



Tariff Regime in Pakistan

PRESENTED BY:

Mr. Sajid Akram

Add. Director General Tariff

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY

(NEPRA)

Electricity Market Professional (EMP) Program

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NEPRA ACT – Mandate of NEPRA

- NEPRA was established under an Act of Parliament in 1997.
- NEPRA is the Sole Regulator of Power Sector with the following mission:
“to develop and pursue a Regulatory Framework, which ensures the provision of safe, reliable, efficient and affordable electric power to the electricity consumers of Pakistan; we shall facilitate the transition from a protected monopoly service structure to a competitive environment where several power sector entities function in an efficiency oriented or market driven environment and shall maintain a balance between the interests of the consumers and service providers in unison with the broad economic and social policy objectives of the Government of Pakistan.”

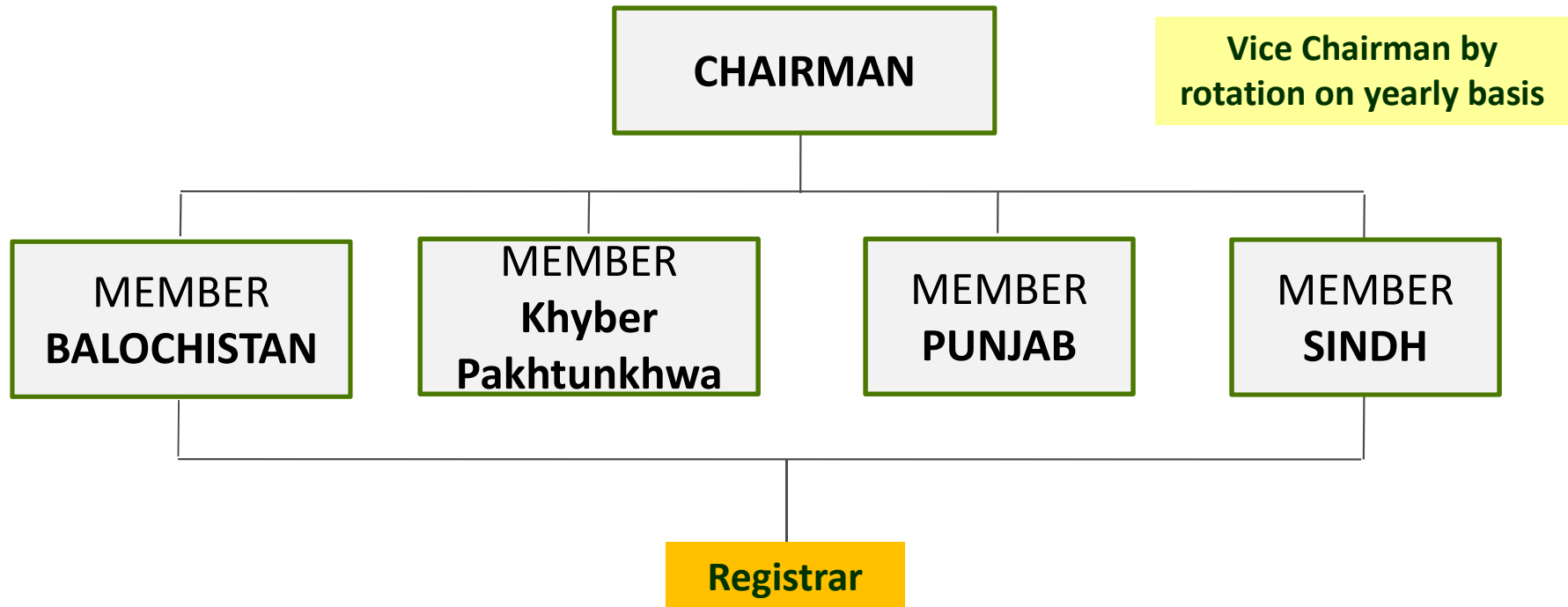


NEPRA ACT – Mandate of NEPRA

- Its main responsibility and objectives are:
 - Regulation of Generation, Transmission and Distribution of electric power.
 - Promotion of competition in the electricity industry.
 - Protection of the rights of consumers as well as producers and sellers of electricity.



