



Faisalabad Electric Supply Company Limited

Chief Executive Officer FESCO Faisalabad

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No. 3064 /EP

Dated: 07.03.2023

The Registrar NEPRA.
NEPRA Tower, Attaturk Avenue (East)
Sector G5/1, Islamabad.

Sub: PETITION FOR DETERMINATION OF USE OF SYSTEM CHARGES (UoSC)

In pursuant of Regulation 7 of NEPRA Open Access (Interconnection and Wheeling of Electric Power) Regulations, 2022 whereby, a Distribution Company shall prepare and submit a separate petition to the Honorable Authority for determination of its use of system charges. We are pleased to submit attached herewith Use of System Charges petition for kind consideration and approval of Authority. It may kindly be noted that the instant petition includes Cost of Service Study of FESCO (FY 2022-23) as Annex-2, thereto forming fundamental basis for the instant petition.

For any clarification or additional information or any other matter relating to the said petition Mr. Aamir Mahboob Ilahi, DG (MIRAD) FESCO (0345-1500206, email:miradfesco@gmail.com) is designated as focal person.

DA/As above in original

[Signature]
Chief Executive Officer 7/3/23
FESCO Faisalabad

CC.

1. General Manager (Technical) FESCO Faisalabad.
2. Chief Financial Officer FESCO Faisalabad.
3. General Manager (Operation) FESCO Faisalabad.
4. General Manager (C&CS) FESCO Faisalabad.
5. Director General (MIRAD) FESCO Faisalabad.
6. Director (Legal & Labor) FESCO Faisalabad.

TARIFF (DEPARTMENT)

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For kind information please:

1. Chairman
2. M (Lic.)
3. M (Law)

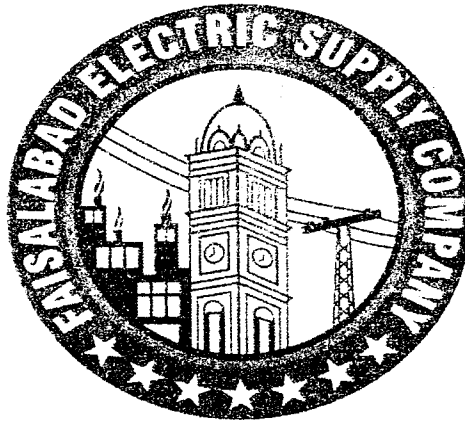
2. M (Tech.)
3. M (Trf. & Fin.)

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DG (RO)

REGISTRAR OFFICE
Diary No: 3002
Date: 14.3.2023

Tarif Division
By No. 16.75
Dated: 15-3-23

FAISALABAD ELECTRIC SUPPLY COMPANY



Petition for Determination of Use of System Charges

(March, 2023)

**WEST CANAL ROAD ABDULLAHPUR,
FAISALABAD**

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PETITION SUMMARY

Details of the Petitioner

Name and Address:

Faisalabad Electric Supply Company (FESCO) Limited was incorporated under the Companies Ordinance, 1984 (Now Companies Act 2017) vide Certificate of Incorporation No. L09460 dated 21-03-1998 and obtained certificate for commencement of business on March 26, 1998 with registered office, West Canal Road, Abdullahpur, Faisalabad. FESCO territory encompasses 45,387 sq. km of area having a population of 32.5 Million people and is responsible for provision of electricity distribution and supply services to over 4.9 million consumers of eight civil districts of Faisalabad, Jhang, Chiniot, Toba Tek Singh, Sargodha, Khushab, Mianwali and Bhakkar.

License Details:

FESCO is a licensed public utility responsible for Distribution & Supply of electricity to its consumers. FESCO has been granted a Distribution License bearing No. 02/DL/2002 by National Electric Power Regulatory Authority (NEPRA) on March 02, 2002, which was expired on March 1, 2022. FESCO applied for renewal of license vide letter No. 1647 dated 28-10-2021 before the Authority. Consequently, NEPRA vide Order dated 31-05-2022 granted provisional renewal of Distribution License for 6 months up to September 01, 2022 and which was further extended vide Order dated December 13, 2022 up to April 30th, 2023 or till the time the final determination of the Authority in the matter is made, whichever is earlier. Under clause 23E (1) of NEPRA Act, 1997 (Amended Act of 2018), FESCO is deemed to hold a license for supply of electric power for a period of 5 years. FESCO, in accordance with the requirement of NEPRA Open Access (Interconnection and Wheeling of electric power) Regulations, 2022, is required to prepare and submit a separate petition to the Authority for determination of its Use of System Charges.

Grounds of Petition:

~~Pursuant to the relevant directions of National Electricity Policy (NE Policy) read with regulation 7 of NEPRA 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:~~

In compliance with the Clause 4.4, Clause 5.5.2(f), Clause 5.5.2(g), Clause 5.5.4, Clause 5.6.5 and Clause 5.6.7 of NE Policy and

In compliance with the regulation 7 of NEPRA Open Access Regulations, each distribution licensee, in consultation with the respective supplier of last resort shall, within ninety days following the date of notification of Open Access Regulation, shall submit a separate petition to the Authority for determination of its use of system charges.

Open access envisages non-discriminatory access to the transmission and distribution network. It enables the eligible Bulk Power Consumers to procure power at competitive price, to meet their demand, from suppliers other than supplier of last resort. DISCOs are mostly worried about losing their high-tariff paying consumers to open access, which will have an adverse impact on their financial and operational efficiencies. Therefore, determination of open access charges is necessary to ensure financial viability of distribution companies.

Relevant Clauses in National Electricity Policy 2021

The National Electricity Policy, 2021 issued under Section 14A of the 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 case, are provided in the below lines.

As per Clause 4.4 (Financial Viability) of the National Electricity Policy provides that sustainability of the entire power sector pivots around the financial and commercial viability of its individual sub-sectors. This will be done by:

- 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.*

As per Clause 5.5.2(f) of National Electricity Policy states:

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

As per Clause 5.5.2(g) of National Electricity Policy states:

~~“the Government shall take a decision on the recovery of costs that arise due to advent of the open access and market liberalization;”~~

As per Clause 5.5.4 of National Electricity Policy states:

“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.”

As per Clause 5.6.5 of National Electricity Policy states:

“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 of uniform tariff. Similarly, the Government may also incorporate, in the consumer-end 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.”

Clause 5.6.7 of National Electricity Policy states:

“The Regulator will provide for recovery of costs arising on account of distributed generation and open access in the consumer-end tariff, as decided by the Government. Further, the Government may announce, from time to time, various concessional packages to incentivize additional consumption to minimize such costs.”

2.2. STRATEGIC DIRECTIVES UNDER DRAFT NATIONAL ELECTRICITY PLAN 2022

As per Draft National Electricity Plan 2022 prepared by Ministry of Energy, Power Division, Govt of Pakistan, Open Access Charges have been recognized by Federal Government to devise appropriate mechanism based on the co-optimization of competing objectives of financial viability, affordability and competition which is crucial for ensuring sustainable transition of the sector posing significant challenge in recovering costs of existing generation assets after liberalization of electricity markets and disruptive technological innovations under following Strategic Directives.

As per Strategic Directive No. 66, *“Costs arising on account of open access shall be recovered from all eligible consumers, opting for bilateral contract(s), through competitive suppliers till the currency of this NE-Plan or as amended by the Government, as per the following mechanism:*

- a) Cross-subsidy shall be applicable to all such consumers;*
- b) Grid charges, including use of transmission and distribution system charges, Market and system operator fee, metering service charges etc., shall be applicable to all such consumers;*
- c) Transition to competition charge shall be applicable to all such consumers, provided that following rate schedule shall be applicable from the effective date of commencement of bilateral contract:*

i) For first two (2) years, 100% of the capacity charge;

ii) For next two (2) years, 75% of the capacity charge;

iii) For the fifth year, 50% of the capacity charge.

Provided further, the time between the formal intimation of bilateral contract to the respective DISCO and effective date of commencement of such bilateral contract shall be offset from the timeline in the schedule stated above. Accordingly, the Regulator shall develop appropriate guidelines to give effect to such transactions in prudent manner."

As per Strategic Directive No. 67, "Prior to the commencement of commercial market operations of the CTBCM, the Regulator shall determine a separate open access charge, comprising of components of cross-subsidy, grid charges and transition to competition charges in accordance with the provisions of Strategic Directive 066. Such charges shall only be applicable for the eligible consumers opting for open access through national grid. Provided further, till the application of uniform tariff, the transition to competition charge shall also be determined on uniform basis across the country."

2.3 Legal and Regulatory Framework

The approved design of Competitive Trading and 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 directed in 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:

As per Section 2(ii) of the Act 1997:

"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"

Important definitions provided in Regulation 2 of 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:

an electric power supplier for supply of electric power to its consumer(s); or

a captive generating plant for delivery of the electric power from generation facility to the destination of its use; or

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) Regulation 5 (Obligation to provide open access) of Open Access Regulations 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 non-discriminatory open access in accordance with the Act, these 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 license 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 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."*

Regulation 7 (Filing of petition and determination of use of system charges) of Open Access Regulations provides as under:

"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."

Regulation 8 (Wheeling of electric power) of Open Access Regulations states under:

"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 FESCO for the purposes of instant petition, is obligated to provide open access, to its network, to the open access users on non-discriminatory basis.
- ii) For the said obligation, the FESCO is entitled for recovery of use of system charges 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. to 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, 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 / Charges (MOF) 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 FESCO, these shall not form part of use of system charges to be recovered directly by FESCO.
 - c. 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 (referred above).

