Distribution Utilities Forum

Open Access: Stakeholders' Perspective

Rishabh Sethi | Balaji Raparthi | Ashish Kumar Sharma

SHAKTI SUSTAINABLE ENERGY FOUNDATION

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Foreword

GIREESH B PRADHAN

Honorary Chairman, Distribution Utilities Forum

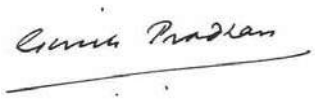
At the tail end of retail supply chain, Discoms are crucial to not only delivering last mile connectivity to the end-consumer but also in meeting the Government's vision of reflecting true and prudent cost in electricity tariff.

Introduction of open access, by the Electricity Act, 2003, was aimed at bringing out competition and enabling consumer choice in the power sector of India. It provides non-discriminatory access to transmission and distribution network to eligible consumers. However, with the growth of open access being muted over the past few years, a number of issues have come up in the operationalization of open access impacting all stakeholders.

The fifth Distribution Utilities Forum meeting, on the theme of open access, was held on 27th September 2019, hosted by Maharashtra State Electricity Distribution Company Limited (MSEDCL). It witnessed participation from various Discoms and other key stakeholders in the implementation of open access. I am happy to note that the meeting witnessed healthy discussions with the stakeholders airing their challenges/issues in implementation of open access and coming forward with suggestions that can enable them to address the present issues.

Discussions at the meeting along with responses from preliminary discussions with Discoms and other stakeholders on the subject and the suggestions have been captured in this report.

I trust that you will find the report to be an interesting read.



Gireesh B Pradhan

Message

AJAY MATHUR

Director General, TERI

The Energy and Resources Institute (TERI) and the Shakti Sustainable Energy Foundation (SSEF) have constituted the Distribution Utilities Forum (DUF), so as to enhance and accelerate sharing and learning amongst distribution utilities from each other's experiences. This Forum is a platform for DISCOMs to come together to discuss issues of importance to them in the electricity distribution sector and to deliberate on ways to achieve their common goals. The Forum focussed on rural electrification, impact of solar rooftop on Discoms and cost of supply as its first three themes. Implementation of open access was the fourth theme selected for study, and is the subject of this report.

Electricity Act, 2003 aimed at bringing about competition, enabling consumer choice and increasing system efficiencies in the power sector of India. Introduction of open access in transmission and distribution is one of the key reforms brought in the Act. Open Access, despite having been in place for over 15 years, can be said to be riddled with challenges and its growth has been muted over the last few years. This study aims to understand the challenges perceived by key stakeholders in furtherance of the open access mandate.

The Discoms and other stakeholders, during the Forum meeting and during one-on-one interactions, shared their perspective on the severity of the five issues identified by Ministry of Power. This report revisits the issues already identified as well as new issues from the perspective of key stakeholders, and presents suggestions to address them, as well as the regulatory practices/approaches being followed in different States. I hope the recommendations made in the report would help the stakeholders in facilitating promotion of open access.

Dr. Ajay Mathur

Message

VATSALA JOSEPH

Interim CEO,
Shakti Sustainable Energy Foundation

As you are aware, Shakti Sustainable Energy Foundation and The Energy and Resources Institute came together to launch the Distribution Utilities Forum in 2018 to provide Indian power distribution companies with an independent platform where they can meet with their peers and share perspectives on the issues and challenges that confront the sector and discuss potential solutions to these problems.

In September 2019, the Forum held a meeting on Open Access, focussing on the issues faced by Discoms and other stakeholders such as open access consumers in the implementation of open access. At the Forum, participating Discoms and stakeholders spoke freely about the challenges that must be addressed before a satisfactory solution can be found, one that would promote open access in the spirit in which it is envisioned in the Electricity Act, 2003.

This report flows out of our initial findings combined with the discussions at the Forum meeting and recommendations to address the identified issues.

I trust you will find the report of interest.

Vatsala Joseph

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Abbreviations

ABR	Average Billing Rate
ACoS	Average Cost of Supply
AHP	Analytic Hierarchy Process
AP	Andhra Pradesh
APEPDCL	Eastern Power Distribution Company of Andhra Pradesh Limited
APERC	Andhra Pradesh Electricity Regulatory Commission
AS	Additional Surcharge
AT&C	Aggregate Technical and Commercial
BRPL	BSES Rajdhani Power Limited
BU	Billion Units
CAGR	Compound Annual Growth Rate
CD	Contract Demand
CERC	Central Electricity Regulatory Commission
CESU	Central Electricity Supply Utility of Odisha Limited
CGP	Captive Generating Plant
CMIA	Chamber Of Marathwada Industries and Agriculture
CoS	Cost of Supply
CSS	Cross Subsidy Surcharge
CTU	Central Transmission Utility
CUF	Capacity Utilization Factor
DAM	Day-Ahead Market
DBT	Direct Benefit Transfer
DERC	Delhi Electricity Regulatory Commission
DGVCL	Dakshin Gujarat Vij Company Limited
Discom	Distribution Company
DSM	Deviation Settlement Mechanism
DUF	Distribution Utilities Forum
ERCs	Electricity Regulatory Commissions
FCFS	First-Cum-First-Served
FOR	Forum of Regulators
FS	Frequent Switching
GERC	Gujarat Electricity Regulatory Commission
GRIDCO	Grid Corporation of Odisha
HERC	Haryana Electricity Regulatory Commission
HT	High Tension

IEX	Indian Energy Exchange Limited
INR	Indian Rupees
KERC	Karnataka Electricity Regulatory Commission
kV	Kilo-Volt
kWh	Kilo-Watt-Hour
LT	Low Tension
LTA	Long-Term Access
MD	Maximum Drawal
MERC	Maharashtra State Electricity Regulatory Commission
MoP	Ministry of Power
MP	Madhya Pradesh
MPMKVVCL	Madhya Pradesh Madhya Kshetra Vidyut Vitran Company Limited
MSEDCL	Maharashtra State Electricity Distribution Company Limited
MT	Medium-Term
MTOA	Medium-Term Open Access
MU	Million Units
MVA	Mega-Volt-Ampere
MW	Mega-Watt
MWh	Mega-Watt-Hour
NEP	National Electricity Policy, 2005
NESCO	North Eastern Electricity Supply Company of Odisha Limited
NLDC	National Load Dispatch Centre
NOAR	National Open Access Registry
NOC	No Objection Certificate
NRLDC	Northern Region Load Dispatch Centre
OA	Open Access
OAUA	Open Access Users Association
OERC	Odisha Electricity Regulatory Commission
PGCIL	Power Grid Corporation India Limited
POSOCO	Power System Operation Corporation
PPAs	Power Purchase Agreements
PPC	Power Purchase Cost
PSERC	Punjab State Electricity Regulatory Commission
PSPCL	Punjab State Power Corporation Limited
PXIL	Power Exchange India Limited
RE	Renewable Energy
RERC	Rajasthan Electricity Regulatory Commission
RLDCs	Regional Load Dispatch Centres

RPO	Renewable Purchase Obligation
SAMAST	Scheduling, Accounting, Metering and Settlement of Transactions in Electricity
SC	Standby Charge
SERCs	State Electricity Regulatory Commissions
SLDCs	State Load Dispatch Centres
SMC	Surat Municipal Corporation
SOUTHCO	Southern Electricity Supply Company of Odisha Limited
ST	Short-Term
STOA	Short-Term Open Access
STUs	State Transmission Utilities
TDR	Tariff Design and Rationalization
ToD	Time-of-Day
UPERC	Uttar Pradesh Electricity Regulatory Commission
USO	Universal Supply Obligation
WAA	Weighted Average Approach
WESCO	Western Electricity Supply Company of Odisha Limited
YoY	Year-on-Year

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Executive Summary

Introduction of open access in power sector by the Electricity Act, 2003 was aimed to bring about competition and enable consumer choice. Open access envisages non-discriminatory access to the transmission and distribution network. It enables the eligible consumers to procure power at competitive price, to meet their demand, from suppliers other than the distribution companies (Discoms) in whose license area they are situated. In furtherance of the provisions in the Act, regulatory commissions have framed regulations for implementation of open access under their own jurisdiction.

Despite the regulations for open access in inter-state and intra-state transmission and distribution being in place for sufficiently long time, the growth of open access over the past few years has been limited and various issues have mushroomed. In this regard, Distribution Utilities Forum (DUF) secretariat, on behalf of the Forum, interacted with 15 stakeholders across various regions of India to capture the perspective of stakeholders and understand the challenges and opportunities associated with the implementation of open access. These stakeholders included seven Discoms, five consumer groups, two system operators, and one power exchange. The findings of these interactions along with consultation paper by Ministry of Power (MoP) and report by Forum of Regulators (FOR) formed the basis for deliberations during the fifth DUF meeting.

The perspective of the stakeholders on the five issues identified by MoP, namely, tariff design and rationalization, cross-subsidy surcharge, additional surcharge, frequent switching of open access consumers, and standby charges, in their consultation paper (thereafter deliberated upon by FOR) was also gathered, during the meeting, to rank these issues depending upon their severity. The responses of the stakeholders to the survey conducted during the meeting were analyzed using analytic hierarchy process (AHP) and weighted average approach (WAA). The result of the analysis was a consolidated ranking of the issues; this would help in understanding the priority for addressing these issues. From the analysis, it emerged that tariff design and rationalization was the most severe issue and must be addressed on priority basis. This was followed by cross-subsidy surcharge, additional surcharge, frequent switching of open access consumers, and standby charges in terms of priority order.

During the Forum deliberations, the stakeholders articulated various issues that impacted the implementation of open access; majority of the issues were raised by Discoms and consumers. Discoms are mostly worried about losing their high-tariff paying consumers to open access, which will have an adverse impact on their financial and operational efficiencies. Consumers are concerned about maintaining financial viability of procuring power via open access route. The perspective of the stakeholders towards implementation of open access was broadly categorized under three aspects, namely, financial, operational, and regulatory.

On the financial front, both Discoms and consumers raised a number of concerns. The provisions in the Act state that charges and surcharges (constituting open access charges) can be levied upon the consumers opting for open access to meet the revenue loss from consumers moving away from the Discom supply. Discoms highlighted that the skewed tariff design has been impacting the determination of realistic open access charges. While Discoms stated that the open access charges are insufficient to compensate for the loss in revenue, consumers have raised their concerns over increasing open access charges that has made this route of power procurement economically unviable for them. Discoms suggested that the determination of open access charges, especially cross-subsidy surcharge, additional surcharge, standby charges, and waivers, must be revisited in order to ensure that these charges do not impact their financial health. Both consumers and Discoms have unanimously agreed that tariff redesign and rationalization can help in addressing most of these financial issues.

On the operational front, Discoms said that open access consumers switching between Discoms and alternative supply tends to have an impact on their power planning and scheduling for the ensuing day, leading to penalties in the form of deviation settlement mechanism (DSM) charges. Discoms also said that they are also burdened with other operational issues, such as banking renewable energy and the impact of open access consumers (who are mostly connected at the HT level) on their AT&C losses. These issues not only impact the operations of Discoms, but also have an impact on their financial health. On this front, consumers have raised the issue of transparency of the application approval process, especially in the case of detailed reasons for rejection, which prevents them from presenting their case against rejection of their applications. Although different issues were raised by Discoms and consumers, both stakeholders agreed on the need for awareness and capacity building on open access.

On the regulatory front, Discoms raised a major concern on the lack of clarity on the competent authority for certifying captive/group captive consumers. Another major challenge identified was the eligibility conditions for group captive consumers, which is related to the shareholding capacity; Discoms articulated that group captive consumers tend to frequently change their shareholding pattern in order to avail the benefits of concessions offered to these consumers. Consumers also said that the provision of deemed approval of open access applications is not followed; the consumers are not inclined to file petitions as they fear discriminatory treatment, such as intentional load shedding.

Various commissions have adopted different measures to reduce the impact of such issues on the concerned stakeholders. Some of these measures are restricting the switching of open access consumers, monthly settlement of banked renewable energy, determination of additional surcharge (including the case of single buyer model) and standby charges, reducing the waivers on procuring renewable energy, development of electronic platform for administration of short-term open access, among others. These practices offer an opportunity of cross-learning and identifying suitable measures owing to state-specific conditions and may be useful for other commissions.

By gathering the perspective of stakeholders and analyzing current practices along with severity of issues, DUF secretariat has put forward recommendations to address the issues identified. These include regulatory interventions on the issue related to captive/group captive consumers, impact assessment and development of tools to distribute financial and operational risks among the different stakeholders, a roadmap for reduction of cross-subsidy and implementation of direct benefit transfer, time-of-day-based open access charges, and awareness and capacity building of all stakeholders.

It has been found that regulatory interventions play a key role in addressing majority of the issues pertaining to open access. Addressing the issues in the order of priority could help ease the implementation of open access and thereby encourage competition among the stakeholders in the power sector, as envisioned in the Electricity Act, 2003.

1. INTRODUCTION

Electricity Act, 2003 (hereinafter referred to as "the Act") was enacted inter alia for taking measures conducive to the development of electricity sector, promoting competition therein, and protecting the interest of consumers. One of the key measures introduced in the Act to facilitate competition and provide a choice for sale and purchase of power is the introduction of open access (OA) in transmission and distribution. Open access enables large consumers to bring economy in the procurement of power from suppliers other than the Discom in whose license area they are situated.

In exercise of powers conferred under the Act, the central and state commissions made regulations to carry out the provisions of the Act in regard to open access. Central Electricity Regulatory Commission (CERC) paved the way for open access in inter-state transmission by notifying regulations on 30 January 2004, which came into force with effect from 6 May 2004. The regulations divided the transmission customers into two categories, namely, long-term customers and short-term customers, depending on the duration of open access. The regulations were amended from time to time in the light of operational experiences and emerging requirements. The 2004 regulations gave way to two new regulations for inter-state open access – one in 2008 dealing with short-term open access and the other in 2009 dealing with long- and medium-term open access. In parallel, regulations for intra-state open access were also issued by appropriate commissions from time to time. A number of other regulations such as regulations on inter-state trading in electricity and power market have been notified from time to time with provisions relating to promotion of competition and choice of supply of power.

Inter-state short-term OA transactions have been taking place since 2004 and the number of transactions increased from 778 in 2004–05 to 18,128 in 2009–10[1]. In 2008–09, the volume of short-term transactions was of the order of 35.27 BU (billion units). Consequent to the commencement of operation of two power exchanges in 2008, namely, Indian Energy Exchange (IEX) and Power Exchange India Ltd (PXIL), the total volume of electricity transacted via short-term transactions from 2008–09 to 2009–10 increased by 87%. The total volume of short-term OA transactions recorded an increase from 65.90 BU in 2009–10 to 145.20 BU in 2018–19, with a compound annual growth rate (CAGR) of 9%. During this period, the volume of short-term transactions of electricity as percentage of the total electricity generation varied between 9% and 12%.

Based on the data in respect of OA transactions at power exchanges available in the public domain, the number of OA consumers increased from 995 in 2010–11 to 4950 in 2018–19 with a CAGR of 22%. The volume of electricity purchased by OA consumers during the aforementioned period witnessed an increase from 4150 to 11,240 MU (million units), representing a CAGR of 13%. It has been observed that the year-on-year (YoY) percentage growth in the number of OA consumers in power exchanges has been muted since 2014–15 and the YoY percentage growth in the volume transacted in the exchanges has followed an irregular trend[2] (Figure1).

Despite the regulations for open access in inter-state and intra-state transmission and distribution being in place for sufficiently long time, the growth of open access over the past few years has been limited. This study aims to look into the issues hindering the growth of open access and captures perspective of key stakeholders through secondary research and stakeholder interactions.

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[1] CERC Annual Report, 2009-10.

[2] CERC Report on Short-Term Power Market in India: 2018-19

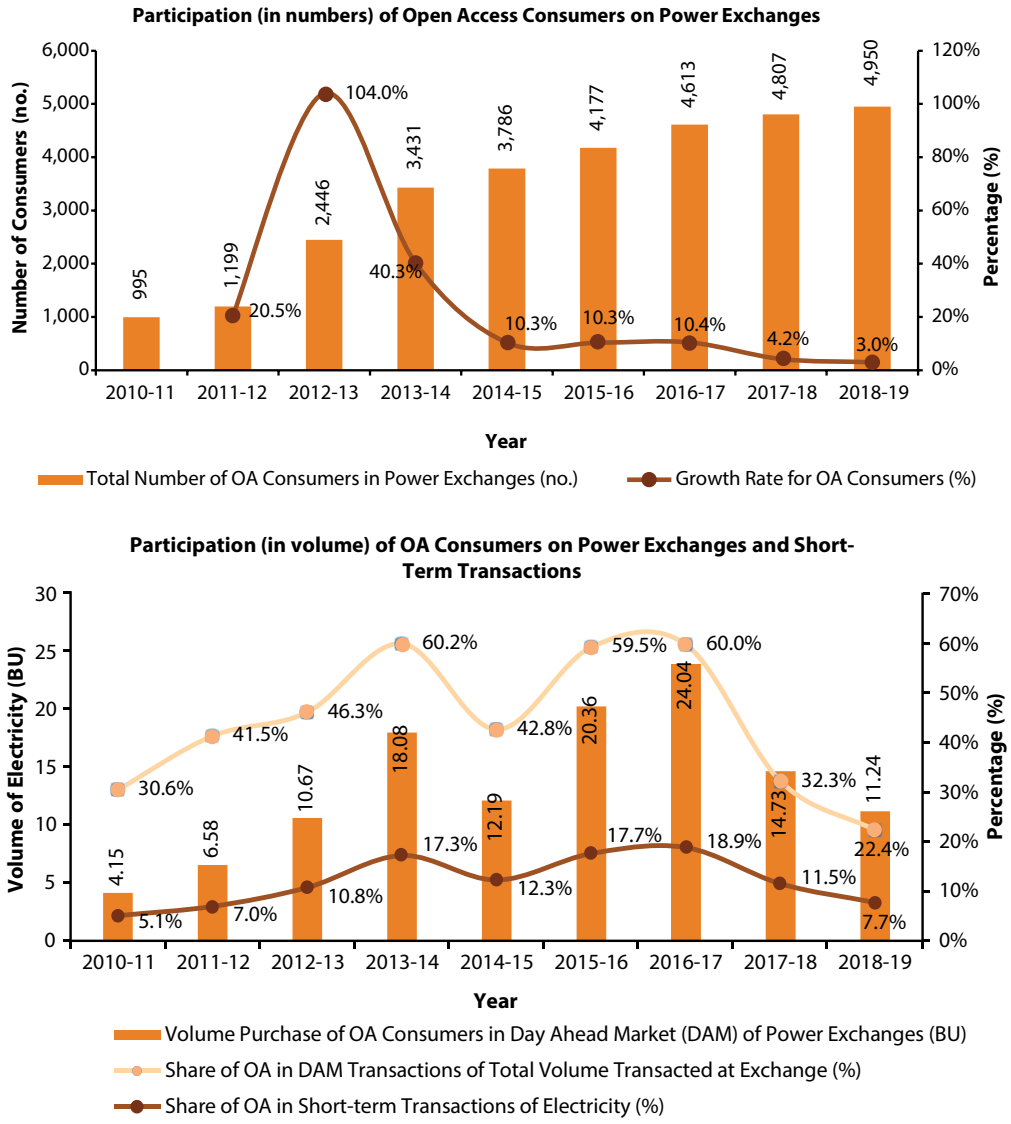

Figure 1: Participation of Open Access Consumers in Power Exchanges and Short-Term Transactions

(Source: CERC Report on Short-Term Power Market in India: 2018-19)

Through this report, the key issues already identified as well as the issues that were noted during the course of the study are brought about and way forward has been suggested for the progression of open access in the power sector of India. The report is organized into six chapters:

» Chapter 2 presents the legal provisions, along with policy provisions and regulations that have been made for implementation of open access. It also discusses various dimensions of open access and the institutions involved in open access.

