

Fax:

SUKKUR ELECTRIC POWER COMPANY

Office of the Chief Executive Officer, SEPCO, Sukkur

0719310044

071-5620237

Office of The Director General MIRAD, Al-Sehra Building 2nd Floor,

Near Dist: Jail, Minara Road, Sukkur

No. DG//MIRAD/ SEPCO/ 460-68 ^

Dated: ----/ 03/ 2023

The Registrar. National Electric Power Regulatory Authority (NEPRA), NEPRA Tower, Ataturk Avenue (East), G-5/1, Islamabad.

Subject: SUBMISSION OF PETITION REGARDING USE OF SYSTEM CHARGES.

In Pursuance of Section 7- of NEPRA's Open Access (Interconnection & Wheeling of Electric Power) Regulations 2022. Whereby a Distribution Company shall prepare and submit separate petition to the honorable Authority for determination of its use of System Charges. (Copy attached).

SEPCO in coordination with USAID PSIA / CPPA Consultant performed Cost of Service Study through a cost of service Model after incorporating SEPCO, commercial, financial and technical data, the cost of Service worked out as per Annex- A & B. (Copy attached)

In this regard enclosed please find herewith the petition for determination of Use of System Charges (UoSC) including Cost of Service Study of SEPCO (FY-2022-23) as Annexed-C, thereto forming fundamental basis for the instant petition, for kind consideration and approval of Honorable NEPRA Authority.

For any clarification or additional information or any other matter relating to the said draft document Mr. Bashir Ahmed Shaikh (Director General MIRAD) SEPCO (0336-8277892), dgmiradsepco@email.com) is designated as focal person.

Note:- For Filing this petition, Approval from BOD SEPCO, required if any, shall be submitted later on after getting its approval.

DA/as above.

ef Executive Officer SEPCO. SUKKUR

Copy to:

- 1. Head MOD, CPPA-G, Islamabad.
- 2. Company Secretary BOD, SEPCO, for kind information of Worthy Chairman BOD.
- 3. Chief Technical Officer, SEPCO, Sukkur.
- 4. Chief Engineer Development (PMU), SEPCO, Sukl
- 5. Chief Commercial Officer, SEPCO, Sukkur.
- 6. Finance Director, SEPCO, Sukkur.
- 7. PSO to CEO SEPCO Sukkur.

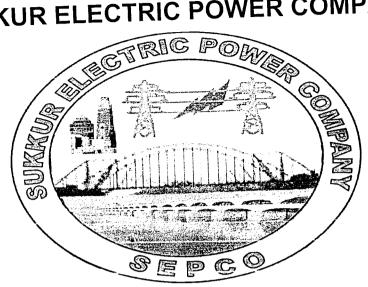
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M (Lic.) M (Law)

Tariff Division Record



SUKKUR ELECTRIC POWER COMPANY



PETITION FOR DETERMINATION

OF

USE OF SYSTEM CHARGES (UoSC)

FOR

FY 2022-23



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Background

As a result, of restructuring, Sukkur Electric Power Company (SEPCO) incorporated under Companies Ordinance 1984, under certificate of incorporation NO. 0074036 on 23rd November 2010 and obtained Certificate for Commencement of Business on 18th August, 2011.

The SEPCO is responsible for Supply of Electricity to almost 0.82 Million Consumers of 10 districts of Sindh province except areas under the jurisdiction of KESC and HESCO, The project covers districts Sukkur, Jacobabad, Shikarpur, Larkana, Ghotki, Kamber, Kandhkot, Dadu, Naushero Feroze, and Khairpur as set out in SEPCO's Distribution License No.21/DL/2011, granted by NEPRA under the NEPRA Act. The Company is Headed by a Chief Executive Officer (CEO) and SEPCO Board of Directors.

Under the Provisions of Regulation of Generation, Transmission & Distribution of Electric Power (Amendment) Act, 2018, SEPCO is deemed to hold a license for Supply of Electric Power to perform the function of Sale of Electric Power in addition to existing Licensee as Distribution Company. The Distribution function now shall, under Section 20, be limited to ownership, operation, management or control of Distribution Facilities for the movement or delivery to Consumers of electric power. The deemed licensee status is expiring on May 01, 2023 and, accordingly, SEPCO has already submitted an Application for Grant of Licence for Supply of Electric Power to the Authority.

After the approval of Competitive Trading Bilateral Contract Market *(CTBCM)* by the honorable Authority on November 12, 2020, several implementation actions were taken. This included issuance of License for the Market Operator (MO), approval of Market Commercial Code (MCC) and promulgation of several Regulations to ensure smooth implementation of CTBCM and create balance in roles, rights and obligations of the stakeholders in the CTBCM.

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Grounds of Petition:

Pursuant to the relevant directions of National Electricity Policy 2021 ("NE Policy-2021") read with Section-7 of the NEPRA's Open Access (Interconnection and Wheeling of Electric Power) Regulations, 2022 ("Open Access Regulations"), following are the grounds for petition for determination of use of system charges:

- a. In compliance with the NE Policy-2021 Clause 4.4, Clause 5.5.2(f), Clause 5.5.2(g), Clause 5.5.4 and Clause 5.6.5 and;
- b. In compliance with the Section-7 of Open Access Regulations, each distribution licensee, in consultation with the respective supplier of last resort shall, within ninety days following the date of notification (i.e. 02.11.2022) of Open Access Regulation, submit separate petition to the Authority for Determination of Use of System Charges (UoSC).

Directions in National Electricity Policy, 2021:

The National Electricity Policy, 2021 issued under Section 14A of the NEPRA's Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997 ("The Act") was prepared by the Government of Pakistan for the Development, Reform, Improvement and Sustainability of the Power Market and Power Sector.

The National Electricity Policy identifies the major goals sought to be achieved for the Power Sector, and in this respect, provides Policy directions. It also provides the key Guiding Principles to develop subservient frameworks that will steer the decision-making in the power sector to achieve identified goals.

Various sections of the said National Electricity Policy, 2021, as relevant to the instant petition, are provided in the below lines.

Clause 4.4 (Financial Viability):

Clause 4.4.1 "Sustainability of the entire power sector pivots around the financial and commercial viability of its individual sub-sectors. This will be done by:

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- a) Promoting investments on least cost basis balanced with development in the underserved areas;
- b) Having cost-reflective tariffs in transmission and distribution, to the extent feasible:
- c) Timely passing of costs to the consumers, while netting off any subsidies funded by the Government; and
- d) Recovery of costs arising on account of open access, distributed generation, etc.

Clause 5.5 (Market Development and Operation):

Clause 5.5.2(f) "providing a level playing field to all market participants through uniform application of cross-subsidization and other grid charges to consumers of all suppliers";

Clause 5.5.2(g) "the Government shall take a decision on the recovery of costs that arise due to advent of the open access and market liberalization;"

Clause 5.5.4 "In order to ensure implementation of wholesale market design and its further evolution, the Regulator shall in a timely manner frame, modify and evolve regulatory framework for, inter alia, supply, procurement, open access / wheeling, competitive bidding, import of power, and ensure effective market monitoring and enforcement. Provided that after implementation of CTBCM, every transmission licensee and distribution licensee shall offer, to all market participants, non-discriminatory open access / wheeling to its respective transmission or distribution system and interconnection services in accordance with CTBCM on the terms determined under the policy and legal framework."

Clause 5.6 (Cost of Service, Tariff and Subsidies):

Clause 5.6.5 "The Regulator, in order to ensure liquidity of the power sector, provide a level playing field for the development of wholesale market and to facilitate prudent projects of the Government, may impose additional charge(s) which shall be deemed to be costs incurred by the distribution companies / electric power supplier(s). Such additional charge may take into account the sustainability, socio-economic objectives and commercial viability of the sector, affordability for the consumers and the policy

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of uniform tariff. Similarly, the Government may also incorporate, in the consumerend tariff, any surcharge imposed by it, which shall also be deemed to be cost incurred by the distribution companies / electric power supplier(s) and shall be collected by them in discharge of their public service obligations."

Legal and Regulatory Framework:

The approved design of Competitive Trading Bilateral Contract Market (CTBCM) provides the right of choice to the eligible Bulk Power Consumers (BPCs) to opt for any Supplier of Electric Power. The design, within the framework of the Act, also provides the concept of Competitive Supplier of Electric Power besides the Supplier of Last Resort, for the purposes of said right of choice to the BPCs within the said wholesale market design.

As per provision of Clause 5.5.4 of the said National Electricity Policy, 2021, the honorable Authority promulgated / specified several Regulations to ensure effective implementation of the market regime in Pakistan. This included promulgation of National Electric Power Regulatory Authority Open Access (Interconnection and Wheeling of Electric Power) Regulations, 2022 ("Open Access Regulations").

For the purpose of this petition for determination of Use of System Charges in terms of mentioned Open Access Regulations, following terms as defined in the legal and regulatory framework are reproduced as below:

Clause 2 (Definition) of the NEPRA's Act 1997 (Amended):

Clause 2(ii) "bulk-power consumer" means a consumer who purchases or receives electric power, at one premises, in an amount of one megawatt or more or in such other amount and voltage level and with such other characteristics as the Authority may specify and the Authority may specify different amounts and voltage levels and with such other characteristics for different areas".

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Important definitions provided in Section-2 of NEPRA's Open Access Regulations are provided below:

2(1) (m) "open access" means the access to a network licensee's system or its associated facilities for movement and delivery of electric power, subject to the terms and conditions as provided in the Act, these regulations and use of system agreement, on non-discriminatory basis to:

- (i) an electric power supplier for supply of electric power to its consumer(s); or
- (ii) a captive generating plant for delivery of the electric power from generation facility to the destination of its use; or
- (iii) any other person, including a licensee for delivery of electric power from a designated place to another designated place;

2(1) (n)"open access user" means any person who is availing open access under these regulations;

2(1)(r) "use of system charges" shall include all charges related to use of distribution system, use of transmission system, system operator services, market operator services, metering service provider services and any other charges as determined by the Authority that may arise due to advent of the open access and market liberalization.

Part-III (OPEN ACCESS) Section-5 (Obligation to provide open access) is reproduced hereunder:

- (1) "A network licensee shall establish, operate and maintain its distribution system or transmission system, as the case may be, in a manner that ensure nondiscriminatory open access in accordance with the Act, theses regulations, Market Commercial Code, Grid Code, Distribution Code and other applicable documents.
- (2) A network licensee shall, on an annual basis, prepare an open access report demonstrating compliance with these regulations and licence terms and conditions, with the detail of its open access users, available and planned capacity, any issues identified in provision of open access, and any instances

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- where open access was denied along with justification thereof. The said report shall also be made available on the website of the network licensee.
- (3) The report required under sub-regulation (2) shall be prepared and submitted to the Authority within a period of one month from the date of end of respective financial year and shall also be made available on the website of the network licensee.
- (4) The distribution company shall develop the use of system agreement in accordance with the minimum provisions provided in Schedule I within ninety days of the notification of these regulations and shall obtain the approval of the Authority and publish the same in its website."

Section-7 (Filing of petition and determination of use of system charges) is reproduced hereunder:

"Within ninety days following the date of notification of these regulations, each distribution licensee, in consultation with the respective supplier of last resort, shall prepare and submit separate petition to the Authority for determination of its use of system charges. Such petition shall be accompanied with a statement which will set out the basis upon which the use of system charges shall be calculated in such manner and with such details as shall be necessary."

Section-8 (Wheeling of electric power) is reproduced hereunder:

"An open access user shall be entitled to wheel electric power using system of network licensee subject to compliance with these regulations and the Market Commercial Code, upon coming into effect, and use of system agreement."

Technical and Financial Attributes:

Adjoining the purposes of CTBCM, directions of the National Electricity Policy, 2021 and stipulations of the legal and regulatory framework; following understandings are inferred:

i) The network licensee, the SEPCO for the purposes of instant petition, is obligated to provide open access, to its network, to the open access users on non-discriminatory basis.

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- For the said obligation, the SEPCO is entitled for recovery of Use of System Charges (*UoSC*) in line with Use of System Agreement, as determined by the honorable Authority.
- iii) The use of system charges shall include:
 - a. Transmission Use of System Charges (NTDC, PGC) irrespective of the placement of BPC and the respective Generator.
 - b. System Operator Charges.
 - c. Metering Service Provider Charges.
 - d. Market Operator Charges.
 - e. Distribution Margin Charges w.r.t. the voltage level (132kV, 11kV etc) and consumer category wise for all possible BPCs.
 - f. Cross-Subsidy Charges (consumer category wise for all possible BPCs)
 - g. Stranded Cost/Capacity (consumer category wise for all possible BPCs)
 - h. Technical Transmission and Distribution Losses
- iv) With reference to the above elements of use of system charges, following clarification shall apply for clarity of application:
 - a. Currently applicable Transmission Use of System (TUoS) Charges, as already determined by the honorable Authority, compositely represent the charges relating to Transmission Network Operator(s) / Licensee(s), System Operator and Metering Service Provider. Accordingly, the said TUoS Charges remain part of use of system charges till separate charges for each of the said service providers are separately determined by the honorable Authority.
 - b. Market Operator Fee (MOF)
 - c. Charges will be recovered by Market Operator as per the mechanism provided in the Market Commercial Code. Accordingly, without prejudice to being part of Cost of Service of SEPCO, these shall not form part of use of system charges to be recovered directly by SEPCO.
 - d. Cross subsidy will be assessed based on Cost of Service analysis for the applicable consumer categories of all possible BPCs, which is according to the principles of uniformity as provided in the National Electricity Policy, 2021 (referred above).

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- e. Subject to the decision of the Government on the recovery of costs that arise due to advent of the open access and market liberalization, the Stranded Capacity Costs will be included in the use of system charges.
- f. As the transmission and distribution losses will be charged to market participants of open access through the mechanism as explained in the Market Commercial Code, therefore, such charges shall not be levied under this use of system charges as requested under this instant petition.

Explanation:

The use of system charges will be determined in terms of metered quantities (kWh or kW), in consideration of allowed %age of losses and also that arrangements under the Market Commercial Code (the parties, the BPC, Competitive Supplier and/or Generator) shall be committing to the Capacity Obligation (including all losses and reserve margin up to bus-bar) through Firm Capacity, therefore, such transmission or distribution losses, as the case may be, will not be charged separately. However, for the purposes of transparency of charges, the impact of such losses may be separately disclosed.

- g. The use of system charges, including the Distribution Margin Charges, as requested by SEPCO and to the extent approved by Authority, will be applicable with reference to those eligible Bulk Power Consumers (BPCs) who opt for supply from a competitive supplier, other than supplier of last resort. (SOLR)
- h. The use of system charges shall be with reference to the voltage level (132/66kV, 11/33kV) for the applicable consumer categories of all possible BPCs. The component-wise Cost of Service as per outcome detailed Cost of Service Study *Annex-A* and consequent assessment, as detailed above, of component-wise Use of System Charges for the applicable BPCs is provided at *Annex-B*.
- i. Power Factor Penalty as provided in applicable documents shall remain applicable in addition to the Use of System Charges.
- j. Any taxes and surcharges as imposed by the Government shall be applicable.

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Summarizing the above, following is the abstract of entitled entities for each element of the use of system charges:

Sr. No.	Use of System Charge Element	Entitled Entity	
1.	Transmission Use of System Charge	NTDC and other TSPs through NTDC / NGC.	
2.	System Operator Charge / Fee	System Operator through NTDC.	
3.	MSP Charge / Fee	MSP through NTDC	
4.	Distribution Use of System Charge	SEPCO as Distribution Licensee	
5.	Cross Subsidy	SEPCO as SOLR (Supply Licensee)	
6.	Stranded Capacity Costs	SEPCO as SOLR (Supply Licensee)	

Basis of Use of System Charges

The instant petition for determination of use of system charges has been developed based on Cost of Service Study (FY 2022-23) carried out by SEPCO forming integral part of this petition and provided separately as attached here to as *Annex-A*.

