



सूचना
का अधिकार

पावर ग्रिड कोर्पोरेशन ऑफ इंडिया लिमिटेड
Power Grid Corporation of India Limited
सूचना का अधिकार अभिनियम 2005 के अंतर्गत केन्द्रीय लोक सूचना अधिकारी
Central Public Information Officer under the RTI Act, 2005
केन्द्रीय कार्यालय, 'सौदामिनी', प्लॉट नं.2, सैक्टर-29, गुडगांव, हरियाणा-122007
Corporate Centre, 'Saudamini', Plot No. 2, Sector-29, Gurgaon, Haryana-122007



पावरग्रिड

CP/RTI/2017/209

Date: 28th September, 2017

Shri Deepak Patel,
Express Building,
B-1/b, Sector-10, Noida,
Uttar Pradesh – 231301

Sub: Information under Right to Information Act, 2005.

Dear Sir,

This has reference to your online RTI request dated 8th September, 2017 received in the POWERGRID on 28th September, 2017 seeking information under RTI Act, 2005.

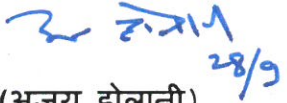
Available information is attached at **Annexure-I**.

First Appeal, if any, against the reply of CPIO may be made to the first appellate Authority within 30 days of the receipt of the reply of CPIO. Details of Appellate Authority at Corporate Centre, Gurgaon, under RTI Act, 2005 is as below:

Shri Sanjeev Singh,
Executive Director (CMG) & Appellate Authority
Corporate Centre, Power Grid Corporation of India Limited
"Saudamini", Plot No. 2, Sector-29, Gurgaon – 122007, Haryana.
Email ID: sanjeev@powergridindia.com
Phone No. 0124-2571962

Thanking you,

भवदीय,


(अजय होलानी)

अपर महाप्रबंधक (के.आ.) एवं के.लो.सू.अधिकारी

Email ID: cpio.cc@powergrid.co.in

Copt to:

- Sh.Sanjeev Jain
Under Secretary (PG Desk)
Ministry of Power, Govt of India
Shram Shakti Bhawan
Rafi Marg, New Delhi-110001



New Delhi

September 07, 2017

ONE Nation
Grid
Frequency

* As per Platts Top250 Energy List (2014, 2015, 2016)

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Transmission – An Introduction

- Indian Power System Framework
- National Grid Development
- Transmission Planning & Growth

