MINUTES OF THE 69th MEETING
OF THE
FORUM OF REGULATORS (FOR) HELD AT AMRITSAR, PUNJAB

Venue	**:**	**Amritsar**
Day / Date	**:**	**Friday, 20th September, 2019**
List of Participants	**:**	**At Annexure-I (Enclosed)**

The meeting was chaired by Shri P.K.Pujari, Chairperson, Central Electricity Regulatory Commission (CERC) and Forum of Regulators (FOR). The Chairperson, CERC/ FOR welcomed all the Members of the Forum to the Meeting. He specifically thanked Chairperson, PSERC for agreeing to host the 69th FOR meeting at Amritsar. He also welcomed Chairperson, Tripura Electricity Regulatory Commission; Chairperson, Haryana Electricity Regulatory Commission; and Chairperson, Tamil Nadu Electricity Regulatory Commission who were attending the meeting for the first time after they took over charge in their respective offices. He also informed the Forum that Chairperson of Andhra Pradesh Electricity Regulatory Commission would be demitting office before the next FOR meeting and placed on record the valuable contributions made by him to the FOR.

Chairperson, CERC/FOR also brought to the notice of the Forum, some developments w.r.t. the proceedings of the APTEL in OP 1 of 2011 wherein Ministry of Power had made a reference to APTEL on issues related to Regulatory Assets, timely tariff determination, cost-reflective tariffs, losses

of Discoms etc. Regular hearings in this case are likely to take place in APTEL in the matter and he requested SERCs to keep themselves updated on this issue. He also informed the Forum that the Ministry of Power has finalized the Draft Tariff Policy and the same is reportedly under circulation before placing the same in the Cabinet.

Before taking up the Agenda items for discussion, Chairperson of Punjab SERC raised the issues of Renewable Energy integration and issue of installing FGD in plants which have outlived their useful life. She also requested the Forum to deliberate on the issues regarding construction of transmission system for renewable energy and its associated costs.

Thereafter, the Forum took up the agenda items for consideration.

AGENDA ITEM NO. 1: CONFIRMATION OF THE MINUTES OF THE 68th MEETING OF THE FORUM OF REGULATORS HELD ON 20th JUNE 2019 AT NEW DELHI.

The Forum considered and endorsed the minutes of the 68th Meeting of FOR, held on 20th June, 2019 at New Delhi.

AGENDA ITEM NO. 2: ACCOUNTS RELATED MATTERS

i. **Approval and adoption of the audited annual accounts of FOR for FY 2018-19**

Dy Chief (RA), CERC/FOR Secretariat updated the Forum on the salient features of the Audited Accounts for the financial year 2018-19. The Forum approved the Audited Accounts for FY 2018-19 (as placed at **Annexure-II**).

ii. **IT issues of FOR – Update**

Dy Chief (RA), CERC/ FOR Secretariat updated the Forum on the ongoing correspondence with the IT authorities w.r.t. seeking exemption for the Forum u/s 10(46) of the Income Tax Act and the follow-up by the officials of CERC/FOR with the Chairman CBDT.

The Forum was also updated on the scrutiny assessment for FY 2015-16 and the serving of demand of Rs 25.03 lacs and penalty of Rs 21.70 lacs for non-submission of exemption certificate. FOR Secretariat is following up the case through its Chartered Accountant firm to file the appeal before the CIT(A).

Chairperson, CERC/FOR informed the Forum that from his level also, a letter has been sent to Chairman CBDT seeking exemption from payment of income tax for FOR.

The Forum noted and directed FOR Sect. to pursue with the IT authorities for early resolution of the same.

iii. **Re-appropriation in Budget of FOR towards Advertisement expenses**

Dy Chief, RA, CERC/ FOR Sectt informed the Forum that due to additional proposals to conduct studies in FOR, approval of the Forum was sought to revise the budget of FOR towards Advertisement expenses from Rs 1 lakh to Rs 3.23 lakhs. The Forum granted approval of the same.

iv. **Resolution of Bad Debts**

The Forum was apprised of the amounts receivable towards security deposit from Vigyan Bhawan, New Delhi towards booking of hall for conducting meetings and workshops of FOR in the years 2013, 2014 and 2015. It was also updated that as per recommendations of the Statutory Auditor, the amounts totaling to Rs. 18,200/- is written off as the same is not recoverable. To this effect, a resolution for effecting the same was approved by the Forum.

v. **Membership Fee Invoice**

Dy Chief (RA), CERC/ FOR Secretariat updated the Forum that as the decision was taken by CERC in FY 2019-20 to not collect any secretariat costs from FOR, the membership invoice on CERC could not be raised in 2018-19. With the approval of the Forum, it was decided to raise the membership fee invoice of CERC (pertaining to FY 2018-19) in this financial year i.e. FY 2019-20.

AGENDA ITEM NO. 3: GLOBAL REGULATORY PERSPECTIVE PROGRAM OF FOR

Chief (RA), CERC informed that every year, the FOR conducts a capacity building program for officials of SERCs/ JERCs with Plan Assistance from Government of India and also a Global perspective Program for the Chairpersons/ Members of SERCs with the Forum's own funds. The first such program for the Chairperson/ Members of SERCs was held last year.

This time, FOR Secretariat has planned to conduct the 2nd Global Regulatory Perspective Program for 20 participants from 27th – 29th November, 2019 in Sydney, Australia in association with Centre for Energy Regulation (CER), IIT Kanpur under the ambit of the MOU signed between IIT Kanpur and the FOR. Interaction with Australian counterparts will be basically on thermal generation, Distribution system management, Competition in Retail sector, Wholesale markets, Capacity markets, Energy Markets, 5-minute markets and Solar PV programs. Based on the feedback received on the previous program, it is proposed that instead of IIT Kanpur making all the arrangements for the participants, it would be more appropriate that flexibility be given to the participants to decide their travel plan and make hotel arrangements. Assistance of IIT Kanpur will be sought only for the logistics and program content in Australia.

After deliberations, the following was decided :

a. The Air travel costs will be reimbursed based on actuals for 1 participant per SERC, subject to a maximum ceiling being the Air India fare available as on the date of issuance of the letter from FOR Secretariat for the Delhi-Sydney-Delhi sector in economy class on the shortest route.
b. Appropriate hotel(s) for accommodation in Sydney will be identified and intimated to enable the participants to make arrangements. The reimbursement of room rent will be at a maximum of US$ 200 per night subject to actual on production of original receipts. For airport transfer, FOR Secretariat will reimburse actual taxi fare on production of receipts.
c. All expenses related to Program logistics, site visits, local transport etc. in Sydney will be borne by FOR through IIT Kanpur.

AGENDA ITEM NO.4: REPORT OF FOR STANDING TECHNICAL COMMITTEE ON "ISSUES OF AGGREGATOR/ QCA OF WIND AND SOLAR PROJECTS"

Chief (RA), CERC apprised the Forum about the Sub-Group of FOR Technical Committee constituted under the Chairmanship of Chairperson, Kerala SERC with representation from KERC, APERC, POSOCO and FOR Secretariat. The Sub-Group was mandated to examine the issues around the QCA/ Aggregator operations within the power system and make suitable recommendations for adoption by the States. The report of the Sub-Group as endorsed by the Standing Technical Committee was presented by the consultant, M/s Idam Infrastructure Advisory Ltd. (**Annexure – III).**

The Forum appreciated the efforts by Standing Technical Committee and the Consultant to bring out the Report that deals with issues associated with QCA and implementation framework for Forecasting and Scheduling regime for RE Generators in a comprehensive manner. After deliberations, the Forum agreed on the following:

a. CERC/ SERCs should incorporate necessary amendments in the IEGC/ State Grid Code to recognise QCA as Regional Entity/ State Entity, which will operate under control of RLDC/ SLDC.
b. The RE Generators shall appoint one QCA per pooling substation by majority principle (i.e. consent of Generators having more than 50% of installed capacity at Pooling Sub-stations). In the absence of consensus, SLDC may appoint the QCA.
c. Penalty should not be levied in case of curtailment, under emergency conditions/ security constraints.
d. Deviation/ Error band and DSM charges thereof under Model F&S Regulations should be reviewed and revised over the period in light of operational experience, advancement in F&S techniques and other regulatory developments.
e. In future, role of Aggregators would evolve to operate in DR, DER, balancing/ ancillary market service providers etc. There should be regulatory oversight and need for separate Model Regulations to govern their operations, as electricity market evolves.

With the above, the Forum endorsed the report of the Technical Committee.

AGENDA ITEM NO. 5: FOR STUDY ON "REVIEW OF STATUS OF OPEN ACCESS IN DISTRIBUTION"

Chief (RA), CERC apprised the Forum regarding the FOR study initiated on "Review of Status of Open Access in Distribution". He informed

that this study report was earlier submitted in the 69th FOR meeting on 20.6.2019 at New Delhi. After deliberations, the Forum wanted to seek views of its members and in accordance, the report was to be modified. In response, comments were received from KERC, TNERC and OERC. The consultant, M/s Deloitte assisting the FOR made a presentation on the salient features of the Report and also on the comments received from SERCs. A copy of the presentation is at **Annexure IV.**

The key recommendations included:

a. Standardisation of Regulations: Regulatory measures required to enable wider adoption of open access.
b. Improvement in operational procedures: Action items for SLDCs, STUs and Discoms to remove barriers to open access.
c. Balancing the interest of consumers and Discoms: Action items for both SERCs and utilities to create a balance between the viability of open access and impact on revenue of Discoms due to open access migration.

Chief (RA) informed the Forum that this report is recommendatory in nature, being a status update on the Open Access in the target States. As evident from the comments received from the 3 SERCs, they are in agreement with the recommendations of the Report and hence no further changes are envisaged in the final report. Hence, the Forum after discussion accepted and adopted the Report.

AGENDA ITEM NO. 6: REFERENCE FROM WEST BENGAL ERC REGARDING REVIEW OF STANDARD BIDDING DOCUMENTS FOR

MEDIUM TERM PROCUREMENT OF POWER ISSUED BY MINISTRY OF POWER ON 29.01.2019

Chairman, West Bengal ERC brought to the notice of the Forum that though Government of India has published the revised Guidelines of Medium term power through competitive bidding and identified 11 categories for such competitive bidding, the objective of arriving at the lowest possible tariff is not getting fulfilled. He opined that that there are many restrictive clauses in the Standard bidding documents. This leads the discoms to seek exemptions from such clauses from the SERCs.

Chief (RA), CERC suggested that it may be necessary to understand the rationale behind the various categories in the SBDs. After deliberations, the Forum decided as under:

- A Working Group of FOR under the Chairmanship of Chairperson, West Bengal ERC with members from Tamil Nadu, Jharkhand, Maharashtra and Karnataka will be constituted who would examine the rationale for the creation of categories which is restricting the competition.
- The Group may also examine the necessity for replacing Short term contracts / medium term contracts with Forward contracts.
- A representative of Ministry of Power may be invited for deliberations in the meetings of the Sub-group and the final report of this Group may be presented in the next meeting of the FOR.

AGENDA ITEM NO. 7: REFERENCE FROM UTTAR PRADESH ERC ON IMPACT OF RECENT ENHANCEMENTS IN RENEWABLE POWER OBLIGATIONS ON RETAIL CONSUMER TARIFF

Chairman, UPERC made a presentation **(Annexure-V)** on the Impact of enhanced RPO on retail tariffs. He stated that vide Government of India notification dated 14.6.2018, equal burden of RPO trajectory has been put on all States without considering geographical and socio-economic conditions. While the RE sources are less predictable, the economic impact of integration of RE is more complex vis-a-vis that of conventional power. A comparison of PLF over the years in the Centre, State and private sectors showed that the PLFs have been reducing over the years while the RPO trajectory has been increasing. He presented an estimation of the true costs of RE and the cost of additional burden of grid integration considering costs related to capital, stranded capacity and balancing costs.

Member, PSERC made a presentation **(Annexure VI)** on the RPO Trajectory and challenges of RE integration in the State of Punjab in addition to giving an overview of the transmission charges. It was depicted that such POC charges and transmission charges are ultimately socialized to the discoms. It was additionally stated that due to the heavy load variations in the State of Punjab, it was difficult to follow a uniform RPO trajectory. In that case, there would be a necessity to store energy and the cost of such storage would be Rs. 4 per unit. Hence, total costs to be passed on to the consumers would be very high.

Chairperson, GERC stated that the coal cess funds should be used by those States who have difficulty in complying with the RPO trajectory.

At the end of discussion, the Forum decided that the Standing Technical Committee of FOR may deliberate upon the following:

a. Assess the true cost of Renewable Energy integration considering all cost elements.
b. Examine scenarios for usage of technologies in grid storage vs battery storage.
c. Examine the use of hydrogen as a future fuel source.
d. Prepare regulatory framework for the Electric Vehicles.

AGENDA ITEM NO. 8: REFERENCE FROM GUJARAT ERC ON RELEVANCE OF APPC TO BE REPLACED BY COMPETITIVE BIDDING RATE

Chairman, GERC stated that considering the infirm nature of RE sources of generation, they are allowed injection of surplus power which is treated as sale to the Discom. However, the rate to be paid for such surplus power cannot be considered to be at par with the tariff applicable for other RE plants supplying committed capacity to the Discoms. Hence, APPC rate was considered to be lower in comparison to preferential tariff determined by the Commission. It was suggested that the rate for such surplus power should be equivalent to source wise average of tariff discovered during the last 6 months in the competitive bidding conducted by the Discoms. However, Chairperson, JSERC stated that the same is reverse in their State.

Chief (RA), CERC informed the Forum that FOR has already recommended various alternatives in its Draft Model Regulations on Grid Interactive Distributed Renewable Energy Sources and therefore, SERCs may like to modify their Regulations as per the Model Regulations to address this issue.

The Forum noted the same.

AGENDA ITEM NO. 9: REFERENCE FROM TRIPURA ERC ON UNIFORM TARIFF POLICY FOR DOMESTIC AND AGRICULTURE CONSUMERS

Chairperson, Tripura ERC informed the Forum that currently almost all States have different tariff structure for its domestic and agriculture consumers throughout the country. The domestic tariffs differ from State to State from as low as Rs 2.40 per unit to as high as Rs 12 per unit. Some State Governments have also issued notifications for bringing in uniform tariff for consumers. Hence, he proposed that while Agriculture and Domestic consumers can have uniform tariff, the tariffs for commercial and industrial consumers can be fixed at market-determined prices. This would be possible if all least cost power (Hydro and Thermal) all across the country is clubbed and made available for domestic consumption.

Members deliberated that though uniform tariffs currently exist for consumers of 2 or more discoms in the same State (based on directions issues by State Governments under section 108 of the Electricity Act), it is

practically not feasible as the actual loss levels, consumer mix etc. in such discoms.

Chief (RA), CERC updated the Forum that a study on the same lines was already conducted by the Ministry of Power to rationalize the tariff categories and sub categories.

The Forum noted the same.

On conclusion of the meeting, Justice Shri Bhavani Prasad, Chairperson, Andhra Pradesh ERC informed the Forum that he would be demitting office in October 2019. He recalled that he was new in the Electricity sector when he took charge and that he was grateful to the Forum especially to Shri P.K,.Pujari, Chairperson, CERC/FOR, Shri G.B.Pradhan, Ex-Chairperson, CERC/FOR, Shri A.S.Bakshi, Ex-Member, CERC and other FOR members for educating and sharing their vast knowledge. He thanked the Forum for the interactions during his tenure and Chairperson PSERC for her hospitality during the 69th FOR meeting.

Shri Sanoj Kumar Jha, Secretary, CERC/ FOR thanked the Chairperson, Members, Secretary and staff of the Punjab State Electricity Regulatory Commission for their painstaking efforts and excellent logistics support to host the 69th Meeting of FOR at Amritsar. He also thanked all the dignitaries present in the meeting. He thanked the staff of FOR Secretariat for their arduous efforts in organizing the meeting.

The Chairperson, CERC/ FOR conveyed to the Members of Forum that the next FOR Meeting will be held in Diu on November 8th, 2019.

The meeting ended with a vote of thanks to the Chair.

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/ ANNEXURE – I /

LIST OF PARTICIPANTS ATTENDED THE 69TH MEETING OF FORUM OF REGULATORS (FOR)

HELD ON 20TH SEPTEMBER, 2019 AT AMRITSAR (PUNJAB).

S. No.	NAME	ERC
01.	Shri P.K. Pujari Chairperson	CERC / FOR – in Chair.
02.	Justice (Shri) G. Bhavani Prasad Chairperson	APERC
03.	Shri R.P. Singh Chairperson	APSERC
04.	Shri Subhash Chandra Das Chairperson	AERC
05.	Shri S.K. Negi Chairperson	BERC
06.	Shri D.S. Misra Chairperson	CSERC
07.	Justice (Shri) S.S. Chauhan Chairperson	DERC
08.	Shri Anand Kumar Chairperson	GERC
09.	Shri Depinder Singh Dhesi Chairperson	HERC
10.	Shri S.K.B.S. Negi Chairperson	HPERC
11.	Shri Lokesh Dutt Jha Chairperson	J&KSERC
12.	Dr. Arbind Prasad Chairperson	JSERC
13.	Shri M.K. Goel Chairperson	JERC (State of Goa & UTs)

14.	Shri Lalchharliana Pachuau Chairperson	JERC for M & M
15.	Shri Shambhu Dayal Meena Chairperson	KERC
16.	Er. Imlikumzuk Ao Chairperson-cum-Member	NERC
17.	Shri U.N. Behera Chairperson	OERC
18.	Ms. Kusumjit Sidhu Chairperson	PSERC
19.	Shri M. Chandrasekar Chairperson	TNERC
20.	Shri D. Radhakrishna Chairperson	TERC
21.	Shri Raj Pratap Singh Chairperson	UPERC
22.	Shri D.P. Gairola Officiating Chairperson/Member (Law)	UERC
23.	Shri Sutirtha Bhattacharya Chairperson	WBERC
24.	Shri K. Vikraman Nair Member	KSERC
25.	Shri Mukul Dhariwal Member	MPERC
26.	Shri Mukesh Khullar Member	MERC
27.	Shri Suresh Chandra Dinkar Member	RERC
28.	Shri Sanoj Kumar Jha Secretary	CERC
29.	Dr. Sushanta K. Chatterjee Chief (RA)	CERC
30.	Ms. Rashmi Somasekharan Nair Dy. Chief (RA)	CERC
SPECIAL INVITEES		
31.	Dr. M.K. Iyer Member	CERC

32.	Shri Indu Shekhar Jha Member	CERC
33.	Shri K.M. Shringarpure Member	GERC
34.	Shri Santokh Singh Sarna Member	PSERC
35.	Ms. Anjuli Chandra Member	PSERC
36.	Shri K.V.S. Baba CMD	POSOCO
37.	Dr. Anoop Singh Associate Professor	IIT, Kanpur
38.	Shri Ajit Pandit Director	Idam Infrastructure Advisory Pvt. Ltd.
39.	Shri Amit Goenka Associate Director	Deloitte Touche Tohmatsu India LLP
40.	Shri Rajat Goel Manager	Deloitte Touche Tohmatsu India LLP

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Annexure-II

To,

The Secretary,
Forum of Regulators,
Sectt.: C/o Central Electricity Regulatory Commission,
3rd&4th Floor, Chanderlok Building, 36 Janpath,
New Delhi – 110001.

Auditors Report

We have audited the attached Balance Sheet of the Forum of Regulators as on 31st March, 2019 and also the Income & Expenditure Account and Receipts & Payments Account for the year ended on that date. These financial statements are primarily the responsibility of the Forum of Regulators. Our responsibility is to express an opinion on these financial statements based on our audit.

We have conducted our audit in accordance with the Accounting Standards generally accepted in India. These standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial Statement are free from material mis-statement. An audit includes examining on test basis evidence supporting the amount and disclosure in the financial statement. It also includes evaluating the overall Financial Statement presentation.

In our opinion and to the best of our information and according to explanation given to us, the financial statements give a true and fair view in conformity with the accounting principle generally accepted in India:

a) In the case of the Balance Sheet, of the state of the affairs of the Forum as at 31st March,2018, and
b) In the case of the Income and expenditure account, of the surplus for the year ended on that date.

For MBR & CO LLP
Chartered Accountants
FRN: 021360N/C400025

Mukesh Sharma
Partner
Membership No.: 511275
Place: New Delhi Date: 16th August, 2019
UDIN No.: 19511275AAAAFQ8047

FORUM OF REGULATORS
BALANCE SHEET AS AT 31st March, 2019

(Amount- Rs.)

CORPUS/CAPITAL FUND & LIABILITIES	Schedule	Current Year	Previous Year
CORPUS/CAPITAL FUND	1	**370,10,643**	370,10,643
RESERVES & SURPLUS	2	**408,79,828**	396,00,634
EARMARKED/ ENDOWMENT FUNDS	3	**-**	2,02,724
CURRENT LIABILITIES & PROVISIONS	4	**88,52,422**	128,23,644
TOTAL		**867,42,893**	896,37,645
ASSETS			
FIXED ASSETS	5	**38,749**	55,378
CURRENT ASSETS, LOANS, ADVANCES ETC.	6	**867,04,144**	895,82,267
TOTAL		**867,42,893**	896,37,645
SIGNIFICANT ACCOUNTING POLICIES	12		
CONTINGENT LIABILITIES & NOTES ON ACCOUNTS	13		

As per our report on the even date appended hereto

For MBR & CO. LLP
Chartered Accountants
FRN: 021360N/C400025

MUKESH SHARMA
(Partner)
M.NO.511275

Internal Financial Advisor

Secretary

Place: New Delhi
Date: 16th August, 2019
UDIN NO.: 19511275AAAAFQ8047

FORUM OF REGULATORS

INCOME & EXPENDITURE ACCOUNT FOR THE PERIOD/YEAR ENDED 31st March, 2019

(Amount- Rs.)

	Schedule	Current Year	Previous Year
INCOME			
Fees/Subscriptions	7	**174,00,000**	180,00,000
Grant received from MoP	3	**25,10,339**	42,56,879
Interest Earned	8	**49,90,595**	45,11,852
Other Income	9	**-**	-
TOTAL (A)		**249,00,934**	267,68,731
EXPENDITURE			
Establishment Expenses	10	**-**	-
Other Administrative Expenses etc.	11	**139,96,608**	197,64,668
Grant Utilised (MoP):	3		
(a) Capacity Buliding		**18,02,255**	16,32,646
(b) Consultancy Services		**7,08,084**	26,24,233
Depreciation (Net Total at the year-end- corresponding to schedule 8)		**16,629**	34,251
Prior Period Expenses		**-**	12,229
TOTAL (B)		**165,23,576**	240,68,027
Balance being excess of Income over Expenditure (A-B)		**83,77,358**	27,00,704
Provision for Tax (Current Year)		**24,24,414**	6,41,391
Provision for Tax (Previous Year)		**46,73,750**	-
Transfer to/from General Reserve		**12,79,194**	20,59,313
BALANCE BEING SURPLUS/(DEFICIT) CARRIED TO CORPUS/CAPITAL FUND		**-**	-
SIGNIFICANT ACCOUNTING POLICIES	12		
CONTINGENT LIABILITIES AND NOTES ON ACCOUNTS	13		

As per our report on the even date appended hereto

For MBR & CO. LLP
Chartered Accountants
FRN: 021360N/C400025

MUKESH SHARMA
(Partner)
M.NO.511275

Internal Financial Advisor

Secretary

Place: New Delhi
Date: 16th August, 2019

UDIN No.: 19511275AAAAFQ8047

FORUM OF REGULATORS

SCHEDULES FORMING PART OF BALANCE SHEET AS AT 31st March, 2019

(Amount- Rs.)

SCHEDULE 1 - CORPUS/CAPITAL FUND:	Current Year		Previous Year	
Balance as at the beginning of the year		**370,10,643**		370,10,643
Add: Contributions towards Corpus/Capital Fund	-		-	
Add/(Deduct): Balance of net income/ (expenditure) transferred from the Income and Expenditure Account	-	-	-	-
BALANCE AS AT THE YEAR-END		**370,10,643**		370,10,643

SCHEDULE 2 - RESERVES & SURPLUS:	Current Year		Previous Year	
1. Capital Reserve:				
As per last Account	-		-	
Addition during the year	-		-	
Less: Deduction during the year	-	-	-	-
2. Revaluation Reserve:				
As per last Account	-		-	
Addition during the year	-		-	
Less: Deduction during the year	-	-	-	-
3. Special Reserves				
As per last Account	-		-	
Addition during the year	-		-	
Less: Deduction during the year	-	-	-	-
4. General Reserve				
As per last Account	**396,00,634**		375,41,322	
Add: Addition during the year	**12,79,194**		20,59,313	
Less: Deduction during the year	-	**408,79,828**	-	396,00,634
TOTAL		**408,79,828**		396,00,634

As per our report on the even date appended hereto

For MBR & CO. LLP
Chartered Accountants
FRN: 021360N/C400025

MBR & CO. LLP CA New Delhi Chartered Accountants

MUKESH SHARMA
(Partner)
M.NO.511275

Internal Financial Advisor

Secretary

Place: New Delhi
Date: 16th August, 2019
UDIN No.: 19511127AAAAFQ8047

FORUM OF REGULATORS

SCHEDULES FORMING PART OF BALANCE SHEET AS AT 31st March, 2019

(Amount- Rs.)

