



14th Capacity Building Programme for Officers of Electricity Regulatory Commissions

**Regulatory Approach to Tariff Setting in the Power Sector –
Power Procurement and Renewable Energy**

March 1 – 3, 2021 | IIT Kanpur

Organised by
Centre for Energy Regulation
Department of Industrial and Management Engineering
Indian Institute of Technology Kanpur



Distribution Tariff Process – Multi-Year Tariff and Truing-up

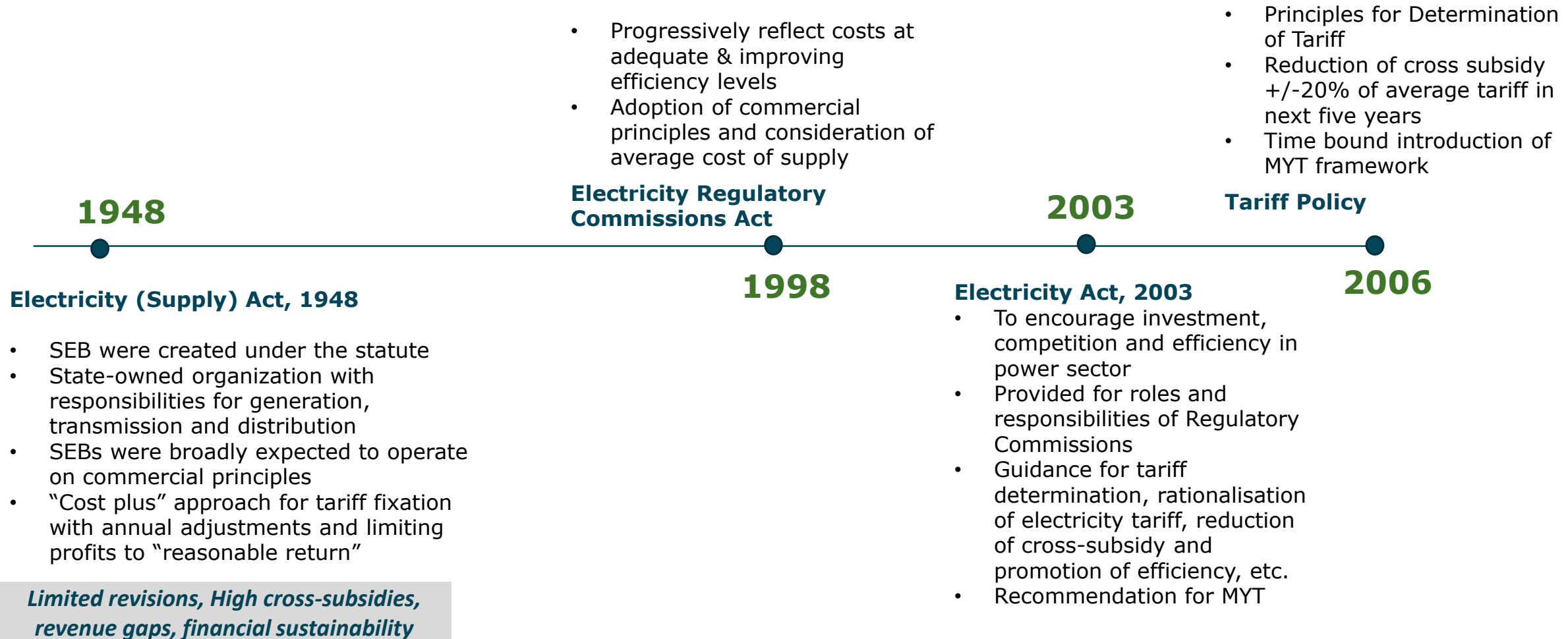
Name: Amit Goenka

Designation: Associate Director

Organization: Deloitte Touche Tohmatsu India LLP



Historical Background





Electricity Act 2003 – Guiding Principles

Section 61. (Tariff regulations):

The Appropriate Commission shall, subject to the provisions of this Act, **specify the terms and conditions for the determination of tariff**, and in doing so, shall be **guided by the following**, namely:-

- (a) the principles and methodologies specified by the Central Commission for determination of the tariff applicable to generating companies and transmission licensees;
- (b) the generation, transmission, distribution and supply of electricity are conducted on **commercial principles**;
- (c) the factors which would **encourage competition, efficiency, economical use of the resources, good performance and optimum investments**;
- (d) safeguarding of consumers' interest and at the same time, **recovery of the cost of electricity** in a reasonable manner;
- (e) the principles rewarding efficiency in performance;
- (f) **multi year tariff principles**;
- (g) that the **tariff progressively reflects the cost of supply** of electricity and also, **reduces cross-subsidies** in the manner specified by the Appropriate Commission;]
- (h) the promotion of co-generation and generation of electricity from renewable sources of energy;
- (i) the **National Electricity Policy and Tariff Policy**:



Electricity Act 2003 – Guiding Principles

Section 62. (Determination of tariff):

.....

