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PLACE
TO
WORK®



“To reach the power, you need transmission lines and the good transmission infrastructure. Two years preceding the formation of our government, 30-35 thousand kilometres of transmission lines were being laid annually. Today, I wish to submit this with satisfaction that we have raised this to 50,000 kilometres. So we have increased the pace..”

Shri Narendra Modi

Hon'ble Prime Minister of India

"Extracts from the speech of Hon'ble Prime Minister on Independence day 15.8.2016"



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“Congratulations to Powergrid for Commissioning Transmission Projects worth ₹ 30,300 Crore in 2015-16, an Annual growth of 39%

In just 18 Months, we increased Transmission Capacity by 71% in the Congested South Indian Grid (3450 Mw to 5900 Mw). Result - Cheaper Power

India Moving Steadily on the Path of One Nation, One Grid, One Price”

Shri Piyush Goyal

Hon'ble Union Minister of State (I/c)
for Power, Coal, New and Renewable Energy & Mines



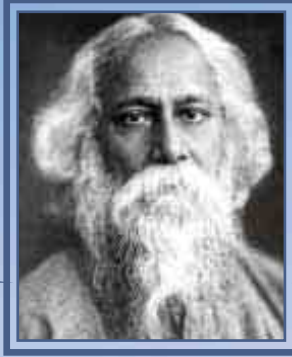
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*Unweiling the Pages of
India's Principal
Electric Power Transmission Company*

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চিত্ত যেথা ভয়শূন্য, উচ্চ যেথা শির,
জ্ঞান যেথা মুক্ত, যেথা গৃহের প্রাচীর
আপন প্রাঙ্গণতলে দিবসশর্বরী
বসুধারে রাখে নাই খণ্ড ক্ষুদ্র করি,
যেথা বাক্য হৃদয়ের উৎসমুখ হতে
উচ্ছ্বসিয়া উঠে, যেথা নির্বারিত স্রোতে
দেশে দেশে দিশে দিশে কর্মধারা ধায়
অজস্র সহস্রবিধ চরিতার্থতায়,
যেথা তুচ্ছ আচারের মরুবালুরাশি
বিচারের স্রোতঃপথ ফেলে নাই গ্রাসি--
পৌরুষেরে করে নিশতথা, নিত্য যেথা
তুমি সর্ব কর্ম চিন্তা আনন্দের নেতা,
নিজ হস্তে নির্দয় আঘাত করি, পিতঃ,
ভারতেরে সেই স্বর্গে করো জাগরিত ॥

--- রবীন্দ্রনাথ ঠাকুর

*Where the mind is without fear and the
head is held high;
Where knowledge is free;
Where the world has not been broken up into
fragments by
narrow domestic walls;
Where words come out from the
depth of truth;
Where tireless striving stretches its arms
towards perfection;
Where the clear stream of reason has
not lost its way
Into the dreary desert sand of dead habit;
Where the mind is led forward by Thee into
ever-widening thought and action,
Into that heaven of freedom, my Father,
let my country awake.*

--- Rabindranath Tagore

Inspired by the timeless appeal of his poignant and philosophical words, an entity was established over a quarter of a century ago – to pioneer, build and operate the power transmission infrastructure of the Nation, as well as to streamline and prepare it for myriad trysts with destiny.

Over the years since then, having changed its name in between to Power Grid Corporation of India Ltd., or “POWERGRID” as it is widely acronymed and known today, the organization has become one of the largest and the most efficient transmission utilities in the world with diversified vistas of its operation and management.

CMD's Thoughts

Enabling Vibrant Electricity Market



Dear friends,

I take this opportunity to reminisce the times when transmission systems in the country were planned & developed through a piecemeal approach. A need was felt to establish a national level Transmission Company for the integrated development of National Electrical Grid. And thus, POWERGRID was born in the year 1989. Ever since, POWERGRID has played a pivotal role in the integrated development of Indian Power Sector. With the passage of time, POWERGRID has kept pace with the challenges and has introduced world class practices & technologies in transmission system development and Grid Management. It is indeed a matter of immense pride that our company has emerged as one of the largest and best managed transmission utilities in the world today.

POWERGRID's journey from being an amalgamation of fragmented transmission divisions of various power sector companies to becoming a principal National Transmission Company, a Navratna, has been one of inspiration, dedication and vision displayed by our predecessors. The growth numbers are phenomenal. POWERGRID has grown from 22,228 ckm to 1,31,728 ckm of transmission lines, from 35 substations to 213 substations and transformation capacity from 12,201 to 2,66,163 MVA since inception. We transmit 45% of the electrical energy generated in India. Today, POWERGRID has not only grown in size, but also in stature. POWERGRID has been playing a key role in sectoral development by providing vibrant electricity market & access to cheap power to the electricity starved consumers. Initiatives for adopting State-of-the-art technologies along with skill development and newer areas such as smart grids, energy efficiency, R&D, etc. have started bearing fruits. POWERGRID has also emerged as a strong player internationally in T&D business. We are on our way in achieving our Vision of becoming a truly Global Company.

Having travelled 26 eventful years, we must pause in remembering our past, paying our respects to the founding fathers of this great company and relish the journey so far. My kudos to the employees and their families, members of management, associates including our partners and other institutions who over the past several years have helped POWERGRID to achieve and sustain repeated success. My heartiest congratulations also to the team who have helped create this beautiful compilation of a colorful nostalgia.

Thank You



I. S. Jha

Chairman cum Managing Director



Bonding With Neighbours



Hon'ble Prime Minister of India alongwith Hon'ble Prime Minister of Bangladesh Inaugurated the 100MW power supply transmission link to Bangladesh on 23rd March 2016.



Hon'ble Prime Minister of India jointly with Hon'ble Prime Minister of Nepal Inaugurated the 400kV transmission line linking Nepal and India on 20th February 2016. The 140 km crossborder line joins the Indian grid from Muzaffarpur in Bihar with Dhalkerbar in Dhanusa to export electricity to ease the acute electricity shortage in Nepal.

*Foundation stone laid for
Leh-Kargil-Srinagar Transmission System*



Hon'ble Prime Minister Shri Narendra Modi laid the foundation stone for the Leh-Kargil-Srinagar 245km long power transmission line at Leh on 12.8.2014.



Hon'ble Prime Minister Shri Narendra Modi dedicated the 765/400 kV Varanasi GIS Sub-Station to the nation on 24.10.2016. 40% less land has been utilised in this State-of-the-Art GIS Sub-Station in comparisons to the conventional one.


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Today, 45% of the electricity Generated in India
flows through transmission networks of
Power Grid Corporation of India Limited

And it all began with a vision...
of making India powerful and its people empowered

Vision & Mission

Keeping pace with changing business environment, POWERGRID set its vision and aligned its mission & objective as a vanguard of foresight.

Vision

“World Class, Integrated, Global Transmission Company with Dominant Leadership in Emerging Power Markets Ensuring Reliability, Safety and Economy.”

Mission

We will become a Global Transmission Company with Dominant Leadership in Emerging Power Markets with World Class Capabilities by:

- ✻ World Class: Setting superior standards in capital project management and operations for the industry and ourselves.
- ✻ Global: Leveraging capabilities to consistently generate maximum value for all stakeholders in India and in emerging and growing economies.
- ✻ Inspiring, nurturing and empowering the next generation of professionals.
- ✻ Achieving continuous improvements through innovation and state-of-the-art technology.
- ✻ Committing to highest standards in health, safety, security and environment.



Objectives

In line with the Vision, Mission and status as “Central Transmission Utility” the major objectives of the Corporation are:

- To undertake transmission of electric power through Inter-State Transmission System;
- To discharge all functions of planning and coordination relating to Inter-State Transmission System with-
 1. State Transmission Utilities;
 2. Central Government;
 3. State Governments;
 4. Generating Companies;
 5. Regional Power Committees;
 6. Authority;
 7. Licensees;
 8. Any other person notified by the Central Government in this behalf;
- To ensure development of an efficient, coordinated and economical system of inter-state transmission lines for smooth flow of electricity from generating stations to the load centres;
- Efficient operation and maintenance of transmission systems;
- To provide assistance to restore power in quickest possible time in the event of any natural disasters like super-cyclone, flood, etc. through deployment of Emergency Restoration Systems.
- To provide consultancy services at national and international levels in transmission sector based on the in-house expertise developed by the organization.
- To participate in long distance trunk Telecommunication business ventures.
- To ensure principles of Reliability, Security and Economy matched with the rising/desirable expectation of a cleaner, safer, healthier environment of people, both affected and benefitted by its activities.

A Dreamer With a Passion to Excel

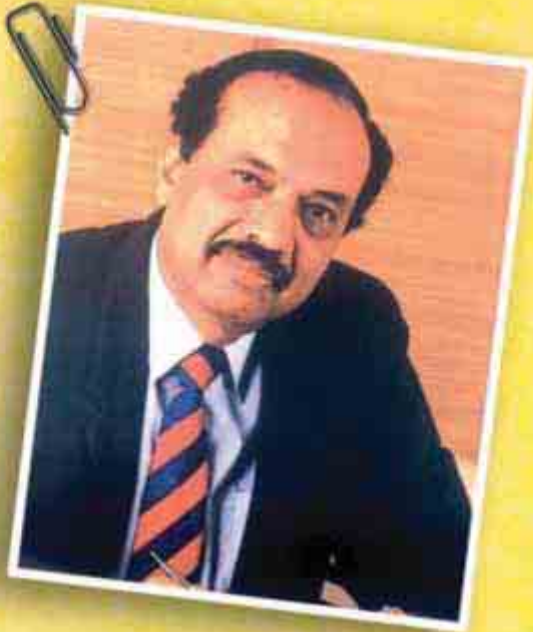
His actions continue to inspire us to dream more, learn more, do more and grow more. As a true leader, he has known the way, gone the way, and shown the way. Late Shri R.K. Narayan, the founder Chairman & Managing Director of POWERGRID since November 1990, brought with him a wealth of experience spanning several decades in various fields of the Power Sector.

Shri Narayan had been the guiding force behind the restructuring programme of the Indian Power Sector resulting in the formation of POWERGRID. His overall guidance and leadership helped POWERGRID to scale new heights in performance and excellence. He superannuated on 31st July 1995, leaving a great legacy in India's power transmission sector.



Late Ram Krishan Narayan
Founder Chairman & Managing Director
POWERGRID

Men Who Led from the Front, This Maverick Entity



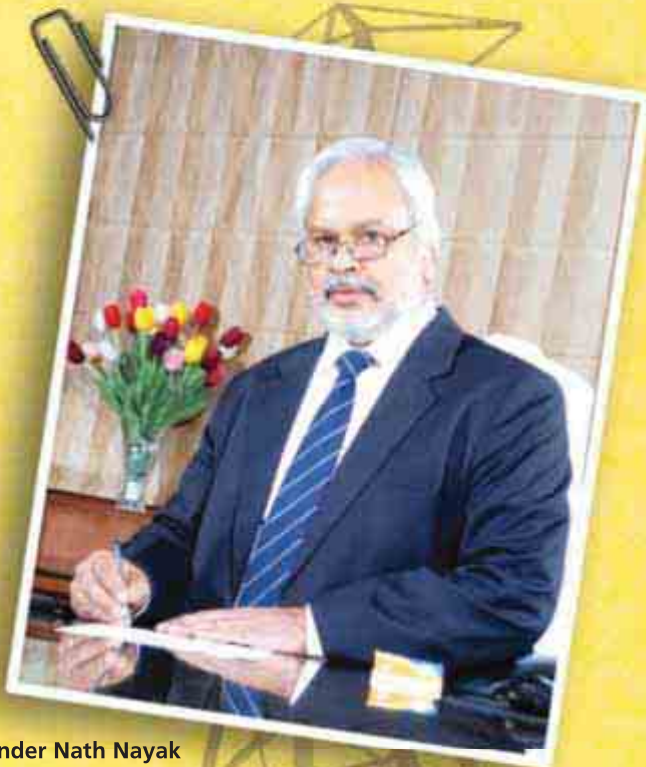
Late Shri Ram Krishan Narayan
01.11.1990 to 31.07.1995



Dr. Rajender Prasad Singh
23.08.1997 to 31.07.2008



Shri Sudhir Kumar Chaturvedi
01.08.2008 to 31.08.2011



Shri Rabinder Nath Nayak
01.09.2011 to 30.09.2015



Shri Indu Shekhar Jha
Since 10.11.2015
Carrying on the Baton

Company Overview

Central Transmission Utility

- Undertakes transmission of electricity through Inter-State Transmission System (ISTS)
- Discharges all functions of planning and co-ordination relating to ISTS with all concerned authorities/stakeholders
- Ensures development of an efficient, co-ordinated and economical system of Inter-state transmission lines for smooth flow of electricity from generating stations to the load centres
- Provides non-discriminatory open access to its transmission system for use by any licensee or generating company

Listed Company

- 57.90% holding by Government of India and 42.10% by public
- Dividend paying since 1993

National Transmission Dominance

- Operates 90% of inter-State / inter-regional networks
- Wheels about 45% of India's power generated
- Transmission system availability more than 99%
- **Nation's Grid Management through its wholly owned subsidiary, Power System Operation Corporation (POSOCO)**

POWERGRID - Growing in Leaps & Bounds

'NAVRATNA'
Company

11
Subsidiaries
& 13 Joint
Ventures

Gol holding:
57.90% &
Institutions
35.49%
Non-Institutions
6.61%

FII
holding:
27.55%

Equity
Shares listed
on
NSE & BSE

Foreign Currency
Bonds
listed on
Singapore
Stock
Exchange

Wholly
owned
by Gol

Schedule
'A'
Company

1992-93

Transmission
Sale of Electric Power
Consultancy



Now

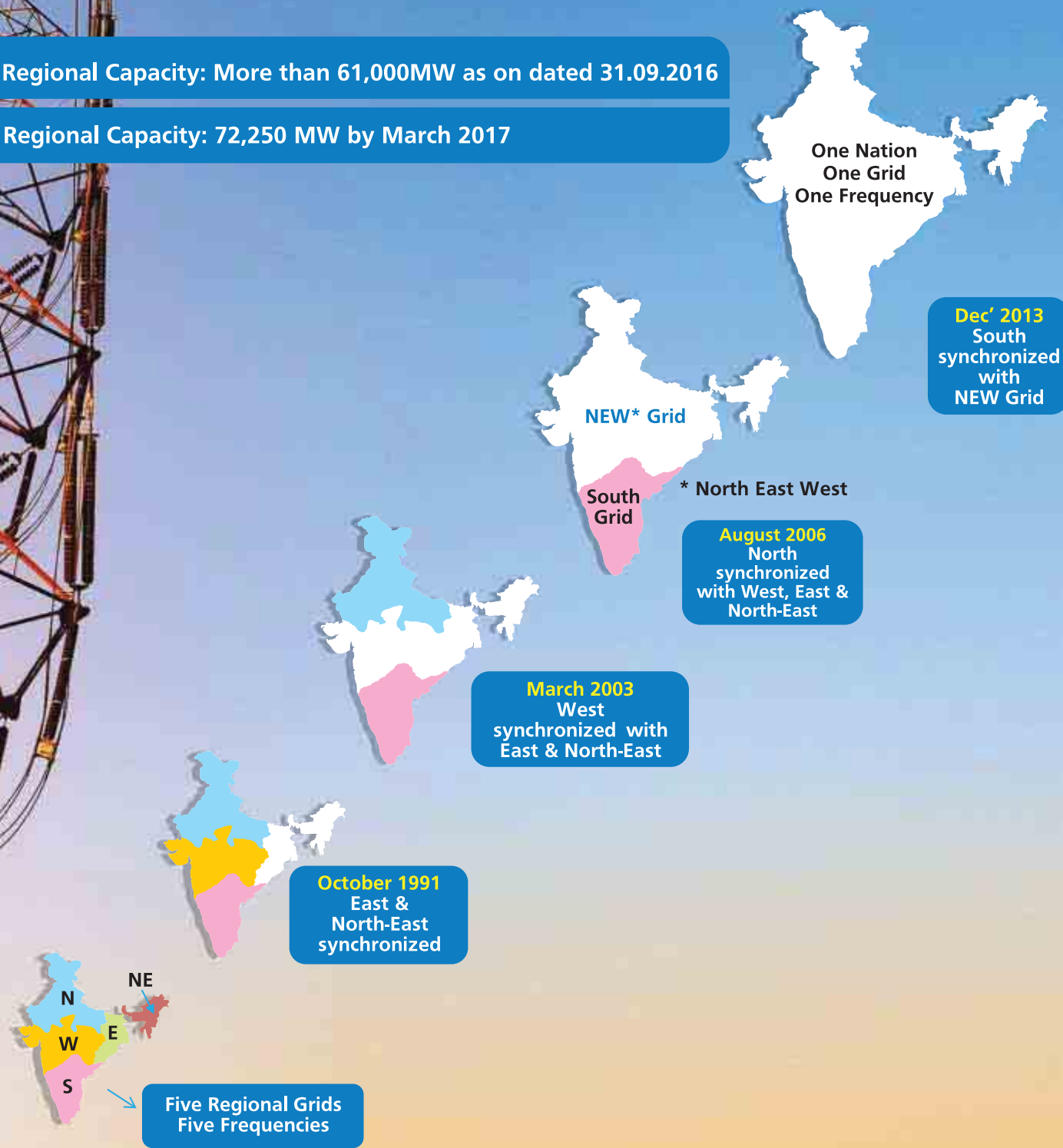
CTU | Inter-State Transmission Service Provider |
Grid Management | Consultancy | International Business | Telecom |
Smart Grid | Distribution | Energy Efficiency |
Renewable Energy Integration