» Chapter 3 describes the aim of the study along with the approach adopted for carrying out the study.

» Chapter 4 presents the key issues and recommendations underlined by MoP as well as deliberations by FOR in regard to open access. It also presents the quantitative analysis carried out to obtain ranking of these identified issues, based on their severity, from the perspective of stakeholders.

» Chapter 5 presents issues and suggestions of the stakeholders gathered during the interactions, which cover the perspective of various stakeholders captured during individual interactions and the fifth Forum meeting.

» Chapter 6 concludes the report with a recommendation, suggested by DUF secretariat, that can be adopted or implemented to address the identified issues.

2. OPEN ACCESS – LEGAL AND REGULATORY PROVISIONS

The legal, policy, and regulatory provisions pertaining to open access are presented in this chapter. The modes and framework for open access are also discussed later.

2.1 Legal Provisions

As per the section 2(47) of the Act, "Open Access" means *the 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.*

The transmission utilities at the central and the state level as well as distribution utilities are mandated to provide non-discriminatory open access to their network on payment of specified charges, as outlined under sub-section 2(d) under sections 38 and 39 and sub-sections 2 and 3 under section 42 of the Act, respectively (Annexure I).

Section 42(2) also specifies the roles and responsibilities of State Electricity Regulatory Commissions (SERCs) to introduce open access in their respective states in a phased manner. Section 42(2) and sub-section (a) under section 86 of the Act also specify that SERCs are also responsible for determining the charges and surcharges (Table 1) to be levied on the consumer opting for open access for utilizing the distribution network.

Table 1: Major open access charges

OA charge(s)	Description
Cross-subsidy surcharge (CSS)	To meet the requirements of the current level of cross-subsidy within the area of supply of the distribution licensee
Additional surcharge (AS)	To meet the fixed cost of such distribution licensee arising out of his obligation to supply
Standby charges (SC)	To meet the additional cost for standby arrangement to be provided by the licensee on the payment of tariff for temporary connection to a consumer category as specified by the Appropriate Commission in case of outages of generator supplying to that consumer on open access

The Act provides every consumer who has constructed and is operating a captive generating plant (CGP)[3] the right to open access for the purpose of carrying electricity from the CGP to the destination of his use (Section 9(2)) (Annexure I). The Act further provides that such surcharges shall not be leviable in case open access is provided to a person who has established a CGP for carrying the electricity to the destination of his own use (Fourth proviso of Section 42(2)).

2.2 Policy Provisions

In compliance with section 3 of the Act, the central government notified National Electricity Policy (NEP) in 2005. Sections 5.3.3 and 5.3.6 of NEP explain the need for the regulatory framework required for providing non-discriminatory open access in transmission network. It also lays out the requirement of load dispatch facilities with the state-of-the-art communication and data acquisition capability on a real-time basis. Section 5.4.5 states that SERCs should notify

[3] The Act defines a captive generating plant (CGP), under section 2(8), as a power plant set up by any person to generate electricity primarily for his own use and includes a power plant set up by any co-operative society or association of persons for generating electricity primarily for use of members of such cooperative society or association.

regulations, by June 2005, enabling open access to distribution network and also determine OA charges, including wheeling charges, cross-subsidy surcharges, and so on. In the context of increasing participation of private players, section 5.8.3 of the policy clearly lays out the path for OA charges by specifying the following:

> *Under sub-section (2) of Section 42 of the Act, a surcharge is to be levied by the respective State Commissions on consumers switching to alternate supplies under open access. This is to compensate the host distribution licensee serving such consumers who are permitted open access under section 42(2), for loss of the cross-subsidy element built into the tariff of such consumers. An additional surcharge may also be levied under sub-section (4) of Section 42 for meeting the fixed cost of the distribution licensee arising out of his obligation to supply in cases where consumers are allowed open access. The amount of surcharge and additional surcharge levied from consumers who are permitted open access should not become so onerous that it eliminates competition that is intended to be fostered in generation and supply of power directly to consumers through the provision of Open Access under Section 42(2) of the Act. Further it is essential that the Surcharge be reduced progressively in step with the reduction of cross-subsidies as foreseen in Section 42(2) of the Electricity Act 2003.*

In January 2006, the MoP announced the Tariff Policy. One of the objectives of the policy was to promote competition, efficiency in operations, and improvement in the quality of supply.

In the context of tariff design and the linkage between tariffs to cost of service, the Tariff Policy under sub-para (2) of para 8.3 states that:

> *For achieving the objective that the tariff progressively reflects the cost of supply of electricity, the SERC would notify roadmap within six months with a target that latest by the end of year 2010-2011 tariffs are within ± 20 % of the average cost of supply. The road map would also have intermediate milestones, based on the approach of a gradual reduction in cross subsidy.*
>
> *For example if the average cost of service is Rs 3 per unit, at the end of year 2010-2011 the tariff for the cross subsidised categories excluding those referred to in para 1 above should not be lower than Rs 2.40 per unit and that for any of the cross-subsidising categories should not go beyond Rs 3.60 per unit*

In regard to open access, para 8.5.1 of Tariff Policy, 2006 provides that:

> *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.*

As per this section, cross-subsidy surcharge (CSS) would be computed as the difference between tariff applicable to the relevant category of consumers and cost of the distribution licensee to supply electricity to consumers of the applicable category; the formula provided by the Tariff Policy, 2006 is as follows:

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

where

T	=	tariff payable to the relevant category of consumers
C	=	weighted average cost of power purchase of top 5% at the margin excluding liquid fuel-based generation and renewable power
D	=	wheeling charge
L	=	system losses for the applicable voltage level (%)

Paras 8.5.4, 8.5.5, and 8.5.6 provide that determination of additional surcharge, wheeling charges, and standby charges must be carried out by the appropriate commissions. Additional surcharge should become applicable only if it is conclusively demonstrated that the obligation of the 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 open access. 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.

In 2016, the central government notified the revised Tariff Policy with one of the objectives to encourage the development of power sector by promoting competition, efficiency in operations, and improvement in the quality of supply. The timeline for bringing the tariffs within the specified band was dispensed with; the provision under sub-para (2) of para 8.3 dealing with the same states the following:

> *For achieving the objective that the tariff progressively reflects the cost of supply of electricity, the Appropriate Commission would notify a roadmap such that tariffs are brought within ±20% of the average cost of supply. The road map would also have intermediate milestones, based on the approach of a gradual reduction in cross subsidy.*

Inclusion of carrying cost of regulatory assets in determination of cross-subsidy surcharge was another change made in the revised Tariff Policy, 2016. The updated formula for determining the cross-subsidy surcharge is as follows:

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

where

T	=	tariff payable by the relevant category of consumers, including reflecting the Renewable Purchase Obligation (RPO)
C	=	per unit weighted average cost of power purchase by the licensee, including meeting the RPO
D	=	aggregate of transmission, distribution, and wheeling charge applicable to the relevant voltage level
L	=	aggregate of transmission, distribution, and commercial losses expressed as a percentage applicable to the relevant voltage level
R	=	per unit cost of carrying regulatory assets

Under para 8.5.1, the revised Tariff Policy specifies the provision for capping of cross-subsidy surcharge for the promotion of open access:

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

The stipulation in regard to determination of additional surcharge, however, has continued to remain unaltered. Para 8.5.4 of the revised Tariff Policy reads as:

> *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.*

Under para 8.5.6, the revised Tariff Policy also provides capping of the standby charges to 125% of normal tariff for the respective category of consumers seeking open access:

> *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.*

2.3 Regulatory Provisions

In furtherance of the provisions related to open access in the Act, CERC issued principal regulations, namely, CERC (Open Access in Inter-State Transmission) Regulations of 2004, on 30th January 2004. It provided the initial framework in regard to open access for inter-state transmission. It broadly characterized OA transactions into short-term OA and long-term access based on the duration for which open access is requested. The principal regulations paved the way for two new regulations – CERC (Open Access in Inter-State Transmission) Regulations, 2008, which deals with short-term open access (STOA), and CERC (Grant of Connectivity, Long-term Access and Medium-term Open Access in Inter-State Transmission and related matters) Regulations, 2009, which deals with medium-term open access (MTOA) and long-term access (LTA). The regulations along with their subsequent amendments have helped in developing the framework for the implementation of open access provisions (Annexure II).

The regulations on open access in inter-state transmission together with the regulations on trading in electricity issued by CERC have enabled the creation of nationwide automated platform for physical delivery of electricity through the power exchanges; Indian Energy Exchange Ltd (IEX) and Power Exchange India Ltd (PXIL) started their operation on 27th June 2008 and 22nd October 2008, respectively.

In view of the mandate provided under the Act, SERCs came up with intra-state open access regulations for their respective states, in line with the prevailing legislative and policy provisions as well as considering the operational challenges faced by stakeholders.

2.4 Modes and Framework for Open Access

These regulations, put in place by appropriate commissions, cover various dimensions of OA transactions, including the duration, type of contract, and location of buyers and sellers (Figure 2). Each mode of OA transaction has different procedure for application, grant of connectivity, charges, and scheduling, as specified in the regulations.

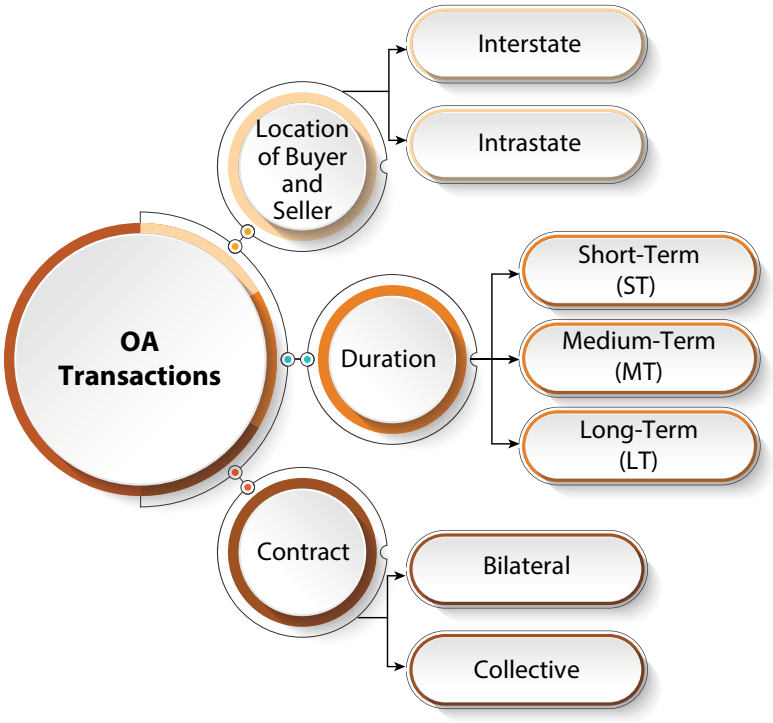

Figure 2: Various modes of OA transactions

Open access is made available for high tariff paying consumers, typically with the maximum power exceeding one megawatt[4], who mainly belong to industrial and commercial categories. CERC regulations on open access specify the duration for different types of OA transactions, namely, short-term open access, medium-term open access, and long-term access, as up to 1 month[5], 3 months to 5 years, and more than 7 years[6], respectively. Variances are, however, noted in regard to the duration of open access in the regulations specified by some of the SERCs[7].

Quite a few organizations have a crucial role in the implementation of open access. The Act and inter-state and intra-state regulations on open access define the roles and responsibilities for each stakeholder. Application process, nodal agencies, and applicable charges vary with the point of injection and point of withdrawal, duration, and quantum of power availed through OA. Table 2 provides an overview of the responsibilities of various stakeholders involved.

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4 This eligibility limit (minimum connected load) varies from state to state as per the respective state regulations.

5 CERC (Open Access in inter-State Transmission) (Amendment) Regulations, 2009 dated 20th May 2009

6 CERC (Grant of Connectivity, Long-term Access and Medium-term Open Access in inter-State Transmission and related matters) (Sixth Amendment) Regulations, 2017 dated 17th February 2017

7 The time frame for short-term, medium-term, and long-term intra-state open access transactions varies from state to state as per the regulations by respective SERCs.

Table 2: Institutional architecture for implementation of open access

Organization/ institution	Role
CERC	Set regulations for implementation of inter-state OA transactions Determination of charges for inter-state OA transactions
SERC	Set regulations for implementation of intra-state OA transactions Determination of charges for intra-state OA transactions
NLDC	Nodal agency for collective transactions
RLDCs	Nodal agency for bilateral transactions
SLDCs	Nodal agency for short-term intra-state OA transactions, except power exchange transactions Checking viability of OA transactions and need to curtail power of any OA user(s), whether long term or short term, in an event concerning grid security and stability Assist/advise the distribution licensee in the matter of energy accounting and allocation
CTU	Nodal agency for inter-state long-term access and medium-term OA transactions
STUs	Nodal agency for long-term and medium-term intra-state OA transactions
Discoms	Carry out load flow studies, system impact studies, forecast load, planning of power procurement through PPAs, network topology and consumption pattern, investments in network management, etc. To determine the capacity available to accommodate OA transactions
Consumers	Follow the application procedure as per the respective regulations for open access

Source TERI analysis based on the Act and regulations related to open access

The aforementioned framework for the implementation of open access is illustrated in Figure 3.

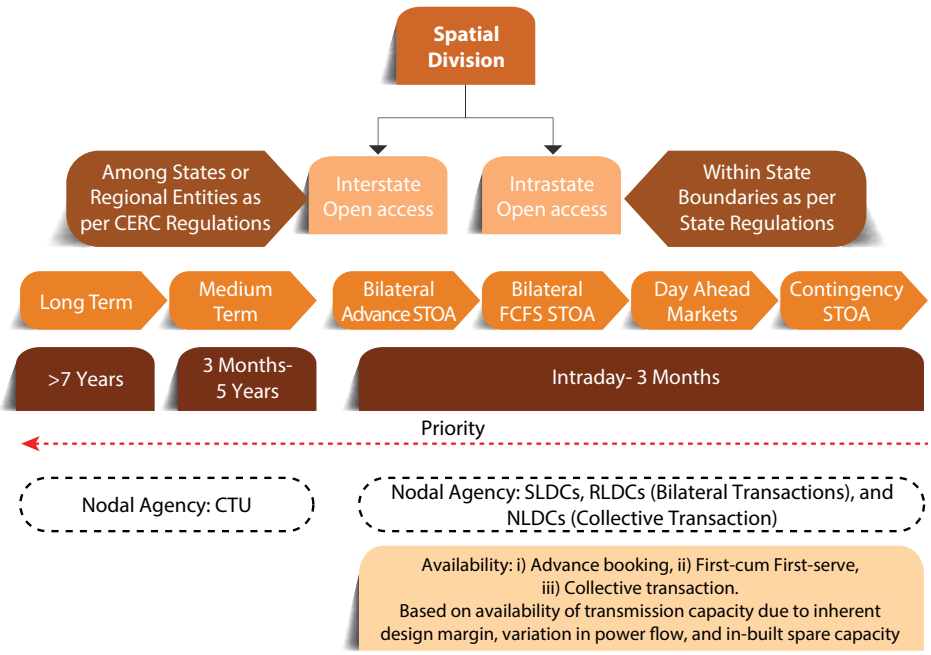

Figure 3: Open access framework

3. APPROACH AND METHODOLOGY OF THE STUDY

The main objective of the study is to capture the perspective of Discoms and other stakeholders in regard to key issues and challenges coming in the way of implementation of open access. For this purpose, in addition to the key issues already identified, interactions were held with various stakeholders. Thereafter, the issues were deliberated in the fifth meeting of DUF. A structured questionnaire-based survey using a well-recognized technique was carried out to gain understanding of the severity of issues as perceived by various stakeholders.

3.1 Approach and Methodology

3.1.1 Interactions with Individual Stakeholders

Structured interactions were carried out with seven Discoms and five industrial consumers and consumer associations in seven states with different levels of industrialization, namely, Punjab, Delhi, Madhya Pradesh, Gujarat, Maharashtra, Odisha, and Andhra Pradesh. Interactions with two system operators and one power exchange were also carried out as a part of this study (Annexure III).

The project team interacted with mid-to-senior level officials from Discoms, system operators, power exchange, and consumers, which included directors, chief engineers, general managers, and superintending engineers in charge of commercial, technical, revenue, and project implementation functions. The stakeholder interactions were carried out with over 40 officials, either in person or telephonically, during July–August 2019. The list of points forming the basis of discussions is provided in Annexure IV.

3.1.2 Stakeholder Interaction during the Forum Meeting

The issues identified by the MoP in its consultation paper, the existing practices and proposals figuring in the consultation paper, recommendation of FOR in regard to these, and the issues gathered during one-to-one interaction with the stakeholders served as the backdrop during the fifth meeting of the Forum. Views and suggestions gathered during the deliberations are detailed in Chapter 5.