Method for recovery of Use of System Charges

The instant petition is for determination of use of system charges for recovery of costs and charges relating to service providers (SO, TNO, MSP, DNO), stranded capacity costs and the cross-subsidy currently being contributed by the eligible BPCs. It is pertinent to mention that most, if not all, costs and charges are fixed in nature, the natural mode of recovery should be the fixed (in terms of Rs./kW/Month) charge. However, following options are available for consideration and determination:

- Use of system charges recovery in term of Rs./kW/Month metered shall provide guaranteed stream of revenue to cover for costs, which are fixed in nature. This may, however, over burden the relevant consumers thus undermining the very purpose of CTBCM and open access regime.
- ii) Use of system charges recovery in term of Rs./kWh will render the service providers and the SOLR to face the revenue loss arising from low load factor of the eligible BPCs. On the other hand the open access users shall be benefitted for any favorable Energy or Capacity Imbalance at the Market this option may

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- not provide a balanced approach to promised sharing of risks and rewards under CTBCM regime.
- iii) Use of system charges recovery through a hybrid approach, i.e. partly through fixed charge in terms of Rs./kW/Month (subject to minimum MDI compared to the contracted load) and partly in terms of Rs./kWh may provide a balanced plausible approach for all the involved parties. It is submitted that, in-order to ensure level playing field for consumers of SOLR and Competitive Supplier, the recovery of use of system charges may have same charging mechanism.

As already mentioned, *Annex-B* to this petition also include proposed rates to be charged under each of the Three (3) options narrated above.

It is, however, noted that the methodology and process as per FACOS model, for the purpose of allocation of demand (kW or MW) related costs, allocates single system peak demand (of SEPCO) to different categories to arrive at the allocation base. This allocation, irrespective of being rational, judicious and in line with international norms, results in less than actual (billable) MDIs of respective customers. Accordingly, taking the same MW demand as denominator for demand (MW) based rate making will result in higher per MW rates. In consideration thereof, a second proposal (Proposal-2) for arriving at demand based rates as per option (i) above, i.e. whole cost recovery in terms of Rs./kW and option (iii), hybrid partial cost recovery in terms of Rs./kW; has been developed based on billable MDIs of B-3, B-4, C-2(b) & C-3(a) customer categories and provided as *Annex-B1* herewith.

Mechanism for Adjustment / Indexation of Use of System Charges:

Each component of use of system charges detailed in the instant petition shall be subject to periodic adjustment / indexations. Whenever these components are adjusted for regulated consumers of the suppliers of last resort, at the same time, the corresponding adjustment in the relevant component of the proposed Use of System Charges for eligible BPCs shall simultaneously be made.

Petition for Determination of UoSC for FY 2022-23

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Applicable Categories / Classification of Eligible BPCs:

While, in terms of existing stipulation contained in the Act, a consumer who purchases or receives electric power, at one premises, in an amount of one megawatt or more is considered as Buik Power Consumer, following position, with regard to consumer with one megawatt or more load at connection voltage 11 kV and above, is brought out for consideration:

Sr.	Consumption	Tariff	Voltage	Remarks
No.	Category	Category	Level	
1.	Industrial Consumer ranging from 500 kW to 5000 kW.	B-3	11/33 kV	B-3 consumer ranges from 500 kW to 5000 kW. It is clarified here that the consumers of this category below 1MW shall not be treated as eligible BPCs for CTBCM. The use of system charges indicated for B-3 category will apply in case of eligible BPC.
2.	Industrial	B-4	66/132 kV	B-4 consumer ranges above 5000 kW.
3.	Bulk Supply Ranging from 500 kW to 5000 kW.	C-2(b)	11/33 kV	Bulk Supply consumer ranges from 500 kW to 5000 kW. Although, the Bulk Supply C-2(a) customers are at 11/33 KV connection level. It is clarified here that the consumers of this category below 1MW shall not be treated as eligible BPCs for CTBCM. The use of system charges indicated for C-2(b) category will apply for C-2(a). Further, the consumers falling under the resale shall not be considered as eligible BPC.
4.	Bulk Supply	C-3(a)	66/132 kV	C-3(a) consumer ranges above 5000 kW. The use of system charges indicated for C-3(a) category will apply for C-3(b).
5.	Housing Colonies attached to Industries	Н	N/A	As per the existing tariffs, no kW sanctioned load quantification or connection voltage is applicable to H tariff category. Further, these connections are resale in nature. Accordingly, these are not considered BPC for the purposes of this petition.

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Other Important Aspects:

Following paragraphs of the petition highlights other important aspects which shall be taken into account while determining the said charges.

Government Subsidies

Any subsidy provided by the Government to the industrial or any other eligible BPC, as applicable, will be dealt with according to the directions and terms and conditions thereof as decided by the Government. However, for the purposes of this petition, such subsidies are not considered.

Captive Power Producers and Users:

- (1) A captive power producer / user using the SEPCO's network for wheeling of power to User destination will be considered "Market Participant" in terms of Market Commercial Code and will be dealt with accordingly. The use of system charges, except the Cross-Subsidy and Stranded Capacity cost, shall fully apply.
- The cases of captive generation and consumption points at the same location taking additional supply from the local supplier of last resort (SOLR) shall be considered a regulated consumer of the SOLR with applicable regulated tariff. The quantum of additional sanctioned / contracted load (in terms of MW) shall be considered to determine its status as BPC in terms of the Act. In case, such BPC choose to exercise option for a competitive supplier, the use of system charges shall apply in full.

Applicability of Stranded Capacity Costs

The costs arising on account of market liberalization and advent of open access shall be the capacity charges/stranded costs to be paid by all eligible BPCs of a competitive supplier as detailed in this instant petition and the amount of such capacity charges shall be the same as the total generation capacity charges recovered from the equally placed bulk power consumers of the suppliers of last resort either in a volumetric form (kWh) and/or through fixed charges and such charges shall continue to be paid till such time as may be decided by the Federal Government as per the National Electricity Policy, 2021.

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Applicability of Use of System Charges on New Eligible BPCs

The Use of System Charges provided in the instant petition shall be applicable to all such BPCs who will opt to get supply of electric power from competitive supplier including the captive generator using the network to wheel its power to the destination of its use. Such charges shall be fully applicable to any new eligible BPC or incremental consumption, obtaining supply of electric power from competitive supplier without any exception.

Prayer:

In view of the above submissions, it is, humbly requested that the Authority may kindly consider and determine the Use of System Charges as calculated in the attached *Annex-B* and/or *Annex-B1*, which contain detailed analysis.

Petition for Determination of UoSC for FY 2022-23

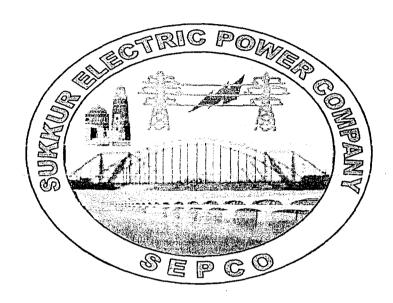
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Annex-A

SUKKUR ELECTRIC POWER COMPANY



COST OF SERVICE STUDY

FOR

FY 2022-23





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Cost of Service Study for FY 2022-23





Cost of Service (COS) Study:

A Cost of Service (COS) study is the fundamental tool for evaluating and establishing utility rates. With industry and technology changes, utilities are expanding the scope and use of COS studies and are preparing studies that distinguish full and partial requirements customer classes. This is due to the increasing presence of distributed energy resources and/or to accommodate customers' expectations of having more control over their usage and utility bills.

Cost of Service is the total cost incurred by a utility Company / DISCO in providing services to its customers and the allocation of the same to customer classes and / or voltage levels.

Fully Allocated Cost of Service Study (FACOS) Model:

FACOS is a model developed in MS Excel with the support of USAID for DISCO's to conduct Cost of Service Study. The methodology used to build the FACOS Model follows very closely the standards that are used internationally. The Model performs the standard three steps encompassed in most of Cost Studies, namely, functionalization, classification, and allocation.

Major Steps of Cost of Service Study:

A class cost of service study begins with a detailed documentation of the numerous budgetary elements of the total revenue requirement. The detailed revenue requirements are the data inputs to the FACOS. At a high level, the FACOS process consists of the following three (3) basic steps:

- **1. Functionalization** The identification of each cost element as one of the basic utility service "functions" (e.g. generation/Power Purchase Price, transmission, distribution and customer).
- 2. Classification The classification of the functionalized costs based on the billing component/determinant that each is associated with (e.g. kWs of capacity, kWhs of energy or number of customers).
- **3.** Allocation The allocation of the functionalized and classified costs to customer classes, based on respective service requirements / parameters e.g. kWs of capacity, kWhs of energy and the number of customers) of each class.

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Fundamental Assumptions:

Table 1

Description	FY 2022-23
Allowed Rate of Return (WACC) (NEPRA Determination)	17.0%
Capital Work in Progress ("CWIP")	CWIP 100%
Working Capital Allowance to be included in Rate Base	NO
Prior Year Adjustment (Rs. In Millions)	2946.00
Demand Allocation Methodology (highest coincident peak in the year).	1 CP
Alternative is 12CP that means average of 12 months coincident peak.	(Single Annual Peak)
Customer Growth %	1.12%
Model Year	FY 2022-23
Base Year	FY 2021-22

Projections and Revenue Requirement for Financial Year 2022-23:

The Revenue Requirement (RR) is the fundamental input to the Cost of Service of SEPCO for allocation to different categories of consumers based on Capacity (kW), Energy (kWh) and number of consumers. The Table 2 below explains the basis and sources for arriving at Revenue Requirement (or overall Cost of Service) of SEPCO.

Table 2

Description	FY 2022-23	Source	
Units Purchased (MkWh)	4,206.47		
Units Sold (MkWh)	2,792.00		
Assessed T&D Losses	33.63%	NEPRA MYT Determination FY 2022-23	
Consumer Growth	1.12%	NEFRA WITT Determination F1 2022-23	
Average Monthly MDI (MW)	710.00		
(Non-Coincidence at CDPs)	710.00		
Energy Purchase Price (Rs/kWh)	10.46		
Capacity Charges (Rs/kW/Month)	3,658.00		
T.UoS Rate (Rs/kW/Month)	657.50		
MOF (Rs/kW/Month)	1.71	Actual basis in FY 2022-23	
Energy Charges (Rs. M)	43,999.63		
Capacity Charges (Rs. M)	31,166.16		
T.UoS Rate (Rs. M)	5,601.90	Calculated by using above rates	
MOF (Rs. M)	14.57		
Power Purchase Price (Rs. M)	80,782.26		
O&M Cost (Rs. M)	10,053.67		
Depreciation (Rs. M)	3,023.72		
RORB (Rs. M)	4,672.59	NEPRA MYT Determination FY 2022-23	
Gross Distribution Margin	17,749.98	NEPRA MITI Determination FT 2022-25	
Other Income (Rs. M)	887.65		
Distribution Margin (net)	16,862.33		
Prior Year Adjustment (Rs. M)	2,946.00		
Revenue Requirement (Rs. M)	100,590.59		
Cost per KWH	36.03		

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Summary of Revenue Requirement:

The extract of Revenue Requirement is provided in the Table 3 below:

Table 3

Summary of Revenue Requirement			
Description	FY 2022-23 Rs. (M)		
Energy Charges	43,999.63		
Capacity Charges	31,166.16		
T.UoS Rate	5,601.90		
MOF	14.57		
Power Purchase Price	80,782.26		
O&M Cost	10,053.67		
Depreciation	3,023.72		
RORB	4,672.59		
Other Income (less other income)	887.65		
Distribution Margin	16,862.33		
Prior Year Adjustment	2,946.00		
Revenue Requirement	100,590.59		

Line Losses Charged on Voltage Levels:

Line losses taken from SEPCO's MYT Determination for FY 2022-23 as a percentage on purchased units is given in **Table 4**. Line losses as a percentage on received units at each voltage level are calculated on the basis of sales data of FY 2021-22.

Table 4

Losses FY 2022-23							
Voltage Level	0.2 KV	0.4KV	11KV	132KV	Total	Source	
Losses %age on purchased units	3.34% & 1.4% Law & order		11.46%	1.69%	17.05%	Target as per NEPRA Determination is 17.05%	
Losses %age on received units	23.2	21%	11.69%	4.51%	33.63%	Calculated as applied on units received at each voltage level.	

Customer Classification by Voltage Level:

While the Cost of Service study is based on allocation of the Revenue Requirement on Classes (categories) of the consumers at different voltage levels; the **Table 5** below provides mapping of existing categories of consumers on the basis of applicable voltage levels.

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Table 5

Classification by Voltage Level						
Voltage	132/66kV	11kV	0.4kV	0.2 kV		
	B4	B3	A1b	A1a		
	C3a	C2a	A2b	A2a		
	C3b	C2b	A2c	B1a		
		H1	A3a	C1a		
C		H2	B1b	E1i		
Si		K1a	B2a	E1ii		
tor		K1b	B2b	E2		
Customer			C1b			
			C1c			
Class			D1a			
S			D1b			
			D2a			
			D2b			
			G1			
			G2			

SEPCO Tariff determined by NEPRA in June-2022: Tariffs for various categories of SEPCO consumers as determined by NEPRA vide their determination No. NEPRA/R/ADG(Tariff)/567/SEPCO/8695-8697, Dated 02.06-2022 are provided in **Table 6** below.

Table 6

	I able 6	- (00 00 0000)					
South Killington L	NEPRA DETERMINED TARIFF (06-06-2022)						
	TARIFF CATAGORIES	Fixed Charges	Variable Charges				
144	<u>Landa Barana (A. 1914). An an</u>	Rs/kW/M	Rs/kWh				
A1 (a)	RESIDENTIAL -A1		F 00				
	Up to 50 Units Life line		5.00				
ii	51-100 units Life line		21.32				
iii	01-100 Units		24.35				
iv	101-200 Units		26.35				
٧	01-100 Units		26.97				
νi	101-200 Units		30.16				
vii	201-300 Units		30.67				
viii	301-400Units		31.92				
ix	401-500Units		32.37				
x	501-600Units		33.37				
хi	601-700Units		34.37				
xii	Above 700 Units	<u> </u>	35.37				
A1(b)	Time of Use (TOU) - Peak		34.37				
	Time of Use (TOU) - Off-Peak		26.99				
E-1(i)	Temporary E-1 (i)		35.37				
	COMMERCIAL AS						
	COMMERCIAL - A2	ļ					
A2 (a)	Commercial - For peak load requirement up to 5 kW		31.35				
A2 (b)	Sanctioned load 5 kw and above	500	29.39				
A2 (c)	Time of Use (TOU) - Peak (A-2)		34.40				

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Annex-A

,	Time of Use (TOU) - Off-Peak	500	28.67
E-1 (ii)		-	31.37
L-1 (II)	Temporary E-1 (ii)		
	INDUSTRIAL		
B1(a)	B1		30.07
B1(b)	B1- TOU (Peak)		33.96
	B1 - TOU (Off-peak)		27.86
B2 (a)	B2	500	29.96
B2 (b)	B2 - TOU (Peak)		33.96
	B2 - TOU (Off-peak)	500	27.36
В3	B3 - TOU (Peak)		33.96
	B3 - TOU (Off-peak)	480	28.78
B4	B4 - TOU (Peak)		33.96
	B4 - TOU (Off-peak)	440	28.58
E-2	Temporary E-2		32.96
	Levi II. Ir		
04 (-)	BULK		30.98
C1 (a)	C1(a) up to 5 kW	F00	30.78
C1 (b)	C1(b) exceeding 5 kW	500	34.37
C1 (c)	Time of Use (TOU) - Peak	500	
00 (-)	Time of Use (TOU) - Off-Peak	500	27.77
C2 (a)	C2 Supply at 11 kV	500	30.68
C2 (b)	Time of Use (TOU) - Peak	460	34.37 29.17
02 (=)	Time of Use (TOU) - Off-Peak	460	30.57
C3 (a)	C3 Supply above 11 kV	440	34.37
C3 (b)	Time of Use (TOU) - Peak	440	28.97
	Time of Use (TOU) - Off-Peak	440	28.37
	AGRICULTURAL TUBE WELLS - Tariff D		
D1 (a)	D1 Scarp		30.98
D2 (a)	D2 Agricultural Tube-wells	200	34.37
D1 (b)	Time of Use (TOU) - Peak	200	27.77
	Time of Use (TOU) - Off-Peak		30.98
D2 (b)	Time of Use (TOU) - Peak		34.37
	Time of Use (TOU) - Off-Peak	200	27.77
G	Public Lighting G		34.67
Н	Residential Colonies H		34.97
K1	Special Contracts - Tariff K (AJK)		
K1 (i)	Time of Use (TOU) - Peak		
	Time of Use (TOU) - Off-Peak		
A3	General Service		31.41
L	1 001.0.01 001.1100		



Results from FACOS Model:

Revenue Requirement Allocation (in Percentage):

While developing the Fully Allocated Cost of Service Model, the detailed study for allocation of cost of service and rate base (for each component) to cost drivers (energy, demand and customer) was developed. Overall summary of the allocation is given in **Table 7** below:

Table 7

Revenue Requirement Allocation %age											
Discription	Distribution Margin	Energy	Demand	Customer	Total						
Energy Charges	-	100%			100%						
Capacity Charges	-	-	100%	-	100%						
T.UoSC	-	. -	100%	-	100%						
MOF	-	-	100%	-	100%						
Distribution Margin	Distribution Margin	-	85%	15%	100%						

Revenue Requirement Allocation to Energy, Demand and Customer.

