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Collaboration
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Power Procurement: Planning, Regulations and Practices

Tata Power Trading Company Ltd



Agenda



Introduction to Tata Power & Tata Power Trading Company Limited

Power Market Structure and Developments

Power Procurement Planning

Power Procurement Regulations

Power Procurement Practices



**INTRODUCTION TO TATA
POWER & TATA POWER
TRADING COMPANY LIMITED**

Tata Power Company – Business Overview

- Established in 1910, Tata Power is India's largest integrated power company with a significant international presence
- The Company generates about 8747 MW of power of which 7407 MW is from Thermal Power Plant
- Tata Power has an installed generation capacity of 1206 MW through green resources
- One of the largest renewable energy players in India
- It has developed India's first 4000 MW Ultra Mega Power Project

Tata Power – International Presence

- South Africa - 50: 50 JV with Exxaro Resources
- Georgia - Development of three hydro projects in 2 phases of 185 MW and 215 MW
- Indonesia – Coal Assets and Geothermal project being developed

Tata Power Trading Company Limited (TPTCL) - Overview

- A wholly owned subsidiary of The Tata Power Company Limited
- First company to be awarded a power trading license by CERC - On 9th June 2004
- Cross Border Trading Experience – Importing power from Dagachhu Hydro Power(126MW), in Bhutan, to India
- TPTCL serves DISCOMs across all the states in India.
- TPTCL sells power of almost 30 generators and 6 State Discoms including DVC, Gujarat, Punjab, Haryana and West Bengal. Also, Authorized by Govt. of Himachal Pradesh to sell its free energy share.
- Timely payment and payment security to power suppliers
- Consistently among the top three power trader in India.
- Has increased its trading volume from 2996 MU in FY 2009 to 10500 MU in FY 2015
- Revenue of Rs. 4182 Crore(s) in FY 2015
- TPTCL is the only trading company to have zonal offices in all regions (Noida – NR ; Mumbai – WR ; Chennai & Hyderabad –SR ; Kolkata – ER). In order to have further penetration state specific offices have been set up in Uttaranchal and Guwahati.
- 24 X 7 State of art highly automated control room manned by highly skilled professionals

TPTCL SERVICE PORTFOLIO

Bilateral Power Contracts

Power Exchanges

Renewable Energy Certificate (REC)

Coal Supply Facilitation

Advisory Services

Short Term Contracts

Medium/Long Term Contracts



Power Market Structure and Developments

DEVELOPMENT OF INDIAN ELECTRICITY MARKET STRUCTURE



Indian Electricity Act 1910

- Basic Framework of Electricity Market
- License for supply of electricity by State

Electricity (Supply) Act 1948

- Creation of SEBs.

Amendment in 1991:

- Private Generating Companies to Set up plant & sell power to Grid

Amendment in 1995

- Introduction of Mega Power Project Policy
- To Promote, monitor, purchase power & sell to identified SEBs through a Govt. Company

Electricity Regulatory Commission Act 1998

- Setting up of Independent CERC & SERC.
- Main function to regulate tariff & promote competition, efficiency & Economy

Amendment in Act-1998

- Participation of Private sector in area of Transmission construction, operation & maintenance under control of CTU & STU.

Electricity Act 2003

- Generation De-licensed
- Determination of tariff by bidding process

Salient Features of Indian Electricity Act 2003

De-licensing of generation

Development of a Multi-Buyer Multi-Seller framework in power

Introduced Tariff based Competitive Bidding for procurement of Power

Provision of Non-discriminatory Open Access

Provision of Parallel license in Distribution

Thrust to Universal Service Obligation (USO)

Setting up State Electricity Regulatory Commission (SERC) made mandatory

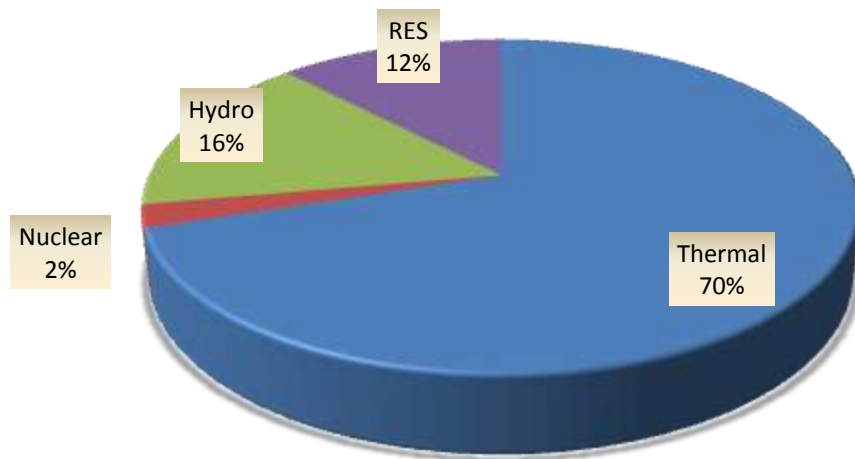
Development of National Electricity Policy (NEP-2005) and National Tariff Policy (NTP-2006)

Installed Generation Capacity

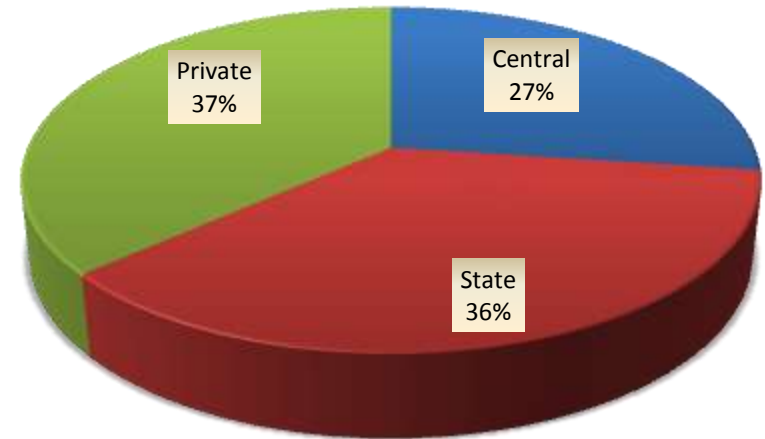
As on FEB 2015	Thermal (MW)				Nuclear (MW)	Hydro (MW)	RES (MW)	Grand Total (MW)
	Coal	Gas	Diesel	Total				
Central	46775	7429	0	54204	5780	10691	0	70675
State	55891	6974	603	63468	0	27482	3804	94753
Private	55830	8568	597	64996	0	2694	27888	95578
Total	158496	22971	1200	182667	5780	40867	31692	261006

All figs in MW, Source: www.cea.nic.in

Generation Mix



Sector-Wise Generation



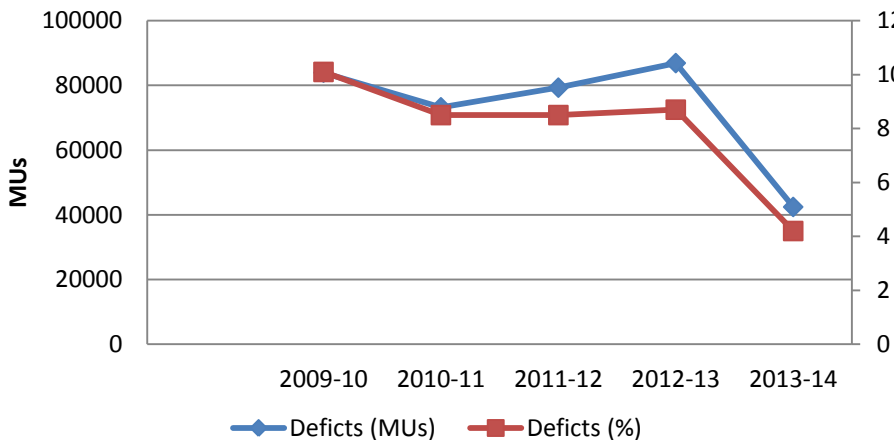
Power Supply Position in India



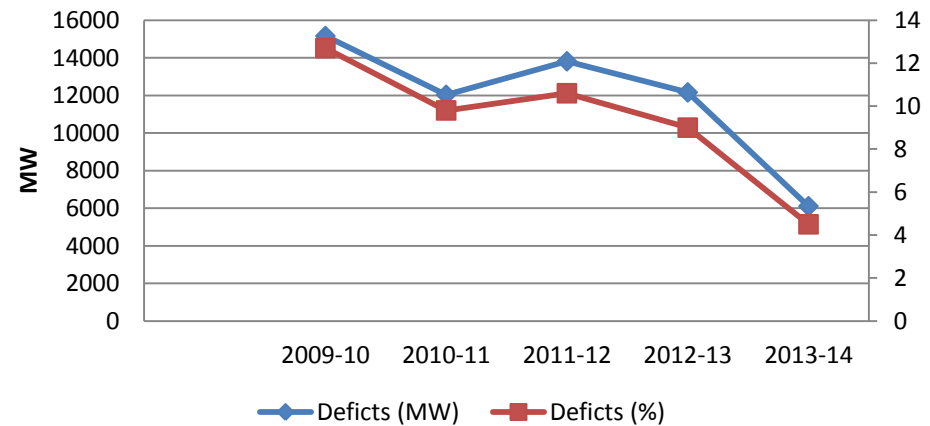
The power supply position in the country during 2009-10 to 2013-14 :