SCHEDULE 3 - EARMARKED/ ENDOWMENT FUNDS	FUND-WISE BREAK UP				TOTALS		
	Plan Fund		MNRE Fund		Current Year		Previous Year
a) Opening Balance of the funds		2,02,724		-		2,02,724	18,12,648
b) Additions to the Funds:							
i. Donations/Grants	48,00,000				48,00,000		
ii. Interest from Investments made on account of funds	58,221	48,58,221			58,221		
iii. Refund from State Agencies			-	-	-	48,58,221	44,46,085
TOTAL (a+b)		50,60,945		-		50,60,945	62,58,733
c) Utilisation/Expenditure towards Objectives of funds							
i. Capital Expenditure							
- Fixed Assets	-		-				
- Others	-	-	-	-		-	-
TOTAL (i)		-		-		-	-
ii. Revenue Expenditure							
- Salaries, Wages and allowances etc.	-				-		
- Rent	-				-		
- Other Administrative expenses	25,10,339	25,10,339			25,10,339	25,10,339	42,56,879
iii. Unspent financial assistance refunded (including interest)		25,50,606	-	-		25,50,606	17,99,130
TOTAL (ii + iii)		50,60,945		-		50,60,945	60,56,009
TOTAL (c) = (i + ii + iii)		50,60,945		-		50,60,945	60,56,009
NET BALANCE AT THE YEAR-END (a+b-c)		0		-		0	2,02,724

Notes

1} Disclosures shall be made under relevent heads based on conditions attaching to the grants.

2} Plan Funds received from the Central/State Governements are to be shown as separate Funds and not to be mixed up with any other Funds.

As per our report on the even date appended hereto

For MBR & CO. LLP
Chartered Accountants
FRN: 021360N/C400025

MUKESH SHARMA
(Partner)
M.NO.511275

Internal Financial Advisor

Secretary

Place: New Delhi
Date: 16th August, 2019

UDIN No.: 19511275AAAAF98047

FORUM OF REGULATORS

SCHEDULES FORMING PART OF BALANCE SHEET AS AT 31st March, 2019

(Amount - Rs.)

	Current Year		Previous Year	
SCHEDULE 4 - CURRENT LIABILITIES & PROVISIONS				
A - CURRENT LIABILITIES				
1. Acceptances		-		-
2. Sundry Creditors :				
a) For Goods	-		-	
b) Others	-	-	-	-
3. Advances Received		-		-
4. Interest accrued but not due on :				
a) Secured Loans/borrowings	-		-	
b) Unsecured Loans/borrowings	-	-	-	-
5. Statutory Liabilities :				
a) Overdue	-		-	
b) Others	-	-	-	-
6. Other current Liabilities		-		-
TOTAL (A)		-		-
B - PROVISIONS				
1. For Taxation				
(i) Previous Years (including penalty for A.Y. 2016-17)	**46,95,607**		33,74,018	
(ii) Current Year	**24,24,414**		6,41,391	
		71,20,021		40,15,409
2. Gratuity		-		-
3. Superannuation/Pension		-		-
4. Accummulated Leave Encashment		-		-
5. Trade Warranties/Claims		-		-
6. Others :				
(i) Secretariat Expenses Payable	**-**		51,66,110	
(ii) Advertising & Publicity Expenses Payable	**1,270**		1,316	
(iii) Audit Fees Payable	**29,800**		22,000	
(iv) Canteen Expenses Payable	**-**		3,302	
(v) Labour (Outsourcing) Expenses Payable	**1,93,260**		6,33,924	
(vi) Printing & Stationery Expenses Payable	**2,93,271**		-	
(vii) Professional Charges (FOR's FUND) Expenses Payable	**18,949**		37,591	
(viii) Professional Fees (Staff Consultants) Expenses Payable	**4,36,515**		2,40,230	
(xi) Study & Consultancy (PLAN FUND) Payable	**-**		10,34,161	
(x) Training Expenses Payable	**5,54,940**		-	
(xi) Training Expenses (PLAN FUND) Payable	**-**		15,65,446	
(xii) TDS Payable on Contract	**3,941**		4,720	
(xiii) TDS Payable on Professional Fees	**1,13,912**		98,665	
(xiv) TDS Payable on CGST+SGST+IGST	**65,366**		-	
(xv) Telephone Expenses Payable	**7,677**		770	
(xvi) Website Expenses Payable	**13,500**	**17,32,401**	-	88,08,235
TOTAL (B)		**88,52,422**		128,23,644
TOTAL (A) + (B)		**88,52,422**		128,23,644

As per our report on the even date appended hereto

For MBR & CO. LLP
Chartered Accountants
FRN: 021360N/C400025

MUKESH SHARMA
(Partner)
M.NO.511275

Internal Financial Advisor

Secretary

Place: New Delhi
Date: 16th August, 2019

UDIN NO.: 19511275AAAAFQ8047

FORUM OF REGULATORS

SCHEDULES FORMING PART OF BALANCE SHEET AS AT 31st March, 2019

(Amount - Rs.)

SCHEDULE 5 - FIXED ASSETS

DESCRIPTION	GROSS BLOCK				DEPRECIATION					NET BLOCK	
	Cost/ valuation as at beginning of the year	Additions during the year	Deductions during the year	Cost/ valuation at the year end	As at the beginning of year	During the year on the Assets at the beginning of the year	On additions during the year	On deductions during the year	Total upto the year-end	As at the Current year-end	As at the Previous year-end
A. FIXED ASSETS											
1. LAND:											
a) Freehold	-	-	-	-	-	-	-	-	-	-	-
b) Leasehold	-	-	-	-	-	-	-	-	-	-	-
2. BUILDINGS:											
a) On Freehold land	-	-	-	-	-	-	-	-	-	-	-
b) On Leasehold land	-	-	-	-	-	-	-	-	-	-	-
c) Ownership flats/premises	-	-	-	-	-	-	-	-	-	-	-
d) Superstructures on land not belonging to entity	-	-	-	-	-	-	-	-	-	-	-
3. PLANT & MACHINERY & EQUIPMENT	**52,023**	-	-	**52,023**	**25,767**	**3,938**	-	-	**29,705**	**22,318**	26,256
4. VEHICLES	-	-	-	-	-	-	-	-	-	-	-
5. FURNITURE, FIXTURES	-	-	-	-	-	-	-	-	-	-	-
6. OFFICE EQUIPMENT	**25,840**	-	-	**25,840**	**15,213**	**1,594**	-	-	**16,807**	**9,033**	10,627
7. COMPUTER/PERIPHERALS	**6,83,783**	-	-	**6,83,783**	**6,65,288**	**11,097**	-	-	**6,76,385**	**7,398**	18,495
8. ELECTRIC INSTALLATIONS	-	-	-	-	-	-	-	-	-	-	-
9. LIBRARY BOOKS	-	-	-	-	-	-	-	-	-	-	-
10. TUBEWELLS & W.SUPPLY	-	-	-	-	-	-	-	-	-	-	-
11. OTHER FIXED ASSETS	-	-	-	-	-	-	-	-	-	-	-
TOTAL OF CURRENT YEAR	**7,61,646**	-	-	**7,61,646**	**7,06,268**	**16,629**	-	-	**7,22,897**	**38,749**	55,378
PREVIOUS YEAR	7,98,272	-	36,626	7,61,646	7,08,643	34,251	-	36,626	7,06,268	55,378	
B. CAPITAL WORK-IN-PROGRESS										-	-
TOTAL										**38,749**	55,378

Note to be given as to cost of assets on hire purchse basis included above.

As per our report on the even date appended hereto

For MBR & CO. LLP
Chartered Accountants
FRN: 021360N/C400025

MUKESH SHARMA
(Partner)
M.NO.511275

Internal Financial Advisor

Secretary

Place: New Delhi
Date: 1/th August, 2019
UDIN NO.: 19511275AAAAFQ8047

FORUM OF REGULATORS

SCHEDULES FORMING PART OF BALANCE SHEET AS AT 31st March, 2019

(Amount- Rs.)

SCHEDULE -6- CURRENT ASSETS, LOANS, ADVANCES ETC.	Current year		Previous year	
A - CURRENT ASSETS				
1. Inventories :				
a) Stores and Spares	-		-	
b) Loose Tools	-		-	
c) Stock-in-trade				
Finished goods	-		-	
Work-in-progress	-		-	
Raw materials	-	-	-	-
2. Sundry Debtors :				
a) Debts outstanding for a period exceeding 6 months	**18,200**		18,200	
Less: Written-off during the year	**(18,200)**			
b) Others	**6,01,370**	**6,01,370**	3,36,058	3,54,258
3. Cash balances in hand (including cheques/drafts/imprest)		**24**		24
4. Bank balances :				
a) With Scheduled Banks :				
- On Current Accounts	-		-	
- On Deposit Accounts (includes margins money)				
(i) Fixed Deposits	**370,10,643**		370,10,643	
(ii) Auto Sweep/Flexi Deposits	**420,34,209**		434,04,839	
- On Savings Accounts				
(i) Corporation Bank (SB Account No. 000068)	**-**		-	
(ii) Corporation Bank (SB Account No. 1708 - MoP)	**12,000**		28,69,530	
		790,56,852		832,85,012
b) With non-Scheduled Banks :				
On Current Accounts	-		-	
On Deposit Accounts	-		-	
On Savings Accounts	-	-	-	-
5. Post Office Savings Accounts.		-		-
TOTAL (A)		**796,58,246**		836,39,294

As per our report on the even date appended hereto

For MBR & CO. LLP
Chartered Accountants
FRN: 021360N/C400025

MUKESH SHARMA
(Partner)
M.NO.511275

Internal Financial Advisor

Secretary

Place: New Delhi
Date: 16th **August, 2019**

UDIN NO.: 19511275AAAAFQ8047

FORUM OF REGULATORS

SCHEDULES FORMING PART OF BALANCE SHEET AS AT 31st March, 2019

(Amount- Rs.)

SCHEDULE -6- CURRENT ASSETS, LOANS, ADVANCES ETC. (Contd.....)	Current year		Previous year	
B - LOANS, ADVANCES AND OTHER ASSETS				
1. Loans :				
a) Staff	-		-	
b) Other Entities engaged in activities/objectives similar to that of the entity	-		-	
c) Other (specify)	-	-	-	-
2. Advances and other amounts recoverable in cash or in kind or for value to be received :				
a) On Capital Account	-		-	
b) Prepayments	-		-	
c) Others				
(i) Security Deposit (MTNL)			3,000	
Previous Year	**3,000**			
(ii) Tax Deducted at Source (TDS):			33,33,805	
Previous Year	**28,07,617**			
Current Year	**4,98,932**			
(iii) Self Assessment Tax:			9,63,614	
Previous Year	**2,07,648**			
(iv) Membership Fee Receivable	-		9,06,000	
(v) GST (Input):			5,30,345	
Current Year	**12,85,965**			
Add: Advance Tax:			-	
Current Year	**17,18,000**			
Add: GST (Output) Receivable:			-	
Current Year	**1,08,000**			
Add: TDS on IGST Receivable:				
Current Year	**60,000**		-	
		66,89,162		57,36,764
3. Income Accrued :				
a) On Investments from Earmarked/Endowment Funds	-		-	
b) On Investments - Others	**3,56,736**		2,06,209	
c) On Loans and Advances	-		-	
d) Others (includes income due unrealised Rs.....)	-		-	
		3,56,736		2,06,209
4. Claims Receivable		-		-
TOTAL (B)		**70,45,898**		59,42,973
TOTAL (A + B)		**867,04,144**		895,82,267

As per our report on the even date appended hereto

For MBR & CO. LLP
Chartered Accountants
FRN: 021360N/C400025

MUKESH SHARMA
(Partner)
M.NO.511275

Internal Financial Advisor

Secretary

Place: New Delhi
Date: 16th August, 2019

UDIN NO.: 19511275AAAAFQ8047

FORUM OF REGULATORS

SCHEDULES FORMING PART OF INCOME & EXPENDITURE FOR THE PERIOD/YEAR ENDED ON 31st March, 2019

(Amount - Rs.)

SCHEDULE -7- FEES/SUBSCRIPTIONS	Current Year	Previous Year
1) Entrance Fees	-	-
2) Annual Fees/Subsrciptions	**174,00,000**	180,00,000
3) Seminar/Program fees	-	-
4) Consultancy Fees	-	-
5) Others (specifiy)		
i) RTI Fee	-	-
TOTAL	**174,00,000**	180,00,000

Note : Accounting policies towards each item are to be disclosed.

As per our report on the even date appended hereto

For MBR & CO. LLP
Chartered Accountants
FRN: 021360N/C400025

MUKESH SHARMA
(Partner)
M.NO.511275

Internal Financial Advisor

Secretary

Place: New Delhi
Date: 10th August, 2019

UDIN No.: 19511275AAAAFQ8047

FORUM OF REGULATORS

SCHEDULES FORMING PART OF INCOME & EXPENDITURE FOR THE PERIOD/YEAR ENDED ON 31st March, 2019

(Amount - Rs.)

SCHEDULE -8- INTEREST EARNED		Current Year	Previous Year
1. On Term Deposits :			
a) With Scheduled Banks	(TDS - Rs.4,98,932/-)	**49,89,311**	44,03,947
b) With Non-Scheduled Banks		-	-
c) With Institutions		-	-
d) Others		-	-
2. On Savings Accounts :			
a) With Scheduled Banks		**1,284**	1,07,905
b) With Non-Scheduled Banks		-	-
c) Post Office Savings Accounts		-	-
d) Others		-	-
3. On Loans :			
a) Employees/staff		-	-
b) Others		-	-
4. Interest on Debtors and Other Receivables		-	-
TOTAL		**49,90,595**	45,11,852

Note - Tax deducted at source to be indicated.

As per our report on the even date appended hereto

For MBR & CO. LLP
Chartered Accountants
FRN: 021360N/C400025

MUKESH SHARMA
(Partner)
M.NO.511275

Internal Financial Advisor

Secretary

Place: New Delhi
Date: 14th August, 2019
UDIN NO.: 19511275AAAAFQ8047

FORUM OF REGULATORS

SCHEDULES FORMING PART OF INCOME & EXPENDITURE FOR THE PERIOD/YEAR ENDED ON 31st March, 2019

(Amount - Rs.)

SCHEDULE -9- OTHER INCOME	**Current Year**	**Previous Year**
1) Profit on Sale/Disposal of Assets :		
a) Owned assets	-	-
b) Assets acquired out of grants, or received free of cost	-	-
2) Export Incentive realized	-	-
3) Fees for Miscellaneous Services	-	-
4) Miscellaneous Income	-	-
5) Liabilities no longer required	-	-
TOTAL	-	-

SCHEDULE -10- ESTABLISHMENT EXPENSES	**Current Year**	**Previous Year**
a) Salaries & Wages	-	-
b) Allowances and Bonus	-	-
c) Contribution to Provident Fund	-	-
d) Contribution to other Fund (specify)	-	-
e) Staff Welfare Expenses	-	-
f) Expenses on Employees' Retirement & Terminal Benefits	-	-
g) Others (specify)	-	-
TOTAL	-	-

As per our report on the even date appended hereto

For MBR & CO. LLP
Chartered Accountants
FRN: 021360N/C400025

MUKESH SHARMA
(Partner)
M.NO.511275

Internal Financial Advisor

Secretary

Place: New Delhi
Date: 16th August, 2019
UDIN NO.: 19511275AAAAFQ8047

FORUM OF REGULATORS

SCHEDULES FORMING PART OF INCOME & EXPENDITURE FOR THE PERIOD/YEAR ENDED ON 31st March, 2019

(Amount - Rs.)

SCHEDULE -11- OTHER ADMINISTRATIVE EXPENSES	Current Year	Previous Year
a) Purchases	-	-
b) Labour and processing charges	**27,01,722**	23,97,862
c) Cartage and Carriage Inwards	-	-
d) Electricity and power	-	-
e) Water charges	-	-
f) Insurance	-	-
g) Repairs and maintenance	-	-
h) Excise Duty	-	-
i) Rent, Rates and Taxes	-	-
j) Vehicles Running and Maintenance	-	-
k) Postage, Telephone and Communication Charges	**26,937**	47,053
l) Printing and Stationary	**2,96,796**	54,460
m) Travelling and Conveyance Expenses	**37,557**	16,420
n) Expenses on Seminar/ Workshops	**19,91,018**	22,25,463
o) Subscription Expenses	-	-
p) Expenses on Fees	-	-
q) Auditors Remuneration	**32,000**	22,000
r) Hospitality Expenses	-	-
s) Professional Charges	**26,02,531**	35,11,679
t) Provision for Bad Doubtful Debts/Advances	**18,200**	-
u) Irrecoverable Balances Written-off	-	-
v) Packing Charges	-	-
w) Freight and Forwarding Expenses	-	-
x) Distribution Expenses	-	-
y) Advertisement and Publicity	**64,294**	2,79,975
z) Capacity Building & Consultancy	**61,66,000**	59,22,820
aa) Secretariat Expenses	-	51,66,110
ab) Others (specify)		
i) Other Expenses (net of excess provision written-off)	**11,691**	23,890
ii) Website Expenses	**27,000**	-
iii) Interest paid on self assessment tax	**20,862**	96,936
TOTAL	**139,96,608**	197,64,668

As per our report on the even date appended hereto

For MBR & CO. LLP
Chartered Accountants
FRN: 021360N/C400025

MUKESH SHARMA
(Partner)
M.NO.511275

Internal Financial Advisor

Secretary

Place: New Delhi
Date: 16th August, 2019

UDIN NO : 19511275AAAAFQ8047

FORUM OF REGULATORS (FOR)

SCHEDULE 12 & 13: (Forming part of Balance Sheet as at 31st March, 2019)

BACKGROUND OF FOR

The Forum of Regulators (FOR) was constituted vide Notification dated 16th February, 2005 in pursuance of the provision under section 166(2) of the Electricity Act, 2003. The Forum consists of Chairperson of Central Electricity Regulatory Commission (CERC) and Chairpersons of State Electricity Regulatory Commissions (SERCs). The Chairperson of CERC is the Chairperson of the Forum.

The Forum shall discharge the following functions, namely:

- *Analysis of the tariff orders and other orders of Central Commission and State Commissions and compilation of data arising out of the said orders, highlighting, especially the efficiency improvements of the utilities;*
- *Harmonization of regulation in power sector;*
- *Laying of standards of performance of licensees as required under the Act.*
- *Sharing of information among the members of the Forum on various issues of common interest and also of common approach.*
- *Undertaking research work in-house or through outsourcing on issues relevant to power sector regulation;*
- *Evolving measures for protection of interest of consumers and promotion of efficiency, economy and competition in power sector; and*
- *Such other functions as the Central Government may assign to it, from time to time.*

SIGNIFICANT ACCOUNTING POLICIES AND NOTES TO THE ACCOUNTS

1. Method of Accounting

Accounts are being prepared under the historical cost convention accrual basis, going concern and are materially complied with the mandatory Accounting Standards notified by the Govt. of India u/s 133 of the Companies Act, 2013.

2. Recognition of Income

Membership fee from each member is received on year on year basis. Such fee and other income/s is/are recognized in the books of accounts on accrual basis.

3. Fixed Assets and Depreciation

Depreciation on Fixed Assets has been worked out on Written Down Value method as per rates prescribed in Income Tax Act, 1961.

4. Grants

Government grants received for Capacity Building and Consultancy are accounted for on accrual basis. Unspent grant is refunded or shown as liability.

5. Taxation

Direct Tax:-

(A) Exemption under section 10(46) of the Income Tax Act, 1961:

(i) FOR has applied for exemption under section 10(46) of the Income Tax Act, 1961 on 13.12.2011 and no provision of tax has been made in the financial statements from F.Y. 2005-06 to F.Y. 2013-14, in anticipation of grant of exemption. FOR has been vigorously pursuing the matter for exemption with the Income Tax Department by sending letters from Secretary, CERC/FOR to the Pr. Chief Commissioner of Income Tax (Exemptions), Pr. Chief Commissioner of Income Tax, Chief Commissioner of Income Tax (Exemptions), Addtl. Commissioner of Income Tax (HQ – Co.ord) and other Income Tax officers. However, no exemption has been received so far.

(ii) Informations/documents were called for by the Under Secretary (ITA-I), CBDT, New Delhi and ADIT (E), New Delhi on 06.09.2012 & 19.02.2013, which have been submitted on 05.10.2012 & 15.03.2013, respectively. During the financial year 2013-14, TDS for the F.Y.s 2005-06 to 2010-11 amounting to **Rs.18,84,216/-** has been provided for as doubtful of recovery in the Income & Expenditure Account.

(iii) FOR has filed its Income Tax Return computing **NIL** income in anticipation of grant of exemption for the F.Ys. 2011-12 to 2015-16. The matter pertaining to the F.Ys. 2011-12 to 2014-15 is still pending with the Income Tax Authorities.

(iv) In the absence of exemption, the Assessing Officer has levied tax of **Rs.25,03,750/-** and a penalty of **Rs.21,70,000/-** for the A.Y. 2016-17 (F.Y. 2015-16). FOR has paid the tax and filed an appeal with the CIT(A) against the penalty.

6. Contingent Liabilities

(i) No provision has been made for Income Tax for the F.Ys. 2005-06 to 2014-15 and interest/penalty, if any, that may arise in the event of not getting Income Tax exemption has not been ascertained and provided for.

(ii) No provision has been made for service tax for the earlier years.

7. Provision for Bad & Doubtful Debts

During the current year, debtor for an amount of **Rs.18,200/-** has been written-off (Previous Year - NIL).

8. Retirement Benefits

There are no regular employees in FOR. Therefore, no retirement benefit is payable/ provided for.

9. Deposits in Auto Sweep/ Flexi Deposit and Investment in FDRs

Fixed Deposits and Short term deposits in Auto Sweeps/Flexi Deposits are stated at Cost and reflected in Cash & Bank Balances.