- d. 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.
- e. Stranded Asset Cost and Cross-Subsidy charges are relevant costs that needs to be incorporated into the use of system charges and if these issues are not properly considered, it would have huge financial implications on the regulated consumers or the same would be borne by the GoP.
- 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 these use of system charges as requested under this instant petition.

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 FESCO 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.
- h. The use of system charges shall be with reference to the voltage level (132/66 kV, 11/33 kV) for the applicable consumer categories of all possible BPCs. The component-wise Cost of Service and consequent assessment, as detailed above, of component-wise Use of System Charges for the applicable BPCs is provided at Annex-II.
- i. Any taxes and surcharges as imposed by the Government shall be applicable.

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/NGCOR NTDC through FESCO
2.	System Operator Charge / Fee	System Operator through NTDC.
3.	MSP Charge / Fee	MSP through NTDC
4.	Distribution Use of System Charge	FESCO as Distribution Licensee
5.	Cross Subsidy Surcharge	FESCO as SOLR (Supply Licensee)
6.	Stranded Capacity Costs	FESCO as SOLR (Supply Licensee)

Features of Petition:

Basis of Use of System Charges:

The instant petition for determination of use of system charges has been developed based on guidelines provided in the NEPRA Open Access (Interconnection and Wheeling of Electric Power) Regulations, 2022. Therefore, FESCO has carried out Cost of Service Study for the FY 2022-23 to arrive at cost reflective tariffs giving proper price signals for its eligible consumers.

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, TSP, 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 in line with the NTDC. However, following options are available for consideration and determination:

- i) 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 in the Market. This option may 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.

It is worth mentioning here that the proposed tariff rates as per Three (3) options narrated above are attached at Annex-A.

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.

Applicable Categories / Eligible BPCs

While, in terms of existing stipulation contained in the Act, and NEPRA, in its Consumer Service Manual 2021 clarified that the Bulk Power Consumer (BPC) 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 determine and the Authority may determine different amounts and voltage levels and with such other characteristics for different areas. The tariff categories (as per NEPRA's Definitions and Conditions for supply of power) for eligible Bulk Power Consumer's (having sanctioned load 1 MW & above) for open access use in FESCO shall include A-3, B-3, B-4, C-2, and C-3. However, any other category which may fall under the definition of BPC will also be eligible.

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

- i) A captive power producer / user using the FESCO 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.
- ii) 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.

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.

Adjustment/Indexation Mechanism of each component of Open Access/Wheeling Charges

Data Extracted from Cost of Service Study FY 2022-23 Cost of Service Functionalized Rates (BPC Only)

Based on the allocation of overall Revenue Requirement of FESCO to customers categories, the resultant functional costs and rates (in terms of Rs./kWh, Rs./kW/Month and Rs./Customer / Month, as applicable) of BPCs are summarized at **Table 1 & 2** below.

Table 1

FY 2022-23											
Classes	Volt. Level	No. of Customers	Energy	Demand	Generation Cost		Transm	MOF	Distribution		Total Cost (Rs. M)
			GWh	MW	Energy (Rs. M)	Demand (Rs. M)	Cost (Rs. M)	Cost (Rs. M)	Demand (Rs. M)	Cust. Cost (Rs. M)	
Commercial -- A2(c)	0.4kV	17,119	417	81	5,147	3,873	499	2	932	101	10,543
Industrial -- B3	11kV	409	2,256	288	27,321	13,505	1,739	7	3,215	546	46,333
Industrial -- B4	132kV	17	969	94	10,990	4,139	533	2	493	182	15,540
Bulk Supply -- C2(a)	11kV	3	0	0	2	2	0	0	0	0	4
Bulk Supply -- C2(b)	11kV	50	118	23	1,426	1,063	137	1	253	29	2,308
Bulk Supply -- C3(a)	132kV	4	5	1	55	30	4	0	4	1	93
Bulk Supply -- C3(b)	132kV	3	84	16	949	700	90	0	83	16	1,858
Residential Colonies -- H	11kV	152	5	1	64	51	7	0	12	1	135
Total		17,758	3,853	504	45,953	23,362	3,009	12	4,983	875	78,194

Table 2

FY 2022-23											
Classes	Volt. Level	No. of Customers	Energy	Demand	Generation Cost		Transm	MOF	Distribution		Total Rs./ kWh
			GWh	MW	Energy (Rs/kWh)	Demand (Rs/kW/Month)	(Rs/kW /Month)	(Rs/kW/Month)	(Rs/kW/Month)	(Rs./ Cust/ Month)	
Commercial -- A2(c)	0.4kV	17,119	417	81	12	3,977	512	1.97	947	492	25.29
Industrial -- B3	11kV	409	2,256	288	12	3,902	503	1.94	929	111,417	20.54
Industrial -- B4	132kV	17	969	94	11	3,655	471	1.81	435	873,471	16.87
Bulk Supply -- C2(a)	11kV	3	0	0	12	3,902	503	1.94	929	870	28.84
Bulk Supply -- C2(b)	11kV	50	118	23	12	3,902	503	1.94	929	47,149	24.70
Bulk Supply -- C3(a)	132kV	4	5	1	11	3,655	471	1.81	435	17,974	19.16
Bulk Supply -- C3(b)	132kV	3	84	16	11	3,655	471	1.81	435	414,942	21.97
Residential Colonies -- H	11kV	152	5	1	12	3,902	503	1.94	929	702	25.52
Total		17,758	3,853	504	11.93	3,859.39	497.09	1.91	823	144.63	20.30

Functional rates in terms of Rs./kW/Month for each function is given in **Table 3** below.

Table 3

FY 2022-23											
Classes	Volt. Level	No. of Customers	Energy	Demand	Generation Cost		Transm	MOF	Distribution		Total Rs./kW/Month
			GWh	MW	Energy (Rs./kW/Month)	Demand (Rs./kW/Month)	(Rs./kW/Month)	(Rs./kW/Month)	(Rs./kW/Month)	(Rs./Cust/Month)	
Commercial -- A2(c)	0.4kV	17,119	417	81	5,285	3,977	512	1.97	947	104	10,826
Industrial -- B3	11kV	409	2,256	288	7,893	3,902	503	1.94	929	158	13,386
Industrial -- B4	132kV	17	969	94	9,703	3,655	471	1.81	435	160	14,426
Bulk Supply -- C2(a)	11kV	3	0	0	3,920	3,902	503	1.94	929	78	9,334
Bulk Supply -- C2(b)	11kV	50	118	23	5,232	3,902	503	1.94	929	105	10,672
Bulk Supply -- C3(a)	132kV	4	5	1	6,787	3,655	471	1.81	435	112	11,461
Bulk Supply -- C3(b)	132kV	3	84	16	4,959	3,655	471	1.81	435	82	9,604
Residential Colonies -- H	11kV	152	5	1	4,910	3,902	503	1.94	929	98	10,343
Total		17,758	3,853	504	7,591	3,859	497	1.91	823	145	12,918

Unbundled Rates/kWh (BPC Only)

Based on the allocation of Revenue Requirement of FESCO (Generation, Transmission and Distribution Cost) to customers categories, the resultant unbundled rates Rs./kwh for generation, transmission and distribution are shown in **Table 4** below.

Table 4

FY 2022-23													
Customer Category	Voltage level	Sales GWh	Demand MW	Generation Rs. (M)	Transm Rs. (M)	MOF Rs. (M)	Dist. Rs. (M)	Total Rs. (M)	Generation Rs./kWh	T. UseSC Rs./kWh	MOF Rs./kWh	D. UseSC Rs./kWh	Total Rate Rs./kWh
Commercial -- A2(c)	0.4kV	417	81	9,020	499	2	1,023	10,543	21.64	1.20	0.00	2.45	25.29
Industrial -- B3	11kV	2,256	288	40,326	1,739	7	3,761	46,333	18.10	0.77	0.00	1.67	20.54
Industrial -- B4	132kV	969	94	15,130	533	2	575	16,340	15.62	0.55	0.00	0.79	16.87
Bulk Supply -- C2(a)	11kV	0.14	0.03	5	0	0	0	4	24	1.55	0.01	0.11	25.94
Bulk Supply -- C2(b)	11kV	118	23	2,484	137	1	282	2,908	21.14	1.16	0.00	2.39	24.70
Bulk Supply -- C3(a)	132kV	5	1	84	4	0	4	92	17	0.79	0.00	0.92	19.16
Bulk Supply -- C3(b)	132kV	84	16	1,649	90	0	99	1,838	19.71	1.08	0.00	1.18	21.97
Residential Colonies -- H	11kV	5	1	115	7	0	13	135	21.74	1.24	0.00	2.53	25.52
Total		3,853	504	69,315	3,009	12	5,858	78,194	17.99	0.78	0.00	1.52	20.30

Revenue, Cost of Service and Subsidies (BPC Only)

Table 5

FY 2022-23						
Customer Class	Voltage	Sales GWh	Revenue Rs./kwh	Cost of Service Rs./kwh	Subsidy Rs./kwh	Revenue to Cost Ratio
Commercial -- A2(c)	0.4kV	417	25.44	25.29	0.15	1.01
Industrial -- B3	11kV	2,256	24.84	20.54	4.30	1.21
Industrial -- B4	132kV	969	24.66	16.87	7.79	1.46
Bulk Supply -- C2(a)	11kV	0.14	32.45	28.84	3.62	1.13
Bulk Supply -- C2(b)	11kV	118	25.12	24.70	0.42	1.02
Bulk Supply -- C3(a)	132kV	5	26.84	19.16	7.68	1.40
Bulk Supply -- C3(b)	132kV	84	25.69	21.97	3.72	1.17
Residential Colonies --	11kV	5	28.75	25.52	3.23	1.13

Cost of Service and Open Access/Wheeling/ Use of System Charges for Eligible BPCs

Based on the allocation of cost of service as elaborated above, open access charge of an eligible BPC is summarized in three forms:

- i. MDI based (Rs. /kW/Month), if implemented, it gives security of revenue.
- ii. Volumetric based (Rs./kWh), if implemented, it provide flexibility to customers.
- iii. Hybrid (both Rs./kW/Month and Rs./kWh), if implemented, it gives benefits to both parties i.e. consumer and distributor.