* As on 31st March, 2016

POWERGRID - Evolving Profile

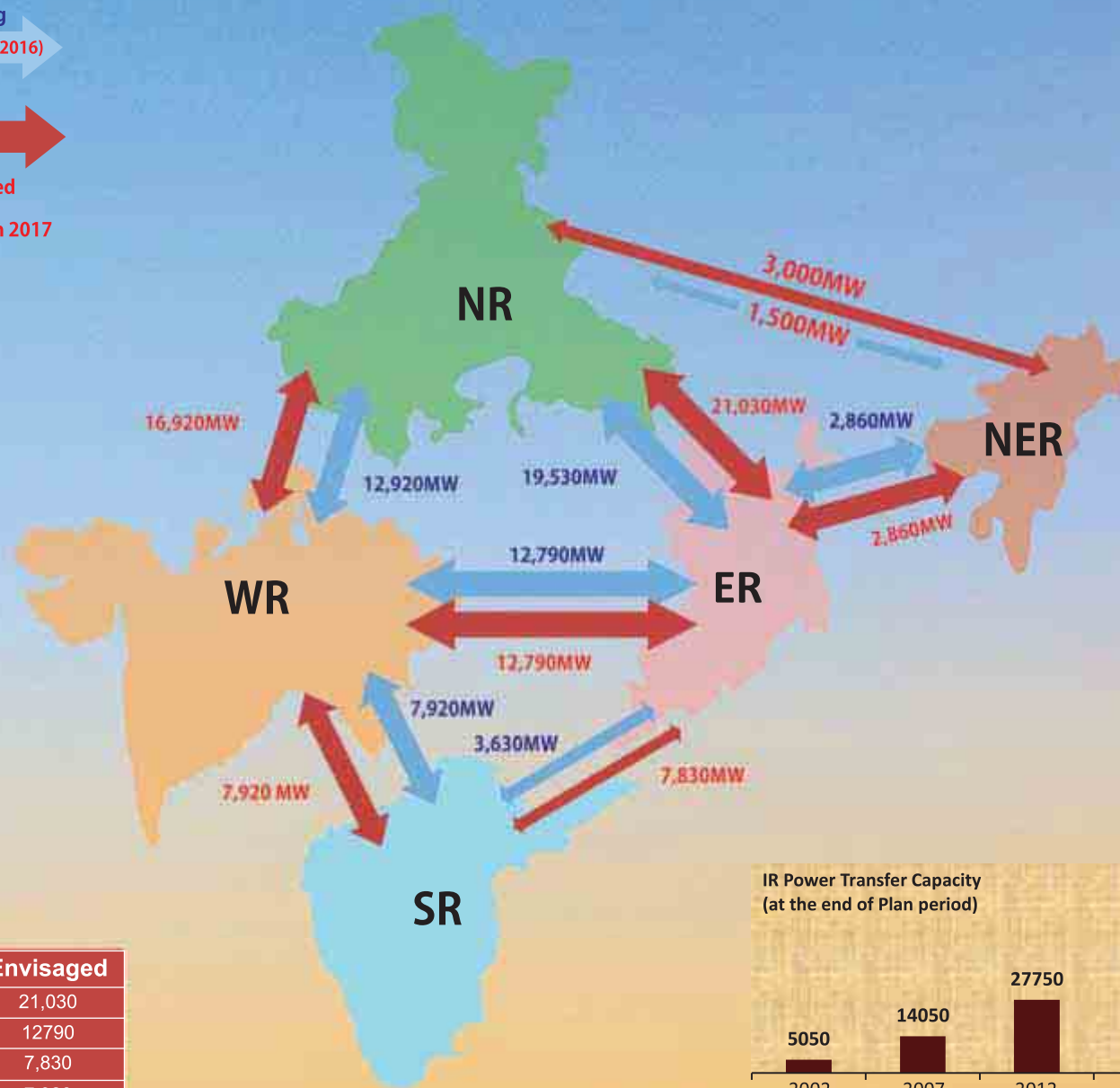
Existing Inter Regional Capacity: More than 61,000MW as on dated 31.09.2016

Planned Inter Regional Capacity: 72,250 MW by March 2017



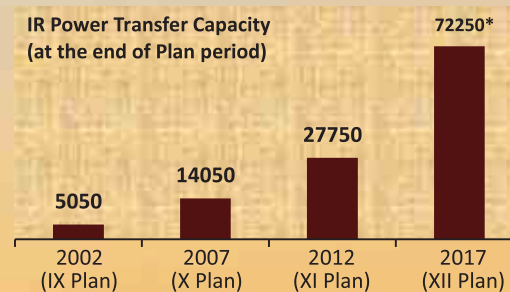
National Grid - Present and Envisaged

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



ONE Nation Grid Frequency

	Existing	Envisaged
ER-NR	19,530	21,030
ER-WR	12,790	12,790
ER-SR	3,630	7,830
SR-WR	7,920	7,920
WR-NR	12,920	16,920
NER-NR	1,500	3,000
NER-ER	2,860	2,860
Total	61,150	72,250



*Envisaged

Present & Targeted IR Capacity include Pvt. Sector lines also
 Figures do not include 600MW (in aggregate) pertaining to various 132kV

Megawatt Mover of Electricity

Created with the mandate of integrated function of Planning, Construction and Operation of nation wide inter-state, power transmission networks, leading to formation of National Grid. Establishing transmission interconnection with South Asian Association for Regional Cooperation (**SAARC**) countries.



Transmits more than half the electrical energy generated in the Country

- Through Transmission lines spanning 131,728 ckm* traversing through tough terrains (peak mountains, deep river, snowfilled landscapes) and 213 Nos* . of Sub-stations with Transformation Capacity 2,66,163 **Megavolt Ampere***
- Network availability > 99.9%

* As on 31st August 2016

Looking Back with Pride

Sowing the Seeds of a Power Revolution in India

Government of India felt the need of extensive reforms in the Indian power sector, in the face of growing demand for power and inconsistent growth of generation & transmission infrastructure in the late 1970s. Based on the recommendations of the Rajadhyaksha Committee, in 1981 the Gol took the policy decision to form a national power grid which would pave the way for the integrated operation of the central and regional transmission systems. This led to incorporation of a new PSU, POWERGRID on 23rd October, 1989 erstwhile christened as "National Power Transmission Corporation Limited". The company received Certificate of Commencement of Business on 8th November, 1990.

Transfer of Transmission Assets along with Associated Manpower from other Power Generating CPSUs



*From NTPC
Shri R.K. Narayan (Right) Chairman and Managing Director, the then NPTC and Shri P.S. Bami (Left) Chairman and Managing Director, NTPC on Aug.16, 1991, New Delhi*



*From NPCL
Shri T.V. Subramanian (Right), Director (Finance), the then NPTC and Shri R.S. Verma (Left), Director (Finance), NPCL Sitting at the centre, Shri R.K. Narayan, Chairman and Managing Director, the then NPTC on Aug. 28, 1991, New Delhi*



*From NEEPCO
Shri R.K. Narayan (Right) Chairman and Managing Director, the then NPTC, and Shri G. Das (Left), Chairman and Managing Director, NEEPCO on Nov. 14, 1991, Shillong*



*From NHPC
Shri R.K. Narayan (Left) Chairman and Managing Director, the then NPTC and Shri Hai (Right) Chairman and Managing Director, NHPC on Nov. 19, 1991, New Delhi*

Consolidating & Growing

The transmission assets of all 9 central sector electricity generation utilities such as National Thermal Power Corporation (NTPC), National Hydro Power Corporation (NHPC), Bhakra Beas Management Board (BBMB), North Eastern Electric Power Corporation Limited (NEEPCO), Satluj Jal Vidyut Nigam (SJVN), the then Naptha Jhakri Power Corporation Limited (NJPC), Neyveli Lignite Corporation (NLC), Tehri Hydro Development Corporation (THDC), Nuclear Power Corporation of India Limited (NPCL) and Damodar Valley Corporation (DVC) as well as Regional Load Dispatch Centers (RLDCs) managed by Central Electricity Authority (CEA) were transferred to POWERGRID during the following years.

*Dedication of 765kV Raichur-Solapur
Transmission Line on 16.8.2014*



श्री नरेन्द्र मोदी

माननीय प्रधानमंत्री, भारत
द्वारा

765 केवी सोलापुर-रायचूर ट्रांसमिशन लाइनों

एवं

4 लेन पुणे-सोलापुर राष्ट्रीय राजमार्ग-9

का राष्ट्र को समर्पण

और

4 लेन सोलापुर-कर्नाटक सीमा राष्ट्रीय राजमार्ग-9

का शिलान्यास



*Dedication of 765kV Ranchi - Dharamjaygarh -
Sipat Transmission Line on 21.8.2014*



Memorable Milestones in Indian Transmission Sector

Since no anniversary can be celebrated without the ubiquitous walk down the memory lane, the celebration of Silver Jubilee of POWERGRID must also entail to such an amble through the corridors of evolution. Pursuant to various legislations promulgated by the Parliament and infusion of emerging technologies over the past 25 years, POWERGRID's saga of success has been replete with glittering milestones, including the following: -

1989

- Formed as "National Power Transmission Corporation of India (NPTC)" to own, operate & maintain High Voltage System incorporated on 23rd October 1989.

1990

- Certificate of Commencement received on 8th November 1990
- ± 500 kV Rihand-Dadri HVDC bi-pole link, the first HVDC line in Asia commissioned

1991

- Acquired transmission assets of Nuclear Power Corporation of India Limited.

1992

- Country's first Static Var Compensator (SVC) commissioned at 400 kV Kanpur substation.
- Transmission assets of National Thermal Power Corporation (NTPC), National Hydro Power Corporation (NHPC) and North Eastern Electric Power Corporation Limited (NEEPCO) transferred.
- Name changed from "National Power Transmission Corporation Limited (NPTC)" to **Power Grid Corporation of India Limited (POWERGRID) on 23rd October 1992**

1993

- Acquired transmission assets of Tehri Hydro Development Corporation Limited.
- **SVC- (Static Var Compensator)**
- **HVDC (High Voltage Direct Current)**
- **kV (Kilo Volt)**



1994

- Grid Management responsibility entrusted.
- First Memorandum of Understanding (MoU) signed with Ministry of Power, GoI. Achieved the highest rating of "Excellent".
- Took over the management of Southern Regional Load Despatch Centre.



1995

- The management of the Eastern Regional Load Despatch Centre and the North Eastern Regional Load Despatch Centre, handed over to POWERGRID.



1996

- The management of the Northern Regional Load Despatch Centre and the Western Regional Load Despatch Centre delegated to POWERGRID.

1997

- Connected Western Region to Southern Region by commissioning 1000 MW Chandrapur HVDC Back to Back Station.



1998

- "Mini Ratna Category I" status
- Formulated "Environment and Social Policy & Procedures" to deal with environmental and social issues relating to its transmission projects.
- Notified as **Central Transmission Utility**.



1999

- Commissioned 500MW HVDC back to back project at Jeypore Gazuwaka, Andhra Pradesh, interconnecting Eastern & Southern Regions.

2000

- The first optic fiber link between Chandigarh and Delhi under Northern Region Unified Load Despatch & Communication project commissioned.

2001

- Diversification into Telecom Business.
- Inauguration of Regional office of SRTS-II, Bengaluru
- First 800kV transmission link between Moga in Punjab and Kishenpur in J & K commissioned.



2002

- Commissioned state-of-the-art Load Despatch Centre.
- Unified Load Despatch & Communications Schemes for the Northern and Southern Regions commissioned.
- Sasaram HVDC back-to-back transmission commissioned leading to the completion of first phase of construction of National Grid.
- Commissioned 2,000 MW Talcher-Kolar bipolar HVDC link.



2003

- First Joint Venture under PPP with Tata Power Company Limited formed for implementing transmission system associated with Tala Hydro-Electric Project.
- First international consultancy contract from Bhutan Telecommunications secured.



2004

- Thyristor Controlled Series Capacitor (TCSC) at Raipur-Rourkela double circuit. First TCSC project in India and second in Asia
- Inauguration of POWERGRID's Telecom Network & Regional Telecom Control Centre at Bengaluru.
- Signed MoU with Rural Electrification Corporation of India Ltd. (REC) for undertaking rural electrification works under Rajiv Gandhi Grameen Vidyutikaran Yojana (RGGVY).



2005

- Unified Load Despatch & Communication scheme for the Eastern Region commissioned.



2006

- Unified Load Despatch & Communication scheme for the Western Region commissioned.
- Foundation stone laid for Western Region System Strengthening Scheme - II at Solapur.
- Launch of Barh Transmission system.



2007

- 1200 km East –North, Tala Transmission System, the first JV in Transmission System of Government and Private Sector dedicated to the nation.
- Listing of POWERGRID's Equity Shares on the Stock Exchanges.
- Country's first 765 kV line from Sipat to Seoni with compact tower configuration commissioned.



2008

- 220 kV Double Circuit Transmission line from Pul-e-Khumri to Kabul Transmission System in Afghanistan completed.
- Conferred "**Navratna**" status.



2009

- Established National Load Despatch Centre (NLDC) at Katwaria Sarai, New Delhi
- **Power System Operation Corporation Limited (POSOCO)** a wholly owned subsidiary established.



2010

- Selected as a consortium member to implement the National Knowledge Network (NKN) project, a telecommunication infrastructure project.
- First Follow-on Public Offer (FPO) of equity shares launched.



2011

- Commissioned transmission system for first Ultra Mega Power Project (UMPP) at Mundra, Gujarat.



2012

- India's first 1200 kV National test station at Bina in Madhya Pradesh dedicated to the nation.
- Company adopts its vision for the first time & restates its mission.
- Smart Grid Control Centre at Puducherry was established.



2013

- Long cherished dream of One Nation-One Grid-One Frequency accomplished with the commissioning of 765 kV single circuit line Raichur-Solapur(South-West)
- Dedicated 765 kV single circuit Agra-Meerut Transmission Line to the Nation.
- Foundation stone laid for **±800 kV, 6000 MW multi-terminal HVDC system** of about 2,000 km from Biswanath Chariali in Assam and Alipurduar of West Bengal to Agra in Uttar Pradesh.
- Bheramara (Bangladesh)-Baharampur (India) 400 kV double circuit line along with HVDC back to back terminal at Bangladesh commissioned to strengthen SAARC grid.
- Second Follow-on Public Offer (FPO) of equity shares launched.
- International Credit Rating taken up for first time-S&P and Fitch Rating Rate POWERGRID BBB-(Outlook-Stable).
- First Foreign Currency Bond taken.
- Listed in Singapore Stock Exchange.



2014

- Dedicated inter regional link 765 kV Ranchi-Dharamjayagarh-Sipat transmission line & 765 kV Solapur-Raichur transmission line to the Nation.
- Foundation stone laid for Leh-Kargil-Srinagar Transmission System.

2015

- Inauguration of **National Transmission Asset Management Centre (NTAMC)** at Manesar, Gurgaon. All Sub-Stations of POWERGRID & spread all over India will be monitored & controlled on-line (24x7) from this centre.
- World's largest multi - terminal **±800kV HVDC** Project at Agra completed on 22.09.2015. Power can flow in either direction through this power transmission express highway from Biswanath Chariali, Assam (North Eastern region) to Agra in UP.

2016

- World's highest voltage 1200 Kilovolt (kV) realised with the commencement of power flow at POWERGRID's National Test Station (NTS) on 8th May 2016. The project built indigenously at Bina, Madhya Pradesh.
- Prime Minister Narendra Modi inaugurated a 100MW power supply in Tripura's Palatana to Bangladesh built by POWERGRID through remote control on 23.03.2016.
- On 20th February, Nepal's visiting Prime Minister K.P. Oli and his Indian counterpart Narendra Modi inaugurated the 400kV transmission line linking Nepal and India.

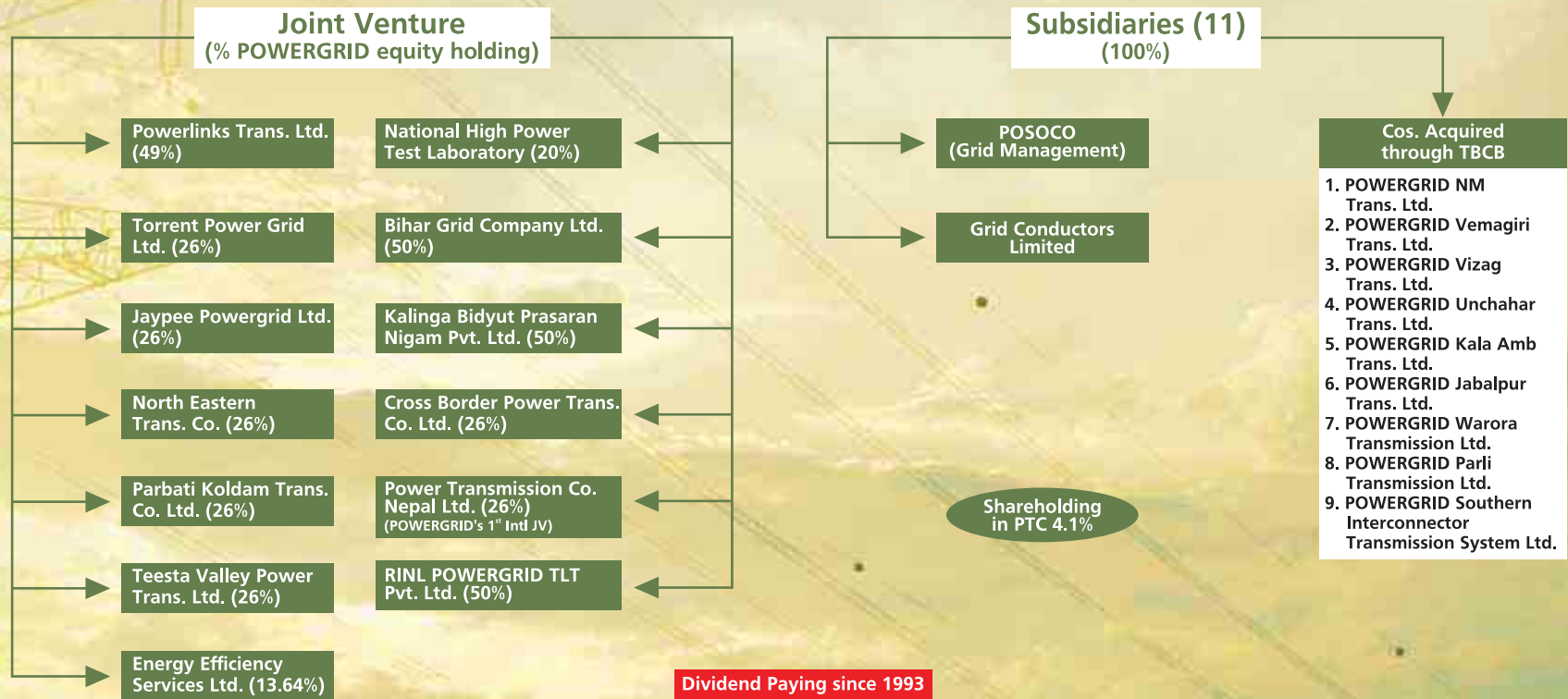
The Nepal portion of the transmission line was constructed at a cost of \$13.5 million and is already feeding 80MW power to Nepal. This will be augmented to 200 MW at 220kV in October 2016, and eventually to 600 MW at 400kV.

