it as deviation from the schedule. http://www.tnerc.gov.in/orders/commn%20order/2017/TNSMA%20-IA%20No1of2015.pdf
TNERC	22 of 2016	2017	TANGEDC O	Simran Wind Project Ltd.	<ul style="list-style-type: none"> Simran Wind had challenged the amendment of TNERC (Renewable Energy Purchase Obligations) Regulations, 2010 on the cap of Pooled cost of power purchase at 75% of the Preferential Tariff , It is stated that as and when APPC breaches Preferential tariff, Commission may notify the said date of breach for the amendment to become effective. Till such time, the Petitioner is entitled to the payment for the power supplied to the Respondent at the APPC rate. TNERC to decide whether the APPC, (Average Pooled Power Purchase Cost), exceeded the preferential tariff determined by the Commission

Commission	Case No.	Year	Utility	OA Consumer	Brief description of case
					<ul style="list-style-type: none"> It was decided that APPC rate (Rs.3.11) exceeded in the year 2013-14 itself over the preferential tariff of Rs.2.75, hence direction cannot be issued to the Licensee to postpone the implementation of the regulations when the regulation is in force http://www.tnerc.gov.in/orders/commn%20order/2017/Simran-MPNo%2022%20of%202016.pdf
TNERC	1 of 2016	2016	TANGEDCO	Indian Wind Power Association	<ul style="list-style-type: none"> Petition filed by IWPA to grant an interim order of stay of operation of Comprehensive Tariff Order on Wind Energy dated 31-03-2016 in so far as the fixation of Scheduling and System Operation Charges viz. Open Access Charges and Line Losses by directing collection of the said charges to be proportionate to the capacity of the WEG pending disposal of the Review Petition. Commission said that the orders of the Commission is specific, unambiguous and specifies 40% of the Scheduling and System Operation Charges as applicable to the conventional power to the wind power as a promotional measure The Commission has fixed the Scheduling and System operation charges taking into account the provisions of the Act and regulations / orders of the Commission. IWPA's comparison of the charges for small and big generators does not fall within the scope of review. http://www.tnerc.gov.in/orders/commn%20order/2016/Indian%20-R.P.No.1%20of%202016.pdf
APTEL	APPEAL NO. 71 OF 2015	2016	TANGEDCO, TNERC	M/s Sai Regency Power Corporation Private Limited	<ul style="list-style-type: none"> Sai has appealed against TNERC's tariff order wherein it has categorized start-up supply in the highest tariff bracket and the drawal has been restricted to 42 days. Sai's category of consumers pay tariff at 249% of the overall average cost of supply of the distribution licensee, which is excessive and amounts to penalizing the generators for drawing start-up power. This is when the generators have no option and have to necessarily draw electricity from the grid for the start-up requirements. The very activity of generation requires drawal of electricity from the grid and being a contributory to the electricity system and one of the important objects of the Electricity Act being to encourage generation and for capacity to be added, the State Commission ought to have determined the tariff for start-up requirements at a much lower level. APTEL directed TNERC to create a separate category for generators drawing startup power for initiating generation from the station which will cater to the need of the power in the

Commission	Case No.	Year	Utility	OA Consumer	Brief description of case
					<p>State. Thus, a separate category of such kind of generators should be created and a separate tariff for such category should be determined.</p> <ul style="list-style-type: none"> http://aptel.gov.in/judgements/A.No.%2071%20of%202015.pdf
APTEL	Appeal No. 187 of 2015	2016	TANGEDCO, TNERC	M/S B&G Solar Private Limited	<ul style="list-style-type: none"> Appeal filed by TANGEDCO against order passed by TNERC, stating that in terms of the Power Procurement from New and Renewable Sources of Energy Regulations, 2008, the cost of the interface line from the generating station up to the interconnection point with the Distribution Licensee's grid shall be established and maintained at the cost of the Distribution Licensee APTEL directed that the Regulations framed by the State Commission are in accordance with the provisions of Electricity Act, 2003 and fulfilling the mandate for promotion of renewable energy sources including the connectivity to be granted to the renewable energy generators and upheld the Impugned Order dated 15.09.2014 passed by the State Commission http://aptel.gov.in/judgements/A.No.%20187%20of%202015.pdf
APTEL	O.P. No. 3 of 2012	2015	TNERC, RERC, MPERC, CSERC, OERC, GERC, APERC	Indian Biomass Power Association	<ul style="list-style-type: none"> Petition has been filed by Indian Biomass seeking appropriate direction under section 121 of the Electricity Act, 2003 to the SERC's regarding revision of annual tariff of biomass based power projects, effective implementation of RPO and REC mechanism and to provide OA to biomass based power projects. APTEL directs SERC's for future for determination of tariff for biomass based power projects :- <ul style="list-style-type: none"> The State Commission shall determine two part tariff i.e. fixed and variable charges in respect of biomass based power projects instead of a single flat energy tariff The State Commissions have to provide non-discriminatory open access on payment of the requisite charges biomass projects who are claiming the incentive under the State Govt. policy could not claim inter-State open access http://aptel.gov.in/judgements/O.P.%20NO.3%20of%202012.pdf
APTEL	68 OF 2014	2016	TNERC, TANGEDCO, TNEB,	M/s OPG Power	<ul style="list-style-type: none"> OPG filed a Petition before TNERC seeking payment for the firm power injected into Grid from 22.04.2010 to 27.04.2010, but TANTransco informed that TNEB had not issued any directions or instructions to OPG to inject the power into TN Grid during that period and

