

ENERGY EXCHANGE

AN INDUSTRY PERSPECTIVE

BY

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We Will Discuss

- ◆ **Power Scenario in India and Karnataka**
- ◆ **Methods of Short Terms Power Purchase**
- ◆ **Introduction to Power Exchange/Benefits to Consumers**
- ◆ **Power Exchange Performance in India**

Demand-Supply Snapshot - India

S.No.	REGION	THERMAL (MW)				NUCLEAR (MW)	HYDRO (MW)	R.E.S (MW)	TOTAL (MW)
		COAL	GAS	DSL	TOTAL				
1	Northern	23620	3813	13	27446	1620	13623	2777	45466
2	Western	29291	8144	17	37452	1840	7448	4918	51658
3	Southern	19173	4691	939	24803	1100	11260	8518	45681
4	Eastern	17635	190	17	17842	0	3882	344	22068
5	N.Eastern	60	787	143	990	0	1116	223	2329
6	Islands	0	0	70	70	0	0	6	76
7	All India	89779	17625	1199	108603	4560	37329	16786	167278

Demand / Supply

- ✓ Demand is growing at 3.96 % over last 3 years
- ✓ Supply had grown at a rate of 3.38% over last 3 years
- ✓ Generation capacity : 167,278 MW of which 19% is private

Energy Deficit (FY 10)

- ✓ Required 790 BUs ; Generated 772 BUs
- ✓ 10.1% energy deficit

Peak Deficit (FY 10)

- ✓ Deficit of 83,807 MUs
- ✓ 12.7% peak power deficit

Power Scenario --- 2010-11

INDIA

Region	Energy Requirement (MU's)	Energy Available (MU's)	Short fall (%)	Peak Demand (MW)	Peak Availability (MW)	Short fall (%)
Northern	271068	222875	-17.8	40000	33220	-17.0
Western	262768	236334	-10.1	40330	34732	-13.9
Southern	229988	200192	-13.0	35085	30656	-12.6
Eastern	98451	101707	3.3	16202	16568	2.3
N.Eastern	11662	8199	-29.7	1957	1679	-14.2
All India	873937	769307	-12.0	133574	116855	-12.5

SOUTHERN REGION

State	Energy				Peak			
	Requirement	Availability	Surplus(+)/Deficit(-)		Requirement	Availability	Surplus(+)/Deficit(-)	
	MU	MU	MU	%	MW	MW	MW	%
Karnataka	47367	41090	-6277	-13.3%	7855	6546	-1309	-16.7
Andhra Pradesh	85072	75227	-9845	-11.6	12894	11093	-1801	-14%
Kerala	19043	17111	-1932	-10.1%	3445	2973	-472	-13.7%
Tamil Nadu	76213	64601	-11612	-15.20%	10656	9751	-905	-8.5%
Puducherry	2293	2162	-131	-5.7	335	293	-42	-12.50%
Total South	229988	200191	-29797	-13%	35085	30656	-4529	-12.60%

Energy as a Commodity

- ◆ **The Electricity Act 2003 is based on the philosophy that consumers benefit through competitive markets.**
- ◆ **Unbarred OPEN ACCESS is a key requirement for facilitating such competition**
- ◆ **Open Access allows non-discriminatory use of transmission lines, distribution network and related infrastructure by any licensee or consumer on payment of user charges and subject to availability of capacity. Thus, the consumer is provided with choice of suppliers, including his own captive unit, which can be located anywhere in the country.**
- ◆ **These electricity transaction contracts through Open Access could be**
 - **Long Term (more than a year)**
 - **Short Term (Less than a year)**