Based on the allocation percentages given in above table, the revenue requirement allocated to energy, demand and customer (cost triggers) is shown in **Table 8** below.

Table 8

······································			
Requirement	Allocation Rs.	(M)	
Energy	Demand	Customer	Total
44,000	-	-	44,000
-	31,166	-	31,166
-	5,602	-	5,602
	15	-	15
44,000	36,783	-	80,782
-	14,333	2,529	16,862
-	1,915	1,031	2,946
44,000	53,031	3,560	100,591
	Energy 44,000 44,000 - 44,000	Energy Demand 44,000 - - 31,166 - 5,602 - 15 44,000 36,783 - 14,333 - 1,915	Requirement Allocation Rs. (M) Energy Demand Customer 44,000 - - - 31,166 - - 5,602 - - 15 - 44,000 36,783 - - 14,333 2,529 - 1,915 1,031

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Annex-A

Revenue as per NEPRA Tariff by Customer Category and Voltage Level The **Table 9** below provides detailed category-wise estimated revenue and average (Rs./kWh) thereof. Whereas the **Table 10** is summary of the said category-wise estimated revenue based on the supply Voltage level of relevant customer category, with average rate (Rs./kWh) thereof. As already mentioned, the calculation of revenue is based on NEPRA Tariff determined vide *No. NEPRA/R/ADG(Tariff)/567/SEPCO/8695-8697, Dated 02.06-2022* already provided in (Table 6 above).

Table 9

,	FY 2022-23										
Consumer Category	MDI MW	Sales (GWh)	Fixed Charge Rs. (M)	Variable Charge Rs. (M)	Total Revenue Rs. (M)	Rs./KWH					
Residential A1(a)	422	1650	27126	29567	56693	17.92					
Residential A1(b)	9	15	553	258	811	17.17					
Commercial A2(a)	48	75	3054	1343	4397	17.92					
Commercial A2(b)	10	12	661	201	862	17.17					
Commercial A2(c)	33	132	2136	2268	4404	17.17					
Industrial B1(a)	19	7	1244	127	1371	17.92					
Industrial B2(a)	26	12	1685	200	1885	17.17					
Industrial B1(b)	22	43	1392	730	2122	17.17					
Industrial B2(b)	79	266	5083	4572	9655	17.17					
Industrial B3	22	148	1023	1956	2980	13.25					
Industrial B4	1	18	40	217	257	11.76					
Single Point Supply C1(a)	1	2	68	27	95	14.05					
Single Point Supply C1(b)	1	20	33	341	375	17.17					
Single Point Supply C1(c)	2	8	98	100	197	13.25					
Single Point Supply C2(a)	0	16	18	191	208	11.76					
Single Point Supply C2(b)	9	59	549	1006	1555	17.17					
Single Point Supply C3(a)	11	87	519	1154	1672	13.25					
Single Point Supply C3(b)	0	0.0	2	0	2	0.00					
AgriculturalD1(a)	7	4	458	75	533	17.17					
AgriculturalD2(a)	13	5	831	84	915	17.17					
AgriculturalD1(b)	25	64	1622	1098	2720	17.17					
AgriculturalD2(b)	2	8	114	129	243	17.17					
Temporary Supply E1(i)	0	0	0	0	0	17.92					
Temporary Supply E1(ii)	0	0	4	2	6	17.92					
Temporary Supply E2	0	0	17	3	20	17.92					
Public Lighting G	21	37	1373	638	2011	17.17					
Residential Colonies H	1	1	29	10	40	13.25					
A3 General	43	105	2747	1799	4546	17.17					
Total	827.11	2792.00	52479	48097	100576	17.23					





Table 10

			FY 202	22-23		
Consum er Class	MDI MW	Sales (GWh)	Fixed Charge Rs. (M)	Variable Charge	Total Revenue Rs. (M)	Rs./KW H
0.2 KV	490.58	1,734.07	31,513.42	31,071.52	62,584.93	17.92
0.4 KV	299.49	780.26	19,238.13	13,397.73	32,635.86	17.17
11 KV	35.62	242.96	1,668.84	3,219.29	4,888.12	13.25
132 KV	1.42	34.70	59.08	408.03	467.11	11.76
G. TOTAL	827	2792	52479	48097	100576	17.23

Cost of Service Functionalized Rates (Tariff Wise)

Based on the allocation of overall Revenue Requirement of SEPCO to customers categories, the resultant functional amounts (Rs. in million) for each customer category are summarized at **Table 11** below.

Table 11

	-				FY 2022-23						
			Energy	Demand	Generati	on Cost	Transmission	MOF	Distrib	ution Cost	
Classes	Voltage Level	No of Customers	GWH	MW	Energy (Rs. M)	Demand (Rs. M)	Cost (Rs. M)	Cost (Rs. M)	Demand (Rs. M)	Customer (Rs. M)	Total Cost
Residential – A1(a)	0.2kV	657,277	1,649.83	422.28	27,493.60	16,591.22	2,982.16	14	7,552.75	2,072.93	56,70
Residential - A1(b)	0.4kV	2,203	15.01	8.62	250.07	338.49	60.84	0.29	154.09	7.64	81:
Commercial A2(a)	0.2kV	122,901	74.93	47.55	1,248.73	1,868.11	335.78	1.58	850.41	94.15	4,399
Commercial A2(b)	0.4kV	292	11.71	10.30	195.13	404.51	72.71	0.34	184.14	5.96	86
Commercial - A2(c)	0.4kV	4,365	132.07	33.25	2,200.86	1,306.46	234.83	1.10	594.73	67.22	4,405
Industrial B1(a)	0.2kV	4,509	7.08	19.36	118.06	760.82	136.75	0.64	346.35	8.90	1,377
Industrial – 82(a)	0.4kV	640	11.64	26.23	193.98	1,030.57	185.24	0.87	469.14	5.92	1,886
Industrial B1(b)	0.4kV	5,640	42.52	21.66	708.64	851.11	152.98	0.72	387.45	21.64	2,12
Industrial B2(b)	0.4kV	2,783	266.22	79.13	4,436.37	3,108.89	558.80	2.62	1,415.25	135.49	9,65
Industrial B3	11kV	27	147.62	21.84	1,889.07	658.91	118.43	0.56	245.91	67.27	2,980
Industrial 84	132/66kV	2	18.49	0.95	208.97	25.43	4.57	0.02	9.58	8.47	25
Single Point Supply C1(a)	0.2kV	183	1.91	1.06	24.44	41.76	7.51	0.04	19.01	2.40	9.
Single Point Supply - C1(b)	0.4kV	151	19.87	0.52	331.07	20.46	3.68	0.02	9.32	10.11	375
Single Point Supply C2(a)	11kV	11	7.51	2.09	96.14	52.92	11.31	0.05	23.48	3.42	19
Single Point Supply C3(a)	132/66kV	1	16.21	0.43	183.23	11.44	2.06	0.01	4.31	7.42	20
Single Point Supply C1(c)	0.4kV	179	58.58	8.55	976.15	335.80	60.36	0.28	152.86	29.81	1,55
Single Point Supply C2(b)	11kV	17	87.05	11.07	1,113.95	333.90	60.02	0.28	124.61	39.67	1,67
Single Point Supply C3(b)	132/66kV			0.04		1.09	0.20	0.00	0.41		
Agricultural -D1(a)	0.4kV	1,964	4.39	7.13	73.17	280.18	50.36	0.24	127.55	2.23	53
AgriculturalD2(a)	0.4kV	3,481	4.90	12.93	81.59	507.99	91.31	0.43	231.25	2.49	91
AgriculturalD2(b)	0.4kV	3,999	63.92	25.26	1,065.27	992.34	178.37	0.84	451.74	32.53	2,72
Agricultural D1(b)	0.4kV	37	7.52	1.78	125.25	69.94	12.57	0.06	31.84	3.83	24.
Temporary Supply E1(i)	0.2kV	5	0.01	0.00	0.10	0.00	0.00	0.00	0.00	0.01	(
Temporary Supply — E1(ii)	0.2kV	34	0.13	0.06	2.15	2.42	0.43	0.00	1.10	0.16	
Temporary Supply E2	0.2kV	15	0.18	0.26	2.97	10.29	1.85	0.01	4.68	0.22	20
Public Lighting — G	0.4kV	451	37.16	21.38	619.22	839.82	150.95	0.71	382.31	18.91	2,01
Residential Colonies H	11kV	20	0.78	0.63	9.93	18.91	3.40	0.02	7.06	0.35	4
Azad Jammu Kashmir - K1a	11kV										
Azad Jammu Kashmir - K1b	11kV					•			· · · · · · · · · · · · · · · · · · ·		
A3 General	0.4kV	13,605	104.77	42.76	1,745.96	1,680.11	301.99	1.42	764.83	53.32	4,54
Total		824,793	2,792,00	827.11	45,394,07	32,153.88	5,779.43	27.13	14,546,15	2,702.50	100,603.1



Based on the cost drivers (energy, demand & customers) based allocation of overall Revenue Requirement of SEPCO to the customers categories, the resultant functional (generation, transmission, MO Fee & Distribution) rates (in terms of Rs./kWh, Rs./kW/Month and Rs./Customer / Month, as applicable) are summarized at **Table 12** below.

Table 12

Table 12 FY 2022-23

	T	. 1			FT 20.						
			Energy	Demand	Generat	ion Cost	Transm	MOF	Distrib	ution	
Customer Class	Voltage Level	No. oF Customers	GWh	MW -	Energy (Rs/kWh)	Demand (Rs /kW/ Month)	(Rs /kW/ Month)	(Rs /kW /Month)	(Rs /kW/ Month)	(Rs /Cust/ Month)	Total Rs./kWh
Residential A1 (a)	0.2kV	657,277	1,649.83	422.28	16.66	3,274.12	588.50	2.76	1,490.47	409.07	34.37
Residential A1 (b)	0.4%	2,203	15.01	8.62	16.66	3,274.12	588.50	2.76	1,490.47	73.87	54.07
Commercial A2 (a)	0.2kV	122,901	74.93	47.55	16.66	3,274.12	588.50	2.76	1,490.47	165.01	58.70
Commercial A2 (b)	0.4kV	292	11.71	10.30	16.66	3,274.12	588.50	2.76	1,490.47	48.24	73.68
Commercial A2 (c)	0.4kV	4,365	132.07	33.25	16.66	3,274.12	588.50	2.76	1,490.47	168.45	33.36
Industrial B1 (a)	0.2kV	4,509	7.08	19.36	16.66	3,274.12	588.50	2.76	1,490.47	38.31	193.59
Industrial B2 (a)	0.4kV	640	11.64	26.23	16.66	3,274.12	588.50	2.76	1,490.47	18.82	162.00
Industrial B1 (b)	0.4kV	5,640	42.52	21.66	16.66	3,274.12	588.50	2.76	1,490.47	83.26	49.91
Industrial B2 (b)	0.4kV	2,783	266.22	79.13	16.66	3,274.12	588.50	2.76	1,490.47	142.69	36.28
Industrial B3	11kV	27	147.62	21.84	12.80	2,514.20	451.91	2.12	938.30	256.67	20.19
Industrial B4	132/66kV	2	18.49	0.95	11.30	2,220.40	399.10	1.87	836.46	739.28	13.90
Single P. Supply C1(a)	0.2kV	183	1.91	1.06	12.80	3,274.12	588.50	2.76	1,490.47	188.15	49.82
Single P. Supply C1(b)	0.4kV	151	19.87	0.52	16.66	3,274.12	588.50	2.76	1,490.47	1,617.76	18.86
Single P. Supply C2(a)	11kV	11	7.51	2.09	12.80	2,514.20	451.91	2.12	938.30	136.80	26.26
Single P. Supply C3(a)	132/66kV	1	16.21	0.43	11.30	2,220.40	399.10	1.87	836.46	1,440.78	12.86
Single P. Supply C1(c)	0.4kV	179	58.58	8.55	16.66	3,274.12	588.50	2.76	1,490.47	290.69	26.55
Single P. Supply C2(b)	11kV	17	87.05	11.07	12.80	2,514.20	451.91	2.12	938.30	298.68	19.21
Single P. Supply C3(b)	132/66kV	•	•	0.04	-	2,220.40	399.10	1.87	836.46	-	
Agricultural D1(a)	0.4kV	1,964	4.39	7.13	16.66	3,274.12	588.50	2.76	1,490.47	26.11	121.56
Agricultural D2(a)	0.4kV	3,481	4.90	12.93	16.66	3,274.12	588.50	2.76	1,490.47	16.06	186.90
Agricultural D2(b)	0.4kV	3,999	63.92	25.26	16.66	3,274.12	588.50	2.76	1,490.47	107.35	42.57
Agricultural D1(b)	0.4kV	37	7.52	1.78	16.66	3,274.12	588.50	2.76	1,490.47	179.08	32.40
Temporary - E1 (i)	0.2kV	5	0.01	0.00	16.66	3,274.12	588.50	2.76	1,490.47	253,088.90	17.95
Temporary - E1 (ii)	0.2kV	34	0.13	0.06	16.66	3,274.12	588.50	2.76	1,490.47	219.10	48.63
Temporary - E2	0.2kV	15	0.18	0.26	16.66	3,274.12	588.50	2.76	1,490.47	71.35	112.23
Public Lighting G	0.4kV	451	37.16	21.38	16.66	3,274.12	588.50	2.76	1,490.47	73.73	54.14
Res Colonies H	11kV	20	0.78	0.63	12.80	2,514.20	451.91	2.12	938.30	46.99	51.13
AJK-K1a	11kV	•		-	•	-	•	-			-
AJK-K1b	11kV	-		-	•		•				
A3 General	0.4kV	13,605	104.77	42.76	16.66	3,274.12	588.50	2.76	1,490.47	103.92	43.41
Total	•	824,793	2,792.00	827.11	419.88	85,474.59	15,363.46	72.11	37,562.38	260,049.11	36.03





The above detailed functional rates recapitulated, in terms of Rs./kW/Month, for each function is given in table **Table 13** below.