- Dedication of 400/220kV GIS sub-station on 10.10.2016. This will be a remote sub-station and will be operated from NTAMC, Manesar.





Shri Piyush Goyal, Hon'ble Union Minister of State (I/C) for Power, Coal, New & Renewable Energy and Mines released a Web/Mobile Application "Vidyut PRAVAH" which gives the highlights of the power availability in the country. The Web/Mobile app provides a wealth of information pertaining to the current demand met, shortage if any, surplus power available and the prices in the Power Exchange. The real time data with a 15 minute lag and comparison with previous day/year data is also available. The information disseminated through the application will empower the consumer, thereby leading all the stakeholders to be more responsive and efficient, bringing more economy to the country. The web application can be accessed through vidyutpravah.in. The mobile version will be freely available for download from the Playstore for both Android and iPhone.



* Note: Shareholding pattern as of 31st March 2016

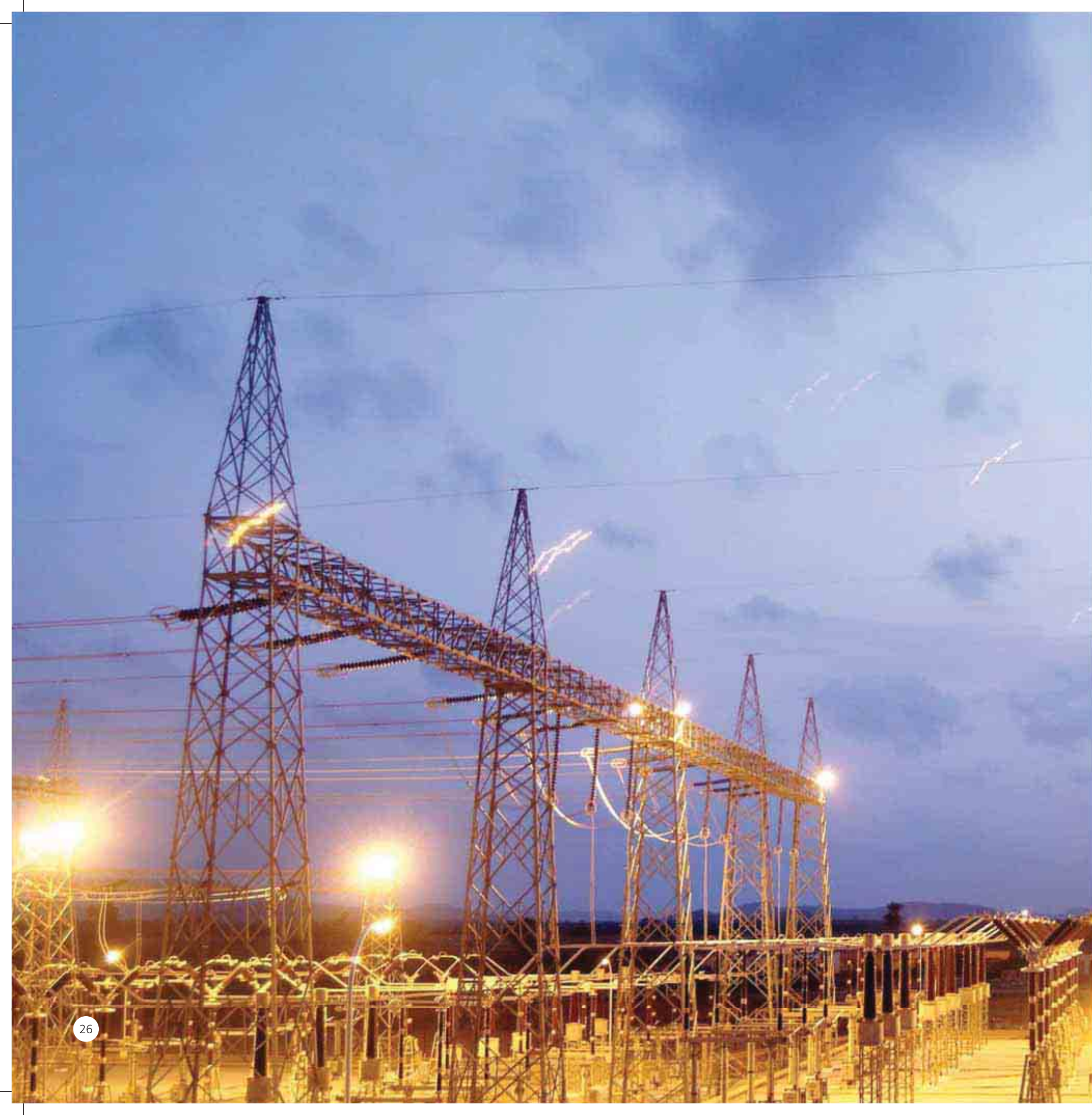




One Nation One Grid One Frequency accomplished

Grid management on regional basis started in the sixties. Initially, the state grids were inter-connected to form a Regional Grid, and India was demarcated into 5 regions, namely Northern, Eastern, Western, North Eastern and Southern.

The integration of regional grids, and thereby establishment of a National Grid, was conceptualized in the early nineties. The integration of regional grids which began with asynchronous HVDC back-to-back inter-regional links, facilitating limited exchange of regulated power, was subsequently upgraded to high capacity synchronous links between the regions leading to "One Nation-One Grid-One Frequency."







Technology Aiding Sustainable Development

POWERGRID has undertaken several technological advancements aimed at conserving RoW, minimizing impact on natural resources & human habitat and cost effectiveness in evacuation of power by upgrading & uprating of existing transmission lines, use of High Temperature Endurance Conductors, Series Compensation including Thyristor Control, Flexible AC Transmission System (FACTS), use of Multi Circuits, Compact & Tall Towers, Gas Insulated Sub-stations (GIS), High Surge Impedance Loading (HSIL) Lines, Large Scale Automation of Sub-stations, unmanned Sub-stations, etc.

Having expertise with 765 kV EHV AC & ± 500 kV HVDC transmission system, POWERGRID has implemented higher transmission voltages of ± 800 kV HVDC & 1200kV UHVAC to achieve efficient utilization of Right-of-Way and increased power transfer capability for transfer of bulk power over long distances.

POWERGRID Advanced Research and Technology Centre (PARTech) is being set up at Manesar, Gurgaon, with state-of-the-art laboratories for power system analysis, advanced equipment diagnostics, smart grid in transmission and distribution, energy, power system control and automation, material science and engineering design. National High Power Test Laboratory under Joint Venture (JV) route and Transmission Line Research Lab at Bina, is also being established to undertake testing of EHV & HV equipment.

Other technological initiatives such as Pollution & Lightning mapping, Emergency Restoration Systems for 400kV substation (Mobile sub-station), Process bus architecture for Sub-station Automation System, Transmission Line Arrestors, Mobile Test Van, 33kV Mobile Capacitor Bank & High Temperature Superconductor Technology for bulk power transmission, fault current limitation (Superconducting Fault Current Limiter) and energy storage (Superconducting Magnetic Energy Storage) applications are being taken up/ explored for their viability in Indian Power System to ensure more efficient, safe, secure & reliable operation of Grid.



World's Highest Voltage Transmission System

Indigenous Development of 1200kV Ultra High Voltage AC Technology

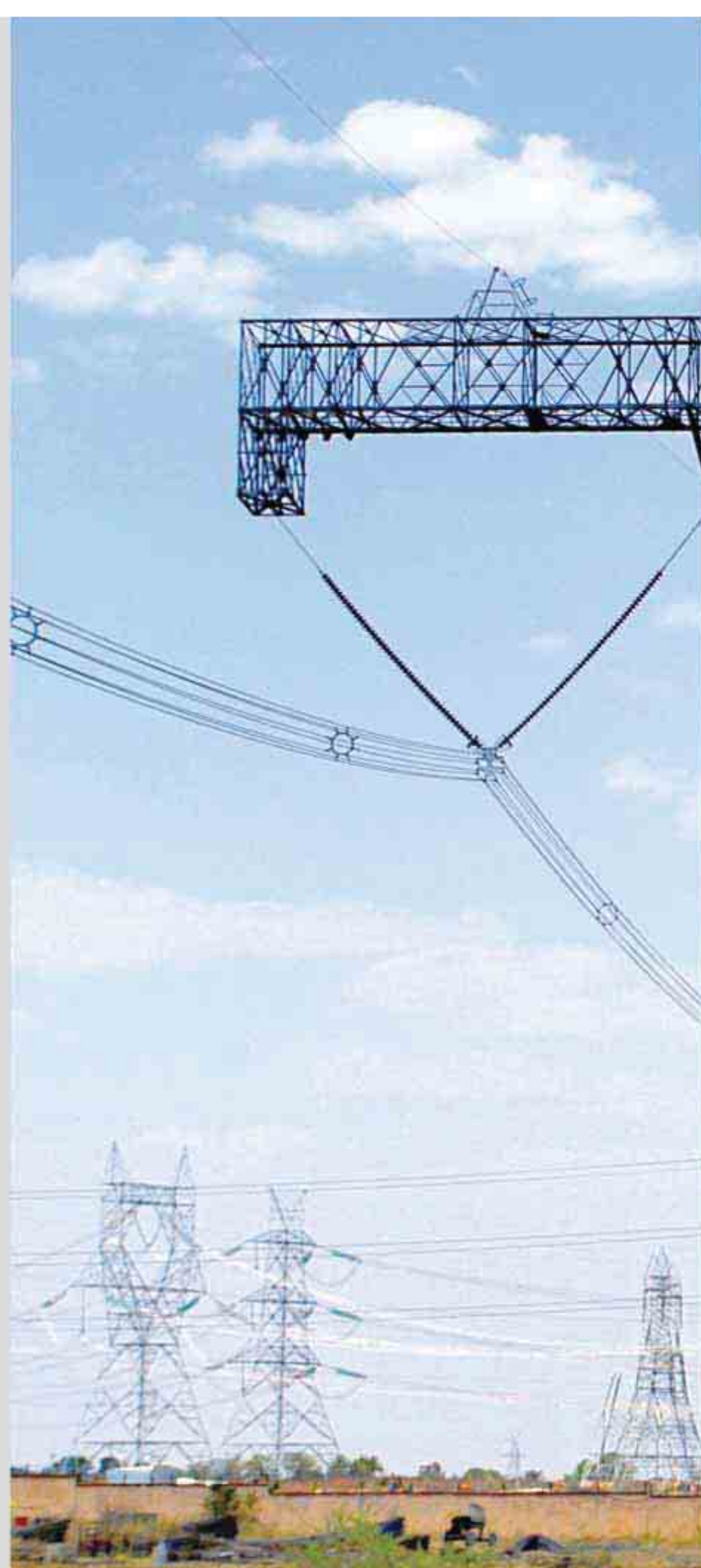
World's highest voltage 1200 kilovolt (kV) has seen the light of dawn in the history of power sector in India with the commencement of power flow at POWERGRID's National Test Station (NTS) developed indigenously at Bina, Madhya Pradesh. This landmark has been achieved with the help of Indian manufacturers under Public-Private-Partnership (PPP) model with active support of Central Power Research Institute (CPRI), Central Electricity Authority (CEA) and Ministry of Power. The test station consists of two 1200kV bays with 1200kV Single Circuit (S/C) & Double Circuit (D/C) Test lines of a km each. 1200kV Equipment developed by 35 Indian manufacturers were being field tested under energised condition earlier and power flow has now commenced.

Integrating Emerging Technology

POWERGRID has given special emphasis on deploying cutting edge technologies and system in the transmission network viz. Gas Insulated Switchgear (GIS) Sub-station, High Surge Impedance Loading (HSIL) lines, multi circuit towers, compact towers like pole type structures, narrow towers, Flexible AC Transmission System (FACTS) reactive devices, etc.

Some Pilot Projects Undertaken

- High Temperature Super Conductor (HTS) Cable System
- Process Bus Architecture in automation system
- 400 kV Emergency Restoration System
- Mobile Sub-station
- Grid scale battery energy storage system
- ***UHV (Ultra High Voltage)***
- ***AC (Alternate Current)***









Smart Grid-Empowering Nation with Smart Solutions

Towards sustainability and bringing efficiency & reliability in power system, POWERGRID has taken pioneering steps in development of state-of-the-art smart grid technologies in the entire value chain, i.e. generation, transmission and distribution including utilization through consumers' participation.

Smart Transmission – POWERGRID has already developed **Wide Area Measurement (WAMS)** pilot project in all the regions using Phasor Measurement Unit. Now, POWERGRID is implementing WAMS as Unified Real Time Dynamic State Measurement (URTDSM) system on pan India basis, integrating all State and Central transmission network for measurement of monitoring system parameters on real time basis. It enables improved visualization and enhanced situational awareness of the operators and planners to maintain system reliability, stability and improve efficiency. Analytics for improving system security through (WAMS) are under development.

Smart Grid in Distribution: POWERGRID, jointly with Electricity Deptt., Government of Puducherry, has successfully implemented first of its kind comprehensive Smart Grid pilot project at Puducherry in the distribution area, covering various attributes viz. Advanced Metering Infrastructure, Outage Management System, Demand Response, Power Quality Management, Net Metering, Electric Vehicle Integration, Street Light Automation, Smart Home Energy Management System, etc. It is also extending consultancy services to number of smart grid projects in the country.

POWERGRID has indigenously developed/is developing various Smart Grid related products like smart meter, micro grid controller, cool roof, active filter, smart home energy management system, etc..

Renewable Integration

To facilitate grid integration of large scale renewable generation, POWERGRID has evolved comprehensive scheme through formulation of "Green Energy Corridors," which is first of its kind in the country. It comprises Intra-state & Inter-state transmission network strengthening and other control infrastructure like forecasting for renewable generation, establishment of renewable energy management centres, dynamic compensation, energy storage, smart grid applications like demand side management & demand response, etc.

POWERGRID has also evolved an integrated plan viz. 'DESERT POWER INDIA – 2050' for harnessing the huge renewable energy potential utilizing waste land in the country's desert regions of Kutch (Gujarat), Thar (Rajasthan), Lahaul & Spiti (H.P) and Ladakh (J&K) in the time horizon of 2050.

POWERGRID has also prepared a report 'Green Energy Corridor - II' to integrate envisaged Ultra Mega Solar Power Parks in various states.

Green Energy Corridors schemes are under various stages of implementation.



GRID CONTROL CENTER | PED



FPI ON FEEDER

COMMUNICATION GATEWAY FOR FPI





Energy Efficiency Initiatives

Towards energy conservation & efficiency, POWERGRID has undertaken energy audit of various industries, utilities and other commercial establishments for process and system audits, and to provide solutions for efficiency improvement and reduction in energy consumption as well. To create awareness in this area, POWERGRID has prepared comprehensive report "Megawatt-Makes a Watt", i.e. energy efficiency opportunities in India, which is first of its kind in the country.

Way Forward

SMART GRID

- Building Smart Electrical Grid for efficiency & enabling consumer engagement
- Enabling technologies that help in deployment of smart grid in the country
- Facilitating penetration & use of energy storage option in grid
- Facilitating development of distributed generation, micro grid, including Rooftop Solar PV in the country
- Indigenous Technology development in the emerging fields of Smart Grid, Energy efficiency, etc.
- Establishment of Knowledge Centre for effective knowledge dissemination and capacity building of human resources

RENEWABLES

- Facilitating integration of large scale renewables like Wind & Solar
- Establishment of Renewable Energy Management Centres (REMS) equipped with advance forecasting tools and real time monitoring & dispatching solutions for RE generations
- Establishment of state-of-the-art Renewable Energy Research Lab and prediction of weather anomalies

ENERGY EFFICIENCY

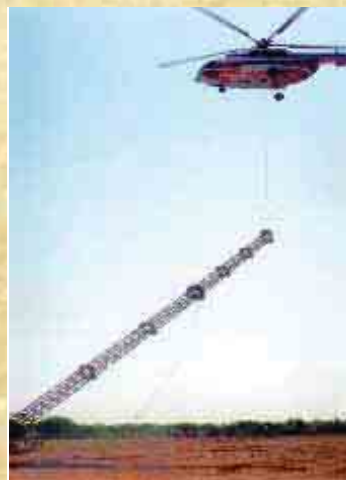
- Facilitating improvements in energy efficiency measures
- Providing Energy Efficiency services to various industries, utilities and other commercial establishments for process and system audit including solutions for improvement in energy efficiency
- Providing ESCo services towards implementation of energy efficiency measures

- *PV (Photo Voltaic)*
- *RE (Renewable Energy)*
- *ESCo (Energy Service Company)*

Uprooted Tower



Emergency Restoration System Under Progress



Restored Transmission Line with ERS Tower



Disaster Management

The loss of electricity infrastructure or a significant curtailment of other services may have an immediate and in some cases, long term effect on a community and region. As such, regardless of the cause of an emergency, the prompt restoration of generation, transmission and distribution system is vital to the well-being of the individual citizens and the economy of the country. The business of utilities is to serve its customers. Restoration activities need to commence immediately (weather and access permitting) upon indication of service disruption.