Short Term Transactions

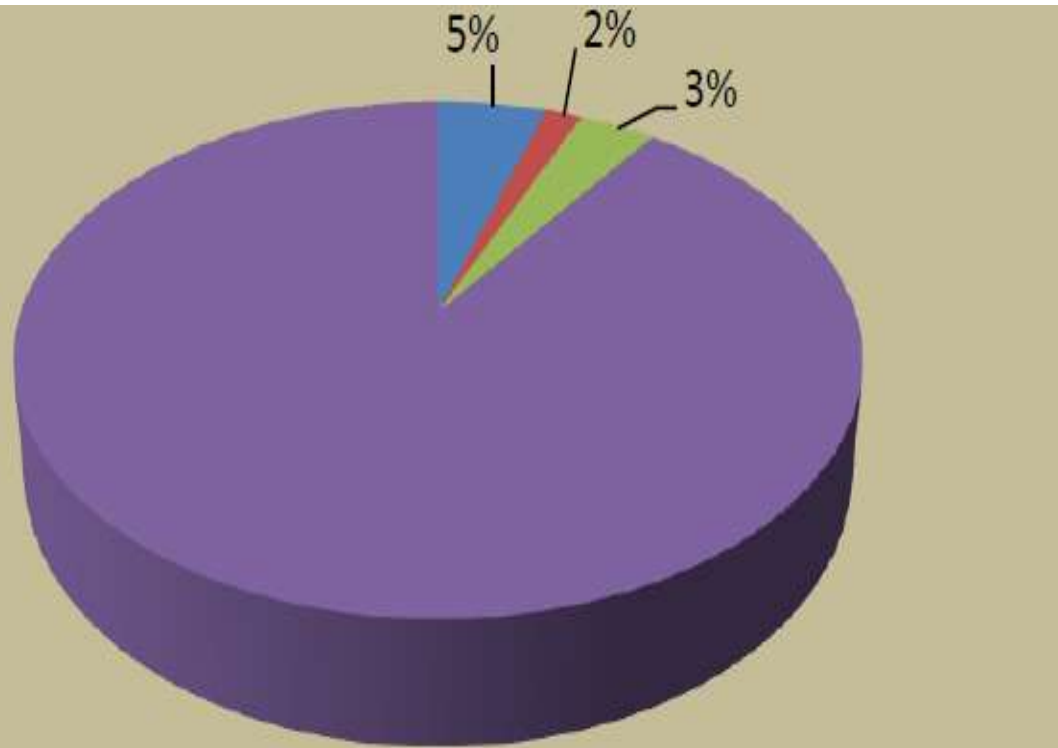
- **Short Term Transactions could be electricity transacted under**
 - ◆ **Bilateral Transactions (either direct or through trader)**
 - ◆ **Energy Exchanges**
 - ◆ **Unscheduled Interchange (UI) (not a market mechanism but considered under short term transactions)**

- **In 2010 -11 , 10% of Energy Procured in India was through Short Term Markets; NEC suggests 15%.**

- **In terms of Volume this was 81.56 Billion Units which was 15.66 BU or 24% more than the previous year (in 2009-10 this was 65.90BU)**

- **Major Chunk of this 15.66 BU came from increase in Volume through power purchased through power exchanges (8.33 BU increase – 53.3%)**