Commission	Case No.	Year	Utility	OA Consumer	Brief description of case
			TANTRAN SCO	Generation Pvt. Ltd.	<p>hence the request to pay for the firm power of 22,50,000 units from 22.04.2010 to 28.04.2010 is not feasible for compliance</p> <ul style="list-style-type: none"> • Commission upheld the decision of the State Distribution Company and the State Commission directed in the Impugned Order that no payment is required for the energy injected between 22.04.2010 to 28.04.2010, aggrieved by this Order, OPG filed appeal to APTEL • APTEL informed that OPG without approval injected power into Tami Nadu Electricity Board grid hence, admittedly, no schedule of power was given by the SLDC to OPG • Also, OPG had signed an agreement stating purchase of infirm power to be automatically terminated from the date of declaration of COD, i.e. by 22.04.2010. Hence, the Energy Purchase Agreement dated 13.04.2010, ceased to be in existence from the date of COD. • Therefore, the appeal was disposed of and the State order was upheld • http://aptel.gov.in/judgements/A.No.%2068%20of%202014.pdf
CERC	49/MP/20 14	2015	TANGEDC O		<ul style="list-style-type: none"> • Petition filed by TANGEDCO seeking directions to SRLDC and NLDC to declare additional transfer capability to the extent of upto 350 MW in the ER-SR corridor arising out of injection of GRIDCO power in South Odisha in ER and direct NLDC to permit a open access in ER-SR corridor for additional transfer capacity by the constituents of SR • During the course of hearing, TANGEDCO submitted they had participated in the tender invited by GRIDCO through NTPC Vidyut Vypar Nigam Limited for purchase of 200 MW power on firm basis for the period from July 2013 to November 2014. Since the said period i.e. July 2013 to November 2014 has already expired, the prayers in the petition had become infructuous. Accordingly, they requested that the petition be disposed. • http://www.cercind.gov.in/2015/orders/SO49.pdf
TNERC	34 of 2012	2015	TANGEDC O	Brakes India Limited	<ul style="list-style-type: none"> • Brakes India filed petition to clarify that the order passed by this Commission applies only to wind energy injected into the grid and that in respect of energy generated and fed into the grid through Long Term Open Access Captive Power Plants, whether the demand available to the petitioner should be calculated only on the basis of the energy injected into the grid and not on the basis of the energy consumed by the petitioner. • TNERC stated that the order applies to all consumers who avail Open Access to meet part of their demand and that there is a difference between the wind generators and any other

Commission	Case No.	Year	Utility	OA Consumer	Brief description of case
					<p>generators in the matter of adjustment of energy and the fixation of quota, hence the petition is therefore dismissed.</p> <ul style="list-style-type: none"> http://www.tnerc.gov.in/orders/commn%20order/2015/Brakes%20-%20M%20P%20No.34%20of%202012.pdf
TNERC	M.P.No.14 of 2012, D.R.P.No. 28 of 2012, M.P.No.21 to 23 of 2014 and D.R.P.No. 45 of 2014	2015	TANGEDC O, SLDC, TANTRAN SCO	IWPA, Tata Power, Green Infra, Tamil Nadu Spinning, Arasan Syntex	<ul style="list-style-type: none"> Petition filed towards grant of "MUST RUN" status to Wind Energy Generators (WEGs) issue appropriate directions to provide deemed generation benefits to WEGs for the loss of generation to declare that the Petitioners is liable to pay the transmission charges at the rates fixed only where there is 100% Grid availability and on the basis of actual grid availability, the transmission charges would be proportionately adjusted TNERC was of opinion that while in principle according the "Must Run Status" for the wind is the ultimate objective, but it should always be subjected to the security of the Grid and effort is required on the part of both the WEGs and the SLDC to achieve the said objective The distribution licensee shall resort to back down of generation at coal based thermal stations upto the minimum threshold limit when secondary oil support is not required, optimum scheduling of gas/liquid fuel based plants and hydro power plants keeping in view the availability of wind energy, operation of Pumped Storage Plants, etc. http://www.tnerc.gov.in/orders/commn%20order/2015/Indian%20-%20D%20R%20P%20No.%2014%2028%2021%2022%2023%20and%2045.pdf
APTEL	Appeal No. 197 of 2013 & I.A. No. 273 of 2013	2014	TANTRAN SCO, TNERC	Tamil Nadu Power Producers Association	<ul style="list-style-type: none"> TNPPA filed appeal against TNERC order challenging the Provisional estimate for open access and scheduling charges from Short Term Open Access and Transmission charges for Short Term Open Access and Long Term Open Access It is submitted that in last tariff Order, Commission approved Rs. 0.27011 per unit as STOA transmission charges. For the licensee to recover revenue for Rs. 296 crores, 10960 MUs of units (134% of total wheeled units) are required to be wheeled through STOA. However, as per the information submitted by licensee, the total energy wheeled estimated by the Commission for FY 2012-13 is 8200 MUs. With majority of open access consumers in TN being long term consumers, there is no rationale in appellant's claim that TNERC has underestimated the fig. APTEL dismissed the appeal stating that there is no reason to interfere with the findings of the State Commission with regard to estimate for charges from Short Term Open Access

Commission	Case No.	Year	Utility	OA Consumer	Brief description of case
					<p>customers. However, the State Commission shall true up the same as per the actual revenue recovery from STOA customers, with carrying cost</p> <ul style="list-style-type: none"> The claim by appellant that the STOA customer should be given lowest allotment priority and will be curtailed first in case of any congestion and, therefore, the charges for STOA customers should be lower than charged from LTOA customers was also dismissed by APTEL APTEL agreed by TNERC that when STOA customers had lower charges it was observed that they had started to take advantage of this provision for applying for short term open access and then extending it every year instead of applying for long term open access. Also due to differential pricing between LTOA and STOA, frequent disputes were raised regarding the LTOA and STOA charges, compensation for relinquishing rights, etc. Therefore, the State Commission has not differentiated between the transmission charges applicable for LTOA and STOA. http://aptel.gov.in/judgements/Appeal%20No.%20197%20of%202013_18.10.2014.pdf
APTEL	Appeal no. 190 of 2013 and Appeal no. 191 of 2013	2014	TNEB, TNERC, TANGEDCO	M/s. Sree Rengaraaj Ispat Industries Pvt. Ltd	<ul style="list-style-type: none"> Sree had filed a petition before the State Commission praying for direction to the TANGEDCO to refund the amounts collected in excess of the energy charges The State Commission disposed of the petition by a common order rejecting the prayer of the Appellant and said that it should be treated as a consumer and the entire bills from the inception of the respective service connection should be revised and the tariff as applicable to temporary supply should be charged and the difference between the revised bill and the amount already paid be collected from the Appellant and gave directions to the TANGEDCO for redrawing bills of the Appellant http://aptel.gov.in/judgements/Appeal%20no.%20190%20of%202013%20and%20191%20of%202013_22.08.2014.pdf
APTEL	Appeal No. 181 of 2013	2014	TNERC, TANGEDCO	Raghu Rama Renewable Energy Ltd.	<ul style="list-style-type: none"> Appeal has been filed by Raghu Rama against TNERC order in a dispute between the generating company and TANGEDCO regarding claim of penalty for short fall in supply. As per EPA, Raghu Ram had promised to supply the contracted power to TANGEDCO which in turn had promised to make payment for the same by the due date which was agreed to be within 30 days of receipt of invoice. Despite non-payment of any money by TANGEDCO, Raghu Ram supplied the contracted power for four months from June to September 2011 by arranging own finances or taking loans. Several requests were made for payment elaborating financial difficulties in arranging fuel did not elicit even a reply from TANGEDCO. TANGEDCO made the payment but the surcharge for delayed payment as per the EPA was

