MAHARASHTRA ELECTRICITY REGULATORY COMMISSION

DRAFT GUIDELINES FOR ALLOCATION OF ASSETS AND COST AT DIFFERENT VOLTAGE LEVELS OF DISTRIBUTION

The Distribution Licensee undertakes two distinct businesses i.e. Wheeling (Wires) and the Supply (Retail). The business of owning and operating the distribution network is called as the Distribution Wires Business (Wires Business), as distinct from the Retail Supply Business, which has a contract with the end consumer for supply of electricity and enters into long-term and short term power purchase contracts for the required quantum of electricity.

Section 61 of the Electricity Act 2003 (hereinafter referred to as "EA 2003") empowers the Appropriate Commission to specify the terms and conditions for the determination of Tariff. Section 62 of the EA 2003 requires the State Electricity Regulatory Commission (SERC) to determine the tariff for Wheeling and Retail supply of electricity. Section 42 of the EA 2003 requires the SERC to introduce open access in the distribution system in a phased manner and stipulates that the duties of the distribution licensee with respect to such supply shall be of a common carrier providing non-discriminatory open access. Also, under Section 9 of the EA 2003, captive consumers are required to pay wheeling charges for availing open access, and are exempted from payment of cross-subsidy surcharge and additional surcharge. Therefore, wheeling charges are to be paid by any person for availing open access using the distribution licensees network.

The Commission, in its Multi Year Tariff Regulations and various Tariff Orders for distribution licensees, has directed the distribution licensees to separate the accounting of wires related costs and supply related costs and also file separate Annual Revenue Requirement (ARR) for Wires and Supply Business, which is essential for un-bundling of cost and tariff components and forms a pre-requisite for appropriate determination of Wheeling Charges.The wires cost is further segregated into different voltages of the distribution network for determination of the voltage wise wheeling charges. Accordingly, Wheeling Charges, so determined, are shown separately for every consumer of distribution licensee as a part of tariff.

For the purpose of allocation of Wires cost over different voltage levels, the Commission has been using the ratio of asset value at EHT, HT and LT levels as provided by the distribution licensees.

The Tata Power Company had filed Case No. 133 of 2020, raising the issue of standardization of allocation of different assets over different voltage levels by different distribution licensees. The Commission in its Order dated 9 December, 2020, based upon the

views of different Distribution Licensees, directed that a study be carried out to determine the uniform principle for allocation of assets and cost in Distribution Business:

> *"The Commission will initiate a study to address various issues raised in the present Petition about voltage wise accounting of asset and would come out with uniform principles/guidelines through public consultation process. While doing so, the Commission may also include other factors which affects consumer tariff."*

Therefore, a study was carried out in order to assess the operational practices of Distribution Licensees for allocation of their assets and costs over different voltage levels, domestic and international research of various practices, so as to recommend a set of guidelines for standardized allocation of assets and costs over the different voltage levels of distribution.

Based on the study so carried out and after examining all aspects in this regard, the Commission now proposes to issue standard Guidelines providing the methodology for the allocation / attribution / recording of assets and costs to be adopted by all Distribution Licensees in Maharashtra.

The Objectives of the issue of these guidelines are as outlined below:

- To design an uniform methodology of allocation of assets and cost to Wire and Supply Business and subsequently the network / wire costs allocated into EHT, HT and LT voltages;
- To lay down the approach and methodology for identification / allocation of assets and cost to different Voltage level of distribution business;
- To determine the fair and comparable wheeling charges so as to have justified recovery of wire charges from the consumers of that particular voltage level;
- The need for voltage-wise allocation of cost is identified in order to allocate costs on consumers in a fair and justified manner, corresponding to their voltage of installation and consequent usage of network assets.

The following issues have been identified and addressed in this Guidelines:

1. **Allocation of assets between Wires function, Supply function and Common Assets (common to both wires and supply function) of distribution licensees and allocation of Common Assets over Wires and Supply functions;**
2. **Formation of purpose-based asset bundles for Wires assets;**
3. **Identification / allocation of defined Wires asset bundles over different voltage levels;**
4. **Allocation of Common assets allocated to Wires function over different voltage levels;**
5. **Determination of various asset ratios and Attribution / Allocation of Wires cost items to different voltage levels**

6. Implementability aspects and general directions to distribution licensees

METHODLOGY FOR ALLOCATION OF ASSETS AND COST FOR DISTRIBUTION BUSINESS

1. ALLOCATION OF ASSETS BETWEEN WIRES, SUPPLY AND COMMON AND FURTHER ALLOCATION OF COMMON ASSETS BETWEEN WIRES AND SUPPLY

1.1. The Distribution Licensees need to form three Asset Groups - Wires function, Supply function and Common to Business function.