Conducting Survey with Stakeholders

Impressions of stakeholders, comprising Discoms, consumer associations, power exchange and system operators, who were present at the meeting, were captured through a structured questionnaire to gather an all-round perspective with regard to severity of the five major issues identified by MoP. The survey was carried out during the meeting through a questionnaire. The structured survey form (Annexure V) was used for pairwise comparison of five issues with the aim to gauge their severity by providing relative importance on a scale of 1 to 9, where 1 represents equal importance of the two issues considered in each pairwise comparison and 9 represents maximum importance of the selected one as compared to others.

Analysis of the inputs gathered from the survey was carried out using AHP to obtain the ranking of the issues for each respondent. The WAA was used to compute consolidated ranking from the response of all the stakeholders, where the ranking of issues varied from stakeholder to stakeholder. Detailed methodology of carrying out the analysis through AHP and WAA is provided in Annexures VI and VII, respectively.

4. RANKING OF ISSUES IDENTIFIED BY THE MINISTRY OF POWER

During the course of operationalization of open access several issues have emerged impacting OA consumers, power sellers, Discoms and their non-open access retail consumers. This chapter presents the issues and proposals from the consultation paper of the Ministry of Power[8] Government of India, and recommendations by Forum of Regulators[9] on these issues. It also presents the quantitative analysis carried out on the survey conducted during the forum meeting to rank these identified issues, based on their severity, as perceived by the stakeholders.

4.1 Issues Identified by the Ministry of Power

The MoP had, in the consultation paper, in August 2017, flagged five issues pertaining to OA, as under:

1. Frequent switching of OA consumers (FS)
2. Cross subsidy surcharge (CSS)
3. Additional surcharge (AS)
4. Standby charges (SBC)
5. Tariff design and rationalization (TDR)

A brief narration of issues and the existing practices as per the consultation paper of the MoP are given hereinafter.

4.1.1 Frequent switching of open access consumers

In some states, large consumers are using OA to switch frequently between Discom's supply and other sources of power. This is primarily due to market-driven prices as consumers tend to purchase power from the market when the market price is economical relative to the utility tariff, even after the respective charges and surcharges. Such frequent switching creates greater volatility in the load to be served by the Discom. As a result, Discoms are unable to forecast their demand for the ensuing day efficiently, leading to heavy penalties for their deviations in the form of applicable deviation settlement mechanism (DSM) charges and incur extra cost to run specific thermal power plants at their technical minimum capacities. Discoms are, thus, disinclined to serve such consumers.

To address this issue, some SERCs (such as Rajasthan Electricity Regulatory Commission (RERC), Haryana Electricity Regulatory Commission (HERC) and Maharashtra Electricity Regulatory Commission (MERC)) have put restrictions in terms of duration and/or quantum of drawal via OA and penalizing OA consumers for variations in drawal, among others. These measures were undertaken to prevent the consumers switching from OA to Discoms supply in an arbitrary manner, taking into account the difficulties faced by Discoms and to ensure that the provision of OA does not unduly burden them.

4.1.2 Cross subsidy surcharge

Cross subsidy surcharge is levied on consumers shifting to open access in order to recover the loss in cross subsidy due to the high tariff paying consumers migrating from the Discom's supply to other sources of supply.

The Tariff Policy, 2016 under para 8.3(2) provides that SERCs should notify a roadmap such that tariffs are within ±20% of Average Cost of Supply (ACoS). The first proviso to para 8.5.1 of Tariff Policy also specifies that CSS should be capped at 20% of the tariff applicable to the category of the consumers.

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[8] Consultation Paper on Issues Related to Open Access, August 2017, Ministry of Power, https://powermin.nic.in/sites/default/files/webform/notices/Seeking_Comments_on_Consultation_paper_on_issues_pertaining_to_Open_Access.pdf; last accessed on May 23, 2020.

[9] Report on "Open Access", December 2017, Forum of Regulators, http://www.forumofregulators.gov.in/Data/WhatsNew/Open_Access.pdf; last accessed on May 23, 2020.

These provisions are not being implemented simultaneously by the respective ERCs, which is resulting in lower recovery of CSS by Discoms (Table 3).

Table 3: Existing practices for levy of CSS

Cost Coverage in Tariff Order	Number of States Within ±20%	Number of States Outside ±20%
Basic ACoS	4	9
Basic CoS	2	1
Do not Publish	-	13

Source: Ministry of Power, 2017

Further, the methodology and formulae adopted by SERCs for determination of CSS over the years is also inconsistent, which has led to variations in the CSS computed, across the states. Some of the formulae used for calculation of CSS by various SERCs are:

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

$$CSS = (ABR – CoS) * Factor$$

$$CSS = T – (avoided\ PPC + wheeling\ charges)$$

$$CSS = (ABR – ACoS) * Factor$$

where,

T = applicable tariff

C = average cost of power purchase by the licensee, including meeting RPO

L = system losses

D = wheeling charge

R = cost of carrying regulatory assets

It has been highlighted that simultaneous implementation of both the provisions of Tariff Policy is essential; otherwise Discoms will not be able to recover cross subsidy through CSS in case consumer opts for open access.

4.1.3 Additional surcharge

As per section 42(4) of the Act, Discoms have a universal supply obligation (USO) towards its consumers and they must supply power as and when required by the consumers. To fulfil this obligation, Discoms enter into long-term power purchase agreements (PPAs) with various suppliers (generators, traders, etc.) for procurement of electricity, taking into consideration future forecasted demand.

However, Discoms are unable to recover the fixed cost from the OA consumers as the cost recovered from fixed charges in the tariff schedule is less than the fixed cost incurred by the Discom for supplying energy. Apart from the above-stated burden, the Discoms also have to bear additional financial burden of stranded assets. In view of the financial loss, section 42(4) of the Act provides for the levy of additional surcharge on OA consumers which is also mentioned in the para 8.5.4 of Tariff Policy, 2016.

In spite of clear provisions allowing levy of additional surcharge on consumers opting for open access, only few SERCs have notified additional surcharge to be recovered. This is primarily due to the Tariff Policy and regulations

putting the onus on Discoms to conclusively demonstrate that the power purchase commitments have been and will continue to remain stranded. Many SERCs have directed that additional surcharge shall be calculated on case to case basis, which is not practically possible.

With India progressing towards an energy surplus scenario, denial of additional surcharge to Discoms may severely impact their financial viability.

Some of the common practices followed for the determination of additional surcharge are:

» Delhi Electricity Regulatory Commission (DERC) considers the difference between UI (DSM) rate and average long-term PPA tariff as additional surcharge.

» Gujarat Electricity Regulatory Commission (GERC) computes the average capacity remaining stranded on account of open access. The methodology followed by them for the same mainly involves determination of the stranded capacity for each hour, that is, lower of the surplus capacity and capacity scheduled by OA consumers. The average stranded capacity is multiplied with the average fixed charges per MW of available power to compute the total additional surcharge to be recovered.

» HERC and RERC use the data of backed down energy and OA scheduled energy for every 15-minute time block and considered minimum of the two as energy backed down due to OA. They utilize source-wise details of backed down energy to compute weighted average cost of energy backed down and effective fixed cost per unit of stranded power.

4.1.4 Standby charges

Standby charges are levied on OA consumers for maintaining standby arrangements required by these consumers to tide over deficits in cases of situations such as outages in generation, transmission assets, etc. These charges should be reflective of the costs incurred by Discoms for providing these support services. Para 8.5.6 of the Tariff Policy, 2016 specifies that the standby charges levied, by the Discoms, on OA consumers for maintaining the standby arrangements should not exceed 125% of the normal tariff of that category.

Standby charges for long-term OA consumers is as per contract signed with distribution licensees, whereas standby charges for short-term OA consumers are generally defined from time to time by the respective SERCs. However, in the case of most of the states, the standby charges are not defined.

It has also been noted that methodology adopted by Discoms for calculation and structuring of standby charges is inconsistent across states. Further, lack of periodic review of these charges can lead to revenue loss for Discoms.

4.1.5 Tariff design and rationalization

Paragraph 8.3 of the Tariff Policy, 2016 specifies that the Regulatory Commissions must determine the tariff so that it should progressively reflect the efficient and prudent cost of supply of electricity.

Even though commissions have introduced two-part tariff structure, mismatch between the actual fixed and variable cost liability incurred by Discoms to the proportion of cost recoverable through fixed charge and energy charge still exists. For example, in case of MSEDCL, the fixed cost was approximately 57% of the total cost for the year 2015-16 (as approved in the Tariff Order), however, recovery through demand/fixed charges were at approximately 19% of the total revenue.

For an OA consumer, Discom saves only on the variable cost of power procurement while incurring the fixed cost, which should in-turn be recoverable from consumers. If tariff design is not reflective of the proportion of fixed and variable cost liability of the Discoms, there will be inadequate recovery of the fixed charges by the Discom.

Rationalization of tariff would lead to transparent determination of CSS and additional surcharge, which are currently also a major issue in the implementation of OA provisions.

4.2 Deliberations by Forum of Regulators

The issues, identified by the MoP, were also deliberated in December 2017 by the working group constituted by Forum of Regulators. The proposals contained in the consultation paper floated by the MoP and the recommendations by FOR on each issue are briefly described hereunder.

4.2.1 Frequent switching of open access consumers

On the issue of switching of OA consumers, FOR agreed to the recommendation, made by the MoP, that the consumers must schedule power for at least 24 hours whenever seeking OA. However, FOR also suggested that consumers should schedule minimum eight (8) hours of continuous supply through OA.

4.2.2 Cross subsidy surcharge

The MoP proposed that it is essential for the SERCs to implement para 8.3.2 and first proviso to para 8.5.1 of Tariff Policy, 2016 simultaneously. The MoP had also proposed that commissions should determine CSS based on category-wise cost of supply which would help in identifying real cross subsidy.

FOR, however, recommended that determination of CSS based on category or voltage-wise cost of supply would lead to lower CSS. They agreed that one must be guided by the philosophy of Tariff Policy, 2016, which states that CSS must be calculated on the basis of average cost of supply.

4.2.3 Additional surcharge

Both FOR and the MoP proposed that to fully recover the losses due to stranded capacity and regulatory assets, additional surcharge may be calculated under three components:

1. Stranded power under long-term PPAs
2. Stranded physical assets
3. Cost of carrying regulatory assets or amortization of regulatory assets

4.2.4 Standby charges

In the consultation paper, it was proposed that SERCs should design two-part standby charges with fixed and variable charge components to reflect the actual fixed and variable cost liability incurred by the Discoms to supply backup power to OA consumers.

FOR expressed agreement to the proposal made by the MoP that the provisions stating the limit of 125% of variable charges, as specified under para 8.5.6 of Tariff Policy, 2016, must be taken into consideration for determining the standby charges. However, FOR was not in agreement with the proposal for applicability of limit of 125% on fixed charges as it has already been recovered in demand charges.FOR also recommended that the concept of standby charges can be only for long-term access consumers.

4.2.5 Tariff design and rationalization

FOR concurred with the proposal of MoP and agreed that the tariff should reflect actual breakup of fixed and variable charges. FOR also expressed consent to the proposal put forward by MoP stating that demand charges are kept low to have minimal impact on low load and domestic consumers; OA customers are also benefitted from the same and they move to OA by paying low fixed charges.

Both MoP and FOR were of the view that SERCs may revise fixed charges gradually so that the new tariff design progressively reflects the actual break-up between fixed and variable charges as incurred by the Discoms.

4.3 Perspective of Stakeholders – Quantitative Approach

Stakeholders, comprising Discoms, consumer associations, power exchange and system operators, who were present at the fifth Forum meeting were surveyed, in order to understand their perspective on the severity of the issues in OA identified by the MoP. Post the collection of responses from the stakeholders, quantitative analysis, using AHP and WAA approach, was carried out.

The issue-wise ranking for each stakeholder, thus obtained, can be visualized in Figure 5.

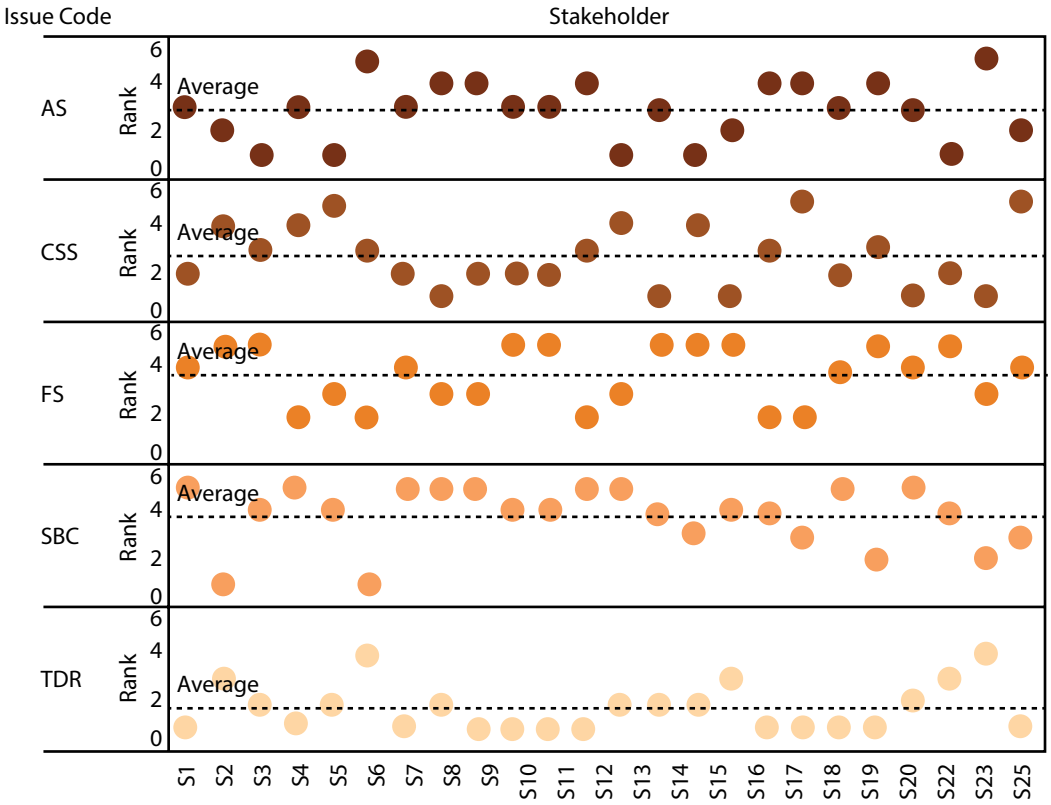

Figure 4: Issue-wise ranking for each stakeholder

Based on the analysis carried out on the issue-wise ranking for each stakeholder, the consolidated rankings of the issues are illustrated in Figure 6.

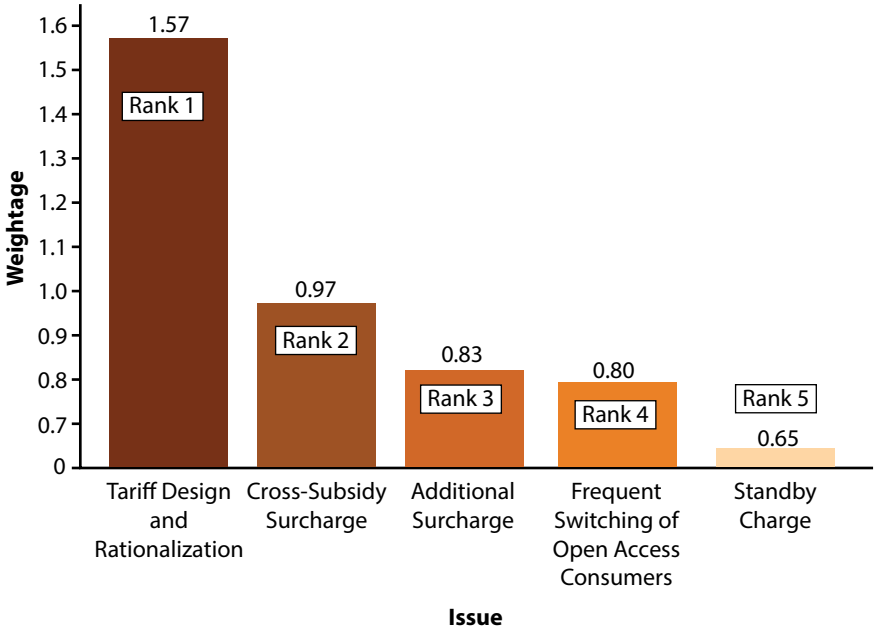

Figure 5: Results of the survey

The results of the survey were discussed with the stakeholders at the Forum meeting. The findings from the discussions are:

» As per the above analysis, stakeholders' rankings revealed that tariff design and rationalization is the major barrier which needs immediate action. The stakeholders were of the opinion that resolving the issue of tariff design and rationalization would help addressing majority of the other issues at hand, such as CSS and additional surcharge.

» After tariff design and rationalization, the second most pressing issue emerged from the survey is the CSS followed by additional surcharge, being levied on OA consumers. Stakeholders had assigned different priority to the issues, but unanimously agreed to revisiting the determination of these charges.

» Frequent switching of OA consumers and stand-by charges were ranked at the bottom, showing that they were a lesser concern. Various commissions have already started to address these issues through amendments in their respective regulations.

Stakeholders agreed, unanimously, that it is important to prioritize these issues on the basis of their severity.

5. STAKEHOLDERS' PERSPECTIVE

This chapter briefly covers the views and suggestions of stakeholders gathered during the stakeholder interactions as well as the forum meeting. These are broadly categorized under financial, operational, and regulatory aspects. The key issues faced by the stakeholders during the implementation of OA are brought out and explained under aforementioned categories. The practices followed in some of the states are also presented to serve as a reference (Annexure VIII).

5.1 Financial Aspects

Introduction of open access aimed to bring in competition within the power sector by giving choice to eligible consumers to procure power at competitive price from the power suppliers alternative to Discoms, considering the economic viability for the same. This section briefly discusses the financial issues raised during implementation of OA, from the perspective of various stakeholders.