POWERGRID's priority, being a CTU, is to restore the power supply to the EHV transmission network affected by disastrous situation to enable restoration to the largest number of customers as quickly as possible.

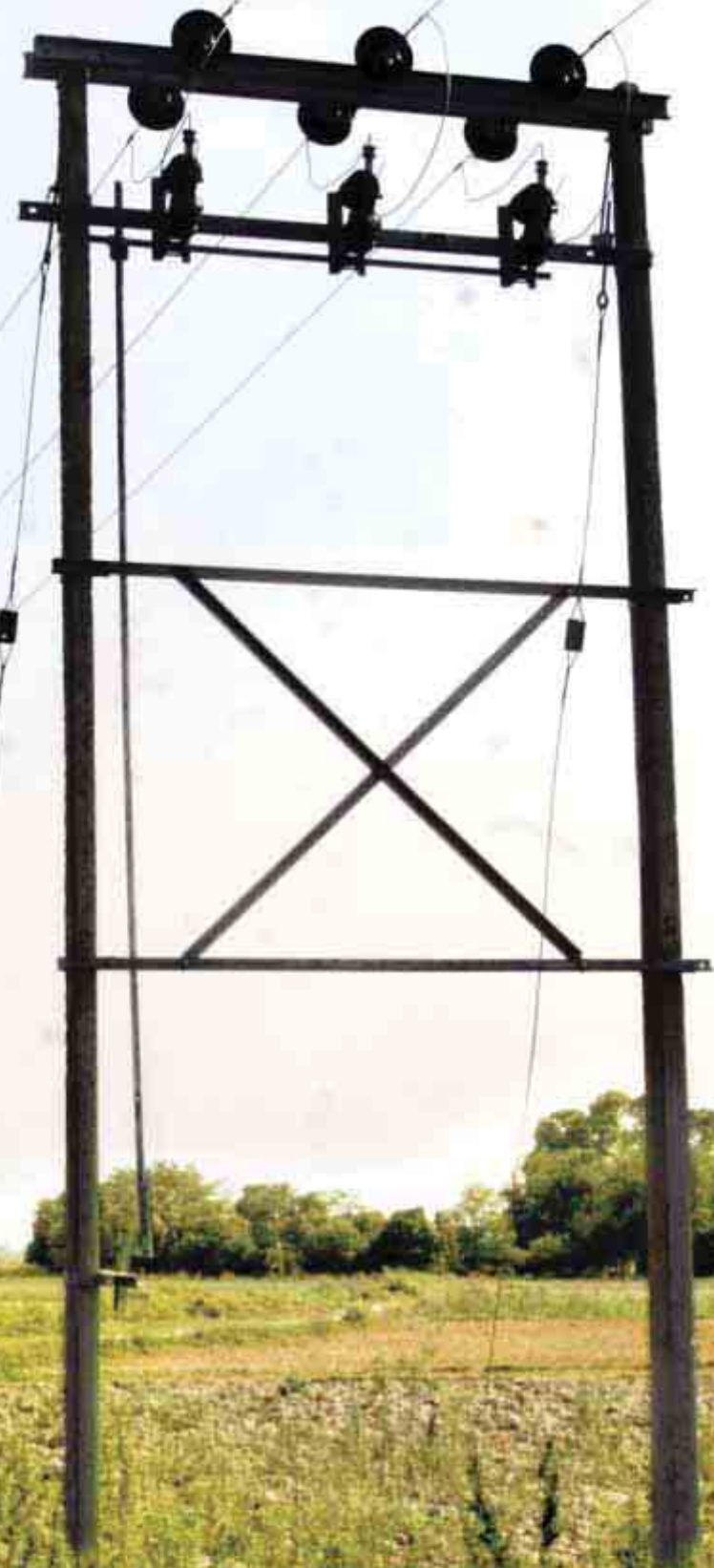
POWERGRID has kept Emergency Restoration System (ERS) at strategic locations for rapid restoration of transmission lines damaged during natural/ manmade disasters. These systems being lightweight & modular, can be deployed even in inaccessible locations and have helped POWERGRID to reduce the restoration time considerably. In recent past, ERS has been used for restoration of not only POWERGRID Transmission during natural disaster but also lines of Delhi Transco (DTL), APTRANSCO (A.P) and JKPDD (J&K), Gujarat Grid (Bhuj), Odisha Grid and other Grid where flood, tsunami, strong winds, disturbance from terror activities have taken place.

Each region has its own team of experts for restoration of damaged transmission lines and can be deployed at a very short notice. Depending upon the extent of damage, resources from other regions can also be pooled to expedite the restoration work. Necessary support facilities like communication equipment, portable generators, tools and plants etc. are also available to enable the ERS team to work effectively without local assistance, which is normally not available during natural calamities.

- **ERS (Emergency Restoration)**

Distribution Management

POWERGRID offers services for formulating the scheme for strengthening of distribution network, which is aimed to reduce distribution losses, effective energy accounting, better customer care services related to their technical & billing queries.



POWERGRID is also playing a key role in power sector reform initiated by the Government of India in consulting and advisory capacity. With its strong managerial and technical expertise, the Company provided assistance to Govt. of India under APDRP for improvement of distribution system in various States. POWERGRID has taken a lead role in implementation of rural electrification works (both erstwhile RGGVY and recent DDUGJY) and was assigned rural electrification works in 70 districts of nine States in the country. Most of the schemes have already been completed. Cumulatively, till March 31, 2016, infrastructure has been created for electrification of 74,500 villages and service connection to about 36.07 Lakh BPL households were provided.







National Transmission Asset Management Centre (NTAMC)

- NTAMC is a unique state-of-the-art project that is going to be a game-changer for the power sector in India.
 - National level control centre at Manesar & 9 Regional control centres shall remotely operate all sub-stations of POWERGRID & manage assets.
 - It provides access to the IEDs in sub-stations for fault analysis & speedy decision making.
 - **Facility for automatic fault analysis - first of its type in the world.**
 - All the sub-stations & assets shall have visibility by way of CCTV cameras with zoom, pan & tilt facility and video analytics.
 - It gives access control to POWERGRID's facilities.
 - It is the first project of its type being executed for such a large geographic spread.
 - It brings in transparency in operation & asset management of POWERGRID's assets.
 - It ensures round the clock availability of domain experts to tackle issues instantaneously.
 - Leveraged with ERP, it ensures condition monitoring of the critical assets & their historical data.
- **IED (Intelligent Electronic Device)**



Role of IT, Communication & Automation

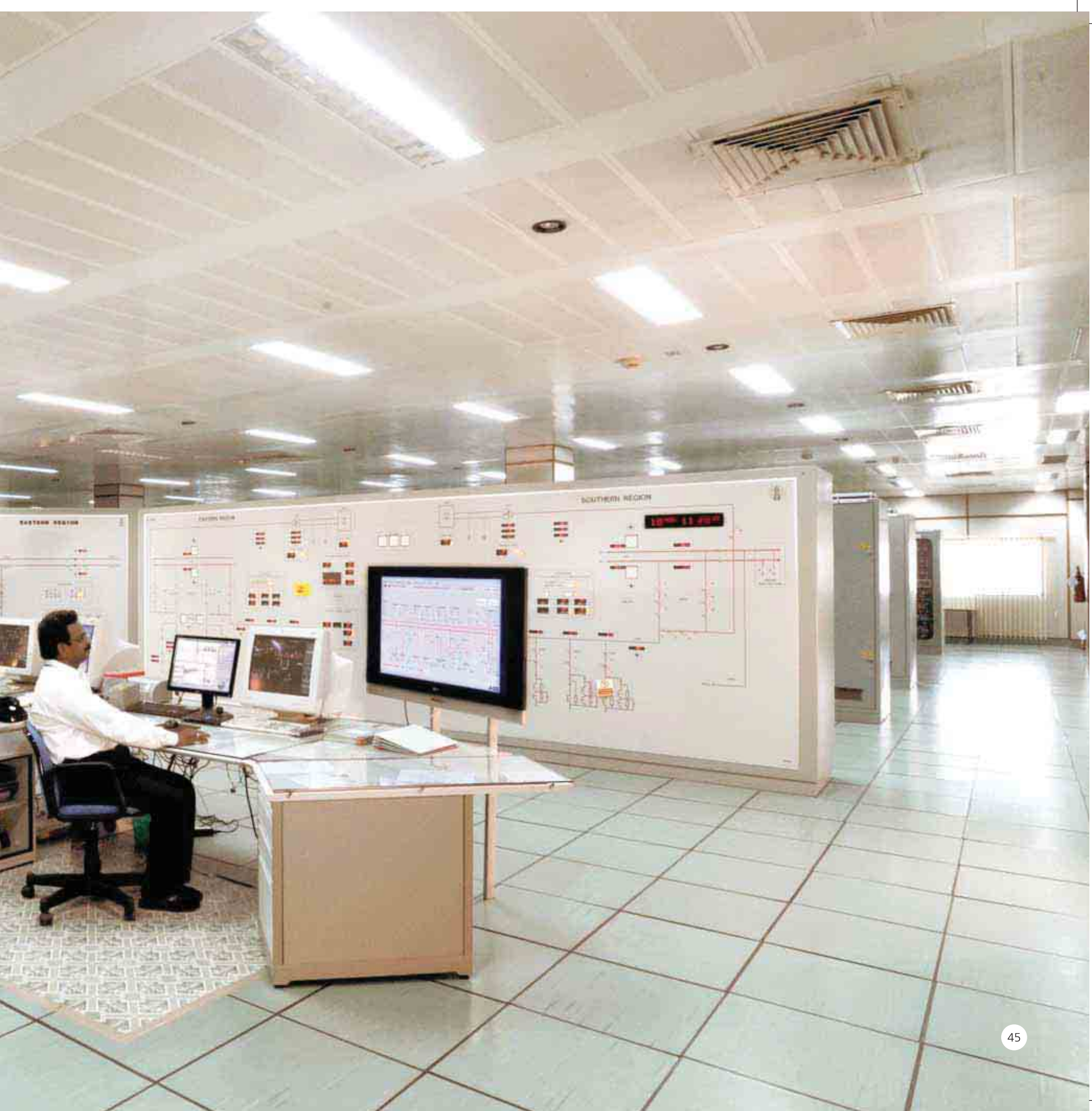
POWERGRID has adopted IT based systems and applications in all the areas of its operation.

Besides many of the existing automated sub-stations, all the new and upcoming sub-stations are automated. Moreover, implementation of one of its kind, National Transmission Asset Management Centre (NTAMC) project is transforming all the existing conventional sub-stations of POWERGRID to automated sub-stations. NTAMC at Manesar is already controlling more than 100 POWERGRID sub-stations as on date.

POWERGRID has successfully implemented Enterprise Wide Resource Planning (ERP) project having integrated most of the business processes. ERP implementation at POWERGRID includes various modules like HR, Procurement, Project Monitoring, Finance, Preventive Maintenance, Material Management, Commercial, Quality Assurance, etc.

POWERGRID heavily relies on its IT network, which extends to all its remote sites, regional headquarters and other offices for carrying out day to day work viz. meeting through video conferencing, enterprise email, web portals etc.





POWERTEL - Building Infoways, Bridging Distances

POWERGRID diversified into telecom venture, POWERTEL, in 2001. The aim was to utilize the spare telecommunication capacity available under Unified Load Dispatch Schemes by leveraging its country wide power transmission network.

POWERTEL's main business is Domestic Leased Bandwidth circuits through which it serves as preferred core backbone provider to leading telecom service providers of India.

POWERGRID has an all India Broadband Telecom Network of more than 37,000 Kms.

The Telecom Network offers: Point to point leased Bandwidth Service, MPLS Based VPN Service, Internet Services, Other IT Services: Wifi, Data Centre, ICT for Smart City Etc.

Important Projects

- POWERTEL is one of the implementing agencies for the National Knowledge Network (NKN) Project of Govt. of India.
- POWERTEL is also part of the prestigious National Optical Fibre Network (NOFN) project of Govt. of India under the entity Bharat Broadband Network Ltd. (BBNL) and provides connectivity to Gram Panchayats (GPs) in various States.
- POWERTEL is providing high speed communication links between NTAMC, RTAMCs & various Sub-stations and is also responsible for providing required connectivity to all offices for implementation of ERP Project primarily through its MPLS network.
- **RTAMCs (Regional Transmission Asset Management Centre)**
- **MPLS (Multi Protocol Switching Label)**



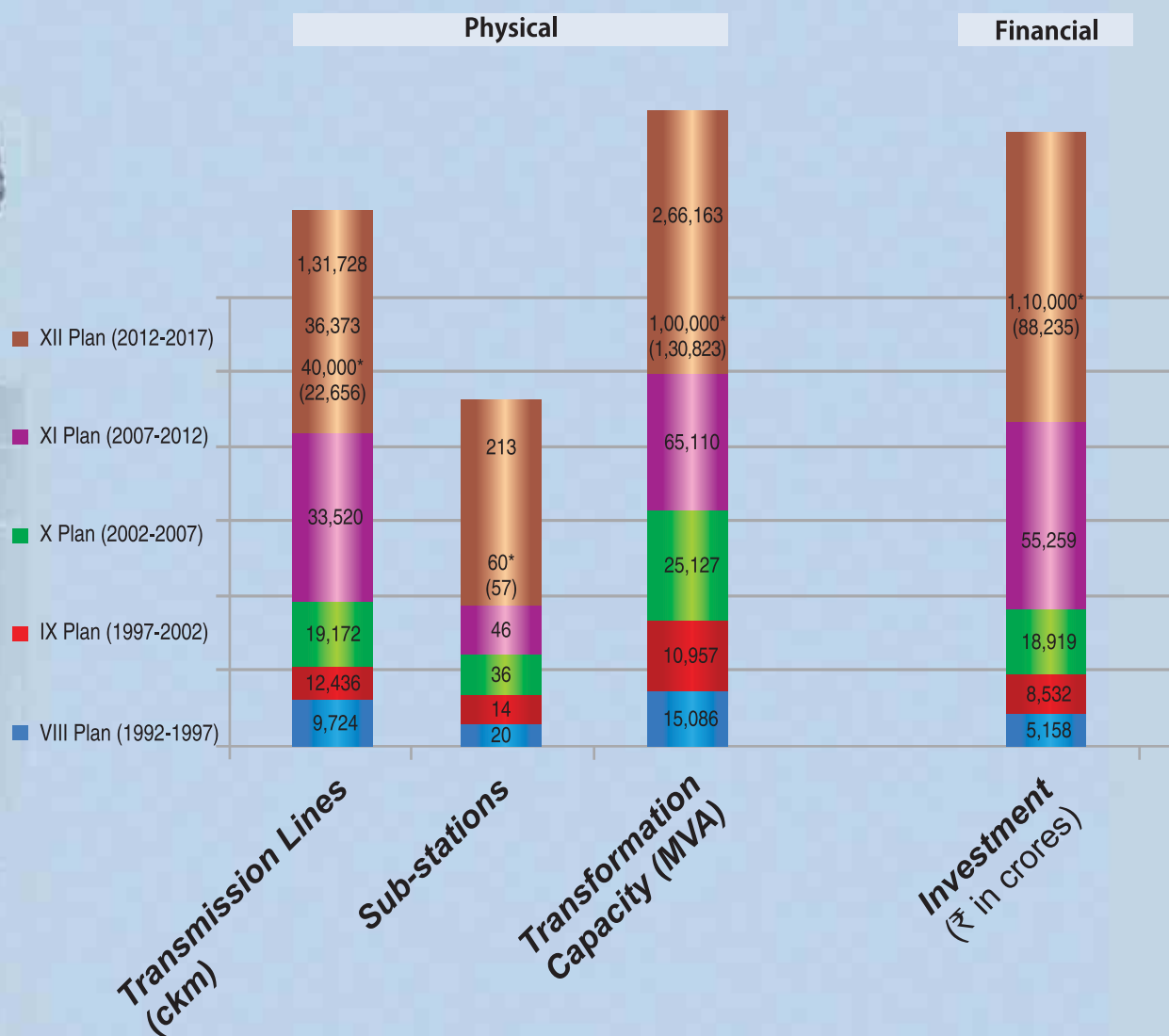




Physical & Financial Strength

Physical	1992-93	2016-17 upto 31.08.16
Transmission Line (ckm)	22,228	1,31,728
Sub-Stations	39	213
Transformation Capacity (MVA)	12,201	2,66,163

Financial	1992-93	2015-16
Turnover	₹634	₹21,281
Net Profit	₹236	₹6,027
Gross Fixed Assets	₹3,521	₹150,052





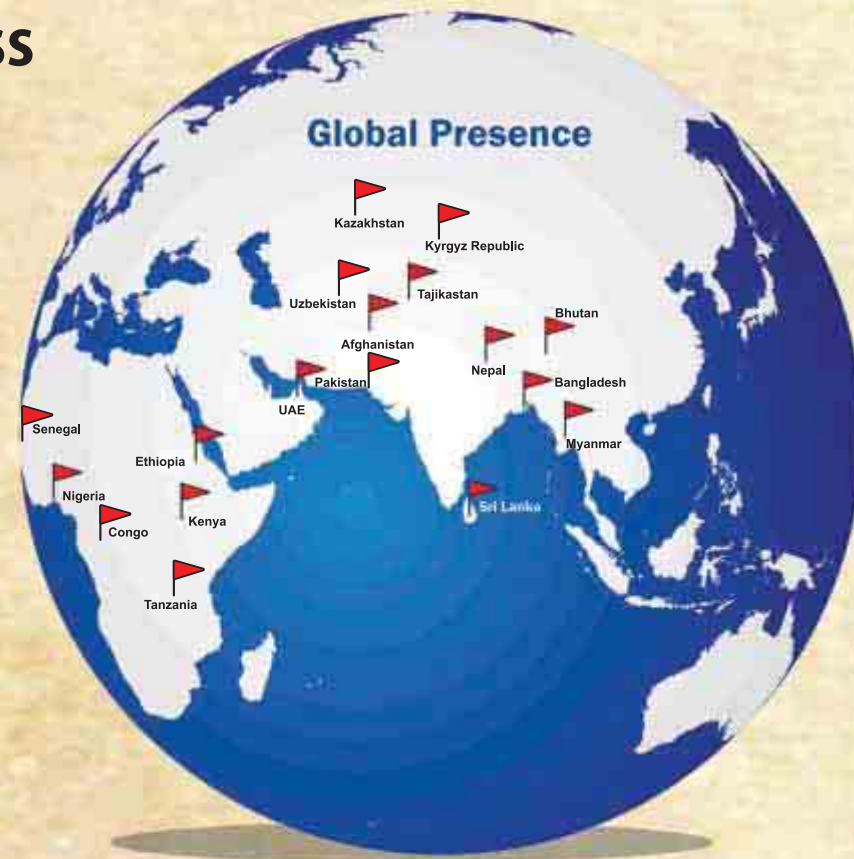


Project Implementation — Our Forte

POWERGRID has adopted an Integrated Project Management and Control System (IPMCS) for the planning, monitoring and execution of projects. Under its project management system, various project implementation activities are broken down with identified key milestones to enable the monitoring and control of critical paths of implementation. Project procurement is divided into well defined contracts to be awarded through competitive bidding. Following the award of contracts, integrated plans govern the implementation of the project, including control of the quality of materials and work during construction. The Company has a pool of trained and experienced personnel having expertise in all areas of project implementation, including system planning, design, engineering, contracts management, project management, supervision of construction, testing and commissioning activities.