1.2. The **Supply dedicated assets** need to be identified by distribution licensees and would include, but may not be limited to the following:

- All consumer meters and associated metering accessories including CT/PT, meter reading devices and instruments, AMR infrastructure including remote meter communication assets and facilities, meter housing, meter boards and including board wiring. It is clarified that this shall not include meters installed at various locations on the distribution grid, along with their associated metering accessories, wiring and housing.
- All assets related to consumption analysis and audit, billing and payment facilities such as IT hardware and software for consumption analysis, billing, etc., cash collection centers, automated payment kiosks, customer care centers, etc.
- Apps for allocation of meter readers, for billing and payment, if any.

1.3. The above list of supply dedicated assets is not exhaustive and is only indicative. The Distribution Licensees may propose inclusion of other assets and facilities within Supply dedicated function, citing adequate reasoning and justification.

1.4. **Common to business assets** will comprise of those assets and facilities that cannot be earmarked either to Wires business or to Supply business.The assets in Common to business function of distribution could include but not be limited to the following types of assets:

- Administrative office buildings of Licensees, including corresponding land parcels.
- Furniture and fixtures, electrical and electronic appliances and other electrical works, security systems, etc. used in various administrative offices.
- Common vehicles for use by officers or employees of Licensees, not dedicated to network maintenance functions.

- Common to business IT software and hardware, including communication facilities, IT hardware for employees and other IT hardware, including monitors, webcams and other communication hardware used in offices, office-use softwares and Licenses, etc.

1.5. The above list of Common to Business assets is not exhaustive and only indicative. The Distribution Licensees may propose inclusion of other assets and facilities within this group, citing adequate reasoning and justification.

1.6. After identification and exclusion of Supply dedicated and Common to Business assets, the remaining assets of the Distribution Licensees shall be classified under Wires dedicated function.

1.7. Further, as more and different type of assets get added in business, the Distribution Licensees shall analyse the primary nature of such assets and allocate them to Wires function, Supply function or Common function and present the same with adequate reasoning and justification during tariff determination process and the Commission, based on prudence check, shall appropriately consider those assets and facilities in corresponding functions.

1.8. In order to allocate all assets into Wires and Supply, the Common to Business assets shall be further allocated to Wires and Supply dedicated functions using the Wires and Supply dedicated asset ratio, as obtained after segregation of assets and further defined in this Guidelines.

2. FORMATION OF PURPOSE-BASED ASSET BUNDLES FOR WIRES FUNCTION

2.1. The assets dedicated to Wires function as identified shall be divided into three groups –

a) assets that voltage identifiable i.e. those assets that clearly and specifically pertain to a single voltage class,

b) assets that exist along the boundary of two voltages i.e. power transformers and distribution transformers which serves more than one voltage and

c) assets that belong to network (wires) business but are not specific to any voltage level and can be utilized across all or multiple voltage levels within the network.

2.2. The identified Wires dedicated assets shall be Bundled based on same-purpose. Bundling implies grouping of same purpose assets into a single bundle. Bundling builds in purpose of use and assists in grouping of assets of same purpose, regardless

of their individual voltage ratings. For example, in a Distribution Substation, there are station batteries, which are otherwise rated at Low Voltage, but batteries are an integral part of the substation and therefore it cannot be that batteries are put in Low Voltage, while other equipment in substation is classified under high voltage.