5.1.1 Discoms' perspective

Skewed Tariff Design

Discoms expressed that there are more financial implications due to the implementation of open access. They underlined **tariff design** as a major challenge, as the **retail tariff structure is skewed towards low tariff paying consumers** given cross-subsidization. Along with that the fixed and variable charges for the consumers, under the current tariff design, do not reflect the realistic costs incurred by the Discoms under the respective heads. This leads to under-recovery of costs from consumers shifting to OA. This concern has been brought to the notice of different commissions by consumers, especially industrial and commercial, as well as Discoms during public hearings on electricity tariff.[10] A few commissions, such as Andhra Pradesh Electricity Regulatory Commission (APERC) and Uttar Pradesh Electricity Regulatory Commission (UPERC), have noted these concerns and requested a detailed rational or discussion paper to take an informed view.[11]

The suggestions put forward by the Discoms during the focused group discussions at the Forum meeting in the context of retail tariff design are:

1. Fixed charges need to increase in a phased manner to recover the cost of investment for the utility, including fixed charges paid towards long-term PPAs, transmission and distribution network, etc.
2. With most of the Discoms coming out of energy deficit scenario, energy availability is no more an issue. However, the time of use of energy has become more important with increasing peak requirement. Thus, it is important that variable energy charges should include time-of-day (ToD) charges to cover the cost associated with the time of energy drawal.

Open Access Charges

On being allowed OA, these consumers have to pay certain charges that are levied upon them. These charges are determined by the appropriate commissions for inter-state and intra-state OA transactions, to compensate for the revenue loss incurred by the Discoms due to their consumers resorting to OA. Discoms, unanimously, opined that the charges and surcharges levied on OA consumers are determined based on the skewed tariff design, as discussed above, and thus, are inadequate to meet their financial requirement, leading to financial loss. The challenges faced under the determination of various OA charges are discussed below.

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[10] APERC Tariff Order (2019-20), Page 159

[11] UPERC Retail Supply Tariff Order (2019-20), Page 70

APERC Retail Supply Tariff Order (2017-18), Pages 181 and 349

Cross Subsidy Surcharge

One of the significant challenges faced by the Discoms is determination of **cross subsidy surcharge (CSS)**. As highlighted in chapters 2 and 3 of this report, Tariff Policy, 2016 states that (a) SERCs would notify a roadmap such that tariffs are brought within ± 20% of ACoS and (b) CSS shall not exceed 20% of the tariff applicable to the category of the consumers seeking OA.

A review of orders of some of the state commissions brings out that in most of the states, cross subsidy for HT category is more than 20% of their respective ACoS but CSS is being capped at 20% of the applicable tariff at the same time (Figure 7).

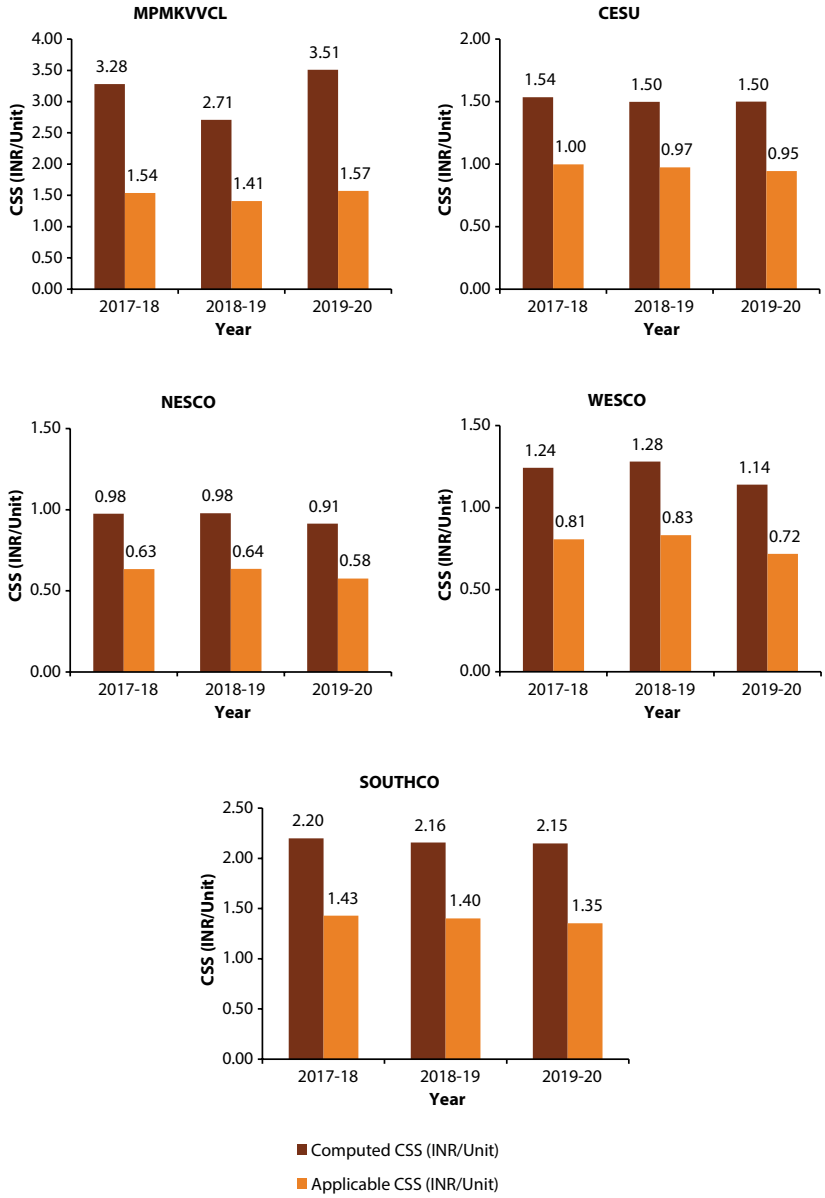

Figure 6: Restriction on determination of CSS for MPMKVVCL, CESU, NESCO, WESCO, and SOUTHCO

(Source: Tariff orders of respective commissions)

Discoms were also of the view that the difference in the cross subsidy to be recovered and CSS approved by the SERCs leads to inadequate recovery of cross subsidy from their high-tariff paying consumers shifting out of their supply to OA, thus, impacting their financial health. It was also noted that there is **no uniform formula** across states for determination of this surcharge. The Discoms underlined the need for addressing the issue of CSS.

In the context of computation of category-wise cost of supply, which is used in the computation of cross subsidy, there has also been a challenge as most of the Discoms are unable to submit the segregated accounts of their business on actual basis due to the unavailability of data and are submitting the same on the basis of estimations/allocations. This has also been highlighted during 4th DUF meeting on cost of supply.

The suggestions put forward by the Discoms during the focused group discussions at the Forum meeting in the context of determination of cross subsidy surcharge are:

1. If the tariff is not within ±20% range of ACoS, then the practice of restricting CSS to 20% of tariff of the given consumer category should not be followed. Otherwise, it will hamper the recovery of cross subsidy from the OA consumers by the Discoms.
2. Different CSS for peak and off-peak period would be economically beneficial for Discoms as well as OA consumers. In this context, the formula for determination of CSS could be modified, while taking the aforementioned point into consideration.
3. Determination of tariff for various consumer categories should be in accordance with cost of supply and subsidy, if any, should be provided by the government directly to the consumer.

Additional Surcharge

Another major financial challenge for the Discoms is the determination of **additional surcharge (AS)**. Tariff Policy, 2016 (under para 8.5.4) put the onus on the respective Discoms to conclusively demonstrate that their power purchase commitments have been and will continue to remain stranded due to OA.

A review of regulations by different commissions shows that most of the commissions have notified additional surcharge as a part of the OA charges, whereas a few, such as Odisha Electricity Regulatory Commission (OERC) and APERC,[12] have observed that they were not able to specify additional surcharge as the Discoms under their jurisdiction have not been able to conclusively demonstrate stranded assets, as specified under the Tariff Policy.

Some of the Discoms stated that they find it difficult to assess the cost of their stranded assets caused by OA conclusively. In the case of states with a 'single buyer' model of power procurement, where one entity is engaged in the business of bulk purchase and sale of power to all the Discoms within the state, it was found to be a more challenging issue.

Majority of the Discoms said that in the absence of a uniform methodology, additional surcharge approved by the respective commissions is found to be inadequate to compensate for the financial loss due to their stranded PPAs and assets. The stakeholders emphasized the need for a standard/uniform methodology for determining the additional surcharge.

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[12] APERC Tariff Order for 2019-20, Page 308

APERC Retail Supply Tariff Order 2017-18, Pages 299 and 300

OERC Tariff Order (2019-20), Page 83, Para 300

The Discoms also highlighted that with most of them already being surplus in power and the remaining ones progressing towards power surplus scenario, non-recovery of cost of stranded assets and PPAs will severely impact the financial viability of Discoms' operations.

Standby Charges

As per Tariff Policy, 2016, standby charges levied by the Discoms on OA consumers for maintaining the standby arrangements on payment of tariff for temporary connection to that consumer category, provided such charges should not exceed 125% of the normal tariff of the category.

Most of the Discoms said that in the absence of any specific provision regarding tariff for supply of standby power to the OA consumers, such consumers are required to pay the normal tariff applicable to the consumer category. Discoms also mentioned that there is no uniform approach for the determination of standby charges, resulting in under-recovery of the costs incurred to maintain capacity for the standby arrangement.

Discoms underlined need for a uniform methodology to be specified for determining standby charges for recovery of the costs incurred by them to maintain capacity for standby arrangement.

Waivers

Discoms said that their financial burden is increased due to **waivers that are offered to the consumers who are availing renewable energy (RE) via the OA route**. Most of the commissions permit certain waivers on procurement of power from RE sources via OA route; RE-OA consumers get waivers on CSS and wheeling charges among others.[13] These measures were introduced primarily to promote RE and OA simultaneously.

However, with the declining prices of solar and wind energy, Discoms were of the view that there is a need for gradual withdrawal of these waivers with a clear roadmap.

Financial Impact due to Captive Consumers

Section 42 (2) (fourth proviso) under the Act, specifies that **surcharge shall not be levied** in case OA is provided to a person who has established a captive generating plant for carrying the electricity to the destination of its own use. The regulations/orders in some of the states also provide for almost complete waiver of all the charges applicable to an OA consumer procuring **power via captive route from RE sources**.

Some of the Discoms said that a few of the consumers, who have been availing OA as a route of power procurement, have been shifting towards captive or group captive source of power to avail benefits of the concessions given to the captive consumers as per the Act. These Discoms said that waivers offered by the respective commissions for procuring RE power pose additional financial burden with increasing captive RE consumption.

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[13] PSERC (Terms and Conditions for Intra-state Open Access) (6th Amendment) Regulations, 2016, Page 1

3rd Amendment to APERC (Interim Balancing and Settlement Code) Regulation, 2006, Page 4

GERC (Procurement of Energy from Renewable Sources) Regulations, 2010, Page 16

UPERC (Captive and Renewable Energy Generation Plants) Regulations, 2019, Page 23

5.1.2 Other stakeholders' perspective

While Discoms raised concerns about the inadequacy of the OA charges to compensate their loss, consumers, raised concerns that these **charges are making their power procurement via OA route economically unviable**; these charges have been a deterrent in consumers considering opting for OA. At present, landed cost of power procured via OA is higher than the tariff set for the Discoms, as illustrated in Figure 8. Hence, the consumers find it economically viable to continue to meet their energy demand through purchase of power from the Discoms.

Assuming price of electricity at exchange is INR 4 per unit and 100 MW being purchased from exchange for 24 hours, a comparison of landed cost of electricity to an 11-kV industrial consumer and tariff offered by Discom is carried out for a few Discoms (based on April 2017 data of IEX landed cost tool). The comparison shows that the landed cost of electricity at the 11-kV industrial consumer through OA is higher than tariff payable to Discoms. Some states provide additional subsidy to industrial consumers, rendering OA route even more economically unviable.

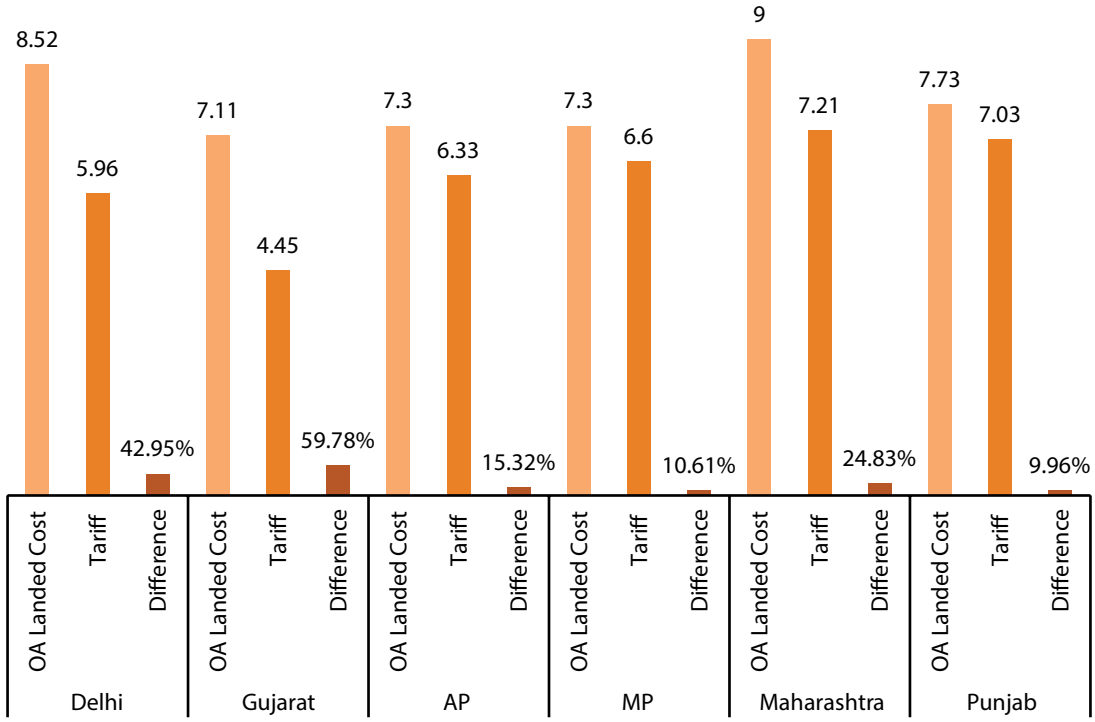

Figure 7: Comparison of landed cost of electricity with tariff offered by Discom for various states

(Source: IEX and respective tariff orders)

The OA consumers said while they understand the Discoms' fear of losing their high tariff paying consumers, as long as OA charges, especially CSS, remain high, OA cannot be as successful. According to OA consumers, there is a need to re-examine the determination of OA charges and to address the skewed tariff structure. A roadmap to gradually reduce OA charges is required to be developed by the commissions to increase participation of consumers in OA.

Summing up, the Discoms opined that OA can be beneficial for them if they are in a power deficit situation. Since most of the Discoms are in a power surplus situation, they articulated that open access at present is not beneficial on account of the financial impact.. **They stated that any financial impact due to OA is either borne by the Discoms as a loss or is being passed onto the non-OA consumers, who are generally the low tariff paying consumers.** Discoms said that financial burden due to OA as discussed above needs to be addressed by the appropriate authorities. OA consumers said that OA route of power procurement is becoming financially unviable for them due to high OA charges. One of the suggestions made by the stakeholders is to address the financial challenges from a risk management perspective, that is, ensure that the risks are fairly distributed among the concerned stakeholders.

5.2 Operational Aspects

Every OA consumer has to utilize the distribution licensee network in order to procure power through OA route up to the consumption point. Any deviation in the drawal pattern of the OA consumers may have an adverse impact on scheduling and load management of the distribution licensee. Grid management would become a major concern when the number of OA consumers increases. In view of operational issues faced, the stakeholders suggested for looking into and addressing these issues from the risk management perspective, that is, to ensure that the ownership of the risks is suitably shared among the concerned stakeholders. This section briefly discusses the operational issues raised regarding implementation of OA, from the perspective of various stakeholders.

5.2.1 Discoms' perspective

Frequent Switching of Open Access Consumers

The clearance price of short-term OA transactions for each time block in a power exchange is market dependent. Hence, the actual energy drawals of STOA consumers fluctuate significantly during a day as they can reschedule their drawal, leading to difficulty for the Discoms in time-block wise demand forecasting for the ensuing day. From a review of various regulations, it was found that in many states, there are no restrictions in the regulations on the minimum duration of OA transactions.

Discoms were in agreement with the issue of switching of OA consumers, as highlighted by the MoP in their consultation paper (refer Chapter 3), being a concern. They said that such behaviour makes it difficult to **predict the energy requirement** for the following day, leading to financial implications such as procurement of expensive power and penalties in the form of deviation settlement mechanism (DSM) charges.

Discoms were of the opinion that regulations with state-specific measures are required to address this issue. As already suggested in a study,[14] Discoms also proposed that to discourage opportunistic use of choice, consumers, who return to Discom supply should be required to avail supply from them for a minimum fixed period.

Some of the suggestions put forward by the Discoms, in this context, are:

» Regulations may include provisions to restrict variation in the drawal schedule by penalizing such variations or setting limits on duration of power schedule from open access.

» Automated meter reading (AMR) could help the Discoms in planning their power requirements in an efficient manner by understanding drawal pattern of STOA consumers.

» The congestion management mechanism needs to be responsive to potential network congestion from increasing volumes of STOA transactions.

[14] Newer Challenges for Open Access in Electricity, Daljit Singh, Brookings India, April 2017

CUF for RE Generation

From the review of regulations of some of the commissions, it was found that some commissions, such as MERC and APERC, provide that OA consumers seeking to source power using OA from RE-based generators shall not have any OA capacity limit as long as there is sufficient capacity in the existing distribution network to accommodate the power flow.[15]

In this regard, Discoms highlighted that by showing **less capacity utilization factor (CUF) of RE** generation source as a reason, OA consumers request clearance for capacity exceeding their contracted demand. The practice followed by the consumers is to compute the demand for clearance based on the average CUF of the RE source. Discoms said that OA consumers tend to exploit such regulations along with the help of the banking mechanism by injecting excess energy during the peak period of system off-peak season, where the seasonal CUF is more than the average CUF. For example, CUF for solar is more in winter season as compared to that in rainy season. Discoms pointed out that these consumers bank the additional power procured via OA for their economic gain, as explained in the following section.