Commission	Case No.	Year	Utility	OA Consumer	Brief description of case
					<p>not made, and yet claimed compensation for short supply. To which State Commission directed TANGEDCO to pay interest for the delayed payment as per the EPA, however, the same had not been paid so far</p> <ul style="list-style-type: none"> • APTEL allowed the appeal and directed that TANGEDCO is not entitled to claim compensation for short supply of power when it had failed to perform its own reciprocal promise and creating circumstances leading to non-fulfillment of obligation of maintaining contracted supply on the part of the Appellant. • TANGEDCO was directed to refund the compensation amount deducted from the bills of the Appellant within 30 days of the receipt of this judgment. Interest will be payable to the Appellant @ 12% for any delay in refunding the amount after 30 days of the receipt of this judgment • http://aptel.gov.in/judgements/Appeal%20No.%20181%20of%202013_11.07.2014.pdf
APTEL	Appeal No. 92 of 2013 & IA no. 151 of 2013	2014	TANGEDCO, TNERC	Tamil Nadu Electricity Consumers' Association, Tamil Nadu Spinning Mills Association,	<ul style="list-style-type: none"> • Appeals have been filed by the Associations of consumers challenging TNERC order implementing the provisions of the Tamil Nadu Solar Energy Policy, 2012 of the State Government claiming that by way of having one Regulation as RPO obligation and another order for SPO as per the Solar Policy of the State Government, the Commission has exceeded its powers. • APTEL admitted the appeals and directed that the Commission had no power to issue an SPO order as per the directions of the State Government u/s 108 in addition and contrary to RPO obligations specified in the RPO Regulations 2010 • APTEL stated that the State Commission can specify the RPO/SPO on the total consumption of the distribution licensee and not selectively and directly on some categories of consumers of the distribution licensee. The SPO obligation as provided in the impugned order is contrary to the State Commission's Renewable Energy Regulations 2010 and is beyond the powers of the State Commissions and discriminatory to some categories of consumers of the distribution licensee. • http://aptel.gov.in/judgements/Appeal%20nos.%2092%20&%20109%20of%202013_21.01.2014.pdf
APTEL	102 of 2012	2013	TANGEDCO, TNERC,	M/s. Beta Wind Farm (P) Limited	<ul style="list-style-type: none"> • Appeal filed by Beta Wind regarding incorrect determination and recovery of the transmission charges by TNERC basis APTEL judgement on appeal 45 of 2012

Commission	Case No.	Year	Utility	OA Consumer	Brief description of case
			TANTRAN SCO		<ul style="list-style-type: none"> • APTEL directed that the transmission charges are to be determined on the basis of allotted transmission capacity to long term open access customers. However, the State Commission has not followed the Regulations and has determined the transmission charges on the basis of available capacity based on the system studies as furnished by the transmission licensee. • Similar issue had been dealt by APTEL in Appeal no. 91 of 2012 in the matter of Sai Regency Power wherein the Tribunal gave certain directions for determination of transmission charges payable by the users of the intra-state transmission system. • Accordingly, APTEL directed to State Commission to redetermine the transmission charges payable by all the long term open access customers of the intra-state transmission system as per our directions. • http://aptel.gov.in/judgements/Appeal%20No.%20102%20of%202012.pdf
APTEL	45 of 2012	2013	TANGEDC O, TNERC, TANTRAN SCO	M/s. Beta Wind Farm (P) Limited	<ul style="list-style-type: none"> • Appeal filed by Beta Wind regarding transmission charges applicable to the wind power developers who desire to avail REC under the Regulations notified by CERC • CERC amended the Renewable Energy Regulations stating that REC benefit will only be available for developers not availing the concessional or promotional tariffs either on sale of electricity generated by it to the State distribution licensees or otherwise • Beta filed petition to TNERC he praying for determination of normative transmission charges so that they can avail the benefit of REC under the Central Commission Regulations as it was paying transmission and wheeling charges at the rate of 5 % • APTEL disposed the petition directing TNERC to determine the transmission charges per MW per day applicable after the reorganisation of the Electricity Board on the basis of the summation of the capacity allotted to all long term OA customers including utilisation by TANGEDCO and said that Beta is entitled to REC benefit on payment of banking charges at the prevailing rate • http://aptel.gov.in/judgements/Judgements%20Appeal%20No.%2045%20of%202012_31012013.pdf

7.11. Comments received from states on the report

7.11.1. Karnataka Electricity Regulatory Commission

Suggestions made in the Report	KERC's Comments	Remark
<p>1. Conditions in Eligibility restricting open access.</p> <p>Suggestions</p> <p>1.1. Group of consumers connected on a feeder, meeting the minimum load requirement on a combined basis should be allowed to avail open access, similar to the case in Haryana</p>	<p>As per Electricity Act, 2003, Open Access (OA) has to be provided to all consumers who require supply of electricity, where the maximum power to be made available at any time exceeds one –MW. Further 'Consumer' is defined as any person who is supplied with Electricity for his own use by a licensee or by any other person engaged in the business of supplying electricity to the public under the Act or any other law for time being in force---. Also, 'Person' is defined as any company or body corporate or association or body of individuals, whether incorporated or not, or artificial juridical person.</p> <p>Hence, KERC is of the view that group of consumers connected on a feeder does not satisfy the definition of a consumer as envisaged in the Act.</p>	<p>The suggestion regarding allowing open access to a group of consumers is based on practice followed by other states like Haryana. Also, as per Electricity Act 2003, an association or body of individuals (whether incorporated or not) are classified under the definition of 'Person'. Therefore, the suggestion is based on existing practice at State level. <i>No change envisaged in the report.</i></p>
<p>1.2. Reduction in 1MW minimum requirement may be considered for increasing the base of eligible consumers that can avail open access</p>	<p>The Act envisages that open access in distribution has to be introduced in phases by the SERCs, subject to conditions including cross subsidies and other operational constraints. Thus, SERCs, keeping in view the above constraints in their State, may decide about reducing the one-MW requirement for OA.</p> <p>Hence, the above decision should be left to the discretion of the SERCs.</p>	<p>The report provides suggestions based on review of ten states. Further, the suggestions are only indicative and are not mandatory to be followed by SERCs. The discretion for adoption of suggestions is on the SERCs for adoption <i>No change envisaged in the report.</i></p>
<p>1.3. As the power situation has improved across States, the voltage level and dedicated feeder level restrictions may be removed in a phased manner.</p>	<p>No such restrictions were imposed in Karnataka</p>	<p><i>No change envisaged in the report.</i></p>
<p>1.4. Compliances with respect to other regulatory requirements established by regulation other than open access regulations, such as RPO, may be considered for disallowance of open</p>	<p>As per the provision of the Electricity Act (EA), OA can be denied only if there is a constraint in the Transmission and/or distribution network i.e. OA is subject to availability of corridor. Imposing additional conditions like RPO compliance is not in tune</p>	<p>The suggestion was primarily considering the fact that disallowance in OA was being done due to RPO non fulfilment by OA consumes. As highlighted, OA denial should only be done in</p>