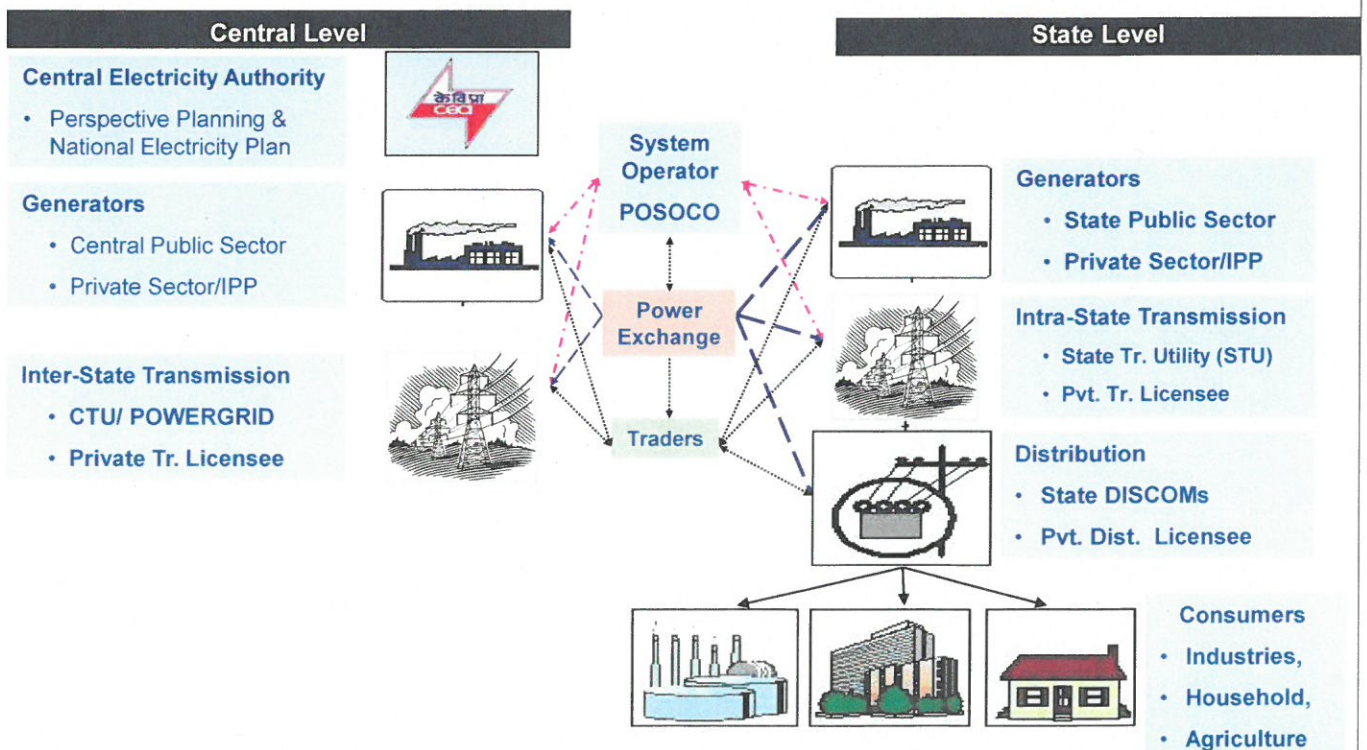
About POWERGRID

- POWERGRID Overview
- Performance
- Major Projects Under Implementation

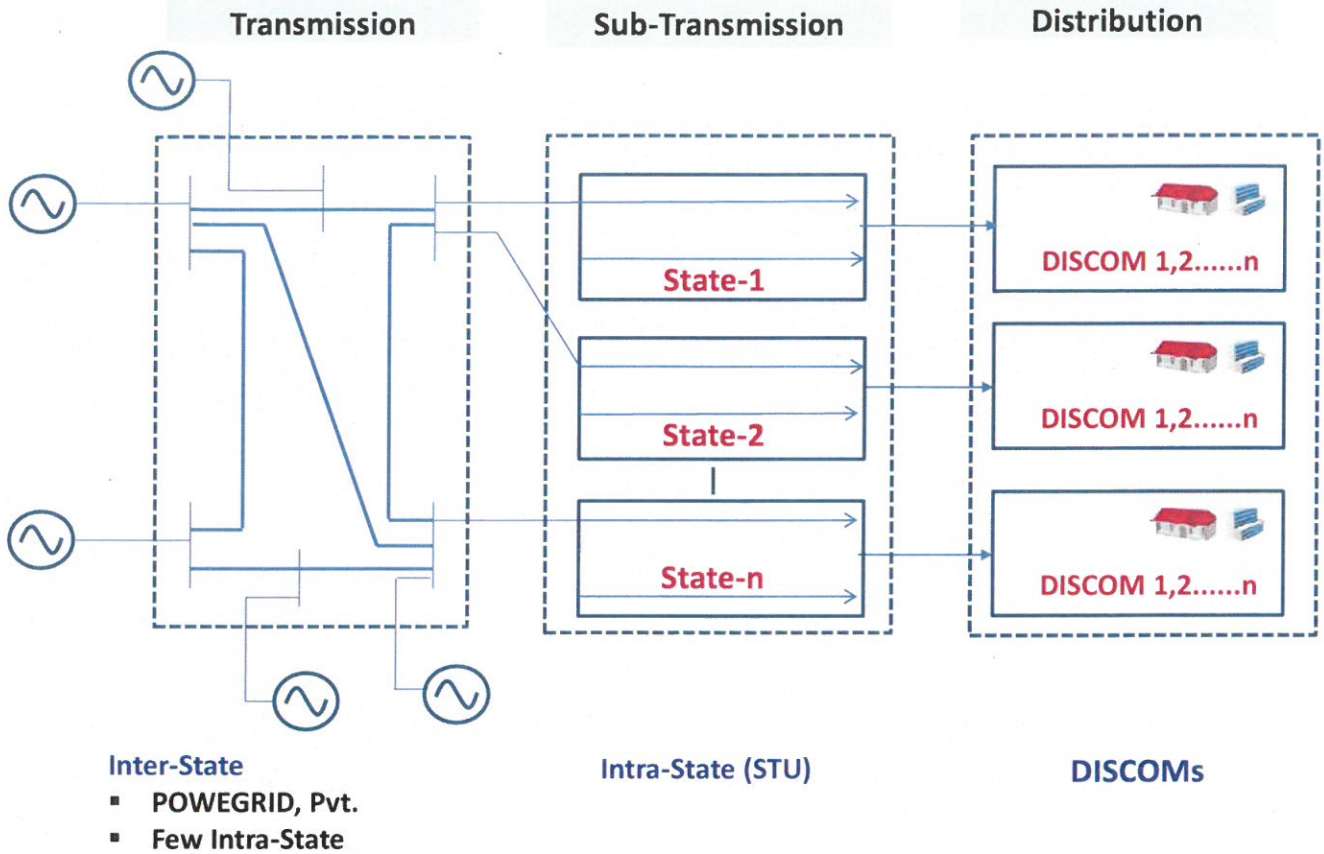
Transmission – An Introduction

Indian Power System Framework

Electricity - A Concurrent Subject



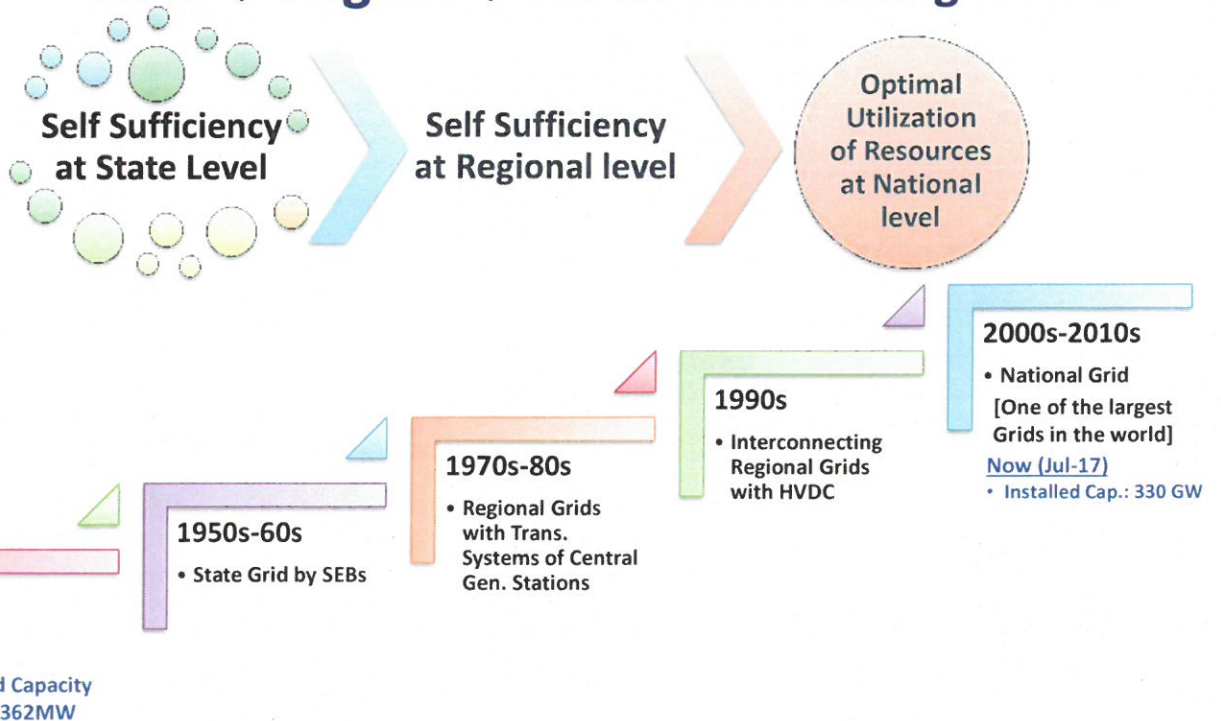
Power Delivery Chain



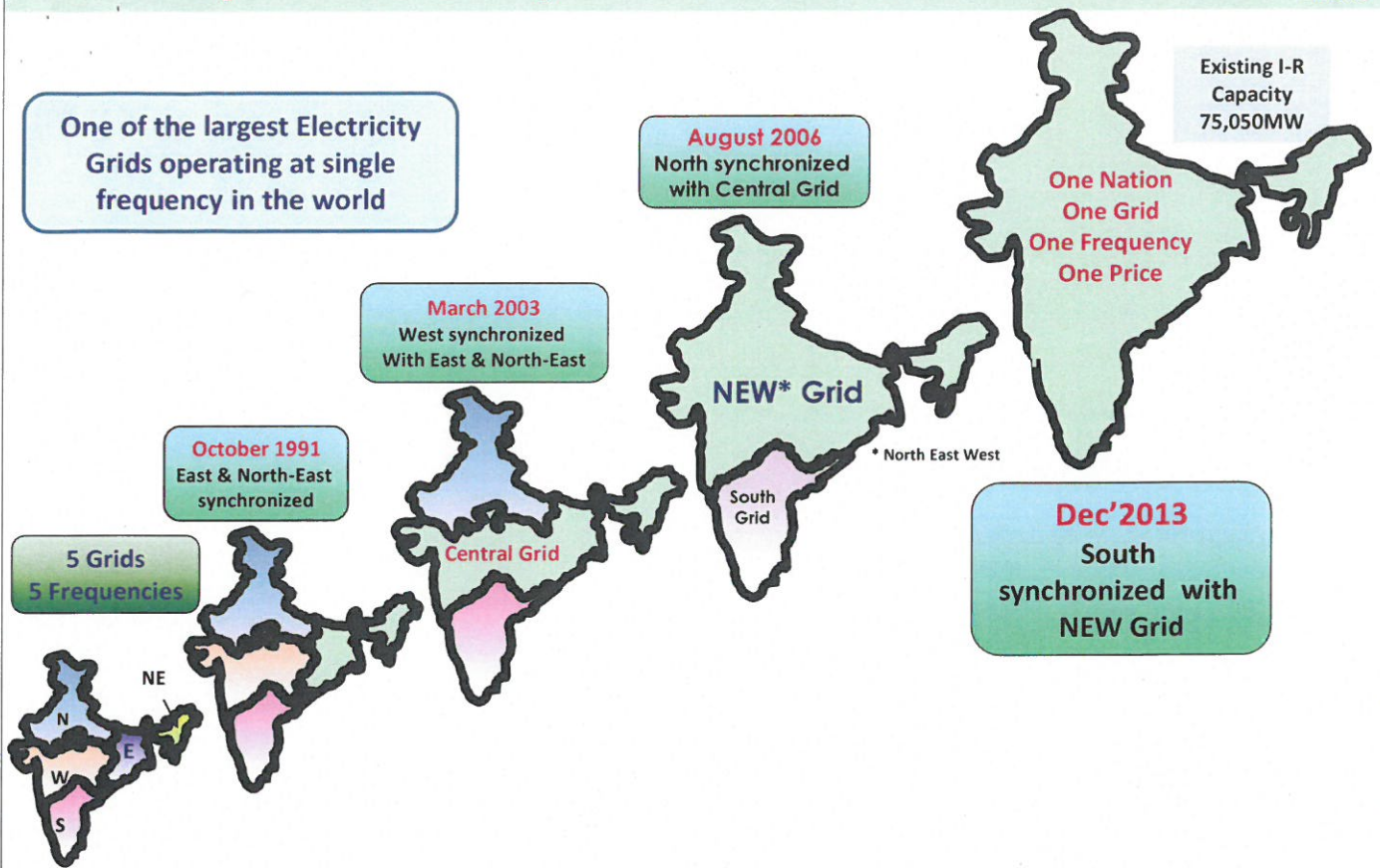
National Grid - Development



State → Region → Nation: A Paradigm Shift

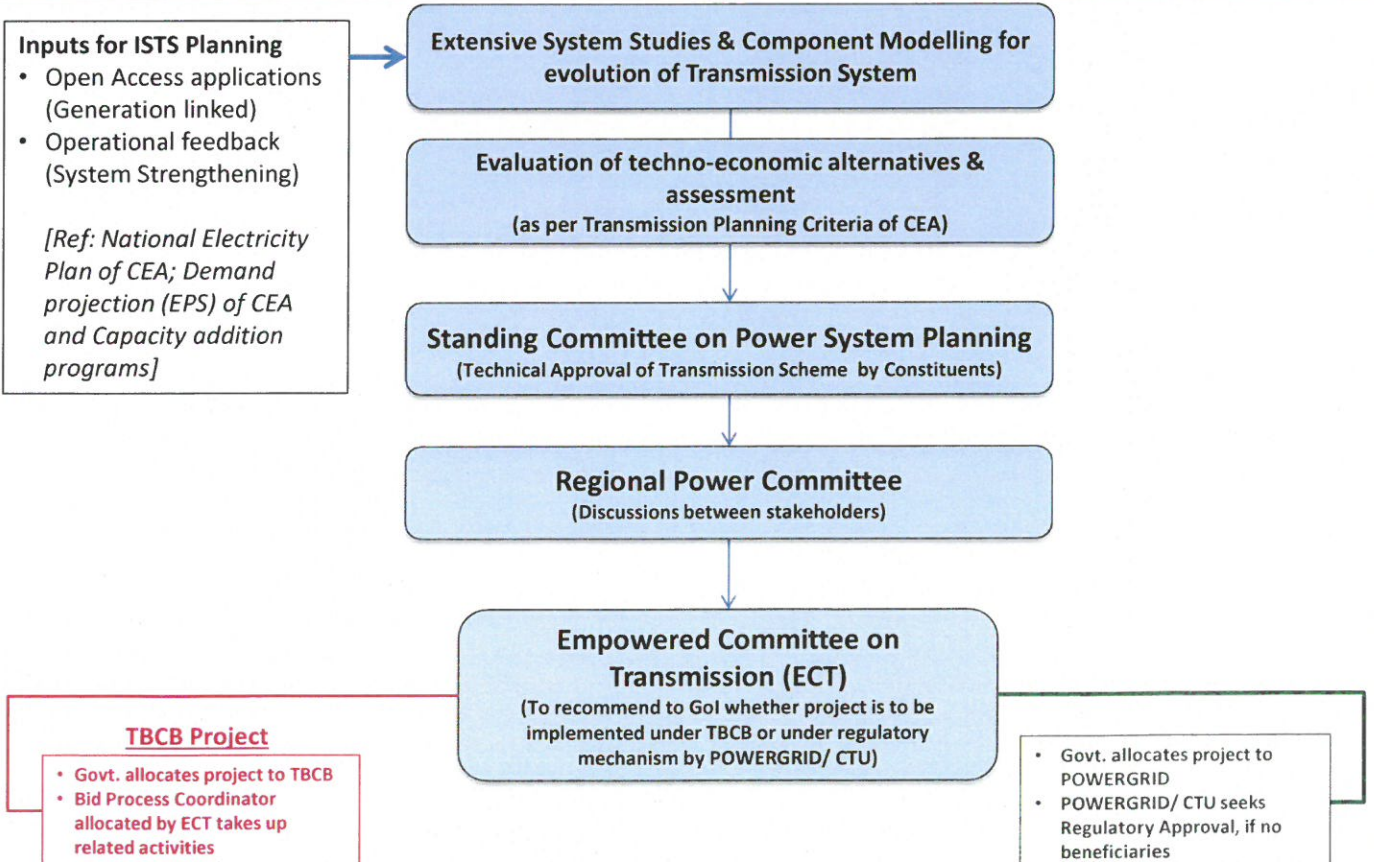


Development of Synchronous National Grid



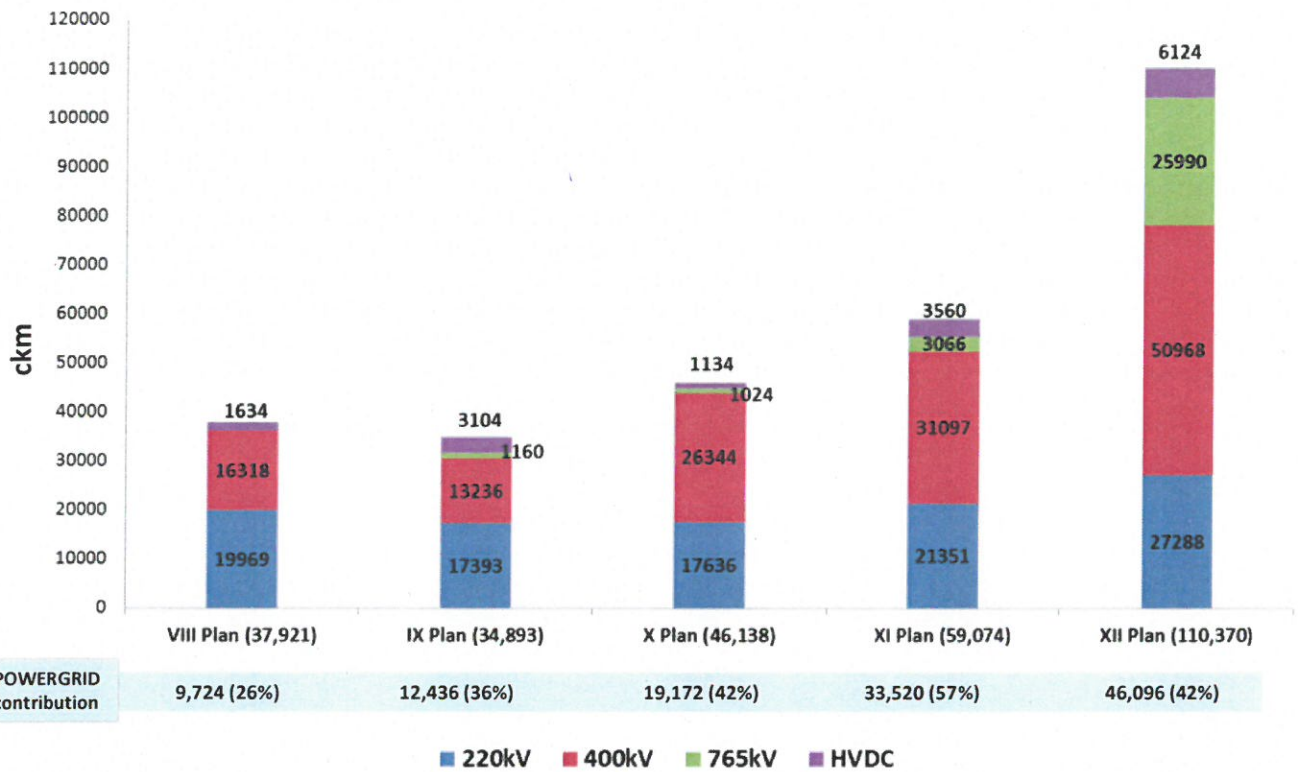
ONE Nation Grid Frequency

Planning - A Consultative Process



ONE Nation Grid Frequency

Transmission Growth - Planwise