Year	Energy				Peak			
	Requirement (MU)	Availability (MU)	Surplus/Deficits(-)		Peak Demand (MW)	Peak Met (MW)	Surplus/Deficits(-)	
			(MU)	(%)			(MW)	(%)
2009-10	830,594	746,644	-83,950	-10.1	119,166	104,009	-15,157	-12.7
2010-11	861,591	788,355	-73,236	-8.5	122,287	110,256	-12,031	-9.8
2011-12	937,199	857,886	-79,313	-8.5	130,006	116,191	-13,815	-10.6
2012-13	998,114	911,209	-86,905	-8.7	135,453	123,294	-12,159	-9
2013-14	1,002,045	959,614	-42,431	-4.2	135,918	129,815	-6103	-4.5
FY 15 till Feb-2015	984,999	948,640	-36,359	-4	148,166	141,160	-7,006	-4.7

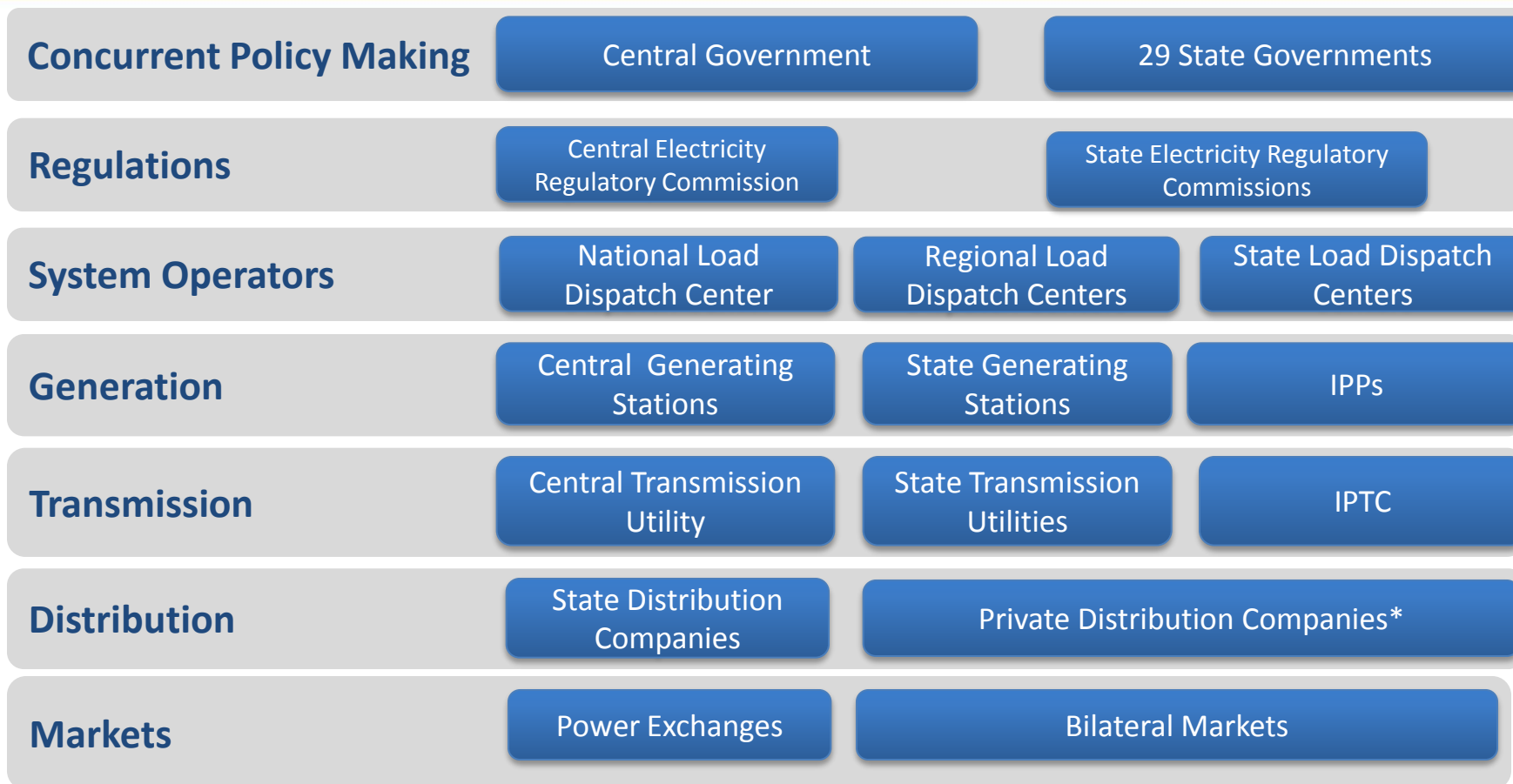
Deficit in Energy – (MUs)/(%)



Deficit in Peak - (MW)/(%)



Structure of Indian Power Market



* Private distribution companies are few in number. Tata Power-Mumbai and Tata Power- Delhi are amongst the best performing distribution companies

Indian Power Market - Design



Nature of Contract	Duration of Contract	Transmission Open access availability
Long Term	20 years or more	Long term open access is available for a period of 12 years to 25 years
Medium Term	>1 years to 5 years	Medium term open access is available for a period of 3 months to 3 years
Short Term		
Short Term – Bilateral	Up to 1 year	For a period of up to 3 months
Short Term – Power Exchange	Day Ahead Market (1 day)	1 day (corridor left after short term bilateral)
	Term Ahead Market (Week Ahead)	Weekly basis (FCFS/Day Ahead)
Deviation Settlement Mechanism	Real time balancing mechanism for settling deviation from schedule	



Power Procurement Planning

Inefficient power procurement planning adversely impacts the finances of the discoms in several ways

- **Shortage of power leads to higher power purchase cost**
- **Indirect consequences of shortage of power**

