

Category	Units	FY 2023-24		
		Fixed/Demand Charge	Energy Charge	Wheeling Charge
HT IX: HT – Electric Vehicle Charging Station	Rs/kVA/mth	70.00	4.96	0.54

**Table 8-25: Summary of HT Tariff for FY 2024-25, effective from 1 April, 2024**

Category	Units	FY 2024-25		
		Fixed/Demand Charge	Energy Charge	Wheeling Charge
<b>EHV</b>				
HT I (A) HT - Industry	Rs/kVA/mth	472.00	6.73	-
HT I (B): HT - Industry (Seasonal)	Rs/kVA/mth	472.00	6.99	-
HT II: HT – Commercial	Rs/kVA/mth	472.00	9.30	-
HT III : HT - Railways/Metro/Monorail Traction	Rs/kVA/mth	472.00	5.31	-
HT IV: HT - Public Water Works	Rs/kVA/mth	472.00	6.17	-
HT V(A): HT - Agriculture Pumpsets	Rs/kVA/mth	84.00	3.69	-
HT V(B): HT - Agriculture - Others	Rs/kVA/mth	84.00	5.10	-
HT VI: HT - Group Housing Societies (Residential)	Rs/kVA/mth	376.00	5.20	-
HT VIII(A): HT - Public Services-Gov.	Rs/kVA/mth	472.00	7.24	-
HT VIII(B): HT - Public Services-Others	Rs/kVA/mth	472.00	7.31	-
HT IX: HT – Electric Vehicle Charging Station	Rs/kVA/mth	70.00	4.97	-
<b>HT</b>				
HT I (A) HT - Industry Sub-total	Rs/kVA/mth	472.00	6.73	0.53
HT I (B): HT - Industry (Seasonal)	Rs/kVA/mth	472.00	6.99	0.53
HT II: HT – Commercial	Rs/kVA/mth	472.00	9.30	0.53
HT III : HT - Railways/Metro/Monorail Traction	Rs/kVA/mth	472.00	5.31	0.53
HT IV: HT - Public Water Works	Rs/kVA/mth	472.00	6.17	0.53
HT V(A): HT - Agriculture Pumpsets	Rs/kVA/mth	84.00	3.69	0.53
HT V(B): HT - Agriculture - Others	Rs/kVA/mth	84.00	5.10	0.53
HT VI: HT - Group Housing Societies (Residential)	Rs/kVA/mth	376.00	5.20	0.53
HT VIII(A): HT - Public Services-Gov.	Rs/kVA/mth	472.00	7.24	0.53
HT VIII(B): HT - Public Services-Others	Rs/kVA/mth	472.00	7.31	0.53
HT IX: HT – Electric Vehicle Charging Station	Rs/kVA/mth	70.00	4.97	0.53

### 8.13 Recording of Maximum Demand

#### *MSEDCL's Submission*

8.13.1 It has been observed that certain consumers are taking the benefit of lacunae in system of bloc window method of Maximum Demand recording and thereby getting the benefit of lower MD recording.

- 8.13.2 Petitioner submitted that, as per the Regulation 2.1 (p) of the MERC (Electricity Supply Code and Other Conditions of Supply) Regulations 2005, the Maximum Demand (MD) is defined as twice the largest number of kWh or kVAh supplied and taken during any consecutive thirty minute blocks in that period, which is the same definition as provided by the Commission in MTR Order dated 12th September 2018 (case No.195 of 2017).
- 8.13.3 Petitioner submitted that “IS 14697” is INDIAN STANDARD for AC static CT/PT operated Energy meters and specifies about the demand integration period i.e. 15 or 30 minutes.
- 8.13.4 Petitioner submitted that CBIP’s “guide on Static energy meters-Specification and testing” has mentioned two methods i.e. block and sliding window method for determination of the MD. In sliding window method determination of the MD is based on 30 min DIP (Demand Integration Period). In block window method, the MD is determined over a fixed time slot of 30 min i.e. from 10:00 to 10:30 hrs. 10:30 to 11:00 hrs.... so on. The new Demand Integration Period (DIP) starts only after the end of previous DIP.
- 8.13.5 In block window method, the MD is integrated over a fixed block of time as per the meter clock i.e. from 10:00 to 10:30 hrs or 10:30 to 11:00 hrs. In this method, there is one disadvantage i.e. consumer with higher demand can split his load in two consecutive time slots such that the demand is split in two blocks and MD recorded is less than the actual load on the system. This split high load than sanctioned contract demand is harmful to the grid and pose difficulties to Distribution Company for meeting demand. Hence, sliding window method is incorporated in new meters to determine demand more accurately, which complies with MERC Regulations, Tariff Order, IS and CBIP standards.
- 8.13.6 In the revised methodology determination of Maximum Demand, the Demand Integration Period (DIP) of consecutive 30 min as specified in the MERC (Electricity Supply Code and other Conditions of Supply) Regulation 2005 is maintained and considered for measuring, recording & billing the maximum demand of consumer and is in line the IS and CBIP Guide.
- 8.13.7 Petitioner stated that FAQs regarding kVA Maximum Demand calculation are available on MSEDCL’s websites.
- 8.13.8 Petitioner submitted that it has installed new technology meters with a sliding window for recording maximum demand in consecutive 30 minutes block. The 30 min DIP is sliding consecutively with 10 min sub-interval has been used.

### **Commission's Analysis and Rulings**

8.13.9 The Commission observes that per provisions under State Grid Code and IEGC, measurement period for the purpose of energy accounting, recording of the demand, scheduling and despatch of power is “time block” which is defined as *“time-block means a time block of 15 minutes, for which specified electrical parameters and quantities are recorded by special energy meter, with first time block starting at 00.00 hrs”*. There are 96 time-blocks in a day, starting from 00:00 hours with each time-block of consecutive 15-minute duration. Thus, 30 minute measurement for the purpose of energy accounting, scheduling and despatch comprise fixed duration from start of hour boundary to next half hourly boundary and does not envisage any sliding scale for measurement of any 30-minute duration, as proposed by MSEDCL for energy accounting/ deviation accounting/determination of Under-drawal/over-drawal or under-injection/under-injection by participants.

8.13.10 Further, DSM Regulations notified by MERC and Central Commission as well as recent notification of the Regulations for Real time market operations has further emphasised this aspect by recognising odd numbered time blocks and even numbered time blocks for the purpose of market operations, and trading on power exchange, alongwith introduction of concept of gate closure. Thus, entire timeframe for the purpose of energy accounting, scheduling and despatch, deviation accounting, congestion management etc. is aligned with the concept of “Time-Blocks” which are fixed duration time-block rather than sliding duration of the time-block. Generating Companies, Distribution Licensees and even Open Access consumers would be responsible for their energy accounting, deviation accounting on “time-block” concept of fixed duration as elaborated above. Under the circumstances, the Commission opines that recording of demand of Direct Consumers of Licensee on sliding scale of 30-minute duration would not be proper and would in fact tantamount to discrimination as against open access consumer.

8.13.11 Thus, the Commission rejects the MSEDCL proposal for introduction of sliding scale based measurement of Billing Demand and MSEDCL should continue with existing practice of recording of Billing Demand on fixed duration of 30-minutes around boundaries of hourly start and half-hourly start period (viz. 00:00 to 00:30 and 00:30 to 01:00 hrs and so on). As per General Conditions under Tariff schedule, the Distribution licensee may measure the Maximum Demand for any period shorter than 30 minute of maximum use, subject to conformity with the Commission's Supply Code Regulations, where it considers that there

are considerable load fluctuations in operations. Accordingly, in such cases of repeated instances, MSEDCL may opt to install SEM at their own cost for such cases and record their Demand on 15-minute Time-block basis and bill accordingly; instead of changing method of measurement to sliding scale.

#### **8.14 Revision in Load Factor Formula**

##### ***MSEDCL's Submission***

8.14.1 Petitioner submitted that the Commission in the last MTR Order dated 12<sup>th</sup> September 2018, had acknowledged the issue of wilful violation of Contract Demand during 22:00 to 06:00 hours to avail ToD benefits & Load Factor Incentive and observed that

*“In order to ensure operation of electricity grid, it is critical that every constituent of the system acts within its assigned boundaries. Intentional violation of contract demand limit by individual consumer for its own financial gain may lead to a system failure, which may affect other consumers.”*

8.14.2 Accordingly, the Commission revised the provision and ruled that LF incentives shall not be available in case of exceeding Contract Demand during night also.

8.14.3 Petitioner further submitted that, as per the Order dated 24<sup>th</sup> December 2018 in Case No.321 of 2018, the Commission revised the LF incentive formula for PF and unity PF is considered instead of actual PF.

8.14.4 The concept of LFI was introduced by Hon'ble Commission in Case No. 2 of 2003 i.e. nearly 16 years ago. Since then till date, there have been numerous disputes with regard to the interpretation of the LF formula. Consumers are approaching MSEDCL with the demand of consideration of interruption/non-supply hours and shut down more than 60 Hours because of unforeseen incidents like water logging in EHV Substation, Flood situation etc. However, as per Formula only planned outage (since 60 hours in a 30 day month is already in built in the Formula) is considered for reduction in hours for calculation of Load Factor. This ultimately results into disputes before CGRF or Hon'ble Commission.

8.14.5 Change in LFI computation is sought with the intention of bringing clarity and simplification in the LFI formula and that any shutdown (planned outage), breakdown or any interruption of supply to the extent of 60 hours in a month has to be considered while framing the calculation of Load Factor Incentive which means, in the 60 hours, the effect of non-supply to the extent of 60 hours is built in and will not have additional effect while calculating LF whereas any non-supply beyond 60 hours will be considered.

8.14.6 Since the introduction of LF incentive, in the calculation of Load Factor as per the methodology adopted by the Commission, 60 hours have been deducted towards interruption/non-supply in a 30-day month. As per the formula of LFI, maximum incentive of 15% becomes available at 92.5% which means non-supply including interruption up to 60 hours are inbuilt in the formula.

8.14.7 Petitioner submitted that the 60 hours of non-supply should include any type of breakdown, interruptions, maintenance, planned shutdowns, etc.

8.14.8 Petitioner further submitted that there is non-supply for more than 60 hours or sometimes more than a few days due to natural calamities like floods or cyclones. Since lack of clarity on how to treat planned outages resulted in various disputes, there is a need to bring in more clarity in the formula for treatment of shutdown or planned outages. Petitioner, thus, proposed not to deduct any non-supply upto 60 hours including planned shutdown for calculating the load factor, whereas, any non-supply of more than 60 hours will be deducted while calculating the load factor as per the following formula proposed by the Petitioner:

$\text{Load Factor} = \frac{\text{Consumption during the month, in MU}}{\text{Maximum Consumption possible during the month, in MU}}$ <p>Maximum consumption possible = Contract Demand (kVA) x Unity Power Factor x Total no. of hours during the month less non-supply hours beyond 60 hours. (irrespective of planned or un-planned load shedding)</p> <p>In case the consumer exceeds its contract demand in any particular month, the Load Factor Incentive will not be payable to the consumer in that month</p>
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8.14.9 Petitioner also submitted that the 60 hours may be reduced to Zero hours by reducing the incentive and actual non-supply hours shall be excluded from computation of Load Factor, if the Commission deems fit. This will protect the consumer interest as he will not lose the incentive due to non-supply from MSEDCL/MSETCL since Load Factor incentive will be based on performance of consumer, thus reducing litigations.

8.14.10 Petitioner asserts that the Load Factor of the consumers will improve due to such revision and many consumers presently not getting the load factor incentive may get the incentives for load factor achievement.

8.14.11 Petitioner also submitted that in both the proposed cases as above, the maximum incentives shall be limited to 7.5% and the proposed applicability of Load Factor incentive is as follows :

- Load Factor above 75% and up to 85% - incentive of 0.25% on the energy charge for every 1% rise in load factor from 75% to 85%.
- Consumers having load factor above 85% - incentive of 0.50% on the energy charge for 1% rise in load factor from 85%.
- The total incentive will be subject to a ceiling of 7.5% of energy charges applicable to the consumer.

8.14.12 Load Factor Calculation with proposed changes:

Base data assumed for case studies			
Consumption during month (Units)	CD (kVA)	Total number of hours during month	PF
500000	1000	720	1

Scenario					Existing method		Proposed method		
	MSEDCL		MSETCL		Total interruptions during the month in hours	Hours considered for deduction	Load factor	Hours considered for deduction	Load factor
	Breakdown in hours	Planned outage in hours	Breakdown in hours	Planned outage in hours					
	1	2	3	4	5=1+2+3+4	6	7	8	9
CASE 1	30	0	0	25	55	0	69%	55	75%
CASE 2	30	10	10	20	70	10	70%	70	77%
CASE 3	40	50	20	0	110	50	75%	110	82%
CASE 4	10	90	0	0	100	90	79%	100	81%

### **Commission’s Analysis and Rulings**

8.14.13 As per the existing tariff of MSEDCL, Load factor incentive is available for incentivising the bulk consumers in the State availing higher loading as compared to the Contract Demand thereby maintaining a steady demand on the system. Maximum incentive payable is 15%

of energy charge. The Commission proposes to continue with same rebate.

8.14.14 However, computation of the load factor considered an interruption/non-supply to the extent of 60 hours in a 30-day month even if there is no or lower than 60 hours of interruption during the month. With AMR/MRI enabled meters being installed to all HT consumers, actual hours of interruptions are recorded in meter and are readily available at the time of processing of monthly bill.

8.14.15 Thus, in order to understand the impact of non-consideration of 60 hrs of interruption during a month, the Commission had sought the illustration from MSEDCL to show net impact on charges to consumers in its Petition with respect to Existing Load Factor Incentive Formula v/s Proposed Load Factor Incentive Formula. The same was submitted by MSEDCL, which can be referred in the above submissions of MSEDCL. The Commission after understanding the above illustration finds it evident that, the removal of '60 Hours' from LF formula and using actual hours of interruptions will provide the correct estimation of LF and the proposal of correcting LF formula has been accepted by the Commission.

8.14.16 In addition, with AMR/MRI enabled meters being installed to all HT consumers, actual hours of interruptions are recorded in meter and are readily available at the time of processing of monthly bill. Hence, in order to compute correct Load Factor, the Commission has modified the formula and has included the actual interruptions hours recorded in the meter instead of provision for 60 hours. In case of faulty meter where interruptions hours are not recorded in the meter, the interruptions hours recorded on feeder meter shall be considered for calculation of Load Factor Incentive for the individual consumer

## **8.15 Rebate for Incremental Consumption**

### ***MSEDCL's Submission***

8.15.1 Petitioner in its MTR petition proposed to provide incentive to the existing HT consumers for incremental consumption, with a rebate of Rs.1/kVAh in energy charges for additional consumption over a threshold limit, provided the effective variable charge of such consumer should not be less than Rs.4/kVAh after considering all charges, rebates, incentives, etc.

8.15.2 Petitioner submitted that the Commission in its MTR Order dated 12<sup>th</sup> September 2018 has observed that encouraging incremental consumption by way of discount would be good in surplus power scenario and contracted capacity is available in excess which otherwise would be subjected to backing down. However, the Commission further states that

providing such rebate during MTR review process would not be proper and hence the same can be considered along with next filing for new Control Period with detailed scheme and cost/benefit analysis of such scheme.

8.15.3 Petitioner further submitted that, the Commission in Regulation 81.4 of MYT Regulations 2019 provides for such rebates, “The Distribution Licensee may propose other rebates for inter-alia, taking supply at higher voltage, bulk consumption, power factor, etc. as apart of their petition and the revenue impact of the rebates shall be passed on through the Aggregate Revenue Requirement and tariffs, subject to the Commission’s approval.” However, this rebate should not be considered under the Regulation 81.5 of the MYT Regulations 2019. Petitioner requested the Commission to allow this rebate as a part of the ARR. The impact assessment of incremental consumption, estimate of eligible consumer/consumption base etc. have been illustrated below:

<b>Cost benefit analysis</b>	<b>UoM</b>	<b>FY 2020-21</b>	<b>FY 2021-22</b>	<b>FY 2022-23</b>	<b>FY 2023-24</b>	<b>FY 2024-25</b>
Sales due to incremental consumption	MU	2424	1318	1392	1472	1561
Average billing rate of HT consumers	Rs./unit	9.12	9.31	9.49	9.66	9.81
Rebate given for incremental consumption	Rs./Unit	1.00	1.00	1.00	1.00	1.00
<b>Net ABR for HT consumers</b>	<b>Rs./Unit</b>	<b>8.12</b>	<b>8.31</b>	<b>8.49</b>	<b>8.66</b>	<b>8.81</b>
<b>Total revenue from incremental sales</b>	<b>Rs. Cr</b>	<b>1969</b>	<b>1094</b>	<b>1181</b>	<b>1275</b>	<b>1376</b>
<b>Purchase quantum for incremental sales</b>	<b>MU</b>	<b>2621</b>	<b>1425</b>	<b>1505</b>	<b>1592</b>	<b>1687</b>
Marginal variable cost of power purchase	Rs./Unit	3.00	3.00	3.00	3.00	3.00
<b>Total cost for incremental sales</b>	<b>Rs. Cr</b>	<b>786</b>	<b>427</b>	<b>451</b>	<b>478</b>	<b>506</b>
<b>Total benefit</b>	<b>Rs. Cr</b>	<b>1183</b>	<b>667</b>	<b>730</b>	<b>798</b>	<b>869</b>

8.15.4 Petitioner submitted that, it would get additional revenue for incremental sales due to such subsidising consumers.

8.15.5 Petitioner proposed to provide incentive to HT consumers for incremental consumption with a rebate of Re.1/kVAh in energy charges for additional consumption over a fixed threshold but the consumers have to pay the fixed and wheeling charges as may be applicable to that category. The criterion for allowing the rebate shall be as under:

- The rebate shall be applicable for HT industries, HT commercial, HT public services and HT Railways/Metro/Mono.
- The rebate shall be given only to those consumers who source their entire power from MSEDCL.
- The rebate shall be for a period of 5 years subject to reconsideration during the MTR.
- The rebate shall be allowed to consumers who consume power above threshold limit. The total consumption in financial year FY 2018-19 by the consumer shall be considered as baseline consumption.
- In case, period is less than one year, baseline consumption shall be worked out on prorated basis.
- The billing at the reduced rates after allowing the rebate shall be done once the consumer crosses the baseline consumption. E.g. If a consumer's total annual consumption in FY 2018-19 was 10,000 units, the consumer shall be entitled for the rebate of Rs.1/kVAh for consumption exceeding consumption of previous year (not below the baseline consumption of 10,000 units) in FY 2020-21 onwards.
- The amount of rebate shall be adjusted in the consumer's bill after completion of the financial year
- The rebate shall be over and above the existing rebates subject to the fact that the consumer's total variable charges should not be less than Rs.4/ kVAh after accounting all applicable rebates.
- The rebates would also be applicable to Open Access consumers who shift their entire demand to MSEDCL

8.15.6 Petitioner submitted that such incentives on incremental consumption is prevalent for

industrial, non-industrial and shopping mall categories in Madhya Pradesh and the relevant clause (3.12 – xii of MPERC Tariff Order FY 19-20) for the same is reproduced as “A rebate of Re.1 per unit energy charges is applicable for incremental monthly consumption w.r.t corresponding month of FY 2015-16.”

8.15.7 Petitioner submitted that in order to reduce the burden of fixed charges on its consumers, there is a need to promote consumption from MSEDCL. Petitioner will also get additional revenue from the subsidising HT categories apart from optimum utilisation of all sources of power. Petitioner further submitted that benefit of increased revenue as a result of increased consumption will get passed on through tariffs during future trueing up which will be a win-win situation for all stakeholders including consumers. Petitioner, thus, requested the Commission to approve the above proposal and consider the said rebate as a part of ARR.

### ***Commission’s Analysis and Rulings***

8.15.8 The Commission notes the submission and rationale provided by MSEDCL for offering rebate for incremental consumption. With surplus contracted energy available at its disposal, the Commission agrees with MSEDCL about exploring avenues for increasing sales within its distribution area as well as opportunities of surplus trading of power through power exchanges and inter-utility exchange within state. In addition any incremental consumption by existing or future consumers would help MSEDCL gainfully utilise surplus /stranded power generation/contracted capacity available with it instead of backing down. So long as the opportunity for revenue recovery from such sources exceed the variable/incremental cost of sourcing of such power, it would only benefit MSEDCL to reduce burden of surplus/stranded power capacity. In that sense, offering such rebate for incremental consumption to direct consumers as well as open access consumers would be in order, since aim for offering such rebate is to increase incremental consumption/sale by Licensee. Hence, the Commission opines that offering such rebate for incremental consumption to all consumers including partial open access consumers, subject to clearly laid out conditions would be appropriate.

8.15.9 In this context, the Commission observes that Regulation 81.4 of MYT Regulations 2019 allows for provisioning of such rebates,

*“The Distribution Licensee may propose other rebates for inter-alia, taking supply at higher voltage, bulk consumption, power factor, etc. as a part of their petition and the revenue impact of the rebates shall be passed on through the Aggregate Revenue Requirement and tariffs, subject to the Commission’s approval.”*

8.15.10 Thus, as covered under earlier sections, impact of such rebate has been estimated based on sales projections with some assumptions to be recovered as part of ARR component in line with regulatory accounting treatment given in case of discounts/prompt payment rebate etc.

8.15.11 Thus, in line with the MSEDCL's Proposal and Commission's view on allowing rebate for incremental consumption with certain modifications to MSEDCL's proposal, the Commission in principle accepts the proposal of MSEDCL. The rebate for incremental consumption is allowed @ Rs 0.75/KVAh and further, it needs to be ensured that conditions and operational modalities are laid out clearly to avoid any discrimination and potential litigations are minimal.

8.15.12 Detailed modalities for operationalization of rebate for incremental consumption along with relevant conditions for applicable consumer categories and eligible consumers shall be governed as per following conditions:

- The rebate for incremental consumption shall be applicable for HT industries, HT commercial, HT public services, HT-PWW, HT Railways/Metro/Mono and HT-Group Housing Society (Residential).
- The rebate shall be given to eligible consumers including partial open access consumers falling under above consumer categories to the extent of procurement from MSEDCL.
- The rebate shall be for a period of 3 years subject to reconsideration during the MTR.
- The rebate shall be allowed to eligible consumers who consume power above threshold limit.
- The 3-year average monthly consumption by consumer from FY 2017-18 to FY 2019-20 shall be considered as baseline consumption (or monthly threshold consumption) for determination of incremental consumption by such eligible consumers.
- In case of a consumer registered into system for duration lower than 3 years, such consumer shall be eligible for availing incremental rebate from the next billing cycle upon completion of 3-year period and average monthly consumption for past three years shall be considered as its baseline consumption (or monthly threshold

consumption) in such cases for determination of their incremental consumption for the purpose of rebate.

- For the purpose of determination of Incremental consumption post MTR period of 4<sup>th</sup> Control Period, (i.e. for FY 2023-24 and FY 2024-25), baseline consumption (or monthly threshold consumption) shall be reset based on 3-year average from FY 2020-21 to FY 2022-23.
- The billing at the reduced rates after allowing the rebate shall be done on monthly basis subject to condition that net entitlement for the rebate under this head of incremental consumption shall be determined on annual basis (April to March) equal to energy units consumption in excess of baseline consumption (i.e. annual threshold consumption). The adjustment for shortfall/excess in case cumulative monthly consumption for the yearly consumption vis-à-vis its baseline consumption (i.e. annual threshold consumption) shall be effected in the last monthly (for March) billing period. No carry-forward of shortfall/excess shall be allowed from one year to next year.

Provided that such adjustment of rebate for yearly incremental consumption vis-à-vis baseline consumption (i.e. annual threshold consumption) shall be undertaken from FY 2021-22 onwards and no such adjustment shall be undertaken for FY 2020-21 wherein monthly rebate shall continue considering emergent situation arising in FY 2020-21 due to global pandemic of COVID-19 and its possible fall out on annual electricity consumption by industry and society at large.

- For example, If a consumer's 3-year average annual consumption in was 12,000 units, the consumer shall be entitled for the rebate of Rs.0.75/kVAh for consumption exceeding its monthly threshold consumption (not below the baseline consumption of 1,000 units per month) in FY 2021-22 onwards. However, in case its cumulative monthly consumption for the yearly period falls short of annual threshold consumption of 12,000 units then, consumer shall not be entitled for incremental consumption rebate for that financial year and shortfall (or rebate already availed by consumer in earlier months, if any) shall be adjusted for recovery in monthly billing period for March.
- The Commission has not considered isolated cases which may become Permanently Disconnected during the year in which a rebate has been availed for some months. The details of such cases, if any will be dealt based on the data as may be submitted by MSEDCL during MTR.

- The rebate shall be over and above the existing rebates subject to the fact that the consumer's total variable charges should not be less than Rs.4/ kVAh after accounting for all applicable rebates.
- The rebates would also be applicable to Open Access consumers, subject to conditions outlined above.

## 8.16 Rebate for Bulk Consumption

### *Commission's Analysis and Rulings*

8.16.1 During public hearing, many industrial consumers have voiced concerns regarding high tariff regime prevalent in the state in comparison to other states for similarly placed industries. They have also highlighted their bulk consumption offers significant revenue stability to Utility as also other benefits in terms of power procurement planning and load generation balancing by Utility. With expected increase in demand charges and likely revision in billing demand their cost of operations where electricity is major raw material source affects the economics of their operations significantly. Hence, such industries/stakeholders have vehemently argued their case for bulk consumption discount or rebate.

8.16.2 The Commission observes that out of around 14000 number of HT-Industrial consumers, around 0.4% no. of consumers consume > 5 MU/month and contribute around 25% of total consumption of HT-Industrial category. Further, around 3% no. of consumers consume between 1 to 5 MU/month and contribute around 29% of total consumption of HT-Industrial category and around 22% no. of consumers consume between 0.1 to 1 MU/month and contribute around 39% of total consumption of HT-Industrial category. The Commission opines that bulk consumption rebate with a reverse telescopic slab would benefit all such consumers under HT-Industrial consumers with consumption in excess of 1 lakh units per month (0.1 MU per month). Thus, the Commission has decided to introduce "Bulk Consumption" rebate in a reverse telescopic manner for HT-Industrial consumers in following manner:

- a) For monthly consumption (> 1 Lakh units to 1 MU) per month: 2%
- b) For monthly consumption (> 1 MU to 5 MU) per month: 1.5%
- c) For monthly consumption (> 5 MU) per month: 1%

8.16.3 Bulk Consumption Rebate shall be applicable on the Energy Charge component including

FAC of the Bill excluding taxes and duty.

8.16.4 In this context, the Commission observes that Regulation 81.4 of MYT Regulations 2019 allows for provisioning of such Bulk Consumption rebates,

*“The Distribution Licensee may propose other rebates for inter-alia, taking supply at higher voltage, bulk consumption, power factor, etc. as a part of their petition and the revenue impact of the rebates shall be passed on through the Aggregate Revenue Requirement and tariffs, subject to the Commission’s approval.”*

8.16.5 Thus, as covered under earlier sections, impact of such rebate has been estimated based on sales projections with some assumptions to be recovered as part of ARR component in line with regulatory accounting treatment given in case of discounts/prompt payment rebate etc.

8.16.6 Illustration:

8.16.7 Say a consumer consumes 15 MU during month then, its consumption more than 1 Lakh units upto 1 MU units rebate will be 2%/unit, for next 4 MU (i.e. upto consumption of 5 MU) rebate will be 1.5%/unit and for consumption in excess of 5 MU upto 15 MU, rebate will be 1%/unit.

## **8.17 Prepaid Meter Rebate**

### ***MSEDCL’s Submission***

8.17.1 MSEDCL submitted that it was difficult to persuade consumers to shift to prepaid metering in the absence of any discount. Further, activities like meter reading, preparation and distribution of bills and payment collection takes considerable time and the costs associated with such processes is a significant amount that is being charged to the consumers which will decrease if consumers opt for prepaid meters. In view of this, the Commission in its Tariff Order as dated on 12th September 2010 (in Case No.111 of 2009) has approved prepaid meter rebate of 5%.

8.17.2 Petitioner submitted that the consumers paying regular bills within the stipulated timelines get Prompt Payment Discount of 1%. Petitioner further submitted that the Commission provides interest for normative working capital at a rate of about 8-10% p.a. which is less than 1% per month. The Commission provides interest for security deposit at bank rate which is about 6-6.5% p.a. The interest rates provided for bank deposits are also in the range of 6-8% p.a. Petitioner also submitted that in view of the same, existing discount of 5% is

much higher which comes to 60% p.a. which was initially given as promotional activity and there is a need to correct the same.

8.17.3 Petitioner proposed to reduce the prepaid meter rebate to 2% of the consumer’s total monthly bill as the existing rebate appears quite high considering the saving in cost from implementation of prepaid meters. Petitioner also submitted that even after reduction of 2%, it is still attractive and higher than prompt payment discount.

8.17.4 Petitioner, thus, requested the Commission to allow the Prepaid Meter Rebate as proposed above.

**Commission’s Analysis and Rulings**

8.17.5 The Commission has sought the detailed rationale of MSEDCL’s proposal of reducing the existing prepaid meter rebate as part of data gaps, to which the response of MSEDCL was not found sufficient enough to justify its claim of reducing the rebate for prepaid meters from 5% to 2%.

8.17.6 In addition, the Commission has also sought the details of category wise prepaid sales as part of data Gaps, the details of the same is provided in the following table:

**Table 8-26: Category wise prepaid sales**

Category	FY 2016-17		FY 2017-18		FY 2018-19	
	Live_Cons	Sale	Live_Cons	Sale	Live_Cons	Sale
	Nos.	MUs	Nos.	MUs	Nos.	MUs
LT Prepaid Res,	11372	10.77	10,528	9.59	9,438	7.75
LT- Prepaid Comm.	1693	1.14	1557	0.97	1358	0.70
LT- Prepaid Temp.	6	0.00	12	0.00	13	0.00
<b>Total</b>	<b>13,071</b>	<b>11.91</b>	<b>12,097</b>	<b>10.57</b>	<b>10,809</b>	<b>8.45</b>

8.17.7 From above table, it is clear that, the overall sales of LT prepaid meter sales is very miniscule to have any significant impact on overall ARR which necessitates review of rebate for prepaid from current level of 5% to 2%. In addition, there is a y-o-y reduction in the Prepaid meter sales, reducing the existing rebate from 5% to 2%, will further demotivate the consumer who wish to opt for prepaid connections. Thus, the Commission has

not accepted the present proposal of MSEDCL in this Order.

8.17.8 The Commission has already approved the capital cost for release of Ag connection on HVDS. The Capital cost involved in releasing Ag connection under HVDS is relatively costly compared to realigning the same on LT level. The Commission also agrees with the advantages of the HVDS system in terms of reliability and quality of supply to the Ag consumers. The Commission also agrees with MSEDCL that with all associated advantage and higher investments, there is a clear expectation of MSEDCL to received timely payments. The higher capital cost is socialized on all the consumers. The Commission directs MSEDCL that all the HVDS connections shall be released through prepaid meters only. Also, HVDS Ag connections released earlier should also be converted into prepaid meters within 6 months. Also, in case of non-availability of prepaid meters, the released connections should be converted to prepaid meters within 6/12 months.

## 8.18 InSTS Charges for Open Access Consumers

### *MSEDCL's Submission*

8.18.1 MSEDCL submitted that the Commission in its Order dated 14th June 2019 had directed the Petitioner to submit details of revenue collected on account of transmission charges from partial OA consumers for the period of FY 2016-17 to FY 2019-20 in its next tariff petition. Accordingly, the Petitioner submitted the details of transmission charges collected from partial OA consumers in the following table:

**Table 8-27: Transmission charges collected from partial OA**

Particulars	Amount in Rs. Crores
FY 2016-17	284.82
FY 2017-18	220.17

8.18.2 Petitioner submitted that the Distribution Licensees may be allowed to retain the transmission charges collected from partial OA consumers as the demand from partial OA consumers is embedded within the demand of the Licensee. Hence, the transmission charges payable by the Distribution Licensee also includes the share of transmission charges attributable to partial Open Access consumers which the Distribution Licensee must recover from partial OA consumers to avoid any burden on regular consumers.