Statutory Reforms since 2014



Forest Clearance

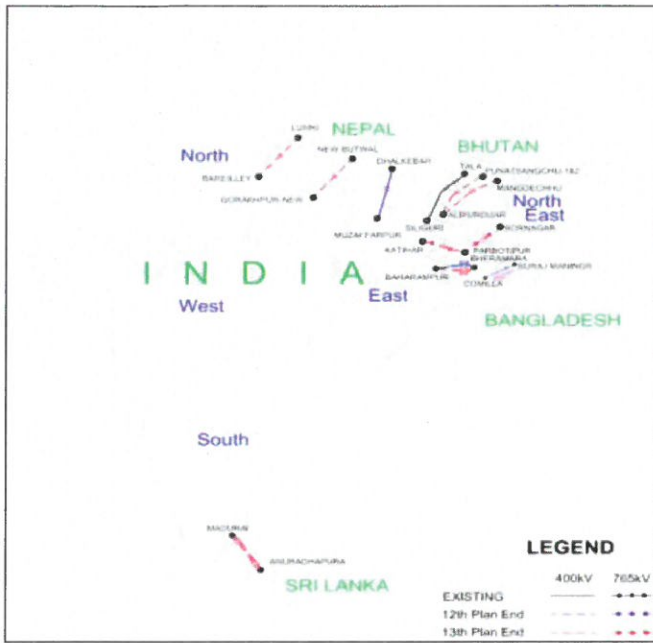
Enhancement in delegation of powers of Regional Offices of MoEFCC (Oct'14)

Permission to start work after Stage-I (In-principle approval) (Aug'14)

FRA Compliance need to be completed at the time of Stage-II

RoW Compensation

Guidelines issued by MoP for payment of additional compensation for Land Use (Oct.'15)



Present Power Transfer:

India - Bhutan: 1350 MW

India - Bangladesh: 660 MW

India - Nepal: 490 MW

India - Myanmar: 3 MW

About POWERGRID

POWERGRID- An Overview



- ❖ A 'Navratna' CPSE - Designated as 'Central Transmission Utility' of the country since 1998.