ISSUES FACED BY DISCOMS IN PLANNING



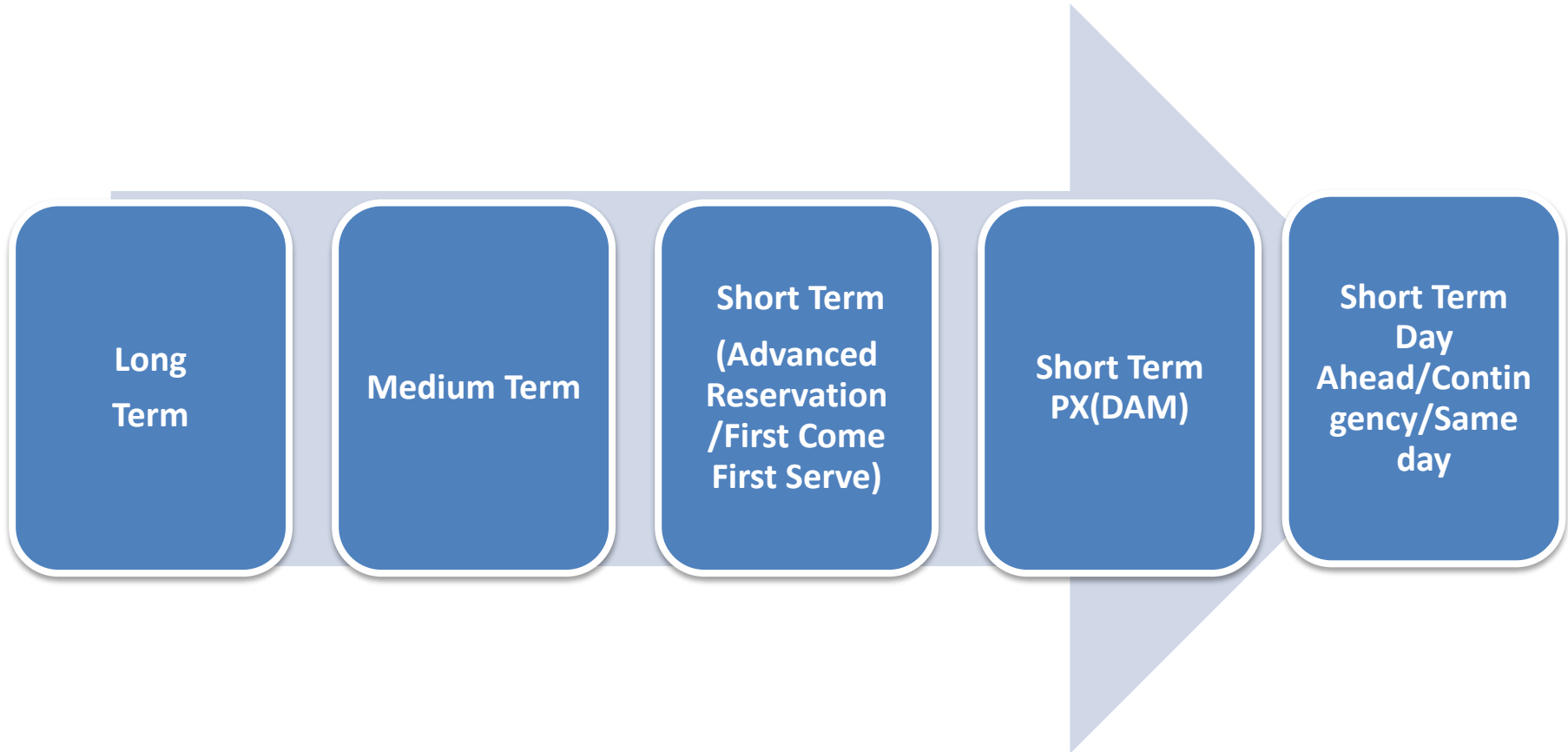
- In the past, Discoms failed to procure power as per the plan due to reasons such as:
 - ✓ Fuel shortages (Gas and Coal)
 - ✓ Transmission congestion at different levels:
 - ❖ Inter regional (e.g. WR to NR, Rest of India to SR)
 - ❖ Intra regional (e.g. S1 to S2, N3 Import, W3 Export) and
 - ❖ Intra state (e.g. Gurgaon Import in Haryana, NPCL Import in UP, PGVCL to UGVCL in Gujarat, Etc.)
 - ✓ Delay in commissioning of power projects
 - ✓ Lower level of hydro generation

- Discoms should conduct sensitivity analysis or probabilistic analysis and ascertain more realistic power procurement requirements in the future.

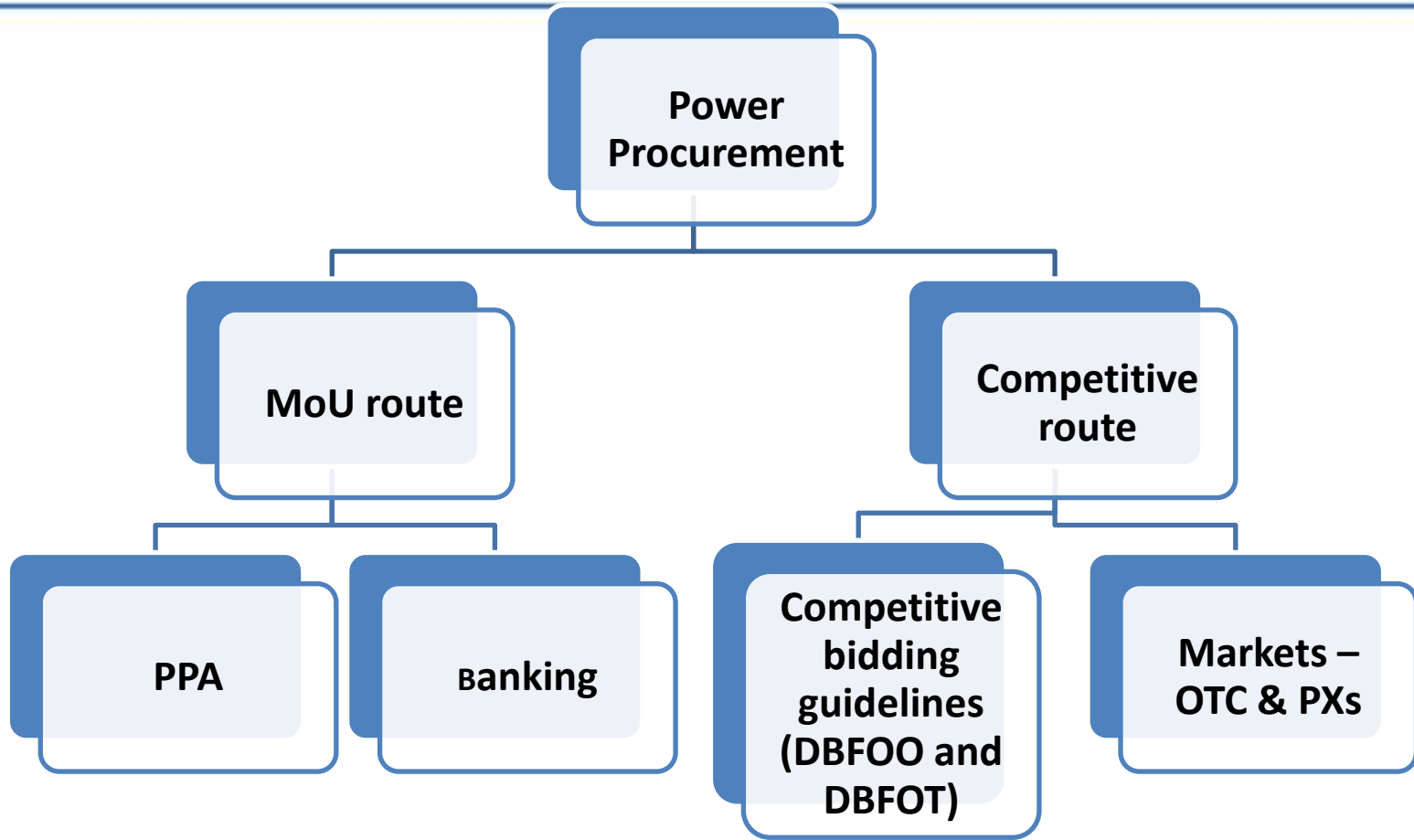
- Competitive bidding for power procurement should be conducted in a timely manner.

TRANSMISSION CORRIDOR PRIORITY

Discoms must keep in mind the priority for transmission corridor related to various options available for power procurement.