International Business

- More than 70 International Consultancy Assignments have been undertaken for projects worth more than 1,650 Million USD under execution with estimated Consultancy Fee of 100 Million USD
- Strong foothold in SAARC Nations, Africa & CIS



Afghanistan Sub-station

Domestic Consultancy



With largest pool of world class experts in Transmission, Distribution, Load Despatch, Communication, Smart Grid and Energy Efficiency using state-of-the-art technology & best utility practices by handling more than 550 jobs for more than 180 clients spread over entire India covering Public & Private utilities.



Work done under APDRP in Bihar



Trust of the Investing Community

POWERGRID has generally been in an investment mode since it embarked on its journey 25 years ago. The investment cycle entered a new orbit since 2005 and with it grew the need for capital - both debt and equity.

Right from the beginning, international financial institutions like the World Bank, the Asian Development Bank (ADB), Overseas Economic Cooperation Fund (OECF) of Japan, KfW (Germany) etc. have expressed their confidence in POWERGRID's capabilities to operate, monitor and construct the national and regional powergrids. International Finance Corporation and the ADB have also extended loans to POWERGRID without the sovereign guarantee from GoI, which speaks volumes of POWERGRID's strengths and the confidence enjoyed by it from its international lenders.

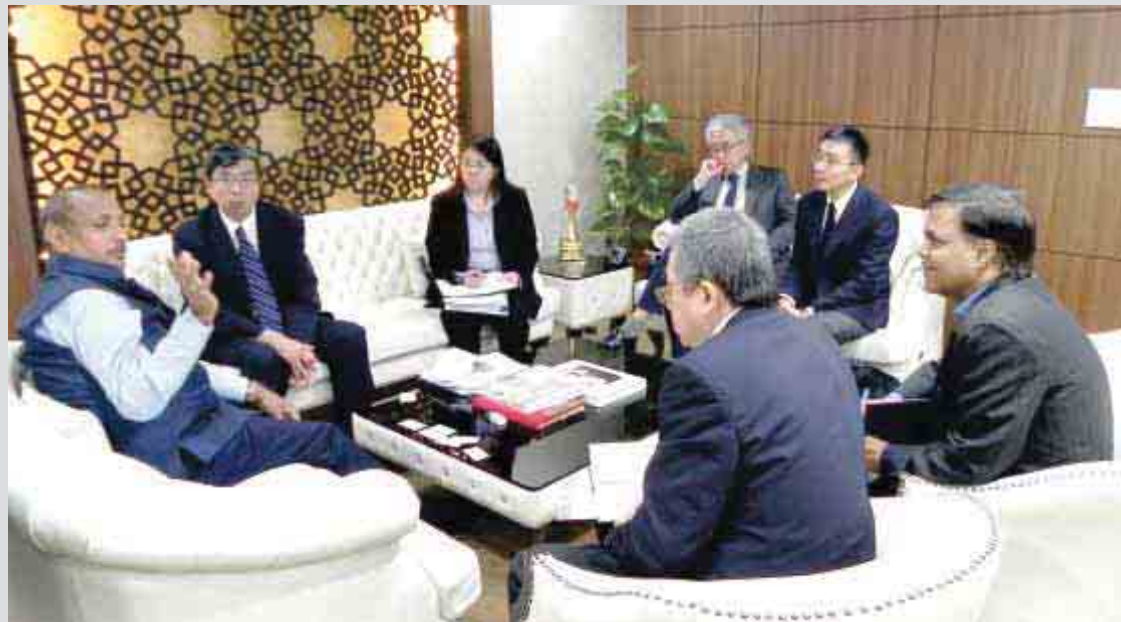
In 2013, POWERGRID obtained its International Credit Rating for the first time and was initially rated by Standard & Poor's and Fitch Ratings Limited at BBB(-) Outlook: negative, consistent with India's sovereign rating. The ratings have since been revised and presently stand at BBB(-) Outlook: Stable in line with sovereign rating.

POWERGRID explored the international bond market for the first time and successfully raised US\$ 500mn in January, 2013 through issue of 10-year Foreign Currency Notes listed on Singapore Stock Exchange at very competitive rates.

POWERGRID came out with its Initial Public Offer in the second half of 2007 and the faith and confidence of equity investors in the company was demonstrated in the overwhelming response from the investor community. POWERGRID's year-on-year performance has indeed justified the faith imbibed in it by the investors and the original POWERGRID investor has seen his/ her investment grow 2.8 times (Rs. 145.20 on 31.3.15 w.r.t IPO price of Rs. 52) in less than eight years, in addition to a regular stream of dividend income. When POWERGRID came out with Follow-on Public Offers in 2010 and 2013 for funding its growth plans, the confidence and trust of the investing community was more than evident and the issues were overwhelmingly oversubscribed. At present the scrip has shot up to Rs. 180 - Rs. 190 range with increased investors' trust.

Borrowings in the domestic market have always formed a major part of POWERGRID's fund raising for its capital expenditure, which largely come through issuance of long term bonds in the domestic market. POWERGRID's bonds have been given the highest credit rating since 2001, 'AAA/Stable' by CRISIL, and 'LAAA'/'AAA' by ICRA, and, since 2008, 'AAA' by CARE.

POWERGRID continues to create opportunities for itself to help its investors to create wealth.



POWER GRID CORPORATION OF INDIA LIMITED

(A Government of India Enterprise)

27TH ANNUAL GENERAL MEETING



Stakeholders' Interactions

To share the progress of POWERGRID's projects and various business related developments with the investing community, the Company regularly holds Press & Analysts' Meets in a transparent manner. These meetings provide an opportunity to stakeholders to have one-to-one interaction with Top Management of the Company at regular intervals.

The efforts and initiatives towards Corporate Governance and transparent information dissemination with various stakeholders has not gone unnoticed and the Company has won laurels both in India as well as in global arena, which has given much boost to Company's already high Corporate profile even globally.

Regular interaction with vendors, through Vendors' Meets, is another hallmark of transparency of managerial practices at POWERGRID. During such meetings, senior management of vendors is invited to interact with POWERGRID leadership and senior management; and share their views and experience to enhance efficiency and efficacy. This also provides an opportunity to vendors to express their views about the policies and practices of POWERGRID. POWERGRID encourages/ supports free and frank feedback from the vendor community and these Vendors' Meets act as open feedback system, devoid of any fear of retribution.

POWERGRID also recognizes its responsibility as a transmission leader and has been organizing sector related international conferences, exhibitions and seminars to provide platform to various new ideas and new technological developments. GRIDTECH, a bi-annual event started by POWERGRID in 2007 has seen five successful editions till now wherein the Student Pavilion has become point of attraction, as POWERGRID brings future engineers closer to the industry.





The culture of transparency and sustained free flow of information with the Employees' Association has built tremendous trust and employees see themselves as an integral part of the company.





*Ensuring Growth
with a Human Face*



TUBE WELL
DONATED UNDER CSR SCHEME BY
POWER CO. GALI DAM SITE
UNDO
162
99



Corporate Social Responsibility

POWERGRID, a responsible corporate entity, realizes its obligations towards the society and commits itself to the goal of Sustainable Corporate Social Responsibility. The three most important tools required for achieving sustainability are modern technologies, financial resources and management skills, and of course, strong will. POWERGRID'S corporate responsibility on social and environmental concern values these concepts and it has committed itself to ensure that its operations contribute to the sustainable development in the country.



POWERGRID, a responsible Corporate Citizen, came out with its policy on CSR in 2009, even before the issuance of guidelines on CSR by the DPE. POWERGRID since then has evolved and the current focus of its CSR initiatives are on the following:

- I. Inclusive social-economic growth and empowerment of communities;
- II. Capacity building;
- III. Environment protection;
- IV. Promotion of green and energy efficient technologies;
- V. Development of backward regions;
- VI. Upliftment of marginalized and under - privileged sections of the society with a focus on such stakeholders, who are affected by its business activities, i.e persons living in the neighbourhood of its sub-stations and transmission lines.

स्मृति महिला समिति के तत्वाधान पावरग्रिड इटारसी में
निशुल्क दन्त परीक्षण शिविर का आयोजन दि. 16-10-03
डॉ. प्रशांत जैन BDS (Gold Medalist) दन्त चिकित्सक, इटारसी.



पावर ग्रिड कारपोरेशन ऑफ इंडिया लिमिटेड
पश्चिम क्षेत्र नवचरण प्रणाली, मुख्यमन्त्री, नारायण
पल्स पोलियो अभियान



*Upholding People's Right to
Live in Health & Dignity*

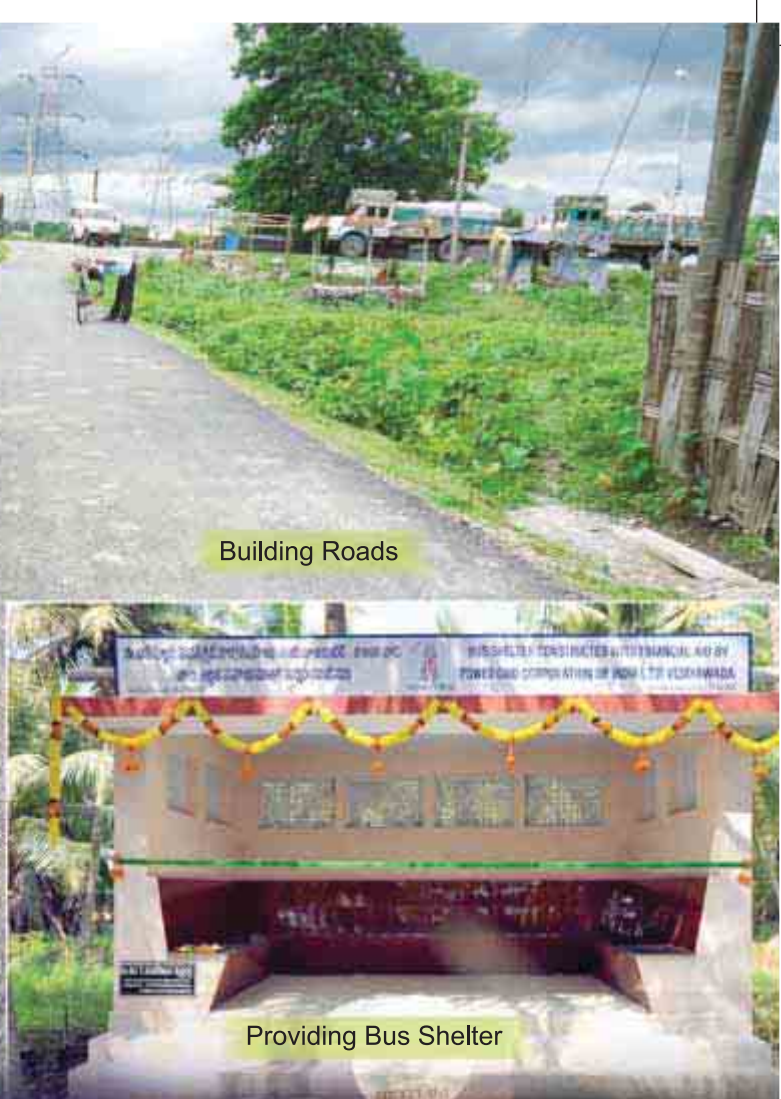
**HEALTH CHECK-UP
&
BLOOD DONATION CAMP**
LYONS CLUB OF CALCUTTA-MAANSAROVAR
POST-322B1
ON-16-01-2002
AT POWER GRID CORPORATION OF INDIA LTD.

BLOOD DONATION CAMP
Organised by
POWER GRID EMPLOYEES ASSOCIATION





Facilitating Education



Building Roads



Providing Bus Shelter



POWER GRID CORPORATION OF INDIA LTD
SRIPERUMBUDUR STATION
VAN MAHOTSAV DAY
5TH JUNE 2006







पवरग्रिड

POWER GRID CORPORATION OF INDIA

अंतर

सम्म

January 20

A grayscale photograph of three women in traditional Indian attire performing a dance on stage. They are wearing sarees with intricate jewelry, including necklaces, bangles, and headpieces. Their arms are raised in various poses, characteristic of Indian classical dance. The background is dark, and the lighting is soft, highlighting the performers.

*A Culture of Unity
that Celebrates Diversity*





*Melodious Moments Made
Memorable by Udit Narayan
at POWERGRID Auditorium*

Showcase of Colourful Inhouse Talent





Valuable Moments



Reliving with Grace & Elegance



Sweet Memories of Silver Jubilee Year Celebrations



Felicitating to Ex Employees





*Running for a Cause...
A Marathon of Winners*



Marathon Awardees



Aligning with the National Movement



Reaching out with Hope & Succour







Nurturing Competitiveness, Instilling Sports Pride



National Recognition and Nation's Appreciation







POWERGRID Bags 4 Awards at India Today PSUs Awards 2015



Excellence at HOD Corporate Affairs and Communication by Dainik Bhaskar



Felicitations in Annual Economic Times Power Focus Summit



Felicitations for Major Contributions Under Swachh Vidyalaya Abhiyan



Best CEO Award by CBIP



Bestowed the Dun & Bradstreet Infra Award



MoU Signed With Tata Memorial Centre for Setting up of Nuclear Medicine Theranostics Unit



India's Top PSUs 2016 Award by Dun & Bradstreet India



Corporate Communication Excellence Awards 2016 by SCOPE

An Unbroken Dividend-Paying Record



Many Amenities in Office Complex



CMD Interacting with Employees in Office Auditorium



Office Library



Gym Corner



Unveiling of Gandhi Statue in the Vicinity of Gurgaon Office Complex



Common Dining for all Categories of Employees

*Integrated Township Facilities,
Enlivening the Life of Employees*





Archery Practice



Badminton Court



Recreation Centre



School Complex



Table Tennis Corner

MOU



MoU With Tata Power, the First JV with Public & Private Participation in Transmission Sector



MoU with NTPC



MoU with Ministry of Power



MoU with Kuwait



MoU with World Bank



MoU with AIIMS



MoU with Ministry of Power

*Important Milestones Created in
Former Prime Ministers' Presence*





Shri Atal Bihari Vajpayee, the then Prime Minister launched POWERGRID's 2,355 km long, Delhi-Lucknow-Mumbai telecom link, on October 19, 2002. The telecom link would provide connectivity to cities/towns such as Muradnagar, Moradabad, Lucknow, Vindhyachal, Jabalpur, Dhule and Nasik.