Share of Different Segments – Total Electricity Generation in FY 2010-11



Bilateral Transactions

Power Exchange Transactions

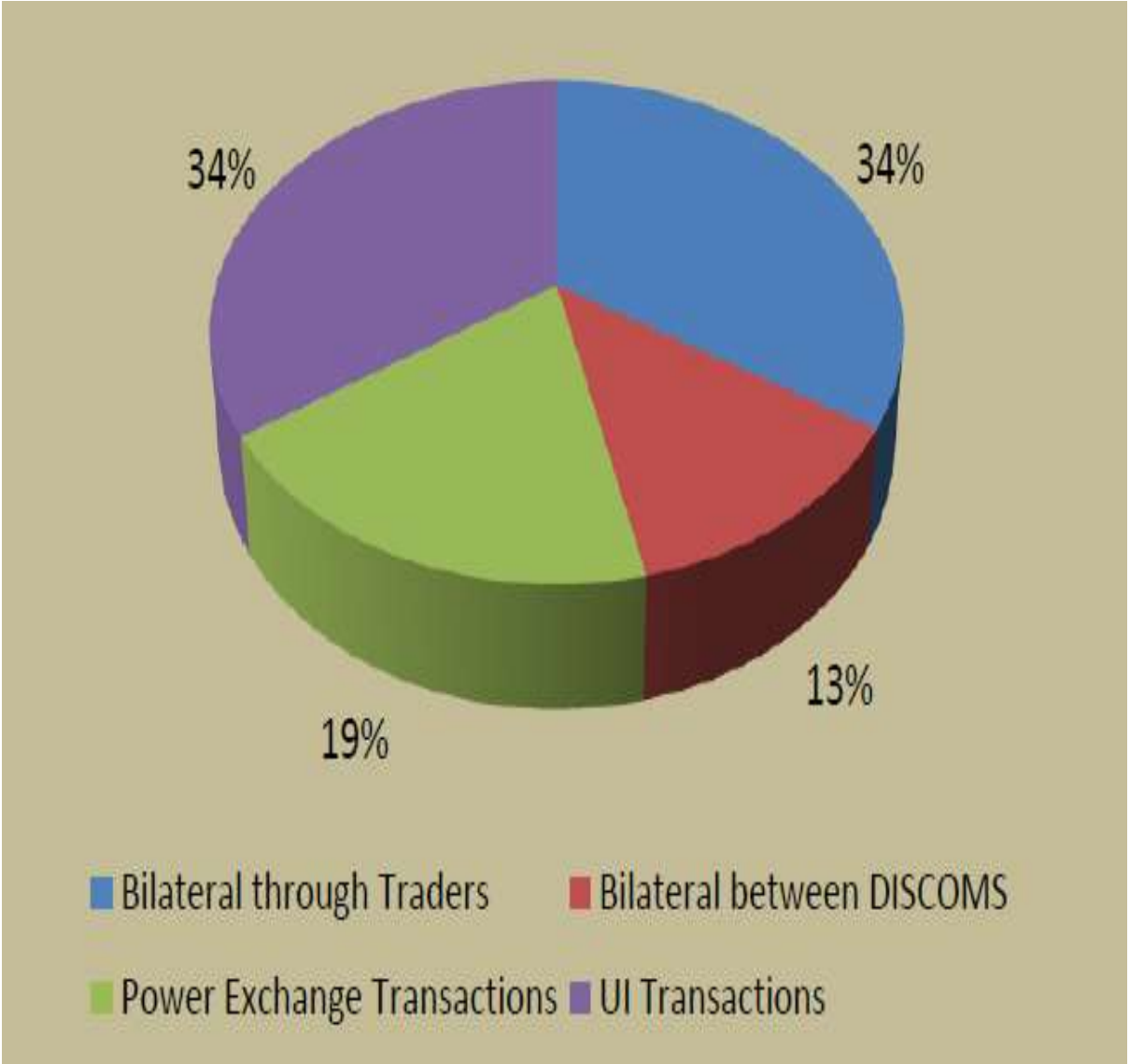
UI Transactions

Long Term Transactions

Total Generation
809 BU

Short Term Trading
81 BU
10%

Share of Different Segments in Short Term Transactions in 2010-11



Source: CERC Report on Short Term Power Market in India July 2011

Power Exchanges – A Brief

Primarily two exchanges functional in India

➤ India Energy Exchange (IEX)

- Promoted by Financial Technologies Ltd., Co promoter PTC FSL.
- Had a market share of total traded power ~ 86% in year 2010-2011
- Commenced operation on 27th June 2008
- www.iexindia.com

➤ Power Exchange India Limited (PXIL)

- Promoted by NSE and NCDEX
- Has a market share of ~ 14% in year 2010-2011
- Commenced Operation on 22nd October 2008
- www.powerexindia.com

- A third exchange National Power Exchange Ltd. likely to commence operations this year
- Another player Marquis Energy Exchange to enter the fray

Power Exchange: Mechanism

- ◆ **A place where buyer and sellers meet to trade off.**
- ◆ **Trading is for**
 - **Day Ahead Market - Define how much energy is required the next day and what is the price you need it at (mostly used)**
 - **Term Ahead Market- Define energy and price for a term (week /month as offered by the exchange).**
- ◆ **Both buyer and trader has to register with the exchange at a very low price.**
- ◆ **Trading is done in advance, on hourly basis.**

