POWER GRID CORPORATION OF INDIA LIMITED

Q1 FY 2015-16

Press & Analysts' Meet

Mumbai **August 11, 2015**

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- *Annual Accounts for FY2014-15 are yet to be approved by the shareholders.*

POWERGRID Today

Financial Highlights

Project Execution

Operations Highlights

Other Businesses Highlights – Consultancy, Telecom

New Initiatives- Updates

Investment & Funding Programme

Thank You

for making POWERGRID (only Indian Company)

‘One of the Best Three Asian Companies which host most constructive Analyst Days that professionals find most beneficial’

Source: ***Institutional Investor Award: The 2015 All-Asia Best Analyst Day***

POWERGRID Today

- A '*NAVRATNA*' ENTERPRISE
- CENTRAL TRANSMISSION UTILITY
- LISTED COMPANY since 2007
- GOVT. SHAREHOLDING 57.90%
- PAYING DIVIDEND SINCE 1993-94
- Market Capitalization ₹ 72,248 crore[1]

Vision

World Class, Integrated, Global Transmission Company With Dominant Leadership in Emerging Power Markets Ensuring Reliability, Safety and Economy

Tr. Lines (as on 10-Aug-15)	MVA & S/S (as on 10-Aug-15)	Operating Parameters (FY14-15)
118,261 ckm	**239,424 MVA**	**Availability: 99.92%**
975 Nos.	**197 Nos.**	**Reliability(*): 0.56**

(*) Trippings/ line

CREDIT RATINGS

Domestic

CRISIL
- AAA
- Stable

ICRA
- AAA
- Stable

CARE
- AAA

International

S&P
- BBB (-)
- Stable Outlook

Fitch
- BBB (-)
- Stable Outlook

1- Based on BSE Closing Price of ₹ 138.10 per share on 10.8.2015

Financial Highlights Q1 FY16

(₹ in crore)

Description	Year ended	Quarter ended	
	31.03.2015	30.06.2014	30.06.2015
Income			
- Transmission Charges	16521	3816	4541
- Consultancy – Services	381	61	89
-Telecom	275	65	88
- Other Income	603	133	70
Total Income	**17780**	**4075**	**4788**
Operating Expenses (including prior period adjustment)	2426	569	580
EBITDA-Gross Margin	**15354**	**3506**	**4208**
Depreciation	5085	1155	1370
Interest	3979	928	1109
Tax	1311	286	362
Profit after Tax	**4979**	**1137**	**1367**

ONE Nation Grid Frequency

Financial Highlights Q1FY16

			(₹ in crore)
Description	**As on 31.03.2015**	**As on 30.06.2014**	**As on 30.06.2015**
Gross Fixed Assets	118264	101382	122811
Capital Work-in-Progress	56292	53345	56878
Debt	93845	84685	99412
Net Worth	38037	35526	39404
Earning Per Share (₹)	9.52	2.17#	2.61#
Book Value per Share (₹)	72.71	67.91	75.32
Key Financial Ratios			
Debt : Equity	71:29	70:30	72:28
Return on Net Worth	13.09%	3.20%#	3.47%#

Not Annualised

Billing & Realization- Q1FY16

Avg. Monthly Billing: ₹ 1,305 Crore => 2months (60 days) billing = ₹ 2,610 crore

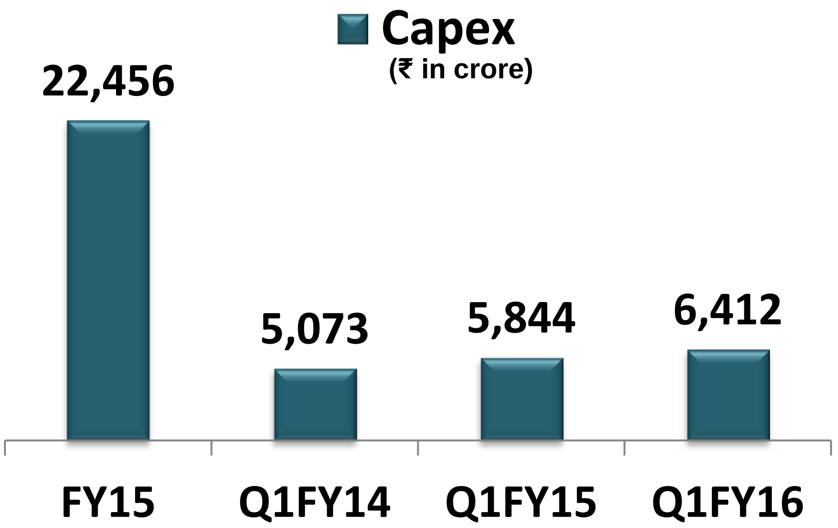
Dues as on 31.07.2015

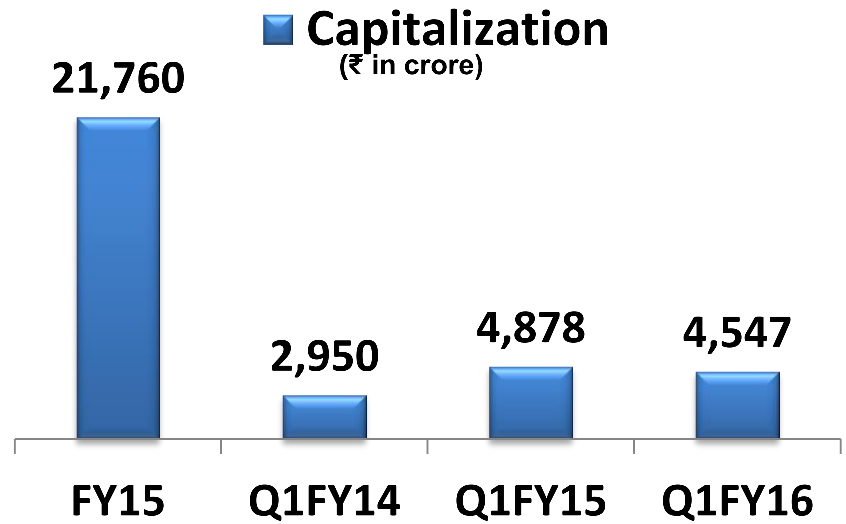
Balance due but not outstanding (<60 days allowed as per CERC) = ₹ 1,809 crore