Galaxy of Union Power Ministers



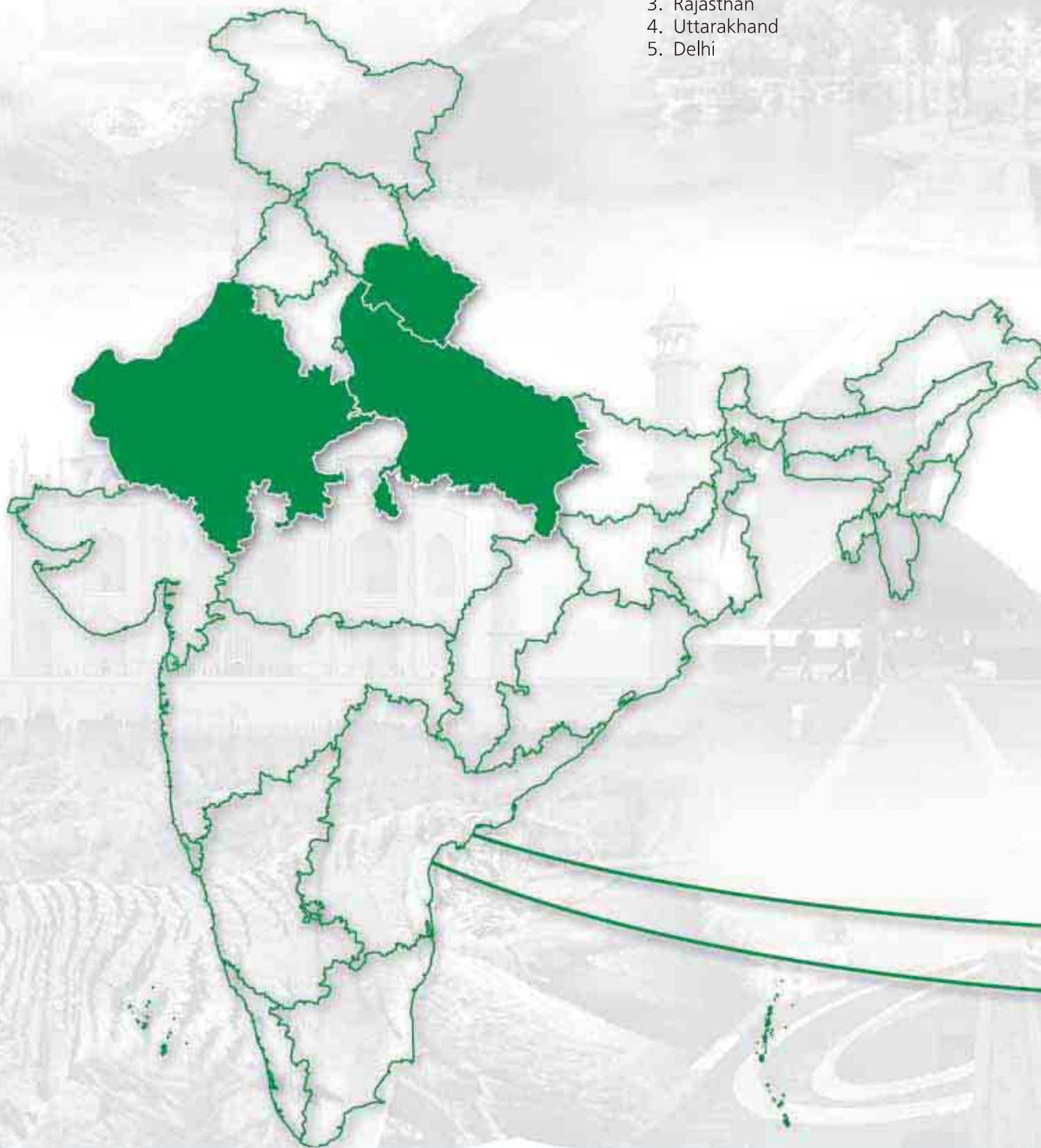






States Covered Under Northern Region - I

1. Uttar Pradesh
2. Haryana - Marginally Covered
3. Rajasthan
4. Uttarakhand
5. Delhi



TOTAL ASSETS UPTO 31.03.2016

TOTAL LINE LENGTH	:	10254.5
		CIRCUIT KILOMETRES
TOTAL SUB-STATION	:	25
HVDC STATION	:	2
765kV SUB-STATION	:	3
765kV GIS	:	0
400kV SUB-STATION	:	16
400kV GIS	:	4
220kV SUB-STATION	:	0
220kV GIS	:	0
132kV	:	0
TOTAL MEGAVOLT AMPERE	:	37206

Project Status for the year 2016-17 (Upto August 31st, 2016)

1. BAGPAT GIS (COMMISSIONED ON 08.05.16)
2. SAHARANPUR (COMMISSIONED ON 09.05.16)

Northern Region Transmission System - I

NRTS - I



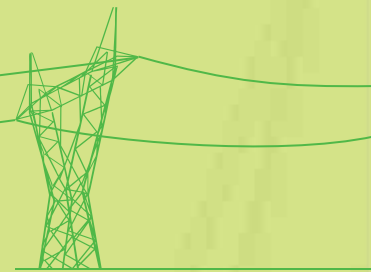
Bahadurgarh 400/220kV Sub-Station Jhajjar, Haryana

- Commissioned on 27.10.2006
- Bahadurgarh sub-station is constructed to fulfill the agricultural and industrial loads in Haryana.
- 400/220 kV Sonipat S/S operated from Bahadurgarh Sub-station.

Ballabgarh 400/220kV Sub-Station Haryana

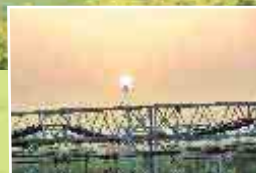
- Commissioned on 13.09.1988
- Vital node of disbursement of power to NCR & northern state.
- Sub-station is equipped with ERS, Hotline maintenance.
- Imports power from Singrauli, Rihand, Dadri & Auraiya and connected to Kanpur, Mainpuri, Agra, Gurgaon, Bamnauli, Nawada, Maharani Bagh & Ballabgarh.





Bassi 400/220kV Sub-Station Jaipur, Rajasthan

- Commissioned on 15.09.1988
- Connected with Pit Head Generating Station & meets half the load of Rajasthan State.



Bhinmal 400/220kV Sub-Station Jalore, Rajasthan

- Commissioned on 10.08.2009
- One D/C 400 kV Line (LILO of 400 kV Zerda-Kankroli Line) is coming and 4 nos. of 220 kV Lines supplying power to Sirohi, Bhinmal and Sanchore region.

NRTS - I



Bhiwadi HVDC 400/220kV Sub-Station Alwar, Rajasthan

- 400kV Commissioned on 04.02.2003 and HVDC on 19.08.2010
- Asia's first 400/220 kV unmanned & remote controlled Sub-station.
- STL (Specialised Testing Laboratory) for testing of all oil parameters for POWERGRID and other utilities.
- First Phasor Measurement Unit (PMU) test Lab of South Asia and 3rd in the world.

Bhiwani 765/400/220kV Sub-Station Haryana

- Commissioned on 01.06.2012
- First 765 kV Sub-station in Haryana.
- System would enable Haryana State to access power from various Hydro/ Thermal projects and shall help in meeting its long term power requirement.



Dadri HVDC Sub-Station Gautam Buddh Nagar (U.P.)

- Commissioned on POLE-1: 21/09/1991, POLE-2: 03/12/1990
- First bipolar link in Asia.
- Located in the complex/premise of NTPC Dadri Power Plant. The Power Plant comprises Thermal, Gas and Solar based generation.



Gurgaon 400/220kV GIS Sub-Station Haryana

- Commissioned on 17.06.2010
- State-of-the-art Gas Insulated Switchgear Sub-station.
- Sub-station also houses first Waste Paper Plant of POWERGRID commissioned on 22.10.2012
- Very compact and Indoor Sub-station which is fully automatic.

NRTS - I



Hisar 400/220kV Sub-Station Haryana

- Commissioned on 18.05.1994
- One of the oldest Sub-stations in Haryana.
- Power generated from Himachal, J&K is transmitted to the states of Haryana, Rajasthan, Delhi & NCR.

Jaipur (South) 400/220kV Sub-Station Rajasthan

- Commissioned on 26.04.2012
- The sub-station is part of Northern Regional Transmission Strengthening Scheme and delivers power to the State of Rajasthan.



Jhatikara 765/400kV Sub-Station New Delhi

- Commissioned on 30.09.2012
- First 765 kV Sub-station of Delhi/NCR.
- First 765 kV Sub-station of India having highest 6000 MVA Transformation capacity.

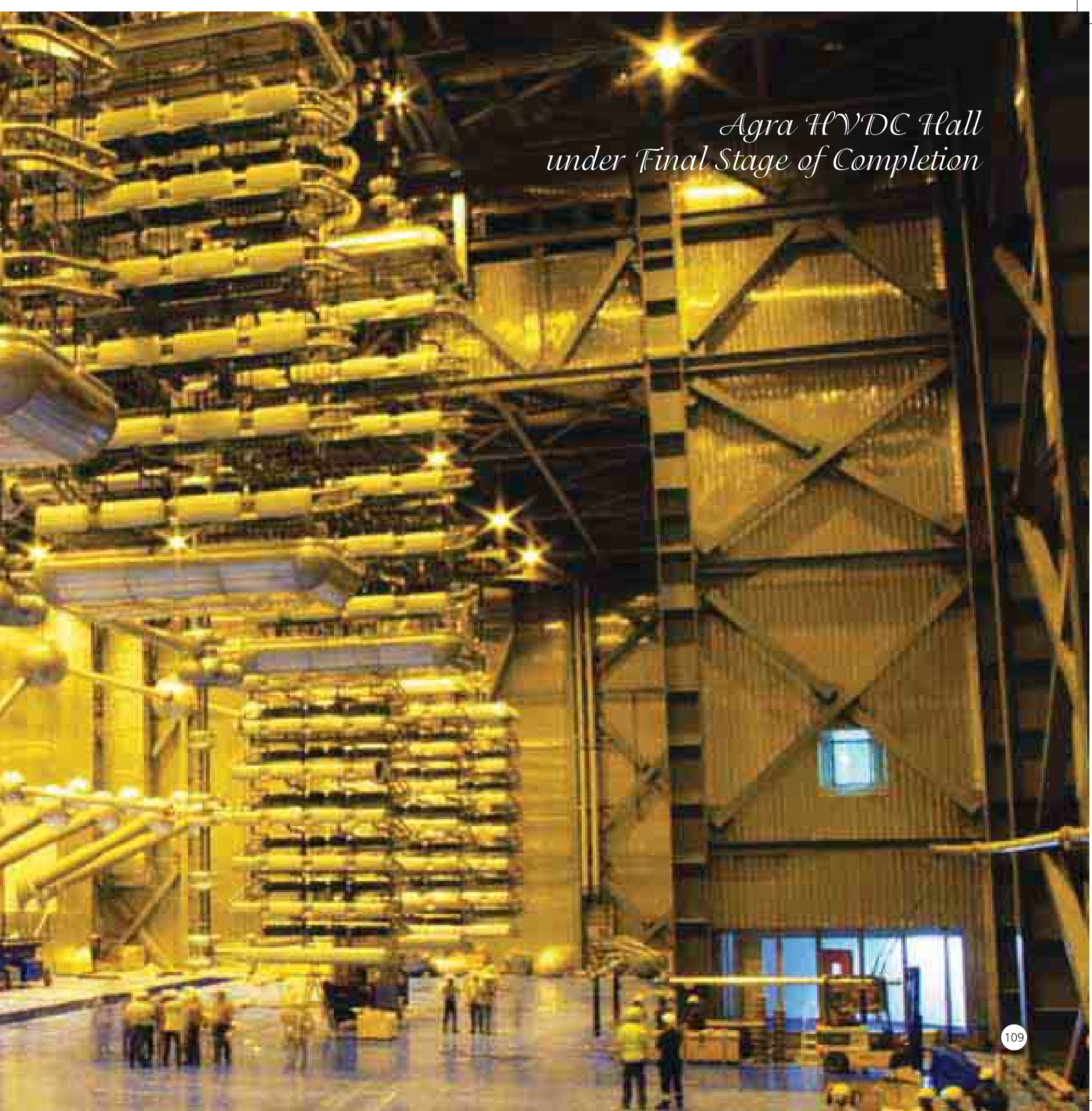


Jind 400/220kV Sub-Station Haryana

- Commissioned on 01.04.2013
- Sub-station will provide additional touch points for absorption of power from the National Grid.
- The objective of the project is to strengthen the Northern Regional Transmission System. The Sub-station is connected to 765 kV Bhiwani Sub-station through 400 kV D/C transmission lines.



*Agra HVDC Hall
under Final Stage of Completion*



NRTS - I



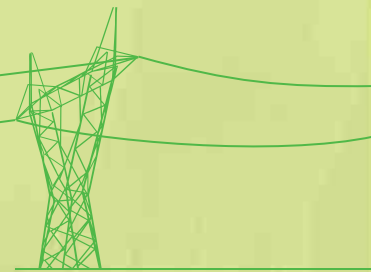
Kankroli 400/220kV Sub-Station Rajasthan

- Commissioned on 08.03.2008
- Transformation capacity is 3x315 MVA.
- It is a very important and critical Sub-station, connected with RAPP 5&6 unit and there is an inter-regional link NR-WR Kankroli-Zarda. It is an IEC61850 Sub-station.

Kota 400/220kV Sub-Station Nanta, Rajasthan

- Commissioned on 31.01.2009
- It is connected to three generating Stations.
- Kota is an important sub-station in South Rajasthan.





Kotputli 400/220kV Sub-Station Jaipur, Rajasthan

- Commissioned on 31.03.2014
- Constructed under Northern Region Strengthening Scheme-XV.
- The Sub-station was formed to build up stronger network in Northern Region & create power network in Rajasthan state to regulate energy demand.



Koteswar 400kV GIS Sub-Station Tehri Garhwal, Uttarakhand

- Commissioned on 08.02.2011
- Sub-station having 7 bays & pooling 1400 MW power generated by Tehri KHEP & Koteswar KHEP
- Very remote & one of the hardship Sub-stations of NR-1



NRTS - I



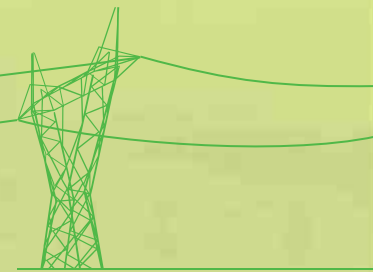
Maharani Bagh 400/220kV GIS Sub-Station New Delhi

- Commissioned on 31.08.2007.
- Maintenance Free, most advanced GIS Technology.
- Pole type tower for transmission line to reduce Right of Way.
- Part of the TALA project which has been designed to evacuate Power from TALA Hydro electric Project (1020 MW in BHUTAN) to National Capital Region (NCR).

Mandola 400/220kV Sub-Station Ghaziabad, Uttar Pradesh

- Commissioned on 22.11.1990.
- Mandola has been commissioned under Rihand Stage-I scheme with 400 kV D/C Dadri Line.
- Vital link of Northern Region and caters to approx. 40-45% requirement of Delhi.





Manesar 400/220kV GIS Sub-Station Gurgaon, Haryana

- Commissioned on 31.05.2012.
- It is a GIS Sub-station.
- NTAMC, ERP & PAL buildings are under construction and these establishments come under national importance of POWERGRID.



Meerut 765kV Sub-Station Uttar Pradesh

- Commissioned on 21.02.2003.
- Conceptualized for evacuation of 2000 MW power generated from Tehri and 400 MW from Koteshwar and for onward feeding of power evacuated from THDC to Northern Grid.

NRTS - I



Neemrana 400kV Sub-Station Alwar, Rajasthan

- Commissioned on 31.12.2011.
- Constructed under Northern Region Strengthening Scheme XV.
- Extension under Northern Region Strengthening Scheme XV.

Roorkee 400/220kV Sub-Station Haridwar, Uttarakhand

- Commissioned in March, 2009.
- Sub-station genesis was to strengthen the power Transmission Link between the two states Uttar Pradesh and Uttarakhand.
- Formed to build up stronger network in Northern Region and create power network easily accessible by the two states to regulate energy demand.





Sikar 400/220kV Sub-Station Rajasthan

- Commissioned on 31.01.2012.
- Sub-station is utilized for power evacuation of ultra mega power project of Sasan-Mundra generation.
- Sub-station has critical importance in view of import of Bulk Power through 400kV D/C Sikar-Agra Line, which is further associated with (+/-) 800kV HVDC Agra-NER project.

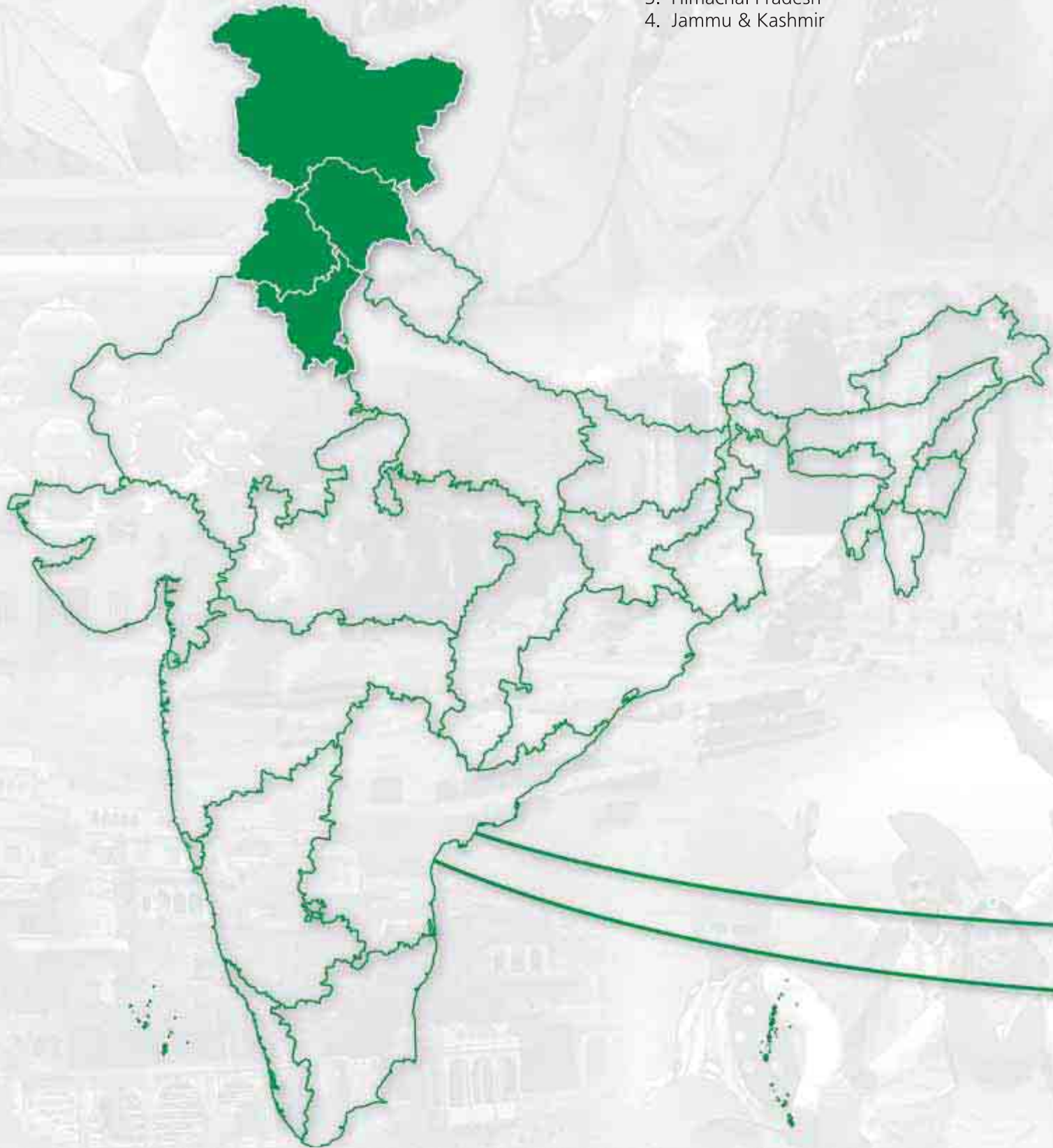
Sonipat 400/220kV Sub-Station Haryana

- Commissioned on 01.10.2010.
- Connected to Abdullapur and Bahadurgarh Sub-stations at 400kV voltage level.
- SAS based Sonipat Sub-station has been fully commissioned and presently operated from Manesar.