Table 13

Table 13

			Energy	Demand	I	022-23 ion Cost	Transm	MOF	Distrib	oution	
Customer Class	Voltage	Sales GWh	GWh	MW	Energy (Rs/kW/ Month)	Demand (Rs/kW/ Month)	(Rs /kW/ Month)	(Rs /kW /Month)	(Rs /kW/ Month)	(Rs /kW/ Month)	Total Rs./kWh/ Month
Residential A1 (a)	0.2kV	1,650	1,649.83	422.28	5,425.61	3,274.12	588.50	2.76	1,490.47	409.07	11,190.53
Residential A1 (b)	0.4kV	15	15.01	8.62	2,418.80	3,274.12	588.50	.2.76	1,490.47	73.87	7,848.53
Commercial A2 (a)	0.2kV	75	74.93	47.55	2,188.56	3,274.12	588.50	2.76	1,490.47	165.01	7,709.43
Commercial - A2 (b)	0.4kV	12	11.71	10.30	1,579.43	3,274.12	588.50	2.76	1,490.47	48.24	6,983.52
Commercial A2 (c)	0.4kV	132	132.07	33.25	5,515.58	3,274.12	588.50	2.76	1,490.47	168.45	11,039.89
Industrial B1 (a)	0.2kV	7	7.08	19.36	508.08	3,274.12	588.50	2.76	1,490.47	38.31	5,902.24
Industrial B2 (a)	0.4kV	12	11.64	26.23	616.27	3,274.12	588.50	2.76	1,490.47	18.82	5,990.95
Industrial B1 (b)	0.4kV	43	42.52	21.66	2,726.06	3,274.12	588.50	2.76	1,490.47	83.26	8,165.18
Industrial B2 (b)	0.4kV	266	266.22	79.13	4,672.16	3,274.12	588.50	2.76	1,490.47	142.69	10,170.71
Industrial 83	11kV	148	147.62	21.84	7,208.14	2,514.20	451.91	2.12	938.30	256.67	11,371.34
Industrial B4	132/66k	18	18.49	0.95	18,249.22	2,220.40	399.10	1.87	836.46	739.28	22,446.33
Single P. Supply C1(a)	0.2kV	2	1.91	1.06	1,916.22	3,274.12	588.50	2.76	1,490.47	188.15	7,460.22
Single P. Supply C1(b)	0.4kV	20	19.87	0.52	52,969.41	3,274.12	588.50	2.76	1,490.47	1,617.76	59,943.03
Single P. Supply C2(a)	11kV	8	7.51	2.09	3,841.81	2,514.20	451.91	2.12	938.30	136.80	7,885.15
Single P. Supply C3(a)	132/66k	16	16.21	0.43	35,565.87	2,220.40	399.10	1.87	836.46	1,440.78	40,464.47
Single P. Supply C1(c)	0.4kV	59	58.58	8.55	9,517.79	3,274.12	588.50	2.76	1,490.47	290.69	15,164.33
Single P. Supply C2(b)	11kV	87	87.05	11.07	8,387.91	2,514.20	451.91	2.12	938.30	298.68	12,593.12
Single P. Supply C3(b)	132/66k	-	-	0.04		2,220.40	399.10	1.87	836.46		3,457.83
Agricultural D1(a)	0.4kV	4	4.39	7.13	855.02	3,274.12	588.50	2.76	1,490.47	26.11	6,236.98
Agricultural D2(a)	0.4kV	5	4.90	12.93	525.86	3,274.12	588.50	2.76	1,490.47	16.06	5,897.77
Agricultural D2(b)	0.4kV	64	63.92	25.26	3,514.74	3,274.12	588.50	2.76	1,490.47	107.35	8,977.94
Agricultural D1(b)	0.4kV	8	7.52	1.78	5,863.55	3,274.12	588.50	2.76	1,490.47	179.08	11,398.49
Temporary - E1 (i)	0.2kV	0	0.01	0.00	3,356,753	3,274.12	588.50	2.76	1,490.47	253,089	3,615,197
Temporary - E1 (ii)	0.2kV	0	0.13	0.06	2,905.93	3,274.12	588.50	2.76	1,490.47	219.10	8,480.88
Temporary - E2	0.2kV	0	0.18	0.26	946.37	3,274.12	588.50	2.76	1,490.47	71.35	6,373.57
Public Lighting G	0.4kV	37	37.16	21.38	2,414.10	3,274.12	588.50	2.76	1,490.47	73.73	7,843.68
Res Colonies H	11kV	1	0.78	0.63	1,319.79	2,514.20	451.91	2.12	938.30	46.99	5,273.32
AJK-K1a	11kV	-	-	-		-	-	-	-	-	-
A J K - K1b	11kV	-	-	-	-	-	-	-			-
A3 General	0.4kV	105	104.77	42.76	3,402.46	3,274.12	588.50	2.76	1,490.47	103.92	8,862.23
Total		2,792	2,792.00	827.11	3,541,807	85,474.59	15,363.46	72.11	37,562.38	260,049	3,940,329





Unbundled Rates Rs./kWh (Tariff Wise)

The functional allocation of Revenue Requirement of SEPCO (Generation, Transmission, MO Fee and Distribution Cost) to customers categories, in Rs./kWh are shown in **Table 14** below.

Table 14

FY 2022-23

Customer Class	Voltage	Sales GWh	Demand MW	Generation Rs. /kWh	T. UoSC Rs. /kWh	MOF Rs. /kWh	D. UoSC Rs. /kWh	Total Rate Rs/ kWh
Residential A1 (a)	0.2kV	1,650	422.28	26.72	1.81	0.01	5.83	34.37
Residential A1 (b)	0.4kV	15	8.62	39.22	4.05	0.02	10.78	54.07
Commercial A2 (a)	0.2kV	75	47.55	41.59	4.48	0.02	12.61	58.70
Commercial A2 (b)	0.4kV	12	10.30	51.21	6.21	0.03	16 23	73.68
Commercial A2 (c)	0.4kV	132	33.25	26.56	1.78	0.01	5.01	33.36
Industrial B1 (a)	0.2kV	7	19.36	124.05	19.30	0.09	50.14	193.59
Industrial B2 (a)	0.4kV	12	26.23	105.20	15.91	0.07	40.81	162.00
Industrial B1 (b)	0.4kV	43	21.66	36.68	3.60	0.02	9.62	49.91
Industrial B2 (b)	0.4kV	266	79.13	28.34	2.10	0.01	5.83	36.28
Industrial B3	11kV	148	21.84	17.26	0.80	0.00	2.12	20.19
Industrial B4	132/66kV	18	0.95	12.68	0.25	0.00	0.98	13.90
Single P. Supply C1(a)	0.2kV	2	1.06	34.66	3.93	0.02	11.21	49.82
Single P. Supply C1(b)	0.4kV	20	0.52	17.69	0.19	0.00	0.98	18.86
Single P. Supply C2(a)	11kV	8	2.09	21.17	1.51	0.01	3.58	26.26
Single P. Supply C3(a)	132/66kV	16	0.43	12.01	0.13	0.00	0.72	12.86
Single P. Supply C1(c)	0.4kV	59	8.55	22.40	1.03	0.00	3.12	26.55
Single P. Supply C2(b)	11kV	87	11.07	16.63	0.69	0.00	1.89	19.21
Single P. Supply C3(b)	132/66kV	-	0.04	-	-	-	_	-
Agricultural D1(a)	0.4kV	4	7.13	80.48	11.47	0.05	29.56	121.56
Agricultural D2(a)	0.4kV	5	12.93	120.42	18.65	0.09	47.74	186.90
Agricultural D2(b)	0.4kV	64	25.26	32.19	2.79	0.01	7.58	42.57
Agricultural D1(b)	0.4kV	. 8	1.78	25.97	1.67	0.01	4.74	32.40
Temporary - E1 (i)	0.2kV	0	0.00	16.68	0.00	0.00	1.26	17.95
Temporary - E1 (ii)	0.2kV	0	0.06	35.44	3.37	0.02	9.80	48.63
Temporary - E2	0.2kV	0	0.26	74.32	10.36	0.05	27.50	112.23
Public Lighting G	0.4kV	37	21.38	39.27	4.06	0.02	10.80	54.14
Res Colonies H	11kV	1	0.63	37.17	4.38	0.02	9.55	51.13
A3 General	0.4kV	105	42.76	32.70	2.88	0.01	7.81	43.41
Total	-	2,792	827.11	27.78	2.07	0.01	6.18	36.03

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Volumetric Rates at Each Customer Category

The above functional rates combined in terms of the nature (Fixed or Variable) and resultant rates in terms of Rs./kW/Month and/or Rs./kWh are provided in **Table 15** below.

Table 15

Table 15 FY 2022-23

			FY 2022	. 23			
			Allocated C	lost Rs. (M)		Variable	
Customer Class	Voltage	Sales GWh	Fixed Cost	Variable Cost	Fixed Charge Rs /kW /Month	Charge Rs/kWh	Total Rate Rs/kWh
Residential A1 (a)	0.2kV	1,650	27,140.13	29,566.54	5,355.85	17.92	34.37
Residential A1 (b)	0.4kV	15	553.71	257.70	5,355.85	17.17	54.07
Commercial A2 (a)	0.2kV	- 75	3,055.88	1;342.88	5,355.85	17.92	58:70
Commercial A2 (b)	0.4kV	12	661.70	201.09	5,355.85	17.17	73.68
Commercial A2 (c)	0.4kV	132	2,137.13	2,268.08	5,355.85	17.17	33.36
Industrial B1 (a)	0.2kV	7	1,244.57	126.97	5,355.85	17.92	193.59
Industrial B2 (a)	0.4kV	12	1,685.81	199.90	5,355.85	17.17	162.00
Industrial B1 (b)	0.4kV	43	1,392.25	730.28	5,355.85	17.17	49.91
Industrial B2 (b)	0.4kV	266	5,085.56	4,571.86	5,355.85	17.17	36.28
Industrial B3	11kV	148	1,023.80	1,956.34	3,906.54	13.25	20.19
Industrial B4	132/66kV	18	39.60	217.44	3,457.83	11.76	13.90
Single P. Supply C1(a)	0.2kV	2	68.31	26.84	5,355.85	14.05	49.82
Single P. Supply C1(b)	0.4kV	20	33.48	341.18	5,355.85	17.17	18.86
Single P. Supply C2(a)	11kV	8	97.76	99.56	3,906.54	13.25	26.26
Single P. Supply C3(a)	132/66kV	16	17.81	190.65	3,457.83	11.76	12.86
Single P. Supply C1(c)	0.4kV	59	549.30	1,005.97	5,355.85	17.17	26.55
Single P. Supply C2(b)	11kV	87	518.80	1,153.62	3,906.54	13.25	19.21
Single P. Supply C3(b)	132/66kV	-	1.70	-	3,457.83	-	-
Agricultural D1(a)	0.4kV	4	458.33	75.40	5,355.85	17.17	121.56
Agricultural D2(a)	0.4kV	5	830.98	84.08	5,355.85	17.17	186.90
Agricultural D2(b)	0.4kV	64	1,623.28	1,097.80	5,355.85	17.17	42.57
Agricultural D1(b)	0.4kV	8	114.41	129.08	5,355.85	17.17	32.40
Temporary - E1 (i)	0.2kV	0	0.00	0.11	5,355.85	17.92	17.95
Temporary - E1 (ii)	0.2kV	0	3.96	2.31	5,355.85	17.92	48.63
Temporary - E2	0.2kV	0	16.83	3.20	5,355.85	17.92	112.23
Public Lighting G	0.4kV	37	1,373.79	638.13	5,355.85	17.17	54.14
Res Colonies H	11kV	1	29.38	10.28	3,906.54	13.25	51.13
A J K - K1a	11kV	-	-	-	-	-	~
A J K - K1b	11kV	-	-	-		- 1	-
A3 General	0.4kV	105	2,748.34	1,799.28	5,355.85	17.17	43.41
Total	•	2,792	52,506.59	48,096.56	138,472.55	17.23	36.03

Note: Variable Cost in Table 15 includes energy cost and customer services cost.

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Revenue, Cost of Service and Subsidies (Tariff Category Wise)

Based on assessment of revenue and the cost of service for each category of consumer, as per the details provided herein before, the Subsidy or Cross Subsidy (the difference between revenue and cost) in terms of million rupees against each customer tariff category is provided in **Table 16** below. It may be noted that the negative figure means the customer is subsidized (revenue less than cost) whereas the positive figure shows that the customer is cross subsidizing (revenue more than cost). Average, in terms of Rs./kWh, assessment of subsidy or cross-subsidy, as the case may be, is also arrived in the last column of Table 16 below.

Table 16

Table 16 FY 2022-23

				Reve	nue As Per NEPR	A Tariff		Cost of Servic	e		
Customer Class	Voltage	Sales GWh	Demand MW	Demand Charge (M.PKR)	Energy Charge M.PKR	Total M.PKR	Demand Cost (M.PKR)	Energy Cost M.PKR	Total M.PKR	Difference Subsidy M.PKR	Subsidy Rs.kWh
Residential A1 (a)	0.2kV	1,649.83	422.28	-	47,138.35	47,138.35	•	56,692.67	56,692.67	(9,554.32)	(5.79)
Residential A1 (b)	0.4kV	15.01	8.62		422.00	422.00	-	811.13	811.13	(389.12)	(25.93)
Commercial A2 (a)	0.2kV	74.93	47.55		2,349.16	2,349.16		4,397.18	4,397.18	(2,048.02)	(27.33)
Commercial A2 (b)	0.4kV	11.71	10.30	1.51	344.14	345.65	661.36	201.09	862.45	(516.80)	(44.14)
Commercial A2 (c)	0.4kV	132.07	33.25	-	3,885.13	3,885.13	•	4,404.10	4,404.10	(518.97)	(3.93)
Industrial B1 (a)	0.2kV	7.08	19.36		213.04	213.04		1,370.89	1,370.89	(1,157.85)	(163.43)
industrial B2 (a)	0.4kV	11.64	26.23	12.42	348.74	361.16	1,684.94	199.90	1,884.84	(1,523.68)	(130.90)
Industrial B1 (b)	0.4kV	42.52	21.66	-	1,211.33	1,211.33	-	2,121.81	2,121.81	(910.48)	(21.41)
Industrial B2 (b)	0.4kV	266.22	79.13	38.08	7,514.82	7,552.90	5,082.93	4,571.86	9,654.80	(2,101.90)	(7.90)
Industrial B3	11kV	147.62	21.84	13.15	4,358.00	4,371.15	1,023.25	1,956.34	2,979.58	1,391.57	9.43
Industrial 84	132/66kV	18.49	0.95	3.23	545.15	548.38	39.57	217.44	257.01	291.37	15.76
Bulk Supply C1(a)	0.2kV	1.91	1.06		59.17	59.17		95.11	95.11	(35.95)	(18.82)
Bulk Supply C1(b)	0.4kV	19.87	0.52	1.79	611.50	613.28	33.46	341.18	374.64	238.65	12.01
Bulk Supply C2(a)	11kV	7.51	2.09	0.68	230.49	231.17	97.71	99.56	197.27	33.90	4.51
Bulk Supply C3(a)	132/66kV	16.21	0.43	1.28	495.64	496.92	17.80	190.65	208.46	288.46	17.79
Bulk Supply C1(c)	0.4kV	58.58	8.55	-	1,684.22	1,684.22		1,554.99	1,554.99	129.24	2.21
Bulk Supply C2(b)	11kV	87.05	11.07	-	2,604.48	2,604.48	•	1,672.14	1,672.14	932.34	10.71
Bulk Supply C3(b)	132/66kV		0.04		-			1.70	1.70	(1.70)	-
Agricultural D1(a)	0.4kV	4.39	7.13	-	136.02	136.02	-	533.50	533.50	(397.47)	(90.53)
Agricultural D2(a)	0.4kV	4.90	12.93	0.41	168.27	168.68	830.55	84.08	914.63	(745.95)	(152.36)
Agricultural D2(b)	0.4kV	63.92	25.26		1,811.11	1,811.11	-	2,720.25	2,720.25	(909.14)	(14.22)
Agricultural D1(b)	0.4kV	7.52	1.78	0.55	230.20	230.75	114.35	129.08	243.43	(12.68)	(1.69)
Temporary E1 (i)	0.2kV	0.01	0.00	-	0.21	0.21	-	0.11	0.11	0.10	17.42
Temporary E1 (ii)	0.2kV	0.13	0.06	-	4.04	4.04	-	6.27	6.27	(2.22)	(17.25)
Temporary E2	0.2kV	0.18	0.26	-	5.88	5.88	•	20.02	20.02	(14.14)	(79.22)
Public Lighting G	0.4kV	37.16	21.38	-	1,288.27	1,288.27	-	2,011.22	2,011.22	(722.94)	(19.46)
Residential Col. H	11kV	0.78	0.63	•	27.12	27.12	-	39.64	39.64	(12.52)	(16.14)
A J K K1a	11kV		-			-	-		-	-	
A J K K1b	11kV		-	-				-			
A3 General	0.4kV	104.77	42.76	-	3,290.86	3,290.86		4,546.21	4,546.21	(1,255.34)	(11.98)
Total	•	2,792.00	827.11	73.09	80,977.36	81,050.45	9,585.92	90,990.10	100,576.02	(19,525.58)	(6.99)