Description	₹ in Crore
Outstanding > 60 days	347

Outstanding equivalent to ~8 days billing

Project Execution- Q1FY16





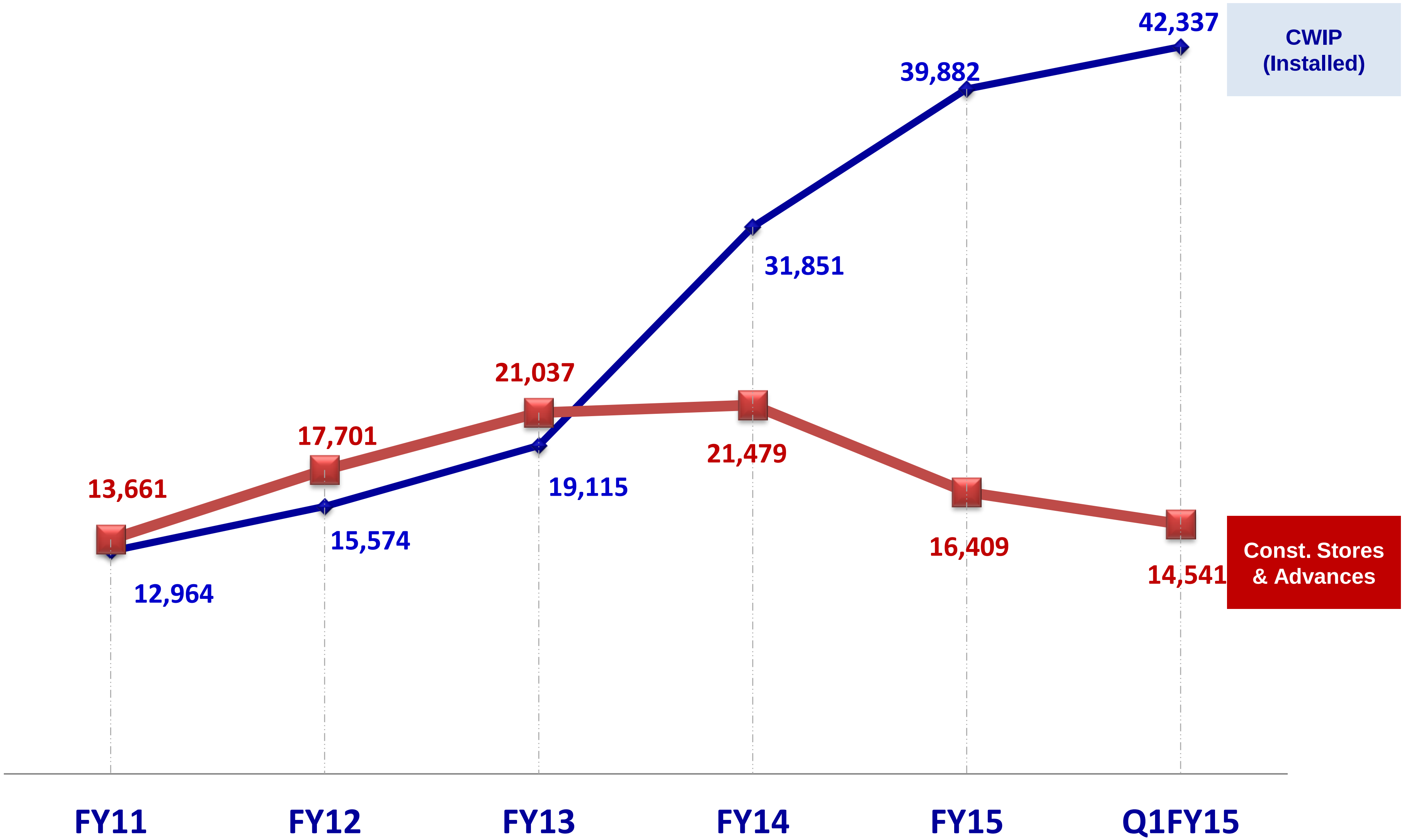
FY16 — Till Jul'15 — ₹ 8,080 crore

FY16 — Till date — ~ ₹7,000 crore

Physical Performance Q1FY16 (Till date)			
Tr. Line (GW-ckm): 2,209 (3,574) Q1FY15: 2,180	S/S (Nos.): 4 (5) Q1FY15: 2	X-fmn.(MVA): 6,000 (7,715) Q1FY15: 3,351MVA	I-R Cap. (MW): 1,600 (3,700) + 2100 by 12-Aug

Project Execution

(₹ in crore)



Projects in FY16

Transmission Lines	Sub-Stations	Inter-Regional Capacity
20,500 GW-ckm	20 Nos.	16,700 MW

Major Lines

- Bareilly-Kashipur, Kashipur-Roorkee
- V'chal – Satna, V'chal-Satna (2nd line)
- Meerut – Moga, Kanpur – Jhatikara
- Barh-Gorakhpur
- Raigarh - Champa
- Silchar – Purba Kanchan Bari
- Vijayawada – Nellore
- Gwalior – Jaipur, Jaipur-Bhiwani(2nd line)
- Biswanath Chariyali – Agra (NE-NR/WR Interconnector) & associated AC system
- Aurangabad-Solapur, Kudgi-Kolhapur
- Aurangabad-Boisar
- Gooty – Madhugiri
- Angul – Jharsuguda (2nd line)
- Ranchi-Dharamjaygarh–Jabalpur
- Raipur PS - Wardha(2nd line),Wardha-Aurangabad
- Dehradun-Baghpat, Roorkee-Saharanpur
- Pasighat – Roing – Tezu
- Mysore-Kozhikode
- Balia – Varanasi, Gaya-Varanasi, Varanasi-Kanpur
- Kishenganj-Patna
- Kurnool-Raichur
- LILOs- Meerut-Kaithal; Baripada-Mendhasal;
- 800kV Champa-Kurukshetra HVDC (Pole-I)