8.18.3 Petitioner further submitted that the CPD/NCPD of Distribution Licensee should be

exclusive of the open access capacity of partial OA consumers while calculating the Base TCR of the Distribution Licensee for determination of InSTS charges. This will ensure correct transmission charge liability of the Distribution Licensees corresponding to their own consumers since, by including open access capacity for partial OA consumers, STU is getting paid double for the same demand. Following table provides details of partial open access consumers and its impact on the Petitioner:

**Table 8-28: Transmission charges- details of partial OA**

Particulars	Unit	FY 16-17	FY 17-18	FY 18-19
Base TCR approved for MSEDCL	MW	15657	16663	17891
MSEDCL share in TTSC	Rs. Crs	3837	4797	4288
Transmission charges	Rs.Crs/MW	0.25	0.29	0.24
Partial OA capacity	MW	1838	1274	1224
Amount paid by MSEDCL from partial OA consumers	Rs. Crs	450	367	293
Amount collected by MSEDCL from partial OA consumers	Rs. Crs	285	220	182
<b>Loss to MSEDCL</b>	<b>Rs. Crs</b>	<b>166</b>	<b>147</b>	<b>111</b>

8.18.4 Petitioner requested the Commission to allow it to retain the transmission charges collected from partial OA consumers. Petitioner further requested the Commission to devise a mechanism to recover the complete amount of transmission charges due to OA consumers. Petitioner submitted that it has raised this issue several times before the Commission through submissions in petition and comments on Draft Open Access Regulations.

### ***Commission’s Analysis and Rulings***

8.18.5 The Commission has already discussed its detailed dispensation of not allowing MSEDCL’s claim of retaining Transmission Charges collected on behalf of STU in the ARR sections above and accordingly the impact of the same have also been disallowed in the respective year’s ARR.

8.18.6 Besides, the Commission has also issued directions for passing on the earlier retained revenue from transmission charges collected from partial open access consumers during FY 2017-18 to FY 2019-20 to be passed onto STU in a time-bound manner. The reduction in

Non-tariff income and increase in ARR to that effect has already been given effect to through this Order. Further, benefit of such passing on of transmission charge revenue would also be available to MSEDCL, (being TSU), as part of sharing of Intra-state transmission system cost (TTSC) in proportion to its share in TTSC.

## **8.19 kVA based Fixed Charges for loads < 20 kW & load in kVA instead of kW**

### ***MSEDCL's Submission***

8.19.1 Petitioner submitted that at present tariff is categorised as per the Sanctioned load in kW, for categories such as LT commercial, LT Public services and LT industrial, the fixed charges for 0-20 kW are based on Rs./Connection/Month while the consumers above 20 kW in these categories are billed on the contract demand basis (kVA) of the consumer i.e. Rs./kVA/month. Hence, it is necessary to divide categories as per Contract Demand of the consumer. Following cases highlight the necessity for contract demand as a basis for categorisation.

- Case 1: - If consumer having 20 kW sanctioned load uses the same load at 0.7 PF, then the demand of the consumer will be =  $20/0.7 = 28.57$  kVA
- Case 2: - If consumer having 25 kW sanctioned load uses the same load at unity PF, then the demand of the consumer will be =  $25/1 = 25$  kVA

8.19.2 Petitioner submitted that, in Case 1, the consumer uses more Contract Demand than Case 2 but still gets billed at only Fixed Charge of Rs. /connection/month because sanctioned load is below 20 kW. Hence it is necessary to correlate slabs of tariff in kVA also.

8.19.3 Petitioner suggested that the sub slabs in the 3 phase LT categories need to be on the basis of kVA only and based on the recorded demand, the consumer shall be billed on Rs./kVA/month for that month and if the consumer crossed the 20 kVA limit on three instances in a year, he shall be categorised in higher slab permanently. Petitioner submitted that; the Commission has given similar ruling in the Order dated 1<sup>st</sup> January 2019 in Case No.60 of 2018.

8.19.4 Petitioner further submitted that if the consumer is willing to reduce the demand back to its previously allocated demand, then it would monitor the load of the consumer for 3 consecutive months before switching it back to the previously allocated lower tariff category. Further, all consumers shall be charged for minimum demand of 1 kVA even if the consumer's demand is below 1 kVA.

8.19.5 Petitioner submitted that it shall continue to levy fixed charges on Rs./connection/month as per the proposed tariff for consumers having single phase connections (upto 40 Amp/7.5 kW) in 0-20 kVA industries, commercial, public services in LT category. Petitioner thus, requested the Commission to allow the kVA-based demand charges for LT category as proposed above.

### ***Commission's Analysis and Rulings***

8.19.6 The Commission has noted the submissions of MSEDCL, and is of the view that, the proposed billing based on the Contract Demand for 3-Phase LT consumers between 0-20 kW cannot be implemented at this stage, since, the Commission is not yet sure of the readiness of MSEDCL and also MSEDCL needs to carry out a detailed study about the likely impact of implementation of this proposal. The Commission would not like to take any hasty step that may result in the tariff shock for such consumer categories at the same time, it is also important to assess the potential impact on number of consumers alongwith their connected load. In earlier sections, the Commission has already dealt with issue of Tariff design for consumers < 20 kW including feasibility of extending kVAh billing in phases, likely impact of revision in Fixed/Demand Charges for such low end consumption basket but affecting vast number of consumers. A comprehensive study on these aspects would be necessary before redesigning tariff aspects for such consumer categories.

8.19.7 Thus, the Commission has not allowed proposed claim of MSEDCL in this Order.

## **8.20 Grid Support Charges for Rooftop Net Metering Arrangements**

### ***MSEDCL's Submission***

8.20.1 Petitioner submitted that it has always supported renewable energy and its current RE contracted capacity is 10795 MW and installed capacity is 7654 MW which is one of the highest in the country.

8.20.2 Petitioner submitted that it encounters challenges due to continuous addition of rooftop RE systems as installation of such facility not only reduces the utilisation of its distribution network but also disturbs the power planning and results into stranded tied-up capacity of generation. Net metering consumers end up paying much lower charges for keeping ready the network and generation capacity which was earlier setup/ tied up for all consumers including these (rooftop) consumers while the burden of unrecovered expenses falls on other consumers of MSEDCL.

- 8.20.3 The solar energy is generated during daytime and after self-consumption by the consumer, the balance energy is fed into the grid. Due to its combined impact, the utility has to back down thermal generation but is obligated to pay same fixed cost to generators. When there is no solar power generation (evening, seasonal change, technical problem in the system, etc.), the rooftop consumer draws full power as per the requirement from the grid and utility has to keep network and generators on bar ready to feed this demand. The rooftop consumer is using the grid as a storage system for his solar rooftop arrangement under the net metering and at the same time, loading the balance costs on other consumers of the distribution utility such as generators fixed cost, infrastructure cost recovery, CSS etc. Thus the burden of such unrecovered expenses from net metering systems falls on other consumers of MSEDCL.
- 8.20.4 Petitioner further submitted that the net metering facility is being utilised by the high end HT/LT consumers which are subsidising consumers and the event of any decrease in consumption by these consumers from Distribution Licensee will have a direct impact by way of increase in tariff for all consumers due to under recovery. Thus, Cross subsidy balance inbuilt in the tariff structure will get disturbed.
- 8.20.5 Petitioner submitted that the Commission has provided for levy of Grid Support Charges on the generated energy under the net metering systems in the MERC Grid Interactive Rooftop Renewable Energy Generating systems Regulations 2019.
- 8.20.6 Petitioner submitted that as per the Net Metering Regulations 2019, the Grid Support Charges cover balancing, banking and wheeling cost after adjusting RPO benefits avoided distribution losses and any other benefits accruing to the Distribution Licensee.
- 8.20.7 Petitioner submitted that the fixed cost component of its cost gets recovered partially through demand/fixed charges. However, the variable charges along with the fixed cost component built into it remains unrecovered. Petitioner further submitted that it shall save only variable component of power purchase cost and T&D losses due to consumer opting for net metering arrangement. Petitioner proposed Grid Support Charges for rooftop net metering arrangements considering the category-wise variable charges, marginal variable cost of power purchase, applicable wheeling and intra state transmission losses. Petitioner has shown the computation for FY 2020-21 in the following table:

**Table 8-29: Proposed Grid Support Charges for Rooftop Net Metering Arrangements (FY 2020-21)**

Category	Variable charge	Marginal cost of power purchase	Intra state transmission loss	Wheeling loss	Grid Support Charge
	Rs./kVAh	Rs./kWh	%	%	Rs./kVAh
<b>HT I: HT – Industry</b>					
HT	7.88	3.38	3.74%	7.50%	4.08
EHV	7.11	3.38	3.74%		3.60
<b>HT I(B): HT – Industry (Seasonal)</b>					
HT	8.17	3.38	3.74%	7.50%	4.37
EHV	7.40	3.38	3.74%		3.89
<b>HT II: HT – Commercial</b>					
HT	12.47	3.38	3.74%	7.50%	8.67
EHV	11.70	3.38	3.74%		8.19
<b>HT III: HT – Railways/Metro/Monorail traction</b>					
HT	7.97	3.38	3.74%	7.50%	4.17
EHV	7.20	3.38	3.74%		3.69
<b>HT IV: HT – Public Water Works</b>					
HT	7.27	3.38	3.74%	7.50%	3.47
EHV	6.50	3.38	3.74%		2.99
<b>HT V(A): HT – Agricultural Pumpsets</b>					
HT	4.67	3.38	3.74%	7.50%	0.87
EHV	3.90	3.38	3.74%		0.39
<b>HT V(B): HT – Agriculture (Others)</b>					
HT	6.17	3.38	3.74%	7.50%	2.37
EHV	5.40	3.38	3.74%		1.89
<b>HT VI: HT – Group Housing Societies (Residential)</b>					

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Category	Variable charge	Marginal cost of power purchase	Intra state transmission loss	Wheeling loss	Grid Support Charge
HT	6.77	3.38	3.74%	7.50%	2.97
EHV	6.00	3.38	3.74%		2.49
<b>HT VIII(A): HT – Temporary Supply Religious (TSR)</b>					
HT	4.67	3.38	3.74%	7.50%	0.87
EHV	3.90	3.38	3.74%		0.39
<b>HT VIII(B): HT – Temporary Supply Others (TSO)</b>					
HT	13.17	3.38	3.74%	7.50%	9.37
EHV	12.40	3.38			9.02
<b>HT VIII(B): HT – Temporary Supply Others (TSO) Total</b>	17.38		3.74%		
<b>HT IX: HT – Public Services</b>					
<b>HT IX(A): HT – Public Services – Govt. Edu. Institutions and Hospitals</b>					
HT	8.77	3.38	3.74%	7.50%	4.97
EHV	8.00	3.38	3.74%		4.49
<b>HT IX(B): HT – Public Services – Others</b>					
HT	10.67	3.38	3.74%	7.50%	6.87
EHV	9.90	3.38	3.74%		6.39
<b>HT X: HT – Electric Vehicle Charging Station</b>					
HT	6.17	3.38	3.74%	7.50%	2.37
EHV	6.17	3.38	3.74%		2.65

Category	Variable charge	Marginal cost of power purchase	Intra state transmission loss	Wheeling loss	Grid Support Charge
	Rs./kWh	Rs./kWh	%	%	Rs./kWh

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<b>LT Residential</b>					
LT I(A): LT – Residential – BPL	1.36	3.38	3.74%	12.00%	-
<i>LT I(B): LT – Residential</i>					
1 – 100 units	4.45	3.38	3.74%	12.00%	0.46
101 – 300 units	8.45	3.38	3.74%	12.00%	4.46
301 – 500 units	11.05	3.38	3.74%	12.00%	7.06
Above 500 units	12.65	3.38	3.74%	12.00%	8.66
<b>LT II: LT – Non Residential</b>					
(A) 0 – 20 kVA	9.05	3.38	3.74%	12.00%	5.06
(B) > 20 kVA and ≤ 50 kVA	10.65	3.38	3.74%	12.00%	6.66
(C) > 50 kVA	12.75	3.38	3.74%	12.00%	8.76
<b>LT III: LT – Public Water Works</b>					
(A) 0 – 20 kVA	3.45	3.38	3.74%	12.00%	-
(B) > 20 kVA and ≤ 50 kVA	4.75	3.38	3.74%	12.00%	0.76
(C) > 50 kVA	6.05	3.38	3.74%	12.00%	2.06
<b>LT IV(C): LT – Agriculture Metered – Others</b>	4.85	3.38	3.74%	12.00%	0.86
<b>LT V(A): LT – Industry – Powerlooms</b>					
(i) 0 – 20 kVA	6.05	3.38	3.74%	12.00%	2.06
(ii) Above 20 kVA	7.45	3.38	3.74%	12.00%	3.46
<b>LT V(B): LT – Industry – General</b>					
(i) 0 – 20 kVA	6.15	3.38	3.74%	12.00%	2.16
(ii) Above 20 kVA	7.05	3.38	3.74%	12.00%	3.06
<b>LT VI: LT – Street Light</b>					
(A): Grampanchayat; A, B and C class Municipal Councils	6.05	3.38	3.74%	12.00%	2.06
(B): Municipal Corporation area	7.15	3.38	3.74%	12.00%	3.16
<b>LT VII: LT – Temporary Connection</b>					

(A): LT – Temporary Supply Religious (TSR)	4.55	3.38	3.74%	12.00%	0.56
(B): LT – Temporary Supply Others (TSO)	14.35	3.38	3.74%	12.00%	10.36
<b>LT VIII: LT – Advertisements and Hoardings</b>	13.55	3.38	3.74%	12.00%	9.56
<b>LT IX: LT – Crematorium and Burial Grounds</b>	4.55	3.38	3.74%	12.00%	0.56
<b>LT X(A) – Public Services – Govt.</b>					
(i) 0 – 20 kVA	4.85	3.38	3.74%	12.00%	0.86
(ii) > 20 kVA and ≤ 50 kVA	5.65	3.38	3.74%	12.00%	1.66
(iii) > 50 kVA	6.85	3.38	3.74%	12.00%	2.86
<b>LT X(B) – Public Services - Others</b>					
(i) 0 – 20 kVA	6.95	3.38	3.74%	12.00%	2.96
(ii) > 20 kVA and ≤ 50 kVA	8.25	3.38	3.74%	12.00%	4.26
(iii) > 50 kVA	8.75	3.38	3.74%	12.00%	4.76
<b>LT XI: LT – Electric Vehicle Charging Station</b>	6.15	3.38	3.74%	12.00%	2.16

8.20.8 Following table provides the category wise and year wise proposed Grid Support Charges for Rooftop Net Metering Arrangements

**Table 8-30: Grid Support Charges for Rooftop Net Metering Arrangements (H T Category)**

Category	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25
	Rs./kVAh	Rs./kVAh	Rs./kVAh	Rs./kVAh	Rs./kVAh
<b>HT I: HT – Industry</b>					
HT	4.08	4.07	4.05	4.03	3.96
EHV	3.60	3.59	3.57	3.57	3.52
<b>HT I(B): HT – Industry (Seasonal)</b>					
HT	4.37	4.37	4.35	4.33	4.29
EHV	3.89	3.89	3.87	3.87	3.85

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Category	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25
<b>HT II: HT – Commercial</b>					
HT	8.67	8.57	8.45	8.33	8.19
EHV	8.19	8.09	7.97	7.87	7.75
<b>HT III: HT – Railways/Metro/Monorail traction</b>					
HT	4.17	4.27	4.35	4.43	4.49
EHV	3.69	3.79	3.87	3.97	4.05
<b>HT IV: HT – Public Water Works</b>					
HT	3.47	3.57	3.65	3.73	3.79
EHV	2.99	3.09	3.17	3.27	3.35
<b>HT V(A): HT – Agricultural Pumpsets</b>					
HT					
EHV					
<b>HT V(B): HT – Agriculture (Others)</b>					
HT	2.37	2.47	2.55	2.63	2.69
EHV	1.89	1.99	2.07	2.17	2.25
<b>HT VI: HT – Group Housing Societies (Residential)</b>					
HT	2.97	3.07	3.15	3.23	3.29
EHV	2.49	2.59	2.67	2.77	2.85
<b>HT VIII(A): HT – Temporary Supply Religious (TSR)</b>					
HT					
EHV					
<b>HT VIII(B): HT – Temporary Supply Others (TSO)</b>					
HT	9.37	9.67	9.95	10.23	10.49
EHV	9.02	9.19	9.47	9.77	10.05

Category	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25
<b>HT IX: HT – Public Services</b>					
<b>HT IX(A): HT – Public Services – Govt. Edu. Institutions and Hospitals</b>					
HT	4.97	4.97	4.95	4.93	4.89
EHV	4.49	4.72	4.61	4.92	5.02
<b>HT IX(B): HT – Public Services – Others</b>					
HT	6.87	6.87	6.85	6.83	6.79
EHV	6.39	6.39	6.37	6.37	6.35
<b>HT IX: HT – Public Services Total</b>					
<b>HT X: HT – Electric Vehicle Charging Station</b>					
HT	2.37	2.59	2.55	2.63	2.69
EHV	2.65	2.09	2.07	2.17	2.25

**Table 8-31: Grid Charges for Rooftop Net Metering Arrangements (LT category)**

Category	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25
	Rs./kWh	Rs./kWh	Rs./kWh	Rs./kWh	Rs./kWh
<b>LT Residential</b>					
<i>LT I(B): LT – Residential</i>					
1 – 100 units					
101 – 300 units	4.46	4.56	4.63	4.69	4.73
301 – 500 units	7.06	6.96	8.63	6.69	6.53
Above 500 units	8.66	8.56	8.43	8.39	8.33
<b>LT II: LT – Non Residential</b>					
(A) 0 – 20 kVA	5.06	5.16	5.23	5.29	5.33
(B) > 20 kVA and ≤ 50 kVA	6.66	6.86	7.03	7.19	7.33
(C) > 50 kVA	8.76	8.86	8.93	8.89	8.83

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Category	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25
<b>LT III: LT – Public Water Works</b>					
(A) 0 – 20 kVA					
(B) > 20 kVA and ≤ 50 kVA					
(C) > 50 kVA	2.06	2.06	2.13	2.19	2.23
<b>LT IV(C): LT – Agriculture Metered – Others</b>					
<b>LT V(A): LT – Industry – Powerlooms</b>					
(i) 0 – 20 kVA	2.06	2.16	2.33	2.49	2.63
(ii) Above 20 kVA	3.46	3.46	3.53	3.59	3.63
<b>LT V(B): LT – Industry – General</b>					
(i) 0 – 20 kVA	2.16	2.36	2.53	2.69	2.83
(ii) Above 20 kVA	3.06	3.26	3.43	3.59	3.73
<b>LT VI: LT – Street Light</b>					
(A): Grampanchayat; A, B and C class Municipal Councils	2.06	2.06	2.13	2.19	2.23
(B): Municipal Corporation area	3.16	3.26	3.33	3.39	3.43
<b>LT VII: LT – Temporary Connection</b>					
(A): LT – Temporary Supply Religious (TSR)					
(B): LT – Temporary Supply Others (TSO)	10.36	10.66	10.93	11.19	11.43
<b>LT VIII: LT – Advertisements and Hoardings</b>	9.56	9.86	10.13	10.39	10.63
<b>LT IX: LT – Crematorium and Burial Grounds</b>					
<b>LT X(A) – Public Services – Govt.</b>					
(i) 0 – 20 kVA					
(ii) > 20 kVA and ≤ 50 kVA	1.66	1.76	1.83	1.89	2.03
(iii) > 50 kVA	2.86	3.06	3.23	3.39	3.53

Category	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25
<b>LT X(B) – Public Services - Others</b>					
(i) 0 – 20 kVA	2.96	3.16	3.33	3.49	3.63
(ii) > 20 kVA and ≤ 50 kVA	4.26	4.56	4.83	5.09	5.33
(iii) > 50 kVA	4.76	5.06	5.33	5.59	5.83
<b>LT XI: LT – Electric Vehicle Charging Station</b>	2.16	2.36	2.53	2.69	2.83

8.20.9 Petitioner requested the Commission to approve the levy of Grid Support Charges on generated energy for Net Metering systems as proposed above.

8.20.10 Petitioner submitted that the Grid Support Charges for rooftop Net Metering arrangements shall vary depending on:

- Any cost approved by the Commission for Genco/Transco in their respective Tariff orders or by way of a separate order
- Variation in any cost approved by the Commission affecting MSEDCL tariff
- Petitioner’s REC requirement to fulfil the shortfall in meeting the RPO targets
- The prevailing monthly market rate for RECs

8.20.11 Petitioner submitted that, the RPO benefits, being a variable element, shall be adjusted at the year-end i.e. at the time of settlement of banked units and after assessment of REC requirement, as per the actual monthly REC rates and consumption during the respective month and financial impact of net metering of below 10 kW consumers.

8.20.12 Petitioner submitted that the benefit of RPO (REC rate) shall be as per the prevailing market rates. Petitioner further submitted that in case it does not require the energy for RPO fulfilment, the benefit of RPO to net metering consumers shall be treated as Zero and the benefit shall be adjusted only till the time the Petitioner has RPO shortfall. Further, if the consumer is an obligated entity (above 1 MW), then also RPO benefit for that consumer shall be treated as Zero.

8.20.13 Petitioner further submitted that the Net metering Regulations 2019 provides that the consumers having sanctioned load up to 10 kW shall be exempted from the payment of Grid

Support charges for net metering systems. Petitioner also submitted that the loss for exemption from paying the Grid Support charges needs to be recovered from consumers having sanctioned load above 10 kW so as to avoid burden on consumers not opting for net metering. This impact shall be computed by considering the same category wise GSC as proposed above and shall be passed on to >10 kW net metering consumers during the year-end settlement as proposed in the above paragraph.

8.20.14 Petitioner submitted that it has computed Grid Support charges for all categories as per the above table and assumptions. However, certain categories such as LT Residential (0 – 100 units), LT PWW (>20 kVA upto 50 kVA), LT AG Metered Others, LT Temporary Supply Religious, LT Crematoriums and Burial Grounds, LT Public Services – Govt. (0 – 20 kVA) and HT AG Pumpsets & HT Temporary supply Religious, considering the adjustment of RPO benefits and floor price of Re.1.00/unit of REC, such charges may be Nil. Petitioner, hence, has not proposed Grid Support Charges for these categories in the petition, however, the same shall be reviewed in the MTR process.

8.20.15 Petitioner further submitted the applicability of Grid Support Charges for rooftop net metering arrangements as follows:

RE generated units	Applicable charges
All generated units	Grid Support Charges
Banked units	Wheeling losses

8.20.16 Petitioner submitted that, in case of HT consumers having rooftop net metering arrangements, the kVAh consumption recorded in the net meter shall be used for commercial settlement for banked energy after consideration of wheeling losses and the generated units shall be converted to kVAh by considering unity PF.

8.20.17 Petitioner proposed that no Grid Support Charges will be levied for rooftop RE systems with Net Billing arrangement.

8.20.18 Petitioner submitted that the financial impact of the Grid Support Charges is not considered at present due to uncertainty of usage by consumers but the impact on revenue for such charges will be considered at the time of final true up.

### ***Commission’s Analysis & Rulings***

8.20.19 The Commission notes the submission made by MSEDCL. However, the Commission also notes that this proposal of introduction of Grid Support Charges was the most prominent issue highlighted to the Commission during the public consultation process of this Petition. It had received several written and oral objections on the issue which are captured in brief in chapter 2 of this Order. As a general principle the Commission wants to promote solar generation to the extent possible and has acted upon by way of notifying the RPO Regulations where the solar targets have been increased and further an incentive is available for exceeding the solar target. Having said this, and considering the complexity of the issue of Grid Support Charges, the Commission highlighted following issues for analysis covering the following aspects:

- Effect of Net-metering on Utilities and on consumers
- Assessing technicality of introduction of Grid Support Charges
- Assessing legal tenability of Grid Support Charges
- Formulation of GSC & defining parameters for its determination
- Determination of Grid Support Charges for 4<sup>th</sup> Control Period
- Applicability of Grid Support Charges
- Review of Grid Support Charges

***Effect of Net-Metering & assessing technicality of the proposal***

8.20.20 The first two aspects viz. Effect of Net-metering on Utilities and on consumers and assessing technicality of introduction of Grid Support Charges have been well elaborated in its Statement of Reasons of the Net metering Regulations, 2019 along with detailed rationale. While, the Commission in the said Regulations has provided various benefits for facilitation of net metering based solar roof-top systems, the difficulties on the side of Utility due to net-metering due to increased proliferation of such systems in the distribution grid was also highlighted. The relevant extract of the statement of reasons is reproduced as under:

*“Further, the existing structure of Retail Supply tariff has an in-built cross-subsidy component. The Tariff for cross-subsidizing categories, such as Commercial, Industrial, etc., is higher than the Average Cost of Supply (ACoS) and the Tariff of cross-subsidised categories such as Residential and Agriculture, is lower than ACoS. In short, the higher Tariff for Commercial and Industrial categories cross-subsidises the lower Tariff for Residential and Agriculture category. **Any revenue***

***loss due to lower sales billed to Commercial and Industrial consumers setting up Rooftop RE Plants would have to be met through tariff increase to subsidised consumer categories and other subsidising consumers, who do not have the space or capital to invest in Rooftop RE plants.***

*Further, the generation from distributed RE sources such as wind and solar is non-firm. Because of uncertainty of generation from these sources, the power procurement plan of the Distribution Licensee is required to be dynamic and is likely to be adversely affected. Also, Rooftop RE sources are grid connected and operating in integration with the distribution grid. **The balancing of the grid is required to be done at distribution system level, considering non-firm RE generation. The responsibility of grid management and the Deviation Settlement Mechanism lies with the Distribution Licensees, and the rooftop RE systems do not have such responsibility.***

*Also, the supply of Distribution Licensee works as standby arrangement for such grid-connected systems, which will always be available in case of failure of generation from these sources.*

*Further, generation from RE sources is exported to the distribution grid during periods of lower self-consumption and could be taken back from distribution grid during peak period/higher consumption period. **Thus, the distribution grid is being used for free as a bank/battery to store the energy generated, which is taken back for consumption. The consumer also saves on the requirement and capital cost of battery systems and their related inefficiency, which would have to be installed, in case the banking facility was not provided by the Distribution Licensee. The consumer does not have to match his generation capacity to his consumption pattern and has the luxury of generating and injecting into the grid, with the facility to utilise such energy at no cost at any time during the financial year.***

*Also, export of generation into distribution grid during light loaded conditions would lead to increase in voltage of distribution system at local level. The voltage levels are required to be maintained by the Distribution Licensee at specified level as per applicable Regulations. **Thus, higher penetration of Net Metering installations affects the technical operations of the distribution grid.***

*Under the Net Metering Arrangement, there is saving to consumer equal to applicable energy charges for every unit generated from the rooftop RE System. The saving increases with the increase in applicable tariff, i.e., the level of cross-subsidy. In other words, the Return on Investment in rooftop RE systems is artificially higher because of the cross-subsidy element present in the tariff for the respective category. The Commission has been reducing the cross-subsidy over the years, and will be continuing in its efforts to do so over the future tariff determination exercises. Therefore, the Return on Investment will reduce as the tariff reduces.*

***On the other side, there is revenue loss equal to applicable tariff for every unit generated from the rooftop RE System. Further, the Aggregate Revenue Requirement (ARR) of the Wires Business of the Distribution Licensee is entirely fixed cost in nature. However, the recovery of Wheeling Charges in the State of Maharashtra is entirely variable in nature, as the Wheeling Charges are recovered in Rs/kWh terms. As the quantum of energy billed to the consumers is reduced under the Net Metering Arrangement, the Wheeling Charges will also be under-recovered to that extent. Similarly, a major part of the fixed cost of the Distribution Licensee is recovered through energy charges levied by the Distribution Licensee. In case of MSEDCL, the Fixed Charges are designed to recover only one-third of the Fixed Costs of MSEDCL. Hence, any reduction in units billed due to Net Metering, would lead to lower revenue from energy charges, further leading to increased under-recovery of fixed costs of the Distribution Licensee.***

*At the same time, Net Metering is not entirely disadvantageous to the Distribution Licensee. The Distribution Licensee is able to meet its RPO targets on account of the units deemed to have been purchased from RE sources, for all units adjusted against the consumers' bills due to Net Metering. Further, reduction of every unit of sale leads to lower power purchase requirement to that extent, which will result in corresponding savings in variable cost of power purchase. It has to also be noted that this saving in power purchase quantum is at consumption end, thereby leading to increased saving in power purchase quantum at the Generator busbar, after factoring in the Transmission Losses and Distribution Losses. Further, due to the very nature of distributed generation located at consumption end, the Distribution Losses would also reduce, though it could be difficult to quantify the exact benefits in this regard.*

*From the above, it can be seen that the role of the Distribution Licensee is crucial in facilitating the operation of the Net Metering Arrangement. Hence, it is required to balance the interest of both consumers as well as the Distribution Licensee. (Emphasis Added)''*

8.20.21 Considering the pros and cons as highlighted above, the intent of the Commission was clear as stated in the later part of the aforementioned paragraph i.e., to strike a balance of the interest of both consumers as well as Distribution Licensee. Hence the need for introduction of such charges is established. Moreover, during the public hearing, various entities, and consumer groups including the Prayas Energy Group, Vidarbha Industries association had supported the concept of Grid support charges. However, what is demanded by various stakeholders is the reasoned, rationale principles for determination of such Grid Support Charges and thereby ensuring regulatory certainty regarding the same. This is a very fair expectation.

**Legal Tenability**

8.20.22 In this context, the Commission would like to highlight that determination of Grid Support Charges is in pursuance of the provisions for such determination as specified under its Net metering Regulations, which is statutory in nature. Thus, the levy of such charges is legally tenable in accordance with the provisions of the said Regulations formulated and in exercise of the powers conferred to Commission under Sections 86(1) (e) and 181 of the Electricity Act, 2003 upon following due regulatory process for notification of the same.

**Formulation of Grid support Charges**

8.20.23 Net metering Regulations, 2019 define the principle based on which Grid Support charges have to be determined. It specifies parameters to be considered while determination of such charges such as balancing cost, banking and wheeling cost giving due adjustment for parameters such as RPO benefits, avoided distribution losses and any other benefits accruing to the distribution licensee. The relevant extract of the Regulations is reproduced as under.