2.3. The identified asset groups and bundles and indicative list of individual same-purpose assets to be included in the corresponding bundle shall be as indicated below:

Main Group	Suggested bundle	Inclusions
Boundary assets	**Distribution Substation (33/11kV or 22/11kV or 33/22kV or Multi-winding)**	Power Transformer, all associated civil structures, land, cables and wiring, relays, switchgear, control panels, lightning arrestors, capacitor banks, station batteries, station transformers, earthing equipment and all other appertuant apparatus being part of the substation
Boundary assets	**Consumer Substation (11/0.4kV or 22/0.4 kV or 33/0.4 kV)**	Distribution Transformer, all associated civil structures, associated land, relays, cables and wiring, if any, switchgear, control panel, capacitor banks, earthing equipment and other appertuant apparatus, being part of the substation
Voltage Identifiable	**Line – 33kV Line – 11kV Line – LT (depending upon voltage rating)**	Overhead Line and associated towers, tower plinth, insulators, gantry and other installed equipment
		Underground cable and cable ducts, if any
		Relays, if any, installed
Voltage identifiable	**Grid Meters**	Grid Meters as per voltage of installation
		Meter housing, boards
		Metering accessories, CT/PT and associated wiring
Common to Voltage	**Others**	Maintenance vehicles
		SCADA, DMS, OMS, Network Planning software and hardware
		Tools and equipment not voltage specific

2.4. The assets included in corresponding bundles are only indicative and not exhaustive. The general guideline in this regard for Distribution Licensees is to bundle same location, same purpose assets into a common bundle as per above bundles. This is important so that purpose-based allocation of assets can be done and similar purpose assets are grouped together.

2.5. It is clarified that the above groups and bundles are for the purpose of allocation of assets over specific voltage levels only, and do not recommend any change in the maintenance of accounts by the Distribution Licensees. The Licensees shall have the liberty to either make appropriate modifications to their SAP system in order to analyse and present data as per the regulatory requirements or make the required groups and bundles outside the system, using the data dump from the SAP system. Licensees not having ERP / SAP system will necessarily have to organize their asset base data as per these requirements manually, till such time they install SAP system with appropriate modules to handle asset base data.

3. IDENITIFCATION / ALLOCATION OF DEFINED WIRE ASSET GROUPS OVER DIFFERENT VOLTAGES

3.1. As shown above, the three main Asset Groups for Wires function shall be the following, along with the basis of allocation of the same over different voltage levels:

3.1.1. Voltage-identifiable:

3.2. This shall include only the distribution lines, cables and associated meters (not including consumer meters, as they are part of retail supply business). These assets shall be allocated to individual voltages depending upon the voltage rating of the line. These assets are clearly earmarked to specific voltage and exist for distribution of power at that specific voltage or for the purpose of recording energy travelling at that specific voltage, as the case may be.

3.2.1. Boundary Assets:

3.2.1.1. This group shall include asset bundles of “Distribution Substation” and “Consumer Substation” as shown above.

3.2.1.2. Distribution Substations of 33/11kV or 22/11kV or 33/22kV, should be identified and allocated as per secondary side voltage. The Distribution Substation refers to the said bundle of assets as shown above i.e. including associated civil and electrical assets and appurtenant apparatus.

3.2.1.3. Consumer Substations of 11/0.4 kV or 22/0.4 kV or 33/0.4 kV, as the case may be should be identified and allocated to LT voltage level. The Consumer Substation refers to the said bundle of assets as shown above i.e. including associated civil structures, electrical assets and other appurtenant apparatus.

3.2.2. Common to Voltage assets:

3.2.2.1. There are some other assets that exist for the various purposes of electricity network business but cannot be classified as identifiable with any specific voltage. These assets serve and exist for the purpose of network as a whole, rather than being

dedicated to any specific voltage level. Some examples could include Vehicles used in network maintenance, in general, or SCADA / DMS / OMS, which exist for the whole of distribution network, or could serve only the HT network common to all voltages of HT. Network planning softwares such as CymeDist could also be categorized under this block, as such assets are again not dedicated to any specific voltage class.

3.2.2.2. The allocation of these assets to specific voltage levels is proposed to be done in the same proportion as the proportion of voltage identifiable + boundary assets put together bears over different voltages, as obtained from above.

3.3. The above list of assets are just for illustrative purpose and should not be considered an exhaustive list. The Licensees are directed to identify all such assets that are otherwise utilised only for network (wires) function but have no voltage rating or cannot be identified with any specific voltageor have use across all voltage levels. All such assets are required to be categorized under this Group/Bundle.