Discoms recommended that a consumer requesting for OA must consider actual or seasonal CUF rather than the average CUF as it will depict OA demand on actual basis; amendments in the concerned regulations were suggested.

Banking

Banking of energy has been a challenge for the Discoms. In some cases, consumers are allowed banking on a yearly basis and the unutilized banked units would be deemed purchased by the Discoms. Under the present banking mechanism, consumers in some states are taking advantage of the drawal of banked energy during peak demand period while injecting during off-peak period. The power procurement cost for the Discoms during peak period is more as compared to off-peak period. Thus, Discoms tend to incur a financial loss due to the difference in power procurement cost along with the drawal and injection of power at peak and off-peak periods. Discoms suggested that energy banked during peak period may be drawn during both peak and off-peak periods, while energy banked during off-peak periods should only be drawn during off-peak periods..

Discoms also said that if the settlement period for banking is 12 months, the consumers may bank energy during peak period of system during off-peak season and draw during the peak period of system peak season. In this regard, the Discoms suggested settlement of banked energy to be carried out on a monthly basis.

Discoms were of the opinion that these suggestions would help reduce the financial burden faced by them due to the "uneven" injection and drawal of banked units.

AT&C Losses

Most of the consumers who are shifting to open access belong to HT category. The losses at HT level are much less compared to the LT level. Hence, with the shift of HT consumers, the loss levels of Discoms may increase.

Discoms felt that the cost of increasing the operational efficiencies at the LT level is much higher compared to HT level. Thus, they tend to incur additional financial burden in maintaining or decreasing their loss levels as HT consumers graduate to OA.

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[15] MERC (Distribution Open Access) (First Amendment) Regulations, 2019, Regulation 3.2

In this context, rather than spending significant cost on the improvement of LT operational efficiencies to maintain the losses, a few Discoms, such as in Madhya Pradesh and Punjab,[16] have announced schemes along with rebates as well as subsidies to retain their HT consumers.

5.2.2 Other stakeholders' perspective

Availability of Data Related to Open Access to Market Participants

Consumers felt that a significant delay has been observed in responding to OA applications. The applications are mostly denied due to technical constraints caused by network congestion. A major constraint is the availability of information pertaining to the availability of transmission and distribution network and clearances given to OA applications, in the public domain, to make a case against the rejection of applications. Lack of technical data makes it more difficult in presenting their case. There is a requirement for a common platform to help with the administration of open access. This single window platform could help ease the application approval process.

In order to address this issue, CERC has already notified implementation and operation of "National Open Access Registry (NOAR)" in Fifth Amendment to CERC (Open Access in inter-state Transmission) Regulations, 2018. As per the regulation, NOAR shall be a common electronic platform for short-term OA where the OA applications shall be processed through NOAR and information related to approvals or rejections of applications, revisions or curtailment of schedules, payment schedules, etc., shall be made available through the registry to respective market participants. The development of NOAR is in progress and would bring about transparency in the process, once it is implemented.

5.2.3 Consumer awareness and capacity building

Consumer awareness and capacity building is a major concern raised by all stakeholders, both Discoms and consumers. Discoms stated that most of the OA applications are rejected on the grounds of procedural issues such as documentation. They conveyed that the consumers are not fully aware of the procedure of applications and the applications usually get rejected due to their incomplete status. Consumers were also of the opinion that there is a lack of awareness among them as well as Discom officials about the application process for open access. Lack of technical knowledge and detailed explanation on the reasons for rejection of OA applications are major drawbacks.

Both sets of stakeholders felt the need for awareness programmes and capacity building for all stakeholders, to ensure the successful implementation of open access. A well informed, less cumbersome OA application process and approval mechanism along with consumer-friendly regulations can bring success via competition-driven power sector.

5.3 Regulatory Aspects

One of the key objectives of the Act is to promote competition through the provision of OA. Consequently, appropriate commissions notified inter-state/intra-state regulations for OA. Even with these regulations, there are various issues that have been raised during the implementation of OA. These need to be addressed in order to encourage competition through OA. This section briefly discusses the views and concerns on the regulatory aspects of OA as expressed by various stakeholders.

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[16] MPERC, ARR and Retail Tariff Order for FY 2019-20, Page 220 (Rebate for Captive power plant consumers) and Page 221 (Rebate for Open Access Consumers)

PSERC, Tariff Order for FY 2019-20 for PSPCL, Page 147, Point 4.1.4

5.3.1 Discoms' perspective

Discoms expressed the urgency to revisit the regulations to address various challenges pertaining to OA which impacts them financially and operationally. They were of the view that there is a need for amendments in the current regulations, considering the challenges faced by them. In addition, the following issue needs regulatory intervention.

Lack of Clarity to be Qualified as a Captive Consumer

Electricity Rules, 2005, under rule 3(1), provides the criteria for a power plant to be qualified as a captive generating plant, as under:

» not less than twenty six per cent of the ownership is held by the captive user(s), and

» not less than fifty one per cent of the aggregate electricity generated in such plant, determined on an annual basis, is consumed for the captive use.

Section 3(2) of the Electricity Rules, 2005 also mentions that it shall be the obligation of captive users to ensure maintaining the consumption as per rule 3(1). As per the requirement of the respective state nodal agency for OA, the captive and group captive consumers must provide the certificate from competent authority regarding the captive status, in line with the Act and the Electricity Rules, 2005, as a part of their application process.

A major regulatory challenge raised by the Discoms is the lack of clarity on the '***competent authority'*** who would certify the aforementioned conditions. At present, different Discoms follow different practices in regard to competent authority to certify the captive status under rule 3(1) of the Electricity Rules, 2005.

Discoms also highlighted the issue of verifying the oft-changing shareholding pattern (26% of total equity) of group captive consumers. Presently, the verification of shareholding pattern to be eligible for the concessions offered to captive consumers is carried out annually by the respective authorities. However, Discoms said that most of the group captive consumers change their shareholding pattern, within the span of a year after being declared captive and avail the benefits of the concessions for the whole year. Due to this, the Discoms face an issue in recovering the concessions provided to these captive consumers during the non-captive period as they need to proceed through dispute resolutions. Discoms felt a need for regulatory interventions in this regard.

5.3.2 Other stakeholders' perspective

Deemed Approval Status of Applications

Discoms are required to process the OA applications within a fixed time frame as per regulations. If they are unable to do so, then the application is treated as **"deemed approved".**[17] However, the "deemed approval" provision is not being implemented as of now as per according to some consumers. Consumers are also not inclined to file petitions against the Discoms as they apprehend discriminatory treatment such as intentional load shedding, etc. The consumers requested strict provisions within the regulations for the implementation of the "deemed approved" status of applications.

[17] For inter-state open access transactions, the deemed approval states is given under clause 5 of regulation 8 under CERC (Open access in inter-state transmission) (5th Amendment) Regulations, 2018

Lack of Consistency in Regulations

OA consumers also emphasized about the lack of consistency in the state regulations. Various issues in the regulations were stressed upon, namely technology or infrastructure requirement, no objection certificate (NOC) requirement process, bill and DSM settlement, time slots for power trading, restrictions on bidding quantum among others.

From the regulatory perspective, the stakeholders highlighted the need to revisit the regulations considering the impact of OA on the financial and operational aspects as well as the regulatory issues faced at present. They were of the opinion that there is a need for uniform regulations with clear framework which would ensure smooth implementation and overall success of OA in the Indian power sector.

6. CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusions

Deliberations with stakeholders were held to delve deeper into the perspectives of different stakeholders on the issues and challenges in the implementation of OA provisions as envisioned in the Act. Interactions with stakeholders and discussions during the fifth Forum meeting showed that Discoms and consumers, by and large, are riddled with a similar set of issues; these have been elucidated under various sections of this report.

This section summarizes the views of the stakeholders and also highlights practices adopted by some of the commissions to address these issues (Annexure IX) along with recommendations by DUF secretariat.

6.1.1 Tariff design and rationalization

An analysis of the stakeholders' perspectives shows that tariff design and rationalization is the most important of the five issues surveyed. Skewed retail tariff structure for electricity impacts determination of OA charges, such as cross subsidy surcharge and additional surcharge among others. Stakeholders suggested the need for a progressive roadmap for realistic, cost-reflective tariff structure, to remove the biggest barrier to open access implementation. In an attempt to address this issue, few commissions, such as GERC and DERC, have introduced clause on the availability of demand-based tariff and new slabs for the consumers with higher consumption to pay higher charges.[18] Thus, redesigning of tariff structure could help in addressing other financial issues, such as determination of OA charges.

6.1.2 Cross subsidy surcharge

The present practice of determination of CSS leads to inadequate recovery of cross-subsidy as the CSS approved by SERCs is less than the cross-subsidy to be recovered from the OA consumers. Stakeholders suggested that there is a need to follow provisions related to cross-subsidy and CSS in Tariff Policy 2016 simultaneously for addressing the issue of difference between them. They also suggested implementation of direct benefit transfer (DBT) would help in reduction of cross-subsidy and, thereby, CSS, by creating awareness among consumers about actual cost of supply. Some commissions, such as PSERC and OERC, have achieved the goal of bringing cross-subsidy within ±20% of ACoS and, also, have been progressively reducing CSS for OA consumers.[19]

6.1.3 Additional surcharge

Determination of additional surcharge adversely affects the financial health of Discoms, especially in a power surplus scenario. Tariff Policy, 2016 and orders of various commissions put the onus on Discoms to conclusively demonstrate that their assets have been and will continue to be stranded due to OA. Discoms emphasized the need for a standard methodology for determining the additional surcharge, as they are in or are progressing towards power surplus scenario. In this context, UPERC has observed that Discoms in Uttar Pradesh cannot levy additional surcharge in view of the power deficit situation prevailing in the state.[20] Commissions such as PSERC, GERC, MPERC, and KERC are computing additional surcharge considering the demand and wheeling charges on OA consumers to balance the

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18 GERC Retail Supply Tariff Order for DGVCL (2019-20), Page 181

19 PSERC Tariff Order for PSPCL (2019-20), Pages 190 and 247

OERC Tariff Order (2019-20), Page 82, Para 294 and Page 83, Para 299

20 UPERC - Approval of Business Plan, MYT ARR and Tariff for State Discoms for FY 2017-18 to FY 2019-20 and True-up of FY 2014-15, Pages 341 and 342

interest of utilities as well as consumers. Among these, GERC, KERC and MPERC have been determining the additional surcharge even though Discoms under their jurisdiction are procuring power under a 'single-buyer model'[21] (Annexure X). Thus, a uniform formula could be helping the Discoms in determination of additional surcharge and, recover the cost of their stranded assets on account of OA.

6.1.4 Frequent switching of open access consumers

Due to dynamic time-block pricing mechanism in the power market and flexibility to reschedule the energy drawal, most of the STOA consumers switch between Discom supply and the open access route, leading to difficulty in day-ahead demand forecasting of Discoms and penalties for deviation in the form of DSM charges. Discoms felt there was a need for state-specific regulations to restrict the variation in the drawal schedule by penalizing such variations or setting limits on duration of continuous power schedule from open access. Various commissions, such as RERC, HERC, MERC and PSERC, have adopted different measures to restrict frequent switching of OA consumers.[22]

6.1.5 Standby charges

Majority of Discoms stated that no differential tariff is charged on OA consumers for maintaining standby arrangements. Some commissions, such as PSERC, GERC and UPERC allow Discoms to levy standby charges on their OA consumers. Wherever the standby charges are allowed, it has been observed that few commissions, such as PSERC, allow Discoms to levy commitment charges on their OA consumers, in addition to the fixed and variable charges. Some commissions such as PSERC and UPERC, also allow Discoms to levy a surcharge, if standby power is to be supplied for more than a stipulated period.[23] Some Discoms, such as those under the jurisdiction of MERC, charge a standby charge through an additional tariff under 'demand surcharge' for drawal of power from Discom in lieu of power contracted under OA.[24]

6.1.6 Waivers on procuring RE power via OA route

There is an additional financial loss for the Discoms from the concessions and waivers being given to captive and RE consumers procuring power via OA route, given the increasing number of RE-OA consumers. Majority of the commissions have provided waivers for procuring RE power through the OA route, with the objective of promoting RE and OA, simultaneously. Policy and regulatory support along with favorable weather conditions (solar irradiance, wind speed among others) have led to achieve grid parity in certain states. To address the issue, Discoms said that there is a need for gradual removal of waivers, by periodically assessing the impact of changing tariff of electricity from RE sources. In this regard, some commissions, such as MPERC and OERC, have started to gradually decrease the waivers.[25]

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21 MPERC Tariff Order (2019-20), Pages 151 and 152
PSERC Interim Order in Petition No. 20 of 2019, Page 2
GERC Order No. 02 of 2019, Page 2
KERC Tariff Order (2019-20), Pages 173 and 174

22 Consultation Paper on Issues Pertaining to Open Access (Ministry of Power, 2017)
PSERC (Terms and Conditions for Intra-State Open Access) (5th Amendment) Regulations, 2015, Page 1

23 PSERC (Terms and Conditions for intra-State Open Access) (8th Amendment) Regulations, 2019, Pages 2 (4818), 3 (4819) & 4 (4820)
PSERC Tariff Order (2019-20), Page 132,133 & 134, UPERC (Terms and Conditions for Open Access) Regulations, 2019, Page 10

24 MERC (Distribution Open Access) (First Amendment) Regulations, 2019, Pages 16 and 17

25 MPERC Tariff Order (2019-20), Page 148

6.1.7 Varying CUF and banking of RE energy

Most of the Discoms highlighted challenges with the present banking mechanism for RE-based OA consumers. They said that using the intermittent nature of RE sources (varying CUF), some consumers tend to take advantage of the banking provisions by procuring additional power via OA. Banking is allowed by most commissions with varying settlement periods, ranging from 6 to 12 months. Discoms recommended that consumers requesting OA must consider actual or seasonal CUF rather than the average CUF as it will give a more accurate picture of demand. They also recommended that ToD-based banked energy settlement on monthly or seasonal basis is required to avoid the exploitation of banking mechanism for RE-based consumers.

Commissions such as PSERC, MERC and APERC permit consumers sourcing power from RE to avail OA more than their existing contract demand, subject to the availability of distribution network. Additionally, in the context of banking, the clause limiting deemed purchase of unutilized banked energy from these consumers to 10% of actual generation in their settlement period is implemented by these commissions. Commissions such as MERC have set the settlement period for RE as one month and further provided that the energy banked during off-peak ToD slots shall not be drawn during peak ToD slots, with a cap on unutilized banked energy at 10% of total actual generation being considered as deemed purchase.[26]

6.1.8 Lack of clarity to be qualified as a captive consumer

At present, different approaches are followed by different states for certifying captive and/or group captive consumers. There is a need for clarity by Discoms on the issue of competent authority as there are no legal or regulatory provision regarding the same. They have also raised the issue of changing shareholding pattern of group captive consumers, before the completion of a year, as it is verified annually. Discoms have to take legal recourse to recover the outstanding amount from the defaulters and incur litigation costs for the same. There is a need to revisit the regulations to address the issues at hand.

In addition, transparency of the OA application process along with compliance of deemed approval provisions were also highlighted. There is a need for regulatory interventions to address these issues for successful implementation of OA.

It is evident from this section that the issues hindering the implementation of OA require key regulatory interventions to address them. Various commissions have adopted different measures to reduce impact of such issues on the concerned stakeholders. These practices adopted offer an opportunity of cross-learning and identifying suitable measures, owing to the state-specific conditions, which may be adopted by other commissions.

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[26] PSERC (Terms and Conditions for intra-State Open Access) (8th Amendment) Regulations, 2019, Page 4 (4820)
3rd Amendment to APERC (Interim Balancing and Settlement Code) Regulation, 2006, Page 4
GERC (Procurement of Energy from Renewable Sources) Regulations, 2010, Page 16
GERC (Procurement of Energy from Renewable Sources) (First Amendment) Regulations, 2014, Page 3
UPERC (Captive and Renewable Energy Generation Plants) Regulations, 2019, Page 26 & 27
MERC (Distribution Open Access) (First Amendment) Regulations, 2019, Page 24
MERC (Distribution Open Access) (First Amendment) Regulations, 2019, Page 5
MERC (Distribution Open Access) (First Amendment) Regulations, 2019, Page 16
Order on MERC Case No. 19 of 2019, Page 19

6.2 Recommendations

In addition to the practices being followed as discussed in the previous section, the DUF secretariat would like to suggest the following recommendations to facilitate the implementation of open access.

6.2.1 Regulatory interventions on tariff design and rationalization

Stakeholders' consultation has brought out that tariff rationalization holds the key for promotion of OA in the spirit in which it is envisioned in the Act. Tariff rationalization would bring the attendant advantage of addressing some of the issues related to cross-subsidy surcharge and additional surcharge.

6.2.2 Regulatory interventions on frequent switching of open access consumers

A suitable provision specifying the continuous period for which an OA consumer has to avail power from the alternative sources and Discoms would help to address the operational as well as financial challenges experienced by the Discoms on this account.

6.2.3 Regulatory interventions on the issue related to captive/group captive consumers

Discoms said that due to lack of clarity in the provisions under the Electricity Rules, 2005 in regard to the authority to certify a generating plant as a captive generating plant, different practices are being followed by the Discoms. Frequent changing of shareholding capacity of group captive consumers has also been raised as a matter of serious concern by Discoms.

In this aspect, DUF secretariat would like to suggest the following regulatory interventions related to the verification and certification of captive/group captive consumers:

- clarity on the competent authority,
- uniformity in the procedure of verification and certification, and
- changing the periodicity of the verification and certification process (for example, it may be done on half-yearly or quarterly basis, instead of the present practice of carrying out annually).

6.2.4 Impact assessment and developing tools to hedge risks

Both Discoms and OA consumers raised concerns over the financial and operational impact due to the implementation of OA. From the discussions, it was concluded that at present OA poses different risks to different stakeholders.

In this regard, DUF secretariat recommends carrying out impact assessment studies on various stakeholders, which would help in understanding how developments have an impact on the financials as well as operations of concerned stakeholders. These studies can also help in developing tools, which would help to hedge the associated risks. For example, studies can be undertaken to assess the impact of present level of OA charges and/or waivers offered for procuring renewable power on the financials of a Discom and thus, developing the roadmap for gradual reduction in these charges and/or waivers.