*11.5 The Commission may determine in the retail Tariff Order such Grid Support Charges to be levied on the generated energy under Net Metering systems which shall cover balancing, banking and wheeling cost after adjusting RPO benefits, avoided distribution losses and any other benefits accruing to the Distribution Licensee. These Grid Support Charges would be determined consumer tariff category wise, based on the proposal of the Distribution Licensee in its retail supply Tariff Petition, supported by adequate justification:  
 Provided that the consumers of all Categories having Sanctioned Load up to 10 kW shall be exempted from payment of Grid Support Charges for Net Metering systems:*

8.20.24 Based on the above specified principle, the Commission hereby stipulates the following formulation for determination of Grid Support Charges separately for HT category of consumers and LT category of consumers for the gross generation of solar energy:

Grid Support Charges (HT)	$GSC (HT) = BC+CB+WC(HT)-(RREB+ADL(HT))$
Grid Support Charges (LT)	$GSC (LT) = BC+CB+WC(LT)-(RREB+ADL(LT))$

Where,  
 ‘BC’ shall mean the Balancing Cost,  
 ‘CB’ shall mean the Cost of availing Banking facility,  
 ‘WC (HT) & WC (LT)’ shall mean the Wheeling Charges for HT & LT categories respectively,  
 ‘RREB’ shall mean the Rooftop RE benefit accrued to the Distribution Licensee  
 ‘ADL (HT) & ADL (LT)’ shall mean the Avoided Distribution Loss for HT & LT categories respectively,

8.20.25 The premise for determination of values against each of the above identified parameters are as listed below:

Parameters	Premise
Balancing Cost (BC)	Fixed Cost of Thermal Generating Stations which will act as standby or balancing support
Cost of Banking (CB)	Difference in ToD Charges during day peak when generation from Solar occurs and banking takes place and ToD charges of the evening peak when utilization of banked energy takes place.
<b>Wheeling Charges</b>	
Wheeling Charges (HT)	As determined in this Order
Wheeling Charges (LT)	As determined in this Order
Rooftop RE Benefit	Equivalent to RPO Non-compliance Charge as specified in Regulation 12.3 of the RPO Regulations, 2019
Avoided Distribution Loss	Avoided Distribution loss on Marginal Variable Cost over the 4 <sup>th</sup> control period
Avoided Dist. Loss (HT)	ADL(HT) = $[MVC/(1-HT Loss\%)] - MVC$ Where, HT Loss% = Tx. Loss + WC (HT) Tx. Loss as approved for the 4 <sup>th</sup> Control Period in this Order
Avoided Dist. Loss (LT)	ADL(LT) = $[MVC/(1-LT Loss\%)] - MVC$ Where, LT Loss% = Tx. Loss + WC (LT) Tx. Loss as approved for the 4 <sup>th</sup> Control Period in this Order

### ***Determination of Grid Support Charges***

8.20.26 The following table shows the working of GSC based on the above parameters.

Nomenclature	Premise	Workings FY 21
BC	Fixed Cost of Thermal Generating Stations which will act as Standby or balancing support	1.31
CB	a. 2% of banking cost (earlier policy initiative) ~ 0.08 Rs/u b. Diff. in ToD Charges: (1.10 - 0.80) Rs/kWh ~ 0.30 Rs/u whichever is lower	0.08
WC		
WC(HT)	As determined in this order	0.57

Nomenclature	Premise	Workings FY 21
WC(LT)	As determined in this order	1.45
RREB	Equiv. RPO Non-compliance Charge (Rs/Unit)	0.10
<b>ADL</b>	On Marginal Variable Cost (MVC) = 3.44 Rs./kWh Range from 3.22 to 3.61 per unit over Control Period	
ADL(HT)	ADL(HT) = $[MVC/(1-HT\ Loss\%)] - MVC$ Where, HT Loss% = Tx. Loss + WC (HT) = 3.18% + 7.5% = <b>10.68%</b>	0.41
ADL(LT)	ADL(LT) = $[MVC/(1-LT\ Loss\%)] - MVC$ Where, LT Loss% = Tx. Loss + WC (LT) = 3.18% + 12% = <b>15.18%</b>	0.62
<b>GSC</b>		
GSC(HT)	GSC (HT) = BC+CB+WC(HT)-(RREB+ADL(HT))	1.45
GSC(LT)	GSC (LT) = BC+CB+WC(LT)-(RREB+ADL(LT))	2.33
Approved GSC	<b>Concessional GSC Charges</b>	
Approved GSC(HT)	AGSC (HT) 50% of the GSC (HT)	0.72
Approved GSC(LT)	AGSC (LT) 50% of the GSC (LT)	1.16

8.20.27 Grid support charges at HT level are lower than that at LT level as cost to serve principle for allocation of distribution network cost suggests that network related capital costs and associated support costs of its operation should be allocated amongst HT:LT network considering the fact that network at HT is used to cater to requirements of HT as well as LT. Thus, wire cost and wheeling cost at HT are further allocated to LT and thus per unit cost of wheeling at HT is lower than per unit cost of wheeling at LT. Accordingly, Grid Support Charges at HT are lower than that at LT voltage level.

8.20.28 As per statistics presented by MSEDCL more than 460 MW of RTPV systems (245 MW at HT level and 215 MW at LT level) have been deployed within MSEDCL area as on January 2020. The Commission notes that said installation is way behind the policy target set by the Government of Maharashtra. The commercial impact on MSEDCL is commensurately not significant. Thus, to incentivize installation of RTPV, the Commission has decided not to impose any Grid Support Charge on RTPV under net-metering arrangement till cumulative

installed capacity of RTPV in the State reaches 2000 MW. Subsequent to that Commission will reconsider option of imposing Grid Support Charge as provided under the Regulations.

8.20.29 Having, exempted levy of Grid Support Charge, the Commission cannot be ignorant of the fact that Distribution Licensee incurs certain costs in order to provide services to RTPV under net-metering arrangement. One of such service is energy banking facility under which RTPV owner banks excess generated energy with MSEDCL and uses it subsequently. During public consultation process, some of the stakeholders have suggested that the Commission may impose banking charges in kind i.e. deduct 15 to 20% of banked energy as a banking charge. The Commission notes that such units made available by way of adjustment in kind, can be used for offsetting some of the Wheeling Loss which the licensee incurs in supplying back the banked units to consumers. Hence, till the Grid Support Charges as envisaged in the Regulations stay exempted, in order to enable MSEDCL to at least recover cost of banking service, the Commission has decided to levy banking charge. For this purpose, the Commission has linked such Banking Charge to Wheeling Loss allowed in this Order i.e. 7.5% for HT and 12% to LT. Accordingly, for RTPV connected on HT network, from the energy injected into the grid, 7.5% energy will be deducted by MSEDCL as a Banking Charge. Similarly, for RTPV connected on LT side such deduction of energy would be 12%.

#### ***Applicability of Banking Charges***

8.20.30 In pursuance of the principles specified under Net Metering Regulations, 2019 and in view of the foregoing, the Banking Charges shall be applicable to all categories of consumers for future installations of rooftop systems under net metering arrangement to be commissioned from the date of issuance of this Order in MSEDCL area, except for the following:

- All Categories having Sanctioned Load up to 10 kW shall be exempted from payment of Grid Support Charges or Banking Charges for Net Metering systems
- Roof top PV systems under Net Billing arrangement and
- Rooftop PV systems installations Behind the Consumer's meter not availing Net Metering or Net Billing arrangement

## **8.21 Additional Demand Charges for systems not opting for Net Metering/ Billing**

### ***MSEDCL's Submission***

8.21.1 Petitioner submitted that the Commission has provided for the Additional Fixed Charges or Demand Charges and any other charges for consumers of Rooftop Grid Connected RE Systems not opting for Net Metering or Net Billing Arrangement in the MERC Grid Interactive Rooftop Renewable Energy Generating Systems Regulations 2019. The relevant excerpts are given below:

*“7.9 Grid Connected Renewable Energy Generating Systems connected behind the consumer’s meter, and not opting for either Net Metering arrangement or Net Billing arrangement, shall be allowed only after prior intimation to the respective Distribution Licensee:*

*.....Provided further that the Commission may determine additional Fixed Charges or Demand Charges and any other charges for such Grid Connected systems excluding non-fossil fuel based co-generation plants, in the retail Tariff Order, if Distribution Licensee proposes such additional Fixed Charges or Demand Charges and any other charges for such systems ....*

*Provided also in the case the consumer installs Renewable Energy Generating Systems behind the consumer’s meter without prior intimation to the respective Distribution Licensee, then the total additional liabilities in terms of additional Fixed Charges or Demand Charges ant any other charges for such systems, shall be levied at twice at the determined rate for such period of default.”*

8.21.2 Petitioner submitted that certain consumers connected at EHV/HT level are installing rooftop RE projects without informing the Distribution Licensee. Such systems take support of the Grid and the network of the Distribution Licensee and reduces the utilisation of Transmission/Distribution network and thereby such consumer pay lower charges for such network setup earlier for it. The unrecovered part of the expenses is then loaded on other consumers of the Distribution Licensee.

8.21.3 Petitioner proposed Additional Fixed/Demand Charges for Grid connected Renewable Energy Generating systems connected behind consumer’s meter and not opting for either Net Metering arrangement or Net Billing arrangement along with the procedure for

intimating the Petitioner as stipulated below:

- Consumer willing to install such Rooftop RE systems shall intimate the Petitioner with the type and capacity of such system
- Additional Fixed/Demand Charges as given below shall be applicable on installed capacity per kWp per month over and above the applicable charges for the respective consumer category.

8.21.4 Petitioner submitted that it has considered the projected ARR for respective year of the Control Period and bifurcated it into fixed and variable costs. The per unit fixed cost recovery required is computed using expected average monthly generation. The units generated in 1 kW rooftop solar plant are computed assuming annual CUF of 19%. Further, nominal 10% demand/ fixed charges are added to the computed demand/fixed charges so as to encourage Net Metering or Net Billing arrangement.

8.21.5 The Additional Fixed/ Demand charges computed in Rs./kW/month basis are as under:

**Table 8-32: Additional Fixed/Demand Charges for Grid Connected RE Generating Systems connected behind consumer’s meter**

Particulars	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FY 24-25
Actual FC Recovery Required (Rs./unit)	4.23	3.86	3.83	3.81	3.73
Monthly units generated by 1 kW rooftop SPV (CUF=19%)	138.7	138.7	138.7	138.7	138.7
Fixed charges to be recovered (Rs./kW/month)	645	589	584	581	568

8.21.6 Petitioner submitted that for compensating its common consumers for current level of cross subsidy, the subsidising consumers shall pay Cross Subsidy Surcharge as proposed for the respective year of control period.

8.21.7 Petitioner requested the Commission to approve the proposed Additional Fixed/ Demand Charges along with CSS for Grid Connected Renewable Energy Systems connected behind

the consumer's meter and not opting for either Net Metering arrangement or Net Billing arrangement.

8.21.8 Petitioner submitted that the financial impact of the Additional Fixed/ Demand charges is not considered at present due to uncertainty of usage by consumers but the impact on revenue of such charges will be considered at the time of final true up.

### ***Commission's Analysis and Rulings***

8.21.9 The Commission opines that registering the grid connected rooftop solar system installations behind the consumer's meter not availing net metering or net billing arrangement and levy of Additional Demand/Fixed Charges for such installations are two distinct aspects from regulatory governance perspective.

8.21.10 Registration of such grid connected rooftop solar system installations behind consumer's meter whether or not availing net metering or net billing arrangement is important solely from the point of view of keeping track of their operational status since such systems are synchronised with grid distribution system whether or not they export power to the grid. It is important to ensure operational safety, deployment of adequate protection systems/islanded mode of operation or anti-islanding features etc. as well as keeping record of such generation for RPO compliance purpose whether for credit to Utility or credit to be availed by such consumer if it is an obligated entity. In future, many such systems are expected to proliferate considering conducive policy/regulatory framework and prosumer friendly approach adopted by distribution utilities as per prevalent regulatory regime. It is important to create a registry of such installations for orderly development of the sector.

8.21.11 Many objectors/stakeholders have pointed out during public hearing that there are many such captive installations (conventional generation/co-generation) facilities operating behind the consumer's meter, for which no such charges have been proposed. The Commission would like to highlight that at present, consumers having captive generation facility synchronised with the grid are required to pay standby demand charges subject to stipulated conditions. The Commission has already considered the revision in Standby/Additional Demand Charges for such installations as dealt with under separate section. Even in such cases, revised Standby/Additional Demand charges are linked to a percentage of Demand Charges and not linked to shortfall in recovery of Fixed Cost as proposed by MSEDCL in this case.

8.21.12 The Commission observes that Regulations for Grid interactive RTPV systems and the Statement of Reasons thereof have clearly specified the rationale for levy of such Additional Demand/Fixed Charges. However, without considering the preparedness, registry and modalities for implementation, the Commission is deferring the levy of such charges at this stage for rooftop PV systems behind the consumer's meter and not availing net metering or net billing arrangement. f

## **8.22 Change in slabs for Commercial and Public services**

### ***MSEDCL's Submission***

8.22.1 Petitioner submitted that Ministry of Power has appointed a committee for Tariff Simplification and another committee for Tariff Rationalisation to suggest measures for simplification of tariff structure and improve transparency to enhance operational performance of the distribution utilities. The committees have strongly advocated for merging of categories and simplify tariff structure. Petitioner further submitted that simplification of tariff structure is one of the major reasons for the proposal as there have been addition of slabs and sub-slabs in the tariff categories over the years. Hence, there is a need to simplify and rationalise the tariff structure.

8.22.2 Petitioner proposed that the consumption based sub-slabs in 0 – 20 kVA for LT Commercial and LT Public Services may be replaced by a single tariff category of 0-20 kVA. Since, large number of consumers are shifting to rooftop RE, the high consumption consumers will automatically shift to lower tariff slabs as a result of merger of these tariff slabs which will enable simplification of tariff structure.

8.22.3 Thus, Petitioner proposed not to increase substantially, the energy charges for 3 phase consumers with load less than 20 kW considering the proposed change in kVA based fixed charges and thus, this will not have impact on small consumer.

### ***Commission's Analysis and Rulings***

8.22.4 As covered under earlier sections, the Commission has extensively dealt with the issue of tariff category rationalisation and rationalisation of consumption slabs. Further, as ruled under earlier sections, the tariff redesigning (fixed charge as well as applicability of kVAh billing) for consumer category below 20 kW would require comprehensive study and impact analysis on large number of consumers. However, while other aspects of tariff rationalization can be undertaken over the period, merging of sub-slabs within the sub-

category would be appropriate in the overall interest of tariff category rationalization and simplification of the slabs. However, it needs to be ensured that while merging such consumption slabs, consumers in the lower end consumption slabs do not suffer tariff shock. The Commission has considered this aspect while merging consumption slab for LT-Commercial and LT-Public Service.

8.22.5 Thus, the Commission has not accepted MSEDCL's proposal for revision in consumption slabs for below 20 kW in respect of LT-Commercial and LT-Public Service.

### **8.23 Stand-by Charges from Captive Power Producers (CPP) and SEZs**

#### ***MSEDCL's Submission***

#### **Standby Charges for CPPs**

8.23.1 Petitioner submitted that the Commission introduced the additional standby demand charges in its Order dated 8th September 2004 in Case no.55 and 56 of 2003 (hereby referred to as "the CPP Order") wherein, it provided power purchase and other dispensation for fossil fuel based Captive Power Plants (CPPs). Further, the Commission allowed recovery of additional demand charges from embedded CPPs through its respective Tariff Orders. The additional standby demand charges of Rs.20 per kVA is being levied to embedded CPP holders which were introduced long back and not revised till date.

8.23.2 Petitioner submitted that the CPP Order determining the standby charges for CPP was issued more than 13 years back considering the then prevailing power supply situation wherein the circumstances have emerged to be precisely different at present. These charges are still continued and are on much lower side in comparison to capacity charges payment made by the Petitioner for serving standby contracted capacity. Petitioner also submitted that such charges should be revised to fit the present power scenario where the Petitioner gets affected by over drawl from these CPP holders in present DSM Regulations 2019.

8.23.3 Petitioner submitted that CPP consumers having captive generation facilities who are synchronised with the Grid require standby facility throughout the year. The standby arrangement is for the benefit of the consumers so that they receive uninterrupted electricity supply and the standby charges are the premium (as fixed charges) on such guaranteed supply which is irrespective of whether any supply is actually drawn under the standby arrangement or not. Petitioner further submitted that as per the existing dispensation, it can charge additional demand charges on embedded CPP consumers, only when it is being

utilised and only up to the extent of use.

8.23.4 Petitioner submitted that a CPP unit trips due to faults resulting in drawl of power from MSEDCL which may result in over drawl of power from the Grid by MSEDCL, thus, affecting the state grid as well as impacting the Petitioner financially in terms of deviation charges. Moreover, such over drawl may lead to power deficit situation for the existing consumers of MSEDCL and may result in grid instability. Petitioner further submitted that it has to plan its power purchase to cater such additional demands and that if penal charges for exceeding the demand on account of unplanned shutdown of CPP are computed based on existing provisions then it works out to be minuscule and does not provide adequate compensation.

8.23.5 Petitioner submitted that the Commission in the last MTR Order already observed that:

*“9.35.10 ..... the Commission has already determined the standby charges of Rs.20/kVA for the embedded CPPs. The Commission notes that the same said charges, which has been worked in the past might require some revision. The same shall be taken up during next MYT Order for the new Control Period.”*

8.23.6 Petitioner further submitted that, additional standby charges for CPPs may be revised in the following manner considering the present power scenario

**Demand Charges on Standby Contracted Capacity**

By its very nature, the standby demand has two scenarios as follows:

- Scenario 1: Standby demand is not utilised
- Scenario 2: Standby demand is utilised in planned/unplanned shutdown

8.23.7 Following dispensation is prayed before the Commission:

	Energy charges	Demand Charges on standby contracted capacity	Penal Addition Demand Charges
When standby demand is not utilised			
Except planned shutdown	-	25% of applicable demand charges on standby contracted capacity	-
When standby demand is utilised			
Planned shutdown	Energy charge as approved in tariff order for relevant category	As approved in tariff order for relevant category on total	2 times demand charges (on

		contracted standby capacity (on monthly basis).	monthly basis) in force
Unplanned shutdown / breakdown	Applicable energy charge for temporary category; energy consumption due to unplanned shut down will be calculated on prorated basis of demand utilised	25% of applicable demand charges on standby contracted capacity	

8.23.8 Petitioner submitted that the method stipulated above would reduce the risk borne by CPP consumers, protect the Petitioner’s consumers from load shedding, compensate the Petitioner for standby services and is easy to implement and levy.

**Standby Charges for SEZs and Demand Licensees**

8.23.9 MSEDCL requested the Commission to make it compulsory for making standby arrangement for supply of power in case of failure of source generator, as many SEZs and deemed licensees do not have standby arrangements. In order to ensure 24x7 reliable and uninterrupted supply to its consumers, Licensees may draw more power from the Grid. Hence, in order to maintain Grid discipline and to avoid financial impact of penalty of overdrawl on the Petitioner, it has requested the Commission that SEZ/ Deemed licensees must have a standby arrangement.

8.23.10 The Commission ruled that many of the deemed licensees have their own standby arrangements where the demand is fulfilled by DG sets installed in different premises within their licensee area. The Commission further stated that these deemed licensees have not shown their concerns or requirement for the standby arrangement. The Commission also ruled that there is no legal mandate on SEZs for standby arrangement.

8.23.11 Petitioner submitted that currently there is no mechanism in place to ensure whether there exists standby arrangement in the form of DG sets within the SEZs/Deemed licensee area as ruled by the Commission in MTR Order and even if such arrangement exists, whether it is being used at the time of failure of source generator is not monitored. Petitioner further submitted that any drawl can be seen only at the time of FBSM as there is no real time monitoring system with SLDC to ensure that such standby arrangement is being put to use at the time of unavailability of source generator.

8.23.12 Petitioner submitted that it had already submitted the number of instances during which certain SEZs/ Indian Railways resorted to overdrawl from the Grid, in its review petition on

the MTR Order.

8.23.13 Petitioner further submitted the exact details of the time blocks during which schedule of the source generated of M/S Gigaplex (SEZ) was Zero and still there was drawl from the Grid.

8.23.14 Generator schedule and drawl details of M/s Gigaplex is summarised in the following table

Time Slot No.	Generator Schedule	Actual Drawl from Grid (kWh)	Pool imbalance (kWh)
10 <sup>th</sup> Oct 2016 Slot 75 to 96 (18.30 to 24.00)	0	9611	(9611)
10 <sup>th</sup> Oct 2016 Slot 1 to 28 (00.00 to 07.00)	0	8537	(8537)

8.23.15 Petitioner submitted that Indian Railways has also resorted to over drawl from Grid when the schedule of the source generator of Indian Railways was curtailed as shown in the table below for FY 2017-18 (upto 25.30.2018)

Month	Total No. of time blocks for which bills prepared (time block)	Net OD energy (MUs)	No. of instance having OD more than 12% demand		No. of instance having OD more than 100% demand (Time block)
			No. of time blocks	%	
<b>August</b>	2976	8.1	1364	46%	123
<b>September</b>	2880	6.1	1263	44%	22
<b>October</b>	2976	10.5	2087	70%	33
<b>November</b>	2496	12.9	1664	67%	347
<b>December</b>	2688	8.3	1528	57%	60

<b>January</b>	2976	13.8	2069	70%	44
<b>February</b>	2688	8.0	1678	62%	57
<b>March</b>	2400	6.4	1511	63%	0
<b>TOTAL</b>	<b>22080</b>	<b>74.1</b>	<b>13164</b>	<b>60%</b>	<b>686</b>

8.23.16 Petitioner submitted that if M/s Gigaplex and M/s Indian Railways have their own standby arrangement, there is no necessity to draw power from the Grid during the unavailability/curtailed availability of source generator. Petitioner further submitted that factual situation is contrary to the ruling of the Commission that the SEZs/Deemed Licensees have their own standby arrangement.

8.23.17 Petitioner reiterated that such situations are not only detrimental to the stability of the Grid but the undue financial burden of such instances is also getting passed onto its consumers for no fault on their part and therefore, SEZs /Deemed Licensee and Indian Railways must have standby arrangement

8.23.18 Petitioner further submitted that it has submitted a letter on 8th February 2019 highlighting the issues pertaining to SEZ. The said letter is attached as Annexure 9 to the petition

8.23.19 Petitioner requested the Commission to make standby arrangement compulsory and if standby arrangement is opted from the Petitioner, recovery of standby charges to be allowed from SEZs or Deemed Licensees at the rate of applicable demand charges for HT Industrial category.

### ***Commission's Analysis & Rulings***

#### **Sharing of Standby charged for Mumbai Distribution Area**

8.23.20 In the MYT Orders for the three Mumbai Distribution Licensees, viz. Tata Power Co. Ltd. (Case No.326 of 2019), Adani Electricity Mumbai Ltd. (Case No.325 of 2019) and BEST (Case No.324 of 2018), the Commission has decided their Stand-by Demand contribution based on average Coincident Peak Demand (CPD) and Non-coincident Peak Demand (NCPD) used for sharing the Total Transmission System Charges.

8.23.21 Further, as elaborated in the previous MTR Order in Case No. 195 of 2017, with reference to the Commission rulings in Case No. 53 of 2017 in the matter of review of the Stand-by Arrangement with MSEDCL, for the Mumbai Distribution area, and related issues, the

Commission had decided the share of Stand-by charges would now be shared amongst the Indian Railways (Mumbai Area) and rest other three Mumbai Distribution Licensees.

8.23.22 In view of above and based on the revised average CPD and NCPD (Base TCR) as approved in the latest InSTS Tariff Order dated 12 September, 2018 in Case No. 265 of 2018, the Commission has determined the share of these three Licensees and Indian Railways (Mumbai Area) in the Stand-by charges for FY 2020-21 to FY 2024-25.

**Table 8-33: Standby Charges for FY 2020-21 to FY 2024-25, as approved by the Commission**

Distribution Licensee	Base TCR	% of Share of Mumbai Utilities & IR	Annual Share of Standby Charges (Rs. Crores)	Per month share of Standby Charges (Rs. Crores)
<b>FY 2020-21</b>				
TPCL-D	808.72	25.25%	99.98	8.33
AEML-D	1482.30	46.28%	183.25	15.27
BEST	811.13	25.32%	100.28	8.36
IR(Mumbai)	101.08	3.16%	12.50	1.04
<b>Total</b>	<b>3203.23</b>	<b>100.00%</b>	<b>396.00</b>	<b>33.00</b>
<b>FY 2021-22</b>				
TPCL-D	819.42	25.18%	99.72	8.31
AEML-D	1513.18	46.50%	184.15	15.35
BEST	816.80	25.10%	99.40	8.28
IR(Mumbai)	104.64	3.22%	12.73	1.06
<b>Total</b>	<b>3254.05</b>	<b>100.00%</b>	<b>396.00</b>	<b>33.00</b>
<b>FY 2022-23</b>				
TPCL-D	830.26	25.12%	99.46	8.29
AEML-D	1544.70	46.73%	185.04	15.42
BEST	822.52	24.88%	98.53	8.21
IR(Mumbai)	108.34	3.28%	12.98	1.08
<b>Total</b>	<b>3305.82</b>	<b>100.00%</b>	<b>396.00</b>	<b>33.00</b>
<b>FY 2023-24</b>				
TPCL-D	841.24	25.05%	99.19	8.27
AEML-D	1576.88	46.95%	185.93	15.49
BEST	828.27	24.66%	97.66	8.14
IR(Mumbai)	112.17	3.34%	13.23	1.10
<b>Total</b>	<b>3358.56</b>	<b>100.00%</b>	<b>396.00</b>	<b>33.00</b>
<b>FY 2024-25</b>				
TPCL-D	852.38	24.98%	98.92	8.24
AEML-D	1609.73	47.17%	186.81	15.57
BEST	834.06	24.44%	96.79	8.07
IR(Mumbai)	116.13	3.40%	13.48	1.12
<b>Total</b>	<b>3412.29</b>	<b>100.00%</b>	<b>396.00</b>	<b>33.00</b>

### **Standby Charges for CPP**

8.23.23 The Commission observes that the present dispensation for Standby charges for CPP was first introduced under its CPP Order dated 8th September 2004 in Case no.55 and 56 of 2003. The power scenario and energy planning by both, Utility and consumer has undergone significant change since then. In the last MTR Order, the Commission has observed that standby charges for CPP as determined may need revision and can be considered at the time of next MYT filing. Relevant extract of the MTR Order is as under:

*“9.35.10 ..... the Commission has already determined the standby charges of Rs.20/kVA for the embedded CPPs. The Commission notes that the same said charges, which has been worked in the past might require some revision. The same shall be taken up during next MYT Order for the new Control Period.”*

8.23.24 In this context, as part of data gaps, the Commission sought the instances of over draws by CPP in the State, which has affected the State Grid’s and MSEDCL’s consequent financial implications due to Deviation Charges along with the instance of tripping in a year by CPPs, to which MSEDCL submitted that, there are 35 nos. of Embedded CPP’s (Thermal). During FY 2017-18 there are 63 instances & during FY 2018-19 there are 41 instances of over draws by embedded CPP’s. MSEDCL further submitted that due to metering arrangements (ABT and ToD Meters), it would be difficult to provide financial implications for such over draws. MSEDCL also provided the list of consumers over drawing the beyond their allotted Contract Demand, the details of the same is provided in the Table below:

<b>Particulars</b>	<b>FY 2017-18</b>	<b>FY 2018-19</b>
Total No. of Consumers	63	41
Total Contract Demand (kVA)	188,786	109,931
Total Max. Demand Recorded (kVA)	305,966	254,628

8.23.25 Further, the Commission also sought MSEDCL’s proposal of penal charges as proposed to be applied on CPP when it exceeds its demand during unplanned shutdowns, where MSEDCL submitted that, the same is covered in its submission above. However, while analysing the details of instances the Commission is of the view that, the details submitted by MSEDCL is not evident enough to point that, the such Overdrawal instances are due to embedded CPPs, since only the consumers numbers for respective instances were provided. In addition, MSEDCL has itself submitted that, due to lack of metering infrastructure, the financial implications due to such Overdrawal would be difficult to estimate at this stage.

8.23.26 Nonetheless, the Commission also acknowledges that with introduction of DSM regime as per MERC DSM Regulations, 2019, the licensees/ generators/ TSUs would be subject to

stringent scheduling and despatch regime with consequent implications of the Deviation charges/Additional Deviation charges for deviation from the schedule, if any. The standby support availed by such CPPs (in planned or un-planned manner) has direct bearing on the scheduling regime, power purchase planning and management of imbalances/deviations by the Utility. The Commission observes that the arrangement for Standby power capacity is optional at the choice of CPP. However, the pricing for usage of standby capacity during planned and un-planned shutdown should not be so low as to cause undue burden on the Utility for its management/arrangement of capacity to cater to standby requirement and at the same time it should not be priced so high so that CPP users hesitate to opt for such standby facility from Utility.

8.23.27 Under the circumstances, upon careful consideration of all facts, the Commission opines that the framework for levy of Standby charges as proposed by MSEDCL is fair and Commission has decided to adopt it with following modifications, as it caters to all cases of supply availed by CPP under Standby arrangement and encourages discipline as regards power planning, load generation balancing and availing standby support while ensuring minimal cost burden for Utility and CPP as well.

8.23.28 Accordingly, the Commission approves the following arrangement for levy of Standby Charges and other conditions/charges to be applicable for availing power supply under standby arrangement by CPP Users. Demand Charges on standby contracted capacity by CPP consumer shall apply in following manner:

- 25% of the Applicable Demand Charges for months when standby capacity is not utilized
- Demand Charges at the rate of 100% of Applicable Demand Charges for months when standby capacity is not used under planned or un-planned shutdown of CPP
- During planned or un-planned shutdown, Additional Demand Charges at the rate of 150% of Applicable Demand Charges (on monthly basis) shall be applicable on such excess demand only if recorded demand exceeds contract demand plus standby contracted capacity.
- In case of CPP Users, who do not opt for Standby power arrangement, in such cases of CPP users for their planned or un-planned outage, Additional Demand Charges at the rate of 200% of Applicable Demand Charges (on monthly basis) shall be

levied on the quantum exceeding their contract demand only if recorded demand exceeds contract demand.

#### **8.24 Standby Charges for SEZs or Deemed Distribution Licensees**

8.24.1 In case of SEZs, the Commission is of the view that, as highlighted by MSEDCL many of the Deemed Distribution Licensees have their own Stand-by arrangements, where the demand is fulfilled by DG Sets installed in different premises of their Licensee area. Thus, as such these Deemed Licensees have not shown their concerns or requirement for the Stand-by arrangement.

8.24.2 Further, some of the Deemed Licensee have acknowledged the drawl from the grid, when generators have failed to supply, in such cases SLDC should have directed the Deemed Licensee to curtail its Load. Such exceptional circumstances cannot be the ground for mandating SEZs to pay Stand-by Charges to MSEDCL, when it already has 100% standby DG Set as mandated under the SEZ Act.

8.24.3 Further, the Commission observes that SEZs/Deemed Distribution Licensees, being TSUs are also participants in the Deviation Pool account and be subjected to scheduling/despatch regime and rules for Deviation settlement mechanisms and would attract deviation charges/additional deviation charges as per MERC DSM Regulations, 2019 and procedures formulated therein. Further, Additional Deviation charges for exceeding their volume limits would also be applicable under DSM regime.

8.24.4 Further, in such scenario the requirement of additional supply may be raised before MSEDCL, since, the Licensee can sell the power as per the Short-Term Rates inclusive of other applicable charges to the Licensee. In addition, SEZ being a pool participant, the over drawl instance will be subjected to DSM charges for deviations.

8.24.5 Thus, in view of above facts, the Commission rules that levy of Stand-by Charges will not be applicable to the SEZ and Deemed Licensee.

#### **8.25 Revision in ToD rates**

##### ***MSEDCL's Submissions***

8.25.1 Petitioner submitted that the Commission in its MTR Order dated 12th September 2018 has observed that the revision in ToD slabs and rates thereof would depend upon factors such

as load curve, demand side measures, overall system demand management measures in vogue, etc. The Commission further ruled that as this issue must be seen in totality across all Licensees, it would take a view on proposals to modify the ToD time slots and /or ToD slot wise tariffs in the next control period

8.25.2 In existing TOD tariff concept, rebate or penalty is same in all month irrespective of load pattern, surplus & shortfall in availability. There is no consideration of impact of RE generation which will be one of important change in generation mix. Moreover, due to various Govt. of India policies to promote RE generation and as per the RPO Targets set for Utilities by the Commission, tremendous rise in RE generation is expected. The major rise is in solar generation which has typical shape of inverted hyperbola. There is no or very less generation during specific time period of a day; particularly during 06:00 to 09:00 and during 15:00 to 19:00 Hrs. Considering the demand pattern and expected Solar Generation, Petitioner has proposed revision in ToD tariff /rates

8.25.3 Petitioner submitted that the existing ToD slabs and Tariffs may be followed with the revision in ToD tariffs as shown in the table below. However, with the increasing share of renewable generations over the last few years, it is necessary to revise ToD slabs so as to change the demand pattern of consumers to enable the utilities to meet their peak demand effectively. Petitioner further submitted that it shall propose revision in ToD slabs and tariffs based on the existing and upcoming renewable capacity additions and the demand-supply scenario at the time of filing of the next MTR petition.