10. Figures have been re-grouped and re-arranged wherever necessary.

For MBR & CO LLP
Chartered Accountants
FRN: 021360N/C400025

(Mukesh Sharma)
Partner
Membership No.: 511275
Place: New Delhi
Date: 16th August, 2019
UDIN NO.: 19511275AAAAFQ8047

FORUM OF REGULATORS (FOR)

Internal Financial Advisor **Secretary**

FORUM OF REGULATORS
RECEIPTS AND PAYMENTS FOR THE YEAR ENDED 31st MARCH 2019

(in ₹)

RECEIPTS	CURRENT YEAR 2018-19	PREVIOUS YEAR 2017-18	PAYMENTS	CURRENT YEAR 2018-19	PREVIOUS YEAR 2017-18
1. To Opening Balances:			**1. By Release to:**		
(a) Cash Balance	**23.75**	9,060.00	GOI - GRANT FROM MNRE	-	8,07,459.00
			GOI - MoP - PLAN FUND (FOR CAPACITY BUILDING & CONSULTANCY)	**25,50,606.00**	9,91,671.00
(b) Bank Balance					
(i) Savings Account:					
CORPORATION BANK - SAVINGS-cum-Auto Sweep A/C	**434,04,839.27**	407,97,798.70			
CORPORATION BANK - SAVINGS A/C (PLAN FUND)	**28,69,530.17**	14,48,079.90			
(ii) Fixed Deposits (Corpus Fund)	**370,10,642.73**	370,10,642.73			
2. To Release from:			**2. By Expenses:**		
GOI - MoP - PLAN FUND (FOR CAPACITY BUILDING & CONSULTANCY)	**48,00,000.00**	39,43,000.00	**(a) Meeting & Seminar Expenses**	**19,66,365.00**	22,05,992.25
			(b) Professional Fees (Staff Consultants)	**20,72,618.00**	32,01,858.00
			(c) Capacity Building & Consultancy:		
			- Forum's Fund	-	59,22,820.00
			- PLAN Fund	**40,75,700.50**	15,89,282.00
			(d) Administratrative expenses:		
			- Advertising & Publicity Expenses	**63,024.00**	2,78,659.00
			- Bank Charges (Forum's Fund)	-	91.45
			- Bank Charges (PLAN Fund)	**82.60**	790.73
			- Labour (Outsourcing) Expenses	**25,05,199.00**	21,43,393.00
			- Legal & Professional Expenses	-	5,167.00
			- Printing & Stationery Expenses	**3,525.00**	54,460.00
			- Professional Charges	**24,397.00**	-
			- Telephones Expenses	**19,260.00**	46,283.00
			- Travelling Expenses	**37,557.00**	28,649.00
			- Website Expenses	**13,500.00**	-
			- **Other Expenses :**		
			- Canteen Expenses	**21,528.00**	39,123.00
			- E-TDS filing Expenses	**200.00**	-
			- Interest on delay in the pymt. of TDS & IT	**20,872.00**	179.00
			- TDS on Interest recoverable	**6.00**	-
			- Office Expenses/Audit Expenses	**1,047.00**	1,132.00

FORUM OF REGULATORS
RECEIPTS AND PAYMENTS FOR THE YEAR ENDED 31st MARCH 2019

(in ₹)

RECEIPTS	CURRENT YEAR 2018-19	PREVIOUS YEAR 2017-18	PAYMENTS	CURRENT YEAR 2018-19	PREVIOUS YEAR 2017-18
3. To Receipts of the Commission			**3. (I) By Advances to Staff**		
			(a) Other Advances (Expenses)		
(a) Membership Fees (Forum's Fund)	**168,00,000.00**	173,10,000.00			
			(II) Adjustments/Remittances/Payables:		
(b) Interest from Flexi Deposits/FDRs:					
- Forum's Fund	**23,29,664.00**	20,54,338.02	(a) Administrative Expenses	**51,66,110.00**	21,37,950.00
- Corpus Fund	**24,69,442.00**	25,41,676.00	(b) Advertisement & Publicity Expenses	**1,316.00**	3,654.00
			(c) Audit Fee	**22,000.00**	22,000.00
			(d) Canteen Expenses	**3,302.00**	3,780.00
			(e) Labour (Outsourcing) Expenses (net of liability)	**6,31,833.00**	3,72,505.00
			(f) Professional Charges	**37,591.00**	4,238.00
(d) Interest from Savings Account:			(g) Professional Charges (Staff Consultants)	**2,40,230.00**	3,38,113.00
- Forum's Fund	**1,284.00**	1,07,905.00	(h) Salary	**-**	49,846.00
- PLAN Fund	**58,221.00**	60,194.00	(i) Telephone Expenses	**770.00**	2,857.00
			(j) Training Advance (Forum's Fund)	**55,49,400.00**	-
			(k) Interest from Auto Sweep FDR (Plan Fund)	**-**	-
			(l) Income Tax (Advance Tax, TDS, TDS on GST & Self Assmt. Tax)	**24,44,948.00**	14,78,035.00
			(m) GST (Output)	**31,32,000.00**	32,05,730.00
			(n) GST (Input)	**15,17,938.00**	5,59,983.00
			(o) Study & Consultancy (FOR's Fund)	**-**	60,375.00
			(p) Study & Consultancy (PLAN Fund)	**10,34,161.00**	-
			(q) Other receipt (CERC)	**-**	20,250.00
			(r) TDS on Contract & Prof. Fees (net)	**1,03,385.00**	-
			(III) By Other:		
			(a) Income Tax Demand (A.Y. 2016-2017)	**25,03,750.00**	-
			(b) Audit Advance (net of receipt)	**-**	8,931.00
			(c) Meeting Advance	**1,51,500.00**	2,71,500.00
4. To Deposit Receipts:			**4. By Expenditure on Fixed Assets:**		
			(a) Computer	**-**	-
			(b) Printer	**-**	-
5. To Remittances Receipts:			**5. By Closing Balances:**		
Implementation of REC Framework - MNRE FUND (refund of unspent financial assistance from State Agencies)	**-**	4,42,891.00	**(a) Cash Balance**	**23.75**	23.75
			(b) Bank Balance		
			(i) Savings Account:		
			CORPORATION BANK - SAVINGS-cum-Auto Sweep A/C	**420,34,209.27**	434,04,839.27
			CORPORATION BANK - SAVINGS A/C (PLAN FUND)	**12,000.07**	28,69,530.17
			(ii) Fixed Deposits (Corpus Fund)	**370,10,642.73**	370,10,642.73

FORUM OF REGULATORS
RECEIPTS AND PAYMENTS FOR THE YEAR ENDED 31st MARCH 2019

(in ₹)

RECEIPTS	CURRENT YEAR 2018-19	PREVIOUS YEAR 2017-18	PAYMENTS	CURRENT YEAR 2018-19	PREVIOUS YEAR 2017-18
6. To Other Receipts					
- TDS on Interest recoverable	**5.00**	-			
- Membership Fee Receivable	**9,06,000.00**	-			
- Meeting Advance	**1,26,847.00**	2,52,029.00			
- GST (Input) claimed	**7,61,461.00**	-			
- TDS on GST (net)	**74,579.00**	-			
- Labour (Outsourcing) (FOIR/SAFIR)	**3,36,058.00**	1,40,063.00			
- Bank Charges (for earlier year)	**-**	115.00			
- GST (Output)	**30,24,000.00**	30,24,000.00			
TOTAL	**1149,72,596.92**	1091,41,792.35	TOTAL	**1149,72,596.92**	1091,41,792.35

As per our report on the even date appended hereto

For MBR & CO. LLP
Chartered Accountants
FRN: 021360N/C400025

MUKESH SHARMA
(Partner)
M.NO.511275

Internal Financial Advisor

Secretary

Place: New Delhi
Date: 16th August, 2019
UDIN NO.: 19511275AAAAF8047

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Annexure-III

Report of Sub-Group on Framework Issues of Aggregators/ Qualified Coordinating Agency (QCA)

69th Meeting of Forum of Regulators (FOR)

September 20, 2019, Amritsar, Punjab

Greening the Grid (GTG) Program

A Partnership between USAID/India and Government of India

The engagement of Consultant for support to FOR and its Technical Committee is supported under USAID/GTG-RISE initiative through Deloitte.

Context

- Need for addressing issues related to QCA and Model Contract arrangement was deliberated during **16th Meeting of FOR Technical Committee** meeting at **Gujarat**.
- Subsequently, during **20th Meeting of the FOR Technical Committee**, representatives from Andhra Pradesh State Load Dispatch Centre (APSLDC) and few QCAs made presentations sharing their experience of operationalizing Forecasting and Scheduling for Renewable power projects in various states.
- A need for undertaking a detailed study on the QCA's role, responsibility and accountability was discussed. In addition, the possibility of examining the roles and responsibilities of Aggregators was also discussed.

Constitution of the Sub-Group:

- FOR Technical Committee in its 20th Meeting held on **17th July 2018** at CERC, New Delhi, constituted a Sub-group headed by Shri Preman Dinaraj, Chairperson KSERC to examine the issues faced/likely to be faced by Aggregator/ QCA.
- Other Members of the Sub-Group include Shri SK Soonee, Advisor POSOCO, and Members/representatives from POSOCO, KERC, APERC and FOR Secretariat.

Mandate of the Sub-Group:

1. To examine the feasibility of drafting a Model Tripartite Agreement between the QCA, SLDC and Renewable Energy generators
2. To examine the generic concept of Aggregator in the Power Sector.

Meetings of the Sub-Group on Aggregator/QCA

- **7th September, 2018 (CERC, New Delhi) – Presentations and deliberations covered following:**
  - draft contours of model agreement specifying the proposed roles and responsibilities of the parties
  - Wider role of the Aggregators in the ever emerging, electricity market scenario.
  - Need for demarcation of roles and identify potential areas of disputes between the RE generators and QCA

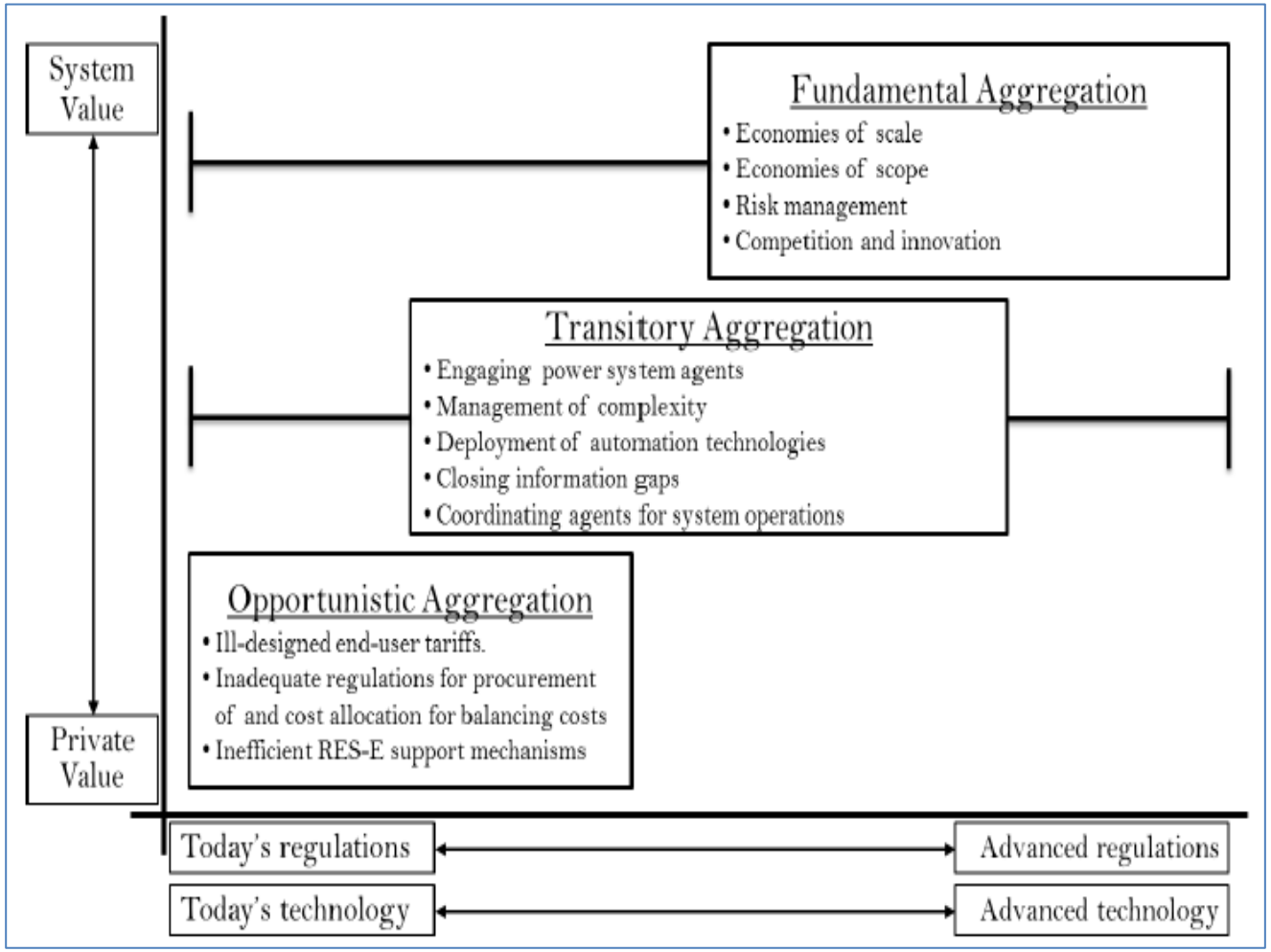
- **21st December, 2018 (CERC, New Delhi) – Presentations by Consultant and deliberations covered following:**
  - International experience of Aggregators highlighting the business models operating in US and EU markets.
  - Experience of QCA in India and the contours of the model agreement.
  - Challenges to be addressed for enabling framework for Aggregators in the Indian context.
  - Regulatory aspects of the twin interactions of QCA-SLDC and QCA-RE Generator.

- **22nd February, 2019 (CERC, New Delhi) - Deliberations on Draft Report**
  - Review of contents/structure of the draft Report.
  - Specific issues on institutional structure, legal status, interactions of QCA-SLDC and QCA-RE Generators, guidelines for model agreement were discussed at length.

- **14 June, 2019 (KSERC, Thiruvananthapuram) – Deliberations and Finalisation of Report**
  - Updation of Draft Report and important aspects of the Aggregator/QCA roles, its regulatory oversight and demarcation of roles.
  - Need for separate sets of Regulations governing activities of "Aggregator", as the market evolve.

- The Draft Report was discussed during the meeting of re-constituted technical committee of Gr-1 on 23rd August, 2019 and Gr-2 on 2 Sept.2019. Based on the deliberations, the draft report of the Sub-Group is accepted by both technical committees and recommended for presentation before the FOR.

Learnings from International Experience and its relevance for India



Source: MIT CEEPR Report on The Value of Aggregators in Electricity Systems

Key learnings from International Experience and relevance for India

- Aggregators operate in Demand Response, Distributed Energy Resources, Imbalance Markets and certain grid services.
- Aggregation business models are mostly market driven and role of regulators is limited;
- To protect consumers and ensure that they are dealing with financially solvent and technically competent aggregator companies, the Commission may consider establishing a certification process.
- Regulators may formulate Model Regulations to cover
  - Minimum standards of service quality
  - Providing Consumers with sufficient information for them to make informed decisions for selection of Aggregator
  - Requirement of transparency in transactions
  - Model contract with standardized clauses on contract term, privacy protection, customer information, technical /process requirements

Role and Responsibilities of QCA

Definition of QCA:

"**Qualified Co-Ordinating Agency" (or "QCA")** means the agency appointed by the Wind or Solar Energy Generators connected to a Pooling Sub-Station, or by an individual Generator connected directly to a Sub-Station, to perform the functions and discharge the obligations specified in the F&S Regulations;

Key Role and Responsibilities of QCA:

- To collect, verify, ascertain and maintain records of **generator-wise static project information** [turbine/inverter].
- To act as '**single point of contact**' between SLDC and RE Generators for implementation of F&S Regulations.
- To **coordinate** with RE Generator(s) for the **forecasts/ schedule(s)**.
- To **communicate aggregate** forecast(s)/schedule(s) to SLDC (day ahead) and **revision of schedules** during intra-day operations in line with the relevant Regulations.
- To **receive instructions from SLDC** for curtailment, real-time operations and cause to implement such SLDC instructions. Curtailment would be done based on RE capacity (installed in MW) basis.
- To facilitate with STU/SLDC for establishment of facilities for communication of meter data/RTU data as required.
- To establish **data/information exchange** protocol and keep records of data collected for each Generator
- To **receive Statements of Energy Account/ Deviation Account** [Weekly/Monthly] and **Deviation Charge Bill** Amount from SLDC.
- To prepare and share Generator-wise '**Statement of De-Pooling Account**' as per approved Regulations.
- To receive/make payments from/to RE Generator(s) and to make/receive payments to the State Deviation RE Pool Account,
- To claim and receive payment for interest/delayed payment charges from RE Generators.

Key Framework Issues for Aggregators/QCA

- Sub-group has studied the **F&S Regulations, Operating Procedures and experiences** in states where F&S framework is already operational.
- Sub-Group has **interacted with key stakeholders** SLDCs/QCAs and verified existing practices, modalities of contracting arrangements
- Upon deliberations, Sub-group deliberated and **identified following key issues** to be addressed:
  - **Issue-1** :Legal status of QCA and regulatory oversight
  - **Issue-2** :Institutional structure of QCA
  - **Issue-3** :QCA – SLDC interactions
  - **Issue-4** :QCA – RE Generator interactions
  - **Issue-5** : Guidelines for Model Agreement between QCA and RE Generator(s)
  - **Issue-6** : Regulating QCA and Aggregators

Summary of Recommendations

Issue 1: Legal Status of QCA and Regulatory Oversight

- Concept of QCA is already recognized by Regulators. **QCA will operate under control of SLDC**, subject to conditions.
- Legal Status for QCA shall be established on the lines of **regulatory precedents for aggregators** such as **'Lead Generator', 'Principal Generator', Professional Member'** in Power Markets and Solar Park Developer.
- **Section 66** of Electricity Act, 2003 (EA,2003) for development of Market provides enabling legal status to QCA along with **Section 28, 29, 32, 33** which recognise RLDC's/SLDC's powers and functions to bring it under control of RLDC/SLDC to facilitate secure and reliable grid operations along with necessary regulatory oversight.
- Further, **Appropriate Commission may recognize 'Aggregators' in general and QCA in particular**, as **Regional Entity/State Entity**, for the purpose of bringing such **entities under control of RLDC/SLDC**, as the case may be, to facilitate secure and reliable grid operations along with framing conditions for **necessary regulatory oversight** over their operations.
- The Appropriate Commission may require to **amend the provision of the State Grid Code to recognize the QCA** as **State Entity**.

Summary of Recommendations

Issue 2: Institutional structure of QCA

- Considering the simplicity for operationalization, the Institutional structure for **QCA as an Agent or Representative of Generators** may be preferred.
- RE Generators at Pooling Sub-Station can engage **Lead/Principal Generator** or **Third-Party Agency** through **'Agreement'** to perform role of QCA.
- **One QCA** to be appointed per Pooling Sub-station **with majority principle** i.e. consent of Generators having **more than 50% of the installed capacity** at Pooling Sub-Stations for acting on behalf of them subject to condition of **minimum threshold capacity limit** to be specified by Appropriate Commission.
- Above such threshold capacity limit, **RE Generators will have choice** either to schedule directly or schedule through QCA.
- Once the QCA will be appointed by following majority principle, **it will act on behalf of all the generators** within Pooling Sub-Station. However, if RE generators opt for separate QCA in line with minimum threshold capacity limit specified by the Commission, they will provide their schedule separately through their QCA within same Pooling Station.
- In case the RE generators **failed to appoint QCA within stipulated time frame SLDC**, shall **nominate the professional agency from among the list of empaneled list** of QCAs which shall be **binding on the RE generators at the PSS, until such time the RE generators appoint their own QCA**. The cost associated with the QCA in such cases will be borne by the RE generators.
- The QCA may **undertake operation of multiple Pooling Sub-Stations**, however deviation accounting and energy accounting of each Pooling Sub-Station **shall be maintained separately**. Aggregation of scheduling and forecasting of multiple Pooling Sub-Stations shall not be allowed.

Summary of Recommendations

Issue 3: QCA-SLDC Interaction

- As QCA is a State Entity, the QCA-SLDC interactions will be regulated.
- Major aspects governing the interaction including eligibility, registration with system operator, commercial and other aspects should be defined as part of regulations.
- The details of terms and conditions of appointment of QCA may form the part of detailed procedure to be prepared by SLDC.
- Every QCA need to register themselves with SLDC as per the Detailed Procedures to be laid down by the SLDC.
- If any RE generators is not opting for QCA and decided to submit its schedule directly to SLDC, all the provisions of the QCA shall be applicable to that generator and it will have to undertake the role of QCA for its own generators.
- Non-compliance of provisions of F&S Regulations or procedures, including continued delay/default in payment of applicable charges/fees/levies shall be liable for proceedings under Section,142 of the EA,2003.

Issue 4: QCA-RE Generator Interaction

- The QCA-RE Generator interactions are not under regulatory purview.
- To facilitate the development of QCA and to bring in uniformity, **Guidelines for Model Agreement** between QCA and RE Generators has been covered under this report.
- It is clarified that the guidelines for Model Agreement between QCA and RE Generators provided under this Report are **only indicative and suggestive**.
- The same may be considered only for guidance purpose to **facilitate evolution of standard contract** framework.
- RE Generators would be **free to deviate or formulate their own commercial agreement** based on terms to be mutually decided between parties and this **Sub-Group in no way suggests that the principles and broad contours** covered under this **Model Agreement guidelines are binding on parties**.

Summary of Recommendations

Issue 5: Guidelines for Model Agreement

General

- **Premise**
  - Parties
  - Project Details
  - Premise for appointment
- **Objective / Purpose of Agreement**
- **Important Definitions**
  - Effective Date
  - Absolute Error
  - Pooling Sub-station
  - Interconnection Point
  - Metering Point
  - De-pooling

Powers, Functions & Role of QCA & RE Generators

- **Part-A**
  - Mobilisation
  - Registration
- **Part-B**
  - Forecasting
  - Scheduling/ revisions
  - Real time coordination
- **Part-C**
  - Meter Data collection
  - Real time Coordination
  - Information exchange
  - Data management
- **Part-D**
  - De-pooling & Commercial settlement
  - Payment modalities
  - Treatment for delay or part payment

Data Sharing, Energy Accounting & Payment

- **Information / Data Sharing**
  - Data Requirement
  - Sharing protocol
  - Data management policy
- **Metering, Energy Accounting, Billing**
  - Formats for Meter/Energy Account statement
  - Deviation Account Statement
  - De-pool statement
- **Payment Modalities**
  - Payment terms for De-pooling charges
  - Delayed payment charges/interest
  - Payment security mechanism

Commercial conditions

- **Commercials**
  - QCA fees and charges
  - Recovery of other costs
  - Payment terms
- **Term and Termination**
  - Period
  - Termination conditions & treatment
- **Events of Default and treatment**
  - By QCA
  - By RE Generator(s)
- **Dispute Resolution**
  - Reconciliation & Arbitration
  - Governing jurisdiction
- **Miscellaneous**
  - Representation & Warranty
  - Change of Law / Taxes
  - Force Majeure
  - Confidentiality
  - Limitation of liability

Summary of Recommendations

Issue 6: Regulating QCA and Aggregators

- At present, role of QCA is limited. However, with **evolution of electricity market, emergence of DR and DER**, role of Aggregators would expand.
- There should be regulatory oversight and **separate Model Regulations** be formulated to govern their operations. Thus, the Sub-Group opined that **there is a need for separate sets of Regulations governing activities of "Aggregator", in general, as the market evolve**.
- Areas where Commission may formulate Regulations for governing the operations of Aggregators and cover them through regulatory oversight are:
  - Minimum **standards for service** quality
  - Providing consumers with **sufficient information to make informed decisions** about choosing an aggregator or retail customers
  - **Requirements of transparency** in transactions
  - To **protect consumers** and to ensure that they are dealing with financially solvent and technically competent aggregator companies, the Commission may consider **establishing a certification process**.
  - **Model contracts** suggesting **standardized clauses on contract terms**, privacy protection for customer information, terminal process, etc. in such contracts by Aggregators with customers.

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- **RISE Contracting Officer Representative: Monali Zeya Hazra**, USAID India, mhazra@usaid.gov
- **Chief of Party: Tushar Sud**, RISE, tsud@deloitte.com

Annexure-IV

Deloitte.

Review of Status of Open Access in Distribution

Forum of Regulators (FOR)
Final Presentation

Overall Approach

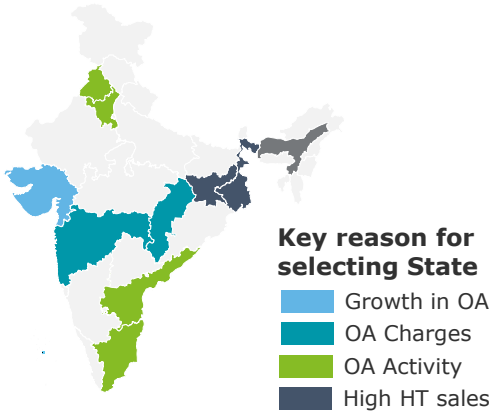
Key modules executed in the assignment

Shortlisting of States

10 States shortlisted based on:

- *Potential of OA*
- *Level of OA activity & Charges*

Final Shortlisted States



Detailed Analysis of Status of Open Access

Comparative analysis of shortlisted States on following areas:

- **Regulatory Review**
- **OA Activity Review**
- **Commercial Review**
- **Tariff & OA Charges Review**

Impact Assessment of Open Access

Impact on Consumers

(Viability of open access)

- *Break even power purchase cost*

Impact on Discoms

(Revenue loss due to OA migration)

- *Per unit revenue loss*
- *Aggregate impact on Discom*

+ Scenario/ Sensitivity Analysis

Measures for Effective OA Implementation

1. **Standardization of Regulations**

   To enable wider adoption of open access

2. **Balancing Interests of Consumers and Discoms**

   Through rationalization of tariff and open access charges

3. **Improvement in operational procedures**

   Improving ease of operating under open access

Comments received on the report

Based on the review of 10 states, key best practices/ suggestions were identified

Comments received from 4 SERCs

1. Punjab State Electricity Regulatory Commission
2. Tamil Nadu Electricity Regulatory Commission
3. Karnataka Electricity Regulatory Commission
4. Odisha Electricity Regulatory Commission

Most of the comments agree with the findings or inform that suggestion is already implemented in their state, regarding following areas -

- Independence of nodal agency
- Reduction in 1MW minimum requirement
- Frequent shifting of consumers
- Uniformity in time period for which OA is allowed
- Roadmap for phasing out discounts for RE power
- Delay in grant of NOC/ OA approvals
- Fixed charges should be determined in a way that enables recovery of fixed costs of the DISCOM
- Lack of information
- Loss of open access power due to unscheduled outages

Key findings discussed in comments

Conditions in Eligibility restricting open access	• OA to a group of consumers does not satisfy definition of consumer • Disallowance of OA allowed only for network constraints, not due to RPO non-compliance
Long Term certainty in Open Access charges	• Capping large variations in OA charges not possible as charges determined as per specified methodologies • OA charges determined annually and not for a block of 3-5 years
Independence of SLDC	• SLDC Independence/ Ring-Fencing can only be done by State Government
Progressive tariff rationalization	• Cross subsidy reduction roadmap to be specified by Government • Methodology for determination of additional surcharge to be set

SERCs may adopt proposed recommendations based on the prevailing conditions in their respective states

Detailed Analysis of Status of Open Access

- Regulatory review
  - *Open access eligibility conditions*
  - *Open access application process*
  - *Open access charges*

Open Access Eligibility Conditions

Few States have conditions with respect feeder and voltage level for availing OA

OA Eligibility

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

OA Period

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

- In JH and GJ, exception for min load requirement of 1MW for captive consumers

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

Open Access Application Process

Key aspects of application process impacting consumers

1 Nodal Agency

	LTOA	MTOA	STOA
CG[1]	STU / Discom	STU / Discom	SLDC/ Discom
AS	STU	STU	SLDC
PB	STU	STU	SLDC
JH	STU	SLDC	SLDC
TN	STU/ SLDC	STU/ SLDC	SLDC
AP	STU		SLDC
WB	STU		SLDC
GJ*	STU/ SLDC	STU/ SLDC	SLDC
HR	STU	STU	STU
MH	Discom	Discom	Discom