NEPRA ACT – Organogram



NEPRA ACT – Functions

- Licensing
- Tariff
- Performance Standards
- Consumer Affairs
- Monitoring and Enforcement



REGULATORY INSTRUMENTS

- **Regulation of Generation, Transmission and Distribution of Electric Power Act 1997:** to regulate generation, transmission and distribution of electric power
- **Tariff Standards Procedure Rules-1998** to highlight the procedure of tariff determination and standards to be adopted
- **Application Modification Procedure Regulations-1999:** to standardize the manner for submitting applications and filing petitions to NEPRA
- **National Electric Power Regulatory Authority Licensing (Distribution) Rules-1999 & Eligibility Criteria for Consumers of (Distribution) Companies, 2003:** to regulate the process of acquiring licenses by distribution companies.

Cont.



REGULATORY INSTRUMENTS

- **Licensing Generation Rules-2000:** to streamline the process for becoming a licensee under NEPRA Act
- **NEPRA (Fees) Rules, 2002**
- **NEPRA (Fines) Rules, 2002**
- **Interim Power Procurement (Procedures and Standards) Regulation-2005:** to streamline the manner for acquiring permission for sale of power to transmission and distribution companies.

Cont...



REGULATORY INSTRUMENTS

- **Performance Standards (Distribution) Rules-2005:** to provide standards of performance for distribution companies.
- **Performance Standards (Transmission) Rules–2005:** to provide the standards of Performance for transmission companies.
- **Performance Standards (Generation) Rules–2009:** to provide the standards of Performance for Generation companies.
- **Regulations for Supply of Power by DISCOs to other DISCOs and Housing Colonies.**

Cont...



REGULATORY INSTRUMENTS

- **Net-Metering Regulations, 2015**
- **Market Operator Registration, Standards and Procedure Rules, 2015**
- **Complaint Handling and Dispute Resolution (Procedure) Rules, 2015**
- **Competitive Bidding Tariff (Approval Procedure) Regulations, 2017**
- **Up-front Tariff (Approval & Procedure) Regulations, 2011**
- **Wheeling of Electric Power Regulations, 2016**
- **Import of Electric Power Regulations, 2017**

Cont...



Recent change in NEPRA Act

RULES AND REGULATIONS

Rules

Federal Government shall notify Rules on its own motion or on recommendation of the Authority in consultation with Authority and provinces

Regulations

NEPRA can make Regulations without seeking approval of the Federal Government

Subjects

Nominations for members of the Authority and Appellate Tribunal

Appointment of officers and staff of NEPRA

Publication of rates and charges for electricity consumption

Form and manner of licence applications

Procedure for metering billing and collection of charges

Submission of reports to CCI and Federal Government

Application Fees

Procedure for resolving disputes

Inquiry into licences

Manner and procedure of show cause notices

Minimum solvency requirements

Power Acquisition Requests

HR and Technical requirements of licences

Investment Standards - Performance Standards

Tariff Procedures

Market Reforms

1. Market Operator , System Operator
2. Provincial Grid Company
3. Open Competitive Market (Power Exchange)
4. Concept of Electricity Supplier
5. Electricity Trader
6. Other Registered Persons under the NEPRA Act
7. Removed exclusivity of Distribution Companies
8. Gradual cessation of Generation Licence requirement (over 5 years)
9. Moratorium of 5 years on provisions relating to market reform (except for Supplier and Trader)
10. All DISCOs will be deemed to be Suppliers for a period of 5 years