POWER PROCUREMENT ROUTES



DBFOO- Design Build Finance Own and Operate

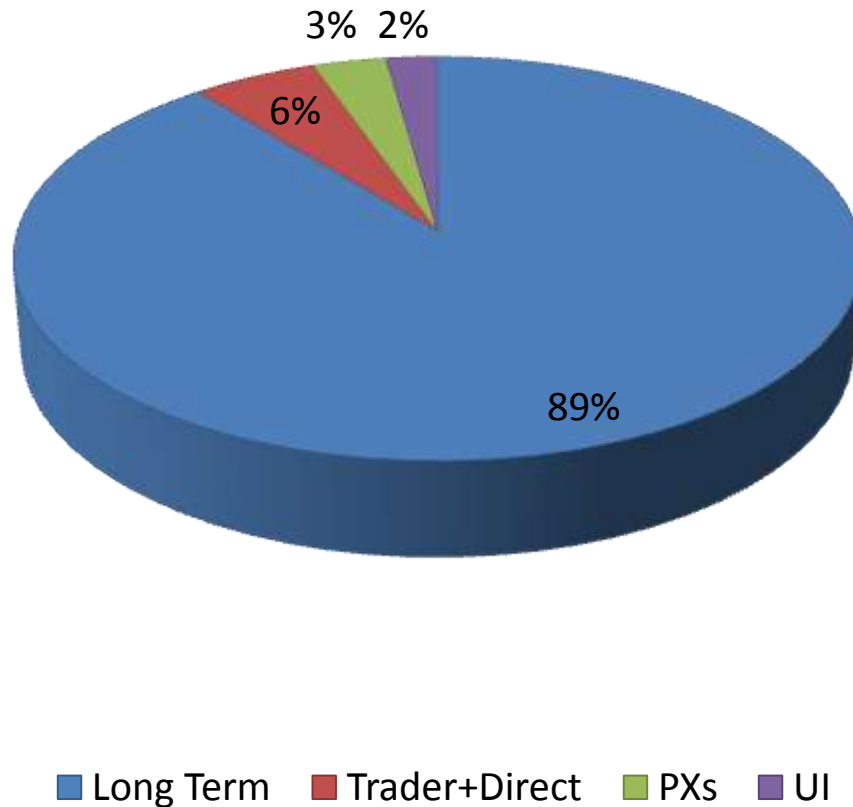
DBFOT- Design Build Finance Operate Transfer

- Reliability of supply and competitive rates are the two primary reasons why consumers use the open access route to procure electricity.
- The Electricity Act 2003 has created this option for sourcing of power to create a market driven regime opposed to supply of electricity through state monopolies.
- The Act provides that industries in need of more than 1 MW electricity can procure power from electricity exchanges or directly from generators and distribution companies or traders of power.
- Many state governments and utilities have stopped giving out permissions for open access by imposing restrictions on movement of power from sellers to users.

INDIAN POWER MARKET - PROCUREMENT BREAKUP



TRANSACTIONS IN FY14



- Largely tied-up through PPAs
- Short term bilateral market dominated by few players (TPTCL, PTC, NVVNL & JSW) accounting for over 85% volume of ST Market.
- Low liquidity in short term market due to Insufficient power available for short term trade
- Fuel availability only for long term PPAs
- UI volume is progressively declining because of tightening of frequency band by CERC and emergence of PX.

POWER PROCUREMENT OPTIONS AVAILABLE FOR A DISCOM

Base Load

- Coal
- Nuclear

Peak Load

- Hydro
- Gas

Renewable

- Solar
- Wind

Procurement of Power Exchanges/Traders Procurer can select a capacity from multiple resources for varying capacities and for varying contracts.

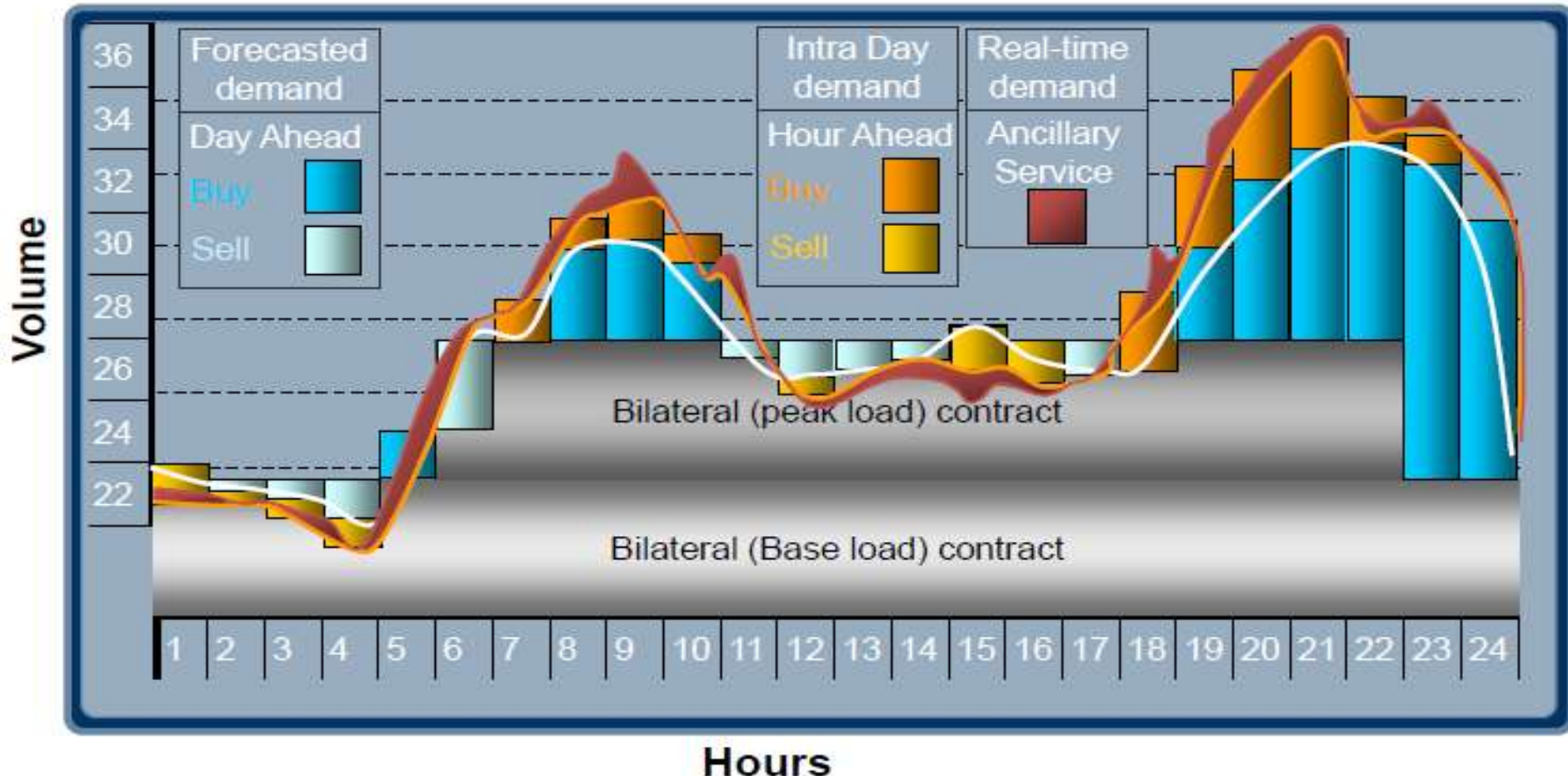
OPERATIONAL ISSUES IN PORTFOLIO MANAGEMENT

- Procurers of complex portfolios would ideally need to update the contracting strategy for procurement of power on an annual basis

- Market conditions in terms of demand-supply gap, electricity prices and regulatory conditions would determine the risks and costs

- The risks and costs would determine the selection of the combination of contracts
 - ✓ Short term/Medium term/Long term
 - ✓ Bilateral/Power Exchange

SCHEMATIC APPROACH TO POWER PROCUREMENT OPTIMIZATION



Due to the combination of long term, medium and short term supplies, differing fuels, base and peaking contracts and power procurements, optimization has to be done for (a) long term planning and (b) short term procurement and sale

LONG TERM / MEDIUM TERM POWER PROCUREMENT

- **Demand Projection**
 - ✓ As per 18th Electric Power Survey (EPS) by CEA
 - ✓ CAGR

- **Estimated availability from Long Term Supply**
 - ✓ Latest Information Available from Various Sources like CEA, Meetings, Seminars, Site Visits etc.

- **Demand Supply Gap Estimated**

- **Planning for Shortfall / Surplus Arrangements**

- **Types of Arrangements**
 - ✓ Allocated
 - ✓ Contracted (Competitive Bidding)

SHORT TERM POWER PROCUREMENT

- **Estimated Demand Projection –One year Ahead (Reviewed Monthly or Earlier –As required –Max./ Avg. Probability)**
 - ✓ Scenario Building on Parameters such as weather, festivals, public elections etc.,.