Revenue, Cost of Service, Subsidy and Revenue to Cost Ratios

Revenue, Cost of Service and Subsidy in terms of million rupees for each category of the consumers is shown in **Table 17** below. The Table also provides the Revenue to Cost Ratio, which shows that:

Table 17 FY 2022-23

					FY ZUZZ						
Customer Class	Voltage	Sales	Demand		s Per NEPRA ariff	Cost of	of Service Difference/ Subsidy Revenue to Cost		Cost Ratio		
Customer class	Voltage	GWh	MW	Fixed (Rs. M)	Variable (Rs. M)	Fixed (Rs. M)	Variable (Rs. M)	Fixed Rs. M	Variable Rs. M	Fixed	Variable
Residential A1 (a)	0.2kV	1,649.83	422.28	-	47,138.35	-	56,692.67	-	(9,554.32)	1.00	0.83
Residential A1 (b)	0.4kV	15.01	8.62	-	422.00	-	811.13		(389.12)	1.00	0.52
Commercial A2 (a)	0.2kV	74.93	47.55	-	2,349.16		4,397.18	-	(2,048.02)	1.00	0.53
Commercial A2 (b)	0.4kV	11.71	10.30	1.51	344.14	661.36	201.09	(659.85)	143.05	0.00	1.71
Commercial A2 (c)	0.4kV	132.07	33.25	-	3,885.13		4,404.10		(518.97)	1.00	0.88
Industrial B1 (a)	0.2kV	7.08	19.36	-	213.04		1,370.89	-	(1,157.85)	1.00	0.16
Industrial B2 (a)	0.4kV	11.64	26.23	12.42	348.74	1,684.94	199.90	(1,672.52)	148.84	0.01	1.74
Industrial B1 (b)	0.4kV	42.52	21.66	-	1,211.33	-	2,121.81	-	(910.48)	1.00	0.57
Industrial B2 (b)	0.4kV	266.22	79.13	38.08	7,514.82	5,082.93	4,571.86	(5,044.86)	2,942.96	0.01	1.64
Industrial B3	11kV	147.62	21.84	13.15	4,358.00	1,023.25	1,956.34	(1,010.10)	2,401.66	0.01	2.23
Industrial B4	132/66kV	18.49	0.95	3.23	545.15	39.57	217.44	(36.34)	327.71	0.08	2.51
Bulk Supply C1(a)	0.2kV	1.91	1.06	-	59.17	- :	95.11		(35.95)	1.00	0.62
Bulk Supply C1(b)	0.4kV	19.87	0.52	1.79	611.50	33.46	341.18	(31.67)	270.32	0.05	1.79
Bulk Supply C2(a)	11kV	7.51	2.09	0.68	230.49	97.71	99.56	(97.03)	130.93	0.01	2.32
Bulk Supply C3(a)	132/66kV	16.21	0.43	1.28	495.64	17.80	190.65	(16.52)	304.99	0.07	2.60
Bulk Supply C1(c)	0.4kV	58.58	8.55		1,684.22	•	1,554.99	-	129.24	1.00	1.08
Bulk Supply C2(b)	11kV	87.05	11.07	-	2,604.48	-	1,672.14	-	932.34	1.00	1.56
Bulk Supply C3(b)	132/66kV	-	0.04	-	-	-	1.70	-	(1.70)	1.00	1.00
Agricultural D1(a)	0.4kV	4.39	7.13	-	136.02	-	533.50	-	(397.47)	1.00	0.25
Agricultural D2(a)	0.4kV	4.90	12.93	0.41	168.27	830.55	84.08	(830.15)	84.19	0.00	2.00
Agricultural D2(b)	0.4kV	63.92	25.26	-	1,811.11	-	2,720.25	-	(909.14)	1.00	0.67
Agricultural D1(b)	0.4kV	7.52	1.78	0.55	230.20	114.35	129.08	(113.80)	101.12	0.00	1.78
Temporary E1 (i)	0.2kV	0.01	0.00	-	0.21	-	0.11	-	0.10	1.00	1.97
Temporary E1 (ii)	0.2kV	0.13	0.06	-	4.04	-	6.27	-	(2.22)	1.00	0.65
Temporary E2	0.2kV	0.18	0.26	-	5.88	-	20.02	-	(14.14)	1.00	0.29
Public Lighting G	0.4kV	37.16	21.38	-	1,288.27		2,011.22	-	(722.94)	1.00	0.64
Residential Col. H	11kV	0.78	0.63	-	27.12	-	39.64	-	(12.52)	1.00	0.68
AJK K1a	11kV	-	-	-	-	-	-	-	- ` -	1.00	1.00
A J K K1b	11kV		-	-	-	-			-	1.00	1.00
A3 General	0.4kV	104.77	42.76	-	3,290.86	-	4,546.21	-	(1,255.34)	1.00	0.72
Total	<u>.</u>	2,792.00	827.11	73.09	80,977.36	9,585.92	90,990.10	(9,512.83)	(10,012.74)	0.01	0.89

If this ratio is less than one, the relevant customer class is subsidized, i.e. the tariff revenue is less than the allocated cost;

If this ratio is greater than one, the relevant customer class is cross subsidizing, i.e. the tariff revenue is higher than the allocated cost; and

If this ratio is equal to one, the customer class is at adequately priced vis-à-vis the allocated cost.





Revenue, Cost of Service and Subsidies (Rs./kWh)

Revenue, Cost of Service and Subsidy in terms of Rs./kWh for each category of the consumers is shown in **Table 18** below. The Table also provides the Revenue to Cost Ratio.

FY 2022-23

			1 2022-25	Cost Of		
Customer Class	Voltage	Sales GWh	Revenue Rs./kWh	Service Rs. /kWh	Subsidy Rs. /kWh	Revenue to Cost Ratio
Residential A1 (a)	0.2kV	1,649.83	28.57	34.36	(5.79)	0.83
Residential A1 (b)	0.4kV	15.01	28.12	54.05	(25.93)	0.52
Commercial A2 (a)	0.2kV	74.93	31.35	58.68	(27.33)	0.53
Commercial A2 (b)	0.4kV	11.71	29.52	73.65	(44.14)	- 0.40
Commercial A2 (c)	0.4kV	132.07	29.42	33.35	(3.93)	0.88
Industrial B1 (a)	0.2kV	7.08	30.07	193.50	(163.43)	0.16
Industrial B2 (a)	0.4kV	11.64	31.03	161.93	(130.90)	0.19
Industrial B1 (b)	0.4kV	42.52	28.49	49.90	(21.41)	0.57
Industrial B2 (b)	0.4kV	266.22	28.37	36.27	(7.90)	0.78
Industrial B3	11kV	147.62	29.61	20.18	9.43	1.47
Industrial B4	132/66kV	18.49	29.66	13.90	15.76	2.13
Bulk Supply C1(a)	0.2kV	1.91	30.98	49.80	(18.82)	0.62
Bulk Supply C1(b)	0.4kV	19.87	30.87	18.86	12.01	1.64
Bulk Supply C2(a)	11kV	7.51	30.77	26.26	4.51	1.17
Bulk Supply C3(a)	132/66kV	16.21	30.65	12.86	17.79	2.38
Bulk Supply C1(c)	0.4kV	58.58	28.75	26.55	2.21	1.08
Bulk Supply C2(b)	11kV	87.05	29.92	19.21	10.71	1.56
Bulk Supply C3(b)	132/66kV	-	-	-	-	-
Agricultural D1(a)	0.4kV	4.39	30.98	121.51	(90.53)	0.25
Agricultural D2(a)	0.4kV	4.90	34.45	186.81	(152.36)	0.18
Agricultural D2(b)	0.4kV	63.92	28.33	42.55	(14.22)	0.67
Agricultural D1(b)	0.4kV	7.52	30.70	32.39	(1.69)	0.95
Temporary E1 (i)	0.2kV	0.01	35.37	17.95	17.42	1.97
Temporary E1 (ii)	0.2kV	0.13	31.37	48.62	(17.25)	0.65
Temporary E2	0.2kV	0.18	32.96	112.18	(79.22)	0.29
Public Lighting G	0.4kV	37.16	34.67	54.13	(19.46)	0.64
Residential Col. H	11kV	0.78	34.97	51.11	(16.14)	0.68
A J K K1a	11kV	-	-	-	-	-
A J K K1b	11kV	-	-	•	-	-
A3 General	0.4kV	104.77	31.41	43.39	(11.98)	0.72
Total	-	2,792.00	29.03	36.02	(6.99)	0.81



Revenue, Cost of Service and Subsidies (11 kV and Above)
The revenue, cost of service and subsidies for customer categories that fall under 11kv are summarized at **Table 19** below.

Table 19 FY 2022-23

Customer Class	Voltage	Sales GWh	Demand MW	Revenue As Per NEPRA Tariff			Cost of Service			Difference	
				Demand Charge (M.PKR)	Energy Charge M.PKR	Total M.PKR	Demand Cost (M.PKR)	Energy Cost M.PKR	Total M.PKR	Subsidy M.PKR	Subsidy Rs.kWh
Industrial B3	11kV	147.62	21.84	13.15	4,358.00	4,371.15	1,023.25	1,956.34	2,979.58	1,391.57	9.43
Industrial B4	132/66kV	18.49	0.95	3.23	545.15	548.38	39.57	217.44	257.01	291.37	15.76
Bulk Supply C2(a)	11kV	7.51	2.09	0.68	230.49	231.17	97.71	99.56	197.27	33.90	4.51
Bulk Supply C3(a)	132/66kV	16.21	0.43	1.28	495.64	496.92	17.80	190.65	208.46	288.46	17.79
Bulk Supply C2(b)	11kV	87.05	11.07	-	2,604.48	2,604.48		1,672.14	1,672.14	932.34	10.71
Bulk Supply C3(b)	132/66kV		0.04					1.70	1.70	(1.70)	
Residential Col. H	11kV	0.78	0.63	-	27.12	27.12	-	39.64	39.64	(12.52)	(16.14)

Revenue/kWh, Cost of Service/kWh and Subsidies/kWh (BPC only)

With regard to the above analysis, the following points are emphasized:

- 1. The Industrial B-3 and Bulk Supply C2 customers are at 11 KV connection level, however, any of these customers may not fall within the definition of BPC as contained in NEPRA Act, 1997, being less than 1 kW.
- 2. The customer categories A-2 and A-3, for purposes of cost of service assessment, have been considered at 0.4 KV level. However, these costumers, based on the sanctioned load, may be connected at 11 KV level, as required.
- 3. Consumer category for tariff H, i.e. housing colonies attached to industries, despite being connected at 11 kV, cannot be considered as BPC for (i) principally being resale in nature and (ii) being less than 1 MW.

Based on the above clarification, the abstract of Revenue (Rs./kWh), the Cost of Service (Rs./kWh) and resultant cross-subsidy (Rs./kWh) is appended at **Table 20** below.

Table 20

FY 2022-23

Customer Class	Voltage	Sale GWH	Revenue Rs. /KWH	Costof Service Rs. /KWh	Subsidy Rs. /KWh	
Industrial B3	11kV	147.62	29.61	20.18	9.43	
Industrial B4	132/66kV	18.49	29.66	13.90	15.76	
Bulk Supply C2(b)	11kV	87.05	29.92	19.21	10.71	
Bulk Supply C3(a)	132/66kV	16.21	30.65	12.86	17.79	

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Annex-A

Master Data for Results of SEPCO's Cost of Service Study (FY 2022-23):

For interest of the readers to glance through overall master data for result of SEPCO's Cost of Service Study (FY 2022-23), following Tables (**Table 21** to **Table 27**) are added separately.

Final Remarks:

- The above Cost of Service Study Report (FY 2022-23) is a sincere human effort to arrive at judicious assessment of functional (generation, transmission, market operator, distribution and customer services) costs for each category of consumers demonstrating the needs and parameters associated with relevant category.
- The results of the study are to be used for the purposes of rate making of Use of System Charges for possible eligible Bulk Power Consumers.
- The Fully Allocated Cost of Service (FACOS) Model used for the purpose of this study is realistically elaborate, professionally structured in line with international practices and reasonably accurate to provide equitable results in terms of costs associated with demonstrated needs of the customers. Human errors and omissions are, however, expected.
- The underlying assumptions made and considerations relied upon in carrying out this Cost of Service Study were adopted with all possible care, without any prejudice and have been disclosed in details to the extent possible.
- Inherent and unforeseen limitations of the FACOS model, assumptions made and consideration relied upon may not be as exhaustive as expected; accordingly, for the purposes of rate making of Use of System Charges, certain out of the model iterations may be necessary.
- While the Cost of Service is substantially (96%) covered by the determined tariffs, inherent cross subsidization and possibility of stranded costs need considerate, careful, concerted and continuous attention for proactive mitigation thereof.
- While currently certain classes of consumers are enjoying benefit of inter and intra tariff subsidies, the other categories of consumers are paying huge (30~35%) cross-subsidies. For a robust, vibrant and successful wholesale, and later retail, power market, minimization, if not elimination, of intra and inter tariff subsidies shall remain fundamental requirement.