6.2.5 Roadmap for reduction of cross subsidy and implementation of direct benefit transfer

A major issue highlighted by Discoms is the recovery of cross subsidy through approved CSS from the OA consumers. Ensuring successful implementation of OA makes the case stronger for the need of reduction in cross subsidy. During the discussions, benefits of DBT and the need for roadmap were discussed in the matter of reducing cross subsidy.

In this context, DUF secretariat recommends that studies can be undertaken by the utilities, which may directly or indirectly help in the reduction of cross subsidy in order to develop roadmaps and/or action plans for the same. Some examples of such studies are DSM studies based on load research, AT&C loss reduction action plans and DBT, among others.

6.2.6 Time-of-day based OA charges

High OA charges are deterrent for consumers to opt for OA. In this context, DUF secretariat would recommend the determination of ToD based OA charges. ToD-based OA charges would promote OA during the peak periods so that Discoms also benefit from the reduction in peak load. This would prove to be beneficial for both Discoms as well as OA consumers. The present formulae for OA charges may be revisited to help in determining time-driven dynamically changing levels of OA charges.

6.2.7 Awareness and capacity building

Even with the regulations and subsequent amendments for the successful implementation of OA, a need for awareness and capacity building has been raised by various stakeholders. In this context, DUF secretariat recommends that studies can be undertaken to gauge the technical capabilities of various stakeholders, in the regard of OA, and to undertake capacity building programmes to fill the identified voids.

Major issues and challenges raised along with the recommendations addressing the issue at hand are summarized in Table 4.

Table 4: Summary of recommendations with key stakeholders involved and their roles

S.No.	Issue	Recommendations	Key stakeholders involved and their roles	
1.	Tariff design	Regulatory interventions on tariff design and rationalization	Regulatory Commissions	» Redesign of tariff for realistic, cost-reflective tariff determination
2.	Frequent switching of OA consumers	Regulatory interventions on frequent switching of OA consumers	Regulatory Commissions	» Specifying suitable provision for continuous period for which an OA consumer has to avail power from the alternative sources and Discoms
3.	Lack of clarity to be qualified as a captive consumer	Regulatory interventions on the issue related to captive/group captive consumers	Regulatory Commissions	» Clarity on competent authority to clarify CGP » Re-defining the procedure for verification and certification of captive/ group captive consumers
4.	Financial and operational impact due to OA	Impact assessment and developing tools to hedge risks	Discoms	» Conducting impact assessment studies from risk management perspective
			Regulatory Commissions	
5.	Financial impact due to cross subsidy surcharge	Roadmap for reduction of cross subsidy and implementation of direct benefit transfer	Discoms	» Carrying out studies for preparing roadmap for reduction of cross subsidy
			Regulatory Commissions	» Preparation of roadmap for reduction of cross subsidy » Determination of realistic category-wise tariff for DBT
			State Governments	» Implementation of DBT programme
6.	Determination of OA charges	ToD-based OA charges	Regulatory Commissions	» Defining the formulae for ToD-based OA charges
7.	Consumer awareness	Awareness and capacity building	Discoms	» Capacity building of their officials
			Consumers	» Consumer awareness on open access and its application procedure

Given the fact that the Discoms differ in terms of consumer mix, retail tariff for different consumer categories among other aspects, they may want to adopt different approaches to reduce the impact from the implementation of OA. Practices and approaches followed by a few Discoms could also help other Discoms to draw learning while moving forward. At the same time, there is also a need to have a mechanism to build capabilities of Discoms and other stakeholders which could benefit them through exchange of on-the-job best practices. DUF secretariat can take up specific studies of identifying key important issues of respective Discom on case-to-case basis and suggest suitable measures to the Discom for the challenges faced by them in implementation of open access. Distribution Utilities Forum will continue to act as a platform for sharing of experience and best practices.

ANNEXURES

Annexure I: Legal provisions related to open access in the Electricity Act, 2003

Section 38 of the Act, which deals with the CTU and its functions, stipulates as follows:

"(2) The functions of the Central Transmission Utility shall be –

(a) ….

(b) ….

(c) ….

(d) to provide non-discriminatory open access to its transmission system for use by-

(i) any licensee or generating company on payment of the transmission charges; or

(ii) any consumer as and when such open access is provided by the State Commission under sub-section (2) of section 42, on payment of the transmission charges and a surcharge thereon, as may be specified by the Central Commission:

Provided that such surcharge shall be utilised for the purpose of meeting the requirement of current level cross-subsidy:

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

Provided also that the manner of payment and utilisation of the surcharge shall be specified by the Central 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."

Section 39 of the Act deals with the STU and its functions and provides as follows:

"(2) The functions of the State Transmission Utility shall be –

(a) ….

(b) ….

(c) ….

(d) to provide non-discriminatory open access to its transmission system for use by-

(i) any licensee or generating company on payment of the transmission charges; or

(ii) any consumer as and when such open access is provided by the State Commission under sub-section (2) of section 42, on payment of the transmission charges and a surcharge thereon, as may be specified by the Central Commission:

Provided that such surcharge shall be utilised for the purpose of meeting the requirement of current level cross-subsidy:

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

Provided also that the manner of payment and utilisation of the surcharge shall 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."

Section 40 of the Act reads as follows:

"40. It shall be the duty of a transmission licensee -

(a)….

(b) ….

(c) to provide non-discriminatory open access to its transmission system for use by-

(i) any licensee or generating company on payment of the transmission charges; or

(ii) any consumer as and when such open access is provided by the State

Commission under sub-section (2) of section 42, on payment of the transmission charges and a surcharge thereon, as may be specified by the State Commission:

Provided that such surcharge shall be utilised for the purpose of meeting the requirement of current level cross-subsidy:

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

Provided also that the manner of payment and utilisation of the surcharge shall be specified by the Appropriate 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.

Section 42 of the Act deals with the provision of open access to distribution and reads as follows:

"(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.

(3) Where any person, whose premises are situated within the area of supply of a distribution licensee, (not being a local authority engaged in the business of distribution of electricity before the appointed date) requires a supply of electricity from a generating company or any licensee other than such distribution licensee, such person may, by notice, require the distribution licensee for wheeling such electricity in accordance with regulations made by the State Commission and the duties of the distribution licensee with respect to such supply shall be of a common carrier providing non-discriminatory open access

(4) Where the State Commission permits a consumer or class of consumers to receive supply of electricity from a person other than the distribution licensee of his area of supply, such consumer shall be liable to pay an additional surcharge on the charges of wheeling, as may be specified by the State Commission, to meet the fixed cost of such distribution licensee arising out of his obligation to supply."

Section 9(2) of the Act reads as follows:

(2) Every person, who has constructed a captive generating plant and maintains and operates such plant, shall have the right to open access for the purposes of carrying electricity from his captive generating plant to the destination of his use:

Provided that such open access shall be subject to availability of adequate transmission facility and such availability of transmission facility shall be determined by the Central Transmission Utility or the State Transmission Utility, as the case may be:

Provided further that any dispute regarding the availability of transmission facility shall be adjudicated upon by the Appropriate Commission.

Annexure II: CERC Regulations Pertaining to Open Access

Regulation	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
CERC (Open Access in Inter-state Transmission) Regulations																	
CERC (Grant of Connectivity, Long-term Access and Medium-term Open Access in Inter-state Transmission and Related Matters) Regulations																	

Legend

	Open Access Principal Regulations
	Amendment

Annexure III: List of Selected Stakeholders for Interactions

Table 5: List of selected Discoms for interactions

S. No.	Discom	State (licensee region)	Grid region	Interaction date	Private/ state owned
1	BSES Rajdhani Power Limited (BRPL)	Delhi (south and west)	North	04.07.2019	Private
2	Punjab State Power Corporation Limited (PSPCL)	Punjab	North	16.07.2019	State owned
3	Madhya Pradesh Madhya Kshetra Vidyut Vitaran Company Limited (MPMKVVCL)	Madhya Pradesh (central)	West	23.07.2019	State owned
4	Dakshin Gujarat Vij Company Limited (DGVCL)	Gujarat (south)	West	24.07.2019	State owned
5	Maharashtra State Electricity Distribution Company Limited (MSEDCL)	Maharashtra	West	26.07.2019	State owned
6 (a)	Grid Corporation of Odisha (GRIDCO)	Odisha	East	29.07.2019	State owned
(b)	Central Electricity Supply Utility of Odisha (CESU)	Odisha (central)	East	29.07.2019	State owned
(c)	Western Electricity Supply Company of Odisha (WESCO)	Odisha (west)	East	29.07.2019	State owned
7	Andhra Pradesh East Power Distribution Company Limited (APEPDCL)	Andhra Pradesh (east)	South	02.08.2019	State owned

Table 6: List of consumers for interactions

S. No.	Stakeholder	Responsibility	State	Grid region	Interaction date
1	Open Access Users Association (OAUA)	Consumers (association)	Delhi	All-India	11.07.2019
2	HEG Limited	Consumer (industry)	Madhya Pradesh	West	22.07.2019
3	Pratibha Fabrics	Consumer (industry)	Gujarat	West	24.07.2019
4	Surat Municipal Corporation (SMC)	Consumer (municipal corporation)	Gujarat	West	24.07.2019
5	Chamber Of Marathwada Industries and Agriculture (CMIA)	Consumer (association)	Maharashtra	West	28.08.2019

Table 7: List of other stakeholders for interactions

S. No.	Stakeholder	Responsibility	Grid region	Interaction date
1	Indian Energy Exchange Limited (IEX)	Power Market Operator	All-India	13.06.2019
2	Power System Operation Corporation (POSOCO)	National Load Despatch Centre (NLDC)	All-India	07.08.2019
3	Northern Region Load Dispatch Centre (NRLDC)	Regional Load Despatch Centre (RLDC)	North	07.08.2019

Annexure IV: List of Discussion Points for Interaction with Stakeholders

Points for Discussion with Discoms

1. The status of OA in your licence area

Period	20____ - 20____	20____ - 20____
Number of OA consumers		
Quantum of power procured through OA (kWh/MWh)		
Number of OA applications		
Number of OA applications rejected		
Most common reason for rejection		

2. Discom's experience in OA
    a. Challenges faced (in legislative, financial, and operational aspects)
    b. Opportunities availed
3. Discom's opinion of OA
    a. Challenges perceived, if any, that may arise in the future as a result of increasing OA transactions, both in terms of number and volume.
    b. Clearance system for OA applications
    c. Are industrial consumers moving towards OA and captive generation? If yes, then what is the impact on Discom?
    d. Charges availed by OA consumers and consumers with captive generation
    e. Effect of STOA and MTOA
    f. Bilateral agreements under OA
4. Issues in respect to OA
    a. Challenges that they perceive are present due to OA
    b. Five issues in OA, as brought out by MoP and FOR
5. Proposals in regard to the issues in OA
    a. Recommended solution(s) to challenges faced in OA
    b. View of proposals made by Mo*P and FOR on the challenges discussed by them*
6. Other suggestions, if any. _____
    _____

Points for Discussion with OA Consumers (industries/associations)

1. Status of OA
    a. Duration and quantum of OA transactions
2. Your experience in OA
    a. Challenges faced (application to consumption)
    b. Opportunities availed
3. Your opinion of OA
    a. Reasons for shifting/not shifting towards OA
    b. Hurdles in the application/clearance process
    c. Main reason(s) for rejection of OA application

Other suggestions, if any.

_____

_____

Points for Discussion with System Operators

1. Status of OA
    a. Quantum of OA transactions
2. Major challenges faced in
    a. The application clearance process
    b. Main reason(s) for rejection
    c. Any other challenges faced
    d. Suggestions for bringing improvement
3. Effect of ST-OA and exchange transactions on grid stability in comparison to LTOA and MTOA.
4. Your opinion on any challenges perceived that may arise in the future as a result of increasing OA transactions, both in terms of number and volume.
5. Other suggestions, if any.

_____

_____

Annexure V: Exercise for Stakeholders: Survey Form for Ranking of Issues

Index	
S. No.	**Issue**
1	Frequent switching of open access consumers (FS)
2	Cross-subsidy surcharge (CSS)
3	Additional surcharge (AS)
4	Standby charge (SBC)
5	Tariff design and rationalization (TDR)
Scale	Degree of preference
1	Equal importance
3	Moderate importance of one factor over another
5	Strong or essential importance
7	Very strong importance
9	Extreme importance
2, 4, 6, 8	Intermediate values

Inputs										
Which has more importance amongst the following?			**And by how much?**							
A	B	A or B?	1	2	3	4	5	6	7	8	9
FS	CSS										
FS	AS										
FS	SBC										
FS	TDR										
CSS	AS										
CSS	SBC										
CSS	TDR										
AS	SBC										
AS	TDR										
SBC	TDR										

Instructions	
In the column A or B, please write an option from either column A or B, which has more importance amongst the two.	In the columns numbered from 1 to 9, please notify the number which would denote the importance of the selected option earlier over the other unselected option.
Please refer to the index on the left for more clarity on the abbreviations and number scale.	

Annexure VI: Analytic Hierarchy Process

Analytic hierarchy process (AHP), introduced by Thomas Saaty (1980), is an effective tool for dealing with complex decision-making, and may aid the decision-maker to set priorities and make the best decision. By reducing complex decisions to a series of pairwise comparisons, and then synthesizing the results, the AHP helps to capture both subjective and objective aspects of a decision. In addition, the AHP incorporates a useful technique for checking the consistency of the decision maker's evaluations, thus reducing the bias in the decision-making process.

Approach and Methodology

The AHP considers a set of evaluation criteria, and a set of alternative options among which the best decision is to be made. The AHP generates a weight for each evaluation criterion according to the decision-maker's pairwise comparisons of the criteria. The higher the weight, the more important the corresponding criterion. Next, for a fixed criterion, the AHP assigns a score to each option according to the decision-maker's pairwise comparisons of the options based on that criterion. The higher the score, the better the performance of the option with respect to the considered criterion. Finally, the AHP combines the criteria weights and the options scores, thus determining a global score for each option, and a consequent ranking. The global score for a given option is a weighted sum of the scores it obtained with respect to all the criteria.

For the implementation of AHP and computing the ranks of the *'m'* evaluation criteria from the inputs received from each stakeholder, the following steps were followed:

Step 1: Inputs from stakeholders for the analysis

The first step in the AHP is to get the relative importance of the barriers based on the stakeholders' perspective. In this, pairwise comparison is carried out by choosing the relatively important criteria among the selected pair. The relative importance between two criteria is measured according to a numerical scale from 1 to 9. Table 8 shows the interpretation of importance of pairwise comparison based on the relative scores as per the inputs of the stakeholders.

Table 8: Table of relative scores for AHP Analysis

Relative score	Interpretation
1	i and j are equally important
3	i is slightly more important than j
5	i is more important than j
7	i is strongly more important than j
9	i is absolutely more important than j
2, 4, 6, 8	Intermediate values

Step 2: Computing the vector of criteria weights

In order to compute the weights for the different criteria, the AHP starts creating a pairwise comparison matrix A which is a '$m \times m$' real matrix (here, m is the number of evaluation criteria considered). Each entry a_{ij} of the matrix A represents the importance of the ith criterion relative to the jth criterion.

Each value a_{ij} of the matrix A are populated with the inputs received from the stakeholder. It is important to note that:

» if $a_{ij} > 1$, then the *i*th criterion is more important than the *j*th criterion.

» if $a_{ij} < 1$, then the *i*th criterion is less important than the *j*th criterion.

» if two criteria have the same importance, then the entry a_{ij} is 1.

The entries a_{ij} and a_{ji} satisfy the following constraint:

$$\alpha_{ij} \times \alpha_{ji} = 1$$

Thus,

$$\alpha_{ji} = \frac{1}{\alpha_{ij}}$$

Thus, the preferences collected using the AHP questionnaire were tabulated for each stakeholder as follows:

» Diagonal values (i.e. $i = j$) were set to be to equal to 1.

» Assuming that the response for *i-j* pair comparison is *k* and *i* is more important than *j*, then the matrix is populated with value:

$$\alpha_{ij} \times \alpha_{ji} = k$$

and,

$$a_{ji} = \frac{1}{k}$$

Step 3: Computing the matrix of option scores

Now, each entry to be converted into weights between 0 and 1 by taking each entry and divided by the sum of the numbers in the column it positioned in. A new matrix '$m \times m$' B, with elements b_{ij} is created by using the elements a_{ij} from the earlier created matrix A. The following formula is used for its computation:

$$b_{ij} = \frac{a_{ij}}{\sum_{i=1}^{m} a_{ij}}$$

Step 4: Ranking the options

For each evaluating criterion, average is taken across each row to arrive at its overall weightage. Based on the weightages calculated, the evaluating criteria are stacked in ascending order and ranked on a scale of 1 to m. The following formula is used for computing the overall weightage for each criterion:

$$b_{ij} = \frac{b_{ij}}{\sum_{j=1}^{m} b_{ij}}$$

Illustration

For illustration, we consider the following inputs based on the perspective of a particular stakeholder.

Inputs											
Which has more importance amongst the following?			And by how much?								
A	B	A or B?	1	2	3	4	5	6	7	8	9
FS	CSS	A					5				
FS	AS	B				4					
FS	SBC	A					5				
FS	TDR	B						6			
CSS	AS	A					5				
CSS	SBC	A						6			
CSS	TDR	B					5				
AS	SBC	A						6			
AS	TDR	B							7		
SBC	TDR	B						6			

Following step 2, we arrive at the table given below:

Evaluation criterion	FS	CSS	AS	SBC	TDR
FS	1	5	1/4	5	1/6
CSS	1/5	1	5	6	1/5
AS	4	1/5	1	6	1/7
SBC	1/5	1/6	1/6	1	1/6
TDR	6	5	7	6	1

Following step 3, we arrive at the table given below:

Evaluation criterion	FS	CSS	AS	SBC	TDR
FS	0.09	0.44	0.02	0.21	0.10
CSS	0.02	0.09	0.37	0.25	0.12
AS	0.35	0.02	0.07	0.25	0.09
SBC	0.02	0.01	0.01	0.04	0.10
TDR	0.53	0.44	0.52	0.25	0.60

Following step 4, we arrive at the table given below:

Evaluating criterion	Average weightage	Rank computed
FS	0.171	2
CSS	0.170	3
AS	0.156	4
SBC	0.037	5
TDR	0.467	1

As demonstrated in the illustration, the results suggest that, with an overall weightage of 0.467, tariff design and rationalization is most important as per the inputs of the stakeholder. Thus, tariff design and rationalization needs to be addressed on priority. This is followed by standby charges, cross-subsidy surcharge, frequent switching of OA consumers and additional surcharge as per the overall weightage of the criteria/issues.