Cost of Service (inclusive of energy loss impact and separated energy loss impact) and open access charge are elaborated in **Table 06** to **Table 9** below.

Table 6

Description	Cost of Service (Inclusive of Energy Loss Impact)				Cost of Service (Exclusive of Energy Loss Impact)				Open Access Charges			
	Variable		Fixed		Total		Variable Rs./kWh	Fixed Rs./kW/Mnth	Total Rs./kWh	MDI Based Rs./kW/Mnth	Volumetric Rs./kWh	Hybrid Rs./kW/Mnth
	Rs./kWh		Rs./kW/Mnth		Rs./kWh							
Consumption Category	Commercial				Commercial				Commercial			
Tariff Category	A-2C				A-2C				A-2C			
Generation Cost - Energy	12.35				12.35				11.17			
Generation Cost - Capacity		3,976.92	9.29			3,597.39	8.40		8.40	3,597.39	8.40	1,331.04
Transmission Charges		512.23	1.20		1.20	463.34	1.08		1.08	463.34	1.08	171.44
Market Operator's Fee		1.97	0.00		0.00	1.78	0.00		0.00			
Distribution Use of System		1,050.43	2.45		2.45	950.18	2.22		2.22	950.18	2.22	351.57
Total Applicable Costs	12.35	5,541.55	12.95		25.29	5,012.71	11.71		22.88	5,010.92	11.71	1,854.04
Impact of Allowed Losses						1.18	1.24		2.41	528.84	1.24	1.24
Total Cost of Service	12.35	5,541.55	12.95		25.29	5,541.55	12.95		25.29	5,539.76	12.94	2,377.05
Gross Subsidy					0.15				0.15	90.64	0.15	0.15
Average Applicable Tariff					25.44				25.44	5,630.40	13.09	3.46

Table 7

Description	Cost of Service (Inclusive of Energy Loss Impact)				Cost of Service (Exclusive Energy Loss Impact)				Open Access Charges			
	Variable	Fixed		Total	Variable	Fixed		Total	MDI Based	Volumetric	Hybrid	
	Rs./kWh	Rs./kW /Mnth	Rs./kWh	Rs./kWh	Rs./kWh	Rs./kW /Mnth	Rs./kWh	Rs./kWh	Rs./kW /Mnth	Rs./kWh	Rs./kW /Mnth	Rs./kWh
	Industrial				Industrial				Industrial			
Consumption Category	B-3				B-3				B-3			
Tariff Category	12.11			12.11	11.17			11.17				
Generation Cost - Energy		3,901.64	5.99	5.99		3,597.29	5.52	5.52	3,597.29	5.52	1,331.00	3.48
Generation Cost - Capacity		502.53	0.77	0.77		463.33	0.71	0.71	463.33	0.71	171.43	0.45
Transmission Charges												
Market Operator's Fee		1.94	0.00	0.00		1.78	0.00	0.00				
Distribution Use of System		1,086.68	1.67	1.67		1,001.91	1.54	1.54	1,001.91	1.54	370.71	0.97
Total Applicable Costs	12.11	5,492.79	8.43	20.54	11.17	5,064.31	7.77	18.94	5,062.53	7.77	1,873.14	
Impact of Allowed Losses					0.94	428.47	0.66	1.60	428.47	0.66		0.66
Total Cost of Service	12.11	5,492.79	8.43	20.54	12.11	5,492.79	8.43	20.54	5,491.00	8.43	2,415.27	2.07
Cross Subsidy				4.30				4.30	2,622.89	4.30		4.30
Average Applicable Tariff				24.84				24.84	8,113.90	12.72		6.37

Table 8

Description	Cost of Service (Inclusive of Energy Loss Impact)				Cost of Service (Exclusive Energy Loss Impact)				Open Access Charges			
	Variable		Fixed		Total	Variable		Fixed		Total	MDI Based	
	Rs./kWh	Rs./kWh	Rs./kWh	Rs./kWh	Rs./kWh	Rs./kWh	Rs./kWh	Rs./kWh	Rs./kWh	Rs./kWh	Rs./kWh	Rs./kWh
Consumption Category	Industrial					Industrial					Industrial	
Tariff Category	B-4					B-4					B-4	
Generation Cost - Energy	11.35				11.35	11.17				11.17		
Generation Cost - Capacity		3,654.60		4.27	4.27		3,597.22		4.21	4.21	3,597.22	1,330.97
Transmission Charges		470.71		0.55	0.55		463.32		0.54	0.54	463.32	171.43
Market Operator's Fee		1.81		0.00	0.00			1.78	0.00	0.00		
Distribution Use of System		595.82		0.70	0.70		586.47		0.69	0.69	586.47	216.99
Total Applicable Costs	11.35	4,722.95	5.52	16.87	16.87	11.17	4,648.80	5.44	5.43	16.60	4,647.02	1,719.40
Impact of Allowed Losses						0.18	74.15	0.09	0.09	0.26	74.15	0.09
Total Cost of Service	11.35	4,722.95	5.52	16.87	16.87	11.35	4,722.95	5.52	5.52	16.87	4,721.17	2,107.82
Cross Subsidy					7.79					7.79	4,754.39	7.79
Average Applicable Tariff					24.66					24.66	9,475.56	8.65

Table 9

Description	Cost of Service (Inclusive of Energy Loss Impact)				Cost of Service (Exclusive Energy Loss Impact)				Open Access Charges				
	Variable		Fixed		Total	Variable	Fixed		Total	MDI Based	Volumetric	Hybrid	
	Rs./kWh	Rs./kW /Mnth	Rs./kWh	Rs./kWh	Rs./kWh	Rs./kWh	Rs./kW /Mnth	Rs./kWh	Rs./kWh	Rs./kW /Mnth	Rs./kWh	Rs./kW /Mnth	Rs./kWh
	Bulk Supply												
	C2-a												
Consumption Category	C2-a												
Tariff Category	C2-a												
Generation Cost - Energy	12.11				12.11	11.17				11.17			
Generation Cost - Capacity		3,901.64	12.05		12.05		3,597.29	11.11		11.11		1,331.00	7.00
Transmission Charges		502.53	1.55		1.55		463.33	1.43		1.43		171.43	0.90
Market Operator's Fee		1.94	0.01		0.01		1.78	0.01		0.01			
Distribution Use of System		1,007.21	3.11		3.11		928.65	2.87		2.87		343.60	1.81
Total Applicable Costs	12.11	5,413.32	16.73		28.84	11.17	4,991.05	15.42		26.59		1,846.03	
Impact of Allowed Losses						0.94	422.27	1.30		2.25		1.30	1.30
Total Cost of Service	12.11	5,413.32	16.73		28.84	12.11	5,413.32	16.73		28.84		2,361.06	4.01
Cross Subsidy					3.60					3.60			3.60
Average Applicable Tariff					32.44					32.44		20.32	7.62

Table 10

Description	Cost of Service (Inclusive of Energy Loss Impact)				Cost of Service (Exclusive of Energy Loss Impact)				Open Access Charges							
	Variable		Fixed		Total		Variable		Fixed		Total		MDI Based		Hybrid	
	Rs./kWh		Rs./kWh /Mnth		Rs./kWh		Rs./kWh		Rs./kWh /Mnth		Rs./kWh		Rs./kWh /Mnth		Rs./kWh /Mnth	
Consumption Category																
Tariff Category																
Bulk Supply																
C2-b																
Generation Cost - Energy																
Generation Cost - Capacity																
Transmission Charges																
Market Operator's Fee																
Distribution Use of System																
Total Applicable Costs																
Impact of Allowed Losses																
Total Cost of Service																
Cross Subsidy																
Average Applicable Tariff																

Table 11

Description	Cost of Service (Inclusive of Energy Loss Impact)				Cost of Service (Exclusive Energy Loss Impact)				Open Access Charges							
	Variable		Fixed		Total		Variable Rs./kWh	Fixed Rs./kW/Mnth	Total Rs./kWh	MDI Based Rs./kW/Mnth	Volumetric Rs./kWh	Hybrid Rs./kW/Mnth	Rs./kWh			
	Rs./kWh	Rs./kW/Mnth	Rs./kWh	Rs./kW/Mnth	Rs./kWh	Rs./kWh										
Consumption Category	Bulk Supply				Bulk Supply				Bulk Supply				Bulk Supply			
Tariff Category	C3-a				C3-a				C3-a				C3-a			
Generation Cost - Energy	11.35				11.35	11.17				11.17						
Generation Cost - Capacity		3,654.60	6.11		6.11		3,597.22	6.01		6.01	3,597.22	6.01	1,330.97		3.79	
Transmission Charges		-	0.79		0.79		463.32	0.77		0.77	463.32	0.77	171.43		0.49	
Market Operator's Fee		1.81	0.00	0.00	0.00		1.78	0.00		0.00						
Distribution Use of System		547.64	0.92	0.92	0.92		539.04	0.90		0.90	539.04	0.90	199.44		0.57	
Total Applicable Costs	11.35	4,204.05	7.81	19.16	19.16	11.17	4,601.37	7.69		18.86	4,599.59	7.69	1,701.85			
Impact of Allowed Losses						0.18	73.39	0.12		0.30	73.39	0.12			0.12	
Total Cost of Service	11.35	4,204.05	7.81	19.16	19.16	11.35	4,674.76	7.81		19.16	4,672.98	7.81	2,072.72		1.18	
Cross Subsidy					7.68					7.68	4,685.78	7.68			7.68	
Average Applicable Tariff					26.84					26.84	9,358.76	15.49			8.86	