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					FY 202	2-23						
	Voltage	Energy GW	'h	Demar	nd MW	Genera	tion Cost	Transm	MOF	Distril	oution	Total Cost
Classes	Level	Sold	Purchase d	at Meter	at CDP	Energy (Rs.M)	Demand (Rs.M)	Cost (Rs.M)	Cost (Rs.M)	Demand (Rs.M)	cust. Cost (Rs.M)	(Rs. M)
Residential A1(a)	0.2kV	1,650	2,548	422	652	27,494	16,591	2,982	14	7,553	2,073	56,707
Residential A1(b)	0.4kV	15	23	9	13	250	338	61	0	154	8	811
Commercial – A2(a)	0.2kV	75	116	48	73	1,249	1,868	336	2	850	94	4,399
Commercial A2(b)	0.4kV	12	18	10	16	195	405	73	0	184	6	
Commercial A2(c)	0.4kV	132	204	33	51	2,201	1,306	235	1	595	67	4,405
Industrial 81(a)	0.2kV	7	11	19	30	118	761	137	1	346	9	1,372
Industrial 82(a)	0.4kV	12	18	26	41	194	1,031	185	1	469	6	1,886
Industrial 81(b)	0.4kV	43	66	22	33	709	851	153	1	387	22	2,123
industrial 82(b)	0.4kV	266	411	- 79	122	4,436	3,109	559	3	1,415	135	9,657
Industrial 83	11kV	148	175	22	26	1,889	659	118	1	246	67	2,980
Industrial 84	- 132/66kV	18	19	1	1	209	25	5	0	10	8	257
Single Point Supply C1(a)	0.2kV	2	2	1	2	24	42	8	0	19	2	95
Single Point Supply C1(b)	0.4kV	20	31	1	1	331	20	4	0	9	10	375
Single Point Supply — C2(a)	- 11kV	8	9	2	2	96	63	11	0	23	. 3	197
Single Point Supply C3(a)	132/66kV	16	17	0	0	183	11	2	0	4	1	208
Single Point Supply C1(c)	0.4kV	59	90	9	13	976	336	60	0	153	30	1,555
Single Point Supply C2(b)	11kV	87	103	11	13	1,114	334	60	0	125	40	1,672
Single Point Supply C3(b)	132/66kV			0	0		1	0	0	0		2
AgriculturalD1(a)	0.4kV	4	7	7	11	73	280	50	0	128	2	534
AgriculturalD2(a)	0.4kV	5	8	13	20	82	508	91	0	231	2	915
AgriculturalD2(b)	0.4kV	64	99	25	39	1,065	992	178	1	452	33	2,721
AgriculturalD1(b)	0.4kV	8	12	2	3	125	70	13	0	32	4	243
Temporary Supply E1(i)	0.2kV	0	0	0	0	0	0	0	0	0	0	0
Temporary Supply E1(ii)	0.2kV	0	0	0	0	2	2	0	0	1	0	6
Temporary Supply E2	0.2kV	0	0	0	0	3	10	2	0	5	0	20
Public Lighting G	0.4kV	37	57	21	33	619	840	151	1	382	19	2,012
Residential Colonies H	11kV	1	1	1	1	10	19	3	0	. 1	0	40
Azad Jammu Kashmir - K1a	11kV	-									-	
Azad Jammu Kashmir - K1b	11kV		-	-		-	-	-				
A3 General	0.4kV	105	162	43	66	1,746	1,680	302	1	765	53	4,548
Total		2,792	4,206	827	1,264	45,394	32,154	5,779	27	14,546	2,702	100,603



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			FY	2022-23	(kW or k	Wh at Co	nsumer)					
	Voltage	Energy GW	/h	Demar	d MW	Genera	tion Cost	Transm	MOF	Distri	bution	Total Fixed
Classes	Level	Sold	Purchase	at Meter	at CDP	Energy	Demand	Cost	Cost	Demand	cust. Cost	Cost
	LEYEI	J0IU	ď	at Mictel	at CD1	(Rs./kWh)	(Rs./kW/M)	(Rs./kW/M)	(Rs./kW/M)	(Rs./kW/M)	(Rs./kW/M)	(Rs./kW/M)
Residential – A1(a)	0.2kV	1,650	2,548	422	652	16.66	3,274.12	588.50	2.76	1,490.47	409.07	5,764.93
Residential A1(b)	0.4kV	15	23	9	13	16.66	3,274.12	588.50	2.76	1,490.47	73.87	5,429.73
Commercial A2(a)	0.2kV	75	116	48	73	16.66	3,274.12	588.50	2.76	1,490.47	165.01	5,520.86
Commercial A2(b)	0.4kV	12	18	10	16	16.66	3,274.12	588.50	2.76	1,490.47	48.24	5,404.09
Commercial A2(c)	0.4kV	132	204	33	51	16.66	3,274.12	588.50	2.76	1,490.47	168.45	5,524.31
Industrial – B1(a)	0.2kV	7	1i	19	30	16.66	3,274.12	588.50	2.76	1,490.47	38.31	5,394.16
Industrial – B2(a)	0.4kV	12	18	26	41	16.66	3,274.12	588.50	2.76	1,490.47	18.82	5,374.68
Industrial – B1(b)	0.4kV	43	66	22	33	16.66	3,274.12	588.50	2.76	1,490.47	83.26	5,439.11
Industrial — B2(b)	0.4kV	266	411	79	122	16.66	3,274.12	588.50	2.76	1,490.47	142.69	5,498.55
Industrial – B3	11kV	148	175	22	26	12.80	2,514.20	451.91	2.12	938.30	256.67	4,163.20
Industrial – B4	132/66kV	18	19	1	1	11.30	2,220.40	399.10	1.87	836.46	739.28	4,197.11
Single Point Supply C1(a)	0.2kV	2	2	1	2	12.80	3,274.12	588.50	2.76	1,490.47	188.15	5,544.00
Single Point Supply C1(b)	0.4kV	20	31	1	1	16.66	3,274.12	588.50	2.76	1,490.47	1,617.76	6,973.62
Single Point Supply C2(a)	11kV	8	9	2	2	12.80	2,514.20	451.91	2.12	938.30	136.80	4,043.33
Single Point Supply C3(a)	132/66kV	16	17	0	0	11.30	2,220.40	399.10	1.87	836.46	1,440.78	4,898.60
Single Point Supply C1(c)	0.4kV	59	90	9	13	16.66	3,274.12	588.50	2.76	1,490.47	290.69	5,646.54
Single Point Supply C2(b)	11kV	87	103	11	13	12.80	2,514.20	451.91	2.12	938.30	298.68	4,205.21
Single Point Supply C3(b)	132/66kV			0	0	-	2,220.40	399.10	1.87	836.46	•	3,457.83
Agricultural D1(a)	0.4kV	4	1	7	11	16.66	3,274.12	588.50	2.76	1,490.47	26.11	5,381.97
AgriculturalD2(a)	0.4kV	5	8	13	20	16.66	3,274.12	588.50	2.76	1,490.47	16.06	5,371.91
AgriculturalD2(b)	0.4kV	64	99	25	39	16.66	3,274.12	588.50	2.76	1,490.47	107.35	5,463.20
AgriculturalD1(b)	0.4kV	8	12	2	3	16.66	3,274.12	588.50	2.76	1,490.47	179.08	5,534.93
Temporary Supply E1(i)	0.2kV	0	0	0	0	16.66	3,274.12	588.50	2.76	1,490.47	253,088.90	258,444.75
Temporary Supply E1(ii)	0.2kV	0	0	0	0	16.66	3,274.12	588.50	2.76	1,490.47	219.10	5,574.95
Temporary Supply E2	0.2kV	0	0	0	0	16.66	3,274.12	588.50	2.76	1,490.47	71.35	5,427.21
Public Lighting G	0.4kV	37	57	21	33	16.66	3,274.12	588.50	2.76	1,490.47	73.73	5,429.58
Residential Colonies – H	11kV	1	1	1	. 1	12.80	2,514.20	451.91	2.12	938.30	46.99	3,953.53
Azad Jammu Kashmir - K1a	11kV									•		
Azad Jammu Kashmir - K1b	11kV	•								٠		
A3 General	0.4kV	105	162	43	66	16.66	3,274.12	588.50	2.76	1,490.47	103.92	5,459.77
Total		2,792	4,206	827	1,264	15.26	3,239.58	582.29	2.73	1,465.56	272.28	5,562.45



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				FY 202	2-23 (kW	or kWh C	DP)				,	
	Voltage	Energy GV	/h	Demai	nd MW	Genera	tion Cost	Transm	MOF	Distri	bution	Total Fixed
Classes	Level	Sold	Purchase	at Meter	at CDP	Energy	Demand	Cost	Cost .	Demand	cust. Cost	Cost
	LEVEI	JUIU	d	at Weter	alcur	(Rs./kWh)	(Rs./kW/M)	(Rs./kW/M)	(Rs./kW/M)	(Rs./kW/M)	(Rs./kW/M)	(Rs./kW/ M)
Residential A1(a)	0.2kV	1,650	2,548	422	652	10.79	2,120.24	381.10	1.79	965.19	264.91	3,733.2
Residential A1(b)	0.4kV	15	23	9	13	10.79	2,120.24	381.10	1.79	965.19	47.84	3,516.15
Commercial A2(a)	0.2kV	75	116	48	73	10.79	2,120.24	381.10	1.79	965.19	106.86	3,575.17
Commercial A2(b)	0.4kV	12	18	10	16	10.79	2,120.24	381.10	1.79	965.19	31.24	3,499.55
Commercial A2(c)	0.4kV	132	204	33	51	10.79	2,120.24	381.10	1.79	965.19	109.09	3,577.40
Industrial B1(a)	0.2kV	7	11	19	30	10.79	2,120.24	381.10	1.79	965.19	24.81	3,493.12
Industrial B2(a)	0.4kV	12	18	26	41	10.79	2,120.24	381.10	1.79	965.19	12.19	3,480.50
Industrial B1(b)	0.4kV	43	66	22	33	10.79	2,120.24	381.10	1.79	965.19	53.92	3,522.23
Industrial 82(b)	0.4kV	266	411	79	122	10.79	2,120.24	381.10	1:79	965.19	92.41	3,560.72
Industrial B3	11kV	148	175	22	26	10.79	2,120.24	381.10	1.79	791.28	216.45	3,510.85
Industrial B4	132/66kV	18	19	1	1	10.79	2,120.24	381.10	1.79	798.73	705.93	4,007.78
Single Point Supply C1(a)	0.2kV	2	2	1	2	10.79	2,120.24	381.10	1.79	965.19	121.84	3,590.15
Single Point Supply C1(b)	0.4kV	20	31	1	1	10.79	2,120.24	381.10	1.79	965.19	1,047.62	4,515.93
Single Point Supply C2(a)	11kV	8	9	2	2	10.79	2,120.24	381.10	1,79	791.28	115.36	3,409.76
Single Point Supply C3(a)	132/66kV	16	17	0	0	10.79	2,120.24	381.10	1.79	798.73	1,375.78	4,677.63
Single Point Supply C1(c)	0.4kV	59	90	9	13	10.79	2,120.24	381.10	1.79	965.19	188.24	3,656.55
Single Point Supply C2(b)	11kV	87	103	11	13	10.79	2,120.24	381.10	1.79	791.28	251.87	3,546.27
Single Point Supply C3(b)	132/66kV		•	0	0		2,120.24	381.10	1.79	798.73	•	3,301.85
AgriculturalD1(a)	0.4kV	4	7	7	11	10.79	2,120.24	381.10	1.79	965.19	16.91	3,485.22
Agricultural D2(a)	0.4kV	5	8	13	20	10.79	2,120.24	381.10	1.79	965.19	10.40	3,478.71
AgriculturalD2(b)	0.4kV	64	99	25	39	10.79	2,120.24	381.10	1.79	965.19	69.51	3,537.82
AgriculturalD1(b)	0.4kV	8	12	2	3	10.79	2,120.24	381.10	1.79	965.19	115.97	3,584.28
Temporary Supply E1(i)	0.2kV	0	0	0	0	10.79	2,120.24	381.10	1.79	965.19	163,894	167,362
Temporary Supply E1(ii)	0.2kV	0	0	0	0	10.79	2,120.24	381.10	1.79	965.19	141.88	3,610.19
Temporary Supply E2	0.2kV	0	0	0	0	10.79	2,120.24	381.10	1.79	965.19	46.21	3,514.52
Public Lighting G	0.4kV	37	57	21	33	10.79	2,120.24	381.10	1.79	965.19	47.75	3,516.06
Residential Colonies H	11kV	1	1	1	1	10.79	2,120.24	381.10	1.79	791.28	39.63	3,334.03
Azəd Jammu Kəshmir - K1a	11kV	•		-			•			-		•
Azad Jammu Kashmir - K1b	11kV						-		-			•
A3 General	0.4kV	105	162	43	66	10.79	2,120.24	381.10	1.79	965.19	67.29	3,535.60
Total		2,792	4,206	827	1,264	10.79	2,120.24	381.10	1.79	959.18	178.20	3,640.50



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	1	· · · · · · · · · · · · · · · · · · ·				1 at Consu				,		
	Voltage	Energy GV		i 	nd MW	Genera	ition Cost	Transm	MOF	Distrib	oution	Total Fixed
Classes	Level	Sold	Purchase	at Meter	at CDP	Energy	Demand	Cost	Cost	Demand	cust. Cost	Cost
			d	4.1110.03	31.00	(Rs./kWh)	(Rs./kWh)	(Rs./kWh)	(Rs./kWh)	(Rs./kWh)	(Rs./kWh)	(Rs./kWh)
Residential A1(a)	0.2kV	1,650	2,548	422	652	16.66	10.06	1.81	0.01	4.58	1.26	17.71
Residential A1(b)	0.4kV	15	23	9	13	16.66	22.56	4.05	0.02	10.27	0.51	37.41
Commercial A2(a)	0.2kV	75	116	!	73	16.66	24.93	4.48	0.02	11.35	1.26	42.04
Commercial A2(b)	0.4kV	12	18	10	16	16.66	34.55	6.21	0.03	15.73	0.51	57.02
Commercial A2(c)	0.4kV	132	204	33	51	16.66	9.89	1.78	0.01	4.50	0.51	16.69
Industrial B1(a)	0.2kV	7	11	19	30	16.66	107.39	19.30	0.09	48.89	1.26	176.92
Industrial B2(a)	0.4KY	12	18	26	41	16.66	88.54	15.91	0.07	40.30	0.51	145.34
Industrial B1(b)	0.4kV	43	66	22	33	16.66	20.01	3.60	0.02	9.11	0.51	33.25
Industrial B2(b)	0.4kV	266	411	79	122	16.66	11.68	2.10	0.01	5.32	0.51	19.61
Industrial 83	11kV	148	175	22	26	12.80	4.46	0.80	0.00	1.67	0.46	7.39
Industrial B4	132/66kV	18	19	1	1	11.30	1.38	0.25	0.00	0.52	0.46	2.60
Single Point Supply C1(a)	0.2kV	2	2	1	2	12.80	21.86	3.93	0.02	9.95	1.26	37.02
Single Point Supply C1(b)	0.4kV	20	31	1	1	16.66	1.03	0.19	0.00	0.47	0.51	2.19
Single Point Supply C2(a)	11kV	8	9	2	2	12.80	8.37	1.51	0.01	3.13	0.46	13.47
Single Point Supply C3(a)	132/66kV	16	17	0	0	11.30	0.71	0.13	0.00	0.27	0.46	1.56
Single Point Supply C1(c)	0.4kV	59	90	9	13	16.66	5.73	1.03	0.00	2.61	0.51	9.89
Single Point Supply C2(b)	11kV	87	103	11	13	12.80	3.84	0.69	0.00	1.43	0.46	6.42
Single Point Supply C3(b)	132/66kV			0	0			•	-	•		
AgriculturalD1(a)	0.4kV	4	7	7	11	16.66	63.81	11.47	0.05	29.05	0.51	104.90
AgriculturalD2(a)	0.4kV	5	8	13	20	16.66	103.76	18.65	0.09	47.23	0.51	170.24
AgriculturalD2(b)	0.4kV	64	99	25	39	16.66	15.52	2.79	0.01	7.07	0.51	25.90
AgriculturalD1(b)	0.4kV	8	12	2	3	16.66	9.31	1.67	0.01	4.24	0.51	15.73
Temporary Supply E1(i)	0.2kV	0	0	0	0	16.66	0.02	0.00	0.00	0.01	1.26	1.28
Temporary Supply E1(ii)	0.2kV	0	0	0	0	16.66	18.78	3.37	0.02	8.55	1.26	31.97
Temporary Supply E2	0.2kV	0	0	0	0	16.66	57.65	10.36	0.05	26.25	1.26	95.57
Public Lighting G	0.4kV	37	57	21	33	16.66	22.60	4.06	0.02	10.29	0.51	37.48
Residential Colonies H	11kV	1	1	1	1	12.80	24.38	4.38	0.02	9.10	0.46	38.33
Azad Jammu Kashmir - K1a	11kV		-	•	-			-	-			•
Azad Jammu Kashmir - K1b	11kV	-				-		-	-	-	-	
A3 General	0.4kV	105	162	43	66	16.66	16.04	2.88	0.01	7.30	0.51	26.74
Total		2,792	4,205	827	1,264	16.26	11.52	2.07	0.01	5.21	0.97	19.77