- Independence of SLDC/ Nodal Agency is a key concern

2 Documentation Required

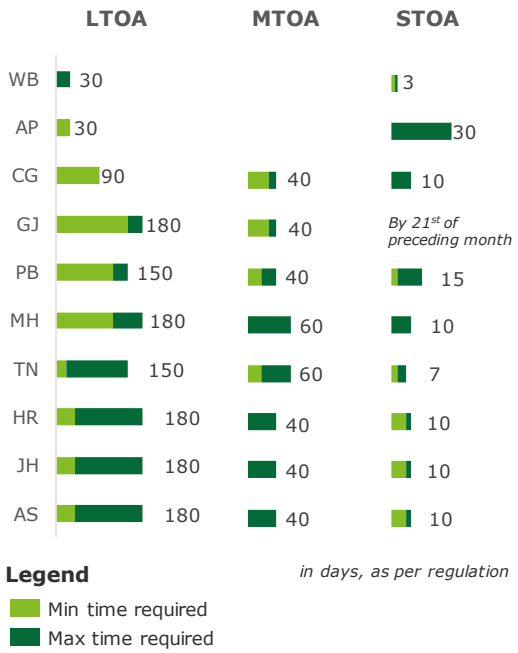
- NOC required along with OA application in CG, JH, TN and GJ
- Conditions for NOC, subjective and non verifiable
  - Existence of necessary infra
  - Availability of surplus capacity

Only few States provide some information on network availability

CG	• Weekly SLDC reports on transmission constraints
GJ	• Report on available OA capacity issued by SLDC
AS	• Monthly reports on Transmission System Availability, by SLDC
MH	• Feeder Outage Data

- PB[2], AP, MH, HR[3] and TN[4] have online NOC/ application process
- In HR and PB, feasibility clearance from STU/ Discom required. In MH a Techno Commercial Report required

3 Time period



- Deemed approval for LTOA at the end of 30 days in AP
- In CG, GJ, PB, TN, HR, JH and AS deemed timelines for NOC approval

4 Cost of application

Application charges based on	LTOA/ MTOA / STOA	Load	Point of Connec-tion	Sourc e of Power
WB	✓			✓
AP	✓			
CG	✓		✓	
GJ		✓	✓	
PB	✓		✓	
MH		✓		
TN	✓	✓	✓	
HR	✓			
JH	✓			
AS	✓			

- Cost of OA application insignificant as compared to overall open access charges

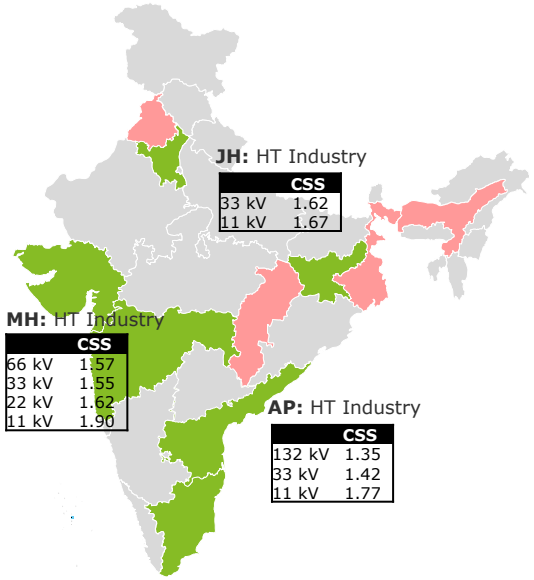
1.based on injection/ drawl point
2.on trial basis for IEX consumers
3.for STOA, online form submission
4.online process for captive consumers

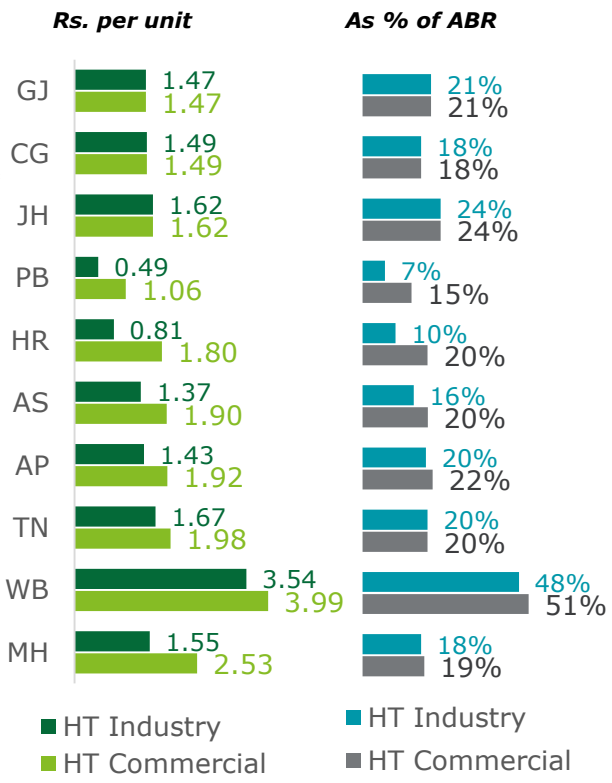
Open Access Charges

Different methodologies and charge structure for CSS and T&D charges

Cross Subsidy Surcharge

FY2018-19





- Most States are following the revised methodology for CSS

Assumptions: 33 kV voltage level; Non-captive, conventional consumer; Average CSS taken for AP (E) and AP (S); CSS for WB calculated as per regulations; ABR as per Tariff Orders or Variable Tariff plus Fixed Tariff converted to per unit charge assuming 60% load factor; Numbers for FY2018-19

Transmission and Wheeling Charges

FY2018-19

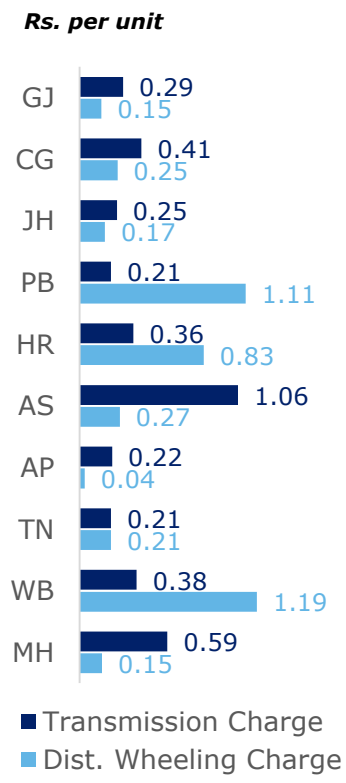
Distribution Wheeling Charge

	LT	MT	ST	Voltage Wise
GJ				✓
CG				
JH				✓
PB	■	■		
HR	■	■		
AS				
AP	■	■	■	✓
TN				
WB				
MH				✓

Transmission Charge

	LT	MT	ST	Voltage Wise
GJ^	■	■	■	
CG	■	■		
JH				
PB	■	■		
HR*				
AS	■	■		
AP	■	■	■	
TN	■	■		
WB	■	■	■	
MH	■	■		

Legend
Per month
Per unit



- Voltage wise and Per month wheeling charges not determined in most States
- In AP, significant difference between 11kV and 33kV wheeling charge

Note:
^Transmission wheeling charge for STOA collective transactions is per unit and for bilateral transactions per MW/Day;
** While regulations provide for per month trans. charge in LTOA/ MTOA, only per unit charge for STOA is determined*

Open Access Charges

Variations in methodology and applicability of other open access charges across States

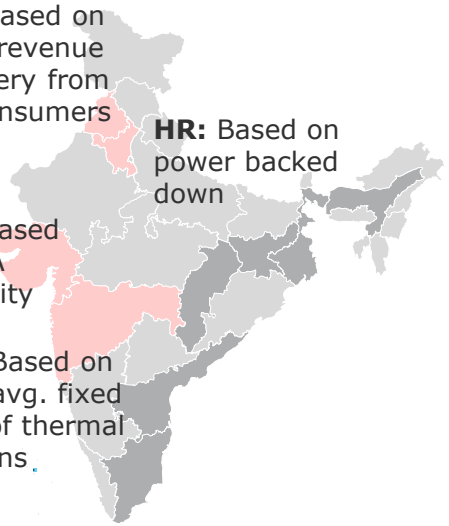
Additional Surcharge

PB: Based on fixed revenue recovery from HT consumers

HR: Based on power backed down

GJ: Based on OA capacity

MH: Based on wtd. avg. fixed cost of thermal stations



FY19	Rs./Kwh
PG	0.86
HR	1.13
GJ	0.57
MH	1.25

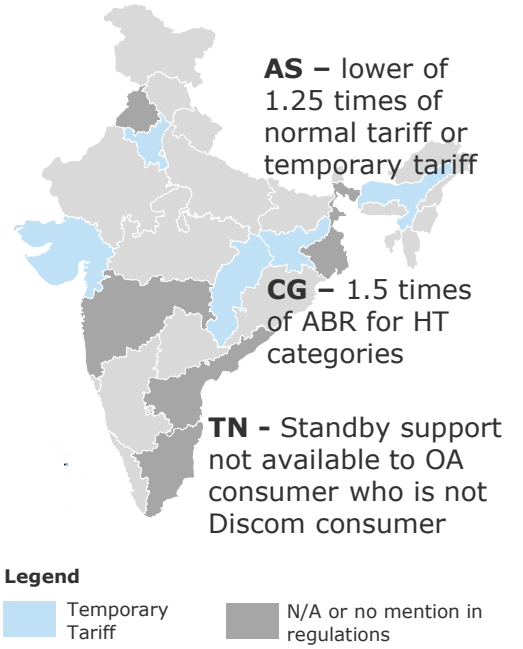
- Methodology suggested by MoP/ FOR is still to be adopted

SLDC Charges

FY19	LT	MT	ST
CG	-	-	Rs. 2,000/ day
AS	Rs. 46.87/ MW/ Day		
PB	Rs. 1,321/ MW/ Month		Rs. 2,000/ day
JH	-		
TN	Scheduling – Rs. 160/ day Rs. 33.74/ MW/ day		Rs. 1.41/ MW/ Hr
AP	Annual Fee – Rs. 4,214/MW/Year Operating – Rs. 2,343/MW/Month		
WB	Rs. 0.05/ Kwh + 0.5% of T&D charge		
GJ	Rs. 300/ MW/ Month		Rs. 2,000/ day
HR	-	-	Rs. 1,000/ day
MH	Rs. 658/ MW/ Month		

- Per MW/ Per Day SLDC charges for STOA consumers could be higher in case of lower load factor

Stand-by charge



AS – lower of 1.25 times of normal tariff or temporary tariff

CG – 1.5 times of ABR for HT categories

TN - Standby support not available to OA consumer who is not Discom consumer

Legend

- Temporary Tariff
- N/A or no mention in regulations

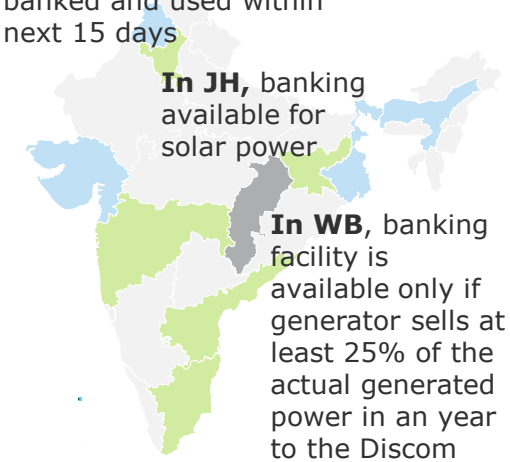
- Requirement for provision on standby charges in open access regulations across states

Banking of Power

In PB, any underdrawl due to unscheduled power cut can be banked and used within next 15 days

In JH, banking available for solar power

In WB, banking facility is available only if generator sells at least 25% of the actual generated power in an year to the Discom



Legend

- Available for third party RE OA consumer
- Available for captive RE consumers
- Banking not available

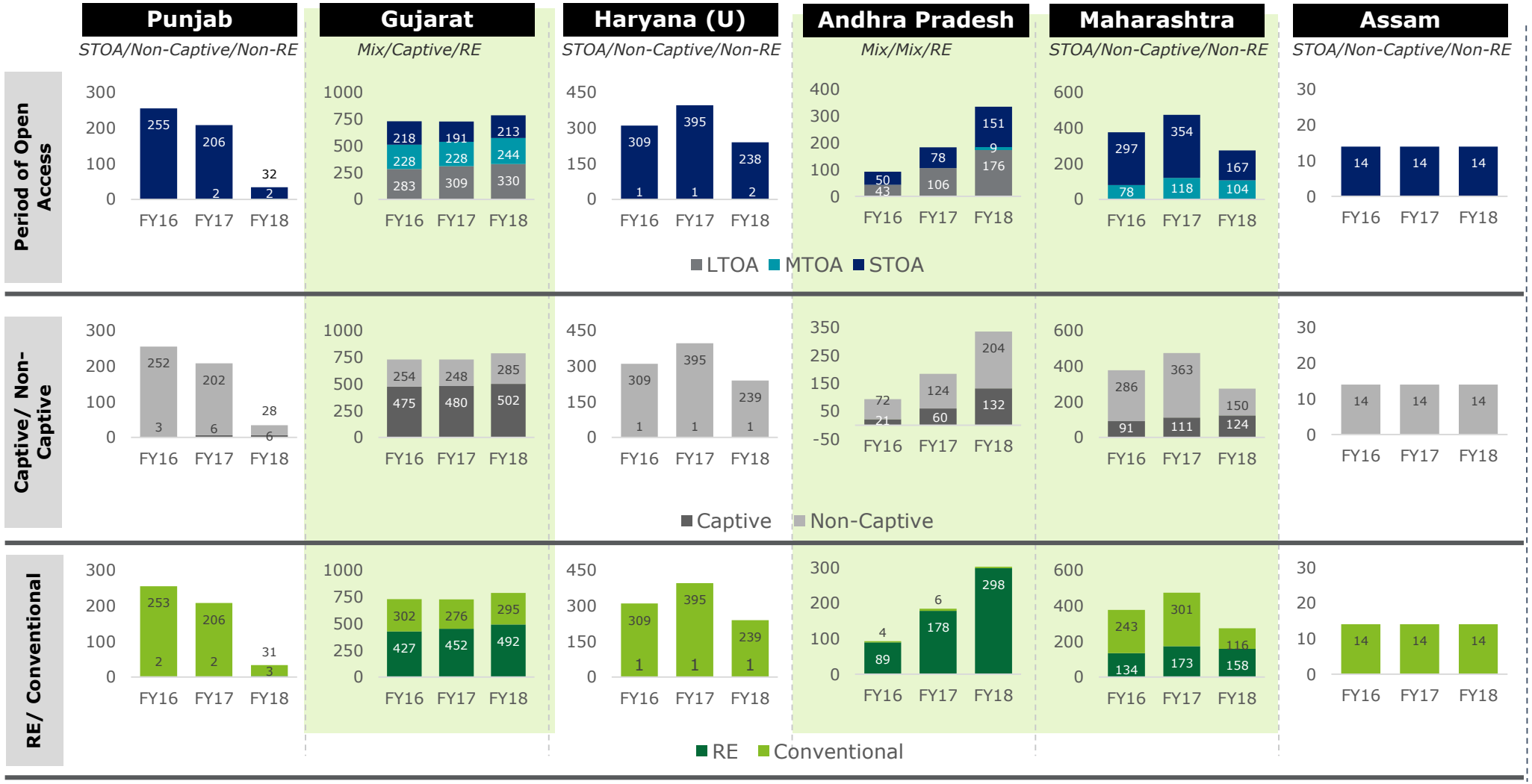
- In HR, GJ, PB and TN Under-drawl of OA due to network outage or unscheduled load shedding, is banked or compensated for

Detailed Analysis of Status of Open Access

- Open Access Activity review
  - *Type of open access activity*
  - *Open access consumers and sales*
  - *Open access applications*

Type of open access activity

OA consumers are predominantly utilizing STOA in most states instead of LTOA/MTOA



Key Observations

- AP & GJ have high proportion of LTOA/ MTOA consumers, while other states have STOA
- AP & GJ are also RE rich states and the proportion of RE power in OA quantum is considerably high as compared to the other states
- Limited captive open access is observed in northern states of Punjab, Haryana and NER state of Assam

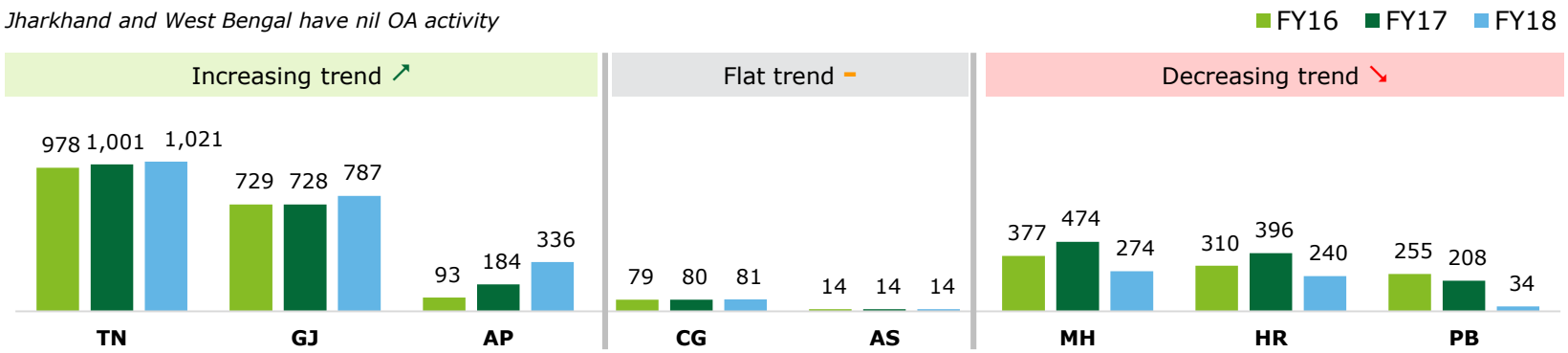
Based on number of consumers

Open access consumers and sales

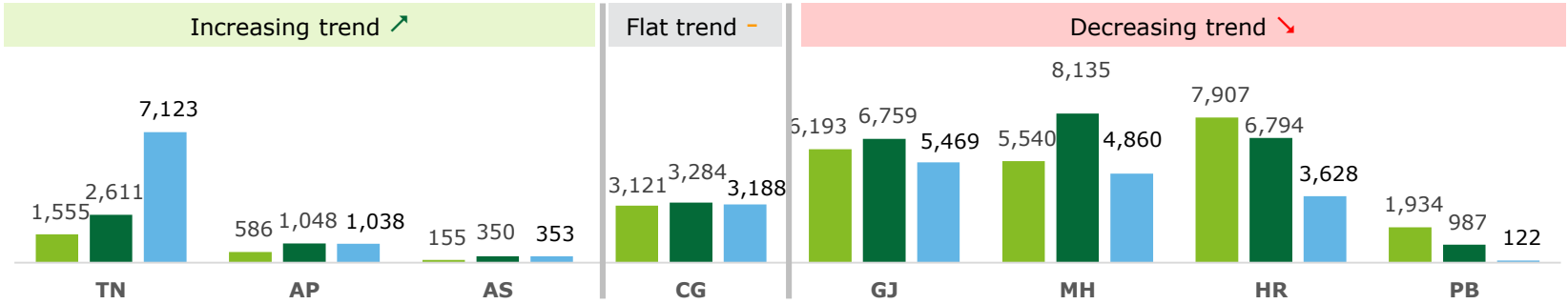
Considerable variations are observed in OA activity in the last three years across States

Open Access Consumers (Numbers)

Jharkhand and West Bengal have nil OA activity



Open Access Sales (Gwh)



Source: CERC Market Monitoring Reports for TN, CG and MH; Data provides by respective SERCs for other states
Units purchased from bilateral sources and power exchange is taken from CERC market monitoring reports

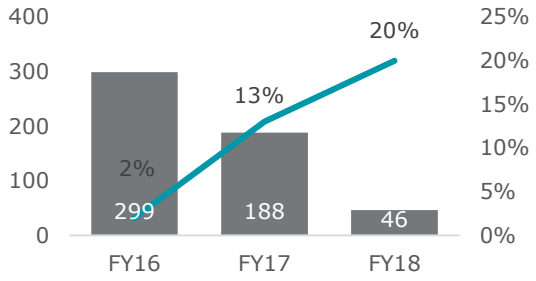
Key Observations

- Increased RE capacity and incentives lead to higher Open Access activity. One of the reason for increased open access sales across Maharashtra, Tamil Nadu and Andhra Pradesh is the increased RE capacity and incentives in form of discounted OA charges
- STOA activity is largely dependent on the prices in power exchanges. Due to increase in short-term prices during FY18, the STOA activity has reduced in states like Haryana and Gujarat where industrial consumers were buying only in case of significant difference in tariff and short-term prices
- Significant increase in OA sales is seen in Tamil Nadu as CSS has reduced significantly post Tariff Policy 2016

Open access applications

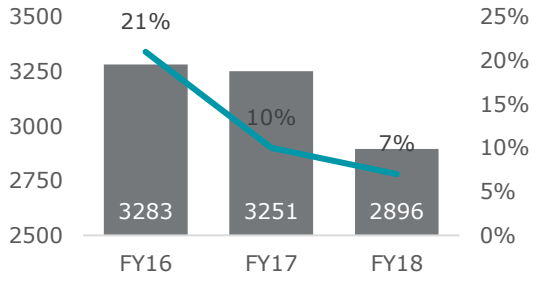
Decreasing trend of applications across states; rising rejection rate except for Gujarat

Punjab



- Non-compliance with RPO is cited as reason for all rejections

Gujarat

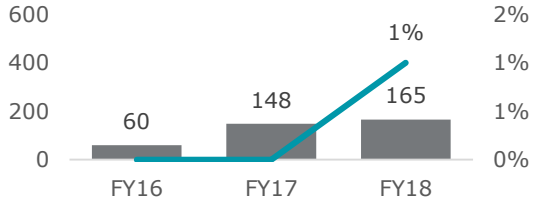


- Upstream network constraint and Denial by Discom are the biggest reasons for rejection
- Reasons given by Discom for denial are ABT meter issues, load above contract demand, undertaking not submitted etc.