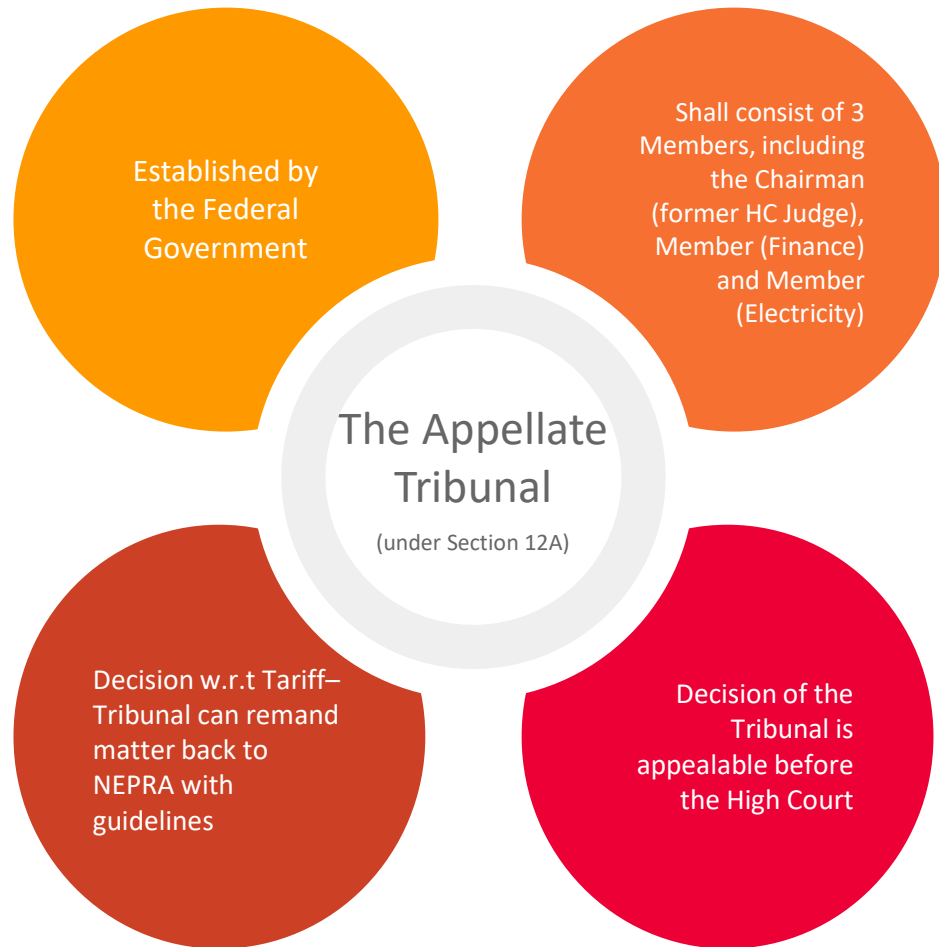
RESTRICTIONS ON TARIFF DETERMINATION POWERS

1. NEPRA to be guided by **National Electricity Policy** and **National Electricity Plan** and **Guidelines of Federal Government**
2. Authority to determine **Uniform Tariff** for Distribution Licences wholly owned and controlled by a common shareholders on the basis of on consolidated accounts
3. **Standards of Tariff determination** prescribed in the Act
4. **Reconsideration Request** removed
5. Power to prescribe **Surcharge** removed
6. Timeframe for tariff determination shall not exceed **4 months**
7. Tariff notification in official Gazette to be done in **15 days**
8. **Appellate Tribunal** shall prescribe **guidelines** in matters of determination of tariff under appeal

Tariff Determination

STANDARDS FOR TARIFF DETERMINATION

1. Allow licensees to recover all **costs prudently incurred**
2. Provide depreciation charge and rate of return based on **investments of comparable risk**
3. Provide rate of return to **promote continued investment**
4. Provide mechanism for **rewarding and penalising licensees** for efficiency in cost and quality of service
5. Reflect **Marginal Cost** principles
6. Preference for **competition**
7. May be set below level of cost if tariffs **financially feasible**
8. Reflect full **cost of service**
9. **Comprehensible, explicit** and free of **misinterpretation**



OVERVIEW

1. Members appointed on **rotation** by Federal Government on **nomination of Provinces**
2. Appointment of Chairman for 4 years and Members for 3 years
3. **Single terms** of Members and Chairman
4. **Member Finance** – Chartered Accountant, Cost and Management Accountant or Chartered Financial Accountant. Masters from Accredited university and 15 years experience. No past criminal record and honesty, integrity, reliability, competence and objectivity.
5. **Member Electricity** – Members of Pakistan Engineering Council and specialised in electrical engineering. Masters from Accredited university and 15 years experience. No past criminal record and honesty, integrity, reliability, competence and objectivity.
6. **Retirement Age** – 65 years
7. Civil Servants of less than **Grade 21** not eligible
8. **Citizens of Pakistan** and employed on **Full-Time Basis**

PROCEDURE

1. Decisions to be taken by **simple majority**
2. **Appeal** against decision of the Authority, Single Member or Tribunal
3. Appeal to be filed within **30 days**
4. Further **inquiry** and **opportunity of hearing** if deemed necessary
5. In case of disagreement with Authority on **matter of tariff**, Tribunal will remand matter back to Authority with relevant guidelines which shall be duly considered by the Authority
6. Authority to review its decision within **1 month**
7. **Appeal** before High Court

Tariff Regime & Procedures

- General Tariff Procedures
- Generation
 - Cost Plus
 - Upfront
 - Competitive Bidding
 - Interim Power Procurement Regulations
 - Discussion as per NEPRA Amended Act,
- Transmission
 - Cost Plus
 - Competitive Bidding
- Distribution
 - Revenue Cap and Price Cap