4. ALLOCATION OF COMMON ASSETS (AS ALLOCATED TO WIRES FUNCTION) OVER DIFFERENT VOLTAGE LEVELS

4.1. The Common to Business Assets as identified from the total Fixed Asset Base of the Distribution Licensees will have to be first allocated between Wires and Supply functions. For this purpose, the ratio of Wires only and Supply only assets to total (Wires + Supply only) assets, as obtained using these guidelines, shall be used.

4.2. In the next step, the Common Assets so allocated to Wires function shall be further allocated to different voltage levels of distribution. For this purpose, the following methodology shall be used:

	Customer-driven			**Network-driven**		
GFA value of Common to Business assets, allocated to Wires function **(A)**	50% of A			50% of A		
	EHT	**HT**	**LT**	**EHT**	**HT**	**LT**
Allocation to Voltages in ratio of→	% of EHT customers to total customers	% of HT customers to total customers	% of LT customers to total customers	% of EHT line length in Ckt-km to total distribution line length in Ckt-km	% of HT line length in Ckt-km to total distribution line length in Ckt-km	% of LT line length in Ckt-km to total distribution line length in Ckt-km

**Distribution line length will include Service Lines as well*

4.3. As shown above, 50% value of total GFA value of allocated Common to Business assets shall be considered as Customer-driven and shall be allocated to the different voltage levels of distribution on the basis of the proportion of number of customers served by the Licensee at each level. Similarly, the balance 50% value of total GFA value of allocated Common to Business assets shall be considered as Network-driven and shall be allocated to the voltage levels of distribution in the proportion of line length (including service lines) in ckt-km at each voltage level.

5. DETERMINATION OF VARIOUS ASSET RATIOS AND ALLOCATION OF WIRES COST COMPONENTS TO DIFFERENT VOLTAGE LEVELS AND SUPPLY COST

5.1. Based on the allocation of assets as discussed in preceding paragraphs, the entire GFA of distribution can be divided between EHT, HT, LT voltages (Wire Business) and Supply Business. The values so allocated therein will result in different asset ratios obtained for Network Asset Group, Non-network Asset Group and Total Assets. This is shown as under:

Voltage	**Network Asset Group**			**Non-network asset group**	**Supply**	**Total**
	Voltage Identifiable	**Boundary assets**	**Common to Network**	**Common to Business** / **Customer / Network – 50:50**		
EHT	A_1	B_1	C_1	D_1	**-**	**A_1 to D_1**
HT	A_2	B_2	C_2	D_2	**-**	**A_2 to D_2**
LT	A_3	B_3	C_3	D_3	**-**	**A_3 to D_3**
TOTAL Wire	**A**	**B**	**C**	**D**	**-**	**A to D**
Supply				**D_4**	**E_1**	**D_4 +E_1**
Total	**A_Σ**	**B_Σ**	**C_Σ**	**D_Σ**	**E_Σ**	**A_Σ+E_Σ**

5.2. Based on the allocation of assets as defined in Step 4, the assets ratio will be determined which will be considered as base for allocation of cost of ARR of Wire business

Asset Ratios	**EHT**	**HT**	**LT**	**Supply**
Network Assets (P)	(A1+B1+C1) / (A+B+C)	(A2+B2+C2) / (A+B+C)	(A3+B3+C3) / (A+B+C)	-
Non-Network Assets (Q)	(D1) / (D)	(D2) / (D)	(D3) / (D)	-
Total Wire	**T_{EHTW}=**	**T_{HTW}=**	**T_{LTW}=**	-

(T)	**(A+B1+C1+D1) / (A+B+C+D)**	**(A2+B2+C2+D2) / (A+B C+D)**	**(A3+B3+C3+D3) / (A+B+C+D)**	
Total GFA (T_{GFA})	**T_{EHTT}= (A+B1+C1+D1) / (A_{Σ}+B_{Σ}+C_{Σ}+D_{Σ}+E_{Σ})**	**T_{HTT}= (A2+B2+C2+D2) / (A_{Σ}+B_{Σ}+C_{Σ}+D_{Σ}+E_{Σ})**	**T_{LTT}= (A3+B3+C3+D3) / (A_{Σ}+B_{Σ}+C_{Σ}+D_{Σ}+E_{Σ})**	**T_{ST} = (D_4+E_1) / (A_{Σ}+B_{Σ}+C_{Σ}+D_{Σ}+E_{Σ})**

5.3. Based on the asset values at different voltage levels, the various cost elements of Distribution Wires ARR shall be determined.