States Covered Under Northern Region - II

1. Haryana - Maximum Portion Covered
2. Punjab
3. Himachal Pradesh
4. Jammu & Kashmir



NIRTS-II

TOTAL ASSETS UPTO 31.03.2016		
TOTAL LINE LENGTH	:	9691.6 CIRCUIT KILOMETRES
TOTAL SUB-STATION	:	19
HVDC STATION	:	0
765kV SUB-STATION	:	1
765kV GIS	:	0
400kV SUB-STATION	:	14
400kV GIS	:	4
220kV SUB-STATION	:	0
220kV GIS	:	0
132kV	:	0
TOTAL MEGAVOLT AMPERE	:	19300

Northern Region Transmission System -II

NRTS - II



Abdullapur 400kV Sub-Station Yamuna Nagar, Haryana

- Commissioned on 27.08.1999.
- Catering to states of HP, Haryana , Delhi and Railway workshop Jagadhri etc.
- Receives power from 1500 MW Nathpa Jhakri HEP, 600 MW DCRTTP Yamunanagar (HR), 1000 MW Karcham- Wangtoo HEP and 330 MW Baspa in Himachal Pradesh.

Amritsar 400kV Sub-Station Tarn Taran, Punjab

- Commissioned on 30.04.2006.
- To improve the power supply reliability & availability to Amritsar City.
- In the near future it may be connected with Pakistan's network under "SAARC GRID".



Chamba 400/220kV GIS Pooling Station Himachal Pradesh

- Commissioned on 20.10.2011.
- Power from Chamera-III Station of NHPC is pooled to Pooling station at Chamba at 220 kV level by a double circuit line.
- Pooling Station, power is evacuated by 400 kV double-circuit transmission line from Chamba to Jalandhar.



Fatehabad 400/220kV Sub-Station Haryana

- Commissioned on 01.02.2008.
- Constructed under NRSS - III.
- IEC61850 based SAS, operated from NTAMC.

NRTS - II



Hamirpur 400/220kV GIS Sub-Station Himachal Pradesh

- Commissioned on 01.01.2014.
- Constructed under Northern Region-XX Strengthening Scheme.
- Will be a major National Grid connection to State of Himachal Pradesh.

Jalandhar 400/220kV Sub-Station Punjab

- Commissioned on 29.09.2000.
- One of the most important Sub-stations in Northern Region -II
- Amritsar & Chamba are remotely operated from Jalandhar.



Kaithal 400/220 kV Sub-Station Haryana

- Commissioned on 30.10.2005.
- Constructed as LILO of one circuit of 400 kV Nalagarh - Hissar line at Kaithal under Rihand Stage-II Tr. System.
- Initially connected to Hissar and Nalagarh Sub-station for evacuation of power from Hydro projects of Northern Region.



Kishenpur 800/400/220 kV Sub-Station

Jammu & Kashmir

- Commissioned on 11.11.1987.
- Evacuates power generated in various Hydroelectric Projects constructed in J&K and Himachal Pradesh viz Chamera, Dulhasti, Baglihar, Salal etc.
- Sub-station is situated in a moderate hilly area in Jammu.

NRTS - II



400/220kV GIS Sub-Station

Kurukshetra

- Commissioned on 25.11.2015.
- 400/220kV GIS Sub-station plays a vital role to evacuate 3000 MW of ± 800 KV, HVDC BIPOLE-I.

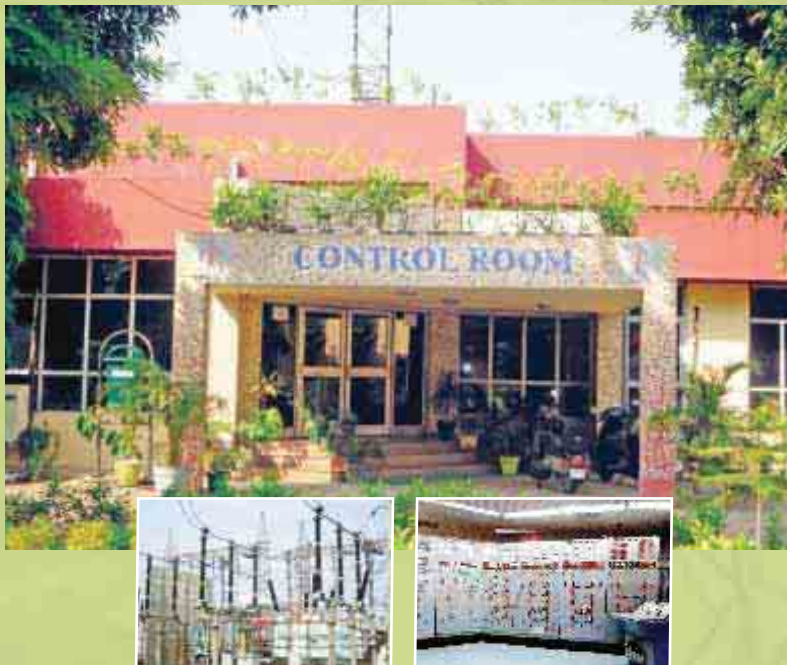
3000 HVDC Terminal & Kurukshetra 400/220kV GIS Sub-Station Karnal, Haryana

- Under Construction.
- It is the largest ± 800 kV HVDC Sub-Station being constructed in India (along with Biswanath Chariali/Alipurduar – Agra Line).
- Rectifier Station is situated at Champa, Chhattisgarh from where 3000 MW of Power will be transferred directly to Kurukshetra (inverter end).



Ludhiana 400/220kV Sub-Station Punjab

- Commissioned on 28.05.2008.
- Connected with Koldam Hydro Electric Project through upcoming 400kV Koldam Ckt-I & II, Jalandhar, Patiala & Malerkotla Sub-station.
- First SAS based Sub-station commissioned in NRTS-II with first in the region to be declared Unmanned and is operated from Manesar.



Malerkotla 400kV Sub-Station Sangrur, Punjab

- Commissioned on 01.07.1992.
- Was constructed by NTPC and handed over to POWERGRID during 1990
- Directly connected to Dadri NTPC gas power plant and has 1100 MVA capacity.

Transmission Line on Toughest Terrain





NRTS - II



Moga 765/400/220kV Sub-Station Punjab

- Commissioned on 22.04.1994.
- 400 kV Moga Sub-station was conceived in 1984 for evacuation of power from Chamera Hydro Electric Project.
- Presently connected to the adjoining states of Punjab.

Nalagarh 400/220 kV Sub-Station Solun, Himachal Pradesh

- Commissioned on 09.10.1999.
- First 400/220kV Sub-station of POWERGRID in the State of Himachal Pradesh.
- One of the unique Sub-stations of POWERGRID, situated at the foothills of Shivalik mountain range.



New Wanpoh 400/220kV Sub-Station

Jammu & Kashmir

- Commissioned on 01.10.2013.
- Station connects valley power system with the rest of the National Grid through LILCO of Kishenpur-Wagoora D/C Line and hence is the first entry of National Grid-Transmission System into the valley.
- The evacuation of power from this system through 220kV downstream is going to hugely benefit South Kashmir.



Panchkula 400/220kV Sub-Station

Haryana

- Commissioned on: 28.02.2012.
- For strengthening the transmission system in Northern Region under Sasan & Mundra Ultra Mega Power Projects (UMPP's).
- Sub-station is CAT-III type SAS based Sub-station & remote controlled by 400/220 kV Abdullapur Sub-station.

NRTS - II



Parbati PS/Banala 400kV GIS Sub-Station Mandi, Himachal Pradesh

- Commissioned in August 2013
- The evacuation of this generated power outside Kullu valley to load centres is entrusted with POWERGRID.
- Banala Sub-station is the 2nd GIS of POWERGRID in Himachal Pradesh.

Patiala 400/220kV Sub-Station Punjab

- Commissioned in December 2005.
- Main source of power evacuation for this Sub-station is Nathpa Jhakri Hydroelectric generating station of Satluj Jal Vidyut Nigam Ltd., Himachal Pradesh.
- Sub-station is being controlled remotely from Moga.



Samba 400/220kV Sub-Station Jammu & Kashmir

- Commissioned on 31.03.2013.
- Constructed under the System Strengthening Scheme.
- Main beneficiaries are the states of J&K, Himachal Pradesh & Punjab.

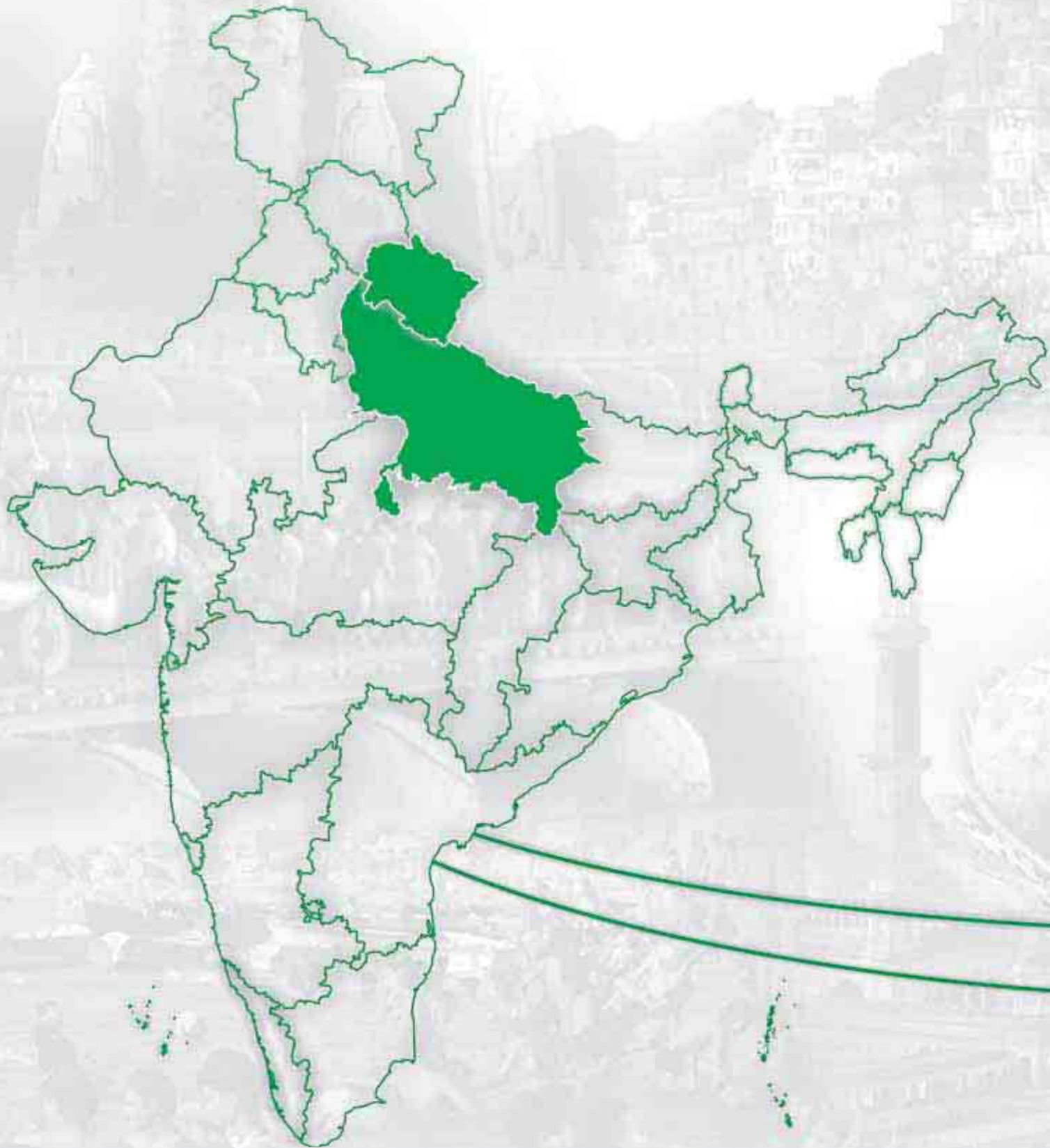


Wagoora 400/220kV Sub-Station Budgam, Jammu & Kashmir

- Commissioned on 19.11.1996.
- Evacuates power from NHPC Uri-I & II power houses and powers a large portion of Kashmir valley.
- Connected to the Northern Grid through 400kV D/C Kishenpur lines passing through the difficult terrain of snow clad mighty Pir Panjal range.

States Covered Under Northern Region - III

1. Uttar Pradesh
2. Uttarakhand



NRTS-III

TOTAL ASSETS UPTO 31.03.2016	
TOTAL LINE LENGTH	: 16714.3 CIRCUIT KILOMETRES
TOTAL SUB-STATION	: 22
HVDC STATION	: 4
765kV SUB-STATION	: 5
765kV GIS	: 2
400kV SUB-STATION	: 8
400kV GIS	: 0
220kV SUB-STATION	: 3
220kV GIS	: 0
132kV	: 0
TOTAL MEGAVOLT AMPERE	: 30394.6

Project Status for the year 2016-17 (Upto August 31st, 2016)

1. KANPUR 765 GIS COMMISSIONED ON 14.09.2016

Northern Region Transmission System -III

NRTS - III



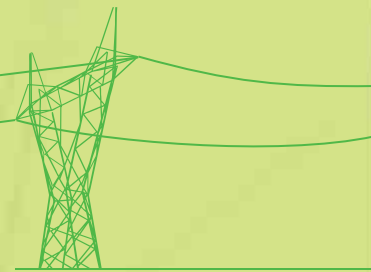
Agra HVDC/765/400kV Sub-Station Uttar Pradesh

- Commissioned in November, 1986.
- First 400kV Sub-station commissioned by NTPC in Northern Region.
- First 765kV line, i.e. 765kV Agra-Fatehpur-I S/c line was commissioned on 01.06.2012.
- + 800kV HVDC Multi terminal system will be one of the largest HVDC Projects in the world.

Allahabad 400/220kV Sub-Station Uttar Pradesh

- Commissioned on 08.07.2001.
- Unique distinction of serving as a gateway of inter regional Power Transmission link between Northern and Eastern regions.
- Allahabad city is situated at the confluence of the Holy river Ganga.





Ballia HVDC 765/400kV Sub-Station Uttar Pradesh

- 400 kV Commissioned in 2007, HVDC in 2010, 765 kV in 2011.
- Catering power of around 8000 MW and 6000 MVA Transformation Capacity.
- Major link between Eastern & Northern regions, evacuating power to ER region to NR & Delhi.
- Birth place of Mangal Pandey and Jai Prakash Narayan.



Bareilly 765 kV/400kV Sub-Stations Uttar Pradesh

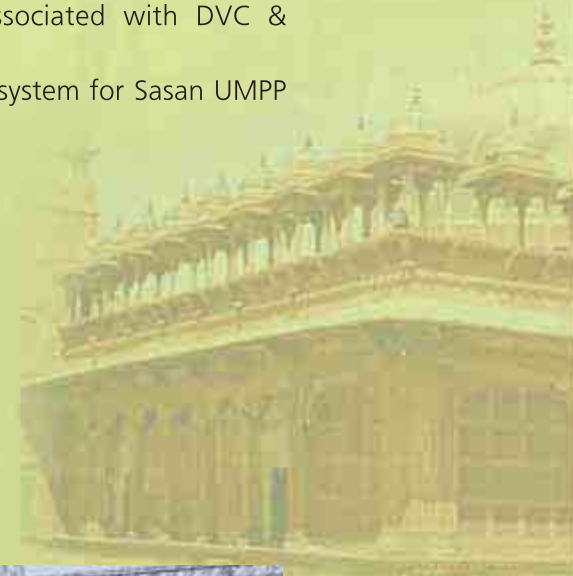
- 765 kV Commissioned on 30.03.2015 & 400 kV commissioned on 20.07.2007.
- Constructed under Northern Region Strengthening Scheme-XXI.
- New 765 kV level station is for channelizing more power flow between the load Centres and Energy rich states which presently varies in tune of 500-600 MW.

NRTS - III



Fatehpur 765/400/220kV Sub-Station Uttar Pradesh

- Commissioned on 13.12.2011.
- Transmission System associated with DVC & Maithon Right Bank.
- Associated Transmission system for Sasan UMPP (4000MW).



Gorakhpur 400/220 KV Sub-Station Uttarakhand

- Commissioned on 15.07.2006.
- Station is associated with High capacity East-North Inter connector-II and is part of prestigious TALA & Barh (NTPC).
- Sub-station has been synchronized with Northern and Eastern grid.





Kanpur 400/220kV Sub-Station Uttar Pradesh

- Commissioned on 01.09.1988.
- India's first Asia's largest Static Var Compensator with state-of-the-art technology was commissioned.
- An important industrial and big city of Uttar Pradesh.