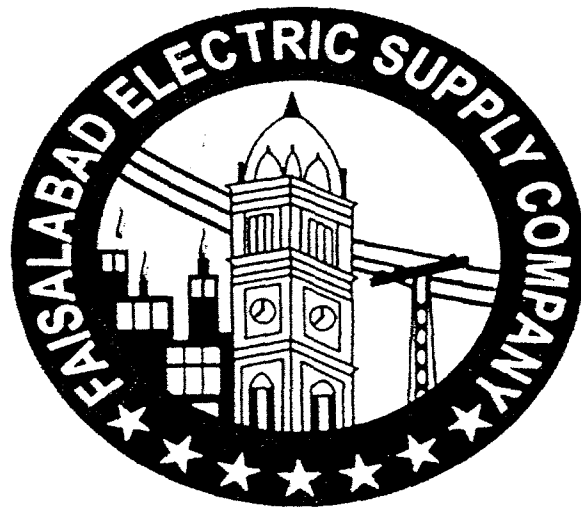
Table 12

Description	Cost of Service (Inclusive of Energy Loss Impact)				Cost of Service (Exclusive Energy Loss Impact)				Open Access Charges			
	Variable	Fixed	Total		Variable	Fixed	Total		MDI Based	Volumetric	Hybrid	
	Rs./kWh	Rs./kW /Mnth	Rs./kWh		Rs./kWh	Rs./kW /Mnth	Rs./kWh		Rs./kW /Mnth	Rs./kWh	Rs./kW /Mnth	
	Bulk Supply				Bulk Supply				Bulk Supply			
Consumption Category	C3-b				C3-b				C3-b			
Tariff Category	11.35		11.35		11.17		11.17					
Generation Cost - Energy												
Generation Cost - Capacity		3,654.60	8.36			3,597.22	8.23		3,597.22	8.23	1,330.97	
Transmission Charges		470.71	1.08			463.32	1.06		463.32	1.06	171.43	
Market Operator's Fee		1.81	0.00			1.78	0.00					
Distribution Use of System		517.44	1.18			509.32	1.17		509.32	1.17	188.45	
Total Applicable Costs	11.35	4,644.57	10.63		11.17	4,571.65	10.46		4,569.87	10.45	1,690.85	
Impact of Allowed Losses					0.18	72.92	0.17		72.92	0.17	0.17	
Total Cost of Service	11.35	4,644.57	10.63		11.35	4,644.57	10.63		4,642.79	10.62	2,050.73	
Cross Subsidy									2,269.32	3.72	3.72	
Average Applicable Tariff									6,912.11	14.34	5.29	

Table 13

Description	Cost of Service (Inclusive of Energy Loss Impact)				Cost of Service (Exclusive Energy Loss Impact)				Open Access Charges			
	Variable	Fixed	Total		Variable	Fixed	Total		MDI Based	Volumetric	Hybrid	
	Rs./kWh	Rs./kW /Mnth	Rs./kWh		Rs./kWh	Rs./kW /Mnth	Rs./kWh		Rs./kW /Mnth	Rs./kWh	Rs./kW /Mnth	Rs./kWh
	Residential Colonies				Residential Colonies				Residential Colonies			
Consumption Category	H				H				H			
Tariff Category												
Generation Cost - Energy	12.11		12.11		11.17		11.17					
Generation Cost - Capacity		3,901.64	9.63	9.63		3,597.29	8.87	8.87	3,597.29	8.87	1,331.00	5.59
Transmission Charges		502.53	1.24	1.24		463.33	1.14	1.14	463.33	1.14	171.43	0.72
Market Operator's Fee		1.94	0.00	0.00		1.78	0.00	0.00				
Distribution Use of System		1,027.01	2.53	2.53		946.89	2.34	2.34	946.89	2.34	350.35	1.47
Total Applicable Costs	12.11	5,433.12	13.40	25.52	11.17	5,009.30	12.36	23.53	5,007.51	12.35	1,852.78	
Impact of Allowed Losses					0.94	423.82	1.05	1.99	423.82	1.05		1.05
Total Cost of Service	12.11	5,433.12	13.40	25.52	12.11	5,433.12	13.40	25.52	5,431.33	13.40	2,374.56	3.24
Gross Subsidy				3.22				3.22	1,360.87	3.22		3.22
Average Applicable Tariff				28.74				28.74	6,792.20	16.62	2,374.56	6.46

FAISALABAD ELECTRIC SUPPLY COMPANY



FESCO

**Cost of Service Study
(For Use of System Charges)**

West Canal Road Abdullahpur Faisalabad

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1. COST OF SERVICE 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.

2. 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.

3. 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:

- I. **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).
- II. **Classification** – The classification of the functionalized costs based on the billing component/determinant that each is associated with (e.g. kW's of capacity, kWh's of energy or number of customers).
- III. **Allocation** – The allocation of the functionalized and classified costs to customer classes, based on respective service requirements / parameters (e.g. kW's of capacity, kWh's of energy and the number of customers) of each class.

4. FUNDAMENTAL ASSUMPTIONS

Table 01

Description	FY 2022-23
Allowed Rate of Return (WACC) (NEPRA Determination).	16.21%
Capital Work in Progress ("CWIP")	CWIP 100%
Working Capital Allowance to be included in Rate Base	NO
Prior Year Adjustment (Rs. in Millions)	21,448
Demand Allocation Methodology (highest coincident peak in the year).	(Single Annual Peak)
Customer Growth %	5.00%
Model Year	FY 2022-23
Base Year	FY 2021-22

5. PROJECTIONS AND REVENUE REQUIREMENT FOR FINANCIAL YEAR 2022-23

The Revenue Requirement (RR) is the fundamental input to the Cost of Service of FESCO 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 FESCO.

Table 2

Description	FY 2022-23 Rs. (M)	Source
Units Purchases (MkWh)	18,479	FESCO Electricity Demand Forecast based on Power Market Survey. Period 2022-2032
Units Sales (MkWh)	16,845	
Assessed T&D Losses	8.84%	
Consumer Growth	5.00%	
Average Monthly MDI (MW) (Non-coincidental at CDPs)	3,468	As per actual CPPA-G invoices w.e.f 7/22 to 12/22 and remaining projected up to June 2023.
Energy Charge (Rs/kWh)	10.57	
Capacity Charge (Rs/kW/Month)	3,255	
T.UoSC (Rs/kW/Month)	419.19	
MoF (Rs/kW/Month)	1.71	
Energy Charges (Rs. M)	195,318	
Capacity Charges (Rs. M)	135,471	
T.UoSC (Rs. M)	17,445	
MoF (Rs. M)	71	
Power Purchase Price	348,305	
O&M Cost (Million Rs.)	32,440	

Depreciation (Million Rs.)	4,136	O&M cost taken as per approved budget for FY 2022-23. Depreciation projected @3.5% on Distribution Equipment, 10% on T&P, Vehicles, 2% on Buildings and 20% amortization on Intangible Assets. RoRB calculated @16.21% on projected RAB.
RORB (Million Rs.)	10,393	
Other Income (Million Rs.)	(5,315)	
Prior Year Adjustment (Rs. M)	21,448	Actual & projected recovery of Sale Revenue in current financial year relates to previous period.
Revenue Requirement (Rs. M)	411,406	
Cost per kWh (sold)	24.42	

6. 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. (Millions)
Energy Charges	195,318
Capacity Charges	135,471
T.UoS	17,445
MOF	71
Power Purchase Price	348,305
O&M Cost	32,440
Depreciation	4,136
RORB	10,393
Other Income	(5,315)
Distribution Margin	41,653
Prior Year Adjustment	21,448
Revenue Requirement	411,406

7. CUSTOMER CLASSIFICATION BY VOLTAGE LEVEL

Line losses taken from FESCO Demand Forecast (Dec-2022) as a percentage on purchased units is given in **Table 04**. 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 04.

Losses FY 2022-23						Table 04.
Voltage Level	0.2 kV	0.4 kV	11 kV	132kV	Total	Source
Losses %age on purchased units	1.40%		5.87%	1.57%	8.84%	Target as per NEPRA determination is 9.34%. Actual losses for FY 2021-22 was 9.10%, Therefore, losses for FY 2022-23 are taken as 8.84%.
Losses %age on received units	1.89%		6.33%	1.57%		Calculated as applied on units received at each voltage level.

8. 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.

Table 5

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

9. FESCO TARIFF DETERMINED BY NEPRA IN JULY-2022.

Tariffs for various categories of FESCO consumers as determined by NEPRA vide their determination No.NEPRA/RIADG(Tariff)/TRF- 100/X WDISCOs/13540- 13542 dated 22-07-2022& notified by Ministry of Energy Govt. of Pakistan vide SRO 1167(1)/2022 dated 25-07-2022, are provided in Table 06 below.