Power Exchange Benefits

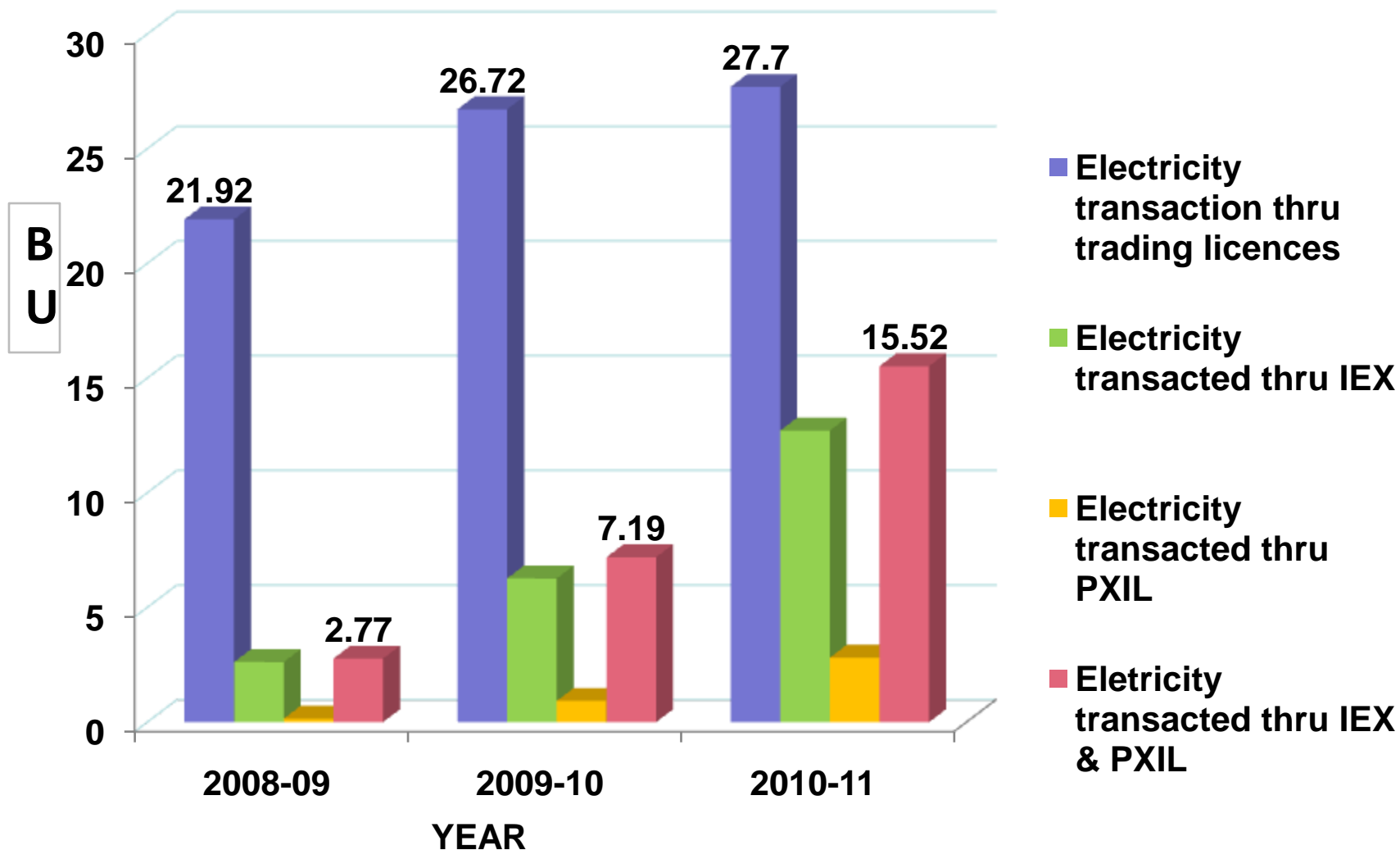
- ◆ **Transparent deals and Fair Pricing.**
- ◆ **Access a diversified portfolio: offers a broader choice to generators and distribution licensees at the national-level so that they can trade in smaller quantities and smaller number of hours without additional overheads.**
- ◆ **Seller Payment is assured by exchange so the risk is minimum to sellers, unlike selling to DISCOMS.**
- ◆ **All charges are displayed on the trading terminals.**
- ◆ **Enables participants to precisely adjust their buying selling as per the needs only. Eg night time buying from exchange!**
- ◆ **Bring efficiency in usage of Transmission capacity**
- ◆ **Encourages investors to put in more capacity**

Overall Impact is reduced cost of Power!!