Sub-stations

- Vindhyachal PS
- New Melli (GIS)
- Champa PS
- Vadodara (GIS)
- Mokokchung (GIS)
- Madhugiri
- Salem (Dharmapuri)
- Navi Mumbai (GIS)
- Kanpur
- Biswanath Chariyali HVDC
- Agra HVDC
- Kudgi
- Kishenganj
- Varanasi
- Kolhapur
- Kozhikode
- Pandiabil (GIS)
- Saharanpur
- Bagpat (GIS)
- Dehradun
- Roing
- Tezu
- Champa HVDC
- Kurukshetra HVDC

Inter-Regional

- Barh – Gorakhpur
- Gwalior-Jaipur
- Biswanath Chariyali – Agra (NE-NR/WR Interconnector)
- Ranchi-Dharamjaygarh
- Gaya-Varanasi
- Champa-Kurukshetra Pole-I
- Kudgi-Kolhapur

SAARC

Transnational Interconnections

- **India-Bangladesh** (Surjyamaninagar-Comilla)
- **India-Nepal** (Muzzafarpur-Dalkebar)

Green font indicates assets commissioned in FY16

Operations Highlights – Q1FY16

Assets under Management (as on 30-Jun-2015)

Lines	963 Nos. 117,323 ckm	765kV(*): 19% 400kV: 71% (*) ckm incl. HVDC & 765kV chgd at 400kV
Sub-Stations	196 Nos. 237,709 MVA	765kV(#): 23% 400kV: 65% (#) S/S incl. HVDC

NTAMC Operational

82 nos. S/S - remotely operated

36 nos. S/S - without Operations team

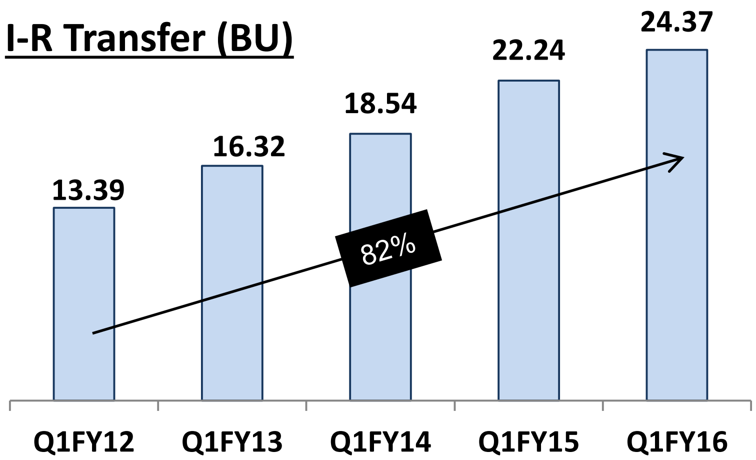
Asset Management (Apr15-Jun15)

Availability: 99.79%	Reliability*: 0.24

(*) Trippings/ line

Grid Management Highlights (POSOCO[1])– Q1FY16

I-R Transfer (BU)



Short Term Open Access (Q1FY16)

Transactions	Energy Transacted
• 11,115 Nos. • 25% increase over Q1FY15	• 22.83 BUs • 17% increase over Q1FY15

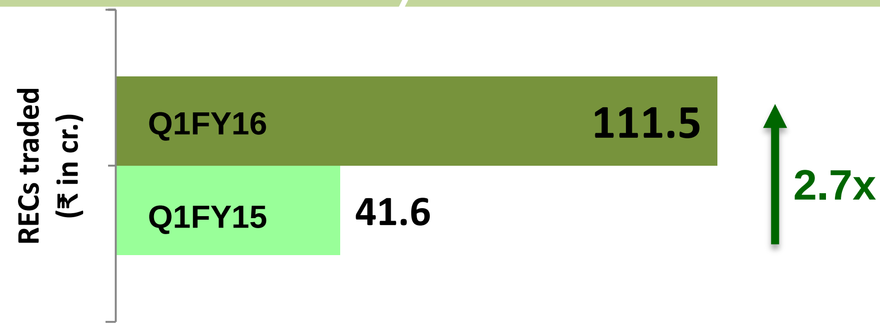
Optimal Utilization of Resources (both Generation & Transmission)

Reduction in per unit energy charges

REC Trading: Update (Jun’15)

Registration
(as on Jun-15)
1088 projects; 4798 MW

Value of RECs traded till Jun-15
- ₹ 1821 crore



No. of RECs issued till Jun’15: 248.94 lakh
No. of RECs traded till Jun’15: 103.10 lakh

ONE Nation Grid Frequency

1- carried out through Power System Operation Corporation Limited, a wholly owned subsidiary of POWERGRID,

Consultancy- Q1FY16 Highlights

Domestic

Q1 Orders: 6 (All Govt.)

Under execution (as on Jun-15) → ~ 120 Assignments
Project Cost: ₹ 19,600 cr. (Bal. cost)

Major assignments secured

- Smart Grid works in Puducherry and Bangalore
- Sub-station work for Railways
- System Study work for Daman & Diu

Works commenced for

- Strengthening of T&D works in Sikkim and Arunachal Pradesh
- NER Power System Improvement Project
- Delhi Transco Works
- Rural Electrification works in Odisha

International

Proposals submitted in Q1FY15

- 6 EoIs submitted
- Shortlisted in 2 EoIs for submitting proposal
- 3 new countries approached
  - Armenia, Rwanda, Mali

Under execution (as on Jun-15) → 14 Assignments

Major On-going assignments

- EPC Consultant: CASA 1000 Project
- Management Contract – Ethiopia
- HVDC Back-to-Back Stn.- Bangladesh
- Implementation Support - Nepal

Recent Development

Shortlisted in Armenia to submit proposal

Footprints in 18 countries

Afghanistan-Bangladesh-Bhutan-Congo-Ethiopia-Nepal-Nigeria-Kazakhastan-Kenya-Kyrgyz Republic-Myanmar-Pakistan-Senegal-Sri Lanka-Tajikistan-Tanzania-UAE-Uzbekistan

Telecom Highlights – Q1FY16

- 12 New Clients [(Pvt. (8), Govt(4)]
- 7 new MPLS clients
- Revenue ₹ 88 crore
- Backbone Availability 100%