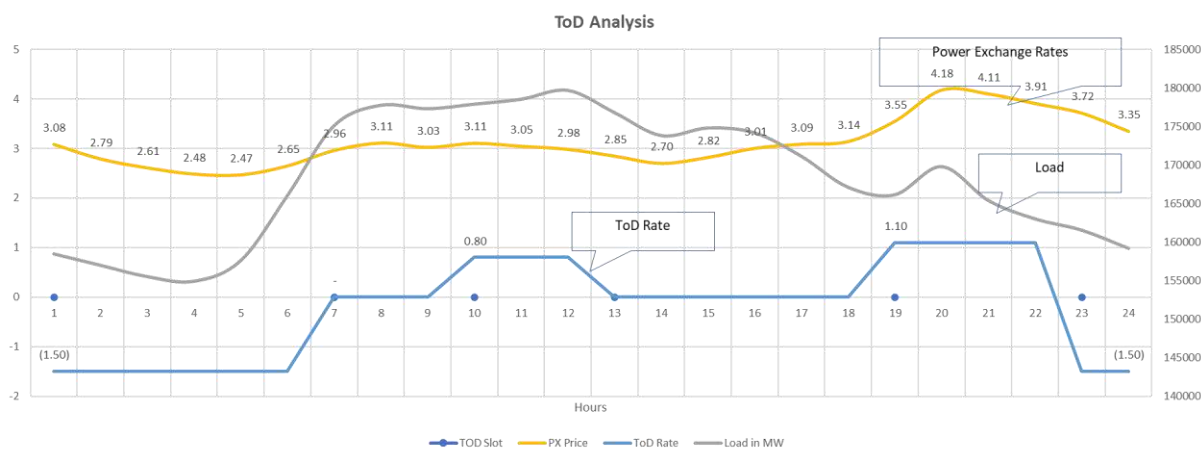
<b>Consumption Slab (kWh)</b>	<b>Existing ToD charge (Rs./kWh)</b>	<b>Proposed ToD charge (Rs./kWh)</b>
2200 Hrs – 0600 Hrs	-1.50	-1.50
0600 Hrs – 0900 Hrs & 1200 Hrs – 1800 Hrs	0.00	0.00
0900 Hrs – 1200 Hrs	0.80	0.60
1800 Hrs – 2200 Hrs	1.10	1.50

8.25.4 Petitioner requested the Commission to approve the revision in ToD charges as proposed  
***Commission’s Analysis and Rulings***

8.25.5 MSEDCL has requested the Commission to revise ToD slots and charges with the claim of

upcoming increase in RE installed capacity and hence, higher amount of penetration in grid from RE plants.

8.25.6 The Commission had sought Hourly, Seasonal & Average Load Curve for the past three years, for establishing the basis of proposed changes in the ToD Rates along with the revenue impact of such proposed revision in the ToD Charges on MSEDCL as part of Data gaps, to which MSEDCL has submitted the required data, while the revenue impact estimated for the ensuing years is ~896 Crore, but no detailed rationale or analysis for revision is provided by MSEDCL. While analysing the data sought from MSEDCL, the Commission has also analysed the hourly trend of Load along with the existing ToD Rates as well as the Short Term Prices discovered at Power Exchange..



8.25.7 In the past the Commission has followed centralized MoD approach and standardised ToD timeslots and rates. The Commission upon analysing the same observed that, the existing ToD structure matches with the rates prevalent in the Power Exchange, i.e., ToD rate is high when Power Exchange power is costly and ToD rate is low when Power Exchange power is cheaper. From 1 April 2020, the State is shifting to decentralized MoD under the DSM framework, and each DISCOM must plan its power procurement as per its load curve. Hence, the ToD structure can be different for each DISCOM. If proposed changes in ToD rates are accepted, it will result into consumer shift from DISCOM to RE plants. Penalising consumers in such a manner will result into loss of consumers for DISCOMs.

8.25.8 In addition, RPO Regulations for the next Control Period envisages substantial increase in Solar power, which will be helping the load curve as it shall be contributing to meet the daytime peak load requirement. Such RE projects would be commissioned in the next couple of years. Hence, at the time of MTR, it would be appropriate to revisit and revise, if

necessary, the ToD timeslots and rates as per DISCOM's power procurement planning. The Commission may also consider having seasonal ToD rate in order to assist the DISCOMs to absorb seasonal variation in RE generation which as per RPO Regulations, 2019 would be 25% in FY 2024-25

8.25.9 Thus, in view of above, the Commission has decided to continue with the existing structure of ToD slots and applicable charges and directs MSEDCL to submit a detailed proposal at the time of MTR.

## 8.26 Harmonics Penalty

### *MSEDCL's Submission*

8.26.1 MSEDCL submitted that the Central Electricity Authority on 6<sup>th</sup> February 2019 had notified amendment to the CEA (Technical Standards for Connectivity to the Grid) Regulations 2007. The amendment states that the Distribution Licensee and Bulk consumers are required to provide adequate reactive compensation to compensate reactive power requirement in the system and mandates for installation of power quality meter and sharing the recorded data thereof. The relevant extracts of the Regulations are reproduced below:

*“(2) (i) The Distribution Licensee and bulk consumer shall provide adequate reactive compensation to compensate reactive power requirement in their system so that they do not depend upon the grid for reactive power support.*

*(ii) The power factor for distribution system and bulk consumer shall be within  $\pm 0.95$ ;*

*(3) Voltage and Current Harmonics –*

*(i) The limits of voltage harmonics by the distribution licensee in its electricity system, the limits of injection of current harmonics by bulk consumers, point of harmonics measurement i.e. point of common coupling, method of harmonic measurement and other related matters, shall be in accordance with the IEEE 519-2014 standards, as amended from time to time;*

*.....*

*(iv) The bulk consumer shall install power quality meter and share the recorded data thereof with the Distribution Licensee with such periodicity as may be specified by the appropriate Electricity Regulatory Commission.”*

8.26.2 MSEDCL submitted that the Regulation 2.1 (i) of the MERC (Electricity Supply code and other Conditions of Supply) Regulations, 2005 defines “Harmonics” as under:

*“Regulation 2.1 (i) “Harmonics” means a component of a periodic wave having frequency that is an integral multiple of the fundamental power line frequency of 50 Hz causing distortion to pure sinusoidal waveform of voltage or current, and as governed by IEEE STD 519-1992, namely “IEEE Recommended Practices and Requirements for Harmonic Control in Electrical Power Systems” and corresponding*

*standard as may be specified in accordance with clause (c) of subsection (2) of section 185 of the Act.”*

8.26.3 MSEDCL states that from the definition, it is understood that the presence of harmonics in electrical systems means that the current and/or voltage are distorted and deviated from the sinusoidal waveform.

8.26.4 MSEDCL further submitted that the Regulation 12.1 of MERC Supply Code provides that the certain categories of HT consumers and LT consumers (Industrial and Commercial) are required to control the harmonics generated in their system on account of their load. The Regulation is reproduced below:

*“12.1 It shall be obligatory for the consumer.....  
Provided that it shall be obligatory for the HT consumer and the LT consumer (Industrial and Commercial only) to control harmonics of his load at levels prescribed by the IEE STD 519-1992 and in accordance with the relevant Orders of the Commission.”*

8.26.5 MSEDCL further submitted that Regulation 12.2 MERC Supply Code Regulations 2005 provides for the minimum time period given to the consumer to make necessary changes in their system so as to control harmonics (or) improve the system’s power factor. Further, the said Regulations also set provisions for penalizing the neglecter for failing to do so. This may attract penalty for not controlling harmonics within the prescribed limit. The Regulation is reproduced below:

*“12.2 The Distribution Licensee may require the consumer within a reasonable time period which shall not be less than three months, to take such effective measures so as to raise the average power factor or control harmonics of his installation to a value not less than such norm, in accordance with Regulation 12.1 above  
Provided that the Distribution Licensee may charge penalty or provide incentives for low/high power factor and for harmonics, in accordance with relevant orders of the Commission.”*

8.26.6 MSEDCL submitted that its consumers use various non-linear loads in industrial and commercial establishments which demand non-sinusoidal currents which are reach in harmonics with higher frequencies of 150 Hz, 250 Hz, etc. Such currents cause overheating of transformers, cables, switchgears, thus causing insulation deterioration and nuisance tripping in control circuits. Thus, harmonics are necessary to control as excessive current harmonics result in voltage harmonics and hence, poor power quality.

8.26.7 MSEDCL mentioned the fact that industrial systems have been moving towards non-linear load equipment which result in higher harmonics in the system leading to increased iron

and copper losses in upstream electrical equipment in distribution systems which do not get metered to the consumer. MSEDCL also mentioned that the increase THD levels (Total Harmonic Distortion) will have adverse effects on the equipment of the utility which affects the operational efficiency of the utility as well as consumers.

8.26.8 MSEDCL submitted some of the effects of harmonics on various components as mentioned below:

- **Generators & Transformers:** Increased heating on account of high iron and copper losses affects the machine efficiency and insulation life. Harmonics lead to asymmetrical unbalanced currents which in turn cause stress on insulation provided to neutral conductors in star connected systems and give rise to failure
- **Power Cables and Capacitor:** Voltage stress induces higher corona losses resulting in dielectric failure
- **Meters:** Non-linear voltages and current induce errors into the measurement circuit resulting in false readings
- **Switch gear and relay:** The out-of-balance current causes spurious/false operations and might operate false alarms and trips.
- **Conductors:** Increase to losses and heating leads to reduced life of conductors

#### **Petitions by MSEDCL in past regarding Harmonics**

8.26.9 MSEDCL had filed a Petition before the Commission for amendment in SOP Regulations related to Harmonics limits and prayed for effective implementation of Regulation 12.2 of the Supply Code Regulations 2005 (Case No. 34 of 2011).

8.26.10 The Commission vide its Order dated 24.12.2012 opined that introduction of penalty for injection of the Harmonics at this stage will be premature. Instead of introduction of penalty, Petitioner needs to analyse existing level of Harmonics in the system and determine causes and remedial measures for limiting the same. The Commission further observed that Petitioner needs to arrange a program for creating awareness amongst the consumers about effects of Harmonics on the power equipment.

8.26.11 MSEDCL filed a petition for removal of difficulties and amendment of Standards of Performance Regulations 2014 and prayed that the onus of control of harmonics should be placed on the consumer in addition to the Distribution Licensee

8.26.12 The Commission vide its Order dated 17<sup>th</sup> August 2015 rejected the claim of Petitioner citing pendency of response to directives in Case No.34 of 2011

**Compliance of Directives in Case No.34 of 2011**

8.26.13 MSEDCL, as per the directives of the Commission, carried out a study of harmonics measurement at the substation end in Load ON and OFF conditions as well as at various HT consumers.

8.26.14 MSEDCL submitted that the measurement of Harmonics was carried out by its field engineers using Electronic Reference Standard Meter (Make: Zera, Class: 0.2S) available with MSEDCL and the THD is measured at consumer premises as well as at substation end.

8.26.15 MSEDCL mentioned that, out of 21810 HT consumers for whom harmonics were measured, 9905 consumers have shown abnormalities of about 45% which is very high.

8.26.16 MSEDCL submitted that, in order to further confirm the abnormalities, it decided to appoint an expert third party agency (M/s. SAS PowerTech P. Ltd., Pune) to undertake measurement of harmonics and analyse the issues involved in respect of sample 100 HT consumers spread all over the state including 25 consumers from each region strictly as per the requirements of IEEE 519 : 1992. This exercise was carried out with the assistance of the third-party expert agency in the field of harmonics measurement and analysis in order to cross verify and validate the observations made by the Petitioner's field engineers.

8.26.17 MSEDCL further mentioned that M/s. SAS PowerTech P. Ltd., Pune completed the work of measurement of harmonics at selected 100 HT consumers premises in May 2018 and submitted the report of detailed analysis in June 2018. These measurements and recordings were carried out for 24 hours at each consumer premises at HT PCC between the MSEDCL and consumer electrical system.

8.26.18 MSEDCL mentioned that, out of 100 HT consumers, 31 consumers were exceeding the permissible limits of TDD compliance, 10 consumers had their TDD at border level while 4 consumers were found exceeding voltage harmonic compliance.

**Regulatory Provisions for Harmonics**

8.26.19 MSEDCL submitted that IEEE Standard namely "IEEE 519-1992 – IEEE Recommended Practices and Requirements for Harmonic Control in Electrical Power Systems" provides for the requirement for harmonics control.

8.26.20 MSEDCL submitted that the CEA on 6<sup>th</sup> February 2019 has notified amendment to CEA (Technical Standards for Connectivity to the Grid) Regulations 2007 as per which, the Distribution Licensees and the Bulk consumers are required to provide adequate reactive compensation to compensate reactive power requirement in their system. The amendment mandates the installation of power quality meter and sharing the recorded data thereof.

8.26.21 MSEDCL further submitted that Regulation 12.1 of MERC (Electricity Supply Code & Other conditions of (Supply) Regulation 2005 provides that it shall be obligatory for HT consumers to control harmonics of his loads at level prescribed by IEEE Standard 519-1992

8.26.22 MSEDCL mentioned the current distortion limits as per the IEEE 519-2014 for general distribution system (120V to 69000V) as below:

<b>Maximum Harmonic Current Distortion in % of I<sub>L</sub></b>						
<b>Individual Harmonic Order (Odd Harmonics)</b>						
<b>I<sub>sc</sub>/I<sub>L</sub></b>	<b>3≤h&lt;11</b>	<b>11≤h&lt;17</b>	<b>17≤h&lt;23</b>	<b>23≤h&lt;35</b>	<b>35≤h&lt;50</b>	<b>TDD</b>
< 20*	4.0	2.0	1.5	0.6	0.3	<b>5.0</b>
20 < 50	7.0	3.5	2.5	1.0	0.5	<b>8.0</b>
50 < 100	10.0	4.5	4.0	1.5	0.7	<b>12.0</b>
100 < 1000	12.0	5.5	5.0	2.0	1.0	<b>15.0</b>
> 1000	15.0	7.0	6.0	2.5	1.4	<b>20.0</b>

8.26.23 MSEDCL mentioned the current distortion limits as per the IEEE 519-2014 for general distribution system (69 kV to 161 kV) as below:

<b>Maximum Harmonic Current Distortion in % of I<sub>L</sub></b>						
<b>Individual Harmonic Order (Odd Harmonics)</b>						
<b>I<sub>sc</sub>/I<sub>L</sub></b>	<b>3≤h&lt;11</b>	<b>11≤h&lt;17</b>	<b>17≤h&lt;23</b>	<b>23≤h&lt;35</b>	<b>35≤h&lt;50</b>	<b>TDD</b>
< 20*	2.0	1.0	0.75	0.3	0.15	<b>2.5</b>
20 < 50	3.5	1.75	1.25	0.5	0.25	<b>4.0</b>
50 < 100	5.0	2.25	2.0	0.75	0.35	<b>6.0</b>
100 < 1000	6.0	2.75	2.5	1.0	0.5	<b>7.5</b>

> 1000	7.5	3.5	3.0	1.25	0.7	<b>10.0</b>
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8.26.24 MSEDCL mentioned the current distortion limits as per the IEEE 519-2014 for general distribution system (above 161 kV) as below:

<b>Maximum Harmonic Current Distortion in % of I<sub>L</sub></b>						
<b>Individual Harmonic Order (Odd Harmonics)</b>						
<b>I<sub>sc</sub>/I<sub>L</sub></b>	<b>3 ≤ h &lt; 11</b>	<b>11 ≤ h &lt; 17</b>	<b>17 ≤ h &lt; 23</b>	<b>23 ≤ h &lt; 35</b>	<b>35 ≤ h &lt; 50</b>	<b>TDD</b>
< 25	1.0	0.5	0.38	0.15	0.1	<b>1.5</b>
25 < 50	2.0	1.0	0.75	0.3	0.15	<b>2.5</b>
≥ 50	3.0	1.5	1.15	0.45	0.22	<b>3.75</b>

Even harmonics are limited to 25% of the odd harmonic limits. TDD refers to the Total Demand Distortion and is based on the average maximum demand current at the fundamental frequency taken at the PCC

\*All power generation equipment is limited to these values of current distortion regardless of I<sub>sc</sub>/I<sub>L</sub>

I<sub>sc</sub> = Maximum short circuit current at the PCC

I<sub>L</sub> = Maximum demand load current (fundamental) at the PCC

h = Harmonic Number

8.26.25 MSEDCL submitted that IEEE 519-2014 has introduced statistical evaluation (very short and short time harmonic measurements), having same limits as mentioned in IEEE 519-1992.

8.26.26 MSEDCL further submitted that Tamil Nadu Electricity Regulatory Commission (TNERC) through its order dated 30<sup>th</sup> March 2012 has permitted the utility to levy harmonic compensation of 15% of respective tariff for High tension consumers for non-compliance of Harmonics limit.

### **Proposal for Harmonics Penalty**

8.26.27 In view of the above, MSEDCL has requested the Commission to propose the following:

8.26.28 Introduce a harmonics penalty of 5% additional energy charges (Wheeling charges plus Energy charges) for HT Industrial and Commercial consumers who do not maintain the harmonics levels specified in IEEE STD 519-2014.

8.26.29 Carry out harmonic survey along with quarterly/annual testing. If any consumer is found with harmonics level beyond limits specified in IEEE STD 519-2014, then the Petitioner will serve a notice indicating test results an intimation to take corrective action for harmonics suppression within 3 months from the date of service of the notice.

8.26.30 Petitioner stated that consumers are required to file report of compliance accompanied with test certificates of harmonic filters, invoices and commissioning report. For such consumers who provide compliance to the notice, no penalty shall be levied, but it is expected that they will maintain harmonic filters in working condition

8.26.31 Consumers who do not adhere to notice stipulations will be charged additional energy charges for consumption beyond 6 months till rectification of defect.

8.26.32 If the consumer has not complied with the stipulations of the notice or has maintained harmonic filters in working conditions, then MSEDCL will apply harmonics penalty for past consumption i.e. from date of serving of notice and for future consumption till rectification of defect.

8.26.33 MSEDCL requested the Commission to approve levy of harmonics penalty through additional charge equivalent to 5% of variable charges (Wheeling charges plus energy charges) for HT Industrial and Commercial consumers who do not maintain the harmonics level specified in IEEE STD 519-2014

8.26.34 MSEDCL further submitted that the HT Industrial and Commercial consumers shall install power quality meters within six months period and share the recorded data with the Petitioner on quarterly basis.

### ***Commission's Analysis and Rulings***

8.26.35 The Commission notes that harmonics in Industries is largely generated from the use of Variable Frequency Drives (VFDs) for large motors with fluctuating load conditions. This being one of the largest sources may not be present in all plants. Further, the Commission opines that the generalization of the fact that all HT and LT-commercial consumers inject Harmonics into the utility's network denies the benefit of investments made by some plants in installing filters to control the harmonic level.

8.26.36 The Commission noted the suggestions and objections from various stakeholders on the issue of Harmonic Penalty. Although most of the stakeholders have opposed imposing

penalty, all desired to get quality power supply from MSEDCL. The Commission notes that Consumers and Distribution Licensee are jointly responsible for Harmonics. Distribution Licensees are responsible for Voltage Harmonics whereas Consumers are responsible for Current Harmonics. However, to fix accountability of Harmonics, it is important to have power quality meter which can measure and record continuous data of power harmonics. Such meter should also be capable of differentiating and recording harmonics being injected from both direction i.e. for consumer, injection from Distribution System and injection into Distribution System. Without having such data based on continuous monitoring and its analysis, the Commission would not be able to impose any incentive or penalty for Harmonics.

8.26.37 In this context, the Commission would like to highlight the provisions of Regulation 5 (3) of CEA (Technical Standards for connectivity to Grid) (Amendment) Regulations, 2019 notified on 6<sup>th</sup> February 2019 which clearly specifies the conditions for Voltage/Current Harmonics, role and responsibility of entities and timelines for corrective actions in case of shortfall in performance on harmonics than that stipulated as per standards. Relevant extract of the said CEA Regulations is as under:

*“(3) **Voltage and Current Harmonics.** - (i) The limits of voltage harmonics by the distribution licensee in its electricity system, the limits of injection of current harmonics by bulk consumers, point of harmonic measurement, i.e., point of common coupling, method of harmonic measurement and other related matters, shall be in accordance with the IEEE 519-2014 standards, as amended from time to time;*

*(ii) Measuring and metering of harmonics shall be a continuous process with meters complying with provisions of IEC 61000-4-30 Class A.*

*(iii) The data measured and metered as mentioned in sub-paragraph (ii) with regard to the harmonics, shall be available with distribution licensee and it shall also be shared with the consumer periodically.*

*(iv) The bulk consumer shall install power quality meter and share the recorded data thereof with the distribution licensee with such periodicity as may be specified by the appropriate Electricity Regulatory Commission:*

*Provided that the existing bulk consumer shall comply with this provision within twelve months from the date of commencement of the Central Electricity Authority (Technical Standards for Connectivity to the Grid) (Amendment) Regulations, 2018.”*

8.26.38 Having said that the Commission is cognizant of issue of power quality. Hence, in order to ensure that requisite data is available before next tariff determination process, the

Commission has laid down time frame for installation of power quality meter as per mandates of CEA Regulations. Accordingly, all Bulk Consumers with Contract Demand above 20 MVA shall install power quality meter by March 2021 (and above 10 MVA by March 2022) and share monthly data with Distribution Licensee. Also, Distribution Licensee needs to install power quality meter at their selected substations and share the data from these meter on its website.

8.26.39 The Commission opines that introduction of penalty for HT consumers for injection of the Harmonics can be undertaken upon analysis of data to be made available through power quality meters. Hence, the Commission has not introduced any Harmonics penalty at this stage. The Commission further observes that MSEDCL needs to arrange a program for creating awareness amongst the consumers about effects of Harmonics on the power equipment.

## **8.27 Expenses for Go Green Initiative (E-Copy of the Bill) and SMS Service**

### ***MSEDCL's Submission***

#### **Expenses for Go Green Initiative**

8.27.1 MSEDCL submitted that it may decide and continue with SMS services and may increase rebate to Rs. 10/- per bill under Go-Green initiative which could be linked to a percentage of bill amount or Rs 10/- per bill whichever is higher, as opined by the Commission in its Order dated 19th March 2019 in Case No.1 of 2019. This expenditure pass through would either be treated as an expenditure under O&M and more specifically under A&G or would be considered as a pass through subject to submission of cost benefit analysis justifying the expense incurred, during its upcoming tariff Petition.

8.27.2 Petitioner proposed to provide a rebate of Rs.10 on every electricity bill to the consumers who opt for an electronic copy of the bill instead of the hard copy under its “Go Green” initiative, in order to encourage consumers to participate in Digital Program. Go Green initiative is a voluntary initiative wherein consumers are free to opt for an electronic copy of the bill instead of the hard copy as per their willingness

8.27.3 Petitioner submitted that earlier it was giving a discount of Rs.3 on every electricity bill since 2016, but has not decided to offer a discount of Rs.10 per electricity bill to consumers opting for electronic bill in order to encourage more participation in Go Green initiative which was implemented w.e.f. 1st December 2018 for LT consumers.

8.27.4 Petitioner mentioned that, currently, 59,040 consumers have opted for Go Green initiative and it has registered email addresses of 14 lakh consumers while more than 50 lakh consumers are paying online. Petitioner further submitted that it expects more and more consumers to opt for electronic copy of the bill. Petitioner, thus, requested the Commission to allow expenditure for Go Green Initiative as revenue expenditure over and above the normative O&M expenses.

#### **Expenses for SMS Service**

8.27.5 Petitioner submitted that the Commission in its MTR Order in Case No.195 of 2017 noted that serving of notices to the consumers through digital medium such as WhatsApp message, email, SMS etc. will not only be environment friendly and save administrative cost but also would free the human resources for other consumer service related works. Hence, the Commission allowed the Petitioner to issue notices under Section 56 of the Electricity Act, 2003 through digital mode such as WhatsApp message, email, SMS etc.

8.27.6 Petitioner submitted that new SMS services are introduced for employees through Employee portal, vendors through vendor payment system and for Solar AG Consumers. Various SMS campaigns are also executed for informing consumers about MSEDCL schemes and major breakdowns during emergencies and natural calamities etc. Recently added Meter Reading Intimation SMS makes consumer aware that meter reader is going to visit his/her premises for capturing reading Meter Reading in particular slots.

8.27.7 Petitioner submitted that the SMS service will help not only consumer but MSEDCL also in information disseminating in a matter of seconds to large section of consumers at one go. Petitioner further submitted that, the Delhi Electricity Regulatory Commission (DERC) in its Order in the matter of Petition for approval of Annual Revenue Requirement (ARR) of Tata Power Delhi Distribution Ltd. for the FY 2018-19, Revised ARR for FY 2017-18, True up for FY 2016-17 has approved expenses of SMS services separately in ARR under other expenses. Petitioner requested the Commission to allow the expenditure for SMS Services as revenue expenditure over and above the normative O&M Expenses.

#### ***Commission's Analysis & Rulings***

8.27.8 Commission has noted the submissions made by MSEDCL for Go Green Initiatives with E-Billing and SMS service taken by DISCOM and its benefits. Commission appreciates the steps taken by MSEDCL towards Go Green Initiatives with the way of saving paper used for electricity bills and other stationary materials. However, the detailed rationale for the same and way of funding such schemes is already discussed under Opex Scheme by the

Commission in this MYT Order. As far as proposal for rebate to consumers for opting for Go Green initiative is concerned, the same is allowed and costs pertaining to such rebate shall be allowed as pass through in ARR in line with Regulation 84.1 of MYT Regulations 2019. However, MSEDCL should maintain separate account of such rebates and details of consumers opting for such Go-Green initiative. Further, MSEDCL should also arrange awareness campaigns through mailers/bills, engage in outreach activities to promote this initiative and also through its customer care centres.

## **8.28 Sharing of Cross Subsidy Impact due to AG consumers in Maharashtra**

### ***MSEDCL's Submission***

- 8.28.1 Petitioner submitted share of the electricity consumption by the agricultural category consumers is ~30 % of the total electricity consumption. The electricity tariff of the agriculture category consumers is being determined to be much less than the Average Cost of Supply effectively increasing the tariff of other category consumers by way of cross subsidy. At the same time, revenue realised from the agriculture consumers is also less owing to various reasons such as poor capacity to pay, uncertain agricultural produce due to unpredictable rainfall etc. This AG cross subsidy is getting passed on to other subsidizing consumers of the Petitioner and increasing their tariff further.
- 8.28.2 Petitioner submitted that, the higher tariffs of the cross-subsidising consumers (Industrial, Commercial, high end residential etc.) is impacting its sales and revenue thereby requiring tariff hike and thus entering into a vicious circle. Hence there is a necessity to maintain a balance in tariff of the subsidised AG consumers and the high-end subsidising consumers.
- 8.28.3 Petitioner submitted that the consumer base of Mumbai licensees (Tata, Adani, BEST) as well as other SEZs comprises mostly of high-end consumers (Industrial, Commercial, high end Residential etc.) that have higher capacity to pay in comparison to the Agricultural category consumers. For Mumbai Licensees and SEZs, as there are no AG consumers, there is no impact on the tariff of these consumers because of cross subsidy for agricultural consumers. Thus, the consumers of Mumbai Licensees and SEZs are protected from payment of the cross subsidy for AG consumers. Petitioner also submitted that since all AG consumers are in its License Area, it has created imbalance in revenue recovery.
- 8.28.4 Stating a fact that the benefits of the agricultural produce from the agricultural consumers of the Petitioner are being enjoyed by all the consumers of Maharashtra including Mumbai

Licensees and SEZs, Petitioner proposed to share equally, the impact of such cross subsidy, by all the consumers of the state of Maharashtra including those in the area of Mumbai Licensees and SEZs as it will reduce differentiation among similar category consumers. Petitioner, thus, requested the Commission to take note of the same and address the issue in larger benefit of similarly placed electricity consumers in the state.

8.28.5 Petitioner further submitted that proposed amendment in the EA 2003 provides for separation of carriage and contents. As a result, multiple supply Licensees will be introduced in State. Petitioner also submitted that, being a Supply Licensee, the impact of cross subsidy of all the AG consumers in its area will be on the Petitioner itself. Hence, the cross-subsidy impact needs to be distributed amongst all the Supply Licensees in Maharashtra which is in line with the proposed amendment.

8.28.6 Petitioner has estimated the overall cross subsidy impact on Mumbai Utilities is around Rs. 1,896 Crore and requested the Commission to use its inherent powers to decide the matters in the interest of consumers as well as utilities.

### ***Commission Analysis and Rulings***

8.28.7 The Commission has noted the submissions and is of the view that, the same is not legally tenable as per the Electricity Act, 2003, as cross-subsidising inter-se amongst licensees is not envisaged under the Act as each Utilities ARR and Tariff determination is to be undertaken based on its consumer mix/sales mix/power purchase mix, network topography in accordance with the principles specified under MYT Regulations.

8.28.8 The Act empowers the Appropriate Government to extend subsidy to Licensee in case any consumer category /class of consumers needs to be provided subsidy against the tariff determined by the Commission and State Government can extend the same in pursuance of Section 65 of the Electricity Act 2003. Further the Government is empowered to determine the Electricity Duty and Tax on Sale of Electricity as per the relevant Acts. Thus, the Commission has not accepted the claim of MSEDCL of sharing the Cross-subsidy impact with Mumbai Utilities.

## **8.29 Wheeling Charges**

### ***MSEDCL's Submission***

#### **Network Cost of MSEDCL**

8.29.1 Petitioner submitted that the Commission has provided the ratio of network and supply cost segregation in MYT Regulations 2019 and the Petitioner has considered the same for segregation of average revenue requirement for the control period and arrived at the wires business and retail supply business cost. Following table provides the summary of network cost of the Petitioner for the control period

**Table 8-34: Network cost of MSEDCL for FY 2020-21 to FY 2024-25**

Sr. No.	Particulars	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25
1	Operation & Maintenance expenses	4536	4710	4891	5078	5273
2	Depreciation	2481	2670	2840	2899	2953
3	Interest on Loan Capital	1266	1317	1222	1001	771
4	Interest on Working Capital	130	140	145	145	145
5	Interest on deposit from consumers and distribution system users	54	57	60	63	66
6	Other finance charges	-	-	-	-	-
7	Provision for bad and doubtful debts	89	94	99	105	111
8	Opex schemes	87	87	87	87	87
9	Contribution to contingency reserves	143	159	171	175	180
10	Income Tax	-	-	-	-	-
11	Return on Equity Capital	1550	1613	1668	1711	1752
	<b>Total Revenue Expenditure</b>	<b>10338</b>	<b>10847</b>	<b>11182</b>	<b>11266</b>	<b>11338</b>

8.29.2 Petitioner submitted that the Regulation 73.2 of MERC (Multi Year Tariff) Regulations 2019 provides for computation of wheeling charges separately for LT voltage, HT voltage and EHT voltage levels. The relevant extract of such regulations are given below:

*“73.2 The Wheeling Charges of the Distribution Licensee shall be determined by the Commission on the basis of a Petition for determination of Tariff filed by the Distribution Licensee in accordance with Part B of these Regulations:*

*Provided that the Wheeling Charges may be denominated in terms of Rupees/kWh or Rupees/kVAh or Rupees/kW/month or Rupees/kVA/month, for the purpose of recovery from the Distribution System User, or any such denomination, as may be stipulated by the Commission:*

*Provided further that the Wheeling Charges shall be determined separately for LT voltage, HT voltage, and EHT voltage, as applicable:”*

8.29.3 Petitioner submitted that for the control period from FY 2020-21 to FY 2024-25, it has proposed Wheeling Charges for three levels only, EHV (66kV and above), HT (combined wheeling charges for 33, 22 & 11 kV) and LT level.