Key Observation

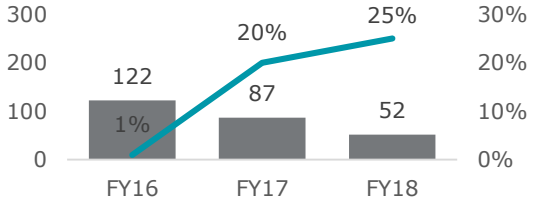
- The type of applications being received in a state are of similar nature i.e. either short term, medium term or long term

Assam



- Very few open access applications rejected

Chhattisgarh



- Majority of the applications with status 'Not Approved' are mentioned to be as per request of consumer

OA Applications

% of OA applications rejected

Detailed Analysis of Status of Open Access

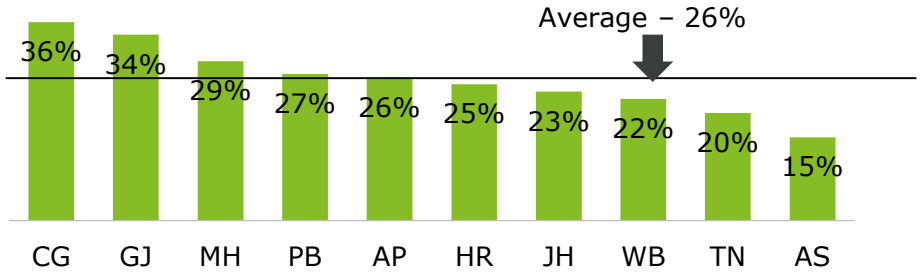
- Commercial review
  - *Share of HT Industrial and HT Commercial sales*
  - *Load Profile of HT consumers*

Share of HT sales and Load Profile of consumers

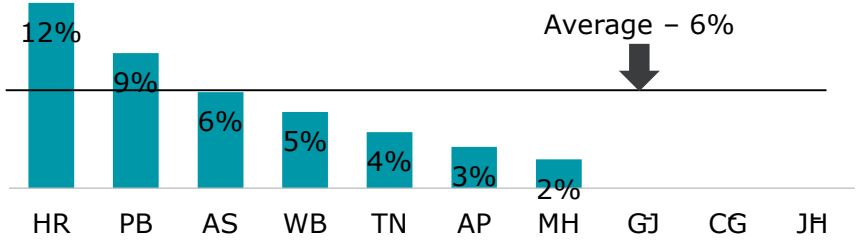
CG, GJ, MH and PB have a larger HT consumer base that may potentially shift to OA

Share of HT sales

HT Industrial Category *FY2018-19*



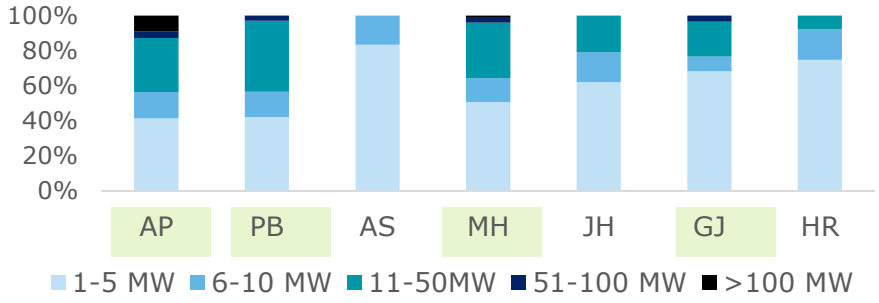
HT Commercial Category *FY2018-19*



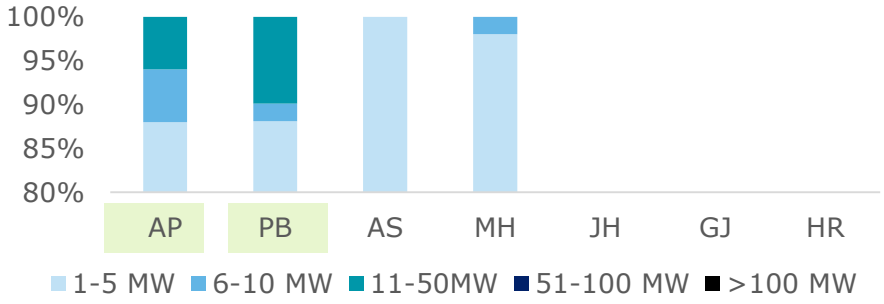
- Potential of OA migration would be higher in States with higher share of HT industrial and commercial sales
- MH, CG and GJ have the highest share and could have high OA migration

Load Profile of HT Consumers in the State

HT Industrial Category *% of sales in each category of load* *FY2018-19*



HT Commercial Category *FY2018-19*



States with consumers present in higher load slabs

- AP, PB, GJ and MH have more than 20% of HT Industrial consumers in the 11-50 MW load block, and thus consumers in the states have higher potential of migrating to open access

Detailed Analysis of Status of Open Access

- Tariff and OA charges review
  - *Review of retail tariffs applicable on HT consumers*
  - *Review of OA charges for various types of consumers*

Review of retail tariffs applicable for HT consumers

Tariff rationalisation is required to reduce negative impact on Discoms

Cost Coverage

ACOS Coverage	HT Ind.	HT Comm.
PB	103%	108%
WB	106%	113%
MH	134%	208%
AS	119%	129%
TN	143%	170%
AP	124%	144%
HR	104%	117%
CG	132%	132%
JH	113%	113%
GJ	120%	120%

FY2018-19

- In case of MH, TN and CG the HT retail tariffs have ACOS coverage beyond 120%, because of which recovery from CSS could be lower due to provisions of NTP which restrict CSS at 20% of ABR

Fixed and Variable Charges

	Fixed ACoS %	HT Ind. (Fixed ABR)	HT Comm. (Fixed ABR)
PB	63%	7%	4%
WB	52%	12%	11%
MH	56%	10%	7%
AS	57%	5%	4%
TN	52%	11%	9%
AP	45%	15%	13%
HR	50%	5%	5%
CG	58%	12%	12%
JH	52%	10%	10%
GJ	48%	16%	16%

FY2018-19

- Fixed costs in total ARR of Discoms is ~52% for all the utilities put together however recovery from fixed tariffs of HT consumers is ~10%
- In PB, WB, MH, AS and AP the fixed charges are growing a faster pace than variable charges

Recovery of fixed cost from fixed charges

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

FY2018-19

- In the states of AS, TN, CG and JH the fixed charges cover less than 50% of the fixed costs of Discom
- Further the Distribution Wheeling charge is 'per unit' in most of the states except PB, AP and HR

Review of Open Access Charges

CSS and Additional Surcharge are the major contributors to OA charges

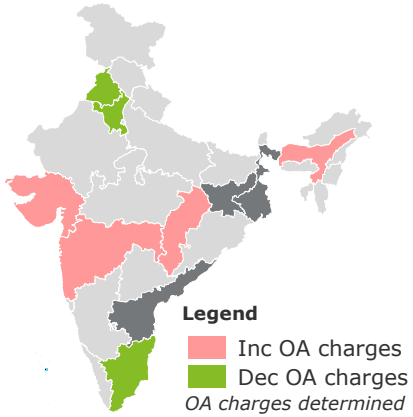
HT Industry Consumer Category (for conventional Power) *FY2018-19*

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

HT Commercial Consumer Category (for conventional Power) *FY2018-19*

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

Trend of Open Access Charges



OA charges determined in JH in FY19 only; Flat trend in AP

- Variation in CSS and/ or Additional Surcharge is the main contributor to change in overall open access charges across States
- Minimal change is observed in Transmission charges and Distribution Wheeling charges across States except for Haryana and Maharashtra

Discounts for RE Power

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

FY2018-19

- Complete waiver in AP and HR (as AP has no Add. Surcharge)
- No Discount in WB and MH

Assumptions: 1 MW load; Non-Captive conventional power; 60% load factor; 33 kV voltage; LTOA (Except in case of Haryana, where only short term OA charges are determined); Numbers for FY2018-19

**Since no separate HT commercial category is present in CG, JH and GJ, same charges of HT Industry category are represented for comparison with other states*

Open Access Charges for different types of consumers

OA charges for captive consumers and RE based OA is lower

Long Term Open Access

General OAC Trend

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

FY2018-19

- Generally OA charges are lower for captive consumers due to non-applicability of CSS and additional surcharge
- Lower OA charges for RE based procurement due to discounts offered by various States

Short Term Open Access

(Higher from LTOA/ MTOA)

HT Ind.	Total Open Access Charges				HT Industrial Tariff	
Rs/ unit	Non Captive, Conventional Power	Captive, Conventional Power	Non Captive, RE* Power	Captive, RE* Power	ABR	Energy Tariff
CG	2.34	0.85	0.75	0.00	7.50	6.63
AS	2.40	1.03	1.90	0.53	7.62	7.20
PB	3.09	1.74	1.36	0.01	6.63	6.16
JH	3.77	0.66	0.67	0.67	6.75	6.05
TN	2.24	0.57	1.39	0.38	7.16	6.35
WB	4.66	1.11	4.82	1.28	7.33	6.44
AP	1.79	0.37	0.02	0.02	7.28	6.18
GJ	2.82	0.78	1.54	0.98	7.06	5.97
HR	3.27	1.33	0.07	0.07	7.29	6.89
MH	3.43	0.63	3.30	0.50	7.91	7.10

FY2018-19

- It is observed that OA charges for STOA is higher than OA charges for LTOA/ MTOA, except in few cases of AS, WB and MH

**for Solar Power*

Impact Assessment of Open Access

- Impact on Consumers
- Impact on Discoms

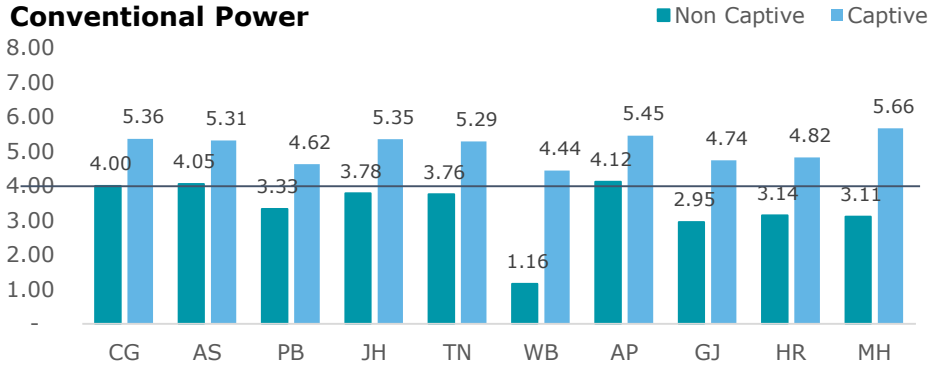
Impact on Consumers

Better viability observed for captive consumers or RE based OA

FY2018-19

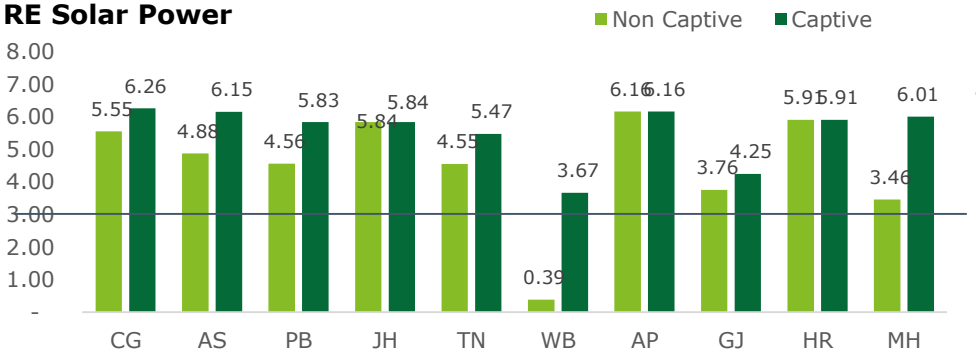
HT Industrial Consumers - Break Even Power Purchase Cost (Rs./Unit)

Conventional Power



- Only viable for captive consumers

RE Solar Power

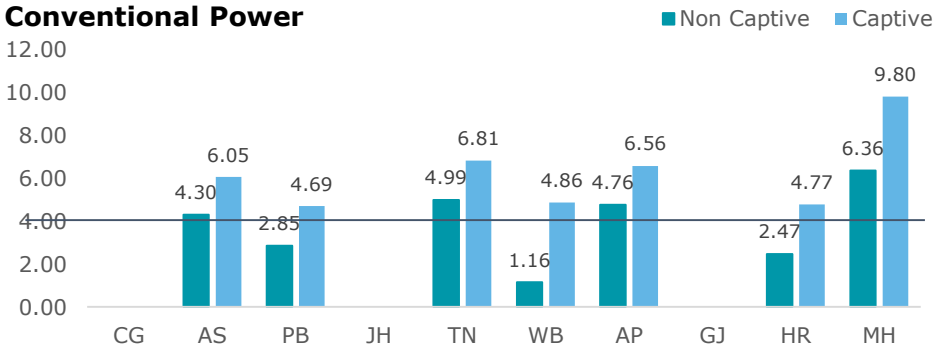


- Viable for all States except WB non-captive (due to high CSS)

FY2018-19

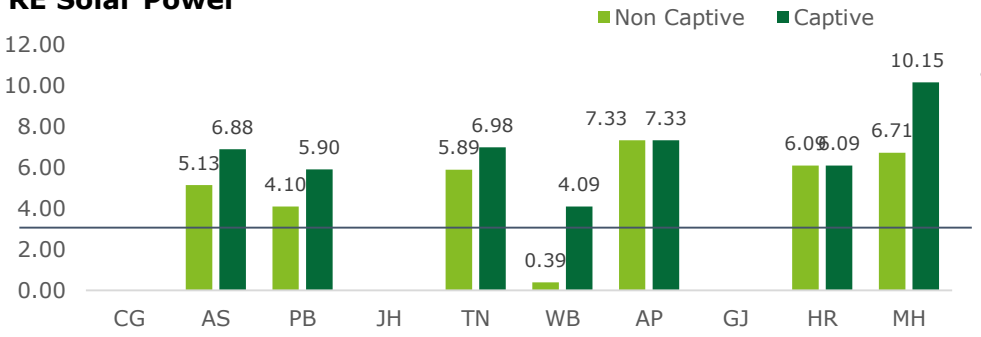
HT Commercial Consumers - Break Even Power Purchase Cost (Rs./Unit)

Conventional Power



- Viable for non-captive consumers in TN, AP and MH

RE Solar Power



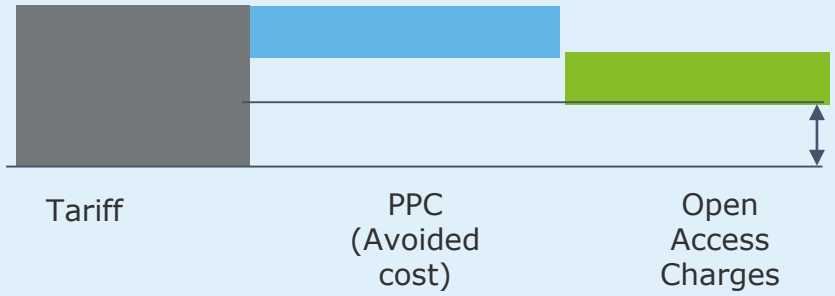
- Viable for all States except WB non-captive (due to high CSS)

Source: SERC Tariff Orders of respective states

Impact on Discoms

Loss of revenue due to migration of consumers to open access

Per Unit Impact on Discom



Gap = Per Unit Impact on Discom

Aggregate Impact on Discom

Sales Migration to Open Access × **Aggregate Impact on Discom** ÷ **Remaining Discom Sales** = **Average Tariff Hike Required to cover the Impact**

Scenario Analysis

Treatment of Contract Demand by Consumer

- Maintained with Discom
- Not maintained with Discom

Treatment of Surplus Power by Discom

- Backed Down
- Re-allocated to other consumers

Type of Open Access consumer

- Thermal, Non-Captive
- Thermal, Captive
- RE, Non-Captive
- RE, Captive

Sensitivity Analysis

Sales migration to Open Access

- 5%
- 10%
- 20%
- As per Load Profile

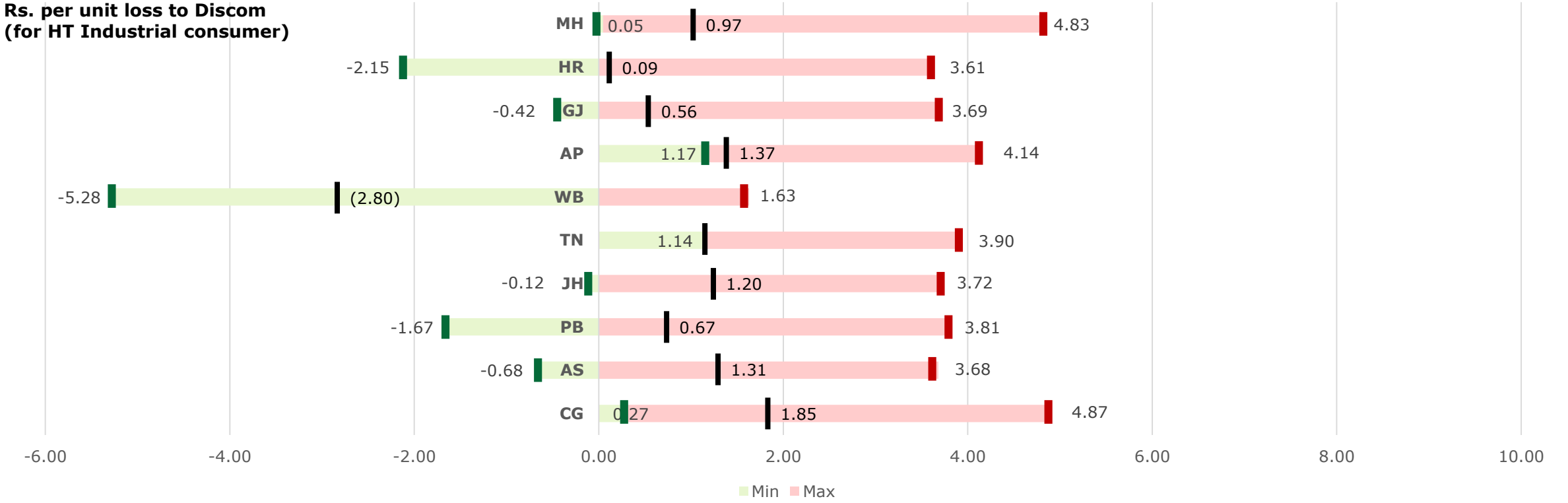
Per unit impact on Discoms

Significant difference in loss if contract demand not maintained with Discom; Discom can reduce loss by re-allocating surplus power

Minimum Impact on Discom
- HT Industrial Consumer, Non-Captive, Conventional Power
- Contract Demand Maintained with Discom
- Surplus Power Re-Allocated by Discom

Base Case
- Non-Captive, Conventional Power
- Contract Demand Maintained with Discom
- Surplus Power Backed Down by Discom

Maximum Impact on Discom
- Captive, RE Power
- Contract Demand Not-Maintained with Discom
- Surplus Power Backed Down by Discom



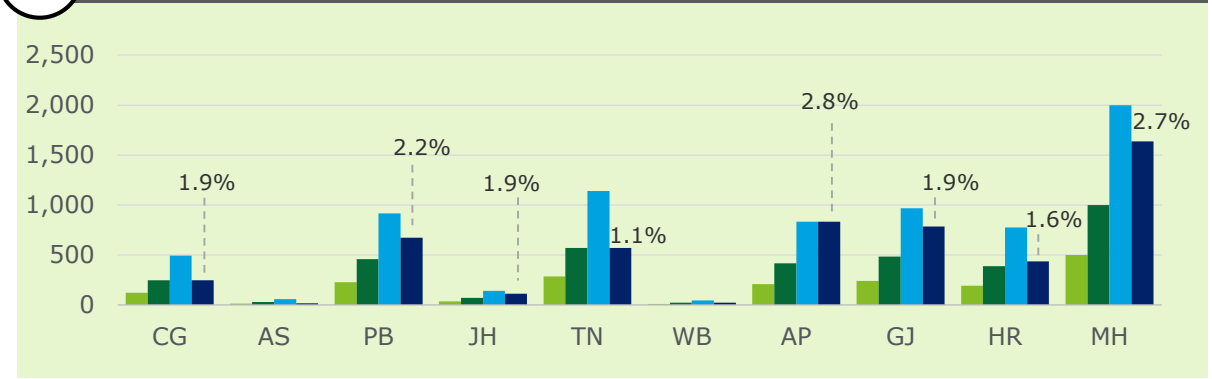
Based on tariffs and open access charges for FY2018-19

Aggregate Impact on Discoms

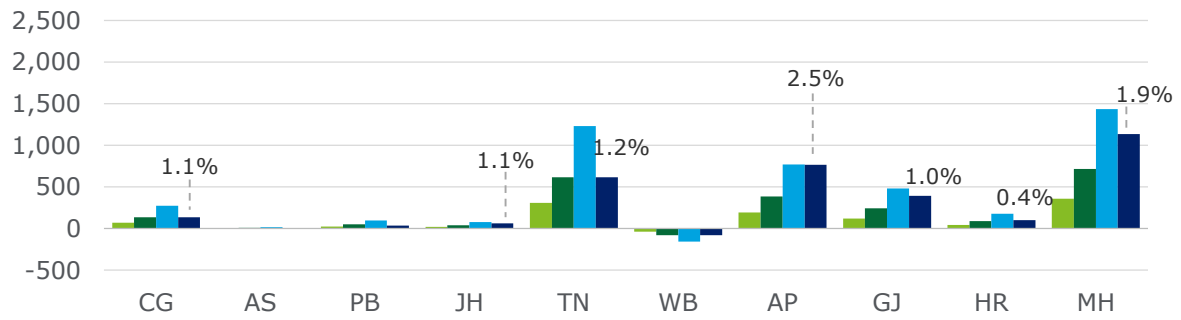
Punjab, Tamil Nadu, Andhra Pradesh, Gujarat and Maharashtra could be adversely impacted in base case

Contract demand maintained

1 Surplus power backed down

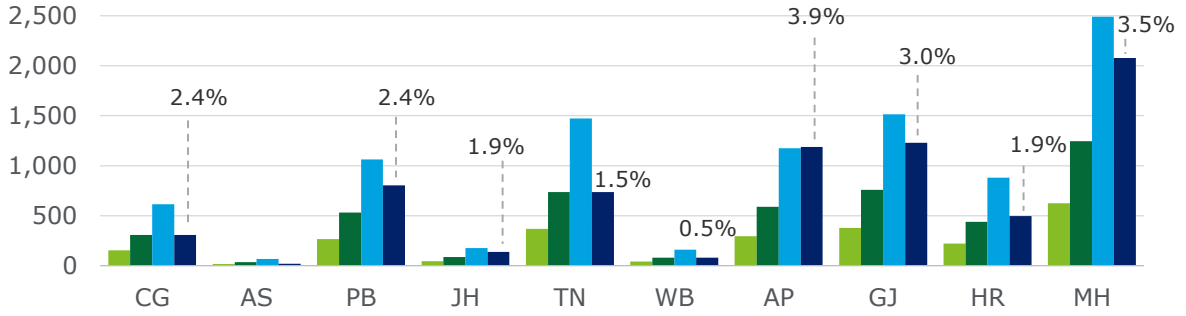


2 Surplus power re-allocated

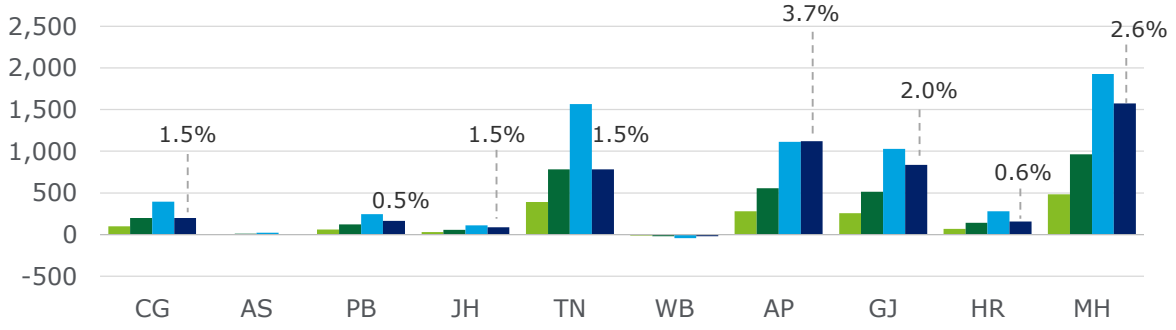


Contract demand not maintained

3 Surplus power backed down



4 Surplus power re-allocated



xx% - Tariff hike required to cover loss of revenue

Based on tariffs and open access charges for FY2018-19

% of sales migration 5% 10% 20% Load Profile

Measures for effective open access implementation

Measures for effective implementation of open access

Applicable on	Broad areas of measures for effective implementation of open access		
	Standardisation of regulations	**Balancing interests of consumers and Discoms**	**Improvement in operational procedures**
Regulator/ Policy	**Measures to enable wider adoption of open access**	**Measures to create a balance between consumer viability and impact on Discoms, through rationalisation of tariff and open access charges**	
SLDC, STU and Discom			**Measures to improve ease of operating under open access**

Measures for effective implementation of open access

Standardisation of regulations

Eligibility Conditions

- Allow OA to group of consumers meeting min requirements together
- Reduction in 1MW minimum requirement
- Removal of voltage/ dedicated feeder restrictions
- Compliances such as RPO, may be considered only in cases where repeated non-compliance is observed

Independence of nodal agency

- Implement recommendations of Pradhan Committee
- SLDC should be the nodal agency for all types of OA

Loss of OA power due to unscheduled outages

- Banking or adjustment in charges during unscheduled power cuts

Frequent shifting of consumers

- Minimum schedule of continuous 8 (eight) hours

Balancing interests of consumers and Discoms

Progressive tariff rationalization

- Simplify applicability of charges on various consumer types
- Reduce the cross subsidies
- Fixed charges in line with fixed costs of Discom

Methodology for determination of OA charges

- Uniformity in methodology for determination of CSS, Add. Surcharge and Standby charges
- Voltage wise wheeling charges
- Wheeling charges with fixed charge structure (except for RE)

Long Term certainty in OA charges

- Capping large variations in OA charges
- Determining OA charges for 3-5 yr (Control period)
- Roadmap for reducing incentives on RE power
- Discounts (for RE Power) limited to certain % of overall charges
- Driving efficiency in operations while determining OA charges (performance standard)

Improvement in operational procedures

Delay in grant of NOC/ OA approvals

- Nodal agency to coordinate getting NOC
- Online portal for OA application/ granting of NOC
- Provision for 'Deemed Approval'

Disputes with respect to OA provisions

- Regulators can issue regular and detailed open access practice directions

Lack of information

- Model document for standardization of information to be shared with the consumers
- Availability of information on the website of nodal agency
- Reduce and standardize the documentation required along with OA application

Deloitte.