Notable Projects

MPLS

- 15 Clients – both CPSUs & Pvt. (NTPC, GAIL, APTRANSCO, Syndicate Bank etc.)
- In-house requirement for NTAMC and ERP

NKN*

- POWERGRID Scope: ₹ 900 cr.
- Project completed - Under Operation

NOFN#

- Execution in 4 States
- Work commenced for 6,900 GPs
- 1810 GPs connected

* National Knowledge Network

\# National Optic Fiber Network
GP- Gram Panchayat

New Initiative- Peering with content providers

- **Recently peered with NIXI at Noida & Chennai and with a leading content provider at Delhi & Chennai**
- **Peering with other content providers under deliberations**

New Initiatives- Updates

Green Energy Corridors	Implementation for Phase-I commenced (Inter-State portion: ₹ 13,000 crore)	Parts- A,B,C – Works commenced Part-D: Project approval under progress
	Green Energy Corridors – II	Report submitted to GoI. Under discussion
Ultra Mega Solar Parks (AP, MP, UP, Raj., Guj., Kar., Meghalaya)	NP Kunta, Andhra Pradesh	Implementation commenced for Solar Park in NP Kunta, Andhra Pradesh
	Rewa, MP	Tendering activities under progress
Power Quality Measurement	Completed in 175 cities across the country	Report under finalization
Energy Storage	1000kW Battery Energy Storage	Under Implementation
Energy Efficiency	Energy Audit assignment from SAIL – successfully completed	New assignments from a leading Private Steel Company and from other industries

Report for Smart Grid leading to Smart City in Gurgaon – submitted to Govt. of Haryana

Investment & Funding Programme

XII Plan Capital Outlay*	Annual Capex Plan				
₹110,000 crore	FY13: ₹20,037 cr. (Achieved)	FY14: ₹22,324 cr. (Achieved)	FY15: ₹ 22,456 cr. (Achieved)	FY16: ₹ 22,500 cr. (₹6,412 till Jun-15)	FY17: ₹22,550 cr.

*Projects

Ongoing Projects; Tariff Based Bidding Projects; Projects assigned by GoI; Green Energy Corridors; Intra-State Projects; Transnational Interconnections

Other upcoming opportunities → TS for Solar Park → RE Integration-Off shore Wind Power → Smart Grid/ Smart City Opportunities → Energy Efficiency → Rural Electrificatio n works → Wire Business → TBCB projects