(3) The Appropriate Commission shall not, while determining the tariff under this Act, show undue preference to any consumer of electricity but may **differentiate according to the consumer's load factor, power factor, voltage, total consumption of electricity** during any specified period or the time at which the supply is required **or the geographical position of any area, the nature of supply and the purpose for which the supply is required.**

(4) No tariff or part of any tariff may ordinarily be amended, **more frequently than once in any financial year, except in respect** of any changes expressly permitted under the terms of any **fuel surcharge formula** as may be specified.

(5) The Commission may require a licensee or a generating company to **comply with such procedures as may be specified for calculating the expected revenues from the tariff and charges** which he or it is permitted to recover.

(6) If any licensee or a generating company recovers **a price or charge exceeding the tariff determined** under this section, the **excess amount shall be recoverable by the person** who has paid such price or charge along with interest equivalent to the bank rate without prejudice to any other liability incurred by the licensee.

Hybrid framework for Tariff setting

	Historical/ Negotiation	Cost Plus	Hybrid/ MYT	Performance Based Regulation	Market Competition
Description	Tariff set based on historical & socio-political trends	Utilities allowed to recover their costs plus returns	Uncontrollable costs allowed on Cost Plus basis while Controllable costs on Target/ Norm basis	Cost/ tariff for a ideal utility determined with recovery linked to inflation and performance of utility	Multiple utilities exist in market, competing among themselves to supply electricity
Sector Reform Stage	Government Owned/ monopoly	← Independent Regulator with single utility, publically or privately owned →			Multiple competing utilities
Tariff Setting Agency	Government	Government/ Regulator	Regulator	Regulator	-
Countries following this regime	Lao PDR, Myanmar	Nepal, Sri Lanka, Cambodia, Thailand etc.	India	Malaysia, Brazil, Philippines, UK for networks business	United Kingdom, Australia for power supply business

- Key objective of performance based regulations is to **appropriately reflect the performance of power utilities in consumer tariffs** and push utilities towards targeted performance levels.
- Tariffs are determined by regulators in India using a **mix of controllable and uncontrollable factors**
- **Cost plus basis for uncontrollable parameters** like fuel costs, sales etc. and using **targets/ norms for controllable parameters** like AT&C losses, O&M costs, capex benchmarking, ROE etc.



Benefits of Multi-Year Framework

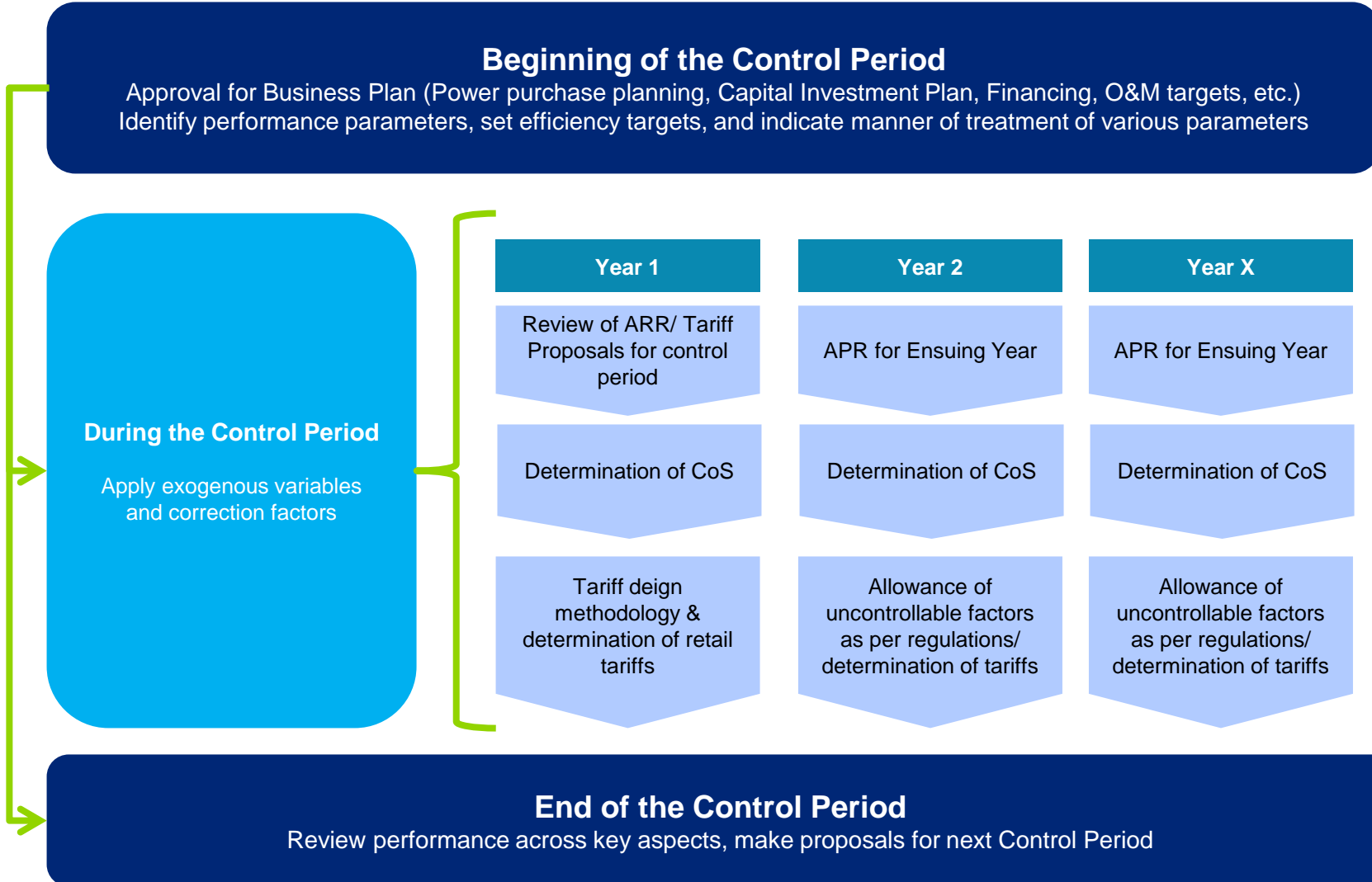
- Provides **regulatory Certainty and Accountability** (for both Consumers as well as Licensee)
- Encourages **Planning**
- **Targets** are assigned for controllable parameters
- Incentivize **efficiency** improvement
- Principles for sharing of **gain / loss** on account of over-achievement / under-achievement