Table 06

NEPRA DETERMINED TARIFF (22-07-2022)			
TARIFF CATAGORIES		22-Jul-22	
		Fixed Charges	Variable Charges
		Rs/kW/M	Rs/kWh
A1	RESIDENTIAL -A1		
(a)			
i	Up to 50 Units Life line		5.00
ii	51-100 units Life line		15.16
iii	01-100 Units		18.15
iv	101-200 Units		20.15
v	01-100 Units		20.79
vi	101-200 Units		23.98
vii	201-300 Units		24.49
viii	301-400Units		25.73
ix	401-500Units		26.17
x	501-600Units		27.17
xi	601-700Units		28.17
xii	Above 700 Units		29.17
A1(b)	Time of Use (TOU) - Peak		28.17
	Time of Use (TOU) - Off-Peak		20.79
E-1(i)	Temporary E-1 (i)		29.17
	COMMERCIAL - A2		
A2	Commercial - For peak load requirement up to 5 kW		25.16
(a)			
A2	Sanctioned load 5 kw and above	500	23.17
(b)			
A2 (c	Time of Use (TOU) - Peak (A-2)	500	28.17
)			
	Time of Use (TOU) - Off-Peak	500	22.07
E-1	Temporary E-1 (ii)		25.15
(ii)			
	INDUSTRIAL		
B1(a)	B1		24.28
B1(b)	B1- TOU (Peak)		28.17
	B1 - TOU (Off-peak)		22.07
B2	B2	500	24.17
(a)			

B2 (b)	B2 - TOU (Peak)	500	28.17
	B2 - TOU (Off-peak)	500	21.57
B3	B3 - TOU (Peak)	460	28.17
	B3 - TOU (Off-peak)	460	22.97
B4	B4 - TOU (Peak)	440	28.17
	B4 - TOU (Off-peak)	440	22.71
E-2	Temporary E-2		27.17
	BULK		
C1 (a)	C1(a) up to 5 kW		24.78
C1 (b)	C1(b) exceeding 5 kW	500	24.58
C1 (c))	Time of Use (TOU) - Peak	500	28.17
	Time of Use (TOU) - Off-Peak	500	21.57
C2 (a)	C2 Supply at 11 kV	460	24.48
C2 (b)	Time of Use (TOU) - Peak	460	28.17
	Time of Use (TOU) - Off-Peak	460	22.97
C3 (a)	C3 Supply above 11 kV	440	24.37
C3 (b)	Time of Use (TOU) - Peak	440	28.17
	Time of Use (TOU) - Off-Peak	440	22.77
			27.37
	AGRICULTURAL TUBE WELLS - Tariff D		
D1 (a)	D1 Scarp		24.78
D2 (a)	D2 Agricultural Tube-wells	200	24.78
D1 (b)	Time of Use (TOU) - Peak	200	28.17
	Time of Use (TOU) - Off-Peak	200	21.57
D2 (b)	Time of Use (TOU) - Peak	200	28.17
	Time of Use (TOU) - Off-Peak	200	21.57
G	Public Lighting G		28.45
H	Residential Colonies H		28.75
K1	Special Contracts - Tariff K (AJK)		
K1 (i)	Time of Use (TOU) - Peak		
	Time of Use (TOU) - Off-Peak		
A3	General Service		25.19

10. RESULTS FROM FACOS MODEL

10.1 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 below Table 7.

Table 7

Revenue Requirement Allocation %age				
Description	Energy	Demand	Customer	Total
Engergy Charges	100%	-	-	100%
Capacity Charges	-	100%	-	100%
T.UoSC	-	100%	-	100%
MOF	-	100%	-	100%
O&M Cost	-	79%	21%	100%
Depreciation	-	77%	23%	100%
RORB	-	88%	12%	100%
Other Income	-	78%	22%	100%
Prior Year Adjustment	-	77%	23%	100%

10.2 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 is shown in Table 8 below

Table 8

Revenue Requirement Allocation Rs. (Millions)				
Description	Energy	Demand	Customer	Total
Engergy Charges	195,318	-	-	195,318
Capacity Charges	-	135,471	-	135,471
T.UoSC	-	17,445	-	17,445
MOF	-	71	-	71
Power Purchase Price	195,318	152,987	-	348,305
O&M Cost	-	25,486	6,954	32,440
Depreciation	-	3,170	965	4,136
RORB	-	9,102	1,291	10,393
Other Income	-	(4,161)	(1,154)	(5,315)
Distribution Margin	-	33,597	8,056	41,653
Prior Year Adjustment	-	16,548	4,900	21,448
Revenue Requirement	195,318	203,132	12,957	411,406

11. REVENUE AS PER NEPRA TARIFF BY VOLTAGE LEVEL CUSTOMER CLASSIFICATION

Revenue given in Table 09 category wise) and in Table 10 (voltage wise) below is calculated as per NEPRA Tariff determined vide No. NEPRA/RIADG(Tariff)/TRF- 100/X WDISCOs/13540- 13542 dated 22-07-2022 given in Table 6

Table 9

FY 2022-23						
Customer Category	MDI MW	Sales (GWh)	Fixed Charge Rs. (M)	Variable Charge Rs. (M)	Total Revenue Rs.(M)	Rs./kWh
Residential -- A1(a)	1,575	7,631	-	175,182	175,182	22.96
Residential -- A1(b)	41	189	-	4,182	4,182	22.15
Commercial -- A2(a)	88	455	-	11,441	11,441	25.16
Commercial -- A2(b)	0	0	1	6	7	26.83
Commercial -- A2(c)	81	417	915	9,690	10,605	25.44
Industrial -- B1(a)	9	53	-	1,285	1,285	24.28
Industrial -- B2(a)	0	0	0	5	6	25.95
Industrial -- B1(b)	69	401	-	9,230	9,230	23.00
Industrial -- B2(b)	368	2,446	3,993	55,287	59,280	24.24
Industrial -- B3	288	2,256	2,273	53,759	56,032	24.84
Industrial -- B4	94	969	1,006	22,881	23,887	24.66
Bulk Supply -- C1(a)	0	0	-	4	4	24.78
Bulk Supply -- C1(b)	0	1	2	25	28	26.99
Bulk Supply -- C2(a)	0	0	1	3	4	32.45
Bulk Supply -- C3(a)	1	5	12	118	130	26.84
Bulk Supply -- C1(c)	4	19	30	422	451	24.23
Bulk Supply -- C2(b)	23	118	152	2,805	2,957	25.12
Bulk Supply -- C3(b)	16	84	164	1,986	2,150	25.69
Agricultural --D1(a)	2	14	-	343	343	24.78
Agricultural --D2(a)	0	0	-	3	3	24.78
Agricultural --D2(b)	285	1,398	1,809	31,546	33,355	23.87
Agricultural --D1(b)	4	35	8	775	783	22.28
Temporary Supply -- E1(i)	0	1	-	19	19	29.17
Temporary Supply -- E1(ii)	4	25	-	638	638	25.15
Temporary Supply -- E2	6	36	-	980	980	27.17
Public Lighting -- G	2	19	-	534	534	28.45
Residential Colonies -- H	1	5	-	152	152	28.75
Azad Jammu Kashmir - K1a	-	-	-	-	-	-
Azad Jammu Kashmir - K1b	-	-	-	-	-	-
A3 General	51	269	-	6,786	6,786	25.19
Total	3,014	16,845	10,367	390,088	400,455	23.77

Table 10

FY 2022-23						
Customer Class	MDI MW	Sales (GWh)	Fixed Charge Rs. (M)	Variable Charge Rs. (M)	Total Revenue	Rs./kWh
0.2 kV	1,683	8,201	-	189,895	189,895	23.15
0.4 kV	907	5,208	6,759	118,489	125,249	24.05
11 Kv	312	2,379	2,426	56,720	59,146	24.86
132 kv	111	1,057	1,182	24,985	26,166	24.75
G. TOTAL	3,014	16,845	10,367	390,088	400,455	23.77