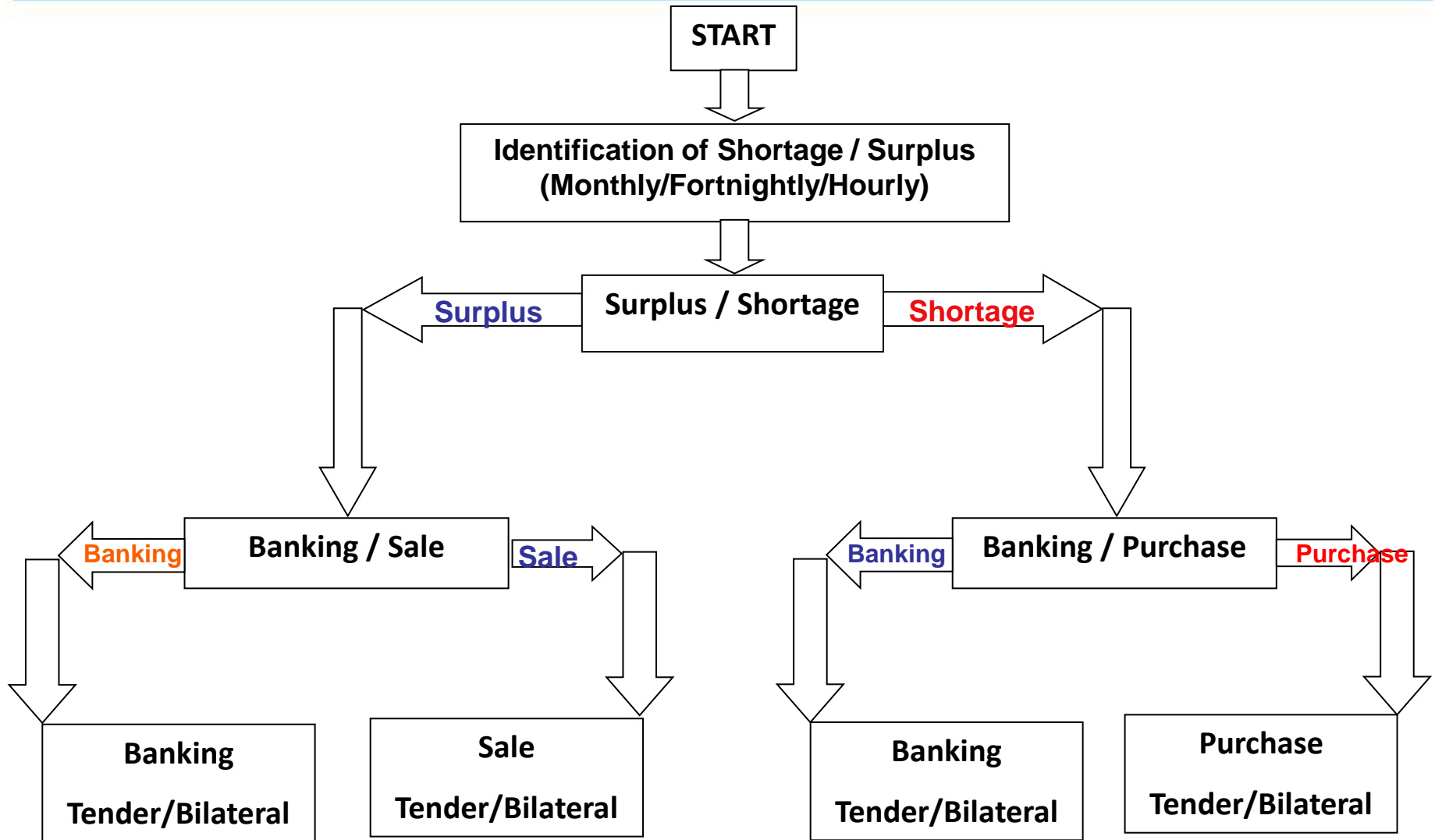
- **Estimated supply from Long Term Supply based on Load Generation Balance Report (LGBR), planned plant outages, contingency , fuel availability etc.,.**

- **Estimated Demand Supply Gap.**

- **Planning for Shortfall / Surplus Arrangements**

- **Types of Arrangements**
 - ✓ Bilateral
 - ✓ Banking
 - ✓ Power Exchanges

DECISION MATRIX FOR SHORT TERM SALE / PURCHASE





Power Procurement Regulations

REGULATORY PROVISIONS

- ✓ **Section 62 of the Electricity Act 2003** states that
“The Appropriate Commission shall determine the tariff in accordance with provisions of this Act for –

(a) *supply of electricity by a generating company to a distribution licensee:*

Provided that the Appropriate Commission may, in case of shortage of supply of electricity, fix the minimum and maximum ceiling of tariff for sale or purchase of electricity in pursuance of an agreement, entered into between a generating company and a licensee or between licensees, for a period not exceeding one year to ensure reasonable prices of electricity;”

- ✓ **Section 63. (Determination of tariff by bidding process):**
“*Notwithstanding anything contained in section 62, the Appropriate Commission shall adopt the tariff if such tariff has been determined through transparent process of bidding in accordance with the guidelines issued by the Central Government*”

Power Procurement Regulations



- The Electricity Act 2003 Dated 2nd June 2003
- National Electricity Policy Dated 12th February 2005
- National Tariff policy 31st March 2008
- Guidelines for short term procurement of power by distribution licensees through tariff based bidding process dated 15th May 2012
- Guidelines for procurement of Electricity from Thermal Power Stations set up on Design, Build, Finance, Operate and Transfer (DBFOT) basis dated 21st September, 2013
- Guidelines for procurement of Electricity from Thermal Power Stations set up on Design, Build, Finance, Own and Operate (DBFOO) basis Dated 9th November, 2013
- Guidelines for procurement of electricity for medium term from power stations set up on Finance, Own & Operate (FOO) basis dated 10th February 2014
- Guidelines for procurement of peaking power for medium term dated 24th February 2014

MOP GUIDELINES FOR PROCUREMENT OF SHORT TERM POWER

- Guidelines dated 15th May 2012 shall be used for short term procurement of power by distribution licensees through tariff based bidding process
- Exception:
 - i) Power procured for less than 15 days
 - ii) Banking Mechanism
 - iii) Power exchanges
- Single Tariff at delivery point up to three decimal places. (No escalation)
- Option of Supply from alternate source.
- Single stage process
- RFP to be published in at least two National Newspaper.
- RFP to include:
 - i) Requirements (Quantum, timeslot, duration)
 - ii) Delivery point
 - iii) Procedure and Criteria to be used to evaluate bids to be given
 - iv) Earnest Money Deposit (EMD), Bank Guarantee,
 - v) Contract Performance Guarantee

MOP GUIDELINES FOR PROCUREMENT OF SHORT TERM POWER

- Validity of Bid for 10 days.
- Draft PPA to be part of RFP
- Important provisions for PPA i.e. Force Majeure Events, Billing Cycle, Compensation clause, Payment terms and Payment security mechanism.
- Requirement of at least two bidders.
- Procurer to constitute a standing committee for evaluation of bid with one external member.
- No deviations from this guidelines allowed except with prior approval of regulatory commission.
- Provides for dispute settlement through arbitration under the Indian arbitration and Conciliation act 1996
- Timeline for Process: RFP issued – Zero Date
 - Submission of RFP Bid – 6 Days
 - Evaluation of bids and signing of PPA – 10 Days

ISSUES IN MOP GUIDELINES FOR SHORT TERM

- ✓ Absence of “**Late Payment Surcharge**” clause leading to payment risk for traders
- ✓ Implementation issues at state level
- ✓ EMD amount of Rs.30,000/MW/Month is quite high for a period of procurement less than one month
- ✓ LC equivalent to 100% of the weekly energy corresponding to contracted capacity at the tariff is less and same should be equivalent to the billing cycle of the contract.