Apr'15-Jul'15

Investment Approval

- ₹ 9,213 crore

Contracts Awarded

- ₹ 8,128 crore

Bids opened

- ~ ₹ 16,500 crore

NITs issued/ Bids not opened

- ~ ₹ 11,000 crore

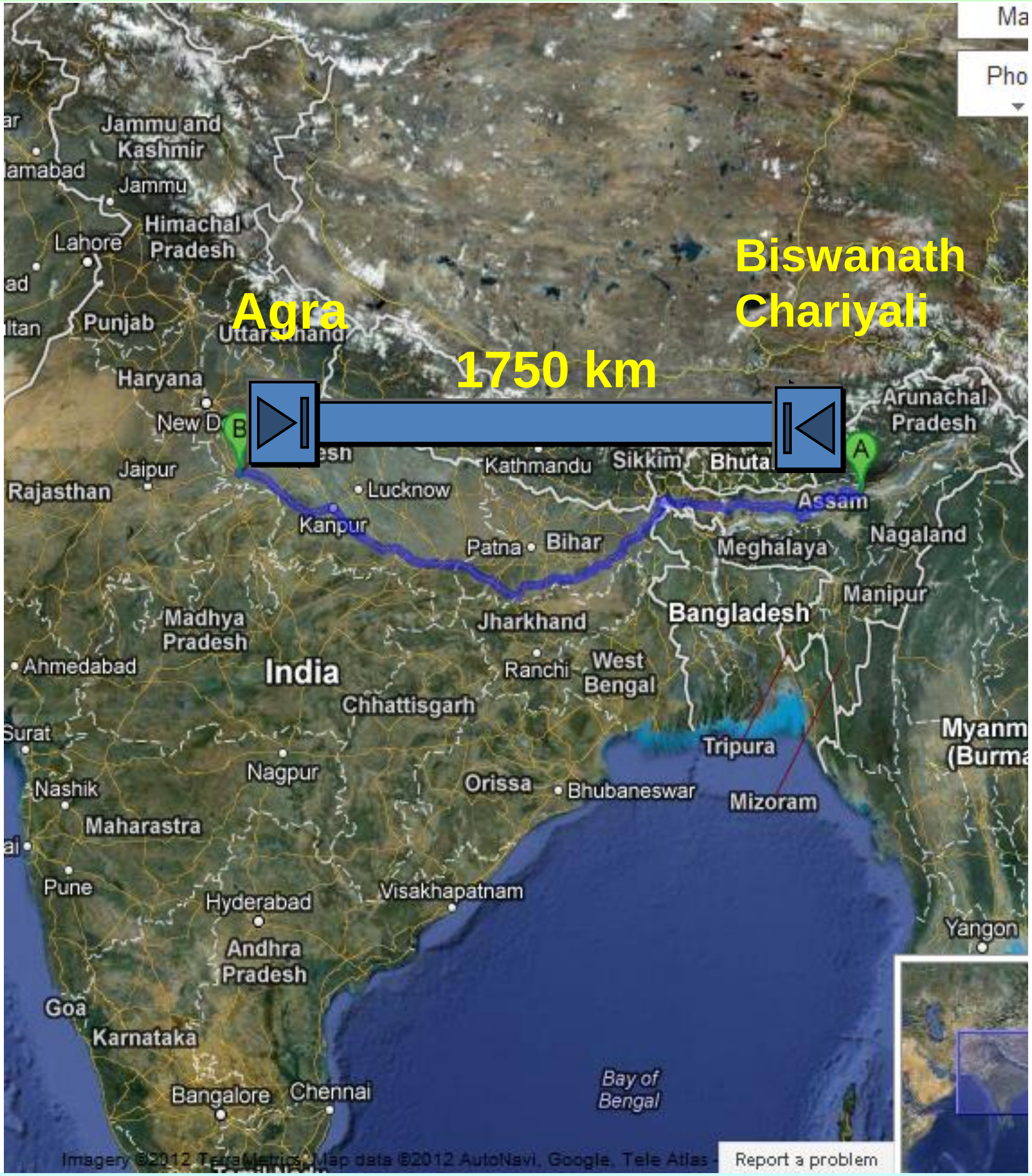
Thank You

±800kV HVDC Biswanath Chariyali-Agra TL- An Overview

- **World's longest multi-terminal ±800kV HVDC**
- **Power Transfer capacity: 6000 MW**
- **Part of NE-N/W Interconnector Project**
- **Line length of Biswanath Chariyali – Agra tr. Line: ~ 1750km**
- **States covered enroute: Assam, West Bengal, Bihar, Uttar Pradesh**
- **Line traverses through Chicken's Neck (only 21km wide stretch) in West Bengal**

<u>Rivers crossed (40+)</u>

- ➢ Jia Bharali, Gabharu, Pansai, Dhansiri, Bulandi, Kulsi, Nanai, Suklai, Puthimarai, Baralia, Matanga, Dimla, Pagladia, Pahumara, Beji, Aie, Salal Bhanga, Champawati
- ➢ Sankosh, Raidak, Gadadhar, Kaljani, Torsa, Jarda, Joldhaka, Teesta, Panga, Balasam, Mahananda
- ➢ Bhakhra, Kosi, Kareh, Boodhi Gandak, Gandak, Rapti, Kamla Balan
- ➢ Ghagra, Gomti, Ganga, Yamuna, Kuani



±800kV HVDC Biswanath Chariyali-Agra TL- An Overview

22 lakh cu.m. Excavation

Station Details

- Converter X-former: 60 1ϕ 2 winding Xfrmrs - 18,000 MVA
- Capacitor: 7000 MVAR
- Thyristor Valves: ~ 10,000

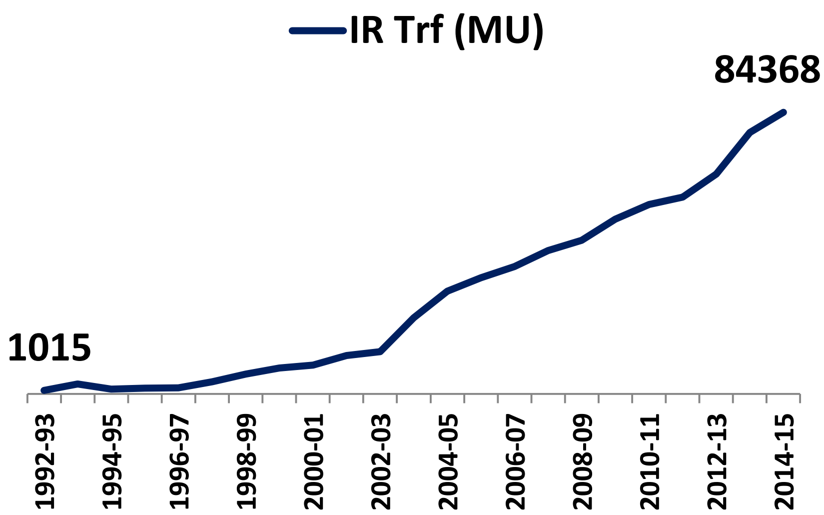
Line Details

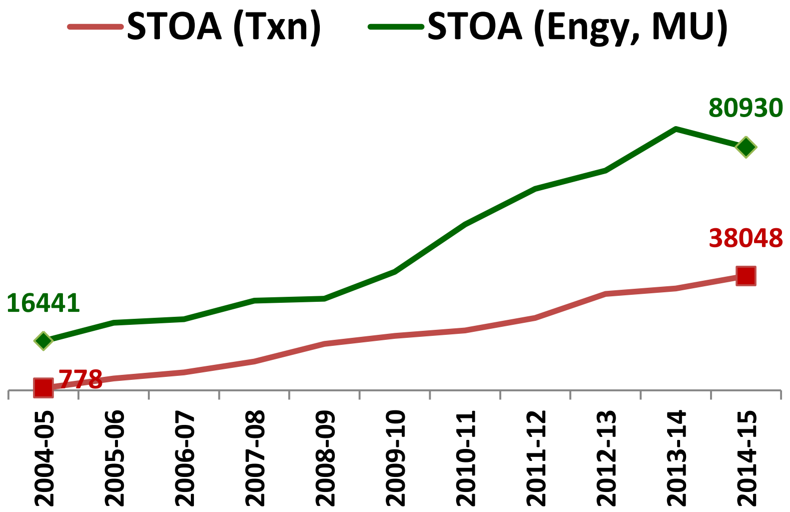
- Line length: ~ 1750 km
- Conductor: ~ 22,000 km (Lapwing)
- Insulator Discs: ~ 20 lakh