- ❖ Started Commercial Operation since 1992-93.
- ❖ Listed on BSE & NSE - IPO in Sep.'07; FPOs in 2010 & 2013
 - Present Shareholding: Govt-57.90%; Public: 42.10%
- ❖ ~ 85% ISTS Transmission Network owned by POWERGRID
- ❖ Paying Dividend since 1993-94
- ❖ Market Value - ₹ 1,13,316 crore[#]

#- Based on BSE Closing Price of ₹ 216.60 per share as on 01.09.2017

ONE Nation Grid Frequency

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Areas of Operation



Transmission



Telecom



Consultancy



Establishment and O&M of:

- ISTS
- Transnational links

Provides Telecom Services

- Point to Point Leased Lines, MPLS, Internet leased lines
- Owns & operates ~42,000km of Telecom network

Provides Consultancy Services:

- Domestic - State Utilities, Pvt./Govt. Cos.
- International – Footprints in 20 countries

POWERGRID : 11 Subsidiaries & 13 Joint Venture Companies

ONE Nation Grid Frequency

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POWERGRID – At Present

~ 141,912 ckm
>1100 nos. of lines

• Transmission Lines

224 Nos.

• EHVAC, UHVAC and HVDC Substations

~2,95,673 MVA

• Transformation Capacity

₹ 1,53,272 crore

• Gross Fixed Assets (as on 30.06.2017)

₹ 26,581 crore

• Turnover (FY 2016-17)

₹ 7,520 crore

• Net Profit (FY 2016-17)

Physical Data as on 31.07.2017

Performance

Growth since Commercial Operation

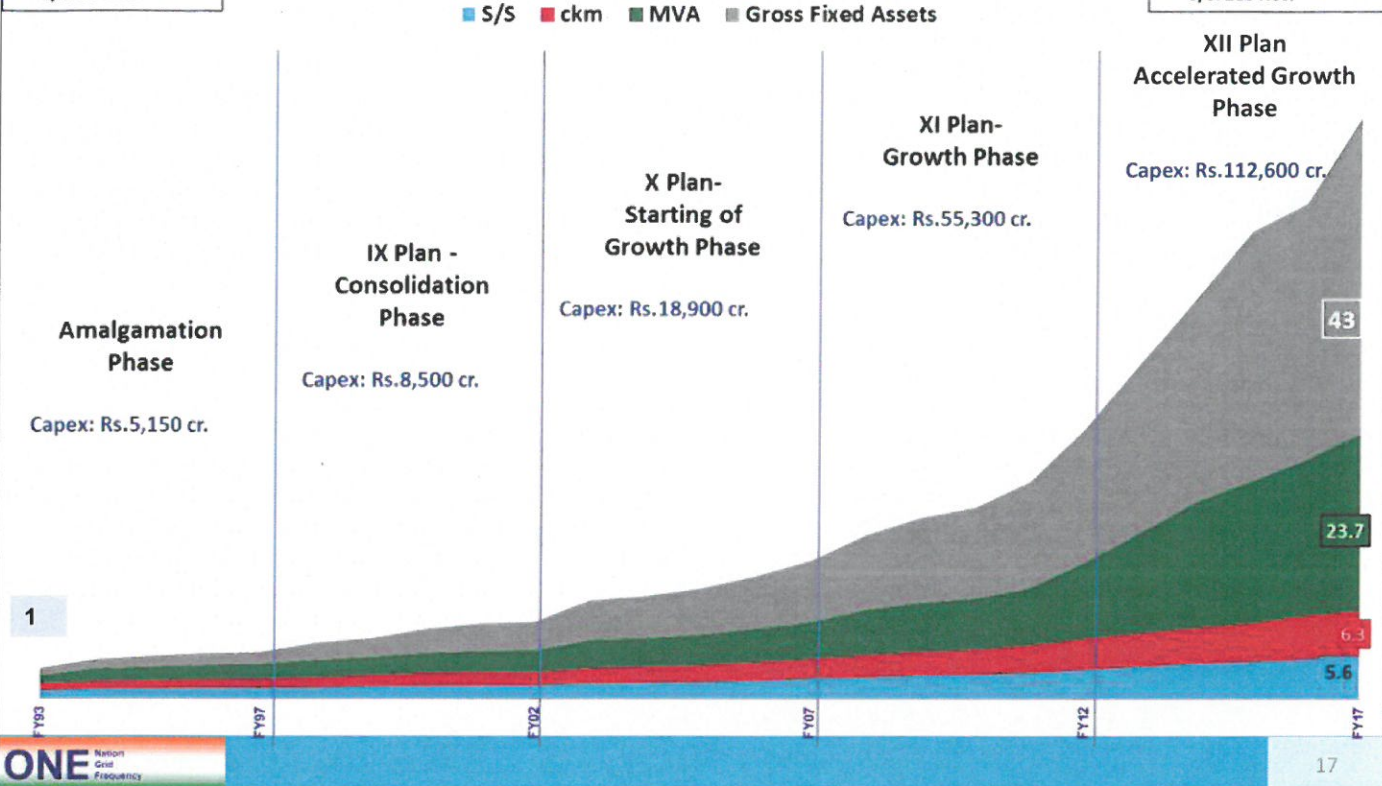
Mar'93:

- GFA: ₹ 3,521 crore
- TL: 22,228 ckm
- X-fmn: 12,201 MVA
- S/S: 39 Nos.

Investment-led Growth

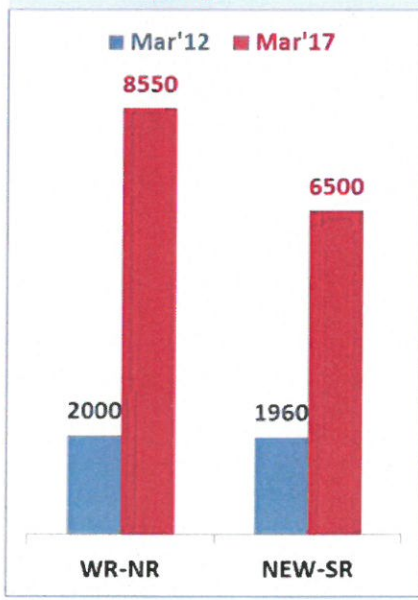
Mar'17:

- GFA: ₹ 149,730 crore
- TL: 139,077 ckm
- X-fmn: 289,543 MVA
- S/S: 219 Nos.



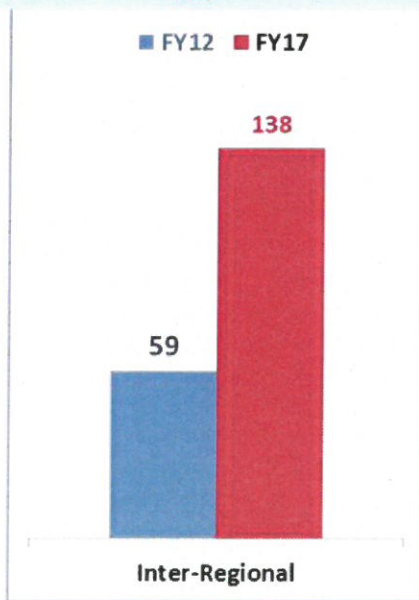
Transmission: Enabling Seamless Power Movement

ATC Enhancement (MW)



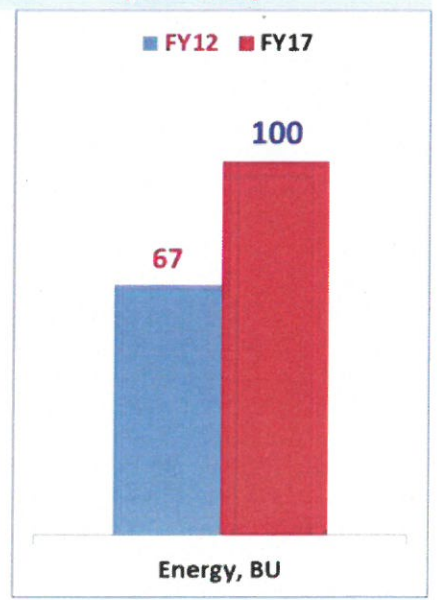
328% 299%

I-R Power Transfer (BU)



134% Increase (%)

Power Markets- STOA (Txns. & BU)

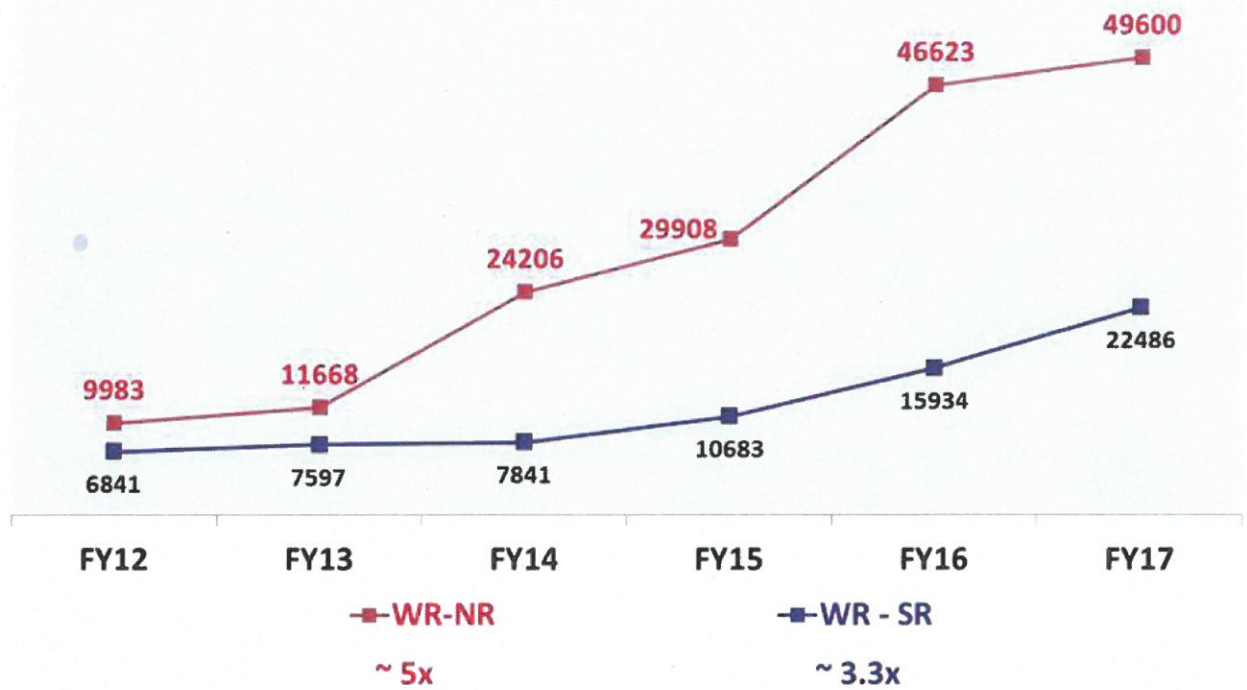


50%

Transmission- Congestion Management



I-R Power flow from WR to NR & WR to SR (MUs)