8.29.4 Petitioner submitted that it does not maintain audited accounts for voltage wise assets and thus it does not have segregation between GFA for HT and LT Levels. Hence, Petitioner, for the purpose of projection, has considered GFA segregated into HT and LT as considered by the Commission in the Mid Term Review Order dated 12th September 2018. Petitioner further submitted that in order to arrive at the proportion of GFA for HT Level, it has added the GFA proportion for 33 kV, 22 kV and 11 kV voltage levels and the same is shown in the table below.

**Table 8-35: Segregation of GFA for the control period**

Particulars	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25
HT (Excel EHV)	70%	70%	70%	70%	70%
LT level	30%	30%	30%	30%	30%

8.29.5 Petitioner has applied ratio of voltage-wise GFA shown in the above table to arrive at GFA of HT (excluding EHV level) and LT levels asset which has been approved by the Commission in its Order dated 12<sup>th</sup> September 2018

8.29.6 The network cost is apportioned among voltage level in the ratio of GFA as computed above:

**Table 8-36: Network cost apportioned for the control period (Rs. Crore)**

Particulars	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25
HT (Excel EHV)	7237	7593	7827	7886	7936
LT level	3101	3254	3354	3380	3401

8.29.7 Petitioner submitted that it has considered the voltage wise consumption (in kVAh also) as projected in Form 1.2 for the respective years of the control period for determining the wheeling charges. The projected consumption at different voltage levels is shown below:

**Table 8-37: Voltage wise consumption for the control period, in MUs**

Particulars	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25
HT (Excel EHV)	30,895	32,100	33,356	34,666	36,034
LT level	73,257	75,874	78,641	81,569	84,671

8.29.8 Petitioner submitted that, to arrive at the cost of wheeling at various voltage levels, the total wire network cost (as computed above) has been apportioned to the various levels (i.e. HT (excluding EHV) and LT) in the ratio of sales at respective voltage levels. The wire costs at higher voltage levels have been further apportioned to lower voltage levels, since the HT system is also being used for supply to the LT consumers

**Table 8-38: Calculation of wheeling cost for FY 2020-21**

Particulars	Network cost (Rs.Crs.)	Sales (MUs)	% of Sales	Wheeling cost (Rs. Crs)
HT (Excel EHV)	7237	30,895	30%	2147
LT level	3101	73,257	70%	8191
<b>Total</b>	<b>10,338</b>	<b>1,04,152</b>	<b>100%</b>	<b>10,338</b>

8.29.9 Using the same methodology, the Petitioner has computed the wheeling cost for the entire control period

8.29.10 Petitioner has submitted that it has calculated the share of each voltage category in the non-incident peak demand using % sales for each category. The wheeling charges have been derived by dividing the wheeling cost of each voltage category (as computed above) by the non-coincidental peak demand for that category and dividing it by 12 months

8.29.11 Petitioner submitted that the wheeling charges have been calculated by dividing the wheeling charges for each category by the load factor (assumed to be 66%) and 720 hours (24x30)

**Table 8-39: Proposed wheeling charges for FY 2020-21**

Particulars	Wheeling cost (Rs. Crs.)	Share in Non coincident demand (MW)	Wheeling charge (Rs./kW/month)	Wheeling charges
HT (Excel EHV)	2147	4913	364	0.77
LT level	8191	12,540	544	1.15
<b>Total</b>	<b>10,338</b>	<b>17,453</b>	<b>494</b>	<b>1.04</b>

8.29.12 Petitioner submitted that using the same methodology, the Petitioner has computed the wheeling cost for the entire control period. The proposed wheeling charges for the control period are given below:

**Table 8-40: Proposed Wheeling Charges for the control period, in Rs./unit**

Particulars	Units	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25
HT (Excel EHV)	Rs./kVAh	0.77	0.78	0.78	0.77	0.75
LT level	Rs./kVAh	1.15	1.17	1.17	1.14	1.11

8.29.13 Petitioner proposed to continue the following wheeling losses which are already approved in previous Tariff Orders for the purpose of commercial settlement

**Table 8-41: Proposed Wheeling Losses for control period**

Particulars	Wheeling Losses
33 kV	6.00%
22 kV	7.50%
11 kV	9.00%
LT	12.00%

8.29.14 Petitioner requested the Commission to approve the Wheeling Charges as proposed.

***Commission Analysis and Rulings***

8.29.15 The Commission in the previous MTR Order estimated the voltage wise Wheeling Charges for 33 kV, 22 kV, 11 kV and LT level consumers. Whereas in the present MYT Petition, in

line with the Regulation 73.2 of the MYT Regulations, 2019, the Wheeling Charges shall now be determined for LT, HT and EHV voltage levels only.

8.29.16 The Commission in its every Tariff Order has directed MSEDCL to provide the Voltage wise GFA details, but the same have not been complied till date. Thus, in absence of Voltage-wise Network Cost, the Commission has considered estimate of the voltage wise GFA ratio considering assumptions on various parameters that influences the determination of GFA ratio such as HT/LT circuit km, Substation Capacity (HT/LT), Number of DTCs/DT capacity, Voltage-wise sales at HT/LT, Energy Units handled at HT/LT etc. and accordingly derived the ratio for allocation of wheeling cost between HT and LT, which is summarised as under:

**Table 8-42: Allocation of Wheeling Cost for FY 2020-21 to FY 2024-25, considered by Commission**

Particulars	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25
HT (Excl EHV)	26%	27%	27%	27%	28%
LT Level	74%	73%	73%	73%	72%

8.29.17 Based on the GFA Ratio, the Commission has worked out the Voltage-wise energy sales, excluding EHV Sales, of HT and LT Levels for FY 2020-21 to FY 2024-25.

**Table 8-43: Voltage-wise Wheeling Cost Allocation for computation of Wheeling Charges for FY 2020-21 to FY 2024-25**

Particulars	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25
HT (Excl EHV)	1,714	1,737	1,796	1,822	1,848
LT Level	9,089	9,047	9,196	9,275	9,351
<b>Total</b>	<b>10,804</b>	<b>10,784</b>	<b>10,992</b>	<b>11,097</b>	<b>11,199</b>

8.29.18 In addition to the allocation of yearly wheeling cost to recover projected ARR of wire business through wheeling charge, the Commission in this present MYT Order has also considered to recover the past period gaps (from FY 2017-18 to FY 2019-20) in recovery of Wire ARR through Wheeling Charges to an extent of Rs 3528 Crore over the ensuing years. Thus, proposed recovery of Wires cost (incl. deferred recovery of past period gaps for wire business) for the ensuing years is provided in the following table:

**Table 8-44: Total Wire Recovery including past period gaps for FY 2020-21 to FY 2024-25, as approved by the Commission**

Particulars	Units	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25
Wheeling ARR	Rs Cr	10,804	10,784	10,992	11,097	11,199

Past Period Wheeling Gap (Incl. Carrying Cost)	Rs Cr	657	657	657	657	657
<b>Total Recovery (Incl. Past Gap)</b>	<b>Rs Cr</b>	<b>11,461</b>	<b>11,441</b>	<b>11,650</b>	<b>11,754</b>	<b>11,856</b>

8.29.19 Thus, the voltage wise wheeled cost, wheeled units and approved Wheeling Charges so determined for the 4<sup>th</sup> Control Period is summarised in the table below:

**Table 8-45: Voltage-wise Share of Network Cost for FY 2020-21 to FY 2024-25, as considered by Commission (Rs. Crore)**

Particulars	Units	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25
Wheeled Cost – HT	Rs Cr	1,819	1,843	1,903	1,930	1,956
Wheeled Cost – LT	Rs Cr	9,642	9,598	9,746	9,824	9,900
<b>Total Wheeled Cost (incl. past period gaps)</b>	<b>Rs Cr</b>	<b>11,461</b>	<b>11,441</b>	<b>11,650</b>	<b>11,754</b>	<b>11,856</b>
Wheeled Units – HT	MU	30,112	31,246	32,425	33,649	34,921
Wheeled Units – LT	MU	65,615	68,344	71,219	74,250	77,446
Wheeling Charge - HT	Rs/kWh	0.58	0.57	0.57	0.55	0.54
Wheeling Charge - LT	Rs/kWh	1.45	1.38	1.35	1.30	1.26
Wheeling Charge - HT	Rs/kVAh	0.57	0.56	0.55	0.54	0.53

8.29.20 In case of HT category where kVAh billing is introduced, Wheeling charges in Rs/kVAh shall be applicable considering categorywise power factor (0.98 pf), as approved in the above table. Further, the Commission approves Wheeling Loss of 7.5% at HT and 12% at LT as proposed by MSEDCL.

8.29.21 Further, In this Order, the Commission has also determined the Wires and Supply components of the tariff separately for each consumer category. Accordingly, the Wheeling Charge component and Energy Charge component have been shown separately while computing the category-wise tariffs, except for the Residential BPL category. In case of the BPL category, no Wheeling Charges are apportioned considering the consumer profile of this category.

### 8.30 Cross Subsidy Surcharge

#### *MSEDCL's Submission*

8.30.1 MSEDCL submitted that Section 2(47) of the said Electricity Act, 2003 defines “Open

Access”, while the Section 42 of the said Act inter-alia mandates the Distribution Licensee to provide Open Access to eligible consumers, subject to payment of “Cross Subsidy Surcharge”, “Additional Surcharge” and other applicable charges.

8.30.2 Petitioner further submitted that the Section 42(2) of the Act provides for the levy of Cross Subsidy Surcharge (CSS). The relevant provision of the Act is reproduced below:

*“ ..... in determining the charges of wheeling, it shall have due regard to all relevant factors including such cross-subsidies and other operational constraints;*

*Provided that open access shall be allowed on payment of surcharge in addition to the charges for wheeling as may be determined by the state Commission;*

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

*Emphasis added*

8.30.3 The Section 86(1)(a) of the said Act inter-alia mandates the Commission to determine “Cross Subsidy Surcharge”, “Additional Surcharge” and other applicable charges payable by the consumers opting for Open Access

8.30.4 Petitioner submitted that the National Electricity Policy as stipulated by the Central Government provides that-

*“Under the sub-section (2) of Section 42 of the Act, a surcharge is to be levied by the respective State Commissions on consumers switching to alternate supplies under Open Access. This is to compensate the host distribution licensee serving such consumers who are permitted Open Access under Section 42(2), for the loss of Cross Subsidy element built into the tariff of such consumers.....”*

8.30.5 Petitioner submitted that the Central Government notified the revised National Tariff Policy on 28th January 2016 and has revised the “Surcharge Formula” as follows:

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

Where,

S is the Surcharge

T is the Tariff Payable by the relevant category of consumers including reflection the Renewable Purchase Obligation

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

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

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

R is the per unit cost of carrying regulatory assets

8.30.6 As per the provisions of Section 42(2) of the Electricity Act 2003, the cross-subsidy surcharge needs to be based on the current level of cross subsidy. Accordingly, the consumers who opted for open access needs to be charged for the compensation of current level of cross subsidy which prevailed during the period and in order to avoid the burden of the same getting passed on other consumers who are with the Distribution Licensee

8.30.7 Petitioner submitted that, to examine the issues related to Open Access along with issues relating to amendments in provisions relating to captive Generating plants in the Electricity Rules, 2005, a committee was constituted by CEA on the advice of Ministry of Power. In the Consultation paper by MoP issued on 24th August 2017, which is based on the report of the said Committee, it has been proposed that the SERCs should determine the CSS based on real cross subsidy. The said Paper also advocated for implementation of Tariff Policy 2016 in true spirit. The relevant extract of the said Consultation Paper is reproduced below:

*“The Tariff Policy 2016 mandates SERCs to determine roadmap for reduction of cross subsidy and bring tariff at +/- 20% Average Cost of Supply, however it restricts Cross Subsidy Surcharge at 20% of the consumer tariff. In case the consumer tariff is more than 120% of Average Cost of Supply, DISCOM will not be able to recover losses through cross subsidy surcharge in case consumer opts for open access. It is essential for SERCs to implement both Para 8.3-2 and First proviso to para 8.5.1 of the Tariff Policy 2016 simultaneously. If one of the provisions could not be implemented due to some reason, the second provision should also not be implanted to that extent.”*

8.30.8 Petitioner further stated that while approving the CSS in Case No.195 of 2017, the Commission worked out the various components of CSS formulae based on the approved values for FY18-19 and FY19-20 and computed the consumer category-wise CSS in accordance with the Tariff Policy 2016. The CSS computed in accordance with NTP formulae represents the current level of cross subsidy. The Petitioner further stated that, however, the Commission approved the CSS equal to minimum of the two values: Computed CSS and 20% of tariff. This has resulted in lower CSS applicable than current level of cross subsidy leading to incomplete recovery of cross subsidy from open access consumers.

8.30.9 For example, the CSS calculated by the Commission as per the NTP formula for HT industrial (general) at EHV level for FY 18-19 was Rs. 3.21 per unit whereas the CSS approved for that category was Rs.1.58 per unit only. Considering the EHV Open Access quantum for FY 18-19, the Petitioner lost about Rs.670 crores of legitimate revenue from HT category open access consumers due to lower level of approved CSS.

8.30.10 Petitioner thus submitted that such revenue deficit due to lower approved CSS is being passed on to its consumers during true-up exercise which results in:

- Substantial delay in revenue realisation which comes only after true up exercise
- Further tariff increases of MSEDCL consumers at large, despite not being at any fault.

8.30.11 OA consumers unduly get benefited due to less cross subsidy surcharge. As industrial consumers are the subsidising consumers the impact gets loaded onto the industrial category, raising its tariff. This increased industrial tariff will lead more consumers to opt for open access which will further add to revenue deficit leading to requirement of further tariff hike, thus entering a vicious cycle. Petitioner further states, therefore, as a principle, only those consumers who opt for open access during a particular period should pay the CSS for such period to maintain the prevailing level of cross subsidy and should not be loaded onto the Petitioner's consumers at large.

8.30.12 Petitioner, thus, submitted that one of the reasons for tariff hike is incomplete recovery of CSS. There can be no ambiguity with the proposition that CSS is a compensatory charge to the Discom. This principle had been accepted even by the Appellate Tribunal in several judgments earlier. Petitioner further submitted that, as held by the Tribunal, CSS is not only to compensate the Discom for the loss of cross subsidy, it is also to compensate the

remaining consumers of the Discom who have not taken open access. The same has been held up in the APTEL in its judgement dated 2nd December 2013 in Appeal No.178 of 2011 (supra) which is reproduced below:

*“...II The contention of the State Commission that Tariff Policy provide that the CSS should not be enormous to suffocate the Competition is misplaced. **The Act mandated the State Commission to determine the CSS to meet the requirement of current level of cross subsidy.** We have to keep in mind that the CSS is paid by subsidizing consumers only. This Tribunal in catena of cases has held that CSS is compensatory in nature. It is meant for to compensate the loss suffered by the remaining subsidised low-end consumers. Thus, in the scenario of mass changeover of consumers, the CSS has also to be such that exodus of subsidizing consumers does not load the remaining low-end consumers heavily. The State Commission has to balance the interest of all the consumers, the plea taken by the State Commission in Appeal No.132/2011 and accepted by this Tribunal in its judgement. The above submission of the State Commission also suggests that it has attempted to suppress the CSS artificially...” **Emphasis Added***

8.30.13 Petitioner submitted that it has determined the cross-subsidy surcharge based on the Tariff Policy formula without putting any ceiling.

8.30.14 Petitioner requested the Commission to determine the cross-subsidy surcharge considering the formula prescribed by the NTP 2016 without putting any ceiling.

**Computation of Cross Subsidy Surcharge for the Control Period.**

8.30.15 Computation of ‘C’ is based on the projected power purchase quantum and price for the control period as submitted in the Form 2 of the Regulatory Formats for the respective year. The definition/explanation for ‘C’ has been revised in the Tariff Policy dated 28th January 2016 with the inclusion of renewable power purchase in the computation of ‘C’. The comparison of old and new Tariff Policy is given below:

Old Tariff Policy	New Tariff Policy
Weighted average cost of power purchase of top 5% at the margin excluding liquid fuel-based generation and renewable power.	Per unit weighted average cost of power purchase by the licensee, including meeting the renewable purchase obligation.

8.30.16 Petitioner submitted that the computation of ‘C’ can be taken as the total power purchase cost based on MOD principle to the total power scheduled to be purchased as per the MOD

principle. Therefore, the ‘C’ computed for MSEDCL for control period are shown in the following table:

**Table 8-46: Computation of C for Control Period**

Financial Year	Details of Power Purchase		
	MUs	Rs. Crores*	Rs./kWh
2020-21	1,36,888	57,558	4.20
2021-22	1,41,651	60,035	4.24
2022-23	1,46,645	63,403	4.32
2023-24	1,51,950	66,662	4.39
2024-25	1,57,573	69,350	4.40

\* - Power Purchase Cost is excluding the PGCIL transmission charges

8.30.17 Computation of System Loss ‘L’: Petitioner submitted that the projected wheeling losses at the respective voltage level and the transmission losses are used to arrive at the grossed up total system losses for the Petitioner which is shown in the following table:

**Table 8-47: Computation of System Loss for the Control Period**

Particulars	EHV	HT	LT level
Transmission Losses (%)	3.30%	3.30%	3.30%
Wheeling Losses (%)	0.00%	7.50%	12.00%
<b>Total System Losses (%)</b>	<b>3.30%</b>	<b>10.55%</b>	<b>14.90%</b>

8.30.18 Computation of Wheeling charge ‘D’: Petitioner submitted that the projected wheeling charges as shown in the Chapter 11 at the respective voltage levels for the Petitioner along with per unit transmission charges (including PGCIL charges and intra-state) are used for the parameter ‘D’ in the computation of cross subsidy surcharge for the control period. The same wheeling charges at respective voltage levels are shown in the following table along with system losses:

**Table 8-48: Computation of Wheeling Charge 'D' for the Control Period**

Wheeling Charges and Transmission Charges
Wheeling Charges (Rs./unit)

Particulars	EHV	HT	LT level
2020-21		0.77	1.15
2021-22	-	0.78	1.17
2022-23	-	0.78	1.17
2023-24	-	0.77	1.14
2024-25	-	0.75	1.11
Transmission Charges (Rs./unit)			
Particulars	EHV	HT	LT level
2020-21	1.22	1.22	1.22
2021-22	0.86	0.86	0.86
2022-23	0.87	0.87	0.87
2023-24	0.90	0.90	0.90
2024-25	0.93	0.93	0.93
Wheeling and Transmission charges (Rs./unit)			
Particulars	EHV	HT	LT level
2020-21	1.22	1.99	2.37
2021-22	0.86	1.64	2.03
2022-23	0.87	1.66	2.04
2023-24	0.90	1.67	2.04
2024-25	0.93	1.68	2.05

8.30.19 Computation of Average Billing Rate ‘T’: Petitioner stated that its ABR has been taken as the effective average billing rate as per the proposed tariff for control period

8.30.20 Determination of Cross Subsidy Surcharge ‘S’: Petitioner submitted that the category wise CSS applicable to open access consumers arrived on consideration of the components ABR, C, L & D from the above referred respective sections is provided in the tables below:

**Table 8-49: Detailed Computation of CSS for FY 2020-21 for HT Consumers**

Consumer Category	T (ABR)	C	WL	TL	L	D=WL + Tx	CSS computed
	Rs./unit*		%	%	%	Rs./unit*	
<b>HT I: HT – Industry</b>							
HT	9.25	4.20	7.50%	3.30%	10.55%	1.99	2.57
EHV	8.40	4.20	0.00%	3.30%	3.30%	1.22	2.83
<b>HT I(B): HT – Industry (Seasonal)</b>							
HT	12.18	4.20	7.50%	3.30%	10.55%	1.99	5.49
EHV	13.93	4.20	0.00%	3.30%	3.30%	1.22	8.36
<b>HT II: HT – Commercial</b>							
HT	15.26	4.20	7.50%	3.30%	10.55%	1.99	8.57
EHV	16.47	4.20	0.00%	3.30%	3.30%	1.22	10.90
<b>HT III: HT – Railways/Metro/Monorail traction</b>							
HT	10.71	4.20	7.50%	3.30%	10.55%	1.99	4.03
EHV	9.55	4.20	0.00%	3.30%	3.30%	1.22	3.98
<b>HT IV: HT – Public Water Works</b>							
HT	8.29	4.20	7.50%	3.30%	10.55%	1.99	1.61
EHV	6.95	4.20	0.00%	3.30%	3.30%	1.22	1.38
<b>HT V(B): HT – Agriculture (Others)</b>							
HT	6.57	4.20	7.50%	3.30%	10.55%	1.99	-
EHV	-	4.20	0.00%	3.30%	3.30%	1.22	-
<b>HT VI: HT – Group Housing Societies (Residential)</b>							
HT	8.77	4.20	7.50%	3.30%	10.55%	1.99	2.09
EHV	6.00	4.20	0.00%	3.30%	3.30%	1.22	0.43

Consumer Category	T (ABR)	C	WL	TL	L	D=WL + Tx	CSS computed
	Rs./unit*		%	%	%	Rs./unit*	
<b>HT VIII(B): HT – Temporary Supply Others (TSO)</b>							
HT	17.38	4.20	7.50%	3.30%	10.55%	1.99	10.69
EHV	-	4.20	0.00%	3.30%	3.30%	1.22	-
<b>HT IX: HT – Public Services</b>							
<b>HT IX(A): HT – Public Services – Govt. Edu. Institutions and Hospitals</b>							
HT	10.73	4.20	7.50%	3.30%	10.55%	1.99	4.04
EHV	-	4.20	0.00%	3.30%	3.30%	1.22	-
<b>HT IX(B): HT – Public Services – Others</b>							
HT	12.96	4.20	7.50%	3.30%	10.55%	1.99	6.27
EHV	10.81	4.20	0.00%	3.30%	3.30%	1.22	5.24

**Table 8-50: Detailed computation of CSS for FY 2020-21 for LT Consumers**

Consumer Category	T (ABR)	C	WL	TL	L	D=WL + Tx	CSS computed
	Rs./unit*		%	%	%	Rs./unit*	
<b>LT Residential</b>							
LT I(A): LT – Residential – BPL	2.18	4.20	12.00%	3.30%	14.90%	2.37	-
<i>LT I(B): LT – Residential</i>							
1 – 100 units	5.61	4.20	12.00%	3.30%	14.90%	2.37	-
101 – 300 units	9.68	4.20	12.00%	3.30%	14.90%	2.37	2.37
301 – 500 units	12.32	4.20	12.00%	3.30%	14.90%	2.37	5.01
Above 500 units	13.15	4.20	12.00%	3.30%	14.90%	2.37	5.85
<b>LT II: LT – Non-Residential</b>							
(A) 0 – 20 kVA	10.55	4.20	12.00%	3.30%	14.90%	2.37	3.24
(B) > 20 kVA and ≤ 50 kVA	13.39	4.20	12.00%	3.30%	14.90%	2.37	6.08

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Consumer Category	T (ABR)	C	WL	TL	L	D=WL + Tx	CSS computed
	Rs./unit*		%	%	%	Rs./unit*	
(C) > 50 kVA	15.35	4.20	12.00%	3.30%	14.90%	2.37	8.04
<b>LT IV(C): LT – Agriculture Metered – Others</b>	7.95	4.20	12.00%	3.30%	14.90%	2.37	0.65
<b>LT V(A): LT – Industry – Powerlooms</b>							
(i) 0 – 20 kVA	6.50	4.20	12.00%	3.30%	14.90%	2.37	-
(ii) Above 20 kVA	7.87	4.20	12.00%	3.30%	14.90%	2.37	0.56
<b>LT V(B): LT – Industry – General</b>							
(i) 0 – 20 kVA	7.92	4.20	12.00%	3.30%	14.90%	2.37	0.61
(ii) Above 20 kVA	9.22	4.20	12.00%	3.30%	14.90%	2.37	1.92
<b>LT VI: LT – Street Light</b>							
(B): Municipal Corporation area	7.76	4.20	12.00%	3.30%	14.90%	2.37	0.45
<b>LT VII: LT – Temporary Connection</b>							
(A): LT – Temporary Supply Religious (TSR)	8.06	4.20	12.00%	3.30%	14.90%	2.37	0.75
(B): LT – Temporary Supply Others (TSO)	16.32	4.20	12.00%	3.30%	14.90%	2.37	9.01
<b>LT VIII: LT – Advertisements and Hoardings</b>	20.39	4.20	12.00%	3.30%	14.90%	2.37	13.08
<b>LT X(A) – Public Services – Govt.</b>							
(i) 0 – 20 kVA	6.09	4.20	12.00%	3.30%	14.90%	2.37	-
(ii) > 20 kVA and ≤ 50 kVA	8.72	4.20	12.00%	3.30%	14.90%	2.37	1.41
(iii) > 50 kVA	9.80	4.20	12.00%	3.30%	14.90%	2.37	2.50
<b>LT X(B) – Public Services - Others</b>							
(i) 0 – 20 kVA	8.33	4.20	12.00%	3.30%	14.90%	2.37	1.02
(ii) > 20 kVA and ≤ 50 kVA	10.65	4.20	12.00%	3.30%	14.90%	2.37	3.34

Consumer Category	T (ABR)	C	WL	TL	L	D=WL + Tx	CSS computed
	Rs./unit*		%	%	%	Rs./unit*	
(iii) > 50 kVA	10.85	4.20	12.00%	3.30%	14.90%	2.37	3.54
<b>LT XI: LT – Electric Vehicle Charging Station</b>	6.35	4.20	12.00%	3.30%	14.90%	2.37	-

**Table 8-51: Summary of CSS for the Control Period of HT Consumers**

Consumer Category	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25
	Rs./unit	Rs./unit	Rs./unit	Rs./unit	Rs./unit
<b>HT I: HT – Industry</b>					
HT	2.57	3.09	3.19	3.31	3.46
EHV	2.83	3.35	3.45	3.57	3.71
<b>HT I(B): HT – Industry (Seasonal)</b>					
HT	5.49	6.06	6.20	6.35	6.57
EHV	8.36	9.02	9.25	9.50	9.81
<b>HT II: HT – Commercial</b>					
HT	8.57	9.05	9.10	9.17	9.30
EHV	10.90	11.49	11.66	11.85	12.11
<b>HT III: HT – Railways/Metro/Monorail traction</b>					
HT	4.03	4.77	5.09	5.44	5.87
EHV	3.98	4.64	4.87	5.12	5.42
<b>HT IV: HT – Public Water Works</b>					
HT	1.61	2.21	2.38	2.56	2.81
EHV	1.38	1.92	2.03	2.15	2.32
<b>HT V(B): HT – Agriculture (Others)</b>					
HT	-	0.41	0.52	0.62	0.78
EHV	-	-	-	-	-

Consumer Category	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25
	Rs./unit	Rs./unit	Rs./unit	Rs./unit	Rs./unit
<b>HT VI: HT – Group Housing Societies (Residential)</b>					
HT	2.09	2.84	3.19	3.57	4.03
EHV	0.43	0.96	1.06	1.16	1.32
<b>HT VIII(B): HT – Temporary Supply Others (TSO)</b>					
HT	10.69	11.95	12.83	13.80	14.92
EHV	-	-	-	-	-
<b>HT IX: HT – Public Services</b>					
<b>HT IX(A): HT – Public Services – Govt. Edu. Institutions and Hospitals</b>					
HT	4.04	4.69	4.92	5.18	5.54
EHV	-	-	-	-	-
<b>HT IX(B): HT – Public Services – Others</b>					
HT	6.27	6.86	7.04	7.23	7.49
EHV	5.24	5.75	5.84	5.93	6.09
<b>HT X: HT – Electric Vehicle Charging Station</b>					
HT	1.99	2.71	3.03	3.36	3.78
EHV	-	-	-	-	-

**Table 8-52: Summary of CSS for the Control Period for LT Consumers**

Consumer Category	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25
	Rs./unit	Rs./unit	Rs./unit	Rs./unit	Rs./unit
<b>LT Residential</b>					
LT I(A): LT – Residential – BPL	-	-	-	-	-
<i>LT I(B): LT – Residential</i>					
1 – 100 units	-	-	-	-	-

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Consumer Category	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25
	Rs./unit	Rs./unit	Rs./unit	Rs./unit	Rs./unit
101 – 300 units	2.37	2.99	3.18	3.39	3.66
301 – 500 units	5.01	5.45	5.45	5.49	5.58
Above 500 units	5.85	6.25	6.23	6.33	6.51
<b>LT II: LT – Non Residential</b>					
(A) 0 – 20 kVA	3.24	3.78	3.88	3.98	4.14
(B) > 20 kVA and ≤ 50 kVA	6.08	6.76	7.00	7.24	7.55
(C) > 50 kVA	8.04	8.54	8.61	8.58	8.61
<b>LT III: LT – Public Water Works</b>					
(A) 0 – 20 kVA	-	-	-	-	-
(B) > 20 kVA and ≤ 40 kVA	-	-	-	-	-
(C) > 40 kVA	-	-	-	-	0.14
<b>LT IV(C): LT – Agriculture Metered – Others</b>	0.65	1.23	1.48	1.77	2.11
<b>LT V(A): LT – Industry – Powerlooms</b>					
(i) 0 – 20 kVA	-	-	-	0.12	0.39
(ii) Above 20 kVA	0.56	1.02	1.14	1.28	1.48
<b>LT V(B): LT – Industry – General</b>					
(i) 0 – 20 kVA	0.61	1.27	1.50	1.72	2.02
(ii) Above 20 kVA	1.92	2.66	2.97	3.30	3.69
<b>LT VI: LT – Street Light</b>					
(A): Grampanchayat; A, B and C class Municipal Councils	-	-	-	-	-
(B): Municipal Corporation area	0.45	1.01	1.14	1.29	1.49
<b>LT VII: LT – Temporary Connection</b>					
(A): LT – Temporary Supply Religious (TSR)	0.75	1.73	2.35	3.08	3.98
(B): LT – Temporary Supply Others (TSO)	9.01	10.04	10.68	11.39	12.22
<b>LT VIII: LT – Advertisements and Hoardings</b>	13.08	14.31	15.13	16.00	16.96

Consumer Category	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25
	Rs./unit	Rs./unit	Rs./unit	Rs./unit	Rs./unit
<b>LT IX: LT – Crematorium and Burial Grounds</b>	-	-	-	-	-
<b>LT X(A) – Public Services – Govt.</b>					
(i) 0 – 20 kVA	-	-	-	-	-
(ii) > 20 kVA and ≤ 50 kVA	1.41	2.00	2.15	2.31	2.63
(iii) > 50 kVA	2.50	3.06	3.20	3.34	3.54
<b>LT X(B) – Public Services - Others</b>					
(i) 0 – 20 kVA	1.02	1.66	1.88	2.10	2.39
(ii) > 20 kVA and ≤ 50 kVA	3.34	4.11	4.46	4.81	5.22
(iii) > 50 kVA	3.54	4.23	4.48	4.74	5.06
<b>LT XI: LT – Electric Vehicle Charging Station</b>	-	-	-	-	-

8.30.21 Petitioner submitted that as stipulated in the Open Access Regulations, the cross-subsidy surcharge shall be based on the current level of cross subsidy of the tariff category/ tariff slab and/or voltage level to which such consumer or person belong or are connected to. Accordingly, the consumers who opt for Open Access during the control period need to be charged to compensate the level of cross subsidy which will prevail during the control period and to avoid the burden of the same on other consumers. Petitioner, therefore, requested the Commission to approve the CSS for the control period as computed above.

### ***Commission’s Analysis & Rulings***

8.30.22 The Commission has taken a note of the concern raised by MSEDCL regarding the application of ceiling cap of +/- 20% across consumer categories as per the Para. 8.3 (2) of the Tariff Policy, 2016. Further, the Commission also notes the reference to the Consultation Paper issued by MoP in August, 2017 as regards implementation of both Para. 8.3 (2) and first proviso to para 8.5.1. of the Tariff Policy, 2016 simultaneously.