ISSUES IN SHORT TERM POWER PROCUREMENT

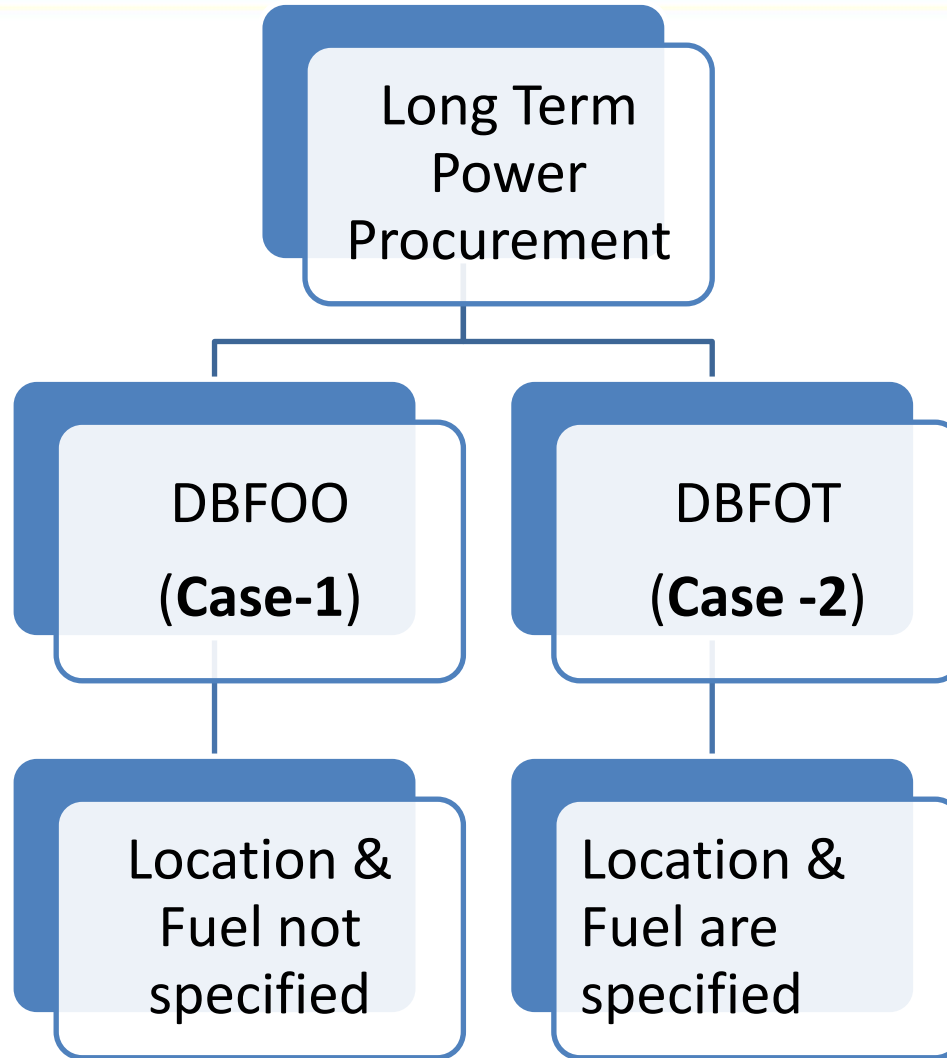
- ✓ Poor Financial Health of Discoms
- ✓ Transmission Constraints
- ✓ Fuel price risk
- ✓ Shortfall in coal supply
- ✓ Lack of regulatory clarity for import of power
- ✓ Implementation of Open Access at state level

MOP GUIDELINES FOR PROCUREMENT OF MEDIUM TERM & LONG TERM POWER



- ✓ Ministry of Power first issued guidelines for competitive bidding process, to be followed by DISCOMs for long/medium term power procurement, on 19th January 2005.
- ✓ **Power Procurement on Long Term basis** - Fresh guidelines were issued on 21st September 2013 for Case-2 bidding process , on 9th Nov 2013 for Case-1 bidding process
- ✓ **Power Procurement on Medium Term basis** - Fresh guidelines were issued on 10th February 2014 and 24th February 2014
- ✓ The guidelines have been framed under the provisions of Section 63 of the Act.

LONG TERM POWER PROCUREMENT - OPTIONS



- Tariff for supply of electricity from a thermal generating station shall comprise two parts:
 - i. capacity charge (for recovery of annual fixed cost)
 - ii. energy charge (for recovery of primary and secondary fuel cost)
- The tariff for supply of electricity from a hydro generating station shall comprise capacity charge and energy charge for recovery of annual fixed cost through the two charges

- Capacity Charges shall be derived on the basis of Annual Fixed Cost and shall consist of the following components:
 - i. Return on equity
 - ii. Interest on loan capital
 - iii. Depreciation
 - iv. Interest on working capital
 - v. Operation and maintenance expenses
- Energy charges shall be derived on the basis of the landed fuel cost (LFC) of a generating station (excluding hydro) and shall consist of the following :
 - i. Landed Fuel Cost of primary fuel
 - ii. Cost of secondary fuel oil consumption

KEY FEATURES FOR PROCUREMENT OF POWER FROM THERMAL POWER STATIONS SET UP ON DBFOT BASIS



- MOP published the guidelines on 21st September 2013 for procurement of electricity from thermal power stations set up on Design, Build, Finance, Operate and Transfer (**DBFOT**) basis
- Two stage competitive bidding process:
 - Request for Qualification (RFQ) stage
 - Request for Proposal (RFP) stage
- Term of contract shall be 20 years or more
- Utility shall pay a fixed charge determined through competitive bidding for availability of the power station and shall be revised annually to reflect 30% of the variation(annual change) in WPI and CPI. Further annual reduction of 2% so that the benefit of a depreciated asset is passed on to the consumers.
- Fuel charge is pass through subject to certain ceiling
- Normative availability shall be 90% of the Installed Capacity
- Tariff to be quoted for first year only (no levelized tariff)
- At the end of concession period, the power plant will be transferred to the utility

KEY FEATURES FOR PROCUREMENT OF POWER FROM THERMAL STATIONS UNDER DBFOO BASIS



- MOP published the guidelines on 9th November 2013 for procurement of electricity from thermal power stations set up on Design, Build, Finance, Own and Operate (DBFOO) basis
- Two stage competitive bidding process:
 - Request for Qualification (RFQ) stage
 - Request for Proposal (RFP) stage
- Term of contract is for 25 years and extendable by 5 years
- Utility shall pay a fixed charge determined through competitive bidding for availability of the power station and shall be revised annually to reflect 30% of the variation in WPI. Further annual reduction of 2% so that the benefit of a depreciated asset is passed on to the consumers.
- Fuel charge is pass through subject to certain ceiling
- Normative availability shall be 90% of the contracted capacity
- Tariff to be quoted for first year only (no levelized tariff)