Suggestions made in the Report	KERC's Comments	Remark
access eligibility, only in cases where repeated non-compliance or non-payment of penalty by consumers is observed by the Commission.	with the provisions of the EA,2003.	case network constraints and therefore, any other practise for denial of OA may be relooked by SERCs. No change is envisaged in the report.
<p>2. Independence of nodal agency Suggestions</p> <p>2.1. Recommendations of Gireesh Pradhan Committee for SLDC Independence should be implemented.</p>	<p>As per Section 31 (2) SLDC has to be operated by a Government company or any authority or corporation established or constituted by or under any State Act, as may be notified by the State Government. Until it is notified, the State Transmission Utility shall operate the State Load Despatch Centre.</p> <p>In view of the above, the ring fencing of SLDC can happen only if the State Government notifies an independent organisation as envisaged in the Act. However, the Act has not specified any time frame for such a notification by the Government.</p>	<p>It is a generic suggestion intended for overall promotion of open access in the country and not aimed at SERC for implementation. The SERCs may however, adopt few practices such as separate approval of SLDC ARR, direct utilities for separate accounting of expenses, etc. similar to current practice in few of the states reviewed as part of the report. <i>No change is envisaged in the report.</i></p>
2.2. SLDC should be the nodal agency for all types of open access, to ensure independence in the process of granting open access	In Karnataka SLDC is the Nodal agency for all OA transactions	<i>No change is envisaged in the report.</i>
<p>3. Loss of open access power due to unscheduled outages</p> <p>3.1. Appropriate structure may be evolved as part of regulations (banking or adjustment in charges) for compensating the open access consumer for lower drawal during unscheduled power cuts.</p>	KERC is of the view that the concerned SERCs need to take a decision in the matter keeping in view the impact on the finances of ESCOMs, which in turn would have impact on consumer's tariff.	<i>No change is envisaged in the report.</i>
<p>4. Frequent shifting of consumers between open access and DISCOM</p> <p>4.1. Open Access Consumers should schedule minimum continuous 8 (eight) hours of supply through Open Access. Adequate amendments in the regulations may be incorporated for operationalizing the</p>	KERC welcomes the suggestion.	<i>No change is envisaged in the report.</i>

Suggestions made in the Report	KERC's Comments	Remark
minimum hours of requirement.		
<p>5. Uniformity in time period for which open access is allowed</p> <p>5.1. The period of open access for LTOA, MTOA and STOA should be made uniform across States considering the time periods defined by CERC. This would simplify the procedures and enable ease of availing open access both at Intra-State and Inter-State level.</p>	KERC welcomes the suggestion.	<i>No change is envisaged in the report.</i>
<p>6. Progressive tariff rationalisation to reduce cross subsidies and improve fixed-variable breakup of tariffs</p> <p>6.1. Reduce the number of tariff categories and slabs, so as to simplify the applicability of charges on various consumer types.</p>	KERC welcomes the suggestion. In Karnataka for HT industries and HT commercial, there are only two slabs for energy charges and one slab for demand charges.	<i>No change is envisaged in the report.</i>
<p>6.2. Reduce the cross subsidies in HT category over a fixed time period to reflect average cost of supply of the Discom and progressively move towards voltage-wise cost of supply.</p>	The State of Karnataka is endeavouring to reduce the cross subsidies in HT category. In view of about 35% of the sales is to the irrigation pump sets, which is subsidised by the Government, to specify the road map for reduction in cross subsidy, a long term trajectory for subsidy has to be given by the State Government. Unless that is done, it would not be practicable to have a road map for cross subsidy reduction and to move towards voltage-wise cost of supply.	The suggestion is for reduction of cross-subsidies and moving towards voltage-wise cost of supply. Initiatives have already been made by a few SERCs in this regard. <i>No change is envisaged in the report.</i>
<p>6.3. Fixed charges should be determined in a way that enables recovery of fixed costs of the DISCOM in an efficient manner from the HT consumers particularly</p>	The suggestion is welcome. KERC is endeavouring to recover the fixed cost of ESCOMs by gradually increasing the demand / fixed charges for HT & LT consumers year on year, in its Orders on retail supply tariff	<i>No change is envisaged in the report.</i>
<p>7. Methodology adopted for determination of open access charges</p>	KERC welcomes the suggestion. Since the year 2006, KERC is calculating the CSS by adopting the formula specified in the tariff policy, as amended from time to time.	<i>No change is envisaged in the report.</i>

Suggestions made in the Report	KERC's Comments	Remark
<p>7.1. Uniformity in methodology for determination of open access charges</p> <ul style="list-style-type: none"> • Uniform formula to be considered for CSS computation with a specific roadmap for reduction. • Common methodology for computation of Additional Surcharge may be considered. • Two-part standby charge should be determined. 	<p>To ensure recovery of stranded fixed cost from OA consumers, KERC has introduced its own formula, in Tariff Order for FY20, duly keeping in view, the tariff structure prevailing in the State. However, KERC welcomes the suggestion. A formula similar to CSS has to be specified in the tariff policy so that a common methodology is adopted by all the States. In this regard, FoR may devise a formula for additional surcharge and recommend the same to the MoP, GoI for incorporating in the tariff policy. The temporary tariff determined for HT consumers is two part in Karnataka.</p> <p>As per Clause 8.5.6 of tariff policy 2016, standby arrangements should be provided by the licensee on the payment of tariff for temporary connection to that consumer category as specified by the Appropriate Commission and that such charges shall not be more than 125 percent of the normal tariff of that category. The temporary tariff determined for HT consumers is two part in Karnataka. However, KERC welcomes the suggestions.</p>	
<p>7.2. Determination of voltage wise open access charges.</p> <ul style="list-style-type: none"> • Wheeling charges to be determined based on the voltage level of connected consumer • Discoms to conduct technical studies for determining voltage-wise losses and voltage-wise assets, so as to provide SERCs with data for determining voltage-wise wheeling charges 	<p>The wheeling charges in Karnataka depend up on the voltage of injection and drawal, which takes care of the voltage levels while determining the wheeling charges.</p> <p>KERC welcomes the suggestions</p>	<p><i>No change is envisaged in the report.</i></p>
<p>7.3. Determination of wheeling charges with fixed charge structure</p> <ul style="list-style-type: none"> • Structure for transmission and distribution wheeling charges, should be 	<p>KERC welcomes the suggestions. At present KERC is determining the transmission charges on per MW basis and wheeling charges on per KWh basis. For RE projects concessional wheeling charges are being levied in Karnataka. However, with more</p>	<p><i>No change is envisaged in the report.</i></p>