2.7 lakh MT Struct. & Reinf. Steel

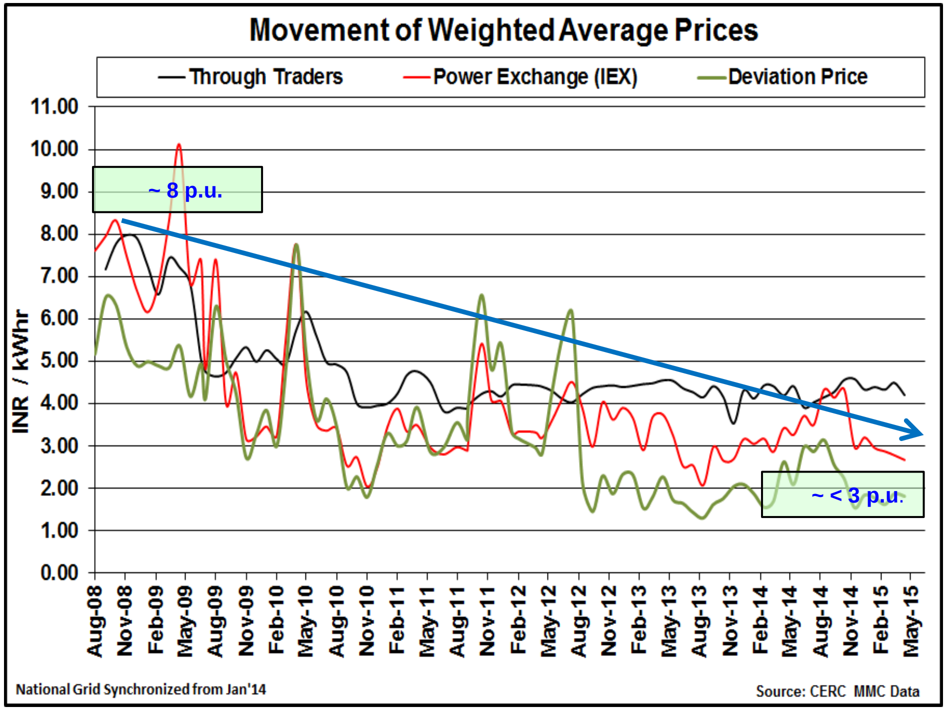
3.2 lakh cu.m. RCC Concrete

Development of Vibrant Electricity Market





- ✓ Optimal Utilization of Resources both Generation & transmission
- ✓ Reduction in per unit energy charges



Congestion- Very minimal

पावरग्रिड

Date: 8-Aug-2015

- **Installed Capacity:** 275,912 MW
- **Peak Met:** 137,541 MW
- **Energy Met:** 3,128 MU

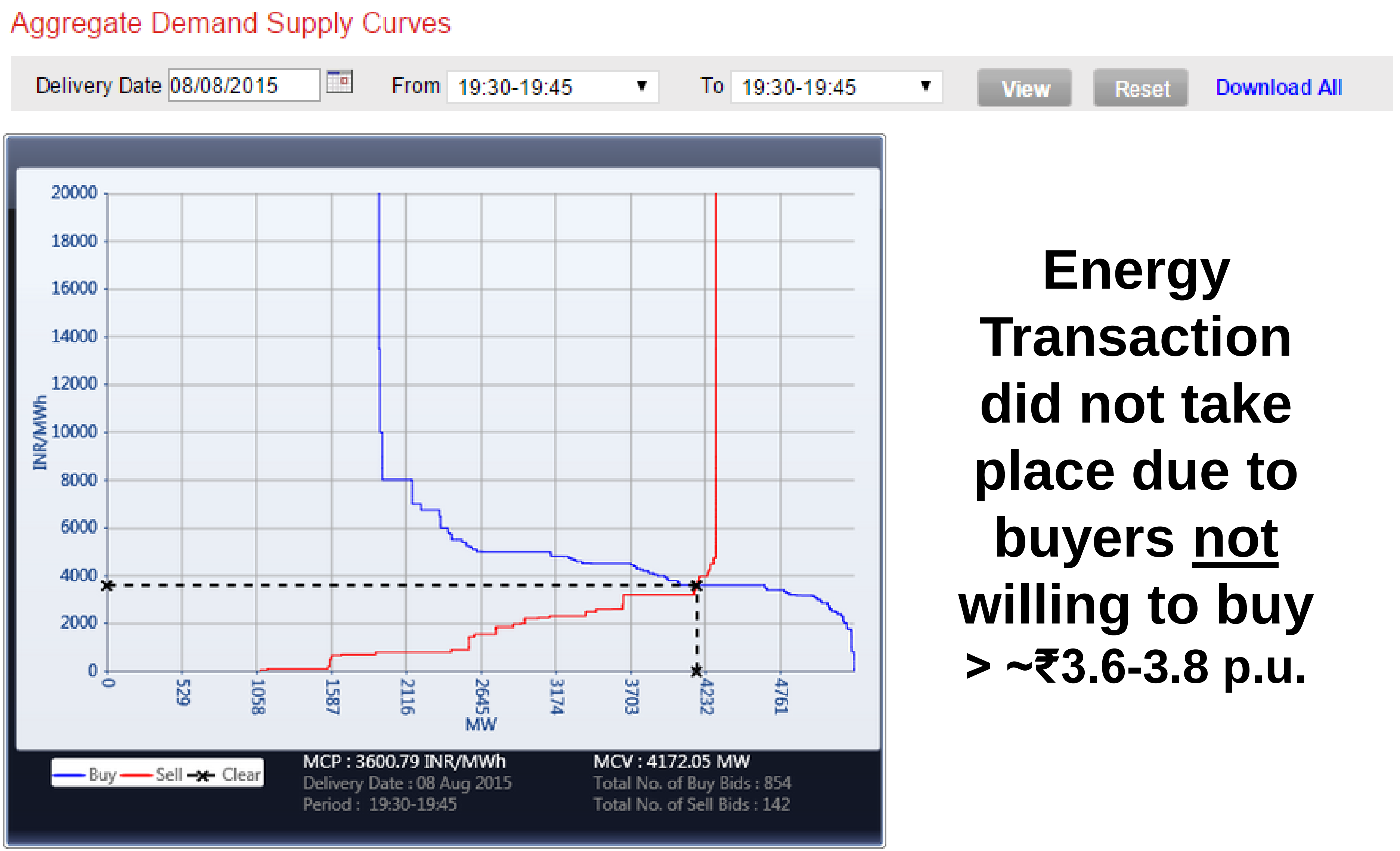
Date		Purchase Bid (MW)	Sell Bid (MW)	Market Clearing Volume (MW)	Cleared Volume (MW)	Market Clearing Price (₹/MWh)
08-08-2015	Total (MWh)	120552	156326	104619	94452	-
	Max (MW)	5562	8444	4910	4617	4500
	Min (MW)	4269	3850	3644	2990	2100
	Average (MW)	5023	6513	4359	3935	2718

Source: CEA, NLDC, IEX

Only ~ 424 MW could not be transacted
(i.e. ~0.15% of installed capacity or ~0.3% of Peak met)