TARIFF PROCEDURES

- The Company/ Licensee files a petition for determination of its tariff according to NEPRA Tariff Standard Procedure Rules -1998;
- The Authority on the basis of information decides whether *prima facie* case exists for admission of the tariff petition;
- In case Authority admits the petition for consideration it gives notice to all the stakeholders through advertisement in the national newspapers inviting them for intervention to participate in the tariff proceedings through personal participation or through written comments;
- After public hearing, based on the evidence provided by the petitioner and the stakeholders, the Authority after due diligence determines the tariff and recommends to the Federal Government for notification in the official gazette;



CRITERIA FOR TARIFF DETERMINATION

- Tariffs should allow licensees the recovery of any and all costs prudently incurred to meet the demonstrated needs of their customers
- Tariffs should reflect marginal cost principles to the extent feasible, keeping in view the financial stability of the sector
- Tariff regime should clearly identify inter-class and inter-region subsidies
- Tariffs should, to the extent feasible, reflect the full cost of service to consumer groups with similar service requirements;
- Tariffs should take into account Government subsidies or the need for adjustment to finance rural electrification in accordance with the policies of the Government;

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COMPONENTS OF DETERMINATION OF TARIFF FOR GENERATION PROJECT

Energy Charge

- Fuel**
- Variable O&M**

Capacity Charge

-Fixed O&M

- Local**
- Foreign**

-Return on Equity

-Return on Equity during Construction

-Insurance

-Withholding Tax

-Debt Repayment

- Principal Amount**
- Interest Payments**



Tariff Components of Transmission

Assessment of Cost

Description	Petition	
	FY-16	FY-17
Revenue Requirement	41,417	45,351
Avg. MDI	19,095	17,175
Rs. /kW/M	180.75	220.05
General Establishment Costs	5,167	5,931
Administrative Costs	485	739
Repair & Maintenance	1,104	1,307
Insurance	153	159
Depreciation	5,099	5,994
Finance Charges	3,443	4,037
Return on Equity	23,171	28,709
Prior Year Adjustment	4,259	-
Less: other income	-1,465	-1,525

Assessment of Losses

Assessment of Transmission Losses;

NTDCL has been allowed T&T losses of 2.80%

Return on Equity Mechanism

Description	FY 14	FY 15
<u>Calculation of Capital Base</u>		
Opening fixed assets in operation	118,211	143,943
Add: Assets Transferred during the year	25,732	5,494
Closing Fixed Assets in Operation	143,943	149,436
Less: Accumulated Depreciation	52,030	56,924
Net Fixed Assets in operation	91,912	92,512
Add: Capital Work in Progress (Closing)	58,350	76,162
Fixed Assets Inc. WIP	150,262	168,674
Stores & Spares (3% GFA)	4,318	4,483
Accounts Receivables (30 Days of R.R)	0.08	2,269
*Cash & Bank Balance	1,436	1,663
Current Assets	5,754	8,415
Long Term Loans (Non Current + Current Portion)	55,117	63,452
Deferred Credits (Consumer Contribution)	55	5,219
Deferred Liabilities	7,691	9,097
*Current Liabilities (2/3rd of current assets)	3,836	5,610
Non-Current Liabilities + Current Liabilities	66,699	83,378
Capital Asset Base (A+B+C)	89,317	93,712
Avg. Capital Base	91,515	91,515

Tariff Components of Market Operator Fee

Description	Determined
	FY - 17
Revenue Requirement (MIn. Rs.)	581.70
Avg. MDI	19243
Rs. /kW/M	2.52
A General Establishment Costs (MIn.Rs.)	525.09
B Administrative Costs (MIn. Rs.)	72.43
C Repair & Maintenance (MIn. Rs.)	15.00
D Tax Paid	
E Insurance & Financial Charges	2.49
F Depreciation	1.80
G PYA	
H Less: other income	(279.44)
I CAPEX (MIn. Rs.)	244.35

Tariff Components of Distribution

Assessment of Cost

Description	Mln. Rs.	Mln. Rs.
A POWER PURCHASE PRICE		72,447
Fuel Cost	32,239	
Variable O&M	2,511	
Capacity Charges	35,500	
Use of System Charges	2,197	
B DISTRIBUTION MARGIN [net]		10,257
Operation and Maintenance Cost (O&M)	5,117	
Depreciation	1,490	
Return on Rate Base (RORB)	4,581	
GROSS DISTRIBUTION MARGIN	11,188	
Other Income	(931)	
C PRIOR YEAR ADJUSTMENT		861
TOTAL REVENUE REQUIREMENT (A+B+C)		83,565