8.30.23 The Commission here would like to highlight that, while working out the CSS, in the previous MTR order in Case No. 195 of 2017, basic intent of keeping the cap of +/- 20% was to keep the gradual reduction trend of the cross-subsidy over the ensuing years and

determine the tariff as close as is possible to the ACoS as well as keeping the cognizance of avoiding tariff shock all across the consumer categories. Further, the Commission notes that in case of most prominent consumer category that is eligible for Open Access and avails open access i.e. HT-Industry, the ratio of ABR/ACoS is lower than 120%.

8.30.24 Thus, Commission has worked out the CSS by keeping the ceiling of +/- 20% for most of the consumer categories in order to maintain the consistency with the principle adopted in the previous MTR Order.

8.30.25 Further, the Commission has worked out the various components of CSS formulae based on the approved values for 4th Control Period and worked out the category-wise CSS for 4th Control Period i.e. from FY 2020-21 to FY 2024-25 for HT Consumers only, since the eligible consumers for OA lies within the HT consumers category only.

8.30.26 The category-wise CSS computed from FY 2020-21 to FY 2024-25 is as shown under:

**Table 8-53: Cross Subsidy Surcharge approved by Commission for FY 2020-21 as per revised Tariff Policy, 2016**

Consumer Category	T (ABR)	C	TL	WL	L	D = WL + Tx	CSS Computed - a	20% of Tariff - (b)	CSS - Min (a,b)
	Rs./Unit*		%	%	%		Rs./Unit*	Rs./Unit*	
<b>HT Category - EHV (66kV and Above)</b>									
HT I (A) (i): HT - Industry	8.36	4.00	3.18%	0.00%	3.18%	0.83	3.39	1.67	1.67
HT I (B): HT - Industry (Seasonal)	11.01	4.00	3.18%	0.00%	3.18%	0.83	6.04	2.20	2.20
HT II (A): HT - Commercial	14.58	4.00	3.18%	0.00%	3.18%	0.83	9.62	2.92	2.92
HT III (A): HT - Railways/Metro/Monorail Traction	7.08	4.00	3.18%	0.00%	3.18%	0.83	2.12	1.42	1.42
HT IV: HT - Public Water Works (PWW)	6.67	4.00	3.18%	0.00%	3.18%	0.83	1.71	1.33	1.33
HT V(A): HT - Agriculture Pumpsets	3.95	4.00	3.18%	0.00%	3.18%	0.83	-	0.79	-
HT VI: HT - Group Housing Societies (Residential)	5.70	4.00	3.18%	0.00%	3.18%	0.83	0.73	1.14	0.73
HT IX(B): HT - Public Services- Others	10.13	4.00	3.18%	0.00%	3.18%	0.83	5.17	2.03	2.03
<b>HT Category - HT (33kV, 22kV and 11 kV)</b>									
HT I (A) (i): HT - Industry	8.55	4.00	3.18%	7.50%	10.44%	1.40	2.68	1.71	1.71
HT I (B): HT - Industry (Seasonal)	10.22	4.00	3.18%	7.50%	10.44%	1.40	4.35	2.04	2.04
HT II (A): HT - Commercial	13.46	4.00	3.18%	7.50%	10.44%	1.40	7.59	2.69	2.69
HT III (A): HT - Railways/Metro/Monorail Traction	8.40	4.00	3.18%	7.50%	10.44%	1.40	2.53	1.68	1.68

Consumer Category	T (ABR)	C	TL	WL	L	D = WL + Tx	CSS Computed - a	20% of Tariff - (b)	CSS - Min (a,b)
	Rs./Unit*		%	%	%	Rs./Unit*		Rs./Unit*	
HT IV: HT - Public Water Works (PWW)	7.39	4.00	3.18%	7.50%	10.44%	1.40	1.52	1.48	1.48
HT V(A): HT - Agriculture Pumpsets	4.74	4.00	3.18%	7.50%	10.44%	1.40	-	0.95	-
HT V(B): HT - Agriculture Others	6.01	4.00	3.18%	7.50%	10.44%	1.40	0.14	1.20	0.14
HT VI: HT - Group Housing Societies (Residential)	7.27	4.00	3.18%	7.50%	10.44%	1.40	1.40	1.45	1.40
HT VIII(B): HT - Temporary Supply Others (TSO)	14.30	4.00	3.18%	7.50%	10.44%	1.40	8.43	2.86	2.86
HT IX(A): HT - Public Services- Govt. Edu. Institutions and Hospitals	9.28	4.00	3.18%	7.50%	10.44%	1.40	3.41	1.86	1.86
HT IX(B): HT - Public Services- Others	9.28	4.00	3.18%	7.50%	10.44%	1.40	3.41	1.86	1.86
HT X: HT – Electric Vehicle Charging Station	8.29	4.00	3.18%	7.50%	10.44%	1.40	2.42	1.66	1.66

**Table 8-54: Cross Subsidy Surcharge approved by Commission for FY 2021-22 as per revised Tariff Policy, 2016**

Consumer Category	T (ABR)	C	TL	WL	L	D = WL + Tx	CSS Computed - a	20% of Tariff - (b)	CSS - Min (a,b)
	Rs./Unit*		%	%	%	Rs./Unit*		Rs./Unit*	
<b>HT Category - EHV (66kV and Above)</b>									
HT I (A) (i): HT - Industry	8.37	4.00	3.18%	0.00%	3.18%	0.82	3.41	1.67	1.67
HT I (B): HT - Industry (Seasonal)	11.14	4.00	3.18%	0.00%	3.18%	0.82	6.19	2.23	2.23
HT II (A): HT - Commercial	14.47	4.00	3.18%	0.00%	3.18%	0.82	9.51	2.89	2.89
HT III (A): HT - Railways/Metro/Monorail Traction	7.19	4.00	3.18%	0.00%	3.18%	0.82	2.23	1.44	1.44
HT IV: HT - Public Water Works (PWW)	6.84	4.00	3.18%	0.00%	3.18%	0.82	1.88	1.37	1.37
HT V(A): HT - Agriculture Pumpsets	3.87	4.00	3.18%	0.00%	3.18%	0.82	-	0.77	-
HT VI: HT - Group Housing Societies (Residential)	5.70	4.00	3.18%	0.00%	3.18%	0.82	0.74	1.14	0.74
HT IX(B): HT - Public Services- Others	9.90	4.00	3.18%	0.00%	3.18%	0.82	4.95	1.98	1.98
<b>HT Category - HT (33kV, 22kV and 11 kV)</b>									
HT I (A) (i): HT - Industry	8.53	4.00	3.18%	7.50%	10.44%	1.38	2.68	1.71	1.71
HT I (B): HT - Industry (Seasonal)	10.28	4.00	3.18%	7.50%	10.44%	1.38	4.43	2.06	2.06
HT II (A): HT - Commercial	13.26	4.00	3.18%	7.50%	10.44%	1.38	7.40	2.65	2.65
HT III (A): HT - Railways/Metro/Monorail Traction	8.55	4.00	3.18%	7.50%	10.44%	1.38	2.69	1.71	1.71

Consumer Category	T (ABR)	C	TL	WL	L	D = WL + Tx	CSS Computed - a	20% of Tariff - (b)	CSS - Min (a,b)
	Rs./Unit*		%	%	%	Rs./Unit*		Rs./Unit*	
HT IV: HT - Public Water Works (PWW)	7.57	4.00	3.18%	7.50%	10.44%	1.38	1.71	1.51	1.51
HT V(A): HT - Agriculture Pumpsets	4.65	4.00	3.18%	7.50%	10.44%	1.38	-	0.93	-
HT V(B): HT - Agriculture Others	5.91	4.00	3.18%	7.50%	10.44%	1.38	0.05	1.18	0.05
HT VI: HT - Group Housing Societies (Residential)	7.31	4.00	3.18%	7.50%	10.44%	1.38	1.46	1.46	1.46
HT VIII(B): HT - Temporary Supply Others (TSO)	14.16	4.00	3.18%	7.50%	10.44%	1.38	8.31	2.83	2.83
HT IX(A): HT - Public Services-Govt. Edu. Institutions and Hospitals	9.33	4.00	3.18%	7.50%	10.44%	1.38	3.47	1.87	1.87
HT IX(B): HT - Public Services-Others	9.33	4.00	3.18%	7.50%	10.44%	1.38	3.47	1.87	1.87
HT X: HT – Electric Vehicle Charging Station	8.35	4.00	3.18%	7.50%	10.44%	1.38	2.50	1.67	1.67

**Table 8-55: Cross Subsidy Surcharge approved by Commission for FY 2022-23 as per revised Tariff Policy, 2016**

Consumer Category	T (ABR)	C	TL	WL	L	D = WL + Tx	CSS Computed - a	20% of Tariff - (b)	CSS - Min (a,b)
	Rs./Unit*		%	%	%	Rs./Unit*		Rs./Unit*	
<b>HT Category - EHV (66kV and Above)</b>									
HT I (A) (i): HT - Industry	8.38	4.00	3.18%	0.00%	3.18%	0.82	3.43	1.68	1.68
HT I (B): HT - Industry (Seasonal)	11.28	4.00	3.18%	0.00%	3.18%	0.82	6.33	2.26	2.26
HT II (A): HT - Commercial	14.39	4.00	3.18%	0.00%	3.18%	0.82	9.44	2.88	2.88
HT III (A): HT - Railways/Metro/Monorail Traction	7.20	4.00	3.18%	0.00%	3.18%	0.82	2.25	1.44	1.44
HT IV: HT - Public Water Works (PWW)	6.92	4.00	3.18%	0.00%	3.18%	0.82	1.97	1.38	1.38
HT V(A): HT - Agriculture Pumpsets	3.89	4.00	3.18%	0.00%	3.18%	0.82	-	0.78	-
HT VI: HT - Group Housing Societies (Residential)	5.70	4.00	3.18%	0.00%	3.18%	0.82	0.75	1.14	0.75
HT IX(B): HT - Public Services-Others	9.70	4.00	3.18%	0.00%	3.18%	0.82	4.75	1.94	1.94
<b>HT Category - HT (33kV, 22kV and 11 kV)</b>									
HT I (A) (i): HT - Industry	8.51	4.00	3.18%	7.50%	10.44%	1.37	2.67	1.70	1.70
HT I (B): HT - Industry (Seasonal)	10.34	4.00	3.18%	7.50%	10.44%	1.37	4.50	2.07	2.07
HT II (A): HT - Commercial	13.07	4.00	3.18%	7.50%	10.44%	1.37	7.24	2.61	2.61

Consumer Category	T (ABR)	C	TL	WL	L	D = WL + Tx	CSS Computed - a	20% of Tariff - (b)	CSS - Min (a,b)
	Rs./Unit*		%	%	%	Rs./Unit*		Rs./Unit*	
HT III (A): HT - Railways/Metro/Monorail Traction	8.60	4.00	3.18%	7.50%	10.44%	1.37	2.76	1.72	1.72
HT IV: HT - Public Water Works (PWW)	7.65	4.00	3.18%	7.50%	10.44%	1.37	1.81	1.53	1.53
HT V(A): HT - Agriculture Pumpssets	4.66	4.00	3.18%	7.50%	10.44%	1.37	-	0.93	-
HT V(B): HT - Agriculture Others	5.90	4.00	3.18%	7.50%	10.44%	1.37	0.07	1.18	0.07
HT VI: HT - Group Housing Societies (Residential)	7.35	4.00	3.18%	7.50%	10.44%	1.37	1.52	1.47	1.47
HT VIII(B): HT - Temporary Supply Others (TSO)	14.05	4.00	3.18%	7.50%	10.44%	1.37	8.22	2.81	2.81
HT IX(A): HT - Public Services-Govt. Edu. Institutions and Hospitals	9.37	4.00	3.18%	7.50%	10.44%	1.37	3.53	1.87	1.87
HT IX(B): HT - Public Services-Others	9.37	4.00	3.18%	7.50%	10.44%	1.37	3.53	1.87	1.87
HT X: HT – Electric Vehicle Charging Station	8.41	4.00	3.18%	7.50%	10.44%	1.37	2.58	1.68	1.68

**Table 8-56: Cross Subsidy Surcharge approved by Commission for FY 2023-24 as per revised Tariff Policy, 2016**

Consumer Category	T (ABR)	C	TL	WL	L	D = WL + Tx	CSS Computed - a	20% of Tariff - (b)	CSS - Min (a,b)
	Rs./Unit*		%	%	%	Rs./Unit*		Rs./Unit*	
<b>HT Category - EHV (66kV and Above)</b>									
HT I (A) (i): HT - Industry	7.98	4.00	3.18%	0.00%	3.18%	0.81	3.04	1.60	1.60
HT I (B): HT - Industry (Seasonal)	13.31	4.00	3.18%	0.00%	3.18%	0.81	8.37	2.66	2.66
HT II (A): HT - Commercial	14.16	4.00	3.18%	0.00%	3.18%	0.81	9.22	2.83	2.83
HT III (A): HT - Railways/Metro/Monorail Traction	7.52	4.00	3.18%	0.00%	3.18%	0.81	2.58	1.50	1.50
HT IV: HT - Public Water Works (PWW)	6.69	4.00	3.18%	0.00%	3.18%	0.81	1.75	1.34	1.34
HT V(A): HT - Agriculture Pumpssets	3.96	4.00	3.18%	0.00%	3.18%	0.81	-	0.79	-
HT VI: HT - Group Housing Societies (Residential)	5.20	4.00	3.18%	0.00%	3.18%	0.81	0.26	1.04	0.26
HT IX(B): HT - Public Services-Others	8.49	4.00	3.18%	0.00%	3.18%	0.81	3.55	1.70	1.70
<b>HT Category - HT (33kV, 22kV and 11 kV)</b>									
HT I (A) (i): HT - Industry	8.61	4.00	3.18%	7.50%	10.44%	1.35	2.79	1.72	1.72

Consumer Category	T (ABR)	C	TL	WL	L	D = WL + Tx	CSS Computed - a	20% of Tariff - (b)	CSS - Min (a,b)
	Rs./Unit*		%	%	%	Rs./Unit*		Rs./Unit*	
HT I (B): HT - Industry (Seasonal)	11.45	4.00	3.18%	7.50%	10.44%	1.35	5.63	2.29	2.29
HT II (A): HT - Commercial	12.84	4.00	3.18%	7.50%	10.44%	1.35	7.02	2.57	2.57
HT III (A): HT - Railways/Metro/Monorail Traction	8.58	4.00	3.18%	7.50%	10.44%	1.35	2.77	1.72	1.72
HT IV: HT - Public Water Works (PWW)	7.82	4.00	3.18%	7.50%	10.44%	1.35	2.00	1.56	1.56
HT V(A): HT - Agriculture Pumpsets	4.84	4.00	3.18%	7.50%	10.44%	1.35	-	0.97	-
HT V(B): HT - Agriculture Others	5.95	4.00	3.18%	7.50%	10.44%	1.35	0.13	1.19	0.13
HT VI: HT - Group Housing Societies (Residential)	7.46	4.00	3.18%	7.50%	10.44%	1.35	1.64	1.49	1.49
HT VIII(B): HT - Temporary Supply Others (TSO)	13.24	4.00	3.18%	7.50%	10.44%	1.35	7.43	2.65	2.65
HT IX(A): HT - Public Services-Govt. Edu. Institutions and Hospitals	9.38	4.00	3.18%	7.50%	10.44%	1.35	3.57	1.88	1.88
HT IX(B): HT - Public Services-Others	9.38	4.00	3.18%	7.50%	10.44%	1.35	3.57	1.88	1.88
HT X: HT – Electric Vehicle Charging Station	7.59	4.00	3.18%	7.50%	10.44%	1.35	1.78	1.52	1.52

**Table 8-57: Cross Subsidy Surcharge approved by Commission for FY 2024-25 as per revised Tariff Policy, 2016**

Consumer Category	T (ABR)	C	TL	WL	L	D = WL + Tx	CSS Computed - a	20% of Tariff - (b)	CSS - Min (a,b)
	Rs./Unit*		%	%	%	Rs./Unit*		Rs./Unit*	
<b>HT Category - EHV (66kV and Above)</b>									
HT I (A) (i): HT - Industry	7.98	4.00	3.18%	0.00%	3.18%	0.79	3.05	1.60	1.60
HT I (B): HT - Industry (Seasonal)	13.77	4.00	3.18%	0.00%	3.18%	0.79	8.85	2.75	2.75
HT II (A): HT - Commercial	14.12	4.00	3.18%	0.00%	3.18%	0.79	9.20	2.82	2.82
HT III (A): HT - Railways/Metro/Monorail Traction	7.41	4.00	3.18%	0.00%	3.18%	0.79	2.48	1.48	1.48
HT IV: HT - Public Water Works (PWW)	6.78	4.00	3.18%	0.00%	3.18%	0.79	1.85	1.36	1.36
HT V(A): HT - Agriculture Pumpsets	4.00	4.00	3.18%	0.00%	3.18%	0.79	-	0.80	-
HT VI: HT - Group Housing Societies (Residential)	5.20	4.00	3.18%	0.00%	3.18%	0.79	0.27	1.04	0.27
HT IX(B): HT - Public Services- Others	8.12	4.00	3.18%	0.00%	3.18%	0.79	3.19	1.62	1.62
<b>HT Category - HT (33kV, 22kV and 11 kV)</b>									
HT I (A) (i): HT - Industry	8.60	4.00	3.18%	7.50%	10.44%	1.32	2.81	1.72	1.72

Consumer Category	T (ABR)	C	TL	WL	L	D = WL + Tx	CSS Computed - a	20% of Tariff - (b)	CSS - Min (a,b)
	Rs./Unit*		%	%	%	Rs./Unit*	Rs./Unit*	Rs./Unit*	
HT I (B): HT - Industry (Seasonal)	11.68	4.00	3.18%	7.50%	10.44%	1.32	5.89	2.34	2.34
HT II (A): HT - Commercial	12.61	4.00	3.18%	7.50%	10.44%	1.32	6.82	2.52	2.52
HT III (A): HT - Railways/Metro/Monorail Traction	8.57	4.00	3.18%	7.50%	10.44%	1.32	2.78	1.71	1.71
HT IV: HT - Public Water Works (PWW)	7.98	4.00	3.18%	7.50%	10.44%	1.32	2.19	1.60	1.60
HT V(A): HT - Agriculture Pumpsets	4.88	4.00	3.18%	7.50%	10.44%	1.32	-	0.98	-
HT V(B): HT - Agriculture Others	5.96	4.00	3.18%	7.50%	10.44%	1.32	0.16	1.19	0.16
HT VI: HT - Group Housing Societies (Residential)	7.60	4.00	3.18%	7.50%	10.44%	1.32	1.81	1.52	1.52
HT VIII(B): HT - Temporary Supply Others (TSO)	12.95	4.00	3.18%	7.50%	10.44%	1.32	7.16	2.59	2.59
HT IX(A): HT - Public Services- Govt. Edu. Institutions and Hospitals	9.52	4.00	3.18%	7.50%	10.44%	1.32	3.73	1.90	1.90
HT IX(B): HT - Public Services- Others	9.52	4.00	3.18%	7.50%	10.44%	1.32	3.73	1.90	1.90
HT X: HT – Electric Vehicle Charging Station	7.79	4.00	3.18%	7.50%	10.44%	1.32	2.00	1.56	1.56

8.30.27 With the rationalisation effected by the Distribution Open Access Regulations, 2016 and its First amendment thereof, adoption of the CSS formulae in accordance with the Tariff Policy and the preferential tariff approved for purchase from RE sources, no concession would be provided to the RE sector in terms of discounted CSS levy. Thus, from the date of applicability of this Order, in case of an OA consumer purchases power from a RE source, the full CSS as determined above shall be payable. The CSS so approved as above shall be applicable on the energy actually consumed by the OA consumer, i.e., on the metered consumption.

### 8.31 Additional Surcharge

#### *MSEDCL's Submission*

8.31.1 MSEDCL submitted that Section 42(4) provides the levy of Additional Surcharge to a consumer who receives supply of electricity from a person other than the distribution licensee of his area of supply. Regulation 14.8 of the Commission's Distribution OA Regulations, 2016 outlines the principles for determination and levy of Additional Surcharge as below:

8.31.2 MSEDCL submitted that it has been casted by Universal Service Obligation (USO) under the Section 43 of the Electricity Act 2003. Hence, in order to cater to the consumer demand, it has to purchase power on long term basis from Mahagenco, NTPC under the MoU route and from IPPs through competitive bidding process. Petitioner further submitted that the tariff for generation as per PPA/MoU comprises of two parts viz. Fixed Charge which is dependent on declared availability of generator and variable charge which is dependent on declared availability of generator and variable charge which is dependent on actual energy supplied.

8.31.3 MSEDCL submitted that capacity addition was done by signing the PPAs with generating companies after due approval of the Commission and based on estimated demand as per the projections published in 16th Electric Power Survey (EPS) published by CEA. However, there is a variation in projected and actual demand due to various reasons such as increase in Open Access, RE capacity addition to fulfil RPO Target, RE capacity addition by CPP because of low tariff and Net Metering etc., resulting into surplus power availability.

8.31.4 MSEDCL further submitted that to fulfil the RPO targets set by the Commission, it has to plan prospective power purchase from RE sources. MSEDCL submitted that it has to procure at least 25% of the power from Renewable sources by FY2024-25 which include 13.5% of solar and 11.5% of non-solar power, as per RPO Regulations 2019 notified on 27<sup>th</sup> December 2019. Hence, MSEDCL has tied up a total of 10,785 MW capacity of Renewable Energy as on 31<sup>st</sup> October 2019 of which 7654 MW capacity is commissioned, which include wind generation of 3999 MW, solar of 4017 MW, bagasse based cogeneration of 2406 MW, biomass capacity of 236 MW, small hydro of 121 MW and Municipal Solid Waste of 16 MW capacity. Further, by the end of FY 2024-25 to meet RPO target, MSEDCL has planned to increase the solar capacity to 12,500 MW. Due to such addition of renewable power, the surplus power is expected to be continued further since the renewable energy is treated as “Must Run”.

8.31.5 MSEDCL also submitted that due to recent trends in the prices of solar energy and MERC Net Metering Regulations 2019, various consumers are now converting to captive power plants (CPPs) by installing solar projects through developers, hence, surplus power is also expected to increase further.

8.31.6 MSEDCL also submitted that to manage surplus power, MSEDCL gives zero schedule/backdown to the high variable cost thermal generation as per Merit Order Despatch or sell in energy market depending upon market rates thereby reducing the burden

of energy charges. MSEDCL further submitted that it has to pay fixed/capacity charges irrespective of the scheduling or non-scheduling of power from the units which declare its availability whenever surplus capacity remains available.

8.31.7 MSEDCL further submitted that whenever there is unavailability of generation due to the forced outage/coal shortage, there is requirement of additional power during certain blocks of the day, sometimes the duration of shortfall during the day is so small that to cater the demand for such small period, it is unviable to take a generation unit on bar to cater the demand for small period. In such cases, the Petitioner forecasts the demand, availability and shortfall on day-ahead basis and procures power from Short Term Markets such as Energy Exchanges.

8.31.8 MSEDCL also submitted that it has to plan in advance and procure the power on short term through bilateral transactions on DEEP Portal considering the historical trend of demand, coal shortage scenario, trend of rates in exchanges, etc.

8.31.9 MSEDCL submitted that it also explores the option of optimisation of power purchase cost by backing down of costly generation unit as per MOD and procuring the cheaper power available in Short Term Market/Exchange.

8.31.10 MSEDCL further submitted that it has to pay fixed charges to the generators as per the terms and conditions of the PPAs irrespective of utilisation of generation capacity and thus it gets burdened by fixed cost of surplus capacity.

8.31.11 MSEDCL submitted the year wise details of net surplus capacity, backdown quantum capacity under outages due to coal shortage and power purchase through short term tender and IEX is as given in the following tables:

<b>FY 17-18</b>	<b>Units under RSD, ESD &amp; BD (MUs)</b>	<b>Capacity under coal shortage (MUs)</b>	<b>Total surplus (MUs)</b>	<b>Total Short Term Purchase (MUs)</b>
	<b>A</b>	<b>B</b>	<b>C=A+B</b>	<b>D</b>
Total MUs	18349	11443	29792	4029
Average MW on RTC basis	2095	1306	3401	460

<b>FY 18-19</b>	<b>Units under RSD, ESD &amp; BD (MUs)</b>	<b>Capacity under coal shortage (MUs)</b>	<b>Total surplus (MUs)</b>	<b>Total Short Term Purchase (MUs)</b>
	<b>A</b>	<b>B</b>	<b>C=A+B</b>	<b>D</b>
Total MUs	20883	15599	36482	5821
Average MW on RTC basis	2384	1781	4165	665

<b>FY 19-20 (Nov-19)</b>	<b>Units under RSD, ESD &amp; BD (MUs)</b>	<b>Capacity under coal shortage (MUs)</b>	<b>Total surplus (MUs)</b>	<b>Total Short Term Purchase (MUs)</b>
	<b>A</b>	<b>B</b>	<b>C=A+B</b>	<b>D</b>
Total MUs	22796	932	23727	763
Average MW on RTC basis	3893	159	4052	130

8.31.12 MSEDCL submitted that MSEDCL is in power surplus as reflected from above tables and will continue to be in surplus for the 4<sup>th</sup> control period. However, short term power is purchased for cost optimization or to meet demand during coal shortage scenario and hence, additional surcharge is justifiable & needs to be made applicable to all OA consumers.

#### **Surcharge Computation as submitted by MSEDCL**

8.31.13 MSEDCL submitted that it has implemented Intra State ABT in Maharashtra since 1<sup>st</sup> August 2011 and SLDC/ Discom are granting approvals/ consent to open access consumers for purchase and sale of power through open access as per Open Access Regulations. MSEDCL further submitted that open access consumers are buying considerable quantum of power under open access and on the other hand, it has tied up sufficient quantum of power after approval of the Commission to meet the expected demand by considering the overall growth in the state.

8.31.14 MSEDCL also submitted that it needs to back down the generation and also has to pay Fixed Charges (or Capacity Charges) to the Generators as per the terms and conditions of the PPAs irrespective of utilization of generation capacity, when the tied up generation capacity becomes excess and that the burden of fixed cost is affecting the viability and sustainability of its operations, which ultimately adversely affects the tariff of its common consumers.

MSEDCL submitted that, hence, to mitigate this, it is appropriate to determine the Additional Surcharge for OA consumers, as per Section 42 (4) of the EA, 2003. MSEDCL also submitted that the Commission in its Order dated 3<sup>rd</sup> November 2016 (Case No. 48/2016) had observed that there was a case for recovery of the part of fixed cost towards the stranded capacity arising from the power purchase obligation through levy of Additional Surcharge from OA consumers. Accordingly, the Commission has determined the additional surcharge in the said MYT Order dated 3<sup>rd</sup> November 2016 and subsequently in MTR Order dated 12<sup>th</sup> September 2018.

8.31.15 MSEDCL submitted that it has calculated the Additional Surcharge for the 4<sup>th</sup> control period i.e. FY2020-21 to FY2024-25 as per DOA Regulations 2016 based on the data for the FY2018-19 as per the methodology adopted by the Commission in the MYT Order dated 3<sup>rd</sup> November 2016 and MTR Order dated 12<sup>th</sup> September 2018.

**Table 8-58: Additional Surcharge for FY 2020-21 as submitted by MSEDCL**

Particulars	Reference	Unit	Value
<b>Step 1: Establishing contribution of OA to backing-down/stranded capacity</b>			
OA volume for FY2019-20 (Upto Sept-19)	(a)	MU	2178
Backing down quantum for FY2019-20 (Upto Sept-19)	(b)	MU	14,704
Ratio of OA to Backed down for FY2019-20 (Upto Sept-19)	(c)=(b)/(a)	%	15%
<b>Step 2: Ascertaining Cost of Stranded Capacity</b>			
Fixed cost of thermal generating sources for FY2020-21	(d)	Rs. Crs	19,207
Total Available MU from thermal generating stations for FY2020-21	(e)	MUs	1,43,926
Wt. Avg. per Unit FC of thermal generating stations for FY2020-21	(f)=(d)/(e)x10	Rs./kWh	1.33
Total projected backdown/RSD volume for FY2020-21	(g)	MUs	32,653
Projected Open Access volume for year for FY2020-21	(h)	MUs	4843
Fixed Cost pertaining to backdown/RSD capacity for FY2020-21	(i)=(f)*(h)/10	Rs. Crs	646
<b>Step 3: Determination of Additional Surcharge</b>			

<b>Per unit Additional Surcharge (to be applicable to OA consumers)</b>	<b>(j)=(i)/(h)*10</b>	<b>Rs./unit</b>	<b>1.33</b>
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**Table 8-59: Additional Surcharge for FY 2021-22 as submitted by MSEDCL**

Particulars	Reference	Unit	Value
<b>Step 1: Establishing contribution of OA to backing-down/stranded capacity</b>			
OA volume for FY2019-20 (Upto Sept-19)	(a)	MU	2178
Backing down quantum for FY2019-20 (Upto Sept-19)	(b)	MU	14,704
Ratio of OA to Backed down for FY2019-20 (Upto Sept-19)	(c)=(b)/(a)	%	15%
<b>Step 2: Ascertaining Cost of Stranded Capacity</b>			
Fixed cost of thermal generating sources for FY2021-22	(d)	Rs. Crs	19,698
Total Available MU from thermal generating stations for FY2021-22	(e)	MUs	1,44,100
Wt. Avg. per Unit FC of thermal generating stations for FY2021-22	(f)=(d)/(e)x10	Rs./kWh	1.37
Total projected backdown/RSD volume for FY2021-22	(g)	MUs	31,957
Projected Open Access volume for year for FY2021-22	(h)	MUs	4843
Fixed Cost pertaining to backdown/RSD capacity for FY2021-22	(i)=(f)*(h)/10	Rs. Crs	662
<b>Step 3: Determination of Additional Surcharge</b>			
<b>Per unit Additional Surcharge (to be applicable to OA consumers)</b>	<b>(j)=(i)/(h)*10</b>	<b>Rs./unit</b>	<b>1.37</b>

**Table 8-60: Additional Surcharge for FY 2022-23 as submitted by MSEDCL**

Particulars	Reference	Unit	Value
<b>Step 1: Establishing contribution of OA to backing-down/stranded capacity</b>			
OA volume for FY2019-20 (Upto Sept-19)	(a)	MU	2178
Backing down quantum for FY2019-20 (Upto Sept-19)	(b)	MU	14,704

Ratio of OA to Backed down for FY2019-20 (Upto Sept-19)	(c)=(b)/(a)	%	15%
<b>Step 2: Ascertaining Cost of Stranded Capacity</b>			
Fixed cost of thermal generating sources for FY2022-23	(d)	Rs. Crs	20,038
Total Available MU from thermal generating stations for FY2022-23	(e)	MUs	1,42,875
Wt. Avg. per Unit FC of thermal generating stations for FY2022-23	(f)=(d)/(e)x10	Rs./kWh	1.40
Total projected backdown/RSD volume for FY2022-23	(g)	MUs	31,725
Projected Open Access volume for year for FY2022-23	(h)	MUs	4843
Fixed Cost pertaining to backdown/RSD capacity for FY2022-23	(i)=(f)*(h)/10	Rs. Crs	679
<b>Step 3: Determination of Additional Surcharge</b>			
<b>Per unit Additional Surcharge (to be applicable to OA consumers)</b>	<b>(j)=(i)/(h)*10</b>	<b>Rs./unit</b>	<b>1.40</b>

**Table 8-61: Additional Surcharge for FY 2023-24 as submitted by MSEDCL**

Particulars	Reference	Unit	Value
<b>Step 1: Establishing contribution of OA to backing-down/stranded capacity</b>			
OA volume for FY2019-20 (Upto Sept-19)	(a)	MU	2178
Backing down quantum for FY2019-20 (Upto Sept-19)	(b)	MU	14,704
Ratio of OA to Backed down for FY2019-20 (Upto Sept-19)	(c)=(b)/(a)	%	15%
<b>Step 2: Ascertaining Cost of Stranded Capacity</b>			
Fixed cost of thermal generating sources for FY2023-24	(d)	Rs. Crs	20,487
Total Available MU from thermal generating stations for FY2023-24	(e)	MUs	1,43,181
Wt. Avg. per Unit FC of thermal generating stations for FY2023-24	(f)=(d)/(e)x10	Rs./kWh	1.43

Total projected backdown/RSD volume for FY2023-24	(g)	MUs	30,469
Projected Open Access volume for year for FY2023-24	(h)	MUs	4843
Fixed Cost pertaining to backdown/RSD capacity for FY2023-24	$(i)=(f)*(h)/10$	Rs. Crs	693
<b>Step 3: Determination of Additional Surcharge</b>			
<b>Per unit Additional Surcharge (to be applicable to OA consumers)</b>	<b><math>(j)=(i)/(h)*10</math></b>	<b>Rs./unit</b>	<b>1.43</b>

**Table 8-62: Additional Surcharge for FY 2024-25 as submitted by MSEDCL**

Particulars	Reference	Unit	Value
<b>Step 1: Establishing contribution of OA to backing-down/stranded capacity</b>			
OA volume for FY2019-20 (Upto Sept-19)	(a)	MU	2178
Backing down quantum for FY2019-20 (Upto Sept-19)	(b)	MU	14,704
Ratio of OA to Backed down for FY2019-20 (Upto Sept-19)	$(c)=(b)/(a)$	%	15%
<b>Step 2: Ascertaining Cost of Stranded Capacity</b>			
Fixed cost of thermal generating sources for FY2024-25	(d)	Rs. Crs	20,276
Total Available MU from thermal generating stations for FY2024-25	(e)	MUs	1,42,854
Wt. Avg. per Unit FC of thermal generating stations for FY2024-25	$(f)=(d)/(e)*10$	Rs./kWh	1.42
Total projected backdown/RSD volume for FY2024-25	(g)	MUs	27,218
Projected Open Access volume for year for FY2024-25	(h)	MUs	4843
Fixed Cost pertaining to backdown/RSD capacity for FY2024-25	$(i)=(f)*(h)/10$	Rs. Crs	687
<b>Step 3: Determination of Additional Surcharge</b>			
<b>Per unit Additional Surcharge (to be applicable to OA consumers)</b>	<b><math>(j)=(i)/(h)*10</math></b>	<b>Rs./unit</b>	<b>1.42</b>

**Table 8-63: Summary of Additional Surcharge for 4<sup>th</sup> Control Period as proposed by MSEDCL**

Particulars	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25
Proposed Additional Surcharge (Rs/kVAh)	1.33	1.37	1.40	1.43	1.42

8.31.16 MSEDCL has requested the Commission to approve the Additional Surcharge for Open Access consumers irrespective of source i.e. Captive Power Plants (CPPs), IPP, RE based power plants etc. in addition to the conventional open access consumers as computed in the above tables.