Key highlights of MYT Regulations

- Prescribes the Control Period – 3 to 5 years
- Provides principles to be applied for parameters and their treatment
- Controllable and Uncontrollable Parameters
- Business Plan/ Capital Investment Plan
- Principles for sharing of Gain/ loss
- Yearly reset of Tariff – Based on variations in uncontrollable parameters and truing-up for past period
- Mid-term Review of controllable parameters

Basic Framework of MYT Regulations



Mid-term review could also be undertaken in case of 5 year Control Period for reviewing any significant changes in controllable parameters and account for any revision in capex requirements



Controllable and Uncontrollable Parameters

- **“Uncontrollable factors”** comprise of the factors which were beyond the control of, and could not be mitigated by the Distribution Utility
- **“Controllable factors”** comprise of the factors which are within the control of the Distribution Utility
- Aggregate **gain or loss** to the Distribution Utility **on account of uncontrollable factors** shall be **passed through, as an adjustment in the tariff of the Distribution Utility**
- The approved aggregate **gain or loss** to the Distribution Licensee **on account of controllable factors** is being **shared between both consumers and distribution utilities** as per percentage share specified in state specific regulations.

Uncontrollable Factors

- Variation in Sales
- Variation in cost of power purchase
- Force Majeure
- Change in Law
- Taxes and Duties

Controllable Factors

- Variations in capital expenditure on account of time and/or cost overruns/efficiencies
- Variation in technical and commercial losses
- O&M expenses
- Return on Equity (RoE)
- Depreciation
- Working capital requirements
- Failure to meet SOP
- Interest and finance charges
- Wires Availability and Supply Availability



Gain/ Loss Sharing Mechanism

- Differs across state regulations – broadly the variables are Distribution loss and O&M expenses
- Few states provide for sharing of gain between utility and consumer in certain ratio (50:50, 60:40, etc.) as per regulations
- Provision for sharing of losses on account of controllable parameters may or may not be allowed in regulations

DELHI TARIFF REGULATIONS

- Incentive on account of over-achievement of Distribution Loss
 - Over-achievement < 50%(Previous target – Current Target): 2/3rd to the Consumers and 1/3rd to the DL
 - Over-achievement > 50%(Previous target – Current Target): 1/3rd to the Consumers and 2/3rd to the DL
- Incentive sharing for sale of surplus power (Actual Sale Rate- Variable Cost)
 - upto 100% of Avg FC: 2/3rd to the Consumers and 1/3rd to the DL
 - above 100% of Avg FC: 1/3rd to the Consumers and 2/3rd to the DL

Components of Aggregate Revenue Requirement (ARR)

AGGREGATE REVENUE REQUIREMENT (ARR)

=

+

Power Purchase Cost

O&M Expenses (Employee, R&M and A&G)