	FY2013-14	FY2014-15
Total Energy Generated	967,150 MU	1048,403 MU
Energy that could not be cleared due to congestion	5,591 MU	3,139 MU
% Energy not cleared	0.58%	0.30%

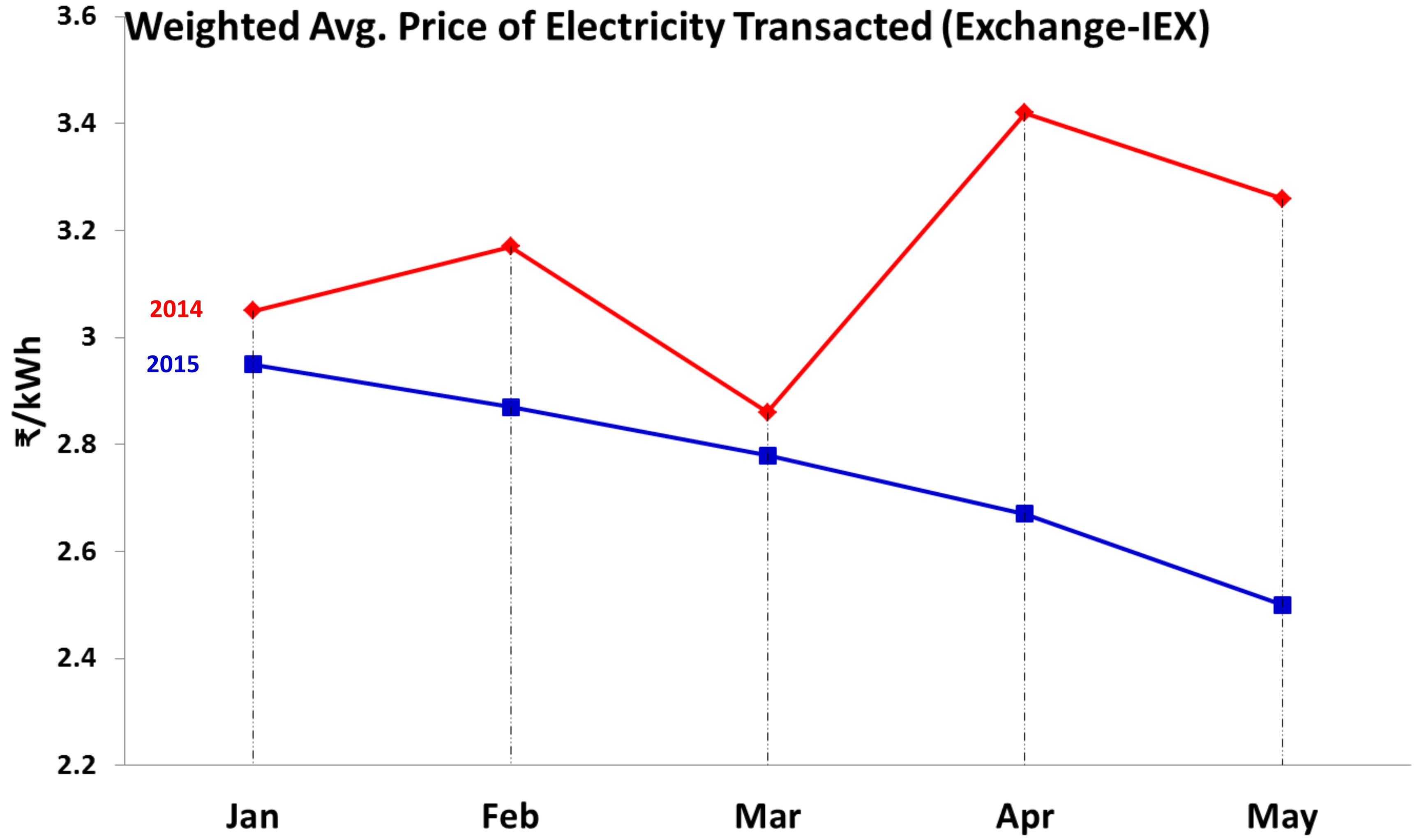
Price – Reason for Energy not transacted



Energy Transaction did not take place due to buyers <u>not</u> willing to buy > ~₹3.6-3.8 p.u.

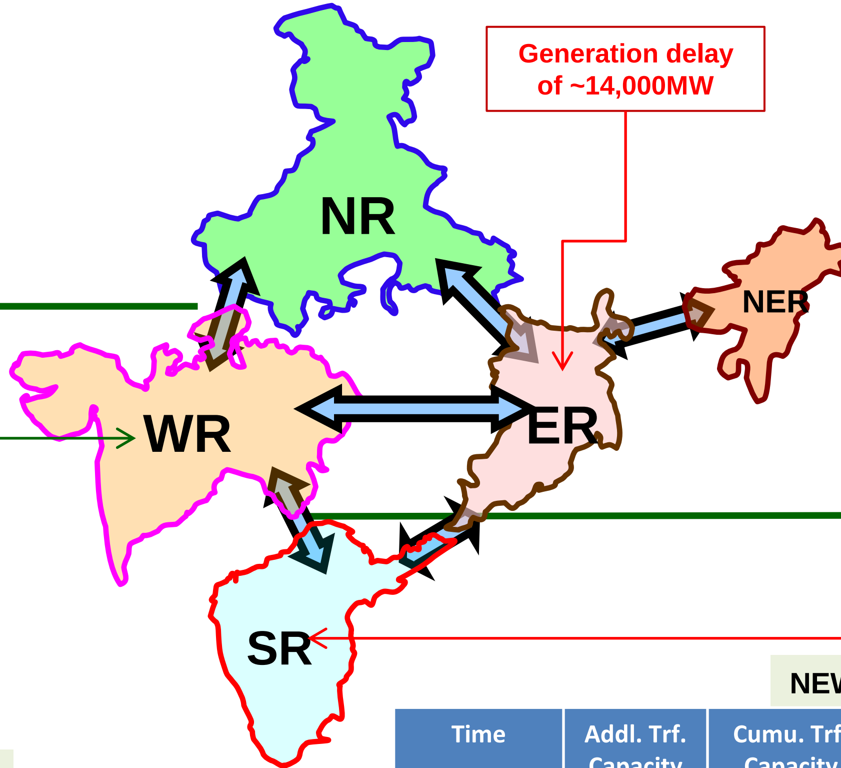
Source: IEX

Prices of Short Term Transactions



Source: Monthly Market Monitoring reports of CERC on Short Term Transactions

Present Congestion in ISTS & its progressive removal



WR-NR (Present Capacity: 5500MW)