8.31.17 MSEDCL further submitted that the CPPs existing prior to FY2015-16 originally set up the plant for self-consumption and continuing the same arrangement of captive use shall be exempted from applicability of Additional Surcharge. This is since these were set up during the power shortage situation and were captive in real sense as per the spirit of the Act.

***Commission’s Analysis and Ruling***

8.31.18 The Commission has carefully examined the submissions of MSEDCL, as well as the objections filed by stakeholders with regard to the determination of Additional Surcharge and MSEDCL’s replies. The Commission has examined the Section 42(4) of the EA, 2003, Clause 8.5.4 of the Tariff Policy, 2016 and Regulation 14.8 of the Distribution Open Access Regulations, 2016 (‘DOA Regulations, 2016’). In light of said provisions of the respective Regulations and Tariff Policy, the Commission in its MYT Order and MTR had already recognised that there is a case for recovery of the part of fixed cost towards the stranded capacity arising from the power purchase obligation through levy of Additional Surcharge from OA consumers.

8.31.19 As the Commission has envisaged a power surplus scenario for 4<sup>th</sup> Control Period, the levy of Additional Surcharge from OA consumers is found to be applicable for FY 2020-21 to FY 2024-25.

8.31.20 Regarding the applicability of the Additional Surcharge, MSEDCL stated that the Additional Surcharge, being a compensatory amount payable towards the fixed cost of stranded power resulting from approved power purchase contracts, has to be determined commonly for all the OA Users.

8.31.21 The Commission has examined the relevant provisions of EA, 2003, and Regulation 14.8 of the DOA Regulations, 2016 on which MSEDCL has relied. The relevant extracts read as follows:

*“(a) Section 42 (4) of EA, 2003, stipulates that:*

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

8.31.22 The Second proviso of Section 9 (1) of the EA 2003 only states that the electricity generated from Captive Generating Plants (CGP) may be supplied to any consumers subject to Regulations made under Section 42 (2) of the EA 2003. The Relevant para. is reproduced as below:

*“9.*

*(1) Notwithstanding anything contained in this Act, a person may construct, maintain or operate a captive generating plant and dedicated transmission lines:*

*Provided that the supply of electricity from the captive generating plant through the grid shall be regulated in the same manner as the generating station of a generating company.*

*[Provided further that no licence shall be required under this Act for supply of electricity generated from a captive generating plant to any licensee in accordance with the provisions of this Act and the rules and regulations made thereunder and to any consumer subject to the regulations made under subsection (2) of section 42.*

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

8.31.23 1<sup>st</sup> proviso to Regulation 14.8 (d) of DOA Regulations, 2016 reads as follows:

*“14.8 (d)... (ii) The cost has not been or cannot be recovered from the consumer, or from other consumers who have been given supply from the same assets or facilities, or from other Consumers, either through wheeling charges, standby charges or such other charges as may be approved by the Commission:*

*Provided that such Additional Surcharge shall be applicable to all the consumers who have availed Open Access to receive supply from a source other than the Distribution Licensee to which they are connected.”*

8.31.24 Proviso of Section 42 (2) of the Electricity Act, 2003 reads as under:

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

*wheeling, it shall have due regard to all relevant factors including such cross subsidies, and other operational constraints:*

.....

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

8.31.25 Moreover, CSS and Additional Surcharge are levied on account of completely different underlying principles. CSS is used/ utilized/ levied to meet the requirement of current level of cross subsidy of Distribution Licensee, while Additional Surcharge is to be levied to meet the fixed cost of such Distribution Licensee arising out of his obligation to supply and its planned power supply has been stranded due to shifting/switching over of Consumers from Distribution Licensee to Open Access mode.

8.31.26 The Commission is of the considered view that, unless fixed costs due to stranded capacity are recovered from OA Consumers, this burden would be unjustly loaded onto other Consumers of Distribution Licensee. The Commission believes it would be unfair and unwarranted to pass such burden of fixed cost recovery of such stranded cost to other Consumers through consequent tariff hike.

8.31.27 The Commission is of the view that, under the circumstances and in pursuance of Regulation 14.8 of the DOA Regulations, 2016, there is a case for recovery of the part of fixed cost towards the stranded capacity arising from the power purchase obligation through levy of Additional Surcharge from OA Consumers including the Group Captive Consumers who have availed such arrangement.

8.31.28 Accordingly, the Commission in its MTR Order in Case No.- 195 of 2017 dated 12 September 2018 had determined the two categories of captive users who procure power from CGP’s viz., (a) Original Captive Users (who were never consumers of Distribution Licensee) and (b) Converted Captive Users (who subsequently switchover to GCPP mode) . The Original Captive Users were the Users who have been procuring power originally under the captive mode and whose demand has not been included in the power procurement plan of Distribution Licensee whereas Converted Captive Users are the Users who prior to issue of MTR Order dated 12 September 2018 were Consumers of Distribution Licensee and who have opted to procure power under Group Captive arrangement, creating stranded capacity for Distribution Licensee. In view of the above the Commission held that Additional Surcharge shall be applicable to Captive Users of Group Captive Power Plants; in addition to Open Access consumers in Case No. - 195 of 2017 dated 12 September 2018.

8.31.29 However, APTEL in Appeal No. 311 of 2018 & IA Nos. 1531, 1468 & 1467 of 2018 dated 27<sup>th</sup> March 2019 filed by JSW Steel Limited and others had set aside the Commission's Order in Case No. - 195 of 2017 dated 12 September 2018 against the levy of additional surcharge on Captive Users of Group Captive Power Plants. The relevant extracts of the Judgement is reproduced below for reference:

*“83. The scope of Mid Term Review proceedings is understood from the above regulations. As seen from the above Regulations, the Commission cannot deviate from the principles adopted in the Multi Year Tariff order. Fundamental principles adopted in the MYT proceedings cannot be reopened and challenged at the stage of MTR proceeding, the scope of which is very limited.*

*84...*

*85. There is one more flaw in the manner in which the Respondent Commission proceeded with Mid-Term-Performance Review. Having come to conclusion that captive consumers are not liable to pay additional surcharge in MYT proceedings, which was implemented by MSEDCL, MERC opines in Review Proceedings that additional surcharge is payable by captive consumers of captive power plant. But this is without giving an opportunity of being heard to the Appellants. This is nothing but violation of principles of natural justice. Firstly, Mid-Term Review is nothing but a comparison between the actual operational performances (factual) vis-a-vis the approved forecast in terms of MERC regulations of 2015. This is nothing but ignoring its own regulations.*

*86...*

*88. In the light of the above discussion and reasoning, we are of the opinion that there cannot be any distinction between an individual captive consumer and group captive consumers or original captive consumers and converted captive consumers. For the above mentioned reasons, the above appeals deserve to be allowed and accordingly allowed. The impugned order dated 12.09.2018 passed by Maharashtra Electricity Regulatory Commission is hereby set aside. All the pending IAs shall stand disposed of. No order as to costs.”*

8.31.30 However, the Supreme Court in its Record of Proceedings dated 01.07.2019 in Civil Appeal No(s). 5074-5075/2019 has put stay on operation and implementation of APTEL's Judgement in Appeal No. 311 of 2018 & IA Nos. 1531, 1468 & 1467 of 2018 dated 27<sup>th</sup> March 2019.

8.31.31 Accordingly, in view of the Supreme Court's Stay Order on APTEL's Judgement as mentioned above paras, the Commission in this Order would continue to determine the two categories of captive users who procure power from CGP's viz., (a) Original Captive Users (who were never consumers of Distribution Licensee) and (b) Converted Captive Users (who subsequently switchover to GCPP mode) . The Original Captive Users are the Users who have been procuring power originally under the captive mode and whose demand has

not been included in the power procurement plan of Distribution Licensee whereas Converted Captive Users are the Users who prior to issue of MTR Order Case No. - 195 of 2017 dated 12 September 2018 were Consumers of Distribution Licensee and who have opted to procure power under Group Captive arrangement, creating stranded capacity for Distribution Licensee.

8.31.32 However, as quantum of consumption by such GCPP users is not known and matter being sub-judice, the Commission has not considered revenue projections from such Additional Surcharge in case of GCPP users. The same would be subject to scrutiny and prudence check at the time of MTR.

8.31.33 In view of the above the Commission holds that for 4<sup>th</sup> Control Period, Additional Surcharge shall be applicable to Captive Users of Group Captive Power Plants, in addition to Open Access consumers.

8.31.34 The Commission has employed the same methodology as suggested by the MSEDCL for determination of the Additional Surcharge for 4<sup>th</sup> Control Period, the computation of which is provided below.

**Table 8-64: Additional Surcharge for FY 2020-21 approved by the Commission (Rs/kWh)**

Particulars	Reference	Unit	MYT Petition	Approved in this Order
<b>Step-1: Establishing contribution of OA to backing-down/stranded capacity</b>				
OA volume for FY 2019-20 (Upto Sept-19)	(a)	MU	2,178	2,159
Backing Down quantum for FY 2019-20 (Upto Sept-19)	(b)	MU	14,704	14,704
Ratio to OA to Backed down for FY 2019-20 (Upto Sept-19)	(c)=(b)/(a)	%	14.81%	14.68%
<b>Step-2: Ascertaining Cost of Stranded Capacity</b>				
Fixed Cost of Thermal Generating Sources for FY 2020-21	(d)	Rs. Crs	20,424	21,087
Total Available MU from Thermal Generating Stations for FY 2020-21	(e)	MUs	129,814	160,753
Wt. Avg. Per Unit FC of Thermal Generating Stations for FY 2020-21	(f)=(d)/(e) x10	Rs/kWh	1.57	1.31
Total Projected Backdown/RSD Volume for FY 2020-21	(g)	MUs	18,609	18,609
Projected Open Access Volume for year for FY 2020-21	(h)	MUs	4,843	4,843
Fixed Cost pertaining to Backdown/RSD capacity for FY 2020-21	(i)=(f)*(h)/10	Rs. Crs	762	635

Particulars	Reference	Unit	MYT Petition	Approved in this Order
<b>Step-3: Determination of Additional Surcharge</b>				
Per Unit Additional Surcharge (to be applicable on OA Consumers )	$j=(i)/(h)*10$	Rs/kWh	1.57	1.31
Per Unit Additional Surcharge (to be applicable on OA Consumers )		Rs/kVAh		1.28

**Table 8-65: Additional Surcharge for FY 2021-22 approved by the Commission (Rs/kWh)**

Particulars	Reference	Unit	MYT Petition	Approved in this Order
<b>Step-1: Establishing contribution of OA to backing-down/stranded capacity</b>				
OA volume for FY 2019-20 (Upto Sept-19)	(a)	MU	2,178	2,159
Backing Down quantum for FY 2019-20 (Upto Sept-19)	(b)	MU	14,704	14,704
Ratio to OA to Backed down for FY 2019-20 (Upto Sept-19)	$(c)=(b)/(a)$	%	14.81%	14.68%
<b>Step-2: Ascertaining Cost of Stranded Capacity</b>				
Fixed Cost of Thermal Generating Sources for FY 2021-22	(d)	Rs. Crs	20,898	21,171
Total Available MU from Thermal Generating Stations for FY 2021-22	(e)	MUs	129,639	164,645
Wt. Avg. Per Unit FC of Thermal Generating Stations for FY 2021-22	$(f)=(d)/(e) \times 10$	Rs/kWh	1.61	1.29
Total Projected Backdown/RSD Volume for FY 2021-22	(g)	MUs	17,502	17,502
Projected Open Access Volume for year for FY 2021-22	(h)	MUs	4,843	4,843
Fixed Cost pertaining to Backdown/RSD capacity for FY 2021-22	$(i)=(f)*(h)/10$	Rs. Crs	781	623
<b>Step-3: Determination of Additional Surcharge</b>				
Per Unit Additional Surcharge (to be applicable on OA Consumers )	$j=(i)/(h)*10$	Rs/kWh	1.61	1.29
Per Unit Additional Surcharge (to be applicable on OA Consumers )		Rs/kVAh		1.26

**Table 8-66: Additional Surcharge for FY 2022-23 approved by the Commission (Rs/kWh)**

Particulars	Reference	Unit	MYT Petition	Approved in this Order
<b>Step-1: Establishing contribution of OA to backing-down/stranded capacity</b>				
OA volume for FY 2019-20 (Upto Sept-19)	(a)	MU	2,178	2,159
Backing Down quantum for FY 2019-20 (Upto Sept-19)	(b)	MU	14,704	14,704
Ratio to OA to Backed down for FY 2019-20 (Upto Sept-19)	(c)=(b)/(a)	%	14.81%	14.68%
<b>Step-2: Ascertaining Cost of Stranded Capacity</b>				
Fixed Cost of Thermal Generating Sources for FY 2022-23	(d)	Rs. Crs	21,220	21,243
Total Available MU from Thermal Generating Stations for FY 2022-23	(e)	MUs	128,739	167,728
Wt. Avg. Per Unit FC of Thermal Generating Stations for FY 2022-23	(f)=(d)/(e) x10	Rs/kWh	1.65	1.27
Total Projected Backdown/RSD Volume for FY 2022-23	(g)	MUs	17,567	17,567
Projected Open Access Volume for year for FY 2022-23	(h)	MUs	4,843	4,843
Fixed Cost pertaining to Backdown/RSD capacity for FY 2022-23	(i)=(f)*(h)/10	Rs. Crs	798	613
<b>Step-3: Determination of Additional Surcharge</b>				
Per Unit Additional Surcharge (to be applicable on OA Consumers)	j=(i)/(h)*10	Rs/kWh	1.65	1.27
Per Unit Additional Surcharge (to be applicable on OA Consumers)		Rs/kVAh		1.24

**Table 8-67: Additional Surcharge for FY 2023-24 approved by the Commission (Rs/kWh)**

Particulars	Reference	Unit	MYT Petition	Approved in this Order
<b>Step-1: Establishing contribution of OA to backing-down/stranded capacity</b>				
OA volume for FY 2019-20 (Upto Sept-19)	(a)	MU	2,178	2,159
Backing Down quantum for FY 2019-20 (Upto Sept-19)	(b)	MU	14,704	14,704
Ratio to OA to Backed down for FY 2019-20 (Upto Sept-19)	(c)=(b)/(a)	%	14.81%	14.68%
<b>Step-2: Ascertaining Cost of Stranded Capacity</b>				

Particulars	Reference	Unit	MYT Petition	Approved in this Order
Fixed Cost of Thermal Generating Sources for FY 2023-24	(d)	Rs. Crs	21,670	21,307
Total Available MU from Thermal Generating Stations for FY 2023-24	(e)	MUs	129,091	172,536
Wt. Avg. Per Unit FC of Thermal Generating Stations for FY 2023-24	$(f)=(d)/(e) \times 10$	Rs/kWh	1.68	1.23
Total Projected Backdown/RSD Volume for FY 2023-24	(g)	MUs	16,364	16,364
Projected Open Access Volume for year for FY 2023-24	(h)	MUs	4,843	4,843
Fixed Cost pertaining to Backdown/RSD capacity for FY 2023-24	$(i)=(f)*(h)/10$	Rs. Crs	813	598
<b>Step-3: Determination of Additional Surcharge</b>				
Per Unit Additional Surcharge (to be applicable on OA Consumers)	$j=(i)/(h)*10$	Rs/kWh	1.68	1.23
Per Unit Additional Surcharge (to be applicable on OA Consumers)		Rs/kVAh		1.20

**Table 8-68: Additional Surcharge for FY 2024-25 approved by the Commission (Rs/kWh)**

Particulars	Reference	Unit	MYT Petition	Approved in this Order
<b>Step-1: Establishing contribution of OA to backing-down/stranded capacity</b>				
OA volume for FY 2019-20 (Upto Sept-19)	(a)	MU	2,178	2,159
Backing Down quantum for FY 2019-20 (Upto Sept-19)	(b)	MU	14,704	14,704
Ratio to OA to Backed down for FY 2019-20 (Upto Sept-19)	$(c)=(b)/(a)$	%	14.81%	14.68%
<b>Step-2: Ascertaining Cost of Stranded Capacity</b>				
Fixed Cost of Thermal Generating Sources for FY 2024-25	(d)	Rs. Crs	21,460	21,313
Total Available MU from Thermal Generating Stations for FY 2024-25	(e)	MUs	129,095	177,592
Wt. Avg. Per Unit FC of Thermal Generating Stations for FY 2024-25	$(f)=(d)/(e) \times 10$	Rs/kWh	1.66	1.20
Total Projected Backdown/RSD Volume for FY 2024-25	(g)	MUs	13,364	13,364
Projected Open Access Volume for year for FY 2024-25	(h)	MUs	4,843	4,843
Fixed Cost pertaining to Backdown/RSD capacity for FY 2024-25	$(i)=(f)*(h)/10$	Rs. Crs	805	581

Particulars	Reference	Unit	MYT Petition	Approved in this Order
<b>Step-3: Determination of Additional Surcharge</b>				
Per Unit Additional Surcharge (to be applicable on OA Consumers )	$j=(i)/(h)*10$	Rs/kWh	1.66	1.20
Per Unit Additional Surcharge (to be applicable on OA Consumers )		Rs/kVAh		1.18

**Table 8-69: Summary of Additional Surcharge for 4th Control Period as approved by the Commission (Rs/kWh)**

Particulars	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25
Additional Surcharge (MYT Petition)	1.57	1.61	1.65	1.68	1.66
Additional Surcharge (Approved in this Order)	1.31	1.29	1.27	1.23	1.20

8.31.35 The Commission observes that for application of the Additional Surcharge, it has to be conclusively demonstrated that the contracted capacity has been stranded and that open access has partly resulted in causing such stranded capacity. Based on actual data for FY 2019-20 (Upto September 2019) and the workings provided in the above table, the case of stranded capacity on account of open access and hence the levy of Additional Surcharge is established. Besides, based on the approved power purchase projections and projection of available generation capacity as outlined under Chapter-6, the same is expected to continue for 4<sup>th</sup> Control Period. Hence, for the purpose of specifying the additional surcharge for the future years of 4<sup>th</sup> Control period, the Commission approves the Additional Surcharge as per the above mentioned table.

8.31.36 However, for the purpose of billing, as kVAh based billing has been introduced for HT category consumers, Additional Surcharge (in kVAh terms) shall be applicable by multiplying category-wise power factor (0.98 pf) to be applied on Additional Surcharge (in per Rs/ kWh) so determined in above tables for respective years of the 4<sup>th</sup> Control Period.

## **9 COMPLIANCE OF EARLIER DIRECTIVES**

The status of compliance by MSEDCL of the directives given in the previous MTR Order is set out below.

### **9.1 Feeder-based Metering with AMR facilities**

#### ***Directive***

9.1.1 MSEDCL at the time of last MTR process submitted that out of 4901 Agricultural feeders with AMR, only 1021 feeders are active and the rest are having communication linkage problem. MSEDCL was directed to keep all the feeder AMR active and start uploading data on its website.

#### ***MSEDCL's Response***

9.1.2 MSEDCL submitted that as on 25<sup>th</sup> November 2019, out of the total 5405 Ag feeders, 5228 nos. have been upgraded with AMR facilities. MSEDCL submitted that it is rigorously taking up the process to install AMR for the balance 177 nos. MSEDCL also submitted that the feeder input data for all the feeders (including Ag feeders) is made available at MSEDCL website on following path:

Consumer Portal > Operational data > Feeder Input Data  
(<https://consumerinfo.mahadiscom.in/feederdata/index.php>)

#### ***Commission's Ruling***

9.1.3 The Commission has noted MSEDCL's submission and progress on compliance of the directive. MSEDCL shall ensure that various actions points including metering of AG feeders as listed under para 4.2.25 shall be carried out.

### **9.2 kVAh Metering**

#### ***Directive***

9.2.1 MSEDCL to educate the consumers and take all necessary steps to ensure that all the consumers are billed by kVAh method from the next MYT i.e. from 1st April 2020.

#### ***MSEDCL's Response***

9.2.2 MSEDCL submitted that it has taken up necessary steps to ensure smooth rollout of kVAh billing. Consumer awareness programs were conducted. FAQs on kVAh billing were uploaded on the website and many interactive sessions on the same were conducted. The consumer awareness programs received many interest from the consumers and were successfully coordinated.

9.2.3 The next step towards kVAh metering was meter replacement. MSEDCL submitted that it has already initiated meter replacement and the same for HT consumers is planned to be completed by January 2020. After completing HT meter replacement, MSEDCL will rigorously take up LT meter replacement too. MSEDCL further submitted that the status of the same would be communicated to the Commission during the next MTR process.

***Commission’s Ruling***

9.2.4 The Commission has noted compliance of the MSEDCL in the matter and the progress for adoption of kVAh-based billing for HT consumer categories. The Commission also observes that MSEDCL has chalked out clear plans to shift LT consumes also to kVAH regime. The Commission intends to implement kVAh billing to all LT consumers having load above 20 kW from 1 April, 2023 upon review of implementation of kVAH based billing for HT consumers effective from 1<sup>st</sup> April, 2020. MSEDCL is required to take necessary steps such as meter replacement, if required, preparedness of billing software etc. for smooth implementation of kVAh billing.

## **10 SCHEDULE OF CHARGES**

### **10.1 Background**

10.1.1 MSEDCL has submitted that it recovers various miscellaneous and general charges from its consumers for various services provided as per the Schedule of charges approved by the Commission vide its Order dated 12 September, 2018 (Case No. 195 of 2017). Basically, these charges are for recovery of cost incurred for availing supply of electricity and various other services provided to the consumers. In order to shield regular consumers from consumer service specific costs, provision for schedule of charges has been made. Income from these charges form a part of the non-tariff income of MSEDCL.

10.1.2 MSEDCL stated that the provisions of Section 46 of the Act provides that the Commission may authorize a Distribution License to charge a person requiring a supply of electricity any expenses reasonably incurred in providing any electric line or electrical plant used for the purpose of giving that supply. Otherwise these costs will get passed on to regular consumers of MSEDCL.

10.1.3 MSEDCL also quoted provisions of Supply Code Regulations where various charges are permitted to be recovered from consumers subject to approval from the Commission. Various services for which charges can be recovered from the consumer as per provisions in MERC (Electricity Supply Code) Regulations, 2005.

10.1.4 In its Petition, MSEDCL has prayed to revise the schedule of charges and proposed revised charges. In the following paragraphs, the Commission has analysed the proposal and determined the Schedule of Charges for MSEDCL.

### **10.2 Service connection charges proposed by MSEDCL**

10.2.1 MSEDCL submitted that it has proposed Service Connection Charges (SCC) based on maximum of estimated or actual expenditure incurred for providing supply to the consumer.

10.2.2 The Commission in its Order in Case No. 197 of 2017 dated 12 September, 2018 has estimated the service connection charges on the basis of 20 meters as the average length. MSEDCL in present proposal has followed the same basis for estimation.

10.2.3 MSEDCL submitted that it has used the material schedule rates of its Central Purchase

Agency (CPA). As per revised Cost data of FY 2019-20 and centages, the estimates are prepared to derive the Service Connection charges. The loading - unloading and handling charges for meter, Contingencies, Insurance of material & price variation/ escalation were taken in consideration. The centages in total over the total estimated cost of materials is 25.50%. All other things are kept as it is such as supervision charges, variable charges etc.

10.2.4 While estimating charges for new HT Overhead connection, MSEDCL has considered all the legitimate expenditure for works of Gantry, Earthing, protection and Metering etc. Similar works have been considered in case of HT underground new service connection. Accordingly, MSEDCL proposes the new service connection charges based on all legitimate costs.

**Service connection charges for new overhead connections:**

10.2.5 The computation of service connection charges for new overhead connections as submitted by MSEDCL is detailed below:

**LT supply**

**Single phase:**

**Table 10-1: Computation of C for Control Period**

Material	Unit	Quantity	Rate in Rs	Cost in Rs.
5-30A LTAC Single Phase 6loWPAN RF Meter with enclosure	No.	1	966.10	966.10
W.P. Wire 2.5 mm2 T/C 1100 V Grade	Mtr	20	6.36	127.20
Meter Board	No	1	80.00	80.00
Kit Kat/ MCCB 20A with Enclosure	No	1	133.00	133.00
Reel Insulator 20mm	No	20	2.00	40.00
G.I. Wire 10SWG	Kg	2	57.40	114.80
G.I. Pipe 20mm	Mtr	3	88.44	265.32
G.I. Bend 20mm	No	3	16.77	50.31
G.I. Flexible pipe 20mm	Mtr	3	11.00	33.00
G.I. coupling 20mm	No	2	7.00	14.00
Sundries (Nut Bolts for Earthing Point and fitting, screws, Washers, drilling bit,	No	1	170.00	170.00

Material	Unit	Quantity	Rate in Rs	Cost in Rs.
Nails, Saddle clamps, lugs, PVC RAWAL Plugs etc.)				
<b>Total</b>				<b>1,993.73</b>
Approx. Labour Charges			15.00%	299.06
Transportation Charges			5.00%	99.69
Tools & Plants			1.50%	29.91
Contingencies			2.50%	49.84
Insurance & Finance Cost			1.50%	29.91
<b>Grand Total</b>				<b>2502.13</b>
Less Meter Cost				966.10
			<b>Proposed charges</b>	<b>1530.00</b>

**Table 10-2: Service connection charges for Overhead connection (LT 1 Ph)**

Material	Unit	Quantity	Rate in Rs.	Cost in Rs.
5-30A LTAC Single Phase 6loWPAN RF Meter with enclosure	No.	1	966.10	966.10
W.P.Wire 10 mm <sup>2</sup> T/C 1100 V Grade	Mtr	20	21.00	420.00
Meter Board	No	1	80.00	80.00
Kit kat / MCCB 32 A with Enclosure	No	1	130.00	130.00
Reel Insulator 30mm	No	20	2.00	40.00
G.I.Wire 10SWG	Kg	2	57.40	114.80
GI Pipe 30mm	Mtr	3	110.00	330.00
GI Bend 30mm	No	3	48.00	144.00
PVC Flexible pipe 30mm	No	2	27.00	54.00
GI coupling 30mm	No	2	32.00	64.00
Sundries (Nut Bolts for Earthing Point and fitting, screws, Washers, drilling bit, Nails, Saddle clamps, lugs, PVC RAWAL Plugs etc.)	No	1	210.00	210.00
<b>Total</b>				<b>2552.90</b>
Approx. Labour Charges			15.00%	382.94
Transportation Charges			5.00%	127.65
Tools & Plants			1.50%	38.29
Contingencies			2.50%	63.82
Insurance & Finance Cost			1.50%	38.29

Material	Unit	Quantity	Rate in Rs.	Cost in Rs.
<b>Grand Total</b>				<b>3203.89</b>
Less Meter Cost				966.10
<b>Proposed Charges</b>				<b>2230.00</b>

**Three phase:**

**Table 10-3: Service connection charges for Overhead connection (LT 3 Ph) for motive power (< 27 HP) or other (< 20 kW) as proposed by MSEDCL**

Material	Unit	Quantity	Rate in Rs	Cost in Rs
10-40A LTAC Three Phase 6loWPAN RF Meter with enclosure	No.	1	1456.78	1456.78
L.T. XLPE Amoured 2 Core 16 Sqmm cable	Mtr	40	52.00	2080.00
Meter Board	No	1	74.20	74.20
Three Phase Four Pole MCB 32A with enclosure	No	1	2096.00	2096.00
Reel Insulator 25mm	No	30	2.12	63.60
G.I. Wire 8SWG	Kg	5	57.40	287.00
G.I. Pipe 110 mm	Mtr	3	238.00	714.00
G.I. Bend 110mm	No	3	60.00	180.00
G.I. Flexible pipe 110mm	Mtr.	2	106.00	212.00
G.I. coupling 110mm	No	2	40.00	80.00
Sundries (Nut Bolts for Earthing Point and fitting, screws, Washers, drilling bit, Nails, Saddle clamps, lugs, PVC RAWAL Plugs etc.)	No	1	400.00	400.00
<b>Total</b>				<b>7,643.58</b>
Approx. Labour Charges			15.00%	1,146.54
Transportation Charges			5.00%	382.18
Tools & Plants			1.50%	114.65
Contingencies			2.50%	191.09
Insurance & Finance Cost			1.50%	114.65
<b>Grand Total</b>				<b>9592.69</b>
Less Meter Cost				1456.78
<b>Proposed Charges</b>				<b>8130.00</b>

**Table 10-4: Service connection charges for overhead connection (LT 3 Ph) for motive power (>27 HP but <107 HP) or other (>20 kW but <80 kW) as proposed by MSEDCL**

Material	Unit	Quantity	Rate in Rs	Cost in Rs.
40-200A LTAC CT Embedded Meter	No.	1	13305.08	13305.08
Single Core armoured XLPE Cable 70 sq.mm	Mtr.	80	56.20	4496.00
Meter Board	No	1	230.00	230.00
Kit Kat fuses 415 V 200 A / MCCB 200 A	No	3	730.00	2190.00
G.I.Wire 8SWG	Kg	6	57.40	344.40
G.I. Pipe 110 mm	Mtr	3	238.00	714.00
G.I. Bend 110mm	No	3	60.00	180.00
G.I. Flexible pipe 110mm	Mtr.	2	106.00	212.00
G.I. coupling 110mm	No	3	40.00	120.00
Sundries (Nut Bolts for Earthing Point and fitting, screws, Washers, drilling bit, Nails, Saddle clamps, lugs, PVC RAWAL Plugs etc.)	No	1	700.00	700.00
<b>Total</b>				<b>22491.48</b>
Approx. Labour Charges			15.00%	3,373.72
Transportation Charges			5.00%	1,124.57
Tools & Plants			1.50%	337.37
Contingencies			2.50%	562.29
Insurance & Finance Cost			1.50%	337.37
<b>Grand Total</b>				<b>28226.81</b>
Less Meter Cost				13305.08
			<b>Proposed charges</b>	<b>14920.00</b>

**Table 10-5: Service connection charges for overhead (LT 3 Ph) for motive power (> 107 HP but < 201 HP) or other (> 80 kW but <150 kW) as proposed by MSEDCL**

Material	Unit	Quantity	Rate in Rs	Cost in Rs
40-200A LTAC CT Embedded Meter	No.	1	13305.08	13305.08
Single Core armoured XLPE Cable 185 sq.mm	Mtr	80	140.00	11200.00
Meter Board	No	1	230.00	230.00
Kit Kat fuses 415 V 200 A/ MCCB 200 A	No	3	730.00	2190.00
G.I.Wire 8SWG	Kg	6	57.40	344.40
G.I. Pipe 200 mm	Mtr	3	276.00	828.00

Material	Unit	Quantity	Rate in Rs	Cost in Rs
G.I. Bend 200mm	No	3	66.00	198.00
G.I. Flexible pipe 200mm	Mtr.	2	110.00	220.00
G.I. coupling 200mm	No	2	42.00	84.00
Sundries (Nut Bolts for Earthing Point and fitting, screws, Washers, drilling bit, Nails, Saddle clamps, lugs, PVC RAWAL Plugs etc.)	No	1	1,000.00	1,000.00
<b>Total</b>				<b>29599.48</b>
Approx. Labour Charges			15.00%	4,439.92
Transportation Charges			5.00%	1,479.97
Tools & Plants			1.50%	443.99
Contingencies			2.50%	739.99
Insurance & Finance Cost			1.50%	443.99
<b>Grand Total</b>				<b>37147.35</b>
Less Meter Cost				13305.08
			<b>Proposed Charges</b>	<b>23840.00</b>

### HT supply

10.2.6 The Commission notes that MSEDCL has re-classified the connections in terms of load limits and voltage level. It has provided the item-wise cost break up for its proposed service connection charges for new overhead HT connections. MSEDCL submitted details as below.