Depreciation

Interest & Finance Charges

Interest on Working Capital

Return on Equity

-

Non-Tariff Income

Other Income



Power Purchase Cost

- One of the most important aspect (comprising of ~70-80% of overall ARR)
- Obligation of licensee to plan its power procurement from long-term, medium-term and short-term sources in most efficient manner
- Assessment of availability of power from various sources:
 - State Generating Stations
 - Central Generating Stations
 - Long-term PPAs with IPPs and other sources
 - RPO Obligation
- Determination of quantum of power to be purchased from various sources in accordance with the principles of merit order schedule and despatch
- Actual generation and power available (allocation) in the past few years
- Projection for Fixed and Variable charge as per the CERC/SERC determined tariff in case of central /State generating stations and PPA/competitive rate for IPPs and renewable power
- Based on sales projections and power available from various sources, utility is required to plan for procurement / disposal of deficit / surplus power

O&M Expenses

- Comprises of Employee, R&M and A&G expenses
- Each component is projected separately based on historical costs – typically last three years
- Annual increase Provision for inflation based on CPI /WPI
- Additional provisions for one time expenses i.e. arrears on account of pay commission

Employee Cost

$$EMP_n = (EMP_{n-1}) * (1+G_n) * (1 + CPI_{inflation})$$

R&M Expenses

$$R\&M_n = K * GFA_{n-1} * (1 + WPI_{inflation})$$

A&G Expense

$$A\&G_n = (A\&G_{n-1}) * (1 + WPI_{inflation}) + Provision$$

- Model Tariff Regulations issued by FOR provide for development of norms for O&M expenses for distribution licensee considering:
 - Combination of number of personnel per 1000 consumers and number of personnel per substation along with annual expenses per personnel for Employee expenses;
 - Combination of A&G expense per personnel and A&G expense per 1000 consumers for A&G expenses
 - R&M expense as percentage of gross fixed assets for estimation of R&M expenses:
- Norms in the trajectory shall have consideration for productivity/ efficiency improvements



Depreciation

- Depreciation shall be charged from the first year of operation of the asset.
- Depreciation shall be calculated annually on the basis of rate and schedule to be specified by Commission.
 - Earlier the depreciation was equally divided over the useful life of asset
 - Based on CERC Tariff Regulations, higher rate of depreciation over the initial 12 yrs to cover the requirement for repayment of loan. Balance depreciation is equally divided over balance useful life of the asset
- The residual value of assets shall be considered as 10% and depreciation shall be allowed to a maximum of 90% of the original cost of the asset.
 - No depreciation on land (GFA for purpose of depreciation to exclude land)
 - Few SERCs have also provided for 100% depreciation of IT related assets/ software
- No depreciation to be allowed on assets funded by capital subsidies, consumer contributions or grants



Interest on Capital Loans

- Actual loan or normative loan, if any, shall be referred as gross normative loan
 - Equity (deployed in capital projects) in excess of 30% shall be treated as normative loan
- Normative loan outstanding as on 1st April of Control Period shall be computed by reducing the cumulative repayment approved by the Commission
- Notwithstanding any moratorium period availed by the Distribution Licensee, the repayment of the loan shall be considered from the first year of the control period as per annual depreciation allowed
- Repayment for each year of Control period shall be deemed to be equal to the depreciation allowed for the year
- Rate of interest shall be the weighted average rate of interest (as per the loans outstanding in the accounts of licensee) calculated on the basis of actual loan portfolio at the beginning of each year of the control period
- In case of no actual outstanding loans, last available weighted average interest rate to be considered



Interest on Working Capital

- Interest on working capital is allowed on normative basis irrespective of the actual loan undertaken by the licensee
- For computing the normative working capital requirement, the following methodology is prescribed:
 - Two months equivalent of expected revenue
 - O&M expenses for one month
 - Maintenance spares @ 40% of R&M expenses for one month
 - Less: Security Deposit from consumers
 - Less: One month power purchase cost
- Interest is allowed considering one year SBI MCLR as on 1st April of the Control Period plus 300-350 basis points



Reasonable Return

- Return on equity is allowed on actual equity or 30% whichever is lower
- Assets funded by consumer contribution, capital subsidies/grants and corresponding depreciation shall not form part of the capital base.
- Rate of return allowed by SERCs differs (typically 14-16% post tax)
 - SERCs have followed the return on equity allowed by CERC on generation and transmission projects with some additional increase to account for the higher risk
- Additional RoE for quality of service (Supply availability, Wheeling availability – SAIDI/SAIFI)
- Few States, Return on Capital Employed concept is also used where the total Weighted Average Cost of Capital (WACC) is allowed on the total capital deployed after adjusting for depreciation i.e. Delhi, Andhra Pradesh
- In case of distribution licensees, income tax is approved as per actual