KEY FEATURES FOR PROCUREMENT OF ELECTRICITY FOR MEDIUM TERM FROM POWER STATIONS SET UP ON FOO BASIS

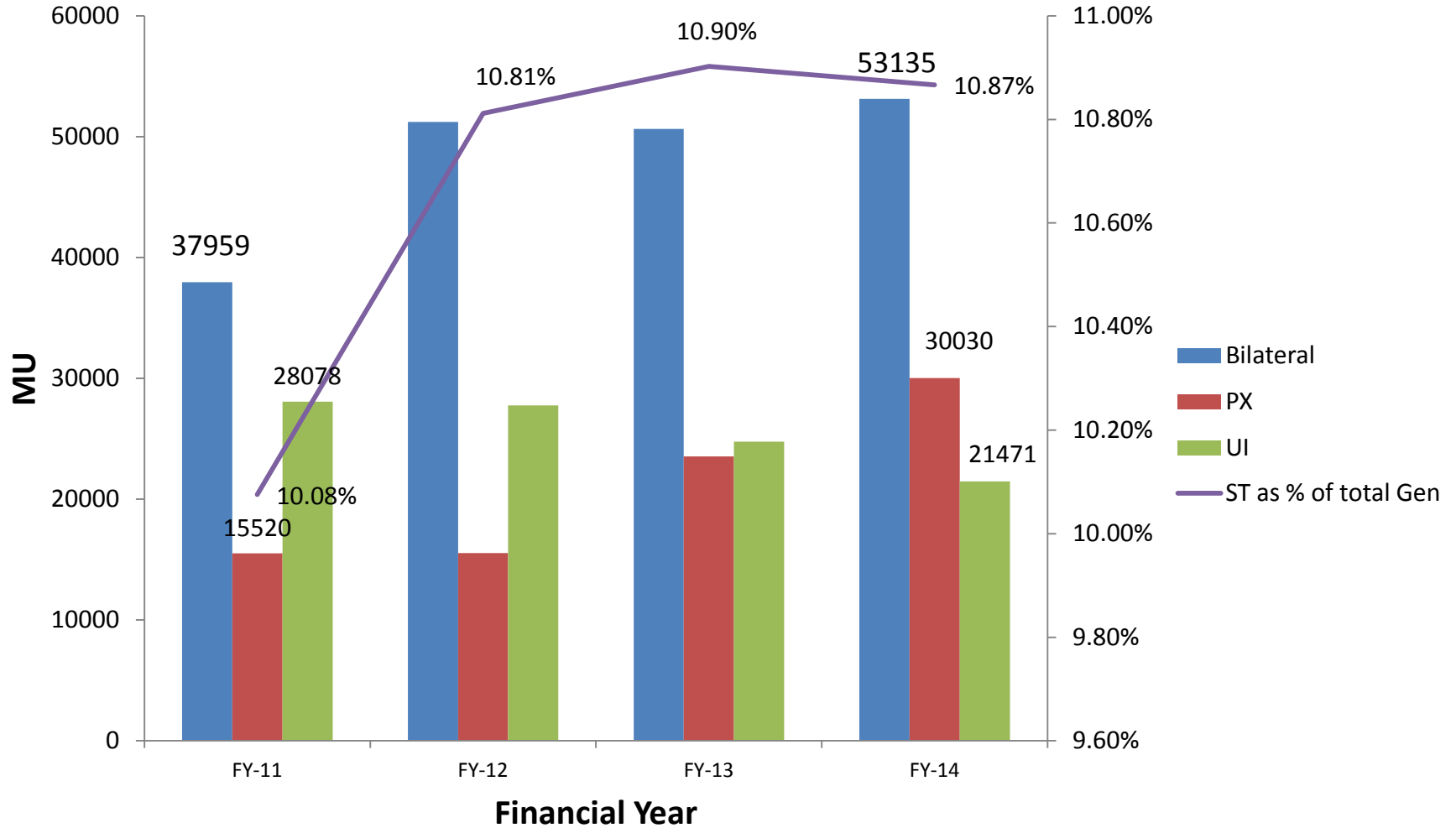


- MOP published the guidelines on 10th February 2014 for procurement of electricity from power stations set up on Finance, Own and Operate (**FOO**) basis
- Two stage competitive bidding process:
 - Request for Qualification (RFQ) stage
 - Request for Proposal (RFP) stage
- Term of contract shall be one to five years, with a provision for extension of this period for the lower of 25% of the initial contract period and one year, with mutual consent
- Utility shall pay a fixed charge determined through competitive bidding for availability of the power station and shall be revised annually to reflect 20% of the variation in WPI.
- Fuel charge is pass through
- Normative availability shall be 85% of the contracted capacity



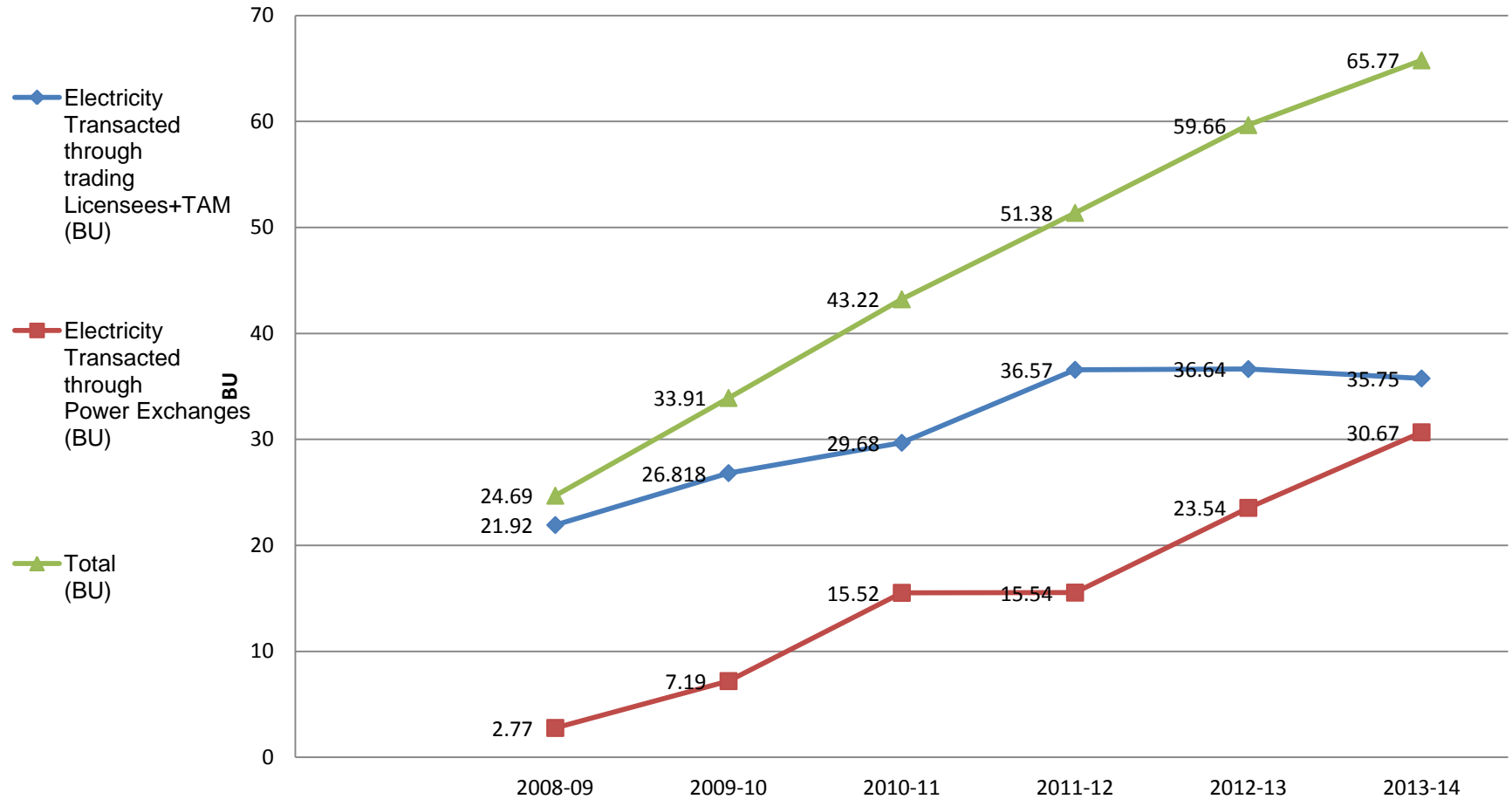
Power Procurement Practices

Short Term Power Market Trends (1/4)