**Table 10-6: Service connection charges for overhead connection (HT) 11 kV supply up to 1000 kVA as proposed by MSEDCL**

Material	Unit	Quantity	Rate in Rs.	Cost in Rs
XLPE Cable 11 kV 3C 95 sq.mm.	No.	1	85000.00	85000.00
HT TOD Meter 5A rating of 0.5s accuracy class	No	1	2316.95	2316.95
HT Earthing set (For cubical)	Set	9	547.00	4923.00
RSJ 152x152, 13 m long	No	2	21562.00	43124.00
11 kV Pin Insulators with G.I. Pins	No	3	135.00	405.00
Disc Insulator 11 KV 70 KN	No	3	344.00	1032.00
Strain Hardware for Weasel/Squirrel	Set	3	179.00	537.00
11 kV Lightning Arrestor (Gapless type) with disconnecter	Set	1	1268.00	1268.00
11KV A.B. Switch, 400 A	Set	1	9240.00	9240.00

M.S. Flats (50 X 10mm)	Kg	20	48.50	970.00
M.S. Channel 100x50x6 mm	Kg	160	51.80	8288.00
M.S. Channel 75x40x6 mm	Kg	150	51.80	7770.00
M.S. angle 50x50x6 mm	Kg	65	51.80	3367.00
H.T. Stay Set	No	2	598.00	1196.00
Stay Wire 7/8	Kg	25	57.45	1436.25
Earthing Sets H.T.	No	4	342.00	1368.00
1" PVC pipe for LA earthing separation	Mtr.	16	73.00	1168.00
G.I. Wire 8 SWG/ 6 SWG	Kg	20	57.40	1148.00
G.I. Barbed Wire 'A' type.	Kg	3	64.27	192.81
Danger Board in yard.	No	2	50.00	100.00
Red Oxide Paint for 2 coats	Ltr	6	85.00	510.00
Aluminium Paint for 1 coat	Ltr	4	113.00	452.00
Black Bituminus Paint	Ltr	2	85.00	170.00
Concreting ratio 1:3:6	Cmt	10	3027.00	30270.00
XLPE Cable 11 kV 3C 95 sq.mm.	Rmt	20	592.00	11840.00
Heat shrinkable kit Outdoor	No	1	1459.00	1459.00
Heat shrinkable kit Indoor	No	1	1169.00	1169.00
Cable Trays 2.5* 6"	No	12	212.00	2544.00
Copper Strip (25 X 6 mm) for earthing of cubical, meter & cable	Kg	30	477.00	14310.00
Bentonite clay	Kg	500	13.00	6500.00
Sundries (Crimping of cable jumpers, minor matching washers, Glands, Nut Bolts, Clamps, Minor Civil Work & misc. items)	L.S.	1	12680.00	12680.00
<b>Total</b>				<b>2,56,754.01</b>
Approx. Labour Charges			15.00%	38,513.10
Transportation Charges			5.00%	12,837.70
Tools & Plants			1.50%	3,851.31
Contingencies			2.50%	6,418.85
Insurance, Labour & Finance Cost			1.50%	3,851.31
<b>Grand Total</b>				<b>3,22,226.28</b>
Less Metering Cost				87,316.95
			<b>Proposed Charges</b>	<b>2,34,900.00</b>

**Table 10-7: Service connection charges for Overhead 11kV HT supply above 1000 kVA up to 5000 kVA as proposed by MSEDCL**

Material	Unit	Quantity	Rate in Rs.	Cost in Rs
HT (11 kV) Metering Cubicle including CT & PT	No.	1	85,000.00	85,000.00
HT TOD Meter 5A rating of 0.2s accuracy class	No	1	5,709.00	5,709.00
HT Earthing set (For cubical)	Set	9	546.81	4921.30
RSJ 152x152, 13 m long	No	2	21562.00	43124.00
11 kV Pin Insulators with G.I. Pins	No	3	135.00	405.00
Disc Insulator 11 KV 70 KN	No	3	344.00	1032.00
Strain Hardware for Weasel/Squirrel	Set	3	179.00	537.00
11 kV Lightning Arrestor (Gapless type) with disconnecter	Set	1	1268.00	1268.00
11 KV Isolators with EB (800 A)	Set	1	30025.00	30025.00
M.S. Flats (50 X 10mm)	Kg	20	48.50	970.00
M.S. Channel 100x50x6 mm	Kg	160	51.80	8288.00
M.S. Channel 75x40x6 mm	Kg	150	51.80	7770.00
M.S. angle 50x50x6 mm	Kg	65	51.80	3367.00
H.T. Stay Set	No	2	546.81	1093.62
Stay Wire 7/8	Kg	25	57.45	1436.25
Earthing Sets H.T.	No	4	302.32	1209.29
1" PVC pipe for LA earthing separation	Mtr.	16	73.00	1168.00
G.I. Wire 8 SWG/ 6 SWG	Kg	20	57.07	1141.41
G.I. Barbed Wire 'A' type.	Kg	3	57.88	173.63
Danger Board in yard.	No	2	46.64	93.28
Red Oxide Paint for 2 coats	Ltr	6	54.06	324.36
Aluminum Paint for 1 coat	Ltr	4	93.28	373.12
Black Bituminous Paint	Ltr	2	43.46	86.92
Concreting ratio 1:4:8	Cmt	10	3323.10	33231.00
XLPE Cable 11 KV, 3 C / 300 mm sq.	Rmt	20	1,194.00	23,880.00
Heat shrinkable kit Outdoor	No	1	2,230.00	2,230.00
Heat shrinkable kit Indoor	No	1	1,662.00	1,662.00
Cable Trays 2.5* 6"	No	12	212.00	2,544.00
Copper Strip (25 X 6 mm) for earthing of cubical, meter & cable	Kg	30	477.00	14310.00

Material	Unit	Quantity	Rate in Rs.	Cost in Rs
Bentonite clay	Kg	500	4.24	2120.00
Sundries (Crimping of cable jumpers, minor matching washers, Glands, Nut Bolts, Clamps, Minor Civil Work & misc. items)	L.S.	1	12680.00	12680.00
Total				2,92,173.18
Approx. Labour Charges			15.00%	43,825.98
Transportation Charges			5.00%	14,608.66
Tools & Plants			1.50%	4,382.60
Contingencies			2.50%	7,304.33
Insurance, Labour & Finance Cost			1.50%	4,382.60
Grand Total				3,66,677.35
Less Meter Cost				90,709.00
			<b>Proposed Charges</b>	<b>2,75,900.00</b>

**Table 10-8 : Service connection charges for Overhead 22kV HT supply up to 1000 kVA as proposed by MSEDCL**

Material	Unit	Quantity	Rate in Rs.	Cost in Rs
HT (22 kV) Metering Cubicle including CT 25/ 5 A& PT	No.	1	1,30,000.00	1,30,000.00
HT TOD Meter 5A rating of 0.5s accuracy class	No	1	2,316.95	2,316.95
HT Earthing set (For cubical)	Set	9	546.81	4921.30
RSJ 152x152, 13 m long	No	2	21562.00	43124.00
22 kV Pin Insulators with G.I. Pins	No	3	336.00	1008.00
Disc Insulator 11 KV 70 KN	No	6	344.00	2064.00
Strain Hardware for Weasel/Squirrel	Set	3	179.00	537.00
22 KV Lightning Arrestors (Gapless type) with disconnecter	Set	1	2280.00	2280.00
22KV A.B. Switch, 400 A	Set	1	14447.00	14447.00
M.S. Flats (50 X 10mm)	Kg	20	36.18	723.56
M.S. Channel 100x50x6 mm	Kg	160	51.80	8288.00
M.S. Channel 75x40x6 mm	Kg	150	51.80	7770.00
M.S. angle 50x50x6 mm	Kg	65	51.80	3367.00
H.T. Stay Set	No	2	546.81	1093.62

Material	Unit	Quantity	Rate in Rs.	Cost in Rs
Stay Wire 7/8	Kg	25	52.16	1304.07
Earthing Sets H.T.	No	4	302.32	1209.29
1” PVC pipe for LA earthing separation	Mtr.	16	73.00	1168.00
G.I. Wire 8 SWG/ 6 SWG	Kg	20	57.07	1141.41
G.I. Barbed Wire 'A' type.	Kg	3	57.88	173.63
Danger Board in yard.	No	2	46.64	93.28
Red Oxide Paint for 2 coats	Ltr	6	54.06	324.36
Aluminium Paint for 1 coat	Ltr	4	93.28	373.12
Black Bituminus Paint	Ltr	2	43.46	86.92
Concreting ratio 1:4:8	Cmt	10	3323.10	33231.00
XLPE Cable 22 kV 3C 95 sq.mm.	Rmt	20	846.00	16,920.00
Heat shrinkable kit Outdoor	No	1	9,023.00	9,023.00
Heat shrinkable kit Indoor	No	1	7,381.00	7,381.00
Cable Trays 2.5* 6"	No	12	212.00	2,544.00
Copper Strip (25 X 6 mm) for earthing of cubical, meter & cable	Kg	30	477.00	14310.00
Bentonite clay	Kg	500	4.24	2120.00
Sundries (Crimping of cable jumpers, minor matching washers, Glands, Nut Bolts, Clamps, Minor Civil Work & misc. items)	L.S.	1	12680.00	12680.00
<b>Total</b>				<b>3,26,023.51</b>
Approx. Labour Charges			15.00%	48,903.53
Transportation Charges			5.00%	16,301.18
Tools & Plants			1.50%	4,890.35
Contingencies			2.50%	8,150.59
Insurance, Labour & Finance Cost			1.50%	4,890.35
<b>Grand Total</b>				<b>4,09,159.50</b>
Less Meter Cost				1,30,000.00
			<b>Proposed Charges</b>	<b>2,79,100.00</b>

**Table 10-9: Service connection charges for Overhead 22kV HT above 1000 kVA up to 10000 kVA as proposed by MSEDCL**

Material	Unit	Quantity	Rate in Rs.	Cost in Rs
HT (22 kV) Metering Cubicle including CT & PT	No.	1	1,30,000.00	1,30,000.00
HT TOD Meter 1A & 5A rating of 0.2s accuracy class	No	1	5,709.00	5,709.00
HT Earthing set (For cubical)	Set	9	546.81	4921.30
RSJ 152x152, 13 m long	No	2	21562.00	43124.00
22 kV Pin Insulators with G.I. Pins	No	3	336.00	1008.00
Disc Insulator 11 KV 70 KN	No	6	344.00	2064.00
Strain Hardware for Weasel/Squirrel	Set	3	179.00	537.00
22 KV Lightning Arrestors (Gapless type) with disconnecter	Set	1	2280.00	2280.00
22 KV Isolators with EB (800 A)	Set	1	41547.00	41547.00
M.S. Flats (50 X 10mm)	Kg	20	36.18	723.56
M.S. Channel 100x50x6 mm	Kg	160	51.80	8288.00
M.S. Channel 75x40x6 mm	Kg	150	51.80	7770.00
M.S. angle 50x50x6 mm	Kg	65	51.80	3367.00
H.T. Stay Set	No	2	546.81	1093.62
Stay Wire 7/8	Kg	25	52.16	1304.07
Earthing Sets H.T.	No	4	302.32	1209.29
1" PVC pipe for LA earthing separation	Mtr.	16	73.00	1168.00
G.I. Wire 8 SWG/ 6 SWG	Kg	20	57.07	1141.41
G.I. Barbed Wire 'A' type.	Kg	3	57.88	173.63
Danger Board in yard.	No	2	46.64	93.28
Red Oxide Paint for 2 coats	Ltr	6	54.06	324.36
Aluminium Paint for 1 coat	Ltr	4	93.28	373.12
Black Bituminus Paint	Ltr	2	43.46	86.92
Concreting ratio 1:4:8	Cmt	10	3323.10	33231.00
XLPE Cable 22 KV, 3 C / 300 mm sq.	Rmt	20	1,464.00	29,280.00
Heat shrinkable kit Outdoor	No	1	13,715.00	13,715.00
Heat shrinkable kit Indoor	No	1	12,874.00	12,874.00
Cable Trays 2.5* 6"	No	12	212.00	2,544.00
Copper Strip (25 X 6 mm) for earthing of cubical, meter & cable	Kg	30	477.00	14310.00
Bentonite clay	Kg	500	4.24	2120.00
Sundries (Crimping of cable jumpers, minor matching washers, Glands, Nut Bolts,	L.S.	1	12680.00	12680.00

Material	Unit	Quantity	Rate in Rs.	Cost in Rs
Clamps, Minor Civil Work & misc. items)				
<b>Total</b>				<b>3,79,060.56</b>
Approx. Labour Charges			15.00%	56,859.08
Transportation Charges			5.00%	18,953.03
Tools & Plants			1.50%	5,685.91
Contingencies			2.50%	9,476.51
Insurance, Labour & Finance Cost			1.50%	5,685.91
<b>Grand Total</b>				<b>4,75,721.00</b>
Less Meter Cost				1,35,709.00
			<b>Proposed Charges</b>	<b>3,40,000.00</b>

**Table 10-10 : Service connection charges for Overhead 33kV HT up to 20000 kVA as proposed by MSEDCL**

Material	Unit	Quantity	Rate in Rs.	Cost in Rs
HT (33 kV) Metering Cubicle including CT & PT	No.	1	1,90,000.00	1,90,000.00
HT TOD Meter 1A rating of 0.2s accuracy class	No	1	5,709.00	5,709.00
HT Earthing set (For cubical)	Set	9	547.00	4,923.00
RSJ 152x152, 13 m long	No.	2	21,562.00	43,124.00
33 kV Pin Insulators with G.I. Pins	No.	3	541.00	1,623.00
Disc Insulator 11 KV 70 KN	No.	9	344.00	3,096.00
Strain Hardware for Dog 0.1 or Equ.AAAC.	No.	3	322.00	966.00
33 KV LA 9 KA	Set	1	10,248.00	10,248.00
33 KV Isolators without EB (800 Amp.)	Set	1	50,510.00	50,510.00
M.S. Flats (50 X 10mm)	Kg	20	48.50	970.00
M.S. Channel 100x50x6 mm	Kg	160	51.80	8,288.00
M.S. Channel 75x40x6 mm	Kg	150	51.80	7,770.00
M.S. angle 50x50x6 mm	Kg	65	51.80	3,367.00
H.T. Stay Set	No	2	598.00	1,196.00
G.I.Stay Wire 7/4mm(8 SWG)	Kg	25	57.45	1,436.25
Earthing Sets H.T.	No	4	342.00	1,368.00
1" PVC pipe for LA earthing separation	Mtr.	16	73.00	1,168.00
G.I. Wire 8 SWG/ 6 SWG	Kg	20	57.40	1,148.00
G.I. Barbed Wire 'A' type.	Kg	3	64.27	192.81

Material	Unit	Quantity	Rate in Rs.	Cost in Rs
Danger Board in yard.	No	2	50.00	100.00
Red Oxide Paint for 2 coats	Ltr	3	85.00	255.00
Aluminium Paint for 1 coat	Ltr	2	113.00	226.00
Black Bituminus Paint	Ltr	1	85.00	85.00
Concreting ratio 1:3:6	Cmt	10	3,027.00	30,270.00
XLPE Cable 33 KV, 3 C / 300 mm sq.	Rmt	20	1,737.00	34,740.00
33 kV Heat shrik Outdoor termination joint (Al) kit for XLPE 3 C X 300 sqmm	No	1	19,028.00	19,028.00
33 kV Heat shrik Indoor termination joint (Al) kit for XLPE 3 C X 300 sqmm	No	1	14,145.00	14,145.00
Cable Trays 2.5* 6"	No	12	212.00	2,544.00
Copper Strip (25 X 6 mm) for earthing of cubical, meter & cable	Kg	30	477.00	14,310.00
Bentonite clay	Kg	500	13.00	6,500.00
Sundries (Crimping of cable jumpers, minor matching washers, Glands, Nut Bolts, Clamps, minor civil work & misc. items)	L.S.	1	12,680.00	12,680.00
<b>Total</b>				<b>4,71,986.06</b>
Approx. Labour Charges			15.00%	70,797.91
Transportation Charges			5.00%	23,599.30
Tools & Plants			1.50%	7,079.79
Contingencies			2.50%	11,799.65
Insurance, Labour & Finance Cost			1.50%	7,079.79
<b>Grand Total</b>			<b>25.50%</b>	<b>5,92,342.51</b>
Less Metering Cost				1,95,709.00
<b>Proposed Charges</b>				<b>3,96,600.00</b>

### EHV Supply

10.2.7 MSEDCL has proposed charges for EHV supply and beyond SOP cases at actual.

### **Service connection charges for new underground connections**

10.2.8 The service connection charges for new underground connections as proposed by MSEDCL are reproduced below.

**LT supply**

**Single phase:**

**Table 10-11 : Service connection charges for underground connection (LT 1 Ph) for load up to 5 kW as proposed by MSEDCL**

Material	Unit	Quantity	Rate in Rs.	Cost in Rs
5-30A LTAC Single Phase 6loWPAN RF Meter with enclosure	No.	1	966.10	966.10
L.T. 2 Core Cable 2.5 sqmm Armoured	Rmt	20	73.41	1468.10
Meter Board	No	1	42.40	42.40
Kit Kat / MCCB 32A with enclosure	No	1	130.72	130.72
Misc. for U/G Cable	LS	1	1060.00	1060.00
<b>Total</b>				<b>3,667.32</b>
Approx. Labour Charges			15.00%	550.10
Transportation Charges			5.00%	183.37
Tools & Plants			1.50%	55.01
Contingencies			2.50%	91.68
Insurance, Labour & Finance Cost			1.50%	55.01
<b>Grand Total</b>				<b>4,602.49</b>
Less Meter Cost				966.10
			<b>Proposed Charges</b>	<b>3630.00</b>

**Table 10-12: Service Connection Charges for Underground Connection (LT 1Ph) for loads above 5 kW up to 7 kW as proposed by MSEDCL**

Material	Unit	Quantity	Rate in Rs.	Cost in Rs
5-30A LTAC Single Phase 6loWPAN RF Meter with enclosure	No.	1	966.10	966.10
L.T. 2 Core Cable 10sqmm Armoured	Rmt	20	45.42	908.42
Meter Board	No	1	74.20	74.20
Kitkat / MCCB 63A, 650V	No	3	328.32	984.97
Misc. for U/G Cable	LS	1	4240.00	4240.00
<b>Total</b>				<b>7,173.69</b>
Approx. Labour Charges			15.00%	1,076.05
Transportation Charges			5.00%	358.68
Tools & Plants			1.50%	107.61

Contingencies			2.50%	179.34
Insurance, Labour & Finance Cost			1.50%	107.61
<b>Grand Total</b>				<b>9,002.98</b>
Less Meter Cost				<b>966.10</b>
			<b>Proposed Charges</b>	<b>8030.00</b>

**Three phase:**

**Table 10-13: Service connection charges for underground connection (LT 3 Ph) motive power (< 27 HP) or other (<20 kW) as proposed by MSEDCL**

Material	Unit	Quantity	Rate in Rs.	Cost in Rs
10-40A LTAC Single Phase 6loWPAN RF Meter with enclosure	No.	1	1456.78	1456.78
L.T. XLPE Armoured cable 4core 16sq.mm.	Rmt	20	67.48	1349.59
Meter Board	No	1	74.20	74.20
Kitkat / MCCB 63A, 650V	No	3	328.32	984.97
R.C.C. Pipe 150 mm 2 M	No	10	507.74	5077.40
Misc. for U/G Cable	LS	1	4240.00	4240.00
<b>Total</b>				<b>13,182.95</b>
Approx. Labour Charges			15.00%	1,977.44
Transportation Charges			5.00%	659.15
Tools & Plants			1.50%	197.74
Contingencies			2.50%	329.57
Insurance, Labour & Finance Cost			1.50%	197.74
<b>Grand Total</b>				<b>16,544.60</b>
Less Meter Cost				1456.78
			<b>Proposed Charges</b>	<b>15,080.00</b>

**Table 10-14: Service connection charges for underground (LT 3 Ph) motive power (>27 HP but <67 HP) or other (>20 kW but <50 kW) as proposed by MSEDCL**

Material	Unit	Quantity	Rate in Rs.	Cost in Rs
40-200A LTAC CT Embeded Meter	No.	1	13,305.08	13,305.08
L.T. XLPE Armoured cable 4core 70 sq.mm.	Rmt	20	383.59	7671.86
Meter Board	No	1	74.20	74.20

Material	Unit	Quantity	Rate in Rs.	Cost in Rs
Kitkat / MCCB 200A, 650V	No	3	328.32	984.97
R.C.C. Pipe 150 mm 2 M	No	10	507.74	5077.40
Misc. for U/G Cable	LS	1	4240.00	4240.00
<b>Total</b>				<b>31,353.51</b>
Approx. Labour Charges			15.00%	4,703.03
Transportation Charges			5.00%	1,567.68
Tools & Plants			1.50%	470.30
Contingencies			2.50%	783.84
Insurance, Labour & Finance Cost			1.50%	470.30
<b>Grand Total</b>				<b>39,348.65</b>
Less Meter Cost				13,305.08
			<b>Proposed Charges</b>	<b>26,040.00</b>

**Table 10-15: Service connection charges for underground (LT 3 Ph) motive power (> 67 HP but <134 HP) or other (> 50 kW but <100 kW) as proposed by MSEDCL**

Material	Unit	Quantity	Rate in Rs.	Cost in Rs
40-200A LTAC CT Embedded Meter	No.	1	13,305.08	13,305.08
L.T. XLPE Armoured cable 4core 185 sq.mm.	Rmt	20	835.71	16714.29
Meter Board	No	1	74.20	74.20
MCCB	No	1	5830.00	5830.00
R.C.C. Pipe 150 mm 2 M	No	10	667.80	6678.00
Misc. for U/G Cable	LS	1	8480.00	8480.00
<b>Total</b>				<b>51,081.57</b>
Approx. Labour Charges			15.00%	7,662.24
Transportation Charges			5.00%	2,554.08
Tools & Plants			1.50%	766.22
Contingencies			2.50%	1,277.04
Insurance, Labour & Finance Cost			1.50%	766.22
<b>Grand Total</b>				<b>64,107.37</b>
Less Meter Cost				13,305.08
			<b>Proposed Charges</b>	<b>50,800.00</b>

**Table 10-16: Service connection charges for underground (LT 3 Ph) motive power (> 134 HP but <201 HP) or other (> 100 kW but < 150 kW) as proposed by MSEDCL**

Material	Unit	Quantity	Rate in Rs	Cost in Rs
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40-200A LTAC CT Embedded Meter	No.	1	13,305.08	13,305.08
L.T. XLPE Armoured cable 4core 300 sq.mm.	Rmt	20	1308.80	26175.97
Meter Board	No	1	72.80	72.80
MCCB	No	1	16463.20	16463.20
R.C.C. Pipe 150 mm 2 M	No	10	655.20	6552.00
Misc. for U/G Cable	LS	1	8320.00	8320.00
<b>Total</b>				<b>70,889.05</b>
Approx. Labour Charges			15.00%	10,633.36
Transportation Charges			5.00%	3,544.45
Tools & Plants			1.50%	1,063.34
Contingencies			2.50%	1,772.23
Insurance, Labour & Finance Cost			1.50%	1,063.34
<b>Grand Total</b>				<b>88,965.76</b>
Less Meter Cost				13,305.08
			<b>Proposed Charges</b>	<b>75,660.00</b>

**HT supply**

10.2.9 The Commission observes that MSEDCL has re-classified the connections in terms of load limits and voltage level. It has provided the item-wise cost break up for its proposed service connection charges for new underground HT connections. MSEDCL submitted details as below.

**Table 10-17: Service connection charges for underground 11 kV HT supply up to 1000 kVA as proposed by MSEDCL**

Material	Unit	Quantity	Rate in Rs.	Cost in Rs
HT (11 kV) Metering Cubicle including CT & PT	No.	1	85,000.00	85,000.00
HT TOD Meter 5A rating of 0.5s accuracy class	No	1	2,316.95	2,316.95
HT Earthing set (For cubical)	Set	9	547.00	4,923.00
RSJ 152x152, 13 m long	No	2	21,562.00	43,124.00
11 kV Pin Insulators with G.I. Pins	No	3	135.00	405.00
Disc Insulator 11 KV 70 KN	No	3	344.00	1,032.00
Strain Hardware for Weasel/Squirrel	Set	3	179.00	537.00
11 kV Lightning Arrestor (Gapless type) with disconnector	Set	1	1,268.00	1,268.00
11KV A.B. Switch, 400 A	Set	1	9,240.00	9,240.00

Material	Unit	Quantity	Rate in Rs.	Cost in Rs
M.S. Flats (50 X 10mm)	Kg	20	48.50	970.00
M.S. Channel 100x50x6 mm	Kg	160	51.80	8,288.00
M.S. Channel 75x40x6 mm	Kg	150	51.80	7,770.00
M.S. angle 50x50x6 mm	Kg	65	51.80	3,367.00
H.T. Stay Set	No	2	598.00	1,196.00
Stay Wire 7/8	Kg	25	57.45	1,436.25
Earthing Sets H.T.	No	4	342.00	1,368.00
1" PVC pipe for LA earthing separation	Mtr.	16	73.00	1,168.00
G.I. Wire 8 SWG/ 6 SWG	Kg	20	57.40	1,148.00
G.I. Barbed Wire 'A' type.	Kg	3	64.27	192.81
Danger Board in yard.	No	2	50.00	100.00
Red Oxide Paint for 2 coats	Ltr	6	85.00	510.00
Aluminium Paint for 1 coat	Ltr	4	113.00	452.00
Black Bituminus Paint	Ltr	2	85.00	170.00
Concreting ratio 1:3:6	Cmt	10	3,027.00	30,270.00
XLPE Cable 11 kV, 3 C / 95 mm sq.	Rmt	60	592.00	35,520.00
11 kV Outdoor termination joint kit for 3 C X 95 mm <sup>2</sup>	No	1	1,459.00	1,459.00
11 kV Indoor termination joint kit for 3 C X 95 mm <sup>2</sup>	No	1	1,169.00	1,169.00
R.C.C. Pipe 150 mm <sup>2</sup>	No	5	572.00	2,860.00
Half round cement pipe (150mm X 1mtr)	No	5	110.00	550.00
Sand	Cmt	15	222.00	3,330.00
Copper Strip (25 X 6 mm) for earthing of cubical, meter & cable	Kg	30	477.00	14,310.00
Bentonite clay	Kg	500	13.00	6,500.00
Sundries (Crimping of cable jumpers, minor matching washers, Glands, Nut Bolts, Clamps, minor Civil work & misc. items)	L.S.	1	12,680.00	12,680.00
<b>Total</b>				<b>2,84,630.01</b>
Approx. Labour Charges			15%	42,694.50
Transportation Charges			5%	14,231.50
Tools & Plants			2%	4,269.45
Contingencies			3%	7,115.75
Insurance, Labour &			2%	4,269.45

Material	Unit	Quantity	Rate in Rs.	Cost in Rs
Finance Cost				
<b>Grand Total</b>				<b>3,57,210.66</b>
Less Metering Cost				87,316.95
<b>Proposed Charges</b>				<b>2,69,800.00</b>

**Table 10-18: Service connection charges for underground 11 kV HT above 1000 kVA up to 5000 kVA as proposed by MSEDCL**

Material	Unit	Quantity	Rate in Rs.	Cost in Rs
HT (11 kV) Metering Cubicle including CT & PT	No.	1	85,000.00	85,000.00
HT TOD Meter 1A & 5A rating of 0.2s accuracy class	No	1	5,709.00	5,709.00
HT Earthing set (For cubical)	Set	9	546.81	4,921.30
RSJ 152x152, 13 m long	No	2	21562.00	43,124.00
11 kV Pin Insulators with G.I. Pins	No	3	135.00	405.00
Disc Insulator 11 KV 70 KN	No	3	344.00	1,032.00
Strain Hardware for Weasel/Squirrel	Set	3	179.00	537.00
11 kV Lightning Arrestor (Gapless type) with disconnector	Set	1	1,268.00	1,268.00
11 KV Isolators with EB (800 A)	Set	1	30,025.00	30,025.00
M.S. Flats (50 X 10mm)	Kg	20	48.50	970.00
M.S. Channel 100x50x6 mm	Kg	160	51.80	8,288.00
M.S. Channel 75x40x6 mm	Kg	150	51.80	7,770.00
M.S. angle 50x50x6 mm	Kg	65	51.80	3,367.00
H.T. Stay Set	No	2	546.81	1,093.62
Stay Wire 7/8	Kg	25	57.45	1,436.25
Earthing Sets H.T.	No	5	302.32	1,511.61
1" PVC pipe for LA earthing separation	Mtr.	16	73.00	1,168.00
G.I. Wire 8 SWG/ 6 SWG	Kg	25	57.07	1,426.76
G.I. Barbed Wire 'A' type.	Kg	3	57.88	173.63
Danger Board in yard.	No	2	46.64	93.28
Red Oxide Paint for 2 coats	Ltr	6	54.06	324.36
Aluminium Paint for 1 coat	Ltr	4	93.28	373.12
Black Bituminus Paint	Ltr	2	43.46	86.92