Reasonable Return

- Return on equity is allowed on actual equity or 30% whichever is lower
- Assets funded by consumer contribution, capital subsidies/grants and corresponding depreciation shall not form part of the capital base.
- Rate of return allowed by SERCs differs (typically 14-16% post tax)
 - SERCs have followed the return on equity allowed by CERC on generation and transmission projects with some additional increase to account for the higher risk
- Additional RoE for quality of service (Supply availability, Wheeling availability – SAIDI/SAIFI)
- Few States, Return on Capital Employed concept is also used where the total Weighted Average Cost of Capital (WACC) is allowed on the total capital deployed after adjusting for depreciation i.e. Delhi, Andhra Pradesh
- In case of distribution licensees, income tax is approved as per actual



Revenue Surplus / Gap

- Refers to the difference of ARR (expenses of the distribution utility for a year) and the total revenue expected to be recovered during the year from the consumers
- Total revenue includes
 - Revenue from sale of power to consumers within the licensee area (projected sales and existing tariff)
 - Sale of surplus power
 - Subsidy available from State Government select categories i.e. agriculture, BPL, etc.
- Any revenue gap is required to be met through tariff increase across various categories
- In case of high revenue gap, provision for Regulatory Asset exists

Aggregate Revenue Requirement

—

Total Revenue

=

Revenue Gap /(Surplus)



Tariff Design – Principles in Tariff Policy

8.3 Tariff design: Linkage of tariffs to cost of service

Consumers below poverty line who consume below a specified level, as prescribed in the National Electricity Policy may receive a special support through cross subsidy. **Tariffs for such designated group of consumers will be at least 50% of the average cost of supply.**

For achieving the objective that the tariff progressively reflects the cost of supply of electricity, the Appropriate Commission would notify a roadmap such that **tariffs are brought within $\pm 20\%$ of the average cost of supply.** The road map would also have intermediate milestones, based on the approach of a gradual reduction in cross subsidy.

Extent of subsidy for different categories of consumers can be decided by the State Government keeping in view various relevant aspects. **But provision of free electricity is not desirable as it encourages wasteful consumption of electricity.**The subsidized rates of electricity should be **permitted only up to a pre-identified level of consumption beyond which tariffs reflecting efficient cost of service should be charged** from consumers. If the State Government wants to reimburse even part of this cost of electricity to poor category of consumers the amount can be paid in cash or any other suitable way. Use of prepaid meters can also facilitate this transfer of subsidy to such consumers.

Metering of supply to agricultural/rural consumers can be achieved in a consumer friendly way and in effective manner by management of local distribution in rural areas through commercial arrangement with franchisees with involvement of panchayat institutions, user associations, cooperative societies etc.



Tariff Design – Principles in Tariff Policy

Two-part tariffs featuring separate fixed and variable charges and **time differentiated tariff** shall be introduced on priority for large consumers (say, consumers with demand exceeding 1 MW) within one year and subsequently for all consumers within a period of five years or such period as may be specified.

The Appropriate Commission may provide **incentives to encourage metering and billing based on metered tariffs**, particularly for consumer categories that are presently unmetered to a large extent.



Key aspects for consideration in Tariff

- Two-part Tariff for recovery of fixed cost and variable cost
- Tariff to remain within +/-20% of average cost of supply
 - Reduction of cross-subsidy
 - State Govt to decide on the quantum of subsidy to be provided to specific category/ type of consumers
- Reflection of average cost of supply / voltage level cost of supply
- Socio-economic considerations (50% tariff for BPL)
- Time differential tariff (Peak hour surcharge / night-time concessions)



CASE STUDY: DETERMINATION OF ARR AND TARIFF DESIGN



Consumer Load, Number and Sales

Estimation of Sales

Consumer Category	FY 2019-20	FY 2020-21	FY 2021-22	CAGR Considered
Domestic	3137.38	3385.63	3653.51	7.91% (5 year)
Non-Domestic	1325.79	1378.24	1432.77	3.96% (5 year)
Govt. Public Utilities	639.13	675.56	714.08	5.70% (3 year)
Private Tube-wells/ Pumping sets	282.91	294.23	306.00	4.00% (nominal growth rate)
Industrial – LT	315.03	326.05	337.47	5.00% (nominal growth rate) + any applications from large industries
Industrial – HT	6445.84	6768.14	7106.54	
Mixed Load	185.46	189.17	192.95	2.00% (nominal growth rate)
Railway Traction	30.08	31.28	32.53	4.00% (nominal growth rate)
Total	12,361.61	13,048.30	13,775.85	

- CAGR for each consumer category based on actual sales for the past 6 years from FY 2012-13 to FY 2017-18 is considered
- The Commission has normalized the growth rate, wherever, considered appropriate based on the ground reality, to realistically estimate the sales figures for a particular category of consumers for each year of the Control Period.