Major Projects Under Implementation

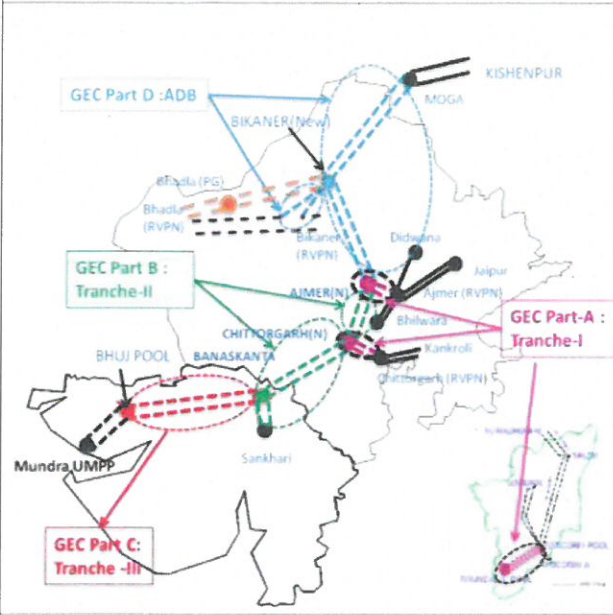
Major Lines

- 1) 765kV D/C Nizamabad – Hyderabad (Maheswaram)
- 2) \pm 800kV Champa-Kurukshetra Pole-II (1500MW)
- 3) \pm 800kV Alipurduar-Agra Bipole (3000MW)
- 4) 400kV D/C Aurangabad- Boisar
- 5) 765kV D/C Jabalpur- Orai –Aligarh
- 6) 765kV D/C Aurangabad – Padghe (along with 400kV D/C Padghe-Kudus & Kala-Kudus)
- 7) 400kV D/C Wardha – Aurangabad (1200kV tower)
- 8) 765kV S/C Salem – Madhugiri
- 9) Lines associated with GEC and Solar Power Parks

Other Important Lines/ Generation Linked Lines

- 1) 400kV D/C Nabinagar – Gaya
- 2) 220kV D/C Kishenganga – Amargarh
- 3) 400kV D/C Dulhasti – Kishenpur
- 4) 400kV D/C Sasaram-Daltonganj
- 5) 132kV S/C Pasighat – Roing – Tezu – Namsai (bal. last link)
- 6) 400kV D/C Dehradun-Abdullapur
- 7) 400kV D/C Kameng – Balipara
- 8) 400kV D/C (charged at 132kV) Silchar – Melriat

Green Energy Corridors-I



Transmission Strengthening:

Interconnection of RE for evacuation & extending boundary for balancing resources

- Estimated Cost (ISTS): ₹ 11,369 Cr
- Debt Funding: KfW & ADB
- Commissioning progressively from Dec'17

Dynamic Compensation:

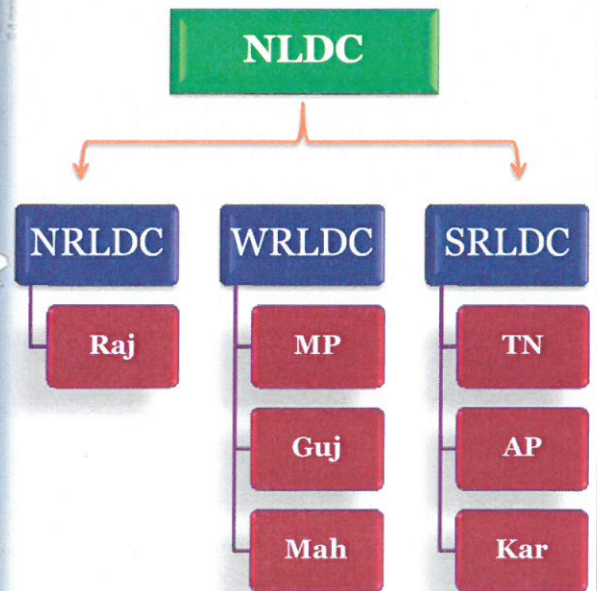
To maintain grid parameters due to variability

- 16 nos. SVC/STATCOM
 - 2 nos. SVC commissioned (Ludhiana, Kankroli)
 - STATCOM – NP Kunta commissioned

REMC: Forecasting & scheduling

- 11 nos. REMCs in 7 RE rich states; 3 RLDCs & 1 NLDC

REMC Locations



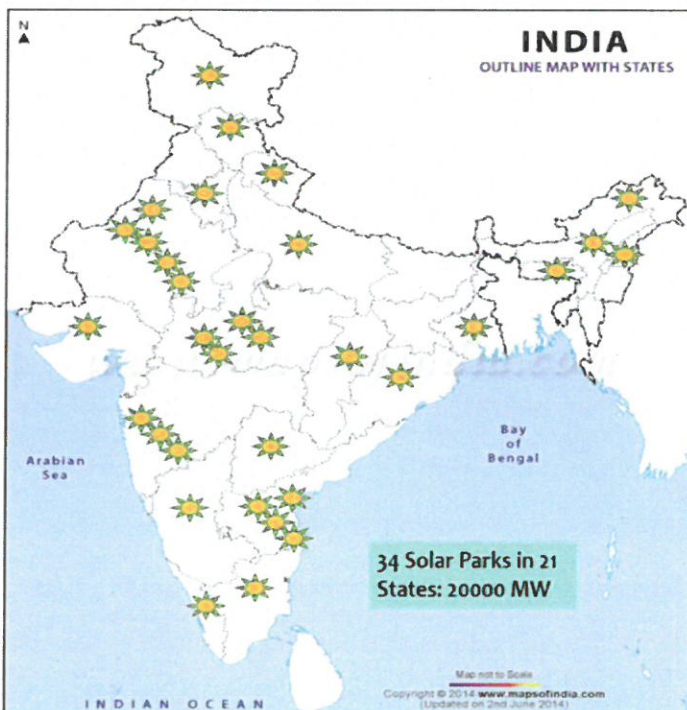
Dynamic Compensation



- Facilitating Renewable Integration
- Maintaining Grid Parameters
- 14 No. of Hybrid STATCOMs
- 4 No. of SVCs