Power Exchanges – India Performance in 2010-11

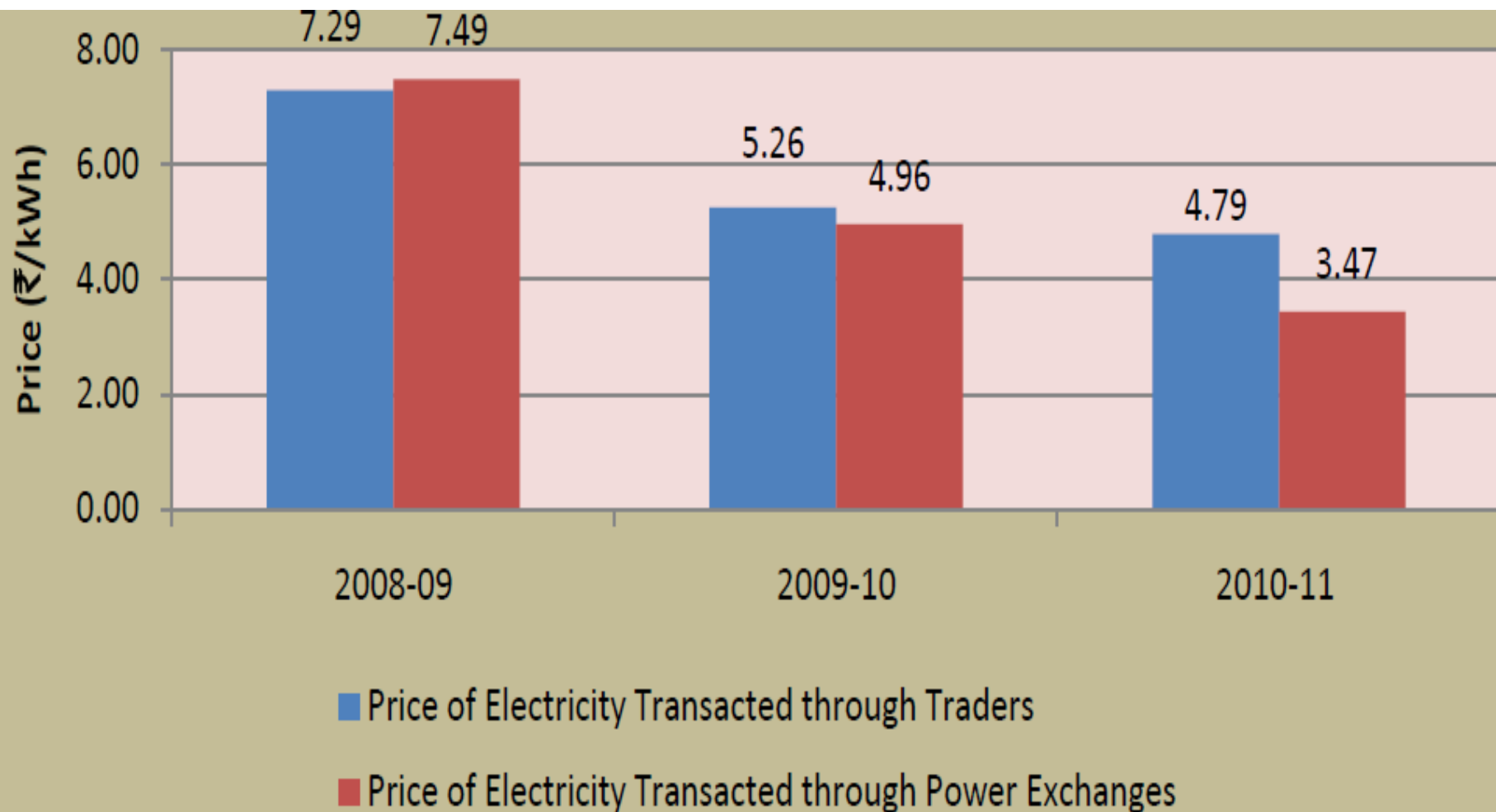
- **Volumes Transacted through Energy Exchanges**
- **Average Price/KWh of power purchased through exchanges**
- **Size of Power Exchanges' market in terms of volume and Rupees**
- **Cumulative Price and Volume of IEX Transactions**