Distribution Loss targets & Energy Balance

Approved Distribution Loss target

Particulars	FY 2019-20	FY 2020-21	FY 2021-22
Distribution Losses	14.25%	14.00%	13.75%

- Marginal loss reduction to the extent of 0.25% for each year of the Control Period

Energy Balance

Source	FY 2019-20	FY 2020-21	FY 2021-22
Total sales with efficiency improvement (MU)	12397.76	13086.34	13815.89
Overall Distribution Loss (%)	14.25%	14.00%	13.75%
Transmission Loss (%)	1.40%	1.40%	1.40%
Energy Input at State periphery (MU)	14,663.31	15,432.73	16,245.87
Total Energy available from firm sources	12,768.47	13,874.84	14,987.90
Power Procurement to meet RPO	291.46	-	-
Deficit/(Surplus)	1,603.38	1,557.89	1,257.97



Power Purchase Projection Basis

Basis for Projection of Power Procurement

Source	Units Projection	Cost Projection
UJVN Ltd.	Average of actual month-wise gross generation in last 3 years	Approved Tariff of UJVN plants
NHPC, THDC, SJVN Plants	Average of actual month-wise gross generation in last 3 years	FC and VC projected separately based on AFC approved for respective plants In absence of TO, previous year FC/ VC with reasonable escalation
NTPC Plants	Based on average PLF for last three years and allocation of licensee	Fixed cost projected separately based on AFC approved for respective plants Variable cost as per last year with reasonable escalation
IPPs	As per PPA capacity and actual/ normative PLF	As per PPA/ actual for past year/(s)
RE sources	As per PPA with existing plants Expected commissioning of capacity with appropriate CUF	As per weighted average rate of procurement for past year For new stations, as per discovered price/ Commission approved rate

- Monthly MoD is prepared and surplus/deficit with respect to monthly sales is evaluated
- Procurement plan for meeting the deficit quantum
- Few utilities undertake Banking arrangement for meeting shortfall capacity during specific months i.e. HP



Power Purchase Projection



Projection of Power Procurement for Control Period

Source	FY 2019-20			FY 2020-21			FY 2021-22		
	Units	Total Cost	Per Unit	Units	Total Cost	Per Unit	Units	Total Cost	Per Unit
UJVN Ltd.	4259.54	770.19	1.81	4134.45	785.59	1.90	4023.3	801.31	1.99
NHPC, THDC, SJVN Plants	1777.64	556.87	3.13	1777.64	573.57	3.23	1777.64	590.78	3.32
NTPC Plants	2562.77	894.92	3.49	2562.77	930.71	3.63	2562.77	967.95	3.78
IPPs	3192.08	1851.46	5.80	4405.87	2423.22	5.50	5630.08	2871.34	5.10
RE Sources	976.44	510.31	5.23	994.11	482.35	4.85	994.11	501.65	5.05
Total Power Purchase cost	12768.47	4583.75	3.59	13874.84	5195.44	3.74	14987.9	5733.03	3.83

Transmission & SLDC Charges

Source	FY 2019-20	FY 2020-21	FY 2021-22
Inter-State Transmission Charges (Rs. Cr)	509.73	519.41	529.80
Intra-State Transmission Charges (Rs. Cr)	255.01	259.86	265.05
SLDC Charges (Rs. Cr)	11.35	11.52	11.75

RPO Targets (Solar/Non-Solar)

Non-Solar	10.25%	10.25%	10.50%
Solar	7.25%	8.75%	10.50%
Total	17.50%	19.00%	21.00%



O&M Expenses – Employee Cost

Projection for Employee Costs

Particulars	FY 2019-20	FY 2020-21	FY 2021-22
EMPn-1	422.08	450.10	546.69
Gn	2.20%	16.41%	12.73%
CPI inflation	4.34%	4.34%	4.34%
$EMPn = (EMPn-1) \times (1+Gn) \times (1+CPIinflation)$	450.10	546.69	643.02
Capitalisation rate	16.90%	16.90%	16.90%
Less: Employee expenses capitalised	76.08	92.41	108.69
Net Employee expenses	374.02	454.29	534.33

- Normative employee expenses for each year has been projected based on growth in employees and CPI Inflation
- Gn factor considered based on addition of y-o-y manpower as per approved HR Plan
- Actual capitalization rate for past year/(s) applied for projecting net employee cost



O&M Expenses – R&M Expense

Projection for R&M Expense

Particulars	FY 2019-20	FY 2020-21	FY 2021-22
K	3.06%	3.06%	3.06%
GFA _{n-1}	4682.71	5259.80	5851.76
WPI inflation	0.33%	0.33%	0.33%
$R\&M_n = K \times (GFA_{n-1}) \times (1+WPI_{inflation})$	143.95	161.69	179.88

- K factor: Based on actual R&M expenses over average GFA in the last three years
- GFA projection based on opening GFA and additional capitalization projected for each year
- WPI inflation – average increase of last three years WPI index