Time	Addl. Trf. Capacity	Cumu. Trf. Capacity (MW)	With the Commissioning of
Aug '15	1900	7,400	Gwalior-Jaipur 765kV 2xS/c
Jul '16	2900	10,300	Champa-Kurukshetra 1st pole
2016-17	2500	12,800	Champa-Kurukshetra 2nd pole
2018-19	2500	15,300	Jabalpur-Orai 765kV D/c line
New	2500	17,800	Indore-Chittorgarh 765kV D/c

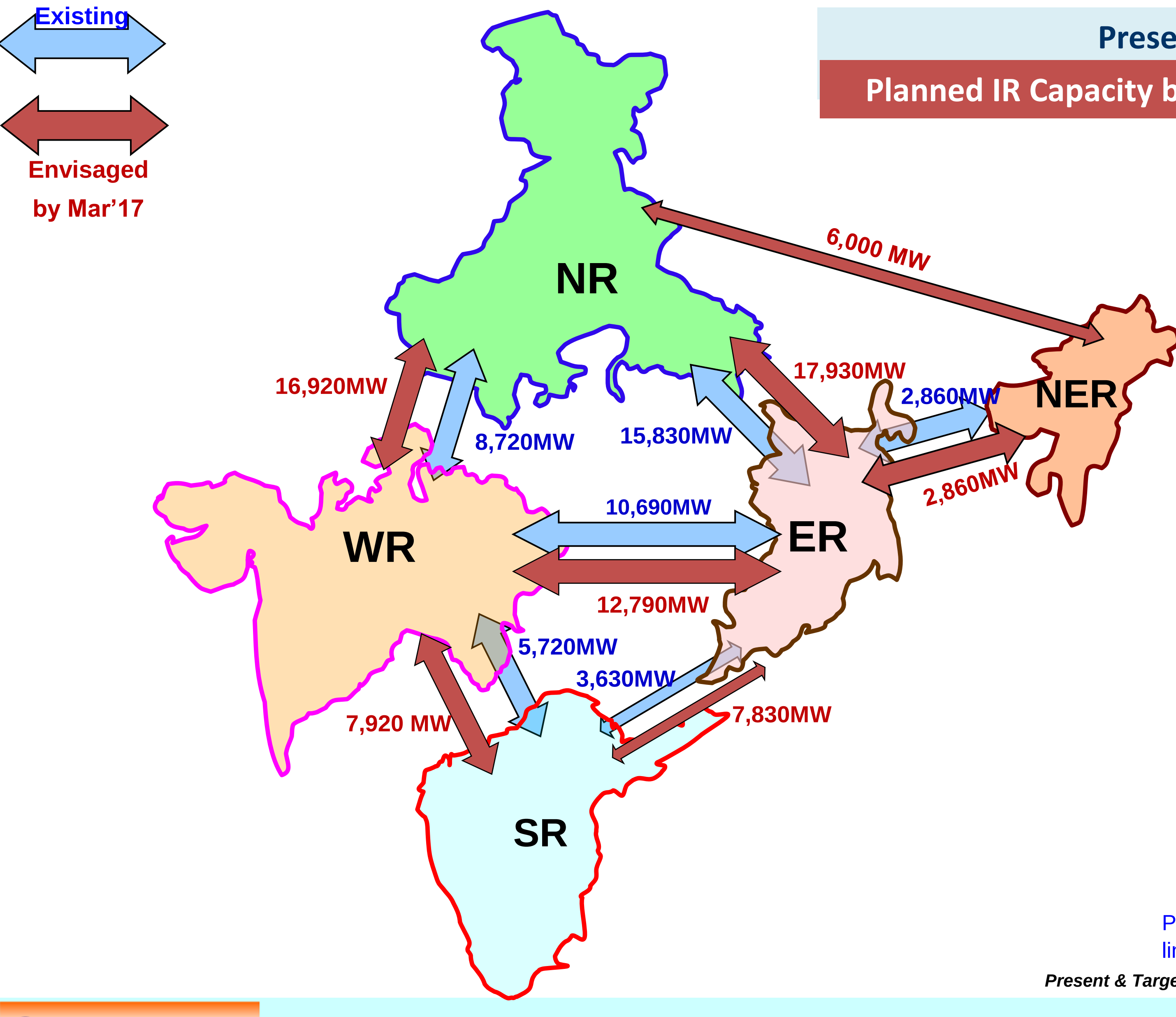
NEW-SR (Present Capacity: 4200MW)

Time	Addl. Trf. Capacity	Cumu. Trf. Capacity (MW)	With the Commissioning of
Sep/Oct'15	1700 +300	5,900 +300	Aurangabad-Sholapur 765 kV D/c Kolhapur – Narendra 765kV D/c Raichur-Sholapur enhancement
Jun '18	2500	8,700	Wardha-Hyderabad 765kV D/C
2018-19	5000	13,700	Warora- Warangal 765kV D/c Angul-Srikakulam - Vemagiri-C'Peta-Cuddapa 765kV D/c
2018-19	5000	18,700	Raigarh-Pugulur HVDC

National Grid – Present and Envisaged

Present IR Capacity: 47,450 MW

Planned IR Capacity by XII Plan end: 72,250 MW



Picture does not include various 132kV lines aggregating 600 MW of IR capacity

Present & Targeted IR Capacity include Pvt. Sector lines also

Present Congestion: Market Forces

Skewed Power Flow due to Market forces

CLP Jhajjar (1320MW), Aravali, Jhajjar(1500MW), Dadri (Thermal 1820 MW), Badarpur (705 MW), Kayankulam in Kerala, Gas projects etc.

- Not in operation due on price considerations

Congestion is dynamic and is a market phenomenon

Comparison of MCV and UMCV (2014 vs 2015)