12. COST OF SERVICE FUNCTIONALIZED RATES (TARIFF WISE)

Based on the allocation of overall Revenue Requirement of FESCO 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											
Classes	Volt. Level	No. of Customers	Energy	Demand	Generation Cost		Transm	MoF	Distribution		Total Cost
			GWh	MW	Energy (Rs.M)	Demand (Rs.M)	Cost (Rs.M)	Cost (Rs.M)	Demand (Rs.M)	Cust. Cost (Rs.M)	
Residential -- A1(a)	0.2kV	4,371,153	7,631	1,575	94,214	75,184	9,684	37	17,898	7,342	204,360
Residential -- A1(b)	0.4kV	25,131	189	41	2,331	1,976	255	1	470	46	5,080
Commercial -- A2(a)	0.2kV	436,118	455	88	5,614	4,218	543	2	1,004	438	11,820
Commercial -- A2(b)	0.4kV	29	0	0	3	2	0	0	0	0	6
Commercial -- A2(c)	0.4kV	17,119	417	81	5,147	3,873	499	2	922	101	10,543
Industrial -- B1(a)	0.2kV	10,297	53	9	653	451	58	0	107	51	1,321
Industrial -- B2(a)	0.4kV	236	0	0	3	2	0	0	0	0	5
Industrial -- B1(b)	0.4kV	30,481	401	69	4,955	3,275	422	2	780	97	9,530
Industrial -- B2(b)	0.4kV	13,971	2,446	368	30,197	17,555	2,261	9	4,179	593	54,794
Industrial -- B3	11kV	409	2,256	288	27,321	13,505	1,739	7	3,215	546	46,333
Industrial -- B4	132kV	17	969	94	10,990	4,139	533	2	493	182	16,340
Bulk Supply -- C1(a)	0.2kV	26	0	0	2	1	0	0	0	0	4
Bulk Supply -- C1(b)	0.4kV	24	1	0	13	12	2	0	3	0	30
Bulk Supply -- C2(a)	11kV	3	0	0	2	2	0	0	0	0	4
Bulk Supply -- C3(a)	132kV	4	5	1	55	30	4	0	4	1	93
Bulk Supply -- C1(c)	0.4kV	131	19	4	230	189	24	0	45	5	492
Bulk Supply -- C2(b)	11kV	50	118	23	1,426	1,063	137	1	253	29	2,908
Bulk Supply -- C3(b)	132kV	3	84	16	949	700	90	0	83	16	1,838
Agricultural -- D1(a)	0.4kV	1,126	14	2	171	93	12	0	22	3	301
Agricultural -- D2(a)	0.4kV	587	0	0	1	1	0	0	0	0	3
Agricultural -- D2(b)	0.4kV	51,133	1,398	285	17,256	13,590	1,750	7	3,235	339	36,176
Agricultural -- D1(b)	0.4kV	434	35	4	434	184	24	0	44	9	693
Temporary Supply -- E1(i)	0.2kV	344	1	0	8	2	0	0	1	1	12
Temporary Supply -- E1(ii)	0.2kV	2,062	25	4	313	189	24	0	45	24	596
Temporary Supply -- E2	0.2kV	58	36	6	446	293	38	0	70	35	881
Public Lighting -- G	0.4kV	1,995	19	2	232	88	11	0	21	5	357
Residential Colonies -- H	11kV	152	5	1	64	51	7	0	12	1	135
Azad Jammu Kashmir - K1a	11kV	-	-	-	-	-	-	-	-	-	-
Azad Jammu Kashmir - K1b	11kV	-	-	-	-	-	-	-	-	-	-
A3 General	0.4kV	31,235	269	51	3,326	2,457	316	1	585	65	6,751
Total		4,994,329	16,845	3,014	206,355	143,126	18,435	71	33,493	9,927	411,406

Based on the allocation of overall Revenue Requirement of FESCO to customers categories, the resultant functional rates (in terms of Rs./kWh, Rs./kW/Month and Rs./Customer / Month, as applicable) are summarized at Table 12 below.

Table 12

FY 2022-23											
Classes	Volt. Level	No. of Customers	Energy	Deman	Generation		Trans	MOF	Distribution		Total Rs./ kWh
			GWh	MW	Energy (Rs/kWh)	Demand (Rs/kW / Month)	(Rs/kW /Month)	(Rs/kW/M onth)	(Rs/kW/Mo nth)	(Rs./ Cust/ Month)	
Residential – A1(a)	0.2kV	4,371,153	7,631	1,575	12.35	3,977	512	1.97	947	140	26.78
Residential – A1(b)	0.4kV	25,131	189	41	12.35	3,977	512	1.97	947	152	26.90
Commercial – A2(a)	0.2kV	436,118	455	88	12.35	3,977	512	1.97	947	84	25.99
Commercial -- A2(b)	0.4kV	29	0	0	12.35	3,977	512	1.97	947	190	22.64
Commercial – A2(c)	0.4kV	17,119	417	81	12.35	3,977	512	1.97	947	492	25.29
Industrial – B1(a)	0.2kV	10,297	53	9	12.35	3,977	512	1.97	947	412	24.96
Industrial – B2(a)	0.4kV	236	0	0	12.35	3,977	512	1.97	947	19	23.22
Industrial – B1(b)	0.4kV	30,481	401	69	12.35	3,977	512	1.97	947	266	23.75
Industrial – B2(b)	0.4kV	13,971	2,446	368	12.35	3,977	512	1.97	947	3,534	22.40
Industrial – B3	11kV	409	2,256	288	12.11	3,902	503	1.94	929	111,417	20.54
Industrial – B4	132kV	17	969	94	11.35	3,655	471	1.81	435	873,471	16.87
Bulk Supply – C1(a)	0.2kV	26	0	0	12.11	3,977	512	1.97	947	473	26.01
Bulk Supply – C1(b)	0.4kV	24	1	0	12.35	3,977	512	1.97	947	866	28.66
Bulk Supply – C2(a)	11kV	3	0	0	12.11	3,902	503	1.94	929	870	28.84
Bulk Supply – C3(a)	132kV	4	5	1	11.35	3,655	471	1.81	435	17,974	19.16
Bulk Supply – C1(c)	0.4kV	131	19	4	12.35	3,977	512	1.97	947	2,870	26.45
Bulk Supply – C2(b)	11kV	50	118	23	12.11	3,902	503	1.94	929	47,149	24.70
Bulk Supply – C3(b)	132kV	3	84	16	11.35	3,655	471	1.81	435	414,942	21.97
Agricultural –D1(a)	0.4kV	1,126	14	2	12.35	3,977	512	1.97	947	248	21.75
Agricultural –D2(a)	0.4kV	587	0	0	12.35	3,977	512	1.97	947	3	27.36
Agricultural –D2(b)	0.4kV	51,133	1,398	285	12.35	3,977	512	1.97	947	552	25.88
Agricultural –D1(b)	0.4kV	434	35	4	12.35	3,977	512	1.97	947	1,634	19.73
Temporary Supply – E1(i)	0.2kV	344	1	0	12.35	3,977	512	1.97	947	155	17.66
Temporary Supply – E1(ii)	0.2kV	2,062	25	4	12.35	3,977	512	1.97	947	986	23.50
Temporary Supply – E2	0.2kV	58	36	6	12.35	3,977	512	1.97	947	49,723	24.42
Public Lighting – G	0.4kV	1,995	19	2	12.35	3,977	512	1.97	947	190	19.02
Residential Colonies – H	11kV	152	5	1	12.11	3,902	503	1.94	929	702	25.52
Azad Jammu Kashmir - K1a	11kV	-	-	-	-	-	-	-	-	-	-
Azad Jammu Kashmir - K1b	11kV	-	-	-	-	-	-	-	-	-	-
A3 General	0.4kV	31,235	269	51	12.35	3,977	512	1.97	947	174	25.06
Total/Average		4,994,329	16,845	3,014	12.25	3,957	510	1.96	926	166	24.42

Functional rates in terms of Rs./kW/Month for each function is given in Table 13 below.

Table 13

FY 2022-23											
Classes	Volt. Level	No. of Customers	Energy	Demand	Generation Cost		Transm	MOF	Distribution		Total Rs./kW/ Month
			GWh	MW	Energy (Rs/kW/ Month)	Demand (Rs/kW/ Month)	(Rs/kW/ Month)	(Rs/kW/ Month)	(Rs/kW/ Month)	(Rs./ kW/ Month)	
Residential -- A1(a)	0.2kV	4,371,153	7,631	1,575	4,984	3,977	512	1.97	947	388	10,810
Residential -- A1(b)	0.4kV	25,131	189	41	4,691	3,977	512	1.97	947	92	10,221
Commercial -- A2(a)	0.2kV	436,118	455	88	5,293	3,977	512	1.97	947	412	11,143
Commercial -- A2(b)	0.4kV	29	0	0	6,682	3,977	512	1.97	947	131	12,251
Commercial -- A2(c)	0.4kV	17,119	417	81	5,285	3,977	512	1.97	947	104	10,826
Industrial -- B1(a)	0.2kV	10,297	53	9	5,760	3,977	512	1.97	947	449	11,647
Industrial -- B2(a)	0.4kV	236	0	0	6,317	3,977	512	1.97	947	124	11,879
Industrial -- B1(b)	0.4kV	30,481	401	69	6,017	3,977	512	1.97	947	118	11,573
Industrial -- B2(b)	0.4kV	13,971	2,446	368	6,841	3,977	512	1.97	947	134	12,413
Industrial -- B3	11kV	409	2,256	288	7,893	3,902	503	1.94	929	158	13,386
Industrial -- B4	132kV	17	969	94	9,703	3,655	471	1.81	435	160	14,426
Bulk Supply -- C1(a)	0.2kV	26	0	0	5,091	3,977	512	1.97	947	404	10,933
Bulk Supply -- C1(b)	0.4kV	24	1	0	4,178	3,977	512	1.97	947	82	9,698
Bulk Supply -- C2(a)	11kV	3	0	0	3,920	3,902	503	1.94	929	78	9,334
Bulk Supply -- C3(a)	132kV	4	5	1	6,787	3,655	471	1.81	435	112	11,461
Bulk Supply -- C1(c)	0.4kV	131	19	4	4,844	3,977	512	1.97	947	95	10,377
Bulk Supply -- C2(b)	11kV	50	118	23	5,232	3,902	503	1.94	929	105	10,672
Bulk Supply -- C3(b)	132kV	3	84	16	4,959	3,655	471	1.81	435	82	9,604
Agricultural -- D1(a)	0.4kV	1,126	14	2	7,326	3,977	512	1.97	947	144	12,908
Agricultural -- D2(a)	0.4kV	587	0	0	4,545	3,977	512	1.97	947	89	10,072
Agricultural -- D2(b)	0.4kV	51,133	1,398	285	5,050	3,977	512	1.97	947	99	10,587
Agricultural -- D1(b)	0.4kV	434	35	4	9,402	3,977	512	1.97	947	184	15,024
Temporary Supply -- E1(i)	0.2kV	344	1	0	15,410	3,977	512	1.97	947	1,201	22,049
Temporary Supply -- E1(ii)	0.2kV	2,062	25	4	6,586	3,977	512	1.97	947	513	12,537
Temporary Supply -- E2	0.2kV	58	36	6	6,039	3,977	512	1.97	947	471	11,948
Public Lighting -- G	0.4kV	1,995	19	2	10,435	3,977	512	1.97	947	205	16,077
Residential Colonies -- H	11kV	152	5	1	4,510	3,902	503	1.94	929	98	10,343
Azad Jammu Kashmir - K1a	11kV	-	-	-	-	-	-	-	-	-	-
Azad Jammu Kashmir - K1b	11kV	-	-	-	-	-	-	-	-	-	-
A3 General	0.4kV	31,235	269	51	5,384	3,977	512	1.97	947	106	10,927
Total		4,994,329	16,845	3,014	5,705	3,957	510	1.96	926	274	11,375

13. UNBUNDLED RATES/KWH (TARIFF WISE)

Based on the allocation of Revenue Requirement of FESCO (Generation, Transmission and Distribution Cost) to customers categories, the resultant unbundled rates Rs./kwh for generation, transmission and distribution are shown in Table 14 below.