Annexure VII: Weighted Average Approach

It is desirable to rank the barriers based on their order of importance. The weighted average method was found out to be suitable methodology to normalize and assign weights to barriers. As per Green and Carmone (1970), one would need only 5-point scale to distinguish the importance of barriers. Accordingly, the first preference is given 5/15 points, second 4/15, third 3/15, fourth 2/15, and fifth 1/15 so that the sum becomes one. These weight points of each rank are further multiplied by the number responses against each barrier and the weighted average is computed. The barriers are then finally ranked, based on these weights according to their order of importance. The empirical formula is given below.

The weighted average of each barrier is obtained as follows[27]:

$$y_i = \sum_{k=1}^{m} \frac{W_k X_k}{n}$$

where,

y_i = weighted average of ith barrier

W_k = weight of kth rank

X_k = responses of kth rank

m = the total number of ranks

n = the total number of respondents

[27] Reddy, B S. 2001. Barriers to the diffusion of renewable energy technologies: a case study of the state of Maharashtra, India. Denmark

Annexure VIII: Prevailing Practices Followed by Various Commissions in Respect to Open Access

Tariff Design and Rationalization

APERC Retail Supply Tariff Order (2017–18), Page 181

> *Commission's View*
>
> *The decision of the Commission on the tariff structure is based on the principle of full cost recovery and any deficiency in such recovery will be the subject of a true up claim that can be preferred in accordance with the prescribed procedure.*

APERC Retail Supply Tariff Order (2017–18), Page 349

> *Since the simplification of tariff structure is being dealt at national level, the licensees could wait and take an informed decision on tariff rationalization.*
>
> *Discussion paper on tariff rationalization has to be drafted and the Commission can take an informed view based on the views.*

UPERC Retail Supply Tariff Order (2019–20), Page 70

> *C. Commission's view*
>
> *3.17.24: The Commission has taken note of issues raised by the stakeholders.*

Additional Surcharge

APERC Retail Supply Tariff Order 2017–8, Pages 299 and 300

> *Determination of Additional Surcharge*
>
> *301 The licensees proposed an Additional Surcharge of 779/kVA/Month (25.97/kVA/Day) which was arrived at by dividing the estimated fixed costs of all generators by the projected average demand and subtracting from this value, the demand charge of 1000/kVA/Month. Clause 8.5.4 of the National Tariff Policy, 2016 states, "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." But, the licensees have not been able to demonstrate the above conclusively, as the parameters for grant of additional surcharge prescribed by Section 42(4) read with Clause 8.5.4 of the National Tariff Policy, 2016 are not satisfactorily established to exist to sustain such a claim. Therefore, the Commission is not rendering any decision on the eligibility or otherwise of the licensees to collect such additional surcharge from a consumer or any class of consumers for FY 2017/18 in the present consideration. However, the licensees are at liberty to move an appropriate application for the purpose in accordance with law sufficiently supported by the relevant data and material which may be considered on merits.*

OERC Tariff Order (2019–20), Page 83, Para 300

> *As per principle followed in the previous order, we have not determined additional surcharge over and above the surcharge to be paid to the Discom Utilities to meet the fixed cost of licensee arising out of his obligation to supply as provided under Sub-section 4 of Section 42 of the Act. This is because no such case has been brought before us by the Discom Utilities.*

Waivers on Procuring Renewable Energy Power

3rd Amendment to APERC (Interim Balancing and Settlement Code) Regulation, 2006, Page 4

3.a "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.

3. b "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.

GERC (Procurement of Energy from Renewable Sources) Regulations, 2010, Page 16

11. Cross-subsidy

Third-party Sale from renewable energy sources shall be exempted from the cross-subsidy surcharge determined by the Commission from time to time. However, no banking facility shall be provided for supply (third-party sale) from renewable energy sources through open access. Further, ABT compatible interface metering system capable of energy accounting for each block of 15 minutes shall be provided at both supply and drawal points.

For third-party sale, energy generation from renewable energy sources in each 15 minute time block shall be set off against the captive/open access user(s) consumption in the same 15 minute time block.

PSERC (Terms and Conditions for Intra-state Open Access) (6th Amendment) Regulations, 2016, Page 1

The following provison shall be added under 'Note' in Regulation 25.

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).

UPERC (Captive and Renewable Energy Generation Plants) Regulations, 2019, Page 23

26.b. iv. In case, the power generated from RE source-based generating plant is supplied to a consumer, then such consumer shall pay charges as per the provisions of UPERC Open Access Regulations.

Provided for large-scale stand-alone solar projects set up for sale of power to electricity distribution company or third-party or captive use, there shall be 100% exemption from State cross-subsidy surcharge for interstate sale of solar power. This exemption is as per the provisions provided in UP Solar Energy Policy, 2017.

Annexure IX: Practices Adopted by Various Commissions to Address the Issues Pertaining to Open Access

Tariff Design and Rationalization

GERC Retail Supply Tariff Order for DGVCL (2019–20), Page 181

> *10.3.1. Extending benefit of optional demand-based tariff to small consumers*
>
> *Some of the stakeholders have suggested to insert option clause about availability of demand-based tariff in the description of NRGP category also for the knowledge of the consumers. It is also suggested to reduce minimum billing criteria for LTMD category from 10 kW to 6 kW. The Commission has accepted both the suggestions and necessary changes have been made in the Tariff Schedule attached with this order.*

Cross-subsidy Surcharge

OERC Tariff Order (2019–20), Page 82, Para 294

> *It would be noted from the above that Commission, in line with the mandate of the National Electricity Policy and Tariff Policy, has managed to keep cross-subsidy among the subsidized and subsidizing category of consumers in the State within ±20%. The Commission makes it clear that the above cross-subsidy is meant only for retail supply tariff fixation in the State applicable to all consumers (except BPL and agriculture) and not to be confused with cross-subsidy surcharge payable by open access consumers to the Discom. The order of the cross-subsidy surcharge applicable only to open access consumers is discussed subsequently.*

OERC Tariff Order (2019–20), Page 83, Para 299

> *As per mandate of the Electricity Act, 2003 under Section 42 the cross-subsidy surcharge is to be reduced progressively. The Commission is authorized to evolve a methodology for such reduction. Basing on the suggestions during the hearing in the last year so also in the current proceeding, the Commission have fixed leviable surcharge at 63% of the computed value of the same for this year as against 65% of computed value of FY 2018/19.*
>
> *As per Clause 8.5.1 the cross-subsidy surcharge shall not exceed 20% of the tariff applicable to the category of the consumers seeking open access. For the state as a whole, the above cross-subsidy surcharge works out to 16.28% in case of HT and 27.46% in case of EHT consumers as against 17.42% for HT and 27.56% for EHT consumers for FY 2018/19.*

PSERC Tariff Order for PSPCL (2019–20), Page 247

> *View of the Commission*
>
> *The Commission has always endeavoured to reduce the cross-subsidy as provided under the Electricity Act, 2003 and the Tariff Policy. Further, Tariff Policy and Tariff Regulations notified by the Commission mandate gradual reduction of the cross-subsidy to the level of ±20% of the average cost of supply.*
>
> *The above provisions are being met while determining tariffs. There has been a progressive reduction in cross-subsidy to the lowest domestic category and AP category.*

PSERC Tariff Order for PSPCL (2019–20), Page 190

> *However, since PSPCL is an integrated utility carrying out the businesses of the generating company as well as distribution licensee and to determine voltage-wise/category-wise cost of supply (CoS); segregation of its accounts on actual basis is required firstly for the generation and distribution businesses and then of retail and supply*

businesses. So far PSPCL is not able to submit the segregated accounts of its businesses on actual basis and is submitting the same on the basis of allocation only. Thus, voltage-wise/category-wise cost of supply (CoS) worked out on the basis of estimated/allocation data supplied by PSPCL may not be depicting the actual cost of supply.

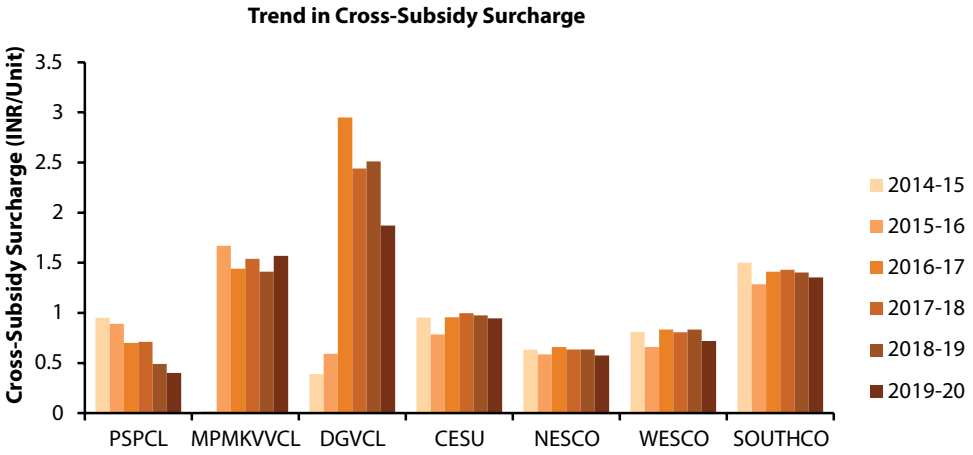

Figure 8: Trend in Cross-subsidy Surcharge

(Source: Tariff orders of respective ERCs)

Additional Surcharge

GERC Order No. 02 of 2019, Page 2

7. The said data has been analyzed and based on the formula depicted in the Commission's Order dated 12. 03. 2014, the Commission has worked out Additional Surcharge at Rs 0.10/ kWh (calculation attached as Annexure A) which shall be applicable for the period of 1. 10. 2019 to 31. 03. 2020.

8. This Additional Surcharge of Rs 0.10/kWh shall be applicable to the consumers of four State-owned Discoms i.e. DGVCL, MGVCL, PGVCL and UGVCL who avail power through Open Access from any source other than their respective Discom.

KERC Tariff Order (2019–20), Page 173 and 174

The Commission notes that, when a consumer purchases electricity under Open Access, the Escoms lose the Fixed Charges embedded in the energy charges for the number of units of energy purchased under Open Access.

The Commission has determined the Additional Surcharge for the Escoms by allocating the total fixed cost of Power Purchase to EHT and HT consumers in proportion to their input energy. The Commission, while computing the Additional Surcharge, has excluded the KPTCL transmission charges and SLDC charges and the distribution network cost, as these charges are being recovered from the Open Access consumers for the use of transmission and distribution network. Further, the Commission has also considered the Fixed Cost associated with the retail supply business allocated to EHT and HT consumers in proportion to their energy sales. Based on the above, the total Fixed Cost excluding KPTCL Transmission Charges, SLDC Charges and Distribution Network Charges, is considered for computation of Additional Surcharge for EHT and HT consumers.

Further, out of the Fixed Charges recovered from EHT and HT consumers in retail supply tariff, the Fixed Costs allocated to EHT and HT consumers towards Transmission and Distribution Network Cost, is deducted on first charge basis.

The balance of the Fixed Charges recovered through retail supply tariff is set off against the total stranded fixed cost attributable to HT/EHT consumers and the remaining stranded fixed cost has to be recovered from OA consumers by levy of additional surcharge.

MPERC Tariff Order (2019–20), Pages 151 and 152

4.31 The Commission has examined the methodology proposed by the petitioners in regard to computation of additional surcharge and has approved the same for determination of additional surcharge to be recovered from open access consumers for FY 2019/20 on the basis of latest data made available by petitioners for previous 12 months, commencing from September 2017 to August 2018. The Commission has computed the additional surcharge by considering the average monthly fixed rate arrived based on daily least fixed rate of generating stations whose energy was surrendered due to open access consumers.

4.32 The Commission has thus determined the additional surcharge of Rs 0.746 per unit on the power drawn by the open access consumers from the date of applicability of this Retail Supply Tariff Order.

PSERC Interim Order in Petition No. 20 of 2019, Page 2

The Additional Surcharge @Rs1.198 per kWh as determined by the Commission vide Order dated 06.09.2019 in Petition No. 07 of 2019 is applicable for the period up to 30.09.2019 only. As such, the Commission decides to continue with the existing additional surcharge as per the Order dated 06.09.2019 provisionally till the issue of new Order after completion of the by polls. As and when the Order for Additional Surcharge for the period 01. 10. 2019 to 31. 03. 2020 is issued, the same shall become applicable from the date as mentioned therein and shall have an overriding effect on this Order.

UPERC – Approval of Business Plan, MYT ARR and Tariff for State Discoms for FY 2017/18 to FY 2019/20 and True-up of FY 2014/15, Pages 341 and 342

7.5 Additional Surcharge

7.5.1 The petitioners have filed a petition (Petition no. 1264 of 2017) regarding issue of additional surcharge stating the Commission in its Tariff Order FY 2016/17 dated 01.08.2016 at Clause No. 6.5 approved additional surcharge as nil, stating that there is considerable amount of load shedding which implied that there is power-deficit scenario. However, under 'Power For All scheme, the petitioners are committed to provide 24X7 power round the year to all consumers. Under this changed scenario, if any consumer opts for open access, the petitioner's commitment to procure the power under long-term PPA will have financial impact in terms of payments of fixed cost obligations and this cost will remain stranded. The petitioners accordingly request the Commission to formulate a mechanism for recovery of this stranded cost as is also allowed under Clause 42(4) of the Electricity Act as additional surcharge.

7.5.3 In view of the regulations above, and on referring to the Merit Order Dispatch of Power Purchase approved for the MYT Control Period, the Commission observes that a lot of power has been proposed by the petitioners to be bought through power exchanges i.e 862.48 MU in FY 2017/18, 5710.53 MUs in FY 2018/19 and 17180.95 MUs in FY 2019/20. Under this changed scenario, if any/some consumers opt for open access, the petitioner's commitment to procure the power under long-term PPA will not have any major financial impact in terms of payments of fixed cost obligations as a lot of power has been bought/procured from the power exchanges and the licensees do not really have to reduce the power procurement from the tied-up sources, hence no cost will remain stranded. Considering the above, the submission of the petitioners has no merit and stand disposed of.

7.5.4 Further, the Commission has approved additional surcharge for the control period i.e. FY 2017/18 to FY 2019/20 as Nil (zero).

Frequent Switching of Open Access Consumers

PSERC (Terms and Conditions for Intra-state Open Access) (5th Amendment) Regulations, 2015, Page 1

Clause 28(3) shall be added as under

28(3) 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.

Standby Charges

MERC (Distribution Open Access) (First Amendment) Regulations, 2019, Pages 16 and 17

4. Amendment in Regulation 4 of the Principal Regulations

The existing Regulation 4.2 shall be substituted by the following:

4.2 Revision of Contract Demand:

The Contract Demand of a Consumer availing LTOA or MTOA shall be governed by the provisions of the Electricity Supply Code and the Regulations of the Commission governing Standards of Performance:

Provided that a consumer availing STOA shall not be eligible to revise his Contract Demand with the Distribution Licensee during the tenure of the STOA, but may do so at the time of applying for Open Access.

Provided further that for non-RE based STOA, MTOA and LTOA consumers, who do not opt for reduction in Contract Demand upto Open Access Capacity, the Demand Charges at approved Demand Charge rate shall be applicable for recorded demand upto Notional Contract Demand and Incremental Demand Charges at the rate of 1.25 times the approved Demand Charge Rate shall be applicable for demand beyond Notional Contract Demand upto Open Access Capacity availed shall be applicable.

[where, Notional Contract Demand shall mean Existing Contract Demand at the time of application of STOA/MTOA/LTOA application less Open Access Capacity applied for]

Illustration:

CD with Discom: 10 MVA

OA capacity applied: 2 MVA

Notional CD: 8 MVA

Recorded MD: 9.5 MVA

For recorded MD of 9.5 MVA, demand charges shall be applicable as under:

- *Normal Demand Charges for Demand upto Notional CD of 8 MVA*
- *1.25 x Normal Demand Charges for Demand beyond Notional CD of 8 MVA.*

Provided further that no such condition of Notional CD and levy of Incremental Demand Charges thereof, shall be applicable in case of RE-based OA transactions.

PSERC (Terms and Conditions for Intra-state Open Access) (8th Amendment) Regulations, 2019, Pages 2 (4818), 3 (4819) and 4 (4820)

27A Standby charges

1) *Standby power shall be provided on request to the Open Access Customer, by the distribution licensee of his area of supply, subject to load shedding as is applicable to the embedded consumers of the licensee.*

   Provided that the Open Access Customer enters into an agreement with the distribution licensee for such demand. The distribution licensee shall prepare a model agreement within one (1) month of notification of these regulations and shall take the Commission's approval for the same. Existing Open Access Customers requiring Standby Power shall be required to execute the supplementary agreement within one (1) month of the approval of the model agreement by the Commission.

   Provided further that Open Access Customers would have the option to arrange Standby Power from any other source subject to the condition that such power shall be drawn through the same system for which open access has been granted.

2) *Standby Power shall be made available at 11 kV or higher voltage as specified in the Supply Code 2014, as amended from time to time and applicable voltage surcharge/ rebate shall be levied/allowed.*

   Provided that the Open Access Customer, who is not a consumer of the licensee, shall have to establish, operate and maintain the required interconnecting infrastructure at his cost.

3) *Standby Power shall be admissible for the maximum period of 42 days in a financial year. The drawal of Standby Power during any time block(s) of a day shall be counted as one day. Provided that the maximum demand that can be contracted under Standby Power shall not exceed the capacity allowed under the Open Access.*

4) *Wherever an agreement for Standby Power exists between the Open Access Customer and the distribution licensee of his area of supply, he shall be required to pay to the distribution licensee a charge equal to Rs 35 per kVA per month or part thereof or as may be decided by the Commission from time to time, towards commitment charges on the capacity (in kVA) contracted as Standby demand from the distribution licensee. The commitment charges shall apply uniformly every month commencing from the date of applicability of the agreement, irrespective of whether the Open Access Customer avails Standby Power or not.*

5) *For actual drawal of Standby Power, in addition to the commitment charges, the Open Access Customer shall also be required to bear charges (including demand surcharge, whenever chargeable) as specified in the Schedule of Tariff for Temporary Supply of relevant category corresponding to the demand slab of total of Standby Contract Demand and Sanctioned CD (if any).*

   Provided that in case where Temporary Supply Schedule of relevant category is not available, the Standby Power shall be provided by the distribution licensee on payment of charges as per Schedule of Tariff for Temporary Supply applicable to LS (General) category.