O&M Expenses – A&G Expense

Projection for A&G Expense

Particulars	FY 2019-20	FY 2020-21	FY 2021-22
A&Gn-1	28.61	28.71	28.81
WPI inflation	0.33%	0.33%	0.33%
A&Gn = A&Gn-1 x (1+WPIinflation) + Provision	28.71	28.81	28.90
Capitalisation rate	59.50%	59.50%	59.50%
Less: A&G expenses Capitalised	17.08	17.14	17.20
Net A&G expenses	11.63	11.67	11.70
Provisioning towards additional Data Centre expenses	19.36	21.69	24.34
License Fee	3.00	3.25	3.50
Total A&G expenses	33.99	36.61	39.54

- Base year A&G expenses considered review of last three years actual A&G expenses vis-à-vis the approved
- Projections undertaken considering WPI inflation and capitalization
- Additional provision for Data Centre related expense and License fees



Review of Capital Expenditure and Capitalization

Projection for Capital Expenditure & Capitalization (1/2)

Particulars	FY 2019-20	FY 2020-21	FY 2021-22
A. Central Schemes			
DDUGJY	345.30	-	-
IPDS	48.29	299.02	175.17
SAUBHAGYA	64.63	-	-
B. Load Growth			
New Substation projects	100	80	70
Release of New PTW Connections	33.00	36.30	36.60
Installation of meters for giving new connections	16.50	21.78	29.95
Laying of LT lines	40.25	44.27	48.70
Other Works	9.03	9.38	15.21
C. Loss Reduction			
Laying of LT ABC Cable in theft prone areas	156.75	172.43	189.67
Replacement of defective single phase and three phase meters	17.99	15.16	16.67
Installation of 11kV & 33kV underground cables	32.97	36.27	39.90
Other Works	14.80	10.92	12.01



Review of Capital Expenditure and Capitalization

Projection for Capital Expenditure & Capitalization (2/2)

Particulars	FY 2019-20	FY 2020-21	FY 2021-22
D. System Reliability and Safety Improvement			
Additional Transformers	109.30	88.77	73.33
LT Protection System on Transformer	30.92	34.01	37.41
Safety measures	8.70	9.57	10.53
Smart Grid projects for industrial areas	5.00	5.00	5.00
E. Creation of infrastructure facilities & miscellaneous works			
Procurement of S/S and high value consumer meter testing and diagnostics equipment	11.85	11.85	11.85
Consumer care centres, Epayment of bills and Cash collection centres	1.19	1.19	1.19
IT related expenditure	9.17	16.25	11.58
Grand Total	1,055.63	892.16	784.76



Review of Capital Expenditure and Capitalization

Projection for Capital Expenditure & Capitalization

Particulars	FY 2019-20	FY 2020-21	FY 2021-22
Capital expenditure	1055.63	892.16	784.76
Capitalisation	577.09	591.96	601.32

- For capitalization, average capitalization achieved by utility over past three years have been considered

Financing Plan

Particulars	FY 2019-20	FY 2020-21	FY 2021-22
Capitalisation	577.09	591.96	601.32
Funding Plan			
Debt	269.90	276.85	281.23
Equity	115.67	118.65	120.52
Grant	191.53	196.46	199.57

- Funding has been considered based on actual of past three year funding of various schemes and shall be considered at the time of truing-up



Depreciation

Projection for Depreciation

Particulars	FY 2019-20	FY 2020-21	FY 2021-22
Opening GFA	4682.72	5259.80	5851.76
Grants	1924.84	2116.36	2312.82
Depreciable opening GFA	2757.88	3143.44	3538.94
Net addition during the year	385.56	395.50	401.75
Closing GFA	3143.44	3538.94	3940.69
Depreciation rate	5.20%	5.20%	5.20%
Depreciation	143.38	163.43	183.99

- Weighted average rate of 5.20% applied each year for computation of depreciation
- Depreciation during initial 12 years is high in view of loan repayment as per the regulations and remaining depreciation is divided in balance life of the assets



Interest on Capital Loans

Projection for Loans and Interest

Particulars	FY 2019-20	FY 2020-21	FY 2021-22
Opening Loan balance	589.77	716.29	829.71
Drawal during the year	269.90	276.85	281.23
Repayment during the year	143.38	163.43	183.99
Closing Loan balance	716.29	829.71	926.95
Interest Rate	11.04%	11.04%	11.04%
Interest on Capital Loans	57.20	70.06	81.44

- Repayment considered as equivalent to the approved depreciation for each year
- Opening loan as per truing-up of past year and approved financing plan for the Control Period
- Interest rate is considered as weighted average rate of interest for existing loans of licensee



Return on Equity

Projection for Equity and Return on Equity

Particulars	FY 2019-20	FY 2020-21	FY 2021-22
Opening Equity	546.12	661.78	780.43
Addition during the year	115.67	118.65	120.52
Closing Equity	661.78	780.43	900.95
Rate of Return	16.50%	16.50%	16.50%
Return on Equity	90.11	109.19	128.77