Suggestions made in the Report	KERC's Comments	Remark
made fixed in nature (per kW and per month/ day). In case of renewable based open access adequate discounts may be provided considering the lower utilization factors and duration of power availability	integration of RE sources, it becomes obvious that these charges are increased, keeping in view the interest of the electricity consumers of the State.	
<p>8. Long Term certainty in Open Access charges.</p> <p>8.1. Capping large variations in open access charges may be considered.</p>	Capping the variations in open access charges may not be possible. The transmission charges, wheeling charges, CSS and Additional surcharge depend up on the cost incurred for that particular year. As open access is non-discriminatory in nature as per the Act, the costs incurred by the licensees have to be shared by the consumers of the licensees as well as OA consumers.	While determining retail tariffs for a MYT Control period, the SERCs generally follow an approach to smoothen out hikes required over a time so as to prevent tariff shocks to consumers. On similar principles, it is suggested that while calculating open access charges also, the SERCs can avoid large variations which may prevent consumers from planning their long-term power supply through OA. <i>No change is envisaged in the report.</i>
8.2. Provide certainty to consumers over long-term and medium-term by determining open access charges for a block of 3-5 years (Control period)	While the suggestion is welcomed, at the end of the control period the charges need to be trued up to account for variation in the cost, including but not limited to power purchase cost.	<i>No change is envisaged in the report.</i>
<p>8.3. A roadmap should be prepared by SERCs for phasing out of discounts/ incentives applicable on renewable power, to avoid shocks to consumers and provide a long term certainty of charges.</p> <p>8.4. Discounts for open access from renewable sources to be limited to a certain % of overall charges.</p>	<p>The suggestion is welcome. The phasing out of discounts/ incentives may be with reference to fulfilment of RPO compliances by the licensees. It may not be advisable to continue the concessions after fulfilment of RPO.</p> <p>In this regard, it may be noted that, the recent Order passed by KERC revising the wheeling charges upwards was challenged and set aside by the Hon'ble High Court of Karnataka. Hence, a suitable amendment to Section 86 (1) (e) of the Electricity Act, 2003 regarding promotion of RE has to be considered.</p>	<i>No change is envisaged in the report.</i>
8.5. Objective of driving efficiency in operations should be considered	The suggestion is welcome.	<i>No change is envisaged in the report.</i>

Suggestions made in the Report	KERC's Comments	Remark
while determining the open access charges, through implementing performance standards		
<p>9. Delay in grant of NOC/ OA approvals</p> <p>9.1. Coordination for getting approvals/ NOC to be included as part of the responsibilities of nodal agency</p>	The suggestion is welcome. In Karnataka SLDC is the Nodal Agency to co-ordinate with the Open Access consumers.	<i>No change is envisaged in the report.</i>
9.2. Online portal can be created for applying for open access or granting of NOC. Use of technology and automation of procedures would help in eliminating delays and individual prejudices and help in simplifying the open access procedure for the consumers	The suggestion is welcome. In this regard, the SERCs may issue suitable directions to SLDCs.	<i>No change is envisaged in the report.</i>
9.3. Timelines should be set for various approvals / clearances required, beyond which provision for 'Deemed Approval' should be included as part of the Regulations, similar to that followed in Andhra Pradesh.	The suggestion is welcome. KERC has already defined the timelines and has included the deemed approval provision in its Regulations, in case of delay in approvals.	<i>No change is envisaged in the report.</i>
<p>10. Lack of information or misinterpretation of regulatory provisions</p> <p>10.1. Information with respect to eligibility, applicable charges, etc. for availing open access should be provided in simple manner for ease of comprehension by the consumer. This information should also include applicability and linkages with other regulations for any additional compliance. A model document in this regard could be prepared for standardization of information to be shared with the consumers with respect to Open Access uniformly across all States.</p>	The suggestion is welcome. FoR may prepare a standard format for collecting the information on OA.	<i>No change is envisaged in the report.</i>

Suggestions made in the Report	KERC's Comments	Remark
10.2. Availability of information on the website of nodal agency regarding applicability of open access charges (separately for long-term/ short-term) on eligible categories of consumers. Regular updates regarding availability of network for short-term open access consumer.	The suggestion is welcome. In this regard, the SERCs may issue suitable directions to SLDCs.	<i>No change is envisaged in the report.</i>
10.3. Efforts should be made to reduce and standardise the documentation required to be submitted along with open access application.	The suggestion is welcome. FoR may standardise documentation required to be submitted along with open access application.	<i>No change is envisaged in the report.</i>
<p>11. Disputes with respect to provisions and applicability of Open Access regulations/ charges</p> <p>11.1. Regulators can issue regular and detailed open access practice directions, similar to Maharashtra, to avoid ambiguities related to provisions of open access regulations.</p>	The suggestion is welcome. KERC has also notified the Open Access Regulations.	<i>No change is envisaged in the report.</i>

7.11.2. Tamil Nadu Electricity Regulatory Commission

TNERC's Comments	Remark
A formula may be evolved to change the tariff design so that recovery of fixed charges from consumers adequately cover the fixed costs of the DISCOM i.e 50 to 60% of DISCOMs fixed costs may be recovered through fixed costs to consumers in retail tariffs.	The scope of the study was limited to review of the ten states. As the proportion of fixed and variable cost may change from state to state based on several factors, SERCs may be required to ascertain the adequate level of fixed cost recovery through fixed charges to consumers accordingly. <i>No change is envisaged in the report.</i>
A formula may be evolved for calculation of additional surcharge, just like in the case of cross subsidy surcharge, so that it may be adopted uniformly by all DISCOMS. Alternatively, the open access consumer may indicate the demand required as standby at the time of applying for open access and be required to pay 50% of demand charges every month on commencement of open access, to meet the fixed costs of power purchase incurred by DISCOMS to cater to the standby power of the OA consumer.	Methodology for calculation of Additional Surcharge has already been proposed by MoP in their consultation paper on the 'Issues Pertaining to Open Access' issued in August 2017. The methodology has also been accepted by FOR in the report on 'Open Access' issued in December 2017. <i>No change is envisaged in the report.</i>