Comments and Suggestions

Annexures

Annexures

- Shortlisting of States

Shortlisting of States

For detailed analysis in this report

Methodology	North	South	East	West	N-E
29 States & 7 UTs	1. J&K 2. Himachal 3. U'khand 4. Punjab 5. Haryana 6. Delhi 7. Uttar Pr. 8. Rajasthan 9. Chandigarh	1. Tamil Nadu 2. Kerala 3. Karnataka 4. Andhra 5. Telangana 6. Andaman 7. Laksha-dweep 8. Puducherry	1. West Bengal 2. Bihar 3. Jharkhand 4. Odisha	1. Gujarat 2. Maharashtra 3. Goa 4. Madhya Pr. 5. Chhattisgarh 6. D&D 7. D&NH	1. Assam 2. Arunachal 3. Manipur 4. Nagaland 5. Tripura 6. Mizoram 7. Meghalaya 8. Sikkim
Potential of Open Access • HT industry and HT commercial sales as % of total sales Top 5 States	1. Uttarakhand 2. Punjab 3. Chandigarh 4. Himachal 5. Haryana	1. Puducherry 2. Andhra 3. Telangana 4. Tamil Nadu 5. Kerala	1. Odisha 2. West Bengal 3. Jharkhand 4. Bihar	1. D&NH# 2. Gujarat 3. Goa 4. Chhattisgarh 5. Maharashtra	1. Sikkim 2. Arunachal 3. Nagaland 4. Meghalaya 5. Assam
Level of OA activity & Charges • No. of OA consumers • Inc. in OA consumers • OA charges Top & bottom States	1. Punjab 2. Haryana 3. Himachal 4. Chandigarh	1. Andhra 2. Tamil Nadu 3. Telangana 4. Puducherry	1. Odisha 2. Jharkhand 3. West Bengal 4. Bihar	1. Chhattisgarh 2. Gujarat 3. Goa 4. Maharashtra	1. Assam 2. Nagaland 3. Sikkim 4. Meghalaya
Final 10 States	**1. Punjab** **2. Haryana**	**1. Andhra** **2. Tamil Nadu**	**1. West Bengal** **2. Jharkhand**	**1. Gujarat** **2. Chhattisgarh** **3. Maharashtra**	**1. Assam**

Data

Data

*States highlighted in **green** reflect greater OA activity and lower OA charges as compared with state highlighted in **blue** based on the parameters considered under this stage of shortlisting.*

#Out of D&NH and D&D, only one UT is considered with higher HT industrial and HT commercial sales

Shortlisting of States

Level 1 Shortlisting - Data for HT sales as % of overall sales in the state

Region	State	Year	Industrial Sales (MU)	Commercial Sales (MU)	Total Sales (MU)	%
North	Uttarakhand	FY19	6,063	1,320	11,888	62%
	Punjab	FY19	15,650	5,226	49,561	42%
	Chandigarh	FY19	249	508	1,782	42%
	Himachal Pradesh	FY19	2,946	587	8,638	41%
	Haryana	FY18	9,030	4,388	36,449	37%
	J&K	FY17	1,364	1,124	7,955	31%
	Rajasthan	FY19	13,046	5,273	60,682	30%
	Uttar Pradesh	FY19	12,499	4,250	1,18,163	14%
West	Dadra & Nagar	FY19	5,532	34	5,941	94%
	Daman & Diu	FY19	1,903	65	2,318	85%
	Goa	FY19	1,398	79	3,645	41%
	Chhattisgarh	FY19	7,809	953	21,675	40%
	Gujarat	FY19	24,829	0	73,561	34%
	Maharashtra	FY19	28,648	1,900	99,039	31%
	Madhya Pradesh	FY19	7,468	1,087	52,652	16%
South	Puducherry	FY19	857	73	2,606	36%
	Andhra Pradesh	FY19	14,125	1,458	54,392	29%
	Telangana	FY19	9,838	2,453	49,721	25%
	Tamil Nadu	FY19	17,331	4,240	88,780	24%
	Kerala	FY18	2,010	2,597	21,840	21%
	Andaman	FY19	19	39	279	21%
	Karnataka	FY19	7,345	3,032	50,699	20%
	Lakshadweep	FY19	0	3	68	5%
East	Odisha	FY17	5,412	0	10,855	50%
	West Bengal	FY17	5,593	847	25,324	25%
	Jharkhand	FY19	2,391	119	10,197	25%
	Bihar	FY19	1,784	1,889	22,100	17%
North East	Sikkim	FY19	196	43	472	51%
	Arunachal	FY19	118	58	424	41%
	Nagaland	FY19	96	110	695	30%
	Meghalaya	FY19	142	29	1,016	17%
	Assam	FY19	730	485	7,785	16%
	Tripura	FY15	39	46	784	11%
	Mizoram	FY19	10	8	388	5%
	Manipur	FY19	9	6	560	3%

Source: Respective tariff orders of SERCs

Shortlisting of States

Level 2 Shortlisting - Data for open access activity and charges

Region	State	Growth in OA consumer[1]	Rank	OA consumers (PXIL + IEX) [2]	Rank	OA Landed Cost (Rs./Kwh) [3]	Rank	Average Rank
North	Haryana	25%	2	487	1	8.30	4	2.3
	Punjab	3%	4	485[4]	1	6.45	2	2.3
	Uttarakhand	8%	3	124	3	5.73	1	2.3
	Himachal Pradesh	55%	1	24	4	8.48	5	3.3
	Chandigarh	0%	5	0	5	7.11	3	4.3
West	Chhattisgarh	2%	3	80	2	6.49	1	2.0
	Gujarat	11%	2	627	1	6.98	4	2.3
	Maharashtra[5]	21%	1	54	3	7.88	5	3.0
	Dadra & Nagar	0%	5	22	4	6.49	1	3.3
	Goa	0%	5	0	5	6.85	3	4.3
South	Andhra Pradesh	3%	2	728	2	5.99	1	1.7
	Tamil Nadu[6]	2%	3	1,001	1	6.58	3	2.3
	Kerala	26%	1	24	4	6.39	2	2.3
	Telangana	-19%	5	27	3	7.25	4	4.0
	Puducherry	0%	4	0	5	7.67	5	4.7
East	Odisha	41%	1	58	1	6.10	1	1.0
	Jharkhand	0%	2	0	2	6.50	2	2.0
	Bihar	0%	2	0	2	8.17	3	2.3
	West Bengal	-100%	3	0	2	9.50	4	3.0
North East	Assam	0%	2	14	1	6.93	4	2.7
	Nagaland	0%	2	0	4	4.00	1	2.3
	Arunachal	-100%	4	0	4	4.19	2	3.3
	Meghalaya	-100%	4	0	4	6.61	3	3.7
	Sikkim	-100%	4	0	4	8.53	5	4.3

[1] From FY2014-15 to FY2016-17, as per CERC Market Monitoring Reports
[2] FY2016-17, as per CERC Market Monitoring Reports
[3] For industrial consumers, assuming Rs. 4.00/ unit as power purchase cost and converting monthly OA charges to per unit, with unity load factor
[4] Same rank is given to Haryana and Punjab, due to similar number of OA consumers
[5] Maharashtra is taken instead of Dadra & Nagar Haveli as Maharashtra has significantly higher OA activity
[6] Between Kerala and Tamil Nadu, Tamil Nadu is selected as it has significantly higher open access activity

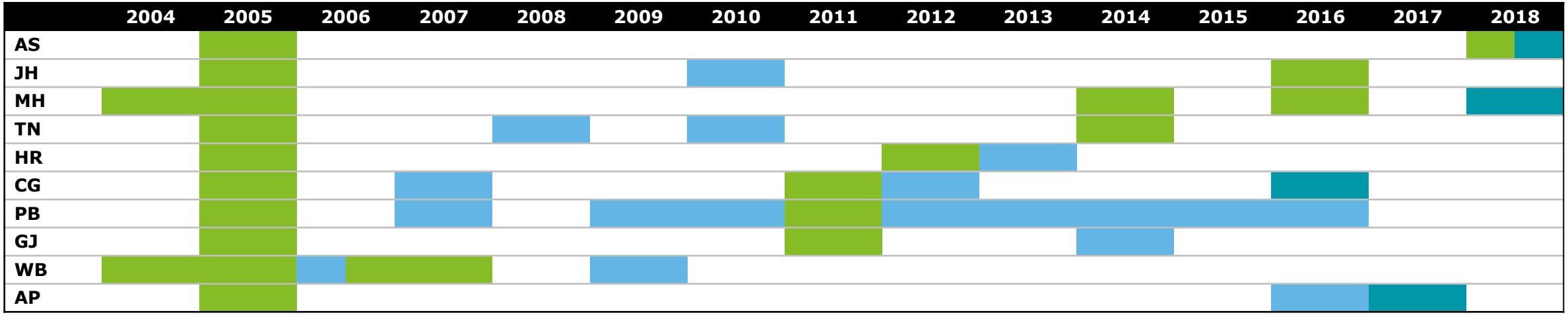
Annexures

- Regulatory Review

Open Access Regulations

As per the Provisions of the Act, all the SERCs came out with the Open Access Regulations early in 2004/05 with subsequent amendments from time to time

Timeline of regulations



Legend

- OA Regulation
- Amendment
- DSM Regulation

Key Observations

- **Chhattisgarh (2012)** - amended OA regulations to allow only bulk consumers connected on dedicated feeders to get OA
- **Haryana (2013)** - amended OA regulations to lower min load requirement for getting OA, from 1 MW to 0.5 MW
- **Punjab (2012)** – single distribution wheeling charges applied on all consumers irrespective of voltage level
- **Punjab (2014)** – CSS not applicable to the extent of regulatory measures imposed due to shortage of power

Open Access Regulations and Amendments.....(1/3)

Punjab

Year	Regulation/ Amendment	Key Amendment
2005	OA Regulation	-
2007	Amendment	• LTOA consumers to pay 1/3rd T&D wheeling charges and STOA 1/5th • OA consumers to bear 30% of agg. T&D losses above 66 kV and 50% of agg. T&D below 66 kV • 98% discount on T&D wheeling charges for RE power
2009	Amendment	• Congestion charges applied on OA consumers for overdrawl • In case of unscheduled outage, OA power banked for 3 months • Settlement of power demand in case of embedded consumers defined • Phasing of OA delayed. OA less than 1 MW to be allowed from 2010 • Stand-by power allowed for 6 weeks in a year at highest HT tariff
2010	Amendment	• SLDC may cancel any OA transaction to prevent network constraint
2011	OA Regulation	-
2012	Amendment	• Same wheeling charges applicable on all OA consumers above 11 kV, in addition to transmission charges
2012	Amendment	• Discount for RE power limited to wheeling of power within the state
2013	Amendment	• Defined Unauthorised Open Access Transaction
2014	Amendment	• CSS not leviable to the extent of regulatory measures imposed due to shortage of power
2015	Amendment	• Drawl of OA consumer from Discom during any time block shall not exceed admissible drawl wherein OA schedule is maximum
2016	Amendment	• No levy of Trans. and Dist. wheeling charges for RE power, for 10 yr from COD, for plants commissioned btw Jul 15 to Mar 17
2016	Amendment	• In case OA consumer fails to meet RPO obligation, OA approval may be withheld until RPO compliance is met

Chhattisgarh

Year	Regulation/ Amendment	Key Amendment
2005	OA Regulation	-
2011	OA Regulation	-
2012	Amendment	• Bulk consumers who are not connected through dedicated feeders disallowed open access • Requirement added to submit NOC along with open access application • Distribution wheeling charge for inter-state LTOA/ MTOA, to be paid on the basis of energy approved considering 100% load factor on the allotted capacity

Jharkhand

Year	Regulation/ Amendment	Key Amendment
2005	OA Regulation	-
2010	Amendment	• Open Access customer defined as Open Access Consumer (OAC) or Open Access Generator (OAG) including captive plants
2016	OA Regulation	• Eligibility to avail Open Access: 1 MW and above (not applicable in case of captive generating plants that is availing Open Access for its own use). • Requirement of minimum scheduling of eight hours for STOA consumers in OA regulations

Open Access Regulations and Amendments.....(2/3)

Andhra Pradesh

Year	Regulation/ Amendment	Key Amendment
2005	OA Regulation	-
2016	Amendment	• Deemed approval of OA application after 30 days • Solar and Wind power exempted from trans. and dist. Wheeling charges, CSS and Additional Surcharge • Dist. Losses exempted for solar power injecting <= 33 kV voltage

West Bengal

Year	Regulation/ Amendment	Key Amendment
2004	OA Regulation	• Defined phasing of open access
2005	OA Regulation	• Defined terms and conditions of availing open access
2006	Amendment	• Defined schedule of charges, fees & formats for open access
2006	OA Regulation	• Re-defined phasing of open access
2007	OA Regulation	• -
2009	Amendment	• Introduced reactive energy charge for open access

Gujarat

Year	Regulation/ Amendment	Key Amendment
2005	OA Regulation	-
2011	OA Regulation	• Limitation of 1 MW not be applicable for Captive OA consumers
2014	Amendment	• STOA period reduced from less than 6 months to less than 1 month • Methodology for transmission charges of Short Term OA re-defined (defined in Rs./MW/Day)

Maharashtra

Year	Regulation/ Amendment	Key Amendment
2004	OA Regulation	-
2005	OA Regulation	• Defined process for open access application • Apart from CSS and Additional Surcharge OA charges defined earlier in 2004 regulations, transmission charges and wheeling charges added as OA charges • Provision added for security deposit
2014	OA Regulation	• Provision to avail OA from multiple generating companies only to the extent to meet their RPO • Limitation of 1MW contract demand not applicable to avail OA from RE generating power • Section added for grant of connectivity to generating plants • Categories of open access consumers defined based on the period of open access sought and location of injection/ drawl point
2016	OA Regulation	• Contract demand for 1MW and above to avail OA restored for all consumers • Provision to avail OA from multiple generating station removed • Provision of banking for RE power introduced

Open Access Regulations and Amendments.....(3/3)

Tamil Nadu

Year	Regulation/ Amendment	Key Amendment
2005	OA Regulation	-
2008	Amendment	• Changes in billing and payment for open access charges to consumers
2008	Amendment	• Provision of Standby power; Standby power to be charged at temporary tariff till ABT regime is implemented • Revision in application fee for open access
2010	Amendment	• Phasing of open access re-determined; OA allowed to all HT consumers irrespective of load in fourth and final phase
2014	OA Regulation	-

Haryana

Year	Regulation/ Amendment	Key Amendment
2005	OA Regulation	-
2012	OA Regulation	• Introduced 'Medium Term' category of open access • Introduction of Stand-By charges, equivalent to temporary tariff • Introduction of 'Limited Short Term Open Access' and 'Embedded Open Access' consumers
2013	Amendment	• Minimum load for getting OA reduced from 1 MW to 0.5 MW • Change in methodology for Transmission charges • Settlement of energy in case of under/over drawl

Assam

Year	Regulation/ Amendment	Key Amendment
2005	OA Regulation	• Availability of OA to consumers with connected load of 3MW and above. Below that OA to be provided only under conditions when benefits to consumers outweigh the costs • Categorization of OA consumers into Long term and short term
2018	OA Regulation	• OA permissible to all consumers above 1MW only • Categorization of OA into long term, medium term and short term • Provisions for day ahead open access introduced

Documents required along with open access applications

	NOC	PPA	Declaration/ Undertaking	Proof of Grid Connectivity	Others documents
CG	✓	✓	✓	✓	• Registration certificate of SLDC, CSPTCL • No Dues Certificate
AS			✓		• Certificate from STU/ Discom that special energy meters are installed
PB		✓	✓	✓	• Copy of Continuous process industry letter • Board Resolution/ Authorization letter • Other self-attested documents and undertakings (listed in annexure)
JH	✓		✓		-
TN	✓	✓		✓	-
AP		✓ (LTOA)	✓		• UI undertaking (STOA) • RPO undertaking (STOA) • If Captive usage, a Chartered Accountant Certificate required, exhibiting capital structure and compliance with regard to requirements under Electricity Act 2003
WB					-
GJ	✓	✓	✓	✓	-
HR			✓		• Copy of Peak Load Exemption and/ or Continuous process industry letter • Feasibility clearance from Transco/ Discom for customer who is not consumer of Discom • Other self-attested documents and undertakings (listed in annexure)
MH	Only if injection point is outside MH	✓	✓	✓	• Copy of MoU • Consent from Seller/ Buyer • Techno Commercial Report issued by the concerned O&M, Circle Office • SEM Commissioning Certificate • No Dues Certificate from Discom • Documents related to RPO compliance

Open Access Charges

Additional Surcharge

Punjab –

- Ratio of Fixed PPC with Fixed Cost of Discom, is multiplied with per unit Fixed Revenue recovery from HT Consumers
- Fixed cost of Discom is calculated as 50% of ARR minus variable PPC and fuel cost

Gujarat

- Fixed charges of stranded capacity is estimated by multiplying average OA capacity by fixed charges of power per MW. In turn fixed charges of power per MW is estimated by dividing total fixed charges for power by average power availability in MW
- Demand charges recoverable from OA sales is reduced from the calculated fixed charges of stranded capacity
- Remaining fixed charges of stranded capacity is divided by scheduled OA energy, to calculate per unit Add. Surcharge

Haryana

- Lower of, Power Quantum backed down or OA sales, is multiplied with average fixed power purchase cost to estimate total stranded cost. Total stranded cost is then divided by total OA sales to estimate Add. Surcharge

Maharashtra

- Per Unit Wtd. Avg. Fixed Cost of thermal generating stations is taken as Add. Surcharge on OA sales

Compliance with FOR Recommendations

Most states are still to comply with the recommendations made by FOR regarding open access provisions and charges

Issue	Recommendations by FOR	HR	PB	GJ	MH	CG	JH	WB	AS	AP	TN
Frequent shifting of OA consumers	• OA consumers should schedule minimum 8 hours of continuous supply through OA	-	-	-	-	-	For embedded users taking STOA	-	-	-	-
Cross Subsidy Surcharge (CSS)	• Determination of CSS based on category wise CoS or VCoS is not suitable, as CoS of industrial consumers is lower than ACOS • SERCs must be guided by the philosophy of the Tariff Policy 2016, which uses ACoS	✓	-	✓	✓	-	✓	-	-	✓	✓
Additional Surcharge	• The working group endorsed the proposal of MoP's consultation paper to have three components of Additional Surcharge	-	-	-	-	-	-	-	-	-	-
Tariff Design and Rationalization	• Tariff should reflect actual breakup of fixed and variable charges. SERCs may revise fixed charges gradually	-	-	-	-	-	-	-	-	-	-
Stand By Charges	• Only 125% of variable charges for each category should be applicable as stand-by surcharge • Fixed charges are already recovered in demand charges and is in line with Tariff policy 2016	-	-	-	-	-	-	-	125% of normal tariff	-	-

Annexures

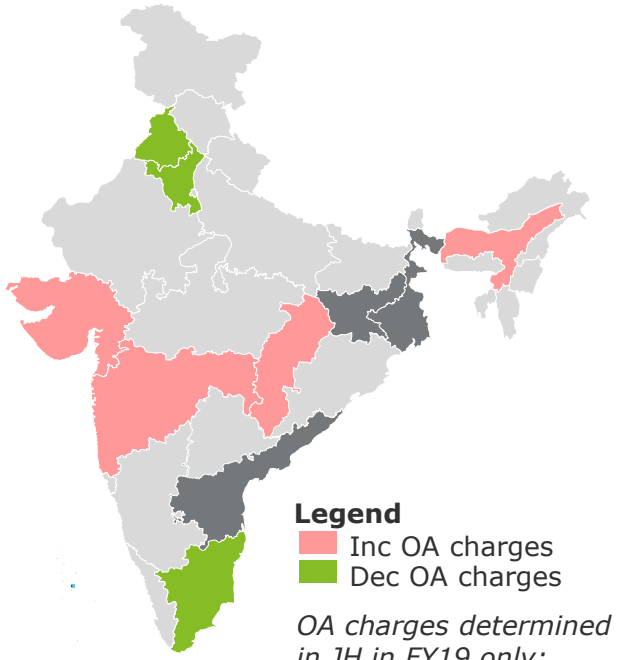
- Tariff and Open Access Charges Review

Recovery of fixed cost from fixed charges

HT Commercial consumer category

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

Trend of Open Access Charges (1/4)



OA charges determined in JH in FY19 only; Flat trend in AP

Key reasons for change in Open Access charges

- **AS:** CSS has increased by 2.5x in last 3 yr from Rs. 0.54/ Kwh in FY17 to Rs. 1.37/ Kwh in FY19 for HT Industrial consumers, and from Rs. 0.54/ Kwh in FY17 to Rs. 1.90/ Kwh in FY19 for HT commercial consumers
- **CG**: increase in CSS from Rs. 1.21/ kwh in FY17 to Rs. 1.41/ kwh in FY19 has contributed to overall increase in OA charges
- **MH:** CSS has slightly decrease from Rs. 1.64/kwh in FY17 to Rs. 1.55/kwh in FY19 for HT Industrial consumers (no change for CSS of HT Commercial consumers). However increase in Add. Surcharge and T&D charges have led to a marginal increase in overall OA charges
- **GJ:** increase in trans. charge and Add. Surcharge, have led to a marginal increase in overall OA charges
- **TN**: CSS reduced from Rs. 3.44/kwh in FY17 to Rs. 1.67/kwh in FY19 for HT Industrial consumers after adoption of NTP 2016 formula
- **HR:** dec in CSS from Rs. 1.57/kwh in FY17 to Rs. 0.81/kwh in FY19 for HT Industrial consumers has contributed for overall decrease in OA charges. The CSS has reduced for HT Industrial consumers due to dec in ABR considered for CSS calculation. Marginal increase can be observed for CSS of HT Commercial consumers
- **PB:** dec in CSS and Add. Surcharge have contributed to overall decrease in OA charges. CSS has decrease from Rs. 0.70/kwh in FY17 to Rs. 0.49/kwh in FY19 for HT Industrial consumers and from Rs. 1.14/kwh in FY17 to Rs. 1.06/kwh in FY19 for HT Commercial consumers. Additional Surcharge has decreased from Rs. 1.25/kwh in FY17 to Rs. 0.86/kwh in FY19

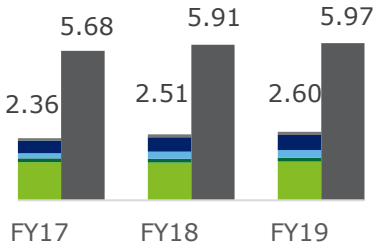
Trend of Open Access Charges (2/4)

CSS Trans. Wheeling Dist. Wheeling SLDC Charge Add. Surcharge Others Energy Tariff

Gujarat

OAC – ↗

HT Industry

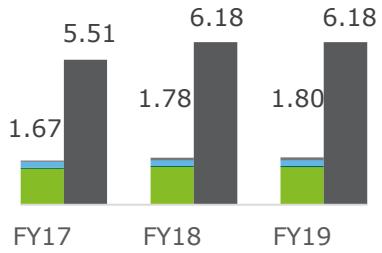


- CSS and Additional Surcharge form major component of OA charges
- Nominal increase in overall OA charges due to transmission wheeling and additional surcharge

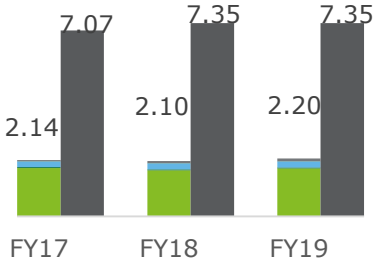
Andhra Pradesh

OAC – ↗

HT Industry



HT Commercial

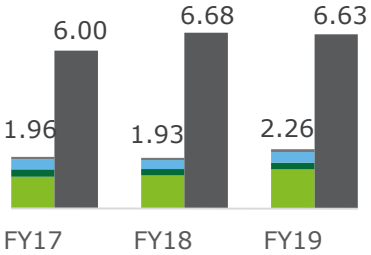


- Total OA charges are increasing each year with the tariff increases
- CSS form major component of OA charges
- Significant difference in 33 and 11kv wheeling charges

Chhattisgarh

OAC – ↗

HT Industry



- CSS Formula (ABR- ACoS) is different from Tariff Policy
- CSS increased by 23 paisa in FY19 resulting in increase in overall OA charges

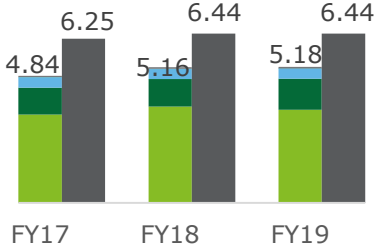
Trend of Open Access Charges (3/4)

CSS Trans. Wheeling Dist. Wheeling SLDC Charge Add. Surcharge Others Energy Tariff

West Bengal

OAC – ↗

HT Industry



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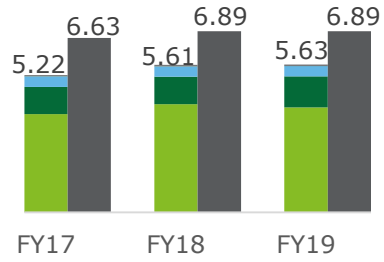
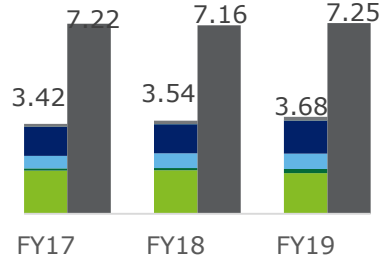


- One of the highest OA charges across states covered
- CSS is calculated based on modified formula (ABR-ACoS)
- High wheeling charge without provision for voltage wise losses

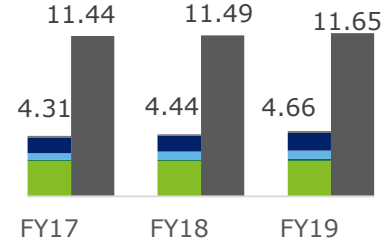
Maharashtra

OAC – ↗

HT Industry



HT Commercial

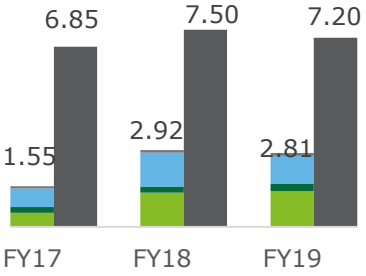


- Significant Additional Surcharge (more than Rs.1 per unit) imposed on OA consumers
- Highest in terms of overall open access charges
- Effect of small reduction in CSS has been covered through higher Additional Surcharge and Wheeling charges

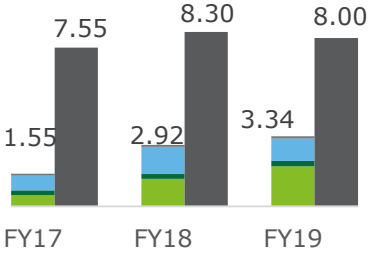
Assam

OAC – ↗

HT Industry



HT Commercial



- Substantial increase in OA charges during FY18 primarily on account of CSS and wheeling charge
- CSS has more than doubled in the last three years. Formula (ABR-ACoS) is not according to the Tariff Policy