Renewable Integration- Green Energy Corridors -II

Locations of Ultra Mega Solar Parks



**34 Solar Parks
20,000 MW**

- ✓ **POWERGRID assigned 8 Solar Parks in 5 States**
 - AP (NP Kunta), MP (Rewa), Karnataka (Tumkur), Rajasthan (Bhadla, Essel), Gujarat (Banaskantha)
- ✓ **TS for 7 Nos. Solar Parks under implementation**
- ✓ **Additional 20,000 MW Solar parks envisaged**

Technologies Being Adopted

❖ Higher Voltages

- 765kV EHVAC, ± 800 kV HVDC
- Future - 1200kV UHVAC – *Highest Voltage in the World*

❖ GIS Substations

❖ Remote Operation of Sub stations

- 150 nos. already being operated remotely from State of the Art Control centre (NTAMC) at Manesar & RTAMCs.

❖ Increase in capacity of transmission corridor through

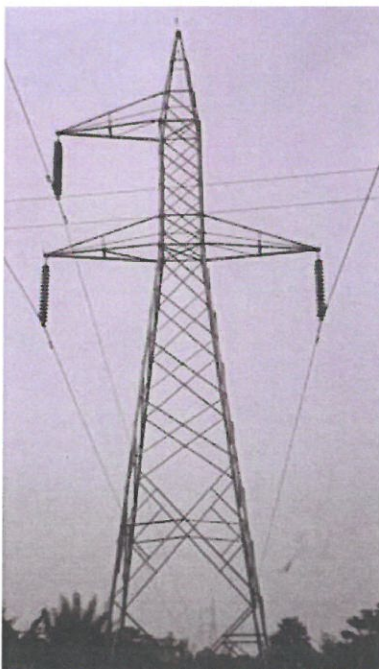
- HTLS Conductor, Series Capacitor

❖ Voltage Source Converter (VSC) based HVDC

❖ Substation Automation: Process Bus Architecture

Conservation of RoW

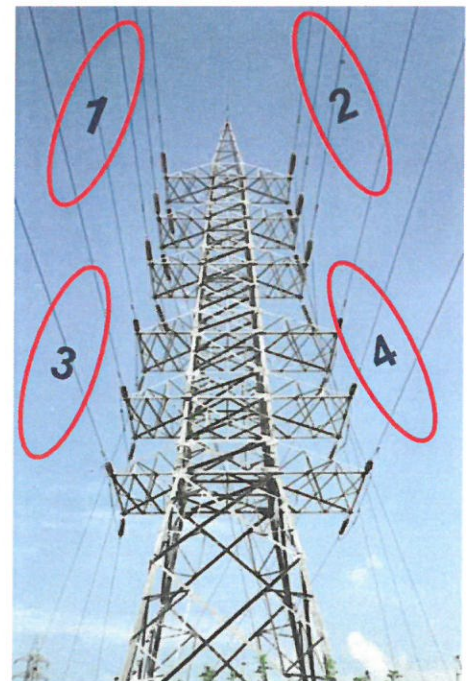
Single Circuit Tower



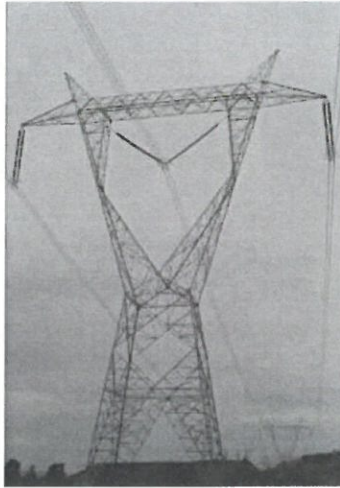
Multi Circuit Tower



Multi Circuit Tower
Erection Using Existing
Corridor in Jaldapara
Sanctuary

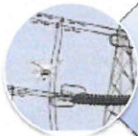
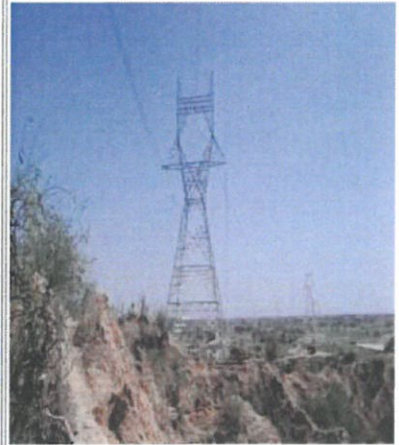


765 kV Normal Tower



400kV Compact Single Pole Tower

765 kV Compact Tower



Use of Unmanned Aerial Vehicles (Drones)



Use of Helicopters



Hot Line Maintenance



Emergency Restoration System



GIS Mapping of TLs

Implementation of Important Gol Schemes

Important Gol Schemes

Transmission Assignments	Power System Improvement Project in NER
	Comprehensive Scheme for Strengthening of Transmission & Distribution System for Arunachal Pradesh and Sikkim
	Connectivity to Leh-Kargil Area with NR Grid at 220kV level
Rural Electrification	Electrification in 15 districts of Odisha
IPDS	In Old Kashi area, conversion of existing overhead distribution network to new underground system.



THANK YOU

ONE
Nation
Grid
Frequency