7.11.3. Punjab State Electricity Regulatory Commission

Suggestions made in the Report	PSERC's Comments	Remark
<p>1. Conditions in Eligibility restricting open access.</p> <p>Suggestions</p> <p>1.1. Group of consumers connected on a feeder, meeting the minimum load requirement on a combined basis should be allowed to avail open access, similar to the case in Haryana</p>	Presently open access is permissible to a customer having demand of 1 MW and above (except generating plants). The Commission is open to extend the eligibility criteria as suggested in the report and when such request is made by any of the stakeholders.	<i>No change envisaged in the report</i>
1.2. Reduction in 1MW minimum requirement may be considered for increasing the base of eligible consumers that can avail open access		
1.3. As the power situation has improved across States, the voltage level and dedicated feeder level restrictions may be removed in a phased manner.	Presently open access is permissible to a customer connected at 11 kV or above, on all feeders except urban pattern supply feeders, AP feeders and category-1 feeders serving mixed load of urban/ industrial consumers. Considering the present infrastructure, OA is not feasible at LT voltages and mixed feeders.	The suggestion are based on review of ten states covered as part of the study and are not specific for all states to follow. SERCs may adopt proposed recommendations based on the prevailing conditions in their respective states. <i>No change envisaged in the report.</i>
1.4. Compliances with respect to other regulatory requirements established by regulation other than open access regulations, such as RPO, may be considered for disallowance of open access eligibility, only in cases where repeated non-compliance or non-payment of penalty by consumers is observed by the Commission.	The open access customers are also mandated to comply with the RPO as specified by the Commission in the PSERC (RPO and its compliance) Regulation, 2011 as amended from time to time, for the period/ year during which open access has been availed.	The suggestion is made based on review of ten states, wherein OA consumers not meeting RPO were denied open access. SERCs may apply some penalty for such non-compliance in line with the applicable regulations and consider denial of open access only in case of repeated non-fulfilment of RPO is observed. <i>No change is envisaged in the report.</i>
<p>2. Independence of nodal agency Suggestions</p> <p>2.1. Recommendations of Gireesh Pradhan Committee for SLDC Independence should be implemented.</p>	Financial independence has been already ensured and separate ARR for SLDC is being received. Directions to PSTCL have been issued to ensure effective ring fencing the SLDC.	The suggestion intended for overall promotion of open access in the country and not aimed at specific status of implementation of recommendations of Girish Pradhan Committee in individual states. <i>No change is envisaged in the report.</i>
2.2. SLDC should be the nodal agency for all types of open	Presently SLDC is a nodal agency for STOA and STU is	<i>No change is envisaged in the report.</i>

Suggestions made in the Report	PSERC's Comments	Remark
access, to ensure independence in the process of granting open access	nodal agency for LTA and MTOA.	
<p>3. Loss of open access power due to unscheduled outages</p> <p>3.1. Appropriate structure may be evolved as part of regulations (banking or adjustment in charges) for compensating the open access consumer for lower drawal during unscheduled power cuts.</p>	Provision already exists in the Open Access regulations for banking facility in case of an exigency.	The suggestion is provided for consideration of all states based on the study carried out. <i>No change is envisaged in the report.</i>
<p>4. Frequent shifting of consumers between open access and DISCOM</p> <p>4.1. Open Access Consumers should schedule minimum continuous 8 (eight) hours of supply through Open Access. Adequate amendments in the regulations may be incorporated for operationalizing the minimum hours of requirement.</p>	Provision already exists in Open Access Regulations to avoid frequent shifting of consumers between open access and Discom.	The suggestion is provided for consideration of all states based on the study carried out. <i>No change is envisaged in the report.</i>
<p>5. Uniformity in time period for which open access is allowed</p> <p>5.1. The period of open access for LTOA, MTOA and STOA should be made uniform across States considering the time periods defined by CERC. This would simplify the procedures and enable ease of availing open access both at Intra-State and Inter-State level.</p>	Time period for Open Access is linked with CERC regulations.	The suggestion is provided for consideration of all the states. Initiatives have already been made by a few SERCs in this regard. <i>No change is envisaged in the report.</i>
<p>6. Progressive tariff rationalisation to reduce cross subsidies and improve fixed-variable breakup of tariffs</p> <p>6.1. Reduce the number of tariff categories and slabs, so as to simplify the applicability of charges on various consumer types.</p>	Simplification of charges is being done	<i>No change is envisaged in the report.</i>

Suggestions made in the Report	PSERC's Comments	Remark
6.2. Reduce the cross subsidies in HT category over a fixed time period to reflect average cost of supply of the Discom and progressively move towards voltage-wise cost of supply.	Cross subsidies levels have been already brought within +/-20%	The suggestion is for reduction of cross-subsidies and moving towards voltage-wise cost of supply. Initiatives have already been made by a few SERCs in this regard. <i>No change is envisaged in the report.</i>
6.3. Fixed charges should be determined in a way that enables recovery of fixed costs of the DISCOM in an efficient manner from the HT consumers particularly	Two-part tariff was introduced in the state with effect from 01.01.2018 and fixed charges are being gradually increased to match fixed costs	<i>No change is envisaged in the report.</i>
<p>7. Methodology adopted for determination of open access charges</p> <p>7.1. Uniformity in methodology for determination of open access charges</p> <ul style="list-style-type: none"> • Uniform formula to be considered for CSS computation with a specific roadmap for reduction. • Common methodology for computation of Additional Surcharge may be considered. • Two-part standby charge should be determined. 	CSS, Additional Surcharge and Standby Charges being computed with same methodology as being adopted by some other states.	The suggestion is provided for consideration of all the states. Initiatives have already been made by a few SERCs in this regard. <i>No change is envisaged in the report.</i>
<p>7.2. Determination of voltage wise open access charges.</p> <ul style="list-style-type: none"> • Wheeling charges to be determined based on the voltage level of connected consumer • Discoms to conduct technical studies for determining voltage-wise losses and voltage-wise assets, so as to provide SERCs with data for determining voltage- wise wheeling charges 	Wheeling charges are being determined separately for transmission and distribution system.	The suggestion is aimed towards calculation of separate wheeling charges for different voltage levels within the distribution system. <i>No change is envisaged in the report.</i>
<p>7.3. Determination of wheeling charges with fixed charge structure</p> <ul style="list-style-type: none"> • Structure for transmission and distribution wheeling charges, should be made fixed in nature (per kW 	Transmission and distribution wheeling charges for medium and long term open access consumers are already being determined per MW/month	The suggestion is provided for consideration of all the states. Initiatives have already been made by a few SERCs in this regard. <i>No change is envisaged in the report.</i>