Table 14

FY 2022-23													
Customer Category	Voltage level	Sales GWh	Demand MW	Generation Rs. (M)	Transm Rs. (M)	MOF Rs. (M)	Dist. Rs. (M)	Total Rs. (M)	Generation Rs./kWh	T. UoSC Rs./kWh	MOF Rs./kWh	D. UoSC Rs./kWh	Total Rate Rs./kWh
Residential -- A1(a)	0.2kV	7,631	1,575	169,399	9,684	37	25,240	204,360	22.20	1.27	0.005	3.31	26.78
Residential -- A1(b)	0.4kV	189	41	4,308	255	1	516	5,080	22.81	1.35	0.005	2.73	26.90
Commercial -- A2(a)	0.2kV	455	88	9,833	543	2	1,442	11,820	21.62	1.19	0.005	3.17	25.99
Commercial -- A2(b)	0.4kV	0	0	5	0	0	1	6	19.69	0.95	0.004	1.99	22.64
Commercial -- A2(c)	0.4kV	417	81	9,020	499	2	1,023	10,543	21.64	1.20	0.005	2.45	25.29
Industrial -- B1(a)	0.2kV	53	9	1,104	58	0	158	1,321	20.87	1.10	0.004	2.99	24.96
Industrial -- B2(a)	0.4kV	0	0	5	0	0	0	5	20.12	1.00	0.004	2.09	23.22
Industrial -- B1(b)	0.4kV	401	69	8,230	422	2	877	9,530	20.51	1.05	0.004	2.18	23.75
Industrial -- B2(b)	0.4kV	2,446	368	47,752	2,261	9	4,772	54,794	19.52	0.92	0.004	1.95	22.40
Industrial -- B3	11kV	2,256	288	40,826	1,739	7	3,761	46,333	18.10	0.77	0.003	1.67	20.54
Industrial -- B4	132kV	969	94	15,130	533	2	675	16,340	15.62	0.55	0.002	0.70	16.87
Bulk Supply -- C1(a)	0.2kV	0	0	3	0	0	0	4	21.57	1.22	0.005	3.21	26.01
Bulk Supply -- C1(b)	0.4kV	1	0	25	2	0	3	30	24.10	1.51	0.006	3.04	28.66
Bulk Supply -- C2(a)	11kV	0	0	3	0	0	0	4	24.17	1.55	0.006	3.11	28.84
Bulk Supply -- C3(a)	132kV	5	1	84	4	0	4	93	17.45	0.79	0.003	0.92	19.16
Bulk Supply -- C1(c)	0.4kV	19	4	419	24	0	49	492	22.48	1.31	0.005	2.66	26.45
Bulk Supply -- C2(b)	11kV	118	23	2,489	137	1	282	2,908	21.14	1.16	0.004	2.39	24.70
Bulk Supply -- C3(b)	132kV	84	16	1,649	90	0	99	1,838	19.71	1.08	0.004	1.18	21.97
Agricultural -- D1(a)	0.4kV	14	2	264	12	0	25	301	19.05	0.86	0.003	1.84	21.75
Agricultural -- D2(a)	0.4kV	0.101	0	2	0	0	0	3	23.15	1.39	0.005	2.81	27.36
Agricultural -- D2(b)	0.4kV	1,398	285	30,846	1,750	7	3,574	36,176	22.07	1.25	0.005	2.56	25.88
Agricultural -- D1(b)	0.4kV	35	4	618	24	0	52	693	17.57	0.67	0.003	1.49	19.73
Temporary Supply -- E1(i)	0.2kV	1	0	10	0	0	1	12	15.53	0.41	0.002	1.72	17.66
Temporary Supply -- E1(ii)	0.2kV	25	4	502	24	0	69	596	19.80	0.96	0.004	2.74	23.50
Temporary Supply -- E2	0.2kV	36	6	739	38	0	105	881	20.48	1.05	0.004	2.90	24.42
Public Lighting -- G	0.4kV	19	2	320	11	0	26	357	17.05	0.61	0.002	1.36	19.02
Residential Colonies -- H	11kV	5	1	115	7	0	13	135	21.74	1.24	0.005	2.53	25.52
Azad Jammu Kashmir - K1a	11kV	-	-	-	-	-	-	-	-	-	-	-	-
Azad Jammu Kashmir - K1b	11kV	-	-	-	-	-	-	-	-	-	-	-	-
A3 General	0.4kV	269	51	5,783	316	1	650	6,751	21.47	1.17	0.005	2.41	25.06
Total		16,845	3,014	349,480	18,435	71	43,420	411,406	20.75	1.09	0.004	2.58	24.42

14. VOLUMETRIC RATES AT EACH CUSTOMER CATEGORY

Volumetric rates both for fixed charge and variable charge (in terms of Rs./kw/month and Rs./kWh respectively) are given in Table 15 below.

Table 15

FY 2022-23							
Customer Category	Voltage Level	Sales GWh	Allocated Cost Rs. (M)		Fixed Charge Rs/kW/ Month	Variable Charge Rs/kW	Total Rate Rs/kWh
			Fixed Cost	Variable Cost			
Residential -- A1(a)	0.2kV	7,631	102,803	101,556	5,438	13.31	26.78
Residential -- A1(b)	0.4kV	189	2,702	2,377	5,438	12.59	26.90
Commercial -- A2(a)	0.2kV	455	5,768	6,052	5,438	13.31	25.99
Commercial -- A2(b)	0.4kV	0	3	3	5,438	12.59	22.64
Commercial -- A2(c)	0.4kV	417	5,296	5,248	5,438	12.59	25.29
Industrial -- B1(a)	0.2kV	53	617	704	5,438	13.31	24.96
Industrial -- B2(a)	0.4kV	0	2	3	5,438	12.59	23.22
Industrial -- B1(b)	0.4kV	401	4,478	5,052	5,438	12.59	23.75
Industrial -- B2(b)	0.4kV	2,446	24,004	30,789	5,438	12.59	22.40
Industrial -- B3	11kV	2,256	18,466	27,867	5,335	12.35	20.54
Industrial -- B4	132kV	969	5,168	11,172	4,563	11.53	16.87
Bulk Supply -- C1(a)	0.2kV	0	2	2	5,438	13.07	26.01
Bulk Supply -- C1(b)	0.4kV	1	17	13	5,438	12.59	28.66
Bulk Supply -- C2(a)	11kV	0	2	2	5,335	12.35	28.84
Bulk Supply -- C3(a)	132kV	5	37	56	4,563	11.53	19.16
Bulk Supply -- C1(c)	0.4kV	19	258	234	5,438	12.59	26.45
Bulk Supply -- C2(b)	11kV	118	1,454	1,454	5,335	12.35	24.70
Bulk Supply -- C3(b)	132kV	84	873	965	4,563	11.53	21.97
Agricultural -- D1(a)	0.4kV	14	127	174	5,438	12.59	21.75
Agricultural -- D2(a)	0.4kV	0	1	1	5,438	12.59	27.36
Agricultural -- D2(b)	0.4kV	1,398	18,582	17,594	5,438	12.59	25.88
Agricultural -- D1(b)	0.4kV	35	251	442	5,438	12.59	19.73
Temporary Supply -- E1(i)	0.2kV	1	3	9	5,438	13.31	17.66
Temporary Supply -- E1(ii)	0.2kV	25	258	337	5,438	13.31	23.50
Temporary Supply -- E2	0.2kV	36	401	480	5,438	13.31	24.42
Public Lighting -- G	0.4kV	19	121	236	5,438	12.59	19.02
Residential Colonies -- H	11kV	5	70	66	5,335	12.35	25.52
Azad Jammu Kashmir - K1a	11kV	-	-	-	-	-	-
Azad Jammu Kashmir - K1b	11kV	-	-	-	-	-	-
A3 General	0.4kV	269	3,360	3,391	5,438	12.59	25.06
Total		16,845	195,124	216,281	5,395	10.70	24.42

15. REVENUE, COST OF SERVICE AND SUBSIDIES (BY TARIFF WISE)

The Subsidy or Cross Subsidy (the difference between revenue and cost) in terms of million rupees against each customer category (tariff wise) is given in Table 16 below. The negative figure means the customer is subsidized whereas positive figure shows that the customer is cross subsidizing. In the last column (Subsidy)/Cross Subsidy per kWh is also mentioned against each voltage level.