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				-	1715	11.73	L					
				FY 20)22-23 (k	Wh at CD	P}					
	Voltage	Energy GW	/h	Demar	nd MW	Genera	tion Cost	Transm	MOF	Distril	oution	Total Fixed
Classes	Level	Sold	Purchase	at Meter	at CDP	Energy	Demand	Cost	Cost	Demand	cust. Cost	Cost
		3010	d	ut meter	UT CO	(Rs./kWh)	(Rs./kWh)	(Rs./kWh)	(Rs./kWh)	(Rs./kWh)	(Rs./kWh)	(Rs./kWh)
Residential A1(a)	0.2kV	1,650	2,548	422	652	10.79	6.51	1.17	0.01	2.96	0.81	11.47
Residential A1(b)	0.4kV	15	23	_ 9	13	10.79	14.61	2.63	0.01	6.65	0.33	24.22
Commercial A2(a)	0.2kV	75	116	48	73	10.79	16.14	2.90	0.01	7.35	0.81	27.22
Commercial A2(b)	0.4kV	12	18	10	-16	10.79	22.37	4.02	0.02	10.18	0.33	36.92
Commercial A2(c)	0.4kV	132	204	33	51	10.79	6.41	1.15	0.01	2.92	0.33	10.81
Industrial 81(a)	0.2kV	7	11	19	30	10.79	69.54	12.50	0.06	31.66	0.81	114.57
industrial 82(a)	0.4kV	12	18	26	41	10.79	57.33	10.31	0.05	26.10	0.33	94.12
Industrial B1(b)	0.4kV	43.	. 66	2.2	33	10.79	12.96	2.33	0.01	5.90	0.33	21.53
Industrial B2(b)	0.4kV	266	411	79	122	10.79	7.56	1.36	0.01	3.44	0.33	12.70
Industrial B3	11kV	148	175	22	26	10.79	3.76	0.68	0.00	1.40	0.38	6.23
Industrial B4	132/66kV	18	19	1	1	10.79	1.31	0.24	0.00	0.49	0.44	2.48
Single Point Supply C1(a)	0.2kV	2	2	1	2	10.79	18.44	3.31	0.02	8.39	1.06	31.22
Single Point Supply C1(b)	0.4kV	20	31	1	1	10.79	0.67	0.12	0.00	0.30	0.33	1.42
Single Point Supply C2(a)	11kV		9	2	2	10.79	7.06	1.27	0.01	2.64	0.38	11.36
Single Point Supply C3(a)	132/66kV	16	17	0	0	10.79	0.67	0.12	0.00	0.25	0.44	1.49
Single Point Supply — C1(c)	0.4kV	59	90	9	13	10.79	3.71	0.67	0.00	1.69	0.33	6.40
Single Point Supply C2(b)	11kV	87	103	11	13	10.79	3.23	0.58	0.00	1.21	0.38	5.41
Single Point Supply C3(b)	132/66kV	-		0	0				•			-
AgriculturalD1(a)	0.4kV	4	7	7	11	10.79	41.32	7.43	0.03	18.81	0.33	67.93
AgriculturalD2(a)	0.4kV	5	8	13	20	10.79	67.19	12.08	0.06	30.59	0.33	110.24
AgriculturalD2(b)	0.4kV	64	99	25	39	10.79	10.05	1.81	0.01	4.58	0.33	16.77
AgriculturalD1(b)	0.4kV	8	12	2	3	10.79	6.03	1.08	0.01	2.74	0.33	10.19
Temporary Supply E1(i)	0.2kV	0	0	0	0	10.79	0.01	0.00	0.00	0.00	0.81	0.83
Temporary Supply E1(ii)	0.2kV	0	0	0	0	10.79	12.16	2.19	0.01	5.54	0.81	20.70
Temporary Supply – E2	0.2kV	0	0	0	0	10.79	37.34	6.71	0.03	17.00	0.81	61.89
Public Lighting G	0.4kV	37	57	21	33	10.79	14.64	2.63	0.01	6.66	0.33	24.27
Residential Colonies H	11kV	1	1	1	1	10.79	20.56	3.70	0.02	7.67	0.38	32.33
Azad Jammu Kashmir - K1a	11kV			•			-	-	-	-		
Azad Jammu Kashmir - K1b	11kV			•		-		-	-	-		
A3 General	0.4kV	105	162	43	66	10.79	10.38	1.87	0.01	4.73	0.33	17.32
Total		2,792	4,206	827	1,264	10.79	7.64	1,37	0.01	3.46	0.64	13.12



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			FY 20)22-23 (C	ost of Lo	sses on k	N or kWh)					
	Voltage	Energy GW	'n	Demar	d MW	Genera	tion Cost	Transm	MOF	Distril	oution	Total Fixed
Classes	Level	Sold	Purchase	at Meter	at CDP	Energy	Demand	Cost	Cost	Demand	cust. Cost	Cost
	revei	JUIU	d	at weter	GLUDI	(Rs./kWh)	(Rs./kW/M)	(Rs./kW/M)	(Rs./kW/M)	(Rs./kW/M)	(Rs./kW/M)	(Rs./kW/M)
Residential A1(a)	0.2kV	1,650	2,543	422	652	5.87	1,153.89	207.40	0.97	525.28	144.17	2,031.71
Residential A1(b)	0.4kV	15	23	9	13	5.87	1,153.89	207.40	0.97	525.28	26.04	1,913.58
Commercial A2(a)	0.2kV	75	116	48	73	5.87	1,153.89	207.40	0.97	525.28	58.15	1,945.70
Commercial A2(b)	0.4kV	12	18	10	16	5.87	1,153.89	207.40	0.97	525.28	17.00	1,904.54
Commercial A2(c)	0.4kV	132	204	33	51	5.87	1,153.89	207.40	0.97	525.28	59.37	1,946.91
Industrial B1(a)	0.2kV	7	11	19	30	5,87	1,153.89	207.40	0.97	525.28	13.50	1,901.04
Industrial B2(a)	0.4kV	12	18	26	41	5.87	1,153.89	207.40	0.97	525.28	6.63	1,894.18
Industrial B1(b)	0.4kV	43	66	22	33	5.87	1,153.89	207.40	0.97	525.28	29.34	1,916.89
Industrial B2(b)	0.4kV	266	411	79	122	5.87	1,153.89	207.40	0.97	525.28	50.29	1,937.83
Industrial B3	11kV	148	175	22	26	2.01	393.96	70.81	0.33	147.03	40.22	652.35
Industrial B4	132/66kV	18	19	1	1	0.51	100.16	18.00	0.08	37.73	33.35	189.33
Single Point Supply C1(a)	0.2kV	2	2	1	2	2.01	1,153.89	207.40	0.97	525.28	66.31	1,953.85
Single Point Supply C1(b)	0.4kV	20	31	1	1	5.87	1,153.89	207.40	0.97	525.28	570.14	2,457.69
Single Point Supply C2(a)	11kV	8	9	2	2	2.01	393.96	70.81	0.33	147.03	21.44	633.57
Single Point Supply C3(a)	132/66kV	16	17	0	0	0.51	100.16	18.00	0.08	37.73	64.99	220.97
Single Point Supply C1(c)	0.4kV	59	90		13	5.87	1,153.89	207.40	0.97	525.28	102.45	1,989.99
Single Point Supply C2(b)	11kV	87	103	11	13	2.01	393.96	70.81	0.33	147.03	46.80	658.94
Single Point Supply C3(b)	132/66kV			0	0		100.16	18.00	0.08	37.73	•	155.98
AgriculturalD1(a)	0.4kV	4	1	7	11	5.87	1,153.89	207.40	0.97	525.28	9.20	1,896.75
AgriculturalD2(a)	0.4kV	5	8	13	20	5.87	1,153.89	207.40	0.97	525.28	5.66	1,893.20
AgriculturalD2(b)	0.4kV	64	99	25	39	5.87	1,153.89	207.40	0.97	525.28	37.83	1,925.37
AgriculturalD1(b)	0.4kV	8	12	2	3	5.87	1,153.89	207.40	0.97	525.28	63.11	1,950.66
Temporary Supply E1(i)	0.2kV	0	0	0	. 0	5.87	1,153.89	207.40	0.97	525.28	89,195.19	91,082.73
Temporary Supply E1(ii)	0.2kV	0	0	0	0	5.87	1,153.89	207.40	0.97	525.28	77.22	1,964.76
Temporary Supply E2	0.2kV	0	. 0	0	0	5.87	1,153.89	207.40	0.97	525.28	25.15	1,912.69
Public Lighting G	0.4kV	37	57	21	33	5.87	1,153.89	207.40	0.97	525.28	25.98	1,913.53
Residential Colonies – H	11kV	1	1	1	1	2.01	393.96	70.81	0.33	147.03	7.36	619.50
Azad Jammu Kashmir - K1a	11kV											
Azad Jammu Kashmir - K1b	11kV											-
A3 General	0.4kV	105	162	43	66	5.87	1,153.89	207.40	0.97	525.28	36.62	1,924.17
Total		2,792	4,206	827	1,264	5.47	1,119.35	201.19	0.94	506.38	94.08	1,921.95

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	·		F	Y 2022-2	3 (Cost o	f Losses o	n kWh)					
	Voltage	Energy GW	/h	Demar	id MW	Genera	ition Cost	Transm	MOF	Distri	bution	Total Fixed
Classes	Level	Sold	Purchase	at Meter	at CDP	Energy	Demand	Cost	Cost	Demand	cust. Cost	Cost
	2010	30.0	d	ut inclu	di CD1	(Rs./kWh)	(Rs./kW/M)	(Rs./kW/M)	(Rs./kW/M)	(Rs./kW/M)	(Rs./kW/M)	(Rs./kW/M)
Residential A1(a)	0.2kV	1,650	2,548	422	652	5.87	3.54	0.64	0.00	1.61	0.44	6.24
Residential A1(b)	0.4kV	15	23	9	13	5.87	7.95	1.43	0.01	3.62	0.18	13.18
Commercial A2(a)	0.2kV	75	116	48	73	5.87	8.79	1.58	0.01	4.00	0.44	14.82
Commercial A2(b)	0.4kV	12	18	10	16	5.87	12.17	2.19	0.01	5.54	0.18	20.09
Commercial A2(c)	0.4kV	132	204	33	51	5.87	3.49	0.63	0.00	1.59	0.18	5.88
Industrial B1(a)	0.2kV	7	11	19	30	5.87	37.85	6.80	0.03	17.23	0.44	62.35
Industrial B2(a)	0.4kV	12	18	26	41	5.87	31.20	5.61	0.03	14.20	0.18	51.22
Industrial B1(b)	0.4kV	43	66	22	33	5.87	7.05	1.27	0.01	3.21	0.18	11.72
Industrial B2(b)	0.4kV	266	411	79	122	5.87	4.12	0.74	0.00	1.87	0.18	6.91
Industrial 83	11kV	148	175	22	26	2.01	0.70	0.13	0.00	0.26	0.07	1.16
Industrial B4	132/66kV	18	19	1	1	0.51	0.06	0.01	0.00	0.02	0.02	0.12
Single Point Supply C1(a)	0.2kV	2	2	1	2	2.01	3.43	0.62	0.00	1.56	0.20	5.80
Single Point Supply C1(b)	0.4kV	20	31	1	1	5.87	0.36	0.07	0.00	0.17	0.18	0.77
Single Point Supply C2(a)	11kV	8	9	2	2	2.01	1.31	0.24	0.00	0.49	0.07	2.11
Single Point Supply C3(a)	132/66kV	16	17	0	0	0.51	0.03	0.01	0.00	0.01	0.02	0.07
Single Point Supply C1(c)	0.4kV	59	90	9	13	5.87	2.02	0.36	0.00	0.92	0.18	3.48
Single Point Supply C2(b)	11kV	87	103	11	13	2.01	0.60	0.11	0.00	0.22	0.07	1.01
Single Point Supply C3(b)	132/66kV	-	-	0	0	•	-	•	•		•	
AgriculturalD1(a)	0.4kV	4	7	7	11	5.87	22.49	4.04	0.02	10.24	0.18	36.97
AgriculturalD2(a)	0.4kV	5	8	13	20	5.87	36.57	6.57	0.03	16.65	0.18	60.00
AgriculturalD2(b)	0.4kV	64	99	25	39	5.87	5.47	0.98	0.00	2.49	0.18	9.13
AgriculturalD1(b)	0.4kV	8	12	2	3	5.87	3.28	0.59	0.00	1.49	0.18	5.54
Temporary Supply E1(i)	0.2kV	0	0	0	0	5.87	0.01	0.00	0.00	0.00	0.44	0.45
Temporary Supply E1(ii)	0.2kV	0	0	0	0	5.87	6.62	1.19	0.01	3.01	0.44	11.27
Temporary Supply E2	0.2kV	0	0	0	0	5.87	20.32	3.65	0.02	9.25	0.44	33.68
Public Lighting G	0.4kV	37	57	21	33	5.87	7.97	1.43	0.01	3.63	0.18	13.21
Residential Colonies H	11kV	1	1	1	1	2.01	3.82	0.69	0.00	1.43	0.07	6.01
Azad Jammu Kashmir - K1a	11kV	-		•								•
Azad Jammu Kashmir - K1b	11kV	-		•				-				
A3 General	0.4kV	105	162	43	66	5.87	5.65	1.02	0.00	2.57	0.18	9.42
Total		2,792	4,206	827	1,264	5.47	3.87	0.70	0,00	1.75	0.33	6.65

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Sukkur Electric Power Company (SEPCO)

Annex-B

Cost of Service & Proposed Use of System Charges
For Possible Eligible Bulk Power Consumers (One MW or
More at One Premises)

(PROPOSAL - 1)

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Who have

ANNEX-B PROPOSAL-1

Cost of Service & Proposed Use of System Charges
For Possible Eligible Bulk Power Consumers (One MW or More at One Premises)