5.4. Using the principle that wherever cost at a particular voltage level is directly obtainable, ratios shall not be employed. Using this principle, **Depreciation for Voltage Identifiable Assets and Boundary Assets** shall be determined for different voltage levels directly as the historical cost and accumulated depreciationof each individual asset(s) shall be available directly from the Fixed Asset Register of the Licensee. The Licensees shall, preferably make this categorization of assets in their SAP system itself, so that, to this extent, voltage-wise depreciation can be made available directly from the system.

5.5. After determining depreciation for Voltage Identifiable and Boundary Assets, the Remaining Depreciation (RD) shall be worked out by subtracting the sum of these two from the total Depreciation available for the year for distribution business as a whole.

5.6. The voltage-wise **Depreciation for Common to Network and Common to Business assets**shall be determined using the "Remaining Depreciation" as follows:

	Common to Network assets			**Common to Business assets**		
	EHT	**HT**	**LT**	**EHT**	**HT**	**LT**
Depreciation (Rs. Cr.)	C1/(C+D) *RD	C2/(C+D)* RD	C3/(C+D) *RD	(D1)/(C+D) *RD	(D2)/(C+D) *RD	(D3)/(C+D) *RD

Where RD = Remaining Depreciation i.e. Total Deprecation available in a year Less Depreciation determined for Voltage Identifiable and Boundary Assets and Reference of C and D value is from para 5.1

5.7. Both **Interest on long-term loans and Return on Equity** shall be distributed over different voltage levels in the voltage-wise ratio of total asset i.e. the ratios of T_{GFA}, T_{EHTT}, T_{HTT} and T_{LTT}, shall be used. (reference from Para 5.2)

5.8. **Contribution to Contingency Reserve** As per MYT Regulations, the Contribution to Contingency Reserves is determined as a percentage of opening GFA. Accordingly the whole of asset base can be classified into different voltage levels and hence this cost, being a percentage of asset value, can be directly obtained at specified percentage of allocated asset value at each voltage level.

5.9. **O&M cost, net of Non-Tariff Income and Income from other business,** shall be distributed over voltages in the same manner as the Common to Business assets i.e. 50% of total approved O&M cost of Wires business shall be considered Customer-related and the remaining 50% shall be considered Network-related. Thereafter, the Customer-related component shall be divided over EHT, HT and LT voltages in the ratio of number of customers of the Distribution Licensee at each voltage level and the Network-related component shall be divided over EHT, HT and LT voltages in the ratio of line length (including service lines) in ckt-km. at each voltage level.

5.10. **Interest on Working Capital and Provision for Bad debts** shall be allocated over different voltages using the ratio of rest of the Wires ARR at each voltage level, as determined using the principles given above.

5.11. **Income Tax:** As per the present MYT Regulations, 2019, Income Tax is not a separate component in ARR, but is allowed by grossing up RoE itself by the relevant Income Tax rate. However, these guidelines are futuristic and hence, in future, if Income Tax is allowed separately, the same shall be allocated over different voltages using the same principles as applied for allocation of RoE.

6. IMPLEMENTABILITY ISSUES AND GENERAL DIRECTIONS TO DISTRIBUTION LICENSEES

6.1. The implementation of the above guidelines depends a lot on availability, quality and granularity of asset base data available with the distribution licensees. Therefore, the Distribution Licensees are directed to update their records and systems to the extent possible, so as to achieve successful implementation of these guidelines.

6.2. Distribution Licensees who do not have ERP system or SAP system are directed to immediately prepare a roadmap for acquisition of requisite hardware and software so as to transfer asset base data from the presently manual systems to SAP system.

6.3. Considering the various data related issues and data organization required for implementation of these guidelines, these Guidelines shall come into force from 01.04.2025 i.e. from the commencement of the fifth MYT Control Period. However, in order to test these guidelines and for better recognition of implementation and other issues, the Distribution Licensees shall, along with the existing method of computation of wheeling charges, also present their asset ratios and consequent division of various items of Distribution Wires ARR over different voltages using the principles of these Guidelines, in their upcoming MTR Petitions.

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