Table 16

FY 2022-23											
Customer Class	Voltage	Sales GWh	Demand MW	Revenue as per NEPRA Tariff			Cost of Service			Difference Subsidy M. PKR	subsidy Rs./kWh
				Demand Charge (M.PKR)	Energy Charge M.PKR	Total M. PKR	Demand Cost (M.PKR)	Energy Cost M.PKR	Total M. PKR		
Residential A1(a)	0.2kV	7,631	1,575	-	175,182	175,182	102,803	101,556	204,360	(29,178)	(3.82)
Residential A1(b)	0.4kV	189	41	-	4,182	4,182	2,702	2,377	5,080	(897)	(4.75)
Commercial A2(a)	0.2kV	455	88	-	11,441	11,441	5,768	6,052	11,820	(379)	(0.83)
Commercial A2(b)	0.4kV	0	0	1	6	7	3	3	6	1	4.19
Commercial A2(c)	0.4kV	417	81	915	9,690	10,605	5,296	5,248	10,543	62	0.15
Industrial B1(a)	0.2kV	53	9	-	1,285	1,285	617	704	1,321	(36)	(0.68)
Industrial B2(a)	0.4kV	0	0	0	5	6	2	3	5	1	2.73
Industrial B1(b)	0.4kV	401	69	-	9,230	9,230	4,478	5,052	9,530	(300)	(0.75)
Industrial B2(b)	0.4kV	2,446	368	3,993	55,287	59,280	24,004	30,789	54,794	4,487	1.83
Industrial B3	11kV	2,256	288	2,273	53,759	56,032	18,466	27,867	46,333	9,699	4.30
Industrial B4	132kV	969	94	1,006	22,881	23,887	5,168	11,172	16,340	7,547	7.79
Bulk Supply C1(a)	0.2kV	0	0	-	4	4	2	2	4	(0)	(1.23)
Bulk Supply C1(b)	0.4kV	1	0	2	25	28	17	13	30	(2)	(1.67)
Bulk Supply C2(a)	11kV	0	0	1	3	4	2	2	4	0	3.62
Bulk Supply C3(a)	132kV	5	1	12	118	130	37	56	93	37	7.68
Bulk Supply C1(c)	0.4kV	19	4	30	422	451	258	234	492	(41)	(2.22)
Bulk Supply C2(b)	11kV	118	23	152	2,805	2,957	1,454	1,454	2,908	49	0.42
Bulk Supply C3(b)	132kV	84	16	164	1,986	2,150	873	965	1,838	312	3.72
Agricultural D1(a)	0.4kV	14	2	-	343	343	127	174	301	42	3.03
Agricultural D2(a)	0.4kV	0	0	-	3	3	1	1	3	(0)	(2.58)
Agricultural D2(b)	0.4kV	1,398	285	1,809	31,546	33,355	18,582	17,594	36,176	(2,821)	(2.02)
Agricultural D1(b)	0.4kV	35	4	8	775	783	251	442	693	90	2.55
Temporary E1(i)	0.2kV	1	0	-	19	19	3	9	12	8	11.51
Temporary E1(ii)	0.2kV	25	4	-	638	638	258	337	596	42	1.65
Temporary E2	0.2kV	36	6	-	980	980	401	480	881	99	2.75
Public Lighting G	0.4kV	19	2	-	534	534	121	236	357	177	9.43
Residential Col.H	11kV	5	1	-	152	152	70	66	135	17	3.23
A J K K1a	11kV	-	-	-	-	-	-	-	-	-	-
A J K K1b	11kV	-	-	-	-	-	-	-	-	-	-
A3 General	0.4kV	269	51	-	6,786	6,786	3,360	3,391	6,751	35	0.13
Total		16,845	3,014	10,367	390,088	400,455	195,124	216,281	411,406	(10,950)	(0.65)

16. REVENUE, COST OF SERVICE AND SUBSIDIES (RS./KWH)

Revenue, Cost of Service and Subsidy in terms of Rs./kWh for each category is shown in Table 17 **Error! Reference source not found.** below. In the below table Revenue to Cost Ratio is also given that shows:

- If this ratio is less than one that customer class is subsidized.
- If this ratio is greater than one that customer class is cross subsidizing.
- If this ratio is equal to one that customer class is at adequate level.

Table 17

FY 2022-23						
Customer Class	Voltage	Sales GWh	Revenue Rs./kWh	Cost of Service Rs./kWh	Subsidy Rs./kWh	Revenue to Cost Ratio
Residential A1(a)	0.2kV	7,631	22.96	26.78	(3.82)	0.86
Residential A1(b)	0.4kV	189	22.15	26.90	(4.75)	0.82
Commercial A2(a)	0.2kV	455	25.16	25.99	(0.83)	0.97
Commercial A2(b)	0.4kV	0	26.83	22.64	4.19	1.19
Commercial A2(c)	0.4kV	417	25.44	25.29	0.15	1.01
Industrial B1(a)	0.2kV	53	24.28	24.96	(0.68)	0.97
Industrial B2(a)	0.4kV	0	25.95	23.22	2.73	1.12
Industrial B1(b)	0.4kV	401	23.00	23.75	(0.75)	0.97
Industrial B2(b)	0.4kV	2,446	24.24	22.40	1.83	1.08
Industrial B3	11kV	2,256	24.84	20.54	4.30	1.21
Industrial B4	132kV	969	24.66	16.87	7.79	1.46
Bulk Supply C1(a)	0.2kV	0	24.78	26.01	(1.23)	0.95
Bulk Supply C1(b)	0.4kV	1	26.99	28.66	(1.67)	0.94
Bulk Supply C2(a)	11kV	0	32.45	28.84	3.62	1.13
Bulk Supply C3(a)	132kV	5	26.84	19.16	7.68	1.40
Bulk Supply C1(c)	0.4kV	19	24.23	26.45	(2.22)	0.92
Bulk Supply C2(b)	11kV	118	25.12	24.70	0.42	1.02
Bulk Supply C3(b)	132kV	84	25.69	21.97	3.72	1.17
Agricultural D1(a)	0.4kV	14	24.78	21.75	3.03	1.14
Agricultural D2(a)	0.4kV	0	24.78	27.36	(2.58)	0.91
Agricultural D2(b)	0.4kV	1,398	23.87	25.88	(2.02)	0.92
Agricultural D1(b)	0.4kV	35	22.28	19.73	2.55	1.13
Temporary E1(i)	0.2kV	1	29.17	17.66	11.51	1.65
Temporary E1(ii)	0.2kV	25	25.15	23.50	1.65	1.07
Temporary E2	0.2kV	36	27.17	24.42	2.75	1.11
Public Lighting G	0.4kV	19	28.45	19.02	9.43	1.50
Residential Col.H	11kV	5	28.75	25.52	3.23	1.13
A J K K1a	11kV	-	-	-	-	-
A J K K1b	11kV	-	-	-	-	-
A3 General	0.4kV	269	25.19	25.06	0.13	1.01
Sub Total		16,845	23.77	24.42	(0.65)	0.97

17. REVENUE, COST OF SERVICE AND SUBSIDIES (11 KV ONLY)

The revenue, cost of service and subsidies for customer categories that fall under 11kv are summarized Table 18 below.

Table 18

FY 2022-23											
Customer Class	Voltage	Sales GWh	Demand MW	Revenue as per NEPRA Tariff			Cost of Service			Difference Subsidy M. PKR	Subsidy Rs./kWh
				Demand Charge (M.PKR)	Energy Charge M.PKR	Total M. PKR	Demand Cost (M.PKR)	Energy Cost M.PKR	Total M. PKR		
Commercial -- A2(c)	0.4kV	417	81	915	9,690	10,605	5,296	5,248	10,543	62	0.15
Industrial -- B3	11kV	2,256	288	2,273	53,759	56,032	18,466	27,867	46,333	9,699	4.30
Industrial -- B4	132kV	969	94	1,006	22,881	23,887	5,168	11,172	16,340	7,547	7.79
Bulk Supply -- C2(a)	11kV	0.14	0.03	1	3	4	2	2	4	0	3.62
Bulk Supply -- C2(b)	11kV	118	23	152	2,805	2,957	1,454	1,454	2,908	49	0.42
Bulk Supply -- C3(a)	132kV	5	1	12	118	130	37	56	93	37	7.58
Bulk Supply -- C3(b)	132kV	84	16	164	1,986	2,150	873	965	1,838	312	3.72
Residential Colonies -- H	11kV	5	1	-	152	152	70	66	135	17	3.23
Sub Total		3,853	504	4,523	91,394	95,917	31,365	46,829	78,194	17,723	4.60

18. REVENUE/KWH, COST OF SERVICE/KWH AND SUBSIDIES/KWH (BPC ONLY)

The abstract of Revenue (Rs./kWh), the Cost of Service (Rs./kWh) and resultant cross-subsidy (Rs./kWh) is appended at Table 19 below.

Table 19

FY 2022-23					
Customer Class	Voltage	Sales GWh	Revenue Rs./kWh	Cost of Service Rs./kWh	Subsidy Rs./kWh
Commercial -- A2(c)	0.4kV	417	25.44	25.29	0.15
Industrial -- B3	11kV	2,256	24.84	20.54	4.30
Industrial -- B4	132kV	969	24.66	16.87	7.79
Bulk Supply -- C2(a)	11kV	0	32.45	28.84	3.62
Bulk Supply -- C2(b)	11kV	118	25.12	24.70	0.42
Bulk Supply -- C3(a)	132kV	5	26.84	19.15	7.68
Bulk Supply -- C3(b)	132kV	84	25.69	21.97	3.72
Residential Colonies -- H	11kV	5	28.75	25.52	3.23

19. 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.