Suggestions made in the Report	PSERC's Comments	Remark
and per month/ day). In case of renewable based open access adequate discounts may be provided considering the lower utilization factors and duration of power availability		
<p>8. Long Term certainty in Open Access charges.</p> <p>8.1. Capping large variations in open access charges may be considered.</p> <p>8.2. Provide certainty to consumers over long-term and medium-term by determining open access charges for a block of 3-5 years (Control period)</p>	Presently open access charges are determined annually in the tariff order. Suggestions made shall be considered.	<i>No change is envisaged in the report.</i>
<p>8.3. A roadmap should be prepared by SERCs for phasing out of discounts/ incentives applicable on renewable power, to avoid shocks to consumers and provide a long term certainty of charges.</p> <p>8.4. Discounts for open access from renewable sources to be limited to a certain % of overall charges.</p> <p>8.5. Objective of driving efficiency in operations should be considered while determining the open access charges, through implementing performance standards</p>	Shall be considered by the Commission at appropriate time.	<i>No change is envisaged in the report.</i>
<p>9. Delay in grant of NOC/ OA approvals</p> <p>9.1. Coordination for getting approvals/ NOC to be included as part of the responsibilities of nodal agency</p>	Already in practice.	The suggestion is provided for consideration of all the states. Initiatives have already been made by a few SERCs in this regard. <i>No change is envisaged in the report.</i>
9.2. Online portal can be created for applying for open access or granting of NOC. Use of technology and automation of procedures would help in eliminating delays and individual prejudices and help in simplifying the open access procedure for the consumers	Presently the OA application is received through online portal. However portal for granting NOC is yet to be created by the Nodal Agencies.	<i>No change is envisaged in the report.</i>
9.3. Timelines should be set for various approvals / clearances	Provision already exist	In certain states, the provision for deemed

Suggestions made in the Report	PSERC's Comments	Remark
<p>required, beyond which provision for 'Deemed Approval' should be included as part of the Regulations, similar to that followed in Andhra Pradesh.</p>		<p>approval is applicable only for the grant of NOC and not overall OA approval. The suggestion is provided for consideration of all the states. Initiatives have already been made by a few SERCs in this regard. <i>No change is envisaged in the report.</i></p>
<p>10. Lack of information or misinterpretation of regulatory provisions</p> <p>10.1. Information with respect to eligibility, applicable charges, etc. for availing open access should be provided in simple manner for ease of comprehension by the consumer. This information should also include applicability and linkages with other regulations for any additional compliance. A model document in this regard could be prepared for standardization of information to be shared with the consumers with respect to Open Access uniformly across all States.</p>	<p>Model document is shared with all consumers by putting it on the website</p>	<p><i>No change is envisaged in the report.</i></p>
<p>10.2. Availability of information on the website of nodal agency regarding applicability of open access charges (separately for long-term/ short-term) on eligible categories of consumers. Regular updates regarding availability of network for short-term open access consumer.</p>	<p>Information is available on the website of the nodal agency</p>	<p><i>No change is envisaged in the report.</i></p>
<p>10.3. Efforts should be made to reduce and standardise the documentation required to be submitted along with open access application.</p>	<p>The documentation required along with OA application is standardised and annexed with the procedure</p>	<p><i>No change is envisaged in the report.</i></p>
<p>11. Disputes with respect to provisions and applicability of Open Access regulations/ charges</p> <p>11.1. Regulators can issue regular and detailed open access practice directions, similar to Maharashtra, to avoid ambiguities related to</p>	<p>Practice directions are proposed to be covered in procedures for MTOA/ LTOA/ STOA.</p>	<p><i>No change is envisaged in the report.</i></p>

Suggestions made in the Report	PSERC's Comments	Remark
provisions of open access regulations.		

7.11.4. Odisha Electricity Regulatory Commission

Suggestions made in the Report	OERC's Comments	Remark
<p>1. Conditions in Eligibility restricting open access.</p> <p>Suggestions</p> <p>1.1. Group of consumers connected on a feeder, meeting the minimum load requirement on a combined basis should be allowed to avail open access, similar to the case in Haryana</p>	No such restriction is existing in the Intra State OA Regulation in place	The suggestion is provided for consideration of all states based on the study carried out. <i>No change is envisaged in the report.</i>
1.2. Reduction in 1MW minimum requirement may be considered for increasing the base of eligible consumers that can avail open access	Allowing Open Access quantum below 1 MW shall increase the number of transactions, increasing the workload of SLDC. Small consumers may not find it worthwhile. However, if there is demand received from small consumers it may be considered at appropriate stage.	<i>No change is envisaged in the report.</i>
1.3. As the power situation has improved across States, the voltage level and dedicated feeder level restrictions may be removed in a phased manner.	No such restriction in the Intra State OA Regulation.	The suggestion is provided for consideration of all states based on the study carried out. <i>No change is envisaged in the report.</i>
1.4. Compliances with respect to other regulatory requirements established by regulation other than open access regulations, such as RPO, may be considered for disallowance of open access eligibility, only in cases where repeated non-compliance or non-payment of penalty by consumers is observed by the Commission.	OERC fully endorses this view. Incorporation of RPO restrictions shall be considered in the amended Regulation.	<i>No change is envisaged in the report.</i>
<p>2. Independence of nodal agency Suggestions</p> <p>2.1. Recommendations of Gireesh Pradhan Committee for SLDC Independence should be implemented.</p>	All type of OA applications for according consent and issuing NOC is being processed by SLDC independently as per the provisions of Regulations.	<i>No change is envisaged in the report.</i>

Suggestions made in the Report	OERC's Comments	Remark
2.2. SLDC should be the nodal agency for all types of open access, to ensure independence in the process of granting open access		
<p>3. Loss of open access power due to unscheduled outages</p> <p>3.1. Appropriate structure may be evolved as part of regulations (banking or adjustment in charges) for compensating the open access consumer for lower drawal during unscheduled power cuts.</p>	Revision of intra-day schedule in forced majeure conditions is provided in present Intra State OA Regulation.	The suggestion is provided based on study of ten states wherein few states allow banking /compensation in case of unscheduled power cuts. <i>No change is envisaged in the report.</i>
<p>4. Frequent shifting of consumers between open access and DISCOM</p> <p>4.1. Open Access Consumers should schedule minimum continuous 8 (eight) hours of supply through Open Access. Adequate amendments in the regulations may be incorporated for operationalizing the minimum hours of requirement.</p>	OERC appreciates this proposal. This provision shall be incorporated in the amended Regulation.	<i>No change is envisaged in the report.</i>
<p>5. Uniformity in time period for which open access is allowed</p> <p>5.1. The period of open access for LTOA, MTOA and STOA should be made uniform across States considering the time periods defined by CERC. This would simplify the procedures and enable ease of availing open access both at Intra-State and Inter-State level.</p>	Intra-State OA Regulation shall be amended in line with CERC Regulation.	<i>No change is envisaged in the report.</i>
<p>6. Progressive tariff rationalisation to reduce cross subsidies and improve fixed-variable breakup of tariffs</p> <p>6.1. Reduce the number of tariff categories and slabs, so as to simplify the applicability of charges on various consumer types.</p>	Commission is adopting Tariff rationalisation and reduction of Cross subsidy over a fixed time period. The fixed charges are factored in the formula in "T".	<i>No change is envisaged in the report.</i>