- Closing equity of previous year and additional equity based on approved capitalization of schemes / works
- Return on equity considered as 16.5% post tax
- Income Tax is approved as per actual



Interest on Working Capital

Projection for Working Capital Requirement & Interest

Particulars	FY 2019-20	FY 2020-21	FY 2021-22
O&M expenses for 1 month	178.37	189.93	202.07
Annual revenues from tariffs and charges	4798.80	4922.77	5050.89
Receivables for two months of revenue from sale of electricity;	799.80	820.46	841.82
Maintenance spares @ 15% of O&M Expenses for one month	26.76	28.49	30.31
Less: one-month power purchase	217.12	234.95	256.61
Less: Consumer Security Deposit	315.79	324.00	332.43
Total Working Capital	472.02	479.93	485.15
Rate of Interest on Working Capital	11.45%	11.45%	11.45%
Interest on Working Capital	54.05	54.95	55.55

- Rate of Interest is considered on normative basis and is equal to the SBI MCLR as on 1st April for the respective year + 300 basis points



Non-Tariff Income

Projection for Non-tariff Income

Particulars	FY 2015-16	FY 2016-17	FY 2017-18
Interest on deposits	65.59	57.09	61.70
Income from staff welfare activities	0.15	0.16	0.14
Rebate/Incentive	45.69	44.07	22.47
Misc receipts	37.14	22.37	15.59
Material Cost Variance	36.78	26.86	20.27
Delayed payment surcharge	-	183.92	173.11
Revenue from sale of surplus power outside State	-	17.20	-
Wheeling charges recovery	-	1.64	16.13
Prior Period Income	-	28.06	-0.88
Total	185.35	381.38	308.52

Particulars	FY 2019-20	FY 2020-21	FY 2021-22
Projected non-tariff income	250	250	250

- Non-tariff income has been projected based on actual non-tariff income in the past three years
- Appropriate escalation has been considered as per increase in non-tariff income
- Exclusions/inclusion of any one time income has been considered



Overall ARR and Revenue Surplus / Gap

Revenue Surplus/Gap

Particulars	FY 2019-20	FY 2020-21	FY 2021-22
ARR	6,549.4	6,811.4	7,083.8
Less:			
Revenue from sale of power	6218.81	6,467.6	6,726.3
Revenue from sale of surplus power	152.75	136.92	108.68
Total Revenue Gap/ (Surplus) to be recovered through Tariff	177.83	206.88	248.88
Revenue Gap / (Surplus) as % of Revenue	2.9%	3.2%	3.7%

- For FY 2019-20, as increase of ~3% is required for meeting the revenue deficit



Allocation of Wheeling and Supply ARR

Particulars	Wheeling	Supply
Power Purchase Expenses	0%	100%
Inter-state transmission Charges	0%	100%
Intra-state transmission Charges	0%	100%
SLDC Charges	0%	100%
Employee Expenses	70%	30%
R&M Expense	90%	10%
A&G Expense	60%	40%
Interest and Financing Charges	95%	5%
Depreciation	95%	5%
Return on Equity	100%	0%
Non-Tariff Income	0%	100%

- Wheeling charge is applicable on generator/ consumers availing open access for sale/ procurement of power



Tariff Revision

Projection of Revenue based on Approved Tariff

Particulars	Existing Tariff			Approved Tariff				Average Increase
	Sales (MU)	Revenue (Rs. Crore)	ABR (Rs. /kWh)	Sales (MU)	Revenue (Rs. Crore)	ABR (Rs. /kWh)	ABR as % of ACOS	
Domestic	3137	1279.62	4.08	3137.38	1328.67	4.23	80.21%	3.7%
Non-Domestic	1326	772.28	5.83	1325.79	808.34	6.10	115.47%	4.6%
Govt Public Utilities	639	339.59	5.31	639.13	348.52	5.45	103.28%	2.6%
Private Tube Wells	283	52.06	1.84	282.91	55.17	1.95	36.93%	6.0%
LT Industry	315	178.13	5.65	315.03	181.50	5.76	109.11%	1.9%
HT Industry	6446	3620.17	5.62	6445.84	3734.76	5.79	109.74%	3.0%
Mixed Load	185	94.32	5.09	185.46	99.30	5.35	101.41%	5.1%
Railway Traction	30	16.78	5.58	30.08	17.01	5.65	107.07%	1.3%
Incremental Sales	36	18.61	5.14	36.21	19.25	5.32	-	3.5%
Total	12398	6371.56	5.14	12397.83	6592.52	5.32	-	3.5%

- Category-wise increase in fixed and variable charge is analyzed in accordance with the provisions of Tariff Policy and Regulations
- ABR to be in range of +/-20% of cost of supply



Thank You