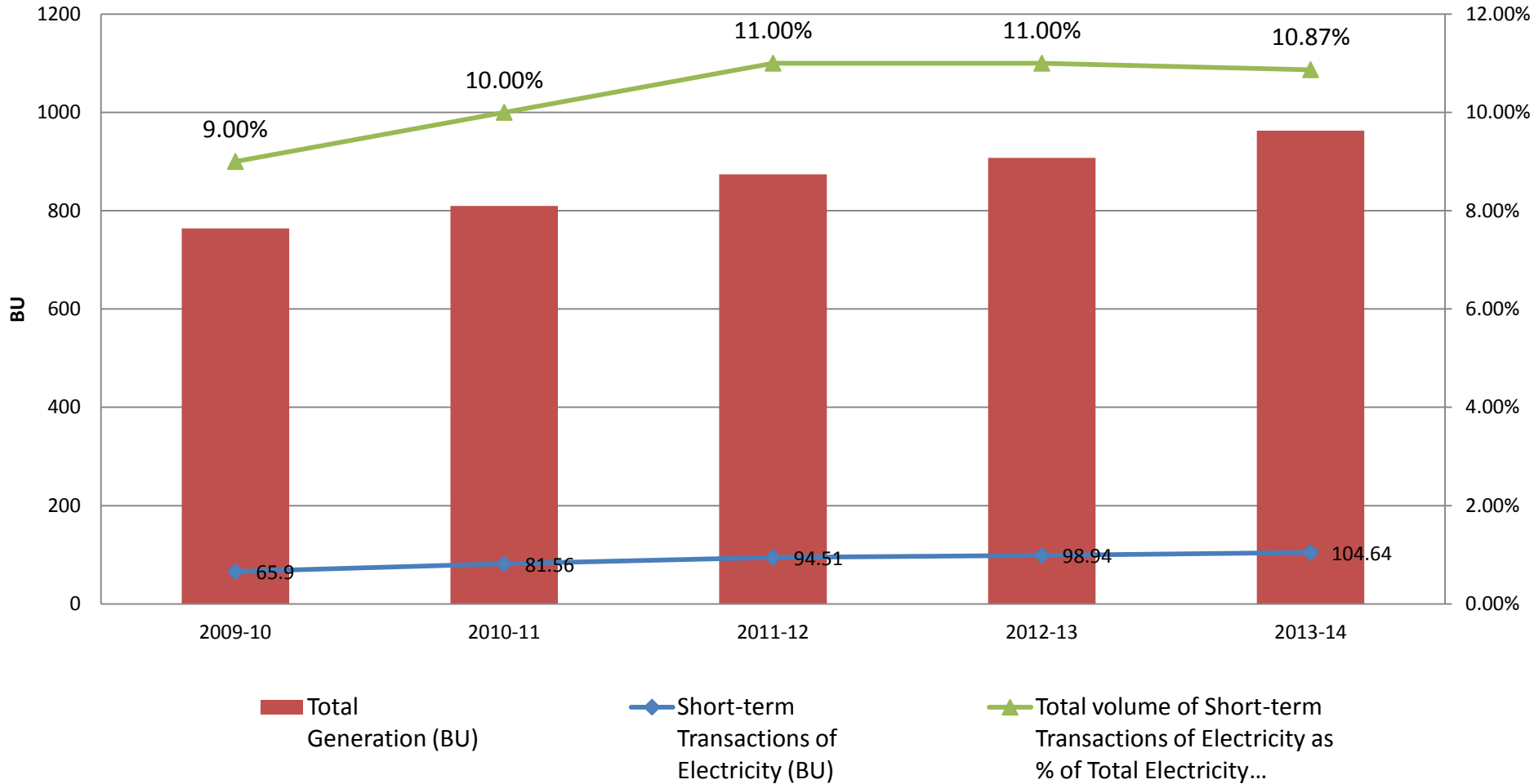
Short Term Power Market Trends (2/4)

Volume of Electricity Transacted through Trading Licensees and Power Exchanges



Short Term Power Market Trends (3/4)

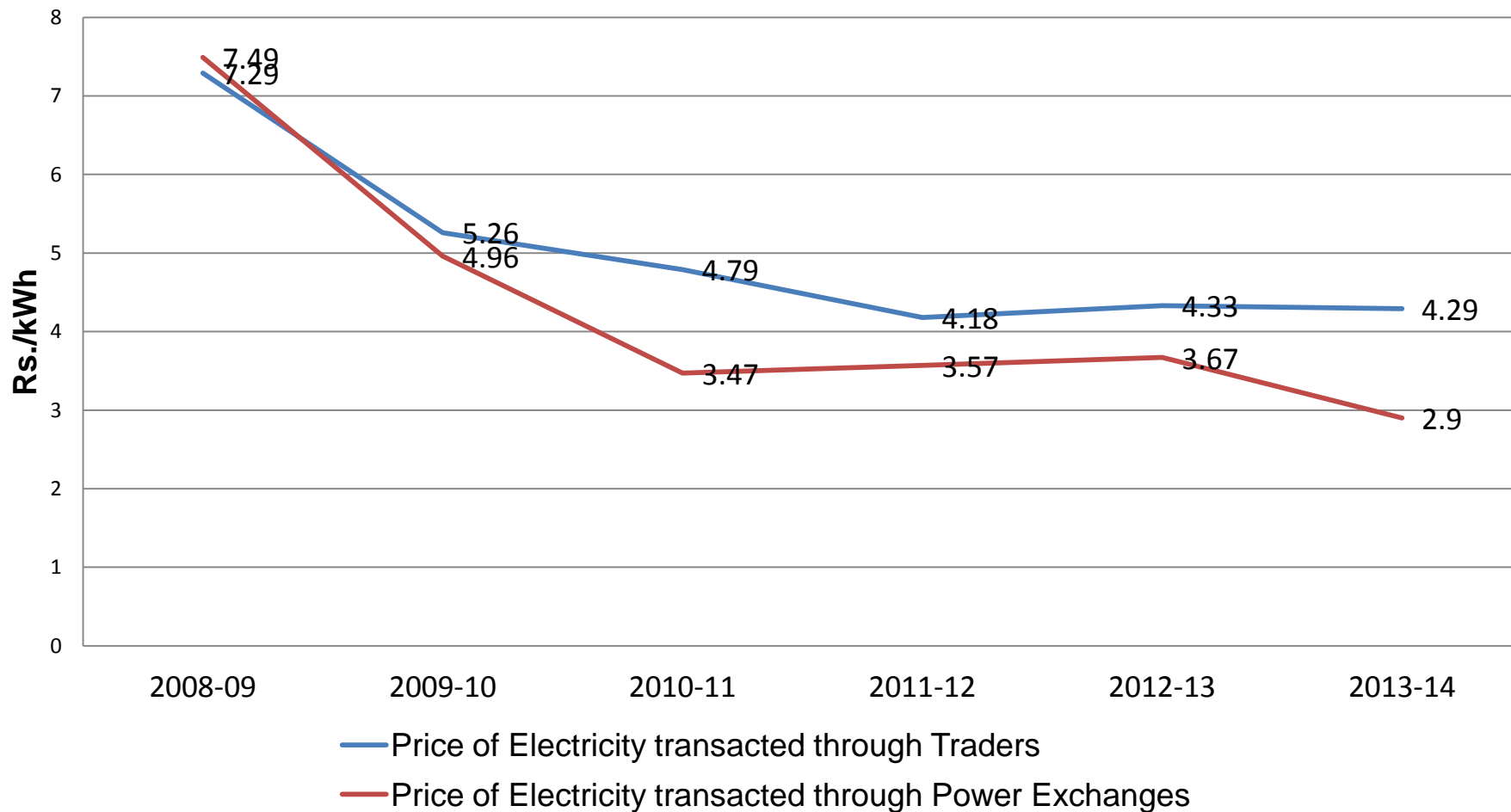
Short -term Transactions of Electricity



Short Term Power Market Trends (4/4)



Price of Electricity Transacted through Traders & Power Exchanges



KSEB “DBFOO” Bid Prices(October 2014)



Bidders	Generating Station, Location	MW	TC	FC	VC
M/s. Jindal Power Limited, New Delhi.	OP Jindal, Raigadh, Chhatishgarh	200	3.6	2.74	0.86
M/s. Jhabua Power Limited, Gurgaon.	Jhabua, nr Jabalpur	115	4.15	2.39	1.76
M/s. Bharat Aluminium Co. Ltd., Chattisgarh.	2X300, Korba	115	4.29	3.25	1.04
M/s. Jindal India Thermal Power Limited, New Delhi.	Talchar	200	4.39	3.64	0.75
M/s. R. K. M. Powergen Pvt. Ltd., Chennai.	RKMPPL 4X360 MW, Tamil nadu from Unit-3	150	5.2	3.24	1.96
M/s. Adani Power Ltd., Gujarat.	Mundra	300	5.54	3.85	1.69
M/s. Lanco Power Ltd., Gurgaon.	Vidharbha-th	450	5.62	3.43	2.19
M/s. Vandana Vidhyut Ltd., Raipur.	Vandana-Chhatish	114	6.18	4.7	1.48
M/s. Thermal Powertech Corporation of India Ltd., Hyderabad.	Thermal power tech, Nellore	120	7	4.93	2.07
M/s. India Bulls Power Limited, Gurgaon.	Nashik	450	7.29	5.15	2.14

**“Journey Continues..
We value your inputs, suggestions and
critique.”**

We take pride in Lighting up Lives!