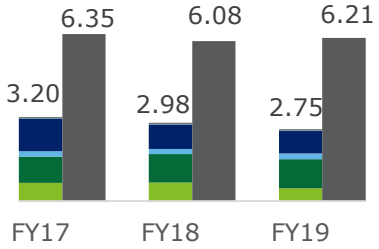
Trend of Open Access Charges (4/4)

CSS Trans. Wheeling Dist. Wheeling SLDC Charge Add. Surcharge Others Energy Tariff

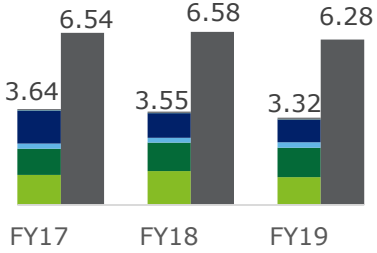
Punjab

OAC – ↘

HT Industry



HT Commercial

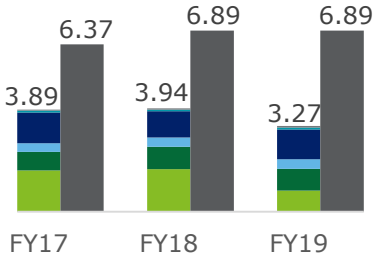


- The overall OA charges have reduced in Punjab
- While CSS is a small element, Additional surcharge and high wheeling charges contribute significantly to the OA charges

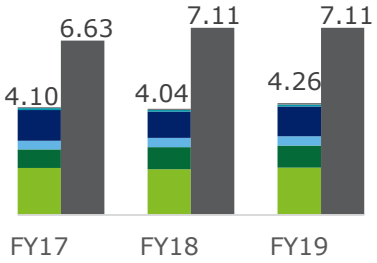
Haryana

OAC – ↘

HT Industry



HT Commercial



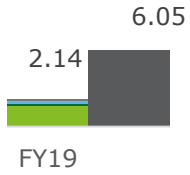
Additional surcharge contributes to the high OA charges in the state

CSS for HT industrial has decreased in last 3 years from Rs. 1.57 to Rs. 0.81 resulting in decline in OA charges

Jharkhand

-

HT Industry

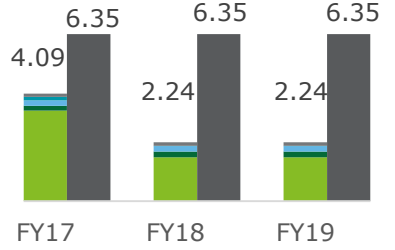


- OA charges determined for first time in FY19 Order
- CSS of Rs. 1.75 per unit forms major OA charge

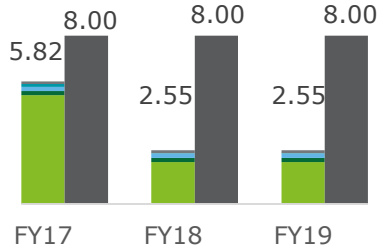
Tamil Nadu

OAC – ↘

HT Industry



HT Commercial



- CSS was significantly reduced in FY18 based on the revised formula of Tariff Policy 2016
- Due to reduction in the high OA charges, open access activity has increased significantly

Discount on OA charges for RE power

In most of the states, discount is given on OA charges for RE procurement

Discounts on OA charges for RE power

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

Key Observations

- With a view to promote renewable energy, majority States are offering discount on OA charges for procurement of RE power. However, no discounts is offered in MH and WB
- In case of OA consumer procuring RE power under HT-Industrial category, States like AP, Haryana and Jharkhand offer lowest OA charges
- The discounts offered in States differ in several ways. Punjab does not offer discount for RE power on CSS as compared with States like Andhra Pradesh, Gujarat and Haryana which provide 100% discount on CSS
- Viability of procurement from RE sources is therefore different as compared to conventional sources

HT Industry (for RE Power)

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

^In Assam, Transmission Charge for Short Term Open Access is taken, as transmission charges for LTOA/ MTOA when converted to per unit charge comes out to be more than Rs. 3 per unit

 # in Maharashtra, for renewable energy, per unit transmission charges determined for STOA are applicable

HT Commercial (for RE Power)

	CSS	Dist. Wheel.	Trans. Wheel	Add. Sur.	SLDC charge	Total
CG*	0.75	-	-	-	-	0.75
AS	1.90	0.09	0.43	-	0.01	2.43
PB	0.49	-	-	0.86	0.01	1.36
JH*	-	0.09	0.13	-	0.00	0.21
TN	1.19	0.08	0.28	-	0.01	1.57
WB	3.99	1.19	1.27	-	0.01	6.47
AP	-	-	-	-	0.02	0.02
GJ*	-	0.15	0.97	0.57	0.00	1.69
HR	-	-	-	-	0.07	0.07
MH#	2.53	0.15	0.34	1.25	0.01	4.28

**Since no separate HT commercial category is present, same charges of HT Industry category are represented for comparison with other states*

Total Open Access Charges
For HT Commercial Consumers

Long Term Open Access

In Rs. per unit for HT Commercial consumer

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

Short Term Open Access

In Rs. per unit for HT Commercial consumer

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

- Due to absence of harmonization in short term and long term charges, it can be observed in few states long term open access is expensive than short term
- Further it can be observed that Open Access for RE power and Captive power is cheaper than Conventional and Non Captive power, because of incentives and discount
- However in West Bengal, the OA charges for RE power are higher than conventional power, due to absence of any incentive for RE power and lower load factor of RE power, which leads to higher per unit charge from monthly wheeling charges

Annexures

- Impact Assessment of OA migration

Scenario and Sensitivity Analysis

For estimating the impact on Discoms

Parameter	Possibilities for Scenarios/ Sensitivity			Difference on impact assessment
Scenario Analysis				
Treatment of surplus power by Discom	A1	•	Surplus power backed down (as per merit order)	Variable PPC avoided by Discom
	A2	•	Surplus Power re-allocated (to under-served consumer categories)	No change in PPC, additional revenue from sales
Treatment of contract demand by Consumer	B1	•	Contract Demand maintained with Discom	Loss of only energy charge to Discom
	B2	•	Contract Demand not maintained with Discom	Loss of demand & energy tariff to Discom
Type of OA consumer	C1	•	Type of OA consumer – Thermal, Non Captive	Different set of open access charges applicable in each case
	C2	•	Type of OA consumer – Thermal, Captive	
	C3	•	Type of OA consumer – RE, Non-Captive	
	C4	•	Type of OA consumer – RE, Captive	
Sensitivity Analysis				
Sales Migration to Open Access	D1	•	5% sales migration	The total impact amount in rupees would differ
	D2	•	10% sales migration	
	D3	•	20% sales migration	
	D4	•	Estimated sales migration, as per load profile analysis of HT consumers	

Per unit impact on Discom

Surplus Power is backed down by Discom

HT Industrial Consumer

Loss to Discom (Rs. Per Unit)	Contract Demand Maintained with Discom (B1)				Contract Demand Not Maintained with Discom (B2)			
	Thermal Non-Captive (C1)	Thermal, Captive (C2)	RE, Non-Captive (C3)	RE, Captive (C4)	Thermal Non-Captive (C1)	Thermal, Captive (C2)	RE, Non-Captive (C3)	RE, Captive (C4)
CG	1.85	3.34	3.26	4.01	2.72	4.21	4.13	4.87
AS	1.31	2.68	1.89	3.26	1.72	3.09	2.31	3.68
PB	0.67	2.02	1.99	3.34	1.14	2.49	2.46	3.81
JH	1.20	2.82	3.03	3.03	1.89	3.51	3.72	3.72
TN	1.14	2.81	1.87	2.87	1.95	3.62	2.68	3.68
WB	-2.80	0.74	-3.69	-0.15	-1.91	1.63	-2.80	0.74
AP	1.37	2.80	3.04	3.04	2.47	3.90	4.14	4.14
GJ	0.56	2.59	1.35	1.91	1.66	3.69	2.45	3.01
HR	0.09	2.03	3.22	3.22	0.48	2.42	3.61	3.61
MH	0.97	3.77	1.22	4.02	1.78	4.58	2.03	4.83

HT Commercial Consumer

Loss to Discom (Rs. Per Unit)	Contract Demand Maintained with Discom (B1)				Contract Demand Not Maintained with Discom (B2)			
	Thermal Non-Captive (C1)	Thermal Captive (C2)	RE, Non-Captive (C3)	RE, Captive (C4)	Thermal Non-Captive (C1)	Thermal Captive (C2)	RE, Non-Captive (C3)	RE, Captive (C4)
CG	1.85	3.34	3.26	4.01	2.72	4.21	4.13	4.87
AS	2.11	3.48	2.69	4.06	2.44	3.81	3.03	4.40
PB	1.33	2.68	2.65	4.00	1.58	2.93	2.91	4.26
JH	1.20	2.82	3.03	3.03	1.89	3.51	3.72	3.72
TN	2.79	4.46	3.52	4.52	3.60	5.27	4.33	5.33
WB	-2.35	1.19	-3.24	0.30	-1.46	2.08	-2.35	1.19
AP	2.54	3.97	4.21	4.21	3.64	5.07	5.31	5.31
GJ	0.56	2.59	1.35	1.91	1.66	3.69	2.45	3.01
HR	0.30	2.24	3.43	3.43	0.67	2.61	3.80	3.80
MH	5.52	8.32	5.77	8.57	6.33	9.13	6.58	9.38

Per unit impact on Discom

Surplus Power is re-allocated by Discom

HT Industrial Consumer

Loss to Discom (Rs. Per Unit)	Contract Demand Maintained with Discom (B1)				Contract Demand Not Maintained with Discom (B2)			
	Thermal Non-Captive (C1)	Thermal, Captive (C2)	RE, Non-Captive (C3)	RE, Captive (C4)	Thermal, Non-Captive (C1)	Thermal, Captive (C2)	RE, Non-Captive (C3)	RE, Captive (C4)
CG	0.27	1.76	1.69	2.43	1.14	2.63	2.55	3.30
AS	-0.68	0.69	-0.09	1.28	-0.26	1.11	0.32	1.69
PB	-1.67	-0.32	-0.34	1.01	-1.19	0.16	0.13	1.48
JH	-0.12	1.50	1.71	1.71	0.58	2.20	2.41	2.41
TN	1.36	3.03	2.09	3.09	2.17	3.84	2.90	3.90
WB	-4.39	-0.84	-5.28	-1.73	-3.50	0.05	-4.39	-0.85
AP	1.17	2.60	2.84	2.84	2.27	3.70	3.93	3.93
GJ	-0.42	1.61	0.37	0.93	0.68	2.71	1.47	2.03
HR	-2.15	-0.21	0.98	0.98	-1.75	0.19	1.38	1.38
MH	0.05	2.85	0.29	3.09	0.86	3.66	1.10	3.90

HT Commercial Consumer

Loss to Discom (Rs. Per Unit)	Contract Demand Maintained with Discom (B1)				Contract Demand Not Maintained with Discom (B2)			
	Thermal Non-Captive (C1)	Thermal Captive (C2)	RE, Non-Captive (C3)	RE, Captive (C4)	Thermal Non-Captive (C1)	Thermal Captive (C2)	RE, Non-Captive (C3)	RE, Captive (C4)
CG	0.27	1.76	1.69	2.43	1.14	2.63	2.55	3.30
AS	0.12	1.49	0.71	2.08	0.46	1.83	1.04	2.41
PB	-1.00	0.35	0.32	1.67	-0.75	0.60	0.57	1.92
JH	-0.12	1.50	1.71	1.71	0.58	2.20	2.41	2.41
TN	3.01	4.68	3.74	4.74	3.82	5.49	4.55	5.55
WB	-3.94	-0.39	-4.83	-1.28	-3.05	0.50	-3.94	-0.40
AP	2.34	3.77	4.00	4.00	3.44	4.87	5.10	5.10
GJ	-0.42	1.61	0.37	0.93	0.68	2.71	1.47	2.03
HR	-1.94	0.00	1.19	1.19	-1.57	0.37	1.56	1.56
MH	4.60	7.40	4.84	7.64	5.41	8.21	5.65	8.45

Share of OA consumer types and load profile analysis

For estimation of aggregate impact on Discom

Share of various consumer types

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

OA migration of sales bases load profiling

Assumption on % of sales migration to OA	
HT Industrial	
1-5 MW	10%
6-10 MW	20%
11–50 MW	30%
51–100 MW	40%
> 100 MW	50%
HT Commercial	
1-5 MW	0%
6-10 MW	5%
11–50 MW	10%
51–100 MW	15%
> 100 MW	20%

	% of sales that can migrate to Open Access	
	HT Ind.	HT Comm.
PB	20%	1%
HR (UH)	13%	
AP (S)	18%	1%
AP (E)	29%	2%
AS	12%	0%
GJ (P)	16%	
GJ (M)	18%	
GJ (U)	13%	
GJ (D)	18%	
MH	19%	0%
JH	16%	

Aggregate impact on Discom

Surplus Power is backed down by Discom

Impact in Rs. Crore

Loss to Discom (Rs. Crore)	Contract Demand Maintained with Discom (B1)				Contract Demand Not Maintained with Discom (B2)			
	5%	10%	20%	Load Profile	5%	10%	20%	Load Profile
CG	123	247	494	247	154	307	615	307
AS	15	29	58	16	17	33	67	19
PB	229	458	916	674	266	532	1,064	803
JH	35	71	141	112	44	87	175	139
TN	285	570	1,140	570	368	737	1,474	737
WB	11	23	46	23	40	80	160	80
AP	208	417	834	832	294	588	1,176	1,188
GJ	242	484	968	786	379	757	1,515	1,229
HR	194	388	775	438	220	439	879	496
MH	499	999	1,998	1,637	623	1,246	2,492	2,078

Average Tariff Hike required

Average tariff hike required	Contract Demand Maintained with Discom (B1)				Contract Demand Not Maintained with Discom (B2)			
	5%	10%	20%	Load Profile	5%	10%	20%	Load Profile
CG	0.9%	1.9%	3.9%	1.9%	1.2%	2.4%	4.9%	2.4%
AS	0.3%	0.5%	1.0%	0.3%	0.3%	0.6%	1.2%	0.3%
PB	0.7%	1.5%	3.0%	2.2%	0.8%	1.7%	3.5%	2.6%
JH	0.6%	1.2%	2.4%	1.9%	0.7%	1.5%	3.0%	2.4%
TN	0.6%	1.1%	2.3%	1.1%	0.7%	1.5%	3.0%	1.5%
WB	0.1%	0.1%	0.3%	0.1%	0.2%	0.5%	1.0%	0.5%
AP	0.7%	1.3%	2.8%	2.8%	0.9%	1.9%	3.9%	3.9%
GJ	0.6%	1.2%	2.4%	1.9%	0.9%	1.8%	3.8%	3.0%
HR	0.7%	1.4%	3.0%	1.6%	0.8%	1.6%	3.4%	1.9%
MH	0.8%	1.6%	3.3%	2.7%	1.0%	2.0%	4.2%	3.5%

Aggregate impact on Discom

Surplus Power is re-allocated by Discom

Impact in Rs. Crore

Loss to Discom (Rs. Crore)	Contract Demand Maintained with Discom (B1)				Contract Demand Not Maintained with Discom (B2)			
	5%	10%	20%	Load Profile	5%	10%	20%	Load Profile
CG	68	137	274	137	99	197	395	197
AS	4	7	14	2	6	11	23	5
PB	25	49	98	35	61	123	246	164
JH	20	39	79	62	28	56	112	89
TN	308	616	1,232	616	391	783	1,565	783
WB	-40	-79	-158	-79	-11	-22	-44	-22
AP	192	385	770	765	278	556	1,112	1,121
GJ	121	241	483	392	257	514	1,029	835
HR	44	88	176	99	70	140	279	157
MH	359	717	1,434	1,133	482	964	1,928	1,575

Average Tariff Hike required

Average tariff hike required	Contract Demand Maintained with Discom (B1)				Contract Demand Not Maintained with Discom (B2)			
	5%	10%	20%	Load Profile	5%	10%	20%	Load Profile
CG	0.5%	1.1%	2.2%	1.1%	0.7%	1.5%	3.1%	1.5%
AS	0.1%	0.1%	0.3%	0.0%	0.1%	0.2%	0.4%	0.1%
PB	0.1%	0.2%	0.3%	0.1%	0.2%	0.4%	0.8%	0.5%
JH	0.3%	0.7%	1.4%	1.1%	0.5%	0.9%	1.9%	1.5%
TN	0.6%	1.2%	2.5%	1.2%	0.8%	1.5%	3.2%	1.5%
WB	-0.2%	-0.5%	-1.0%	-0.5%	-0.1%	-0.1%	-0.3%	-0.1%
AP	0.6%	1.2%	2.6%	2.5%	0.9%	1.8%	3.7%	3.7%
GJ	0.3%	0.6%	1.2%	1.0%	0.6%	1.2%	2.6%	2.0%
HR	0.2%	0.3%	0.7%	0.4%	0.3%	0.5%	1.1%	0.6%
MH	0.6%	1.2%	2.4%	1.9%	0.8%	1.6%	3.2%	2.6%

Annexures

- Data Collection

Data Collection

Required for detailed state wise review of open access

Secondary data

Primary data

Others

Sl.	Data Source	Data Collected	States	Remarks
1.	Open Access Regulations	• Open access eligibility • Application process and Constraints • Applicable charges and RPO obligations	All States	-
2.	Renewable Energy Policies	• Concessions available to RE power	All States	-
3.	SERC Tariff Orders and petitions	• Retail Tariffs • OA charges • HT Sales and Revenue • Discom ARR and ACoS • Power Purchase Cost Merit Order	All States	-
4.	CERC Market Monitoring Reports	• OA volume and consumers on power exchanges	All States	-
5.	Guidelines for availing open access	• Application process for OA	All States	-
6.	Details of open access consumers	• OA sales, consumers and load • Type of OA - Captive/ Non-Captive - LTOA, MTOA or STOA - RE/ Conventional	AP, AS, MH, GJ, PB, HR (UHBVN)	• No OA activity in JH and WB • CERC market monitoring data considered for TN and CG
7.	Details of open access applications	• Number of applications received • Status of application, along with reasons of rejection	PB, AS, CG, GJ	• Review of SERC cases and stakeholder interviews, covered the analysis for other states
8.	Details of HT consumers	• Load profile of HT consumers in the state	AP, AS, MH, GJ, PB, HR (UH), JH	• Sensitivity analysis built to analyse open access migration
9.	Interviews with stakeholders	• Issues and constraints in open access	All states	-
10.	Review of SERC/ APTEL cases	• Issues and constraints in open access	All states	-

Annexure-V

FORUM OF REGULATORS

20 Sept.2019, Amritsar

Impact of enhanced RPO on Retail Tariff

UPERC

Renewable Power Obligation

(as notified by MNRE)

RPO Trajectory	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22
Non-Solar	8.75%	9.5%	10.25%	10.25%	10.25%	10.5%
Solar	2.75%	4.75%	6.75%	7.25%	8.75%	10.5%
Total	11.5%	14.25%	17%	17.5%	19%	21%

Climate Change Commitments

- UNFCC- Climate Change is “shared concern with differentiated responsibilities” of the member nations.
- Indian road map is to reach 40% of its energy needs through renewables by 2030. The present notified is 21% till 2022.
- It will affect the states discoms differently depending upon their power portfolio, geo-climatic & socio-economic conditions.

Installed Capacity

(as on 31.01.19)

(Source- CEA) (MW)

Sector	Hydro	Thermal	Nuclear	RES *	Total
State	29878	71829	0	1990	103698
Private	3394	8700	0	70563	160958
Central	12126	64157	6780	1527	84631
Total	**45399**	**223027**	**6780**	**74081**	**349288**
%	13%	63.8%	1.94%	21.21%	

Grid Interactive RES

(source MNRE, in MWp)

Sector	Cumulative Achievements (as on *31.07.2019)
Wind Power	36686.82
Solar Power – Ground Mounted	27930.32
Solar Power – Roof Top	2141.03
Small Hydro Power	4604.80
Biomass (Bagasse) Cogeneration)	9131.50
Biomass (non-bagasse) Cogeneration)/Captive Power	674.81
Waste to Power	138.30
Total	**81307.58***

Features of RE (Wind & Solar)

- Intermittent in Nature- Varies with time
- Less Predictable- Difficult to forecast
- Location Specific- While some states have abundance of sources, others do not have
- Low inertia- Can't be ramped up/down
- " Must Run" status- Overriding MOD priority

RE Impact on System Operations

-Difficulty in load Frequency Control

-Difficulty in scheduling reserves

-Requirement of enhanced transmission capacity and its under utilization

-Increase in ancillary services thereby increasing operation costs

-Increase in Transmission Cost because of all above

RE Impact on existing Plants

- **Lowering of PLF**
- High Ramping Rate requirement
- **Shifting & cycling of Plants- Loss of useful life**
- Increased O&M costs
- Reduction in life of equipment
- Higher Aux. Power Consumption

Cost Drivers

- Backup capacity
- **Decrease in full load hours of Plants**
- Balancing Cost
- Grid related cost like congestion management etc.

Reducing PLF with enhanced RPO

(Source-MoP Website)

Year	PLF	Sector-wise PLF (%)		
	%	Central	State	Private
2009-10	77.5	85.5	70.9	83.9
2010-11	75.1	85.1	66.7	80.7
2011-12	73.3	82.1	68.0	69.5
2012-13	69.9	79.2	65.6	64.1
2013-14	65.60	76.10	59.10	62.10
2014-15	64.46	73.96	59.83	60.58
2015-16	62.29	72.52	55.41	60.49
2016-17	59.88	71.98	54.35	55.73
2017-18	60.67	72.35	56.83	55.32
2018-19	61.07	72.64	57.81	55.24
2019-20*	60.96	67.55	58.46	58.07

Balancing Cost of RE Grid Integration

(As calculated by CEA)

Item	Balancing Cost Spread of RE Generation	Rs./kwh
1	Total balancing charge for Gas based station	0.04
2	Impact of DSM per unit	0.3
3	Impact on tariff (Rs/kWh) for backing down Coal based generation assuming solar and wind at Rs. 2.50/kWh and tariff of coal based generation at Rs. 3.50/kWh	0.0
4	Stand by charge (Rs/kWh)-	0.5
5	Extra transmission charge (Rs/kWh	0.26
Total		1.11

Stranded Capacity Costs (Due to Solar & Wind)

- Due to ducking of load curve, Discoms will have to back down conventional sources to accommodate “Must Run” grid integrated RE thereby stranding the declared & available capacity and pay for the stranded capacity charges.
- At National level , Wind (~36 GW) & Solar (~30 GW) combined together constitute around 66,000 MWp.

Stranded Capacity Cost (Due to Solar & Wind)

- Considering Rs.7 Crores /MW as capital cost and 25.5% Avg. PUF for Solar & Wind, the total stranded capacity will be 16800 MW and associated capital cost will be 66,000 x 7 x .255 = Rs.1,17,600 Crores over life cycle of RE i.e. 25 Years.
- Amortizing above for a life cycle of 25 years @ 12% will be ~ 14990 Crores per year or Rs.1.02 /Kwh.
- Thus total additional burden of Grid integration of RE will be Rs.1.11 of Balancing Cost and Rs.1.02 of Stranded Capacity Cost, totalling Rs. 2.13 per Kwh.

Stranded Capacity Cost
(Due to Solar & Wind)

Capacity of Solar in MW	30000
Capacity of Wind in MW	36000
Plant Utilization Factor Solar (%)	20%
Plant Utilization Factor Wind (%)	30%
Equivalent Conventional Capacity for Solar in MW	6000
Equivalent Conventional Capacity for Wind in Mw	10800
Weighted Average PUF (%)	25.5%
Equivalent Total Capacity of Conventional in MW	16800
Capital Cost per MW (Rs. Crore)	7
Total Cost of Starnded Conevntional Power (Rs. Crore)	117600
Life of RE Plant (Years)	25
Rate for Amortization (%)	12%
Annual Amortized Value of Stranded Capacity (Crores)	□ 14,994
Units Generated from Solar during a Year	52560000000
Units Generated from Wind during a year	94608000000
Total Energy Generated (Units) during a year	1.47168E+11
Stranded Cost Per Unit	□ 1.02

Additional Cost attributed to Grid Integration of RE (Solar & Wind)

- Additional Burden of 66000 MW (Solar & Wind) @ Rs.2.13 per Kwh –
  - 66000*10^3*2.130*.25*24*365/10^7= Rs.30787 Crores

Socializing this over the total generation of 1330 BU will result in per unit additional burden of Rs. (30787 * 10^7)/(1330*10^9)= Rs.0.23 per kwh

Amortisation.xlsx

Issue-

- Grid Integrated Renewable Power will have marginal cost of more than APPC for Discoms. This will lead to increase in tariff over the period as RPO obligation further increases.
- Should there be one size fits all approach or every state should have customised approach towards RPO in keeping with its geo-climatic & socio-economic conditions.