16.599	1,248.42	18.82	10,598.59	29.61				29.61				O- Manager Collins
9.42		9.42	5,307.69	9.42				9.42				Average Applicable Tariff
07	1							2				Cross Subsidy
718	1.248.42	9.39	5,290.89	20.19	7.39	4,163.20	12.80	20.1877	7.39	4,163.20	12.80	lotal Cost of Service
0.81	195.71	1.16	652.35	3.16	1.16	652.35	2.01					There or allowed losses
6.37	1,052.72	8.23	4,638.54	17.02	6.23	58.01c,c	5/.or	i di Li				Impact of allowed locace
						3 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	10.70	20 19	7.39	4,163.20	12.80	Total Applicable Costs
1 25	302.32	1.79	1,007.72	1.79	1.79	1,007.72		2.12	2.12	1,194.97		Distribution Use of System
				0.00	0.00	1.79		0.00	0.00	1		
0,4,	11 100							2	0	. 213		Market Operator's Fee
0.47	114 33	0.68	381.10	0.68	0.68	381.10		0.80	0.80	451.91		riansmission Charges
2.63	636.07	3.76	2,120.24	3.76	3.76	2,120.24		4.40	+ +			
10.7									7 16	2 514 20		Generation Cost - Capacity
2.01		2.01	1,129.48	10.79			10.79	12.80			12.80	cook charge
ks./kWh	Month	TANA CENT	Month			UNICOILU					17 80	Generation Cost - Energy
	Rs./kW/	Re /bw/h	Rs./kW/	Rs./kWh	Rs./kWh	Rs./kW/	Rs./kWh	Rs./kWh	Rs./kWh	Month	Rs./kWh	
brid	Hybrid	Volumatric	MDI Based	Total	Fixed	Fix	Variable	Total	Hixed	7 (1)	Variable	
					B-3	В			0-0		VI.	
e) 	Industrial B-3 (1 MW or More)	dustrial B-3 (;	<u>-</u>		Industrial	Indu			o			Tariff Category
(T-1pcodo	Sea (1)								ndustrial	Indi		Consumption Category
roporal 11	PROPOSED Use of System Charges (3ropped 1)) Use of Syste	PROPOSED	oss Impact)	ted Energy Lo	Cost of Service (Separated Energy Loss Impact)	Cost of Se	.oss Impact)	Cost of Service (Inclusive of Energy Loss Impact)	rvice (Inclusiv	Cost of Se	Cost Assessment Level
												Cost Assessment

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ANNEX-B	
PROPOSAL-1	
	

17.20	1,261.03	19.13	12,536.07	29.92				29.92				Average Applicable Tariff
10.71		10.71	7,018.30	10.71				10.71				Cross Subsidy
6.49	1,261.03	8.42	5,517.77	19.21	6.42	4,205.21	12.80	19.2122	6.42	4,065.63	12.80	Potal Cost of Service
0.70	197.68	1.01	658.94	3.01	1.01	658.94	2.01					Impact of allowed losses
5.79	1,063.35	7.41	4,858.83	16.20	5.41	3,546.27	10.79	19.21	6.42	4,065.63	12.80	Total Applicable Costs
1.11	312.95	1.59	1,043.15	1.59	1.59	1,043.15		1.89	1.89	1.097.40		Distribution Use of System
				0.00	0.00	1.79		0.00	0.00	2.12		Market Operator's Fee
0.41	114.33	0.58	381.10	0.58	0.58	381.10		0.69	0.69	451.91		ransmission Charges
2.26	636.07	3.23	2,120.24	3.23	3.23	2,120.24		3.84	3.84	2,514.20		Topic in the City
2.01		2.01	1,314.35	10.79			10.70					Generation Cost - Canacity
	MOUNT						10.79	12.80			12.80	Generation Cost - Energy
Rs./kWh	Rs./kw./	Rs./kWh	Rs./kW/	Rs./kWh	Rs./kWh	Rs./kW/ Month	Rs./kWh	Rs./kWh	Rs./kWh	Month	Rs.,'kWh	
orid	Hybrid	Volumatric	MD! Based	Total	œd	Fixed	Variable	Total	Fixed	Fix	Variable	
					C2(b)	22			C2(b)	2		Fariff Category
ore)	(1 MW or Mc	Bulk Supply C-2(b) (1 MW or More)	Bulk		Bulk Supply	Bulk			Bulk Supply	Bulk		consumption Category
roposal-1)	m Charges (Pr	PROPOSED Use of System Charges (Proposal-1)	PROPOSED	oss Impact)	ted Energy Lo	Cost of Service (Separated Energy Loss Impact)	Cost of Se	oss Impact)	Cost of Service (Inclusive of Energy Loss Impact)	rvice (Inclusiv	cost of se	Cost Masessillett Level
										miles for the state of	_ ^^+ of Co.	t Accoccment I eval

Average Applicable Tariff Distribution Use of System Generation Cost - Capacity Impact of allowed losses **Total Applicable Costs** Generation Cost - Energy Market Operator's Fee Total Cost of Service Transmission Charges Consumption Category Cost Assessment Level Cross Subsidy Tariff Category Variable Rs./kWh Cost of Service (Inclusive of Energy Loss Impact) 11.30 11.30 11.30 Rs./kW/ Month 3,360.65 3,360.65 2,220.40 739.28 399.10 1.87 Industrial Fixed В4 Rs./kWh 2.60 2.60 0.98 0.00 0.25 1.38 13.9005 Rs./kWh Total 29.66 15.76 13.90 11.30 0.98 0.00 0.25 1.38 Rs./kWh Variable Cost of Service (Separated Energy Loss Impact) 11.30 10.79 10.79 0.51 4,197.11 4,007.78 Rs./kW/ Month 1,504.66 2,120.24 189.33 381.10 1.79 Industrial Fixed В4 Rs./kWh 0.12 2.60 2.48 0.930.00 0.24 1.31 Rs./kWh Total 29.66 13.90 15.76 13.27 0.63 10.79 0.93 0.00 0.24 1.31 13,357.73 MDI Based Rs./kw/ Month 4,482.47 PROPOSED Use of System Charges (Proposal-1) 8,875.26 4,293.15 1,504.66 2,120.24 189.33 381.10 287.16 Volumatric Rs./kWh 18.86 15.76 3.11 0.12 0.932.99 Industrial B-4 0.24 1.31 0.51 Rs./kW/ Month 1,258.60 1,258.60 1,201.80 451.40 114.33 636.07 56.80 Hybrid Rs./kWh 18.08 15.76

2.33

2.25 0.08

0.65

0.17

0.92 0.51 Cost of Service & Proposed Use of System Charges For Possible Eligible Bulk Power Consumers (One MW or More at One Premises)

ANNEX-B

PROPOSAL-1

And Services

ANNEX-B PROPOSAL-1

Cost of Service & Proposed Use of System Charges For Possible Eligible Bulk Power Consumers (One MW or More at One Premises)

19.96	2,235.75	19.86	16,892.73	30.65				30.65				Average Applicable Tariff
17.79		17.79	11,661.76	17.79				17.79				Cross Subsidy
2.17	2,235.73	2.07	5,230.97	12.86	1.56	4,898.60	11.30	12.86	1.56	4,062.15	11.30	Total Cost of Service
0.05	66.29	0.07	220.97	0.58	0.07	220.97	0.51					Impact of allowed losses
1.55	1,402.75	2.00	5,010.00	12.28	1.49	4,677.63	10.79	12.86	1.56	4,062.15	11.30	Total Applicable Costs
0.48	652.35	0.69	2,174.51	0.69	0.69	2,174.51		0.72	0.72	1,440.78		Distribution Use of System
				0.00	0.00	1.79		0.00	0.00	1.87	•	Market Operator's Fee
0.08	114.33	0.12	381.10	0.12	0.12	381.10		0.13	0.13	399.10		Transmission Charges
0.47	636.07	0.67	2,120.24	0.67	0.67	2,120.24		0.71	0.71	2,220.40		Generation Cost - Capacity
0.51		0.51	334.16	10.79			10.79	11.30			11.30	Generation Cost - Energy
Rs./kWh	Rs./kW/ Month	Rs./kWh	Rs./kW/ Month	Rs./kWh	Rs./kWh	Month	Rs./kWh	Rs./kWh	Rs./kWh	Month	Rs./kWh	
Hybrid	Ŧ	Voluniatric	WDI Based	Total	Fixed		Variable	Total	Fixed	Fix /bai/	Variable	
					C3(a)	D.			C3(a)			Tariff Category
	oly C-3(a)	Bulk Supply C-3(a)			Bulk Supply	Bulk			Bulk Supply	Bulk		Consumption Category
oposal-1)	m Charges (Pr	PROPOSED Use of System Charges (Proposal-1)	PROPOSE	ss Impact)	Cost of Service (Separated Energy Loss Impact)	ervice (Separa	Cost of S	oss Impact)	e of Energy L	Cost of Service (Inclusive of Energy Loss Impact)	Cost of Se	Cost Assessment Level



Sukkur Electric Power Company (SEPCO)

Annex-B-1

Cost of Service & Proposed Use of System Charges
For Possible Eligible Bulk Power Consumers (One MW or
More at One Premises)

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ANNEX-B PROPOSAL-2

Cost of Service & Proposed Use of System Charges For Possible Eligible Bulk Power Consumers (One MW or More at One Premises)

16.599	953.54	18.816	8,095.41	29.61				29.61				Average Applicable Tariff
9.423		9.423	4,054.20	9.42				9.42				Cross Subsidy
7.177	953.54	9.393	4,041.21	20.188	7.391	3,180.00	12.797	20.188	7.391	3,180.00	12.797	Total Cost of Service
0.811	57.72	1.158	192.39	3.163	1.16	192.39	2.01					Impact of allowed losses
6.366	895.82	8.235	3,848.82	17.024	6.233	2,987.60	10.791	20.188	7.391	3,180.00	12.797	Total Applicable Costs
1.252	257.26	1.789	857.54	1.789	1.79	857.54		2.121	2.12	912.76		Distribution Use of System
				0.003	0.00	1.52		0.004	0.00	1.62		Market Operator's Fee
0.474	97.29	0.677	324.30	0.677	0.68	324.30		0.802	0.80	345.18		Transmission Charges
2.635	541.27	3.764	1,804.24	3.764	3.76	1,804.24		4.463	4.46	1,920.43		Generation Cost - Capacity
2.005		2.005	862.74	10.791			10.79	12.797			12.80	Generation Cost - Energy
Rs./kWh	Rs./kW/ Month	Rs./kWh	Rs./kW/ Month	Rs./kWh	Rs./kWh	Rs./kW/ Month	Rs./kWh	Rs./kWh	Rs./kWh	Rs./kW/ Month	Rs./kWำ	
				Total	Fixed	- Fi	Variable	Total	(ed	Fíxed	Variable	
i 		Volumatric	MDI Rased	,	ů	B-3			.	B-3		Tariff Category
- 10	MW or More)	Industrial B-3 (1 MW or More)	İn	i	Industrial	Indu			Industrial	Indu		Consumption Category
posal-2)	n Charges (Fro	PROPOSED Use of System Charges (Proposal-2)	PROPOSED	s Impact)	Cost of Service (Separated Energy Loss Impact)	ervice (Separa	Cost of So	ss Impact)	e of Energy Lo	Cost of Service (Inclusive of Energy Loss Impact)	Cost of Se	Cost Assessment Level
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_	_		Τ-						T		Τ,			T		T	1		Γ.				
CI COO	Cross Subsidy	Total Cost of Service		Impact of allowed losses	Total Applicable costs	Table Costs	Distribution Use of System	Market Operator's ree	1, 5, 5, 6, 5, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6,	Transmission Charges	SCHOOL STORY	Generation Cost - Capacity	Generation Cost - Energy					Tariff Category	Constant	Consumption Category	Cost Assessment Level		ANNEX-B
		3,27.7	12 797			12.797							11.00	12 80	Rs./kWh		Variable				Cost of Serv		PROPOSAL-2
		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	2.697.72			2,697.72	246.64		1.75	3/3.18	010	2,076.16			Month	Rs./kW/	Fixed	(2(0)	22/1	Bulk Supply	COST OF SELVICE (HICKORY)	(Parallel Inching)	AL-2
			6.416			6.416	1.89		0.00	9.00	0.69	3.84			100/1001	Rs /kWh	<u>a</u>			pply	0,	f Energy loss	
29.92	10.71		19.212			19.212	1.887		0.003		0.689	3.836		12.797		Rs./kWh	Total					impact)	
			12.797		2.01	10.791			-					10.79		Rs./kWh	Variable					Cost of Se	
			3,472.55	\dagger	210.09	3,262.46	0000	950 66	1.65		350.60	1,950.55	25255		TATO I CO	Rs./kW/		Eivad	C2(b)	Bulk Supply		Cost of Service (Separated Energy Loss Impact)	For Possible
			6,416		1.01	5.410		1.59	0.00		0.58	0.50	2 73			Rs./kWh		8	5	Anddr	nolv	ed Energy Loss	Eligible Bulk Po
29.92		10.71	19.212		3.010	16.202		1.591	0.003	200	0.581		3 235	10.791		Rs./kWh		Total	· 			Impact)	wer Consume
10,351.79		5,795.53	4,2300,20	7 556 36	210.09	4,346.17		959.66			350.60		1.950.55	1,000.50	1 005 35	Month	Rs /kW/	MDI Based	-		Bulk	PROPOSED	For Possible Eligible Bulk Power Consumers (Une www.ui www.e.e.v.n.c.)
19.125		10.707		8.418	1.005	/,415		1.591			0.581		3.235		2 005	Rs./kWh		Volumatric			Supply C-2(b)	Use of System	Mole of Other
1,041.2/	7		\dagger	1,041.27	63.03	1	078 2/	287.90			105.18	100	585.16			Month	Rs./kW/	пуша			Bulk Supply C-2(b) (1 MW or Nore)	PROPOSED Use of System Charges (Proposal-2)	
1/.201	$\neg \top$	10.707		6.494	0.70		5 790	1.114			0.407	2 407	2.264		2.005	70/ 2001	De /Lia/h		<u>. </u>		E)	osal-2)	

Cost of Service & Proposed Use of System Charges For Possible Eligible Bulk Power Consumers (One MW or More at One Premises)

PROPOSAL-2

Cost of Service & Proposed Use of System Charges For Possible Eligible Bulk Power Consumers (One MW or More at One Premises)

ANNEX-B

PROPOSAL-2

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19.959	2,225.05	19.857	14,806.44	30.65				30.65				C
17.791		17.791	9,629.97	17.79				17.79				Average Applicable Tariff
2.167	2,225.05	2.066	5,176.47	12.858	1.557	4,902.29	11.301	12.858	1.557	4,000.20	100.	Cross Subsidy
0.049	88.978	0.070	296.59	0.580	0.07	296.59	0.51		,		11 301	Total Cost of Service
1.550	1,381.18	1.996	4,879.87	12.278	1.486	4,605.70	10.791	12.858	1.557	4,065.20	11.302	Impact of allowed losses
0.484	642.32	0.691	2,141.07	0.691	0.69	2,141.07		0.724	0.72	1,441.86	11 301	Total Applicable Costs
				0.001	0.00	1.76		0.001	0.00	7.8.1		Distribution (Iso of Surton
0.085	112.57	0.121	375.24	0.121	77.0	47.676						Market Operator's Fee
ç	01.01.0					375 74		0.127	0.13	399.40		Transmission Charges
0.473	626.29	0.674	2,087.63	0.674	0.67	2,087.63		0.706	0.71	2,222.07		Generation Cost - Capacity
0.510		0.510	275.94	10.791			10.79	11.301				Generation Cast Co.
KS./KWh	Month	103/ 1041	Month			Mondi					11.33	Generation Cost - Energy
	Rs./kW/	Rs /kw/h	Rs./kW/	Rs./kWh	Rs./kWh	Rs./kW/	Rs./kWh	Rs./kWh	Rs./kWh	Rs./kW/ N/onth	Rs./kWh	
~ <u>a</u>	Hybrid	Volumatric	MDI Based	Total	Fixed	Fix	Variable	Total	Fixed	Fi	Variable	
					C3(a)	C			C3(a)			Paris Paris
	ນly C-3(a)	Bulk Supply C-3(a)			our supply	OCIA						Tariff Category
- Postor	0.0					Bll.			Bulk Supply	Bulk	-	Consumption Category
lesono	PROPOSED Use of System Charges (Proposal 2)	D Use of Syster	PROPOSEI	is Impact)	Cost of Service (Separated Energy Loss Impact)	ervice (Separa	Cost of S	oss Impact)	Cost of Service (Inclusive of Energy Loss Impact)	ervice (Inclusi	Cost of S	Cost Assessment Level

Cost of Service & Proposed Use of System Charges For Possible Eligible Bulk Power Consumers (One MW or More at One Premises)

ANNEX-B

PROPOSAL-2

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