Assessment of Distribution
Losses;

Return on Regulatory Asset Base (WACC)

Description	FY 2015-16	FY 2016-17
Fixed Assets O/B	18,444	35,682
Addition	2,741	1,836
Fixed Assets C/B	21,185	37,519
Depreciation	8,750	11,773
Net Fixed Assets	12,435	25,745
Capital WIP C/B	17,383	21,839
Fixed Assets Inc. WIP	29,818	47,584
Less: Deferred Credits	9,952	10,901
Total	19,866	36,683
RAB		28,275
WACC		11.83%
RORB		3,345

$$WACC = [K_e \times (E / V)] + [K_d \times (D / V)]$$

Where E/V and D/V are equity and debt ratios respectively taken as 30% and 70%;

$$WACC = \{16.67\% \times 30\%\} + \{9.76\% \times 70\%\} = 11.83\%$$

XWDISCOs Tariff is Revenue Capped (Cost Plus base)

K-Electric has been allowed a Price Cap Tariff (Performance Base)

Transfer Price Mechanism

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The generation cost is transferred to the DISCOs according to the Transfer Price Mechanism (TPM) as prescribed by the Authority.

CPPA-G shall charge the DISCOs and KESC, a transfer charge for procuring power from approved generating companies and its delivery to DISCOs for a billing period as under:

$$XTC = XCTC + XETC$$

Where:

XTC = Transfer charge to XWDISCOs & KESC

XCTC = Capacity Transfer Charge to XWDISCOs & KESC

XETC = Energy Transfer Charge to XWDISCOs & KESC

$$XETC = \frac{CpGenE (Rs)}{XWUs (kWh)}$$

$$XCTC = \frac{CpGenCap + USCF + MoF}{XWD}$$

Transfer Price Mechanism

Where:

(i) CPGenCap=the summation of the capacity cost in respect of all CPGencos in Rs for a billing period minus the amount of liquidated damages received during the month.

(ii) XWD=the sum of the maximum demand of the XWDISCOs & KESC in kW recorded during a billing period at all the delivery metering points at which power is received by the XWDISCOs & KESC.

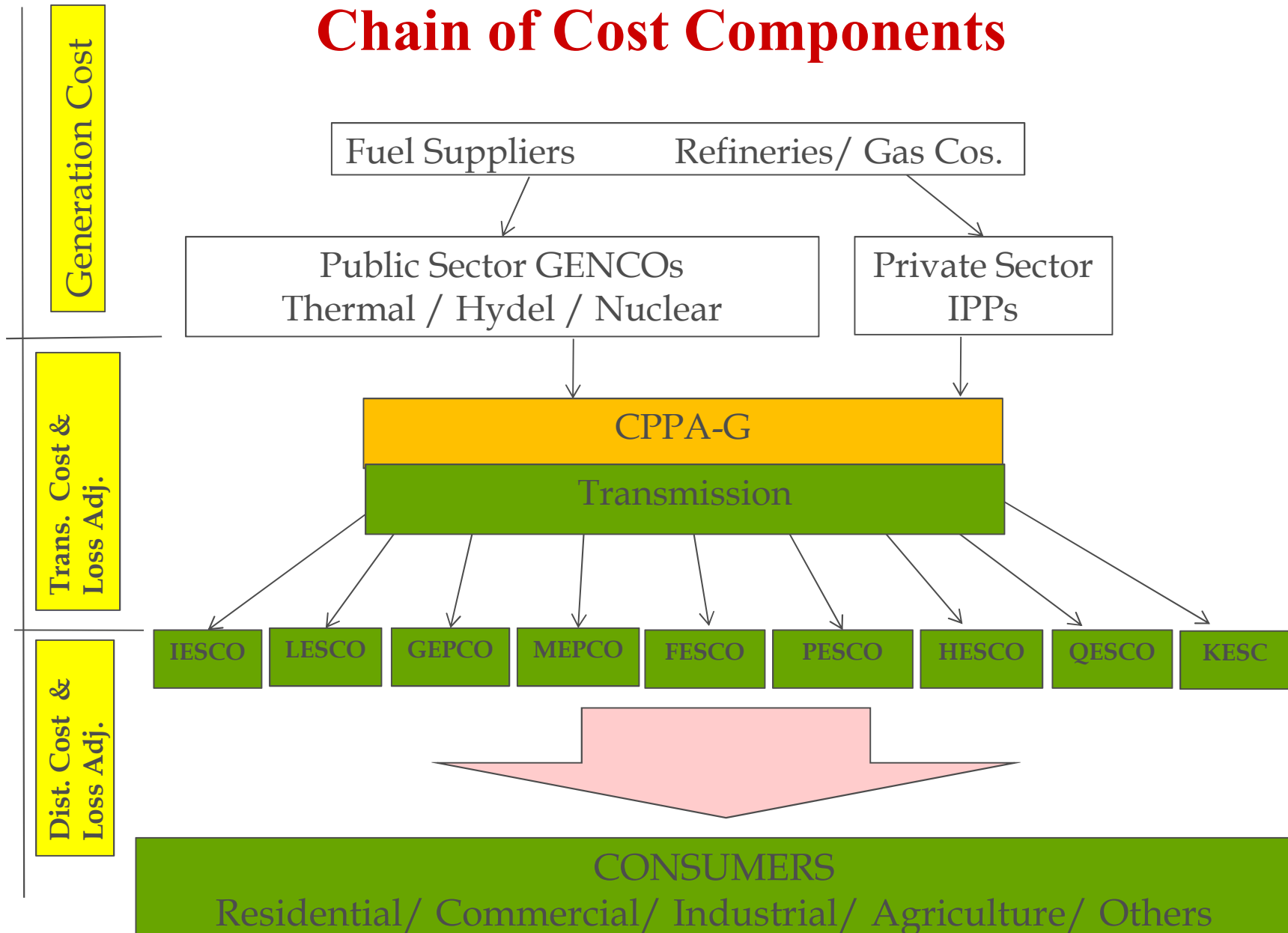
(iii) USCF=Use of system charges in Rs per kW per month.