Annexure-VI

RPO trajectory
and
challenges in Integration of required renewables in the grid

Solar and non solar requirement of Punjab w.r.t. targets

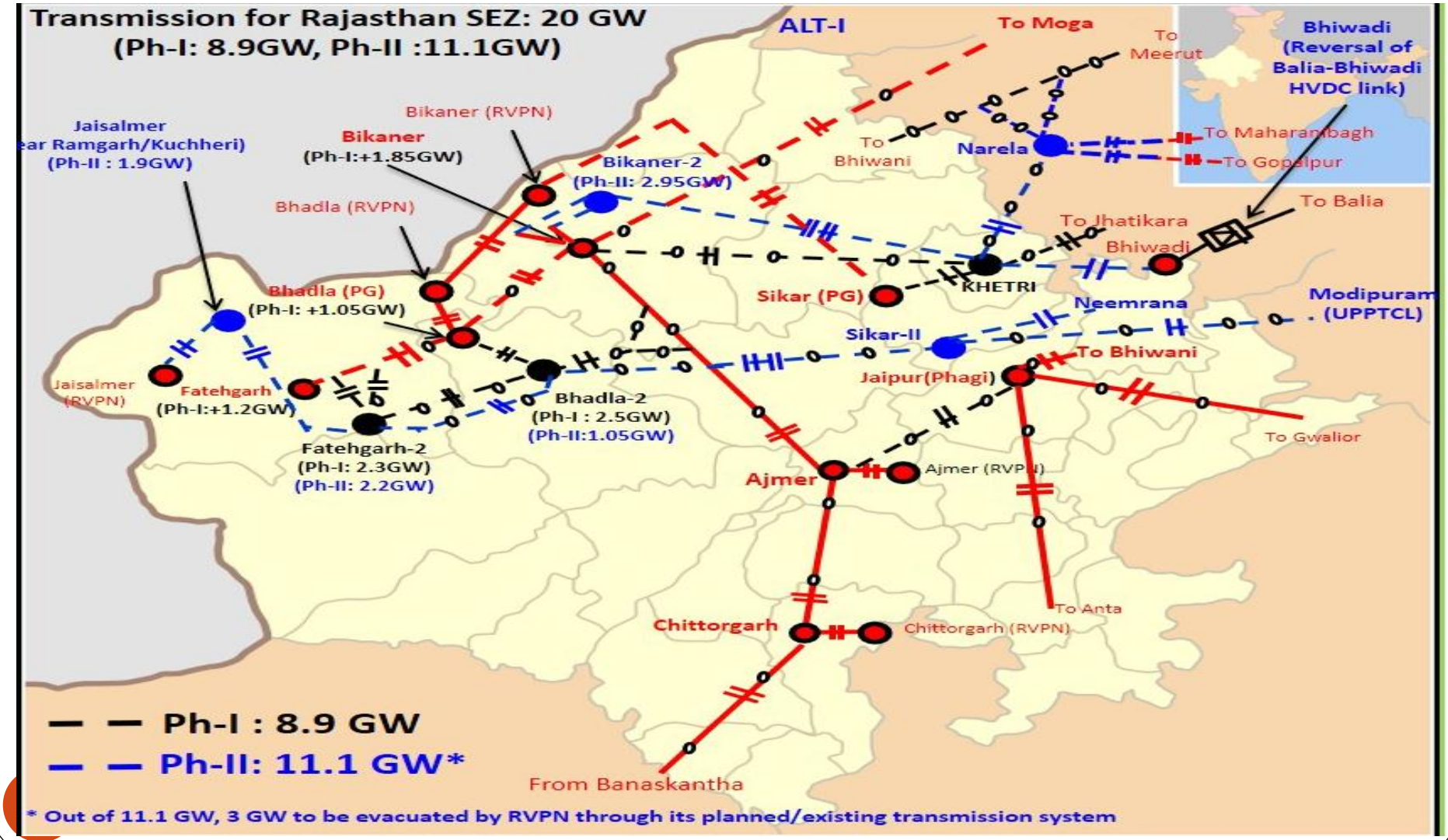
	TARGETS OF PUNJAB	TARGETS OF MOP
	21-22	21-22
SOLAR %	6.5	10.5
PUNJAB MU REQ	60000	60000
SOLAR REQ. LTA REQ (in MW)	3900	6300
SOLAR MW/1000MU	570	570
LTA REQ		
SOLAR PUNJAB (in MW)	**2223**	3591
OTHER RE %	8	10.5
NON SOLAR PUNJAB (in MW)	**2736**	3591
TOTAL RE LTA Reqd. (in MW)	**4959**	7182

NEW SOLAR GENERATION ALLREADY PLANNED

SOUTH ZONE	:	50 GW
WESTERN ZONE	:	16.5 GW
NORTH ZONE	:	20 GW
PHASE 1 RAJASTHAN	:	8.9 GW
PHASE 2 RAJASTHAN	:	11.1 GW

(Out of which 3 GW to be used in Rajasthan)

Map showing Phase-I & Phase-II of Transmission for Rajasthan SEZ



Transmission network planning

- Power availability at different Grid Substations at different times of the day
- When RE power is available then at Moga Grid substation
- When conventional power is available then at Rajpura Grid Sub-station

PER UNIT TRANSMISSION CHARGES Phase-I

Total Estimated cost of scheme		=	7041 cr.
Annual Transmission Charges @ 17% (appx.)		=	1196.97
		~	1197 Crores
Solar Capacity of Phase-I		=	8.9 GW
		~	8900 MW
Annual Energy	$= \frac{8900 \times 0.2 \times 8760}{1000}$	=	15592.8 MU
Transmission Charges/unit	$= \frac{1197 \times 10^7}{15592.8 \times 10^6}$	=	Rs 0.767

PER UNIT TRANSMISSION CHARGES
Phase-II

Total estimated cost of the scheme = 13660 Cr.

Annual Transmission Charges @ 17% (appx.) = 2322.2 Cr.

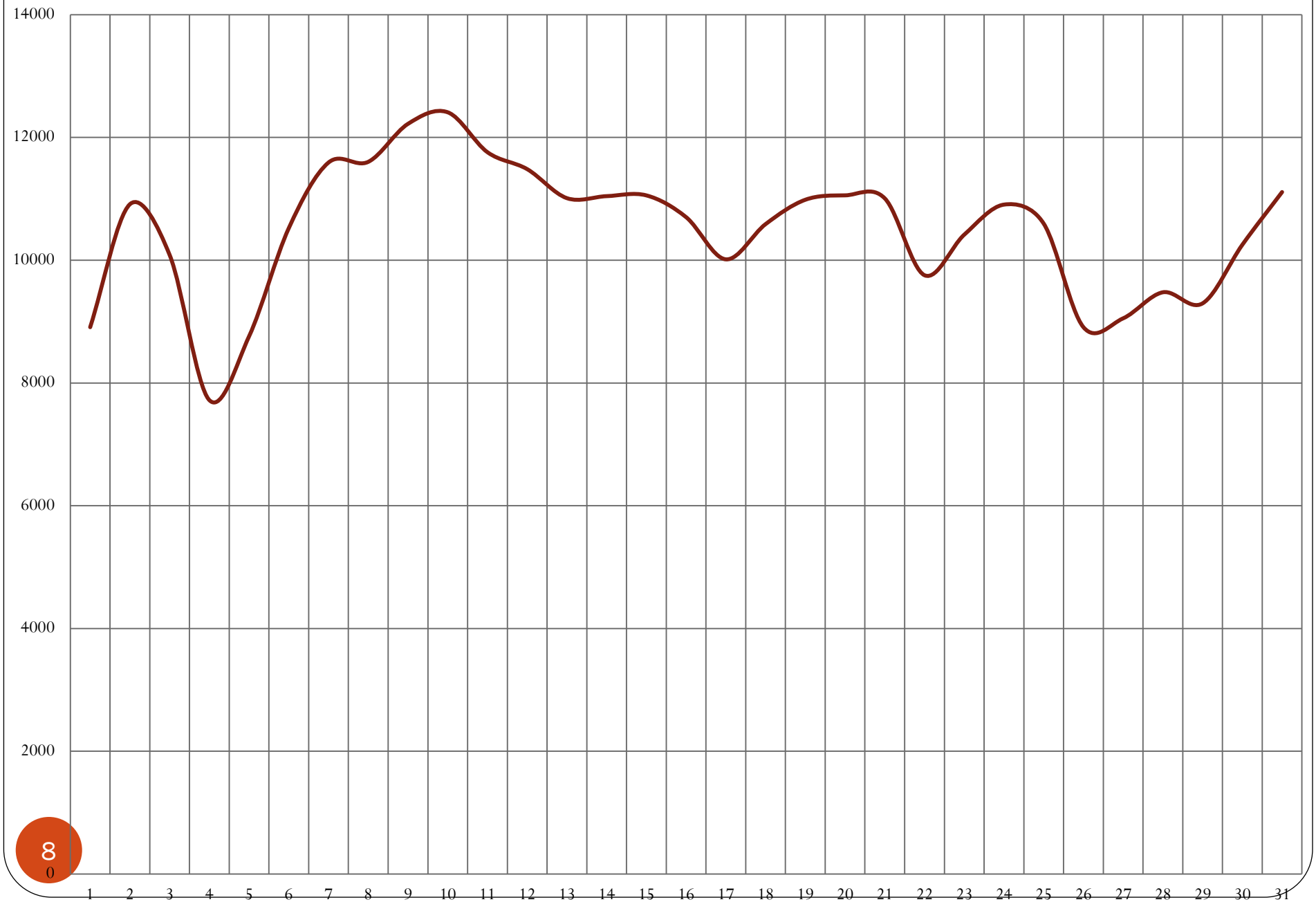
Solar Capacity of Phase-II = 8100 MW { Total = 11100 MW; LTA = 8100 MW; Granted }

Annual Energy $= \frac{8100 \times 0.2 \times 8760}{1000}$ = 14191.2 MU

Transmission Charges/unit $= \frac{2322.2 \times 10^7}{14191.2 \times 10^6}$ = Rs 1.64/Unit

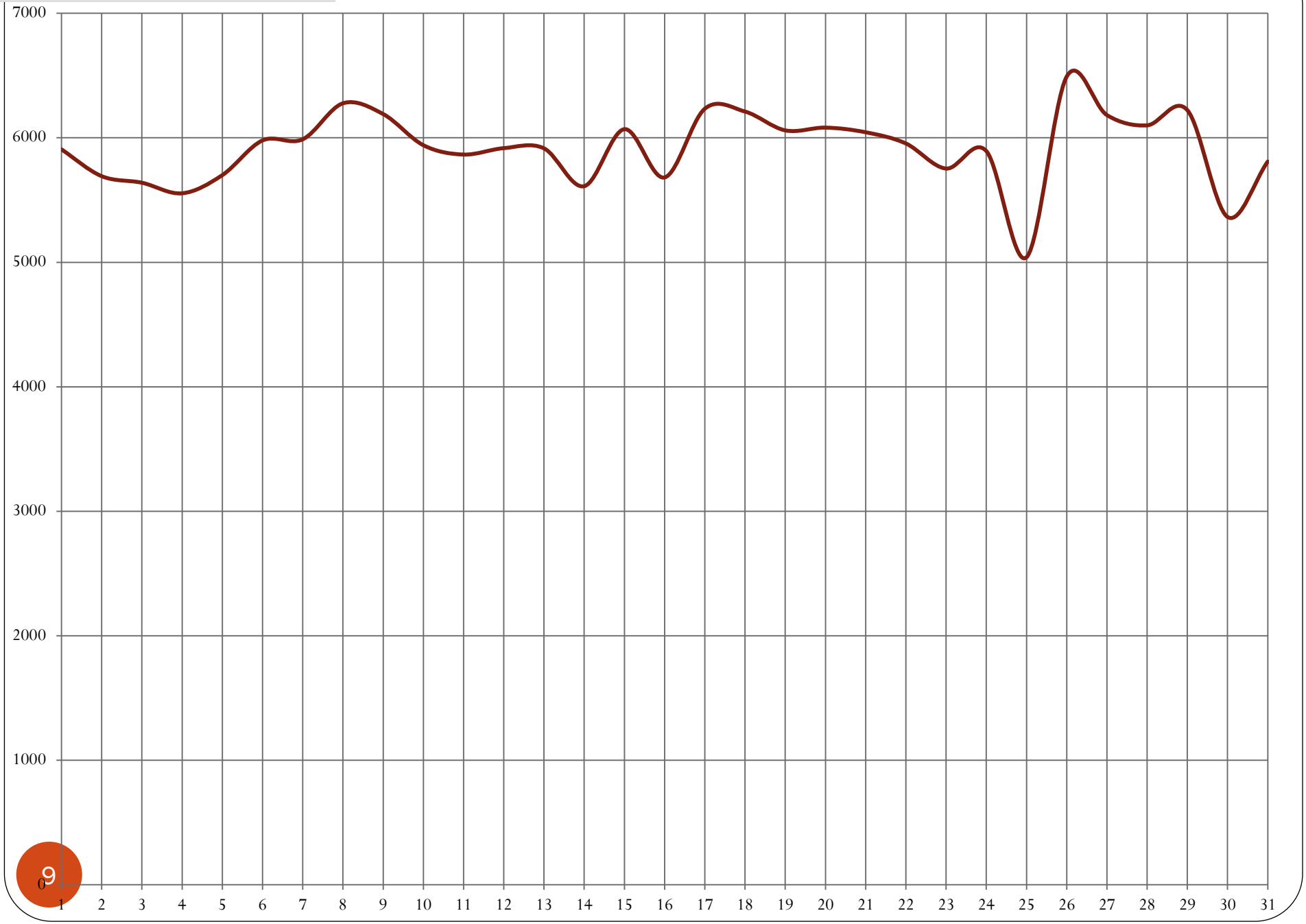
Punjab Load variation in July 2018

7800MW TO 12800 MW

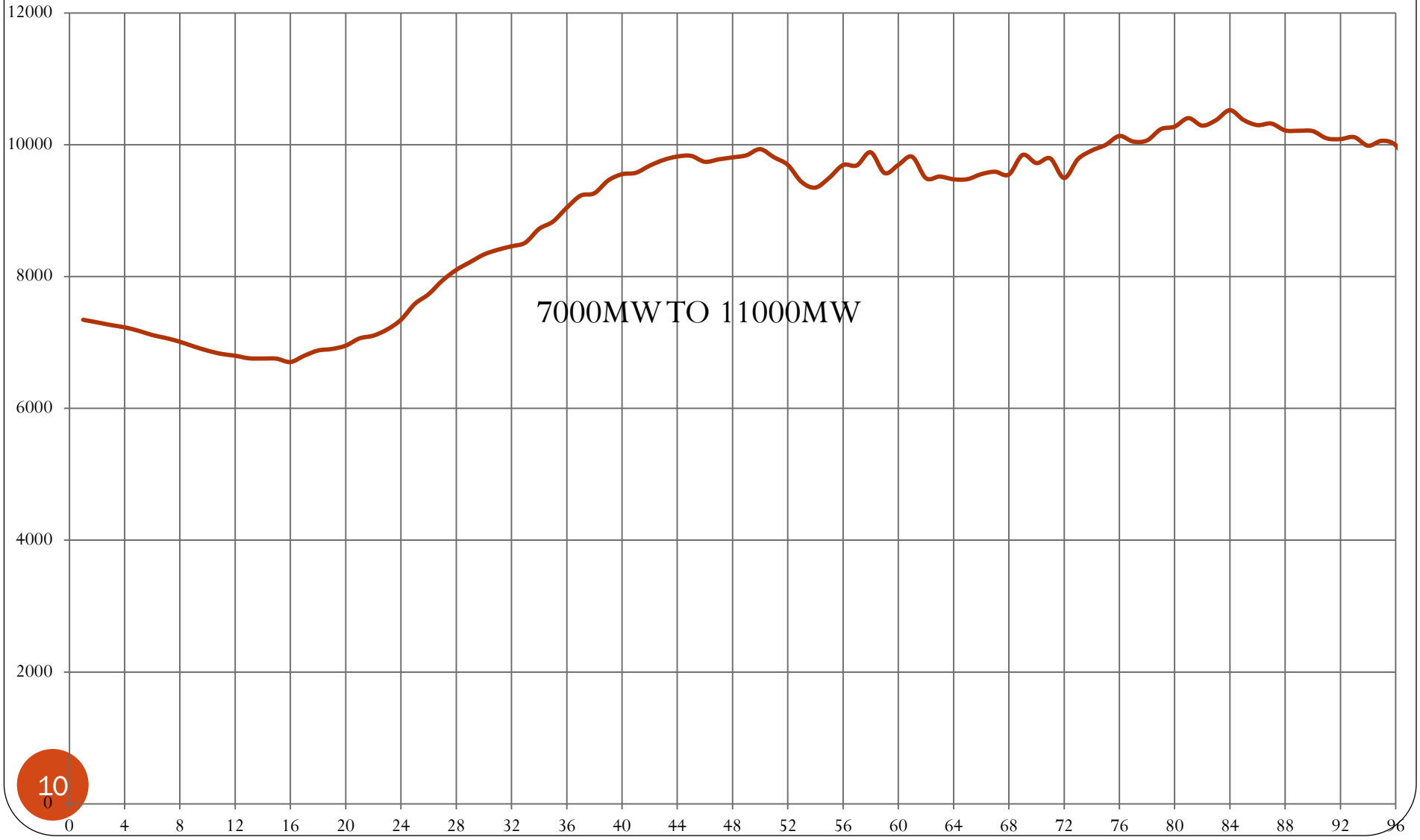


5000MW TO 6500MW

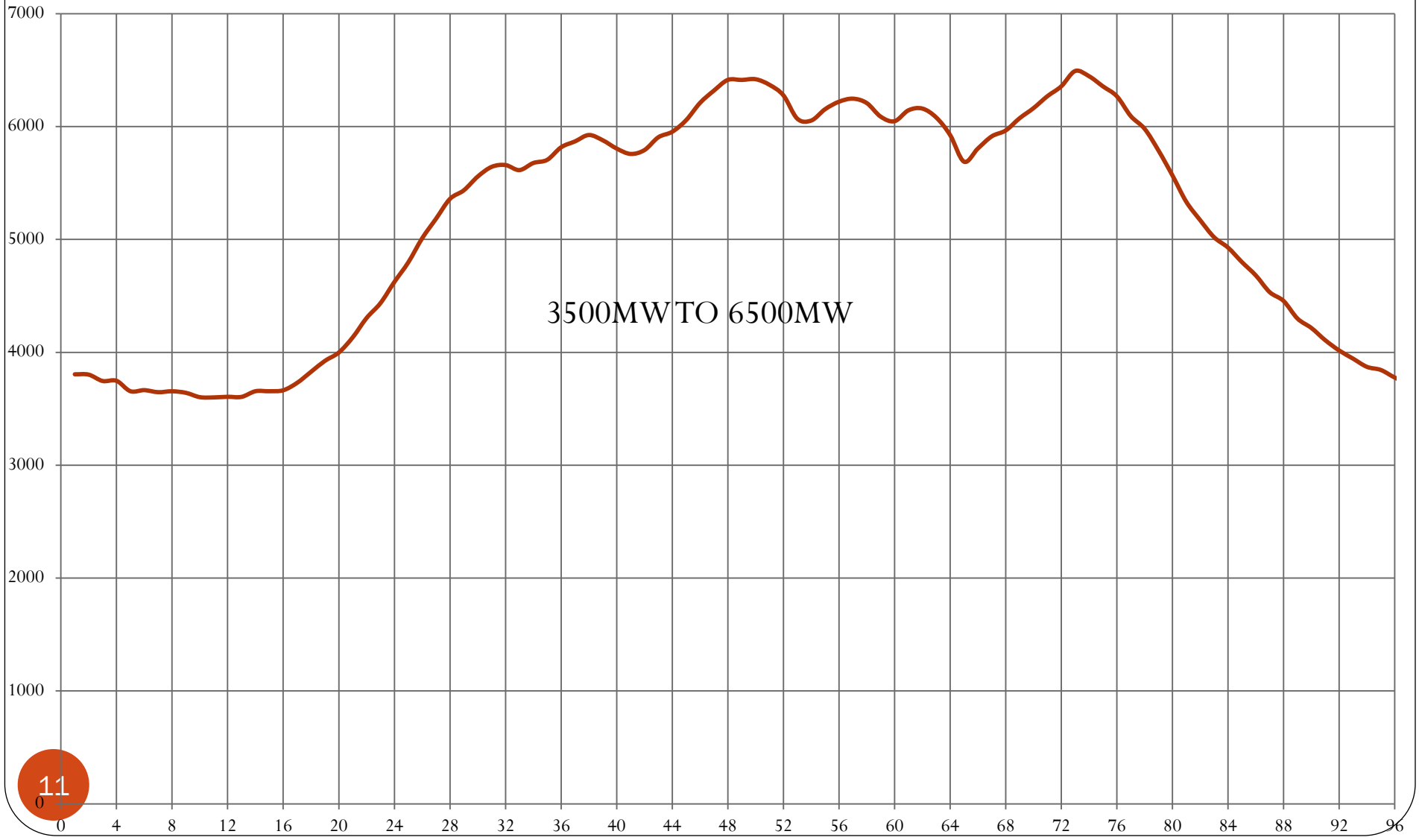
Punjab Load variation in December 2018



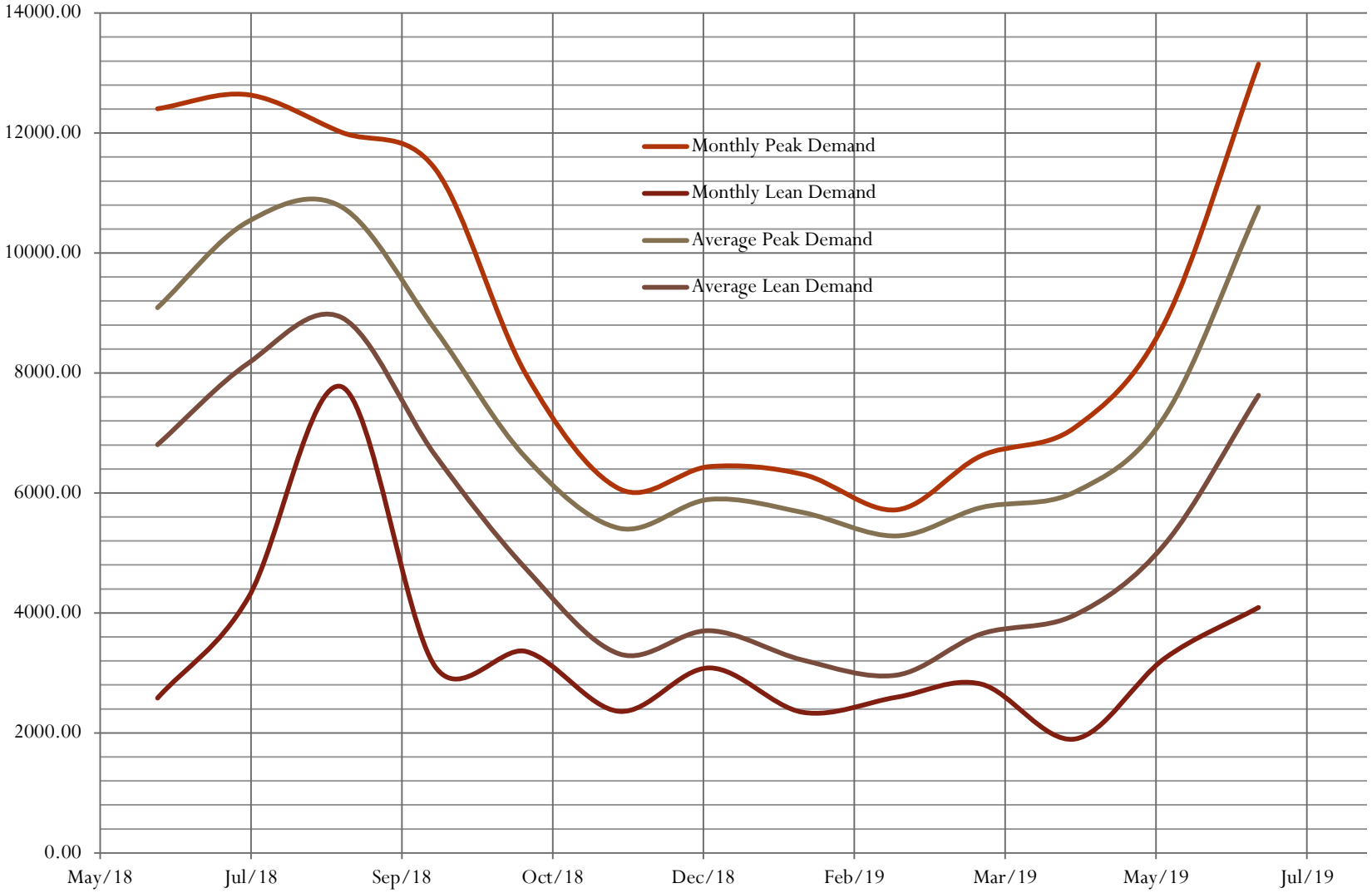
Typical hourly plan for a particular day during peak demand period (July 2018)



Typical hourly plan for a particular day during lean period (December 2018)



PUNJAB LOAD VARIATION



Storage of Solar Power

As on today, the cost of storage of Solar Power is Rs. 8 Crore/MW

OUT OF 8CR 50% IS FIXED AND 50% VARIABLE EVERY 7YEARS

FIXED COST PER UNIT APPROX

4CR FOR 25YEARS FOR 1 MW

UNITS wrt 1 MW FOR 25YEARS=(8760*1*25*0.20)/1000MU: 43.8MU

FIXED COST PER UNIT APPROX : 0.91

VARIABLE COST PER UNIT

4CR FOR 7YEARS

UNITS WRT 1 MW FOR 7YEARS=(8760*1*7*0.20)/1000MU : 12.2MU

VARIABLE COST PER UNIT APPROX 3.27

TOTAL COST OF STORAGE 4.18