   Provided further that for billing during the period of availing Standby Power, the demand for Standby Power shall be calculated on daily basis considering the highest quantum of power scheduled in any particular time block of the day.

6) The charges for drawal of power during the period of availing Standby Power shall be computed as under:

(a) Open Access Customer who is a consumer of the distribution licensee.

i) For the demand availed upto the admissible demand (i.e. sanctioned CD or the admissible drawal whenever applicable as per Regulation 28(3)), billing shall be as a regular consumer of the licensee.

ii) For the Standby Power availed (i.e. demand recorded in excess of the admissible demand), the charges shall be computed as under:

- *Energy charges*

  Energy charges shall be levied on the energy consumption calculated in proportion of the Standby Power availed to the total demand recorded.

- *Fixed charges and/or Demand surcharge*

  Upto 42 days in a financial year, fixed charges on daily basis shall be levied on the Standby Power availed upto the limit of Standby Contract Demand.

  In case, Standby Power is drawn for more than 42 days in a financial year or if the Standby Power availed exceeds the Standby Contract Demand, demand surcharge shall be chargeable on the same.

(b) Open Access Customer who is not a consumer of the distribution licensee.

- *Energy charges shall be levied on the total energy consumed during the period of availing Standby Power.*
- *Fixed Charges and/or Demand Surcharge*

  Upto 42 days in a financial year, fixed charges on daily basis shall be levied on the maximum demand recorded upto the limit of Standby Contract Demand. In case, Standby Power is drawn for more than 42 days in a financial year or if the recorded drawal exceeds the Standby Contract Demand, Demand Surcharge shall be chargeable on the same.

PSERC Tariff Order (2019–20), Pages 132,133, and 134

The Commission decides to continue with the existing provision of levy of the Fixed Charges on 50% of the sanctioned contract demand or actual demand recorded during the billing cycle/month (restricted to the sanctioned contract demand), whichever is higher, for the transitional period of 6 months from the date of issue of this Tariff Order or signing of the agreement for Standby/Startup Power, whichever is earlier.

4.4.3 Temporary supply

In the Tariff Order FY 2018/19, the Commission has decided to charge the Fixed Charges and Energy Charges for Temporary Supply consumers @ 1.3 times the charges (highest slab rate wherever applicable) specified under the relevant schedule of tariff applicable for corresponding permanent supply consumers. The Commission decides to further revise the Fixed Charges and Energy Charges for Temporary Supply consumers @ 1.25 times the charges (highest slab rate wherever applicable) specified under the relevant schedule of tariff applicable for corresponding permanent supply consumers.

4.5 Demand surcharge for exceeding the contract demand

The Commission in its decision dated 03. 02. 2016 in Petition no. 47/2015 filed by Open Access Users Association, has observed as under:

> *"However, the Commission observes that the penalties imposed vide Commercial Circular 29 of 2015 for ensuring implementation of 5th amendment to Open Access Regulations, 2011, need to be further fine tuned so that each day violation is taken care of, otherwise the purpose of carrying out 5th amendment to Open Access Regulations, 2011 will be defeated……..."*

Also, the Commission vide notification dated 15. 02. 2019 has amended the Commission's Open Access and CPPs Regulations as under:

> *"Provided further that for billing during the period of availing Standby Power, the demand for Standby Power shall be calculated on daily basis considering the highest quantum of power scheduled in any particular time block of the day."*

Accordingly, PSPCL was directed to inform about its readiness to implement the proposal for levy of demand surcharge on daily basis i.e. installation of compatible meters for recording demand on daily basis (etc.).

PSPCL vide its letter no. 40 dated 09. 01. 2019 has submitted as under:

> *"The status of PSPCL pertaining to the readiness to implement its proposal for levy of demand surcharge on daily basis i.e. installation of compatible meters for recording demand on daily basis for LS consumers is submitted as under:*
>
> *i) Metering cell has conveyed their readiness regarding availability of compatible meters for LS Consumers. All installed meters are compatible and more can be procured as per requirement.*
>
> *ii) In the next billing cycle MMTS and distribution officials shall verify the compatibility and connectivity issues if any for LS consumer meters (Time period within 3 months).*
>
> *iii) Modems are already being installed by IT department on LS consumers under Non SAP and DBTE consumers. IT department shall ensure that all LS consumers (SAP and Non SAP) are communicating with MDAS system and will coordinate the replacement of meters and modems wherever required. IT department shall develop the logic for demand surcharge on daily basis in coordination with commercial organization. (Time period: within 4 months).*
>
> *iv) 5th Month: Commercial organization shall issue necessary circular after readiness by IT and Distribution and trainings to distribution staff regarding changes in billing shall be conducted zone wise by HRD.*
>
> *v) From 6th month onwards levy of demand surcharge on daily basis shall be started."*

The Commission notes that the period of 4 months sought by PSPCL for preparedness before issuance of the circular by the commercial section for the implementation of the same has already elapsed. Moreover, since all the Open Access Customers and CPPs already have ABT meters for energy accounting, PSPCL shall implement the system of levy of demand surcharge on daily basis for these consumers immediately. The applicable rate of demand surcharge on daily basis for Open Access Customers and CPPs shall be charged @ Rs 50 per kVA per day on excess demand irrespective of the number of defaults in a day. Provided that the demand surcharge so levied in a month shall not exceed the demand surcharge applicable on monthly basis.

UPERC (Terms and Conditions for Open Access) Regulations, 2019, Page 10

20. Standby Charges:

20.1 In the event of non-availability of power supply due to any reason including outage of generator supplying the Open Access Consumer, non-clearance of bid on power exchange, it shall be duty of the Distribution Licensee to provide power to such Open Access Consumers: Provided that open access consumers shall have the option to arrange standby power from any other source: Provided further that standby power from any other source shall be scheduled, as early as possible, latest by 00:00 hours of the day, after giving the notice to the Distribution Licensee.

20.2 The treatment of standby charges shall be as shown under:

- *(i) In case the Open Access Consumer is a consumer of the Distribution Licensee (Embedded Open Access consumer), then standby charges shall not be applicable.*
- *(ii) If the Open Access Consumer is not a consumer of the Distribution Licensee, then standby arrangement should be provided by the Distribution Licensee for a maximum period of 60 days in a year, subject to the load shedding as is applicable to the embedded consumer of the licensee, and on payment of 1.5 times the demand charge and energy charge for that category of consumer in prevailing rate schedule. While energy charge will be determined as per actual meter reading, demand charge shall be prorated from monthly demand charge based on number of days the open access customer has availed the supply of Distribution Licensee.*
- *(iii) A Standby Arrangement Agreement needs to be signed between the Discom and the Open Access Consumer for a certain number of days, to avail power from the Discom in case of outage.*

Waivers on Procuring RE Energy

MPERC Tariff Order (2019–20), Page 148

Aforementioned wheeling charges and cross-subsidy surcharges shall be applicable to consumers availing open access from renewable source of energy as per the provisions of the MPERC (co-generation and generation of electricity from renewable sources of energy) (Revision-I) Regulations, 2010 [ARG-33(I)(v) of 2015], as amended from time to time.

Varying CUF and Banking of Renewable Energy

3rd Amendment to APERC (Interim Balancing and Settlement Code) Regulation, 2006, Page 4

For RE (Wind/solar/mini-hydel) – Banking allowed during all the 12 months (doubt as per the 4th amendment (http://aperc.gov.in/admin/upload/Amndt_RegNo4of2019.pdf): No other consumers are allowed for banking (http://aperc.gov.in/admin/upload/2of2016.pdf)

Drawals from banked energy shall not be permitted during the five (5)-month period from 1April to 30 June and 1 February to 31 March of each financial year. In addition, drawal of banked energy during the time of the day (TOD) applicable during peak hours, as specified in the respective Retail Supply Tariff Order, shall also not be permitted throughout the year.

The energy banked between the period from 1April to end of 31 January of each financial year which remains unutilized as on 31 January, shall be deemed to have been purchased by Discoms as per the wheeling schedule. The energy credited in to bank during the month of February and March of each financial year will be carried forward to the month of April of the next financial year for the credit of the banking account for the next year.

The unutilized banked energy by the end of the year shall be deemed to be purchased at 50% pooled cost of the applicable year, instead of existing 100% pooled cost. The payment for the deemed purchase of unutilized banked energy shall be capped to 10% of the total banked energy during the applicable year.

GERC (Procurement of Energy from Renewable Sources) Regulations, 2010, Page 16

11. For Third-party Sale from renewable energy sources, no banking facility shall be provided for supply (third-party sale) from renewable energy sources through open access. Further, ABT compatible interface metering system capable of energy accounting for each block of l5 minutes shall be provided at both supply as well and drawal point.

For third-party sale, energy generation from renewable energy sources in each 15 minute time block shall be set off against the captive/open access user(s) consumption in the same l5 minute time block.

GERC (Procurement of Energy from Renewable Sources) (First Amendment) Regulations, 2014, Page 3

5.5 In case of renewable energy generator set up under the REC scheme notified by the Central Electricity Regulatory Commission, supplying power for captive use or sale to third party, the distribution licensee shall pay to such RE generator the Average Power Purchase Cost for the surplus energy available after giving set off for the consumption by such captive consumer or the third party.

MERC (Distribution Open Access) (First Amendment) Regulations, 2019, Page 24

B. The existing Regulation 20.2 shall be amended as under:

"20.2. The surplus energy from a 'non-firm' renewable energy generating station after set-off shall be banked with the distribution licensee subject to conditions stipulated under subsequent paragraphs."

C. The existing Regulation 20.3 shall be deleted.

D. The existing Regulation 20.4 shall be renumbered as 20.3 and amended as under:

20.3. Banking of energy shall be permitted only on monthly basis.

Provided that the credit for banked energy shall not be permitted to be carried forward to subsequent months and the credit for energy banked during the month shall be adjusted during the same month 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.

Illustration: Energy banked during

- *Night off-peak TOD slot (2200 hours – 0600 hours) may only be drawn in the same TOD slot*
- *Off-peak TOD slot (0600 hours – 0900 hours and 1200 hours – 1800 hours) may be drawn in the same TOD slot and also during night off-peak TOD slot*

(However, the energy banked during night off-peak and off peak shall not be drawn during morning peak and evening peak.)

MERC (Distribution Open Access) (First Amendment) Regulations, 2019, Page 5

Vibrant Energy has submitted that, the Commission either needs to devise a mechanism of converting the injected capacity into grid by using the CUF factor to arrive at the total OA capacity at the OA consumer end or remove the ceiling of OA capacity to that of contract demand. The same is being implemented in Andhra Pradesh where in the CUF is capped at 25% for solar and a 10 MW capacity of solar is treated as a 2.5 MW OA capacity in the OA consumer end.

MERC (Distribution Open Access) (First Amendment) Regulations, 2019, Page 16

3.2 Provided further that for Open Access Consumer seeking to source power using Open Access from renewable energy-based generators, the above specified capacity limit up to contract demand or sanctioned load shall not be applicable, subject to conditions of resultant power flow specified under Regulation 8.10.

Order on MERC Case No. 19 of 2019, Page 19

10.4 Thus, the Commission observes that MSEDCL has been providing banking in accordance with the provisions of the DOA Regulations. Therefore, the Commission is of the view that there are no merits in the contentions of the petitioner with regard to adjustment of banked energy.

10.5 As regards the loss of units, the Commission is of the view that the practice followed by MSEDCL of capping the generated units up to the allowable limits due to banking provisions considering the infirm nature has well-justified locus since the excessive generation from these wind generators beyond the scope of allowed banking can be detrimental to the grid as explained above in Para. 9.15. Therefore, the Commission is of the view that there is no merit in the contentions of the petitioner.

MERC (Distribution Open Access) (First Amendment) Regulations, 2019, Page 25

20.5. The unutilised banked energy at the end of the month, limited to 10% of the actual total generation by such renewable energy generator in such month, shall be considered as deemed purchase by the Distribution Licensee at a rate equivalent to that stipulated under yearly Generic RE Tariff Order applicable for respective technology. Provided that such deemed purchase shall be counted towards the Renewable Purchase Obligation of the Distribution Licensee.

PSERC (Terms and Conditions for Intra-state Open Access) (8th Amendment) Regulations, 2019, Page 4 (4820)

28(5) 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 Regulation (31)(1)(b).

Provided that, Banking of Energy to Captive Power Plants (CPPs) availing open access shall be permissible as per the provisions of the Punjab State Electricity Regulatory Commission (Harnessing of Captive Power Generation) Regulations, 2009, as amended from time to time."

UPERC (Captive and Renewable Energy Generation Plants) Regulations, 2019, Pages 26 and 27

31. Banking of Power

a) Renewable energy source-based generation and cogeneration plants/captive RE:

The renewable energy generating power plants may be allowed to bank power subject to the following conditions:

i. All renewable energy generating power plants (except for SHP and MSW plants) shall be under ABT mechanism and procedure as mentioned in these regulations, shall apply to them.

ii. Banking of energy upto 100% as agreed between the renewable energy generating power plants (except for SHP and MSW plants) and the distribution licensee, shall be allowed subject to technical feasibility regarding evacuation.

iii. *Withdrawal of banked power shall be allowed only as per TOD system i.e. withdrawal of power of power in the peak/off-peak hours shall not be more than the power banked in that respective TOD slot.*

v. *Renewable energy generating power plants (except for SHP and MSW plants) shall be allowed to withdraw power that was banked during a particular quarter within two subsequent quarters i.e. power banked in Qth quarter shall be allowed to withdraw within (Q+2)th quarter. The banked power remaining unutilized on the expiry of that period is defined herein would be treated as sale and the financial settlement shall be made at Rs 2 per unit or the rate approved in the PPA entered with the distribution licensee, whichever is less. However, banking charges shall be deducted from such unutilized banked energy.*

vi. *Banking charges shall be 12% of the energy banked except for solar and wind power for which it shall be 6% of the energy banked and should be adjusted against the banked energy before withdrawal.*

b) In case of captive non-RE, the settlement is year (Y)+1.

Annexure X: Methodologies Adopted by KERC and GERC for Determination of Additional Surcharge

Table 9: GERC Methodology for calculation of additional surcharge

S. No	Description	Nomenclature	Value	Unit
1	Contracted capacity	A	17,577	MW
2	Maximum availability	B	17,508	MW
3	Minimum availability	C	12,675	MW
4	Average availability	D	15,033	MW
5	Maximum scheduled	E	14,665	MW
6	Minimum scheduled	F	7,205	MW
7	Average scheduled	G	11,335	MW
8	Capacity not availed (max)	H	7,827	MW
9	Capacity not availed (min)	I	422	MW
10	Capacity not availed (avg.)	J	3,698	MW
11	OA allowed (max.)	K	235	MW
12	OA allowed (min.)	L	30	MW
13	OA allowed (avg.)	M	100	MW
14	Capacity stranded due to OA	N	100	MW
15	Total fixed charge (PPA)	O	5,362	Rs crore
16	Fixed charges per MW available	P = O/D	0.3567	Rs crore
17	Fixed charges of stranded capacity	Q = P × N	35.66	Rs crore
18	Transmission charges paid	R	2970.19	Rs crore
19	Energy scheduled	S	49511	MU
20	Transmission charges per kWh	T = R/S ×10	0.5999	Rs/kWh
21	Distribution charges (as approved in Tariff Order)	U	0.15	Rs/kWh
22	Total T&D charges per kWh	V = T+U	0.746	Rs/kWh
23	Energy consumed by OA consumer from Discoms	W	1,599.95	MU
24	T&D charges payable to Discoms by OA consumers	X=W × V/10	119.36	Rs crore
25	Demand charges recovered by Discoms from OA	Y	150.81	Rs crore
26	Demand charges to be adjusted	Z= Y – X	31.46	Rs crore
27	Net stranded charges recoverable	AA= Q –Z	4.21	Rs crore
28	OA scheduled energy	AB	436.77	MU
29	Additional surcharge	AC=AA/AB × 10	0.1	Rs/kWh

Table 10: KERC methodology for calculation of additional surcharge

S. No.	Particular	Total value	Unit
1	Power purchase cost of the state	30,515.77	Rs crore
2	Distribution of power purchase cost (based on share of voltage-wise energy input)	30,515.77	Rs crore
3	Energy input share in percentage	100.00	%
4	Total fixed charges power purchase cost (excluding KPTCL transmission charges + SLDC)	7,011.30	Rs crore
5	Distribution of fixed charges in power purchase cost – voltage wise (based on share of energy Input)	7,011.30	Rs crore
6	KPTCL transmission charges + SLDC (based on share of energy input)	2,793.58	Rs crore
7	Fixed cost in retail supply business (based on share of energy sales)	2,407.66	Rs crore
8	Distribution network costs (based on share of energy sales)	3,946.53	Rs crore
9	Total fixed cost (column number: 5,6,7)	16,159.07	Rs crore
10	Fixed cost recoverable in wheeling and banking charges (transmission charges + SLDC + Distribution network costs) (column number: 6, 8)	6,740.11	Rs crore
11	Balance of fixed cost to be recovered through additional surcharge (column number: 5, 7)	9,418.96	Rs crore
12	Total fixed cost recoverable from HT/EHT consumers (excluding transmission and distribution network cost)	2,324.53	Rs crore
13	Fixed charges recovered by Escoms through tariff from HT/EHT consumers	-	Rs crore
14	Less: Fixed charges allocated to transmission and distribution network cost	-	Rs crore
15	Balance available fixed charges (column number: 13, 14) from HT consumers	734.92	Rs crore
16	Shortfall in recovery of fixed cost to be considered for recovery of additional surcharge (column number: 14, 15)	1,589.61	Rs crore
17	Total HT/EHT sales of Escoms	3,591.70	MU
18	Additional surcharge (column number: 16, 17)	1.17	Rs/unit

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