(iv) MoF=Market Operator Fee of CPPA-G in Rs per kW per month.

(v) CPGenE=the summation of the variable charge rate (Rs per kWh) approved for each of the CPGenCOs times the energy in kWh procured from the respective CPGENCO during the billing period.

(vi) XWUs =the summation of the energy units (kWh) recorded at the delivery metering point of all the XWDISCOs & KESC during a billing period.

Chain of Cost Components



Cost Flows - Adjustment Mechanism

Generation – Fortnightly/Quarterly/Annual Adjustments

Fortnightly/Monthly Adjustment

Fuel Cost (RFO, HSD, RLNG, Coal etc.)

Quarterly Adjustment

Capacity Components i.e. O&M, ROE, Cost of Debt etc.

Annual Adjustment

Insurance, Withholding Tax etc.

Cost Flows - Adjustment Mechanism

Transmission – Annual Adjustment

RoE, Depreciation, Finance Cost and Other Income

Distribution – Monthly/Bi-Annually/ Annual Adjustments

Monthly Adjustment

Fuel Charges Adjustment

Bi-Annual Adjustment

Power Purchase Price (PPP)

Annual Adjustment

RoRB, Depreciation, Other Income

FUEL PRICE ADJUSTMENT MECHANISM

Actual variation in fuel cost component against the reference fuel cost component for the corresponding months will be determined according to the following formula

Fuel Price variation = Actual Fuel Cost Component - Reference Fuel Cost Component

Where:

Fuel Price variation is the difference between actual and reference fuel cost component

Actual fuel cost component is the fuel cost component in the pool price on which the DISCOs will be charged by CPPA in a particular month; and

Reference fuel cost component is the fuel cost component for the corresponding month projected for the purpose of tariff determination as per Annex-IV of the determination;

The fuel price adjustment determined by the Authority shall be shown separately in the bill of the consumer and the billing impact shall be worked out on the basis of consumption by the consumer in the respective month.

PPP – Bi-Annual Adjustment

Description	GEPCO
Actual Purchases	5,769
T&D losses target	9.98%
Allowed Losses	576
Regulated Sales	5,193
FUEL COST	
Actual Fuel Cost	26,952
Fuel Cost Recovered	39,702
FCA that should have been passed on	(12,750)
FCA actually passed on	11,477
FCA still to be passed on	(1,272)
VARIABLE O&M	
Cost billed by CPPA-G	1,608
Variable O&M recovered	1,451
Under / (Over) Recovery	157
CAPACITY CHARGES	
Cost billed by CPPA-G	19,524
Capacity Charges recovered	15,315
Under / (Over) Recovery	4,209
USE OF SYSTEM CHARGES	
Cost billed by CPPA-G	1,793
UoSC recovered	1,445
Under / (Over) Recovery	349
Total Under / (Over) recovered	3,443