Volume of Electricity Transacted through Traders & Power Exchanges



Source: CERC Report on Short Term Power Market in India July 2011

Price of Electricity Transacted through Traders & Power Exchanges

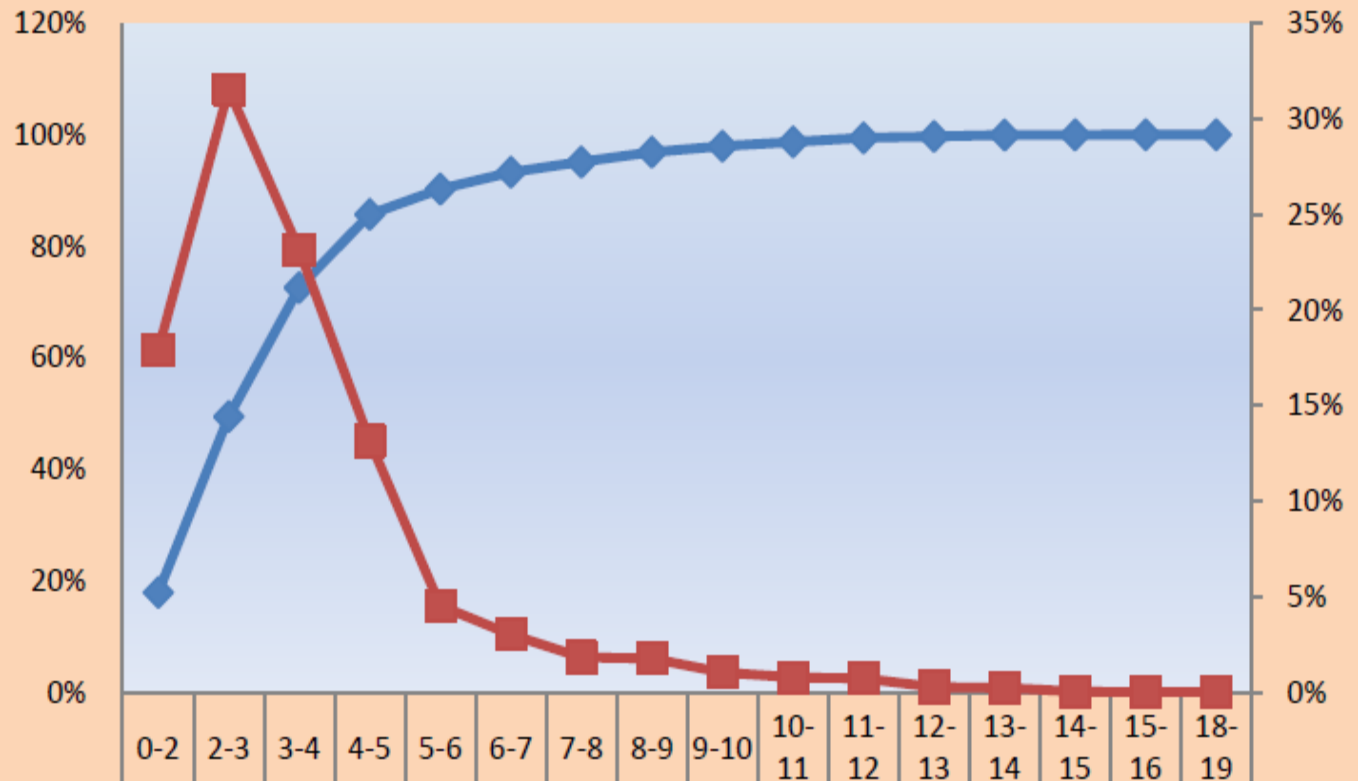


Source: CERC Report on Short Term Power Market in India July 2011

Size of Traders & Power Exchange' markets

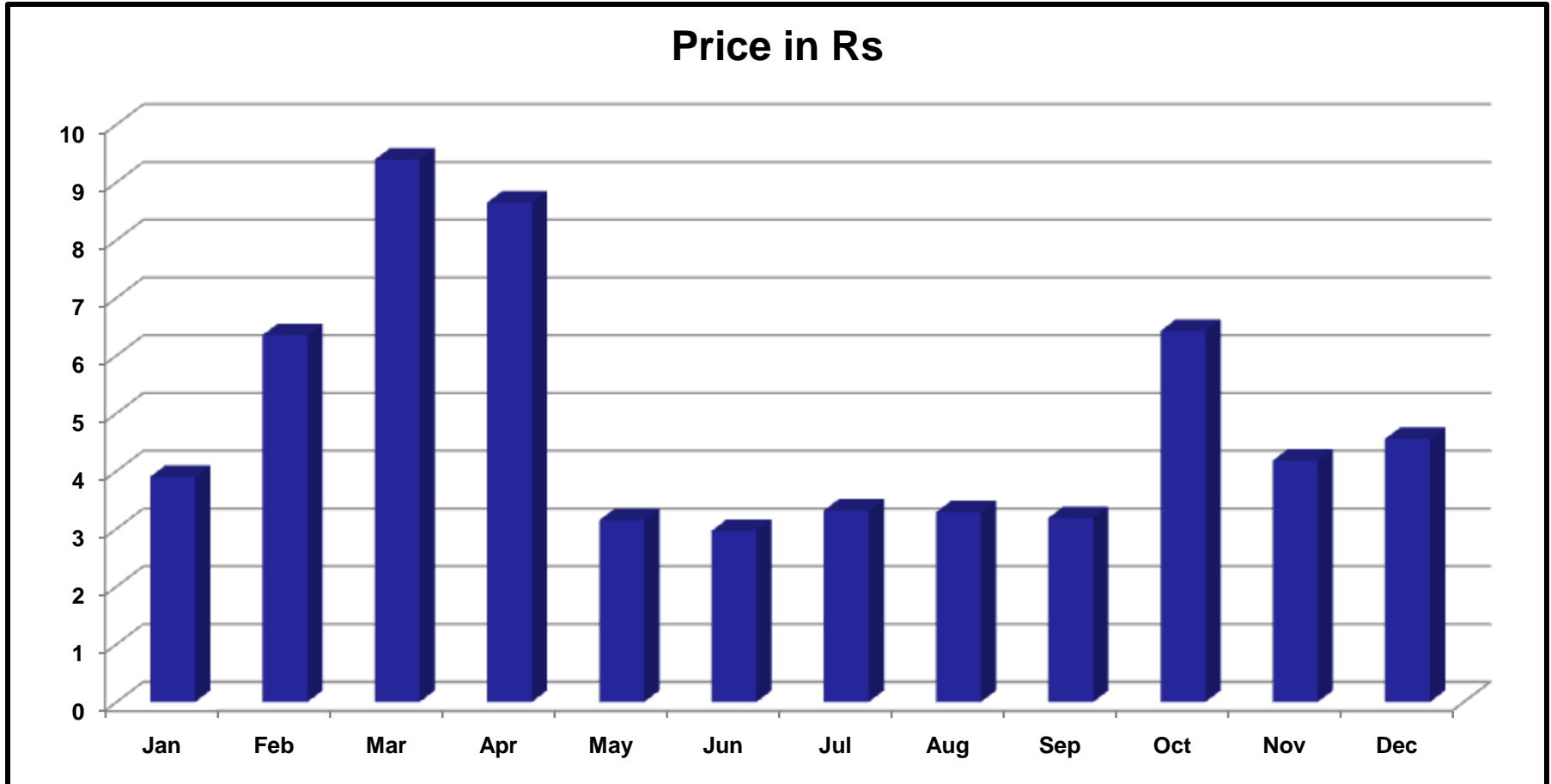
Year	Bilateral Trader			Energy Exchange		
	Volume (BU)	Average price (Rs/Kwh)	Size in Rs. Crores	Volume (BU)	Average price (Rs/Kwh)	Size in Rs. Crores
2009-10	26.72	5.26	14055	7.19	4.96	3563
2010-11	27.7	4.79	13268	15.52	3.47	5389

Cumulative Price & Volume of IEX Transactions in 2010-2011



- 73% of Volume is traded at less than Rs 4/unit
- 1% volume is in the range of Rs 10-13/unit

Average Price IEX- Karnataka Region 2011



Constrain in Transmission is causing pricing variations, as this gets removed with upcoming national grid, we expect price will come down.

To Conclude

- ◆ **Short Term Market is on a rising trend in India led by volumes growth in Power exchange**
- ◆ **Volume growth in Power Exchanges has resulted in reducing the average cost of power purchased.**
- ◆ **Flexibility to Sellers and Buyers- no long term commitments, meet your specific requirements- can be few hours also.**
- ◆ **Relatively simpler mechanism to purchase cheaper power, with minimum investment.**
- ◆ **In future as transmission/distribution constraints are removed, pricing in south will see a downward trend.**

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