Suggestions made in the Report	OERC's Comments	Remark
6.2. Reduce the cross subsidies in HT category over a fixed time period to reflect average cost of supply of the Discom and progressively move towards voltage-wise cost of supply.		
6.3. Fixed charges should be determined in a way that enables recovery of fixed costs of the DISCOM in an efficient manner from the HT consumers particularly	Retail tariff is determined considering recovery of fixed cost as per tariff Regulation.	<i>No change is envisaged in the report.</i>
<p>7. Methodology adopted for determination of open access charges</p> <p>7.1. Uniformity in methodology for determination of open access charges</p> <ul style="list-style-type: none"> • Uniform formula to be considered for CSS computation with a specific roadmap for reduction. • Common methodology for computation of Additional Surcharge may be considered. • Two-part standby charge should be determined. 	Commission is adopting successive reduction of Cross Subsidy Surcharge over a period of time. Uniform formula for all DISCOMs (State as a whole) is used. No additional surcharge has been fixed by the Commission since no case has been brought by the DISCOMs before it.	<i>No change is envisaged in the report.</i>
<p>7.2. Determination of voltage wise open access charges.</p> <ul style="list-style-type: none"> • Wheeling charges to be determined based on the voltage level of connected consumer • Discoms to conduct technical studies for determining voltage-wise losses and voltage-wise assets, so as to provide SERCs with data for determining voltage- wise wheeling charges 	Wheeling charges has been determined at different Voltage levels. DISCOMs are being directed to conduct system studies and determine the losses at different Voltage levels.	<i>No change is envisaged in the report.</i>
<p>7.3. Determination of wheeling charges with fixed charge structure</p> <ul style="list-style-type: none"> • Structure for transmission and distribution wheeling charges, should be made fixed in nature (per kW 	Commission has already determined the charge structure for Transmission and Distribution system (Per/ KW/month/day). Discount for Renewable power is in place.	The suggestion is provided for consideration of all the states. Initiatives have already been made by a few SERCs in this regard. <i>No change is envisaged in the report.</i>

Suggestions made in the Report	OERC's Comments	Remark
and per month/ day). In case of renewable based open access adequate discounts may be provided considering the lower utilization factors and duration of power availability	OA consumers drawing power from RE sources excluding co-gen and bio mass are required to pay only 20% of the wheeling charges.	
<p>8. Long Term certainty in Open Access charges.</p> <p>8.1. Capping large variations in open access charges may be considered.</p> <p>8.2. Provide certainty to consumers over long-term and medium-term by determining open access charges for a block of 3-5 years (Control period)</p>	This is not possible because OA charges are determined basing on the approved ARR of DISCOMs filed before the Commission every year.	While determining retail tariffs for a MYT Control period, the SERCs generally follow an approach to smoothen out hikes required over a time so as to prevent tariff shocks to consumers. On similar principles, it is suggested that while calculating open access charges also, the SERCs can avoid large variations which may prevent consumers from planning their long-term power supply through OA. <i>No change is envisaged in the report.</i>
<p>8.3. A roadmap should be prepared by SERCs for phasing out of discounts/ incentives applicable on renewable power, to avoid shocks to consumers and provide a long term certainty of charges.</p> <p>8.4. Discounts for open access from renewable sources to be limited to a certain % of overall charges.</p>	Commission is in favour of phasing out of discount/ incentive applicable on renewable power to a limit over a certain period of time (years)	<i>No change is envisaged in the report.</i>
8.5. Objective of driving efficiency in operations should be considered while determining the open access charges, through implementing performance standards	Performance standard of Transmission as well as Distribution Licensees operating in the State is being reviewed and directives issued regularly to improve the standard.	<i>No change is envisaged in the report.</i>
<p>9. Delay in grant of NOC/ OA approvals</p> <p>9.1. Coordination for getting approvals/ NOC to be included as part of the responsibilities of nodal agency</p>	The nodal agency (SLDC / OPTCL) is processing all types of OA applications within stipulated time frame as provided in the Regulations.	<i>No change is envisaged in the report.</i>
9.2. Online portal can be created for applying for open access or granting of NOC. Use of technology and automation of procedures would help in eliminating delays and	Implementation of SAMAST activities in the State has been taken up by SLDC, wherein, facility for submission and processing of Open Access application	<i>No change is envisaged in the report.</i>

Suggestions made in the Report	OERC's Comments	Remark
individual prejudices and help in simplifying the open access procedure for the consumers	through "ON Line" portal has been provided.	
9.3. Timelines should be set for various approvals / clearances required, beyond which provision for 'Deemed Approval' should be included as part of the Regulations, similar to that followed in Andhra Pradesh.	Provision of deemed approval beyond a definite timeline has been kept in CERC Regulation. OERC will consider incorporating the same in the amended OA Regulation.	<i>No change is envisaged in the report.</i>
<p>10. Lack of information or misinterpretation of regulatory provisions</p> <p>10.1. Information with respect to eligibility, applicable charges, etc. for availing open access should be provided in simple manner for ease of comprehension by the consumer. This information should also include applicability and linkages with other regulations for any additional compliance. A model document in this regard could be prepared for standardization of information to be shared with the consumers with respect to Open Access uniformly across all States.</p>	OERC has notified the Intra-State Open Access Regulation and approved the detailed procedure developed by OPTCL. All the documents are available on OERC as well as SLDC website for reference of those who intend to avail different types of Open Access in State network.	<i>No change is envisaged in the report.</i>
10.2. Availability of information on the website of nodal agency regarding applicability of open access charges (separately for long-term/ short-term) on eligible categories of consumers. Regular updates regarding availability of network for short-term open access consumer.		
10.3. Efforts should be made to reduce and standardise the documentation required to be submitted along with open access application.	The OA Regulation which is under process of amendment, shall be simplified and all documents will be standardised.	<i>No change is envisaged in the report.</i>
<p>11. Disputes with respect to provisions and applicability of Open Access regulations/ charges</p> <p>11.1. Regulators can issue regular and detailed open access practice directions, similar to Maharashtra, to avoid</p>	OERC is resolving all cases relating to Open Access through open hearing.	The suggestion was based on the best practices observed as part of the study. The practise directions would help in providing future clarity in case of such provisions of the existing regulations which raises ambiguity in

Suggestions made in the Report	OERC's Comments	Remark
ambiguities related to provisions of open access regulations.		open access implementation. <i>No change is envisaged in the report.</i>



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