Lucknow 765kV/400kV/220kV Sub-Station Barabanki, Uttar Pradesh

- 400 kV Commissioned on 15.07.2006 & 765kV on 28.02.2012.
- First 765 kV remote operated Sub-station in the country.
- Important node in evacuation system for the Tala, Khalagaon and DVC Maithon Right Bank project.

Bird's Eye View of GIS Sub-station





NRTS - III



Mainpuri 400/220kV Sub-Station Uttar Pradesh

- Commissioned on 11.05.2005.
- No. of 400 kV incoming lines is 2 no.
- No. of 400 kV outgoing lines is 1 no.

Pithoragarh, 220/132kV Sub-Station Uttarakhand

- Commissioned on 06.07.2010.
- Was constructed under System Strengthening Scheme in Uttarakhand under central sector quota.
- Evacuates power from NHPC Dhauliganga.



Raebareli 220kV Sub-Station Uttar Pradesh

- Commissioned on 30.06.2007.
- Normally evacuates 500MW power from NTPC Unchahar and delivers to Lucknow, Raebareli & Sultanpur.
- Sub-station serves reliable as well as good voltage profile to UPSEB and strengthens the Generation.



Rihand HVDC Sub-Station Sonbhadra, Uttar Pradesh

- Commissioned in 1990-1991.
- HVDC Rihand and HVDC Dadri provide asynchronous link between these two Sub-stations and transfer of power is bi-directional.
- Transmission link is used for transfer of bulk power generated at NTPC Rihand and its nearby plant.
- HVDC link is very important in terms of grid stability and long distance transmission of power.

NRTS - III



Shahjahanpur 400/220kV Sub-Station Uttar Pradesh

- Commissioned on 11.06.2014.
- Established under Northern Region Transmission Strengthening Scheme (NRTSS).
- Constructed mainly to evacuate 1200 MW (300x4) power from ROSA power plant.

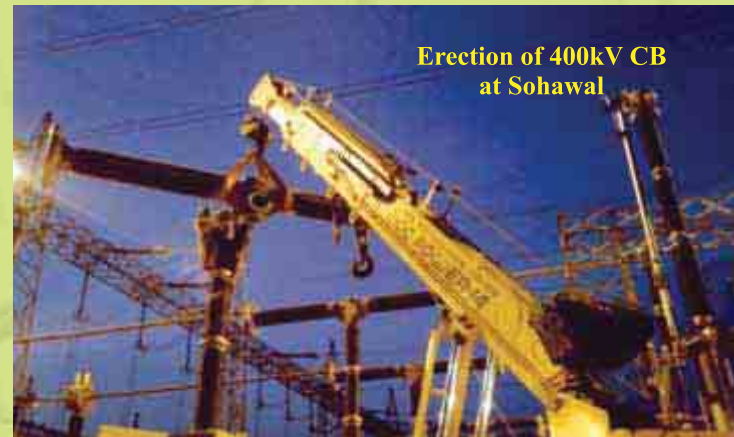
Sitarganj 220/132kV Sub-Station Udham Singh Nagar, Uttarakhand

- Commissioned on 28.02.2009.
- Main source of power conduction to the sub-station is 90 MW NHPC Tanakpur Hydro Power Station.
- POWERGRID 220 kV system is connected to Power Transmission Corporation of Uttarakhand Limited (State Utility) through 132 kV lines.



Sohawal 400/220kV Sub-Station Faizabad, Uttar Pradesh

- Commissioned on 30.06.2012.
- Caters to the power requirement for Faizabad & neighbourhood district including strengthening of Northern Region Transmission Scheme.



Varanasi 765/400kV GIS Sub-Station Uttar Pradesh

- Commissioned in March 2016.
- A high capacity 765/400kV, 3000 MVA State-of-the-art Gas Insulated substation.
- Major load centres in Eastern part of UP.
- Close to the Eastern Border of UP and act as a gateway for import of power from Eastern to Northern Region.

Vindhyachal HVDC Back to Back Station Singrauli, Madhya Pradesh

- Commissioned on 17.04.1989.
- HVDC has been established for inter-connection between the Northern and Western Regions.
- First HVDC Back to Back station of India. It constitutes an important asset of POWERGRID.



States Covered Under Eastern Region - I

1. Bihar
2. Jharkhand
3. Uttar Pradesh - Marginal Portion



ERTS-I

TOTAL ASSETS UPTO 31.03.2016

TOTAL LINE LENGTH	:	11332.5
		CIRCUIT KILOMETRES
TOTAL SUB-STATION	:	16
HVDC STATION	:	1
765kV SUB-STATION	:	3
765kV GIS	:	0
400kV SUB-STATION	:	9
400kV GIS	:	1
220kV SUB-STATION	:	2
220kV GIS	:	0
132kV	:	0
TOTAL MEGAVOLT AMPERE	:	19604

Project Status for the year 2016-17 (Upto August 31st, 2016)

1. CHANDWA GIS (COMMISSIONED ON 12.07.16)

Eastern Region Transmission System - I

ERTS - I



Ara 220/132kV Sub-Station Bhojpur, Bihar

- Commissioned in October, 2004.
- There are 04 nos. of 220 kV Line & 01 no. of 132 kV Line. Total Line Length under Ara Transmission Line jurisdiction- 700 Km.
- Auto Transformer Rating-220/132 kV.

Biharsharif 400/220kV Sub-Station Nalanda, Bihar

- Commissioned on 07.09.1991.
- One of the oldest and largest Sub-stations of POWERGRID in Eastern Region-I.
- Directly connected to the generating stations like Kahalgaon and Koderma and is also having inter-regional connectivity for evacuating power from ER to NR.



Banka 400/132kV Banka Sub-Station Bihar

- Commissioned on 01.12.2012.
- Directly connected to NTPC Kahalgaon STTP generating station through 400kV D/C line.
- Other power generating plants by IPP's in the adjoining area of Banka also planned to connect with Banka Sub-Station.



Chaibasa 400/220kV Sub-Station Jharkhand

- Commissioned on 29.10.2014.
- Constructed by LILO of 400 kV Jamshedpur-Rourkela Circuit - I
- Having two nos. of 315 MVA ICT installed to supply power to West Singhbhum district of Jharkhand.

ERTS - I



Gaya 765 kV Sub-station Bihar

- Commissioned on 31.01.2012.
- First 765 kV Sub-station of Eastern Region-1.
- Power of various generation projects of DVC & Maithon Right Bank will be evacuated to NR through Sub-station & its associated Transmission System.

Jamshedpur 400/220kV Sub-Station Saraikela-Kharswan, Jharkhand

- Commissioned on 03.08.1993.
- Useful link for evacuating the surplus power generated at Kahalgaon, STPP, Mejia, Andal, APNRL and Farakka STPP to Western Region and Southern Region through 400kV D/C Jamshedpur-Rourkela Line.



Kishanganj 400/220kV Sub-station

Bihar

- Name of the Sub-station 400/220kV Kishanganj GIS Substation
- Date of Commissioning 220kV on 01.03.2016 & 400kV on 14.03.2016
- Technical Significance Power evacuation from generating plant in Sikkim to WR/NR

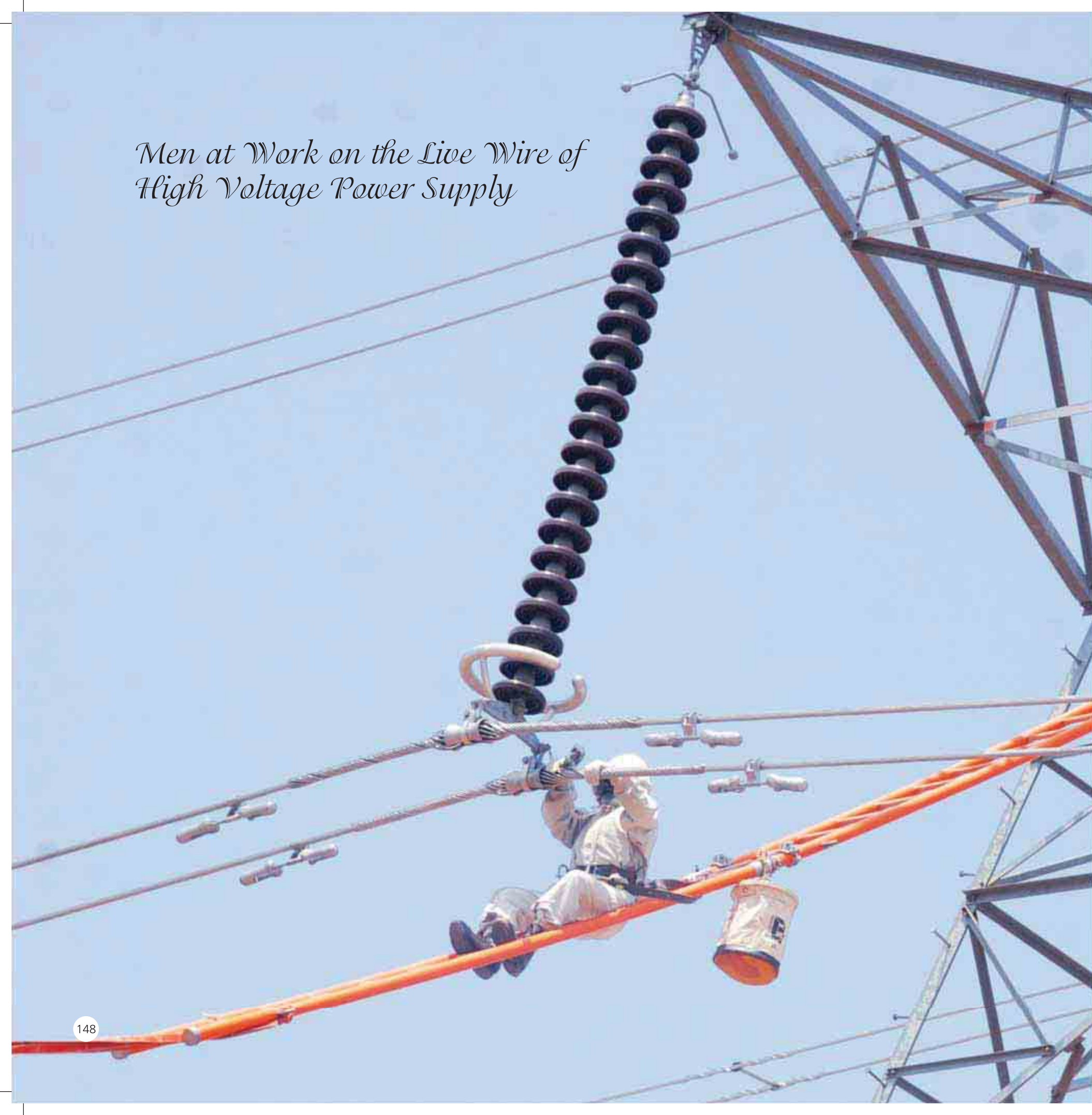


Lakhisarai 400/132 kV Sub-station

Bihar

- Commissioned on 23.03.2014.
- Evacuates power from Kahalgaon Sub-station.
- Caters to the requirement of Lakhisarai & Jamui districts and adjoining districts.

Men at Work on the Live Wire of High Voltage Power Supply





ERTS - I



Muzaffarpur 400/220kV Sub-Station Bihar

- Commissioned on 26.08.2006.
- Inter connect Central Grid to Northern Grid through high capacity link. Further, it evacuates TALA HEP generation as well as Kahalgaon STPP generation.

Patna 400/220kV Sub-Station Bihar

- Commissioned on 30.03.2007.
- Important Sub-station of Eastern Region-I directly connected to NTPC Kahalgaon STTP via NTPC Barh STTP.
- Evacuating Power of NTPC STTP, Kahalgaon and feeding Power to Central Grid & BSEB.



Purnea 400/220/132kV Sub-Station Bihar

- Commissioned 220/132kV in 1986 by NHPC & 400kV in 2004 by POWERGRID.
- Most important Sub-station for evacuation power of North- East Chukha Transmission system & NTPC Power to Northern India.



Sasaram 765 /400/220/132kV and \pm 500MW HVDC back to back Station Kaimur, Bihar

- HVDC Commissioned on 01.08.2002 & 765kV on 01.03.2013.
- Unique Sub-station having voltage levels from 33kV to 765kV and 500 MW HVDC back-to-back Station.
- \pm 500MW HVDC back-to-back East-North Interconnector System.

Ranchi 765/400/220kV Sub-Station Jharkhand

- 400/220kV commissioned on 27.04.2007 & 765kV commissioned on 01.02.2014.
- Unmanned Sub-station and operated remotely from Jamshedpur sub-station.
- Evacuating power from 3 nos. of generating stations, namely STPS/Sipat, MPL/Maithon Right Bank & RTPS/Raghunathpur.



States Covered Under Eastern Region - II

1. Odisha
2. West Bengal
3. Sikkim



ERTS-II

TOTAL ASSETS UPTO 31.03.2016

TOTAL LINE LENGTH	:	9181.8
		CIRCUIT KILOMETRES
TOTAL SUB-STATION	:	22
HVDC STATION	:	1
765KV SUB-STATION	:	2
765KV GIS	:	0
400KV SUB-STATION	:	13
400KV GIS	:	1
220KV SUB-STATION	:	3
220KV GIS	:	1
132KV	:	1
TOTAL MEGAVOLT AMPERE	:	22747

Project Status for the year 2016-17 (Upto August 31st, 2016)

1. PANDIABALI GIS (COMMISSIONED ON 10.07.16)

Eastern Region Transmission System -II

ERTS - II



Angul 765/400kV Sub-Station Odisha

- Commissioned in February, 2012.
- One of the largest pooling stations in the Eastern Region and is being constructed for evacuation of power from various IPPs such as JITPL, MGR, Monnet, LANCO and Nav Bharat to the Northern and Western Regions.
- Strengthen the transmission system of the State of Odisha & Eastern Region.

Birpara 220/132kV Sub-Station Jalpaiguri, West Bengal

- Commissioned in 1986.
- Evacuation of power generated at (Chukha Hydel Power Corporation, Royal Government Of Bhutan) and supplying to State Electricity Boards (West Bengal, Bihar & Sikkim).





Bolangir 400/220kV Sub-Station Odisha

- Commissioned on 31.08.2012.
- It is 400/220 kV automated Sub station. Strengthening the Western part of Odisha & connectivity to Jeypore.



Baripada 400/220/132kV Sub-Station Odisha

- Commissioned on 01.07.2005.
- Caters power to North Odisha and nearby areas of West Bengal & Jharkhand.

ERTS - II



Berhampore 400kV Switching Sub-Station

Murshidabad, West Bengal

- Commissioned on 01.09.2013.
- Its associated Transmission Line project is expected to result in exchange of 500 MW of power in between India and Bangladesh.
- Station helps the Indo-Bangladesh Grid Connectivity and will demonstrate the substantial economic benefits and help in mending the energy gaps across the region.

Durgapur 400/200kV Sub-Station

Burdwan, West Bengal

- Commissioned in March, 1987.
- Primarily set up to evacuate the power generated by Farakka Thermal Power Plant.
- Vital hub for ULDC Data communication, hub for Emergency Restoration System (ERS) and Hot Line maintenance in Eastern Region-II.





Dalkhola 220kV Sub-Station Siliguri, West Bengal

- Commissioned on 19.09.1986.
- First time 220 kV high voltage underground XLPE cable used in POWERGRID, for connecting with WBSETCL.



Gangtok 132/66kV Sub-Station Sikkim

- Commissioned on 07.09.2005.
- Govt. of Sikkim is fully dependent on our Gangtok Sub-station and all connected load for East & North Sikkim drawn from our Sub-station.



ERTS - II



Indravati 400/220kV Sub-Station kalahandi, Odisha

- Commissioned on 16.03.1990.
- Plays vital role during black start & evacuation of hydel power of OHPC.
- Vital link between Rengali & Jeypore, which links Eastern & Southern grids via Jeypore-Gazuawaka Line.

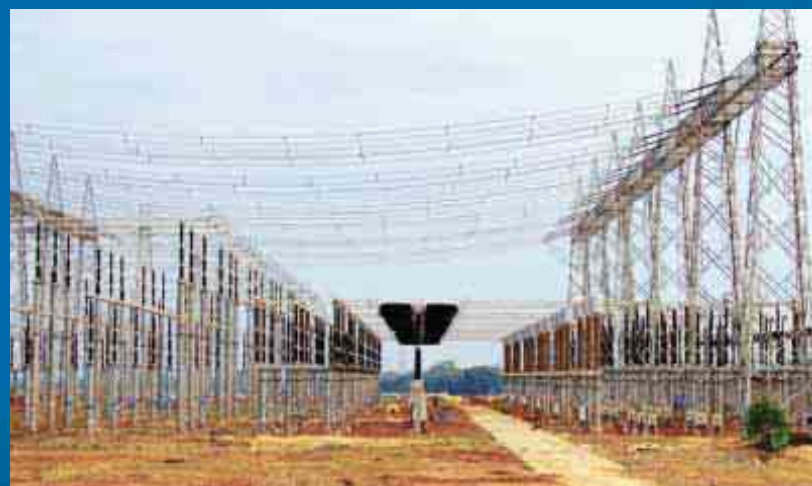
Jeypore 400/220kV Sub-Station Odisha

- Commissioned in 1990.
- Southernmost, remote sub-station of Eastern Region-II and close to the Andhra state border and was constructed by NHPC .
- Initially conceived for evacuating power from Talcher Super Thermal Plant to meet the power demand of Southern Odisha.



Jharsuguda 765/400kV Sub-Station Sundargarh, Odisha

- 400kV Commissioned in March 2013 & 765kV Commissioned in March 2014.
- Pooling station at Jharsuguda is primarily meant for evacuation of bulk power to be generated by various IPPs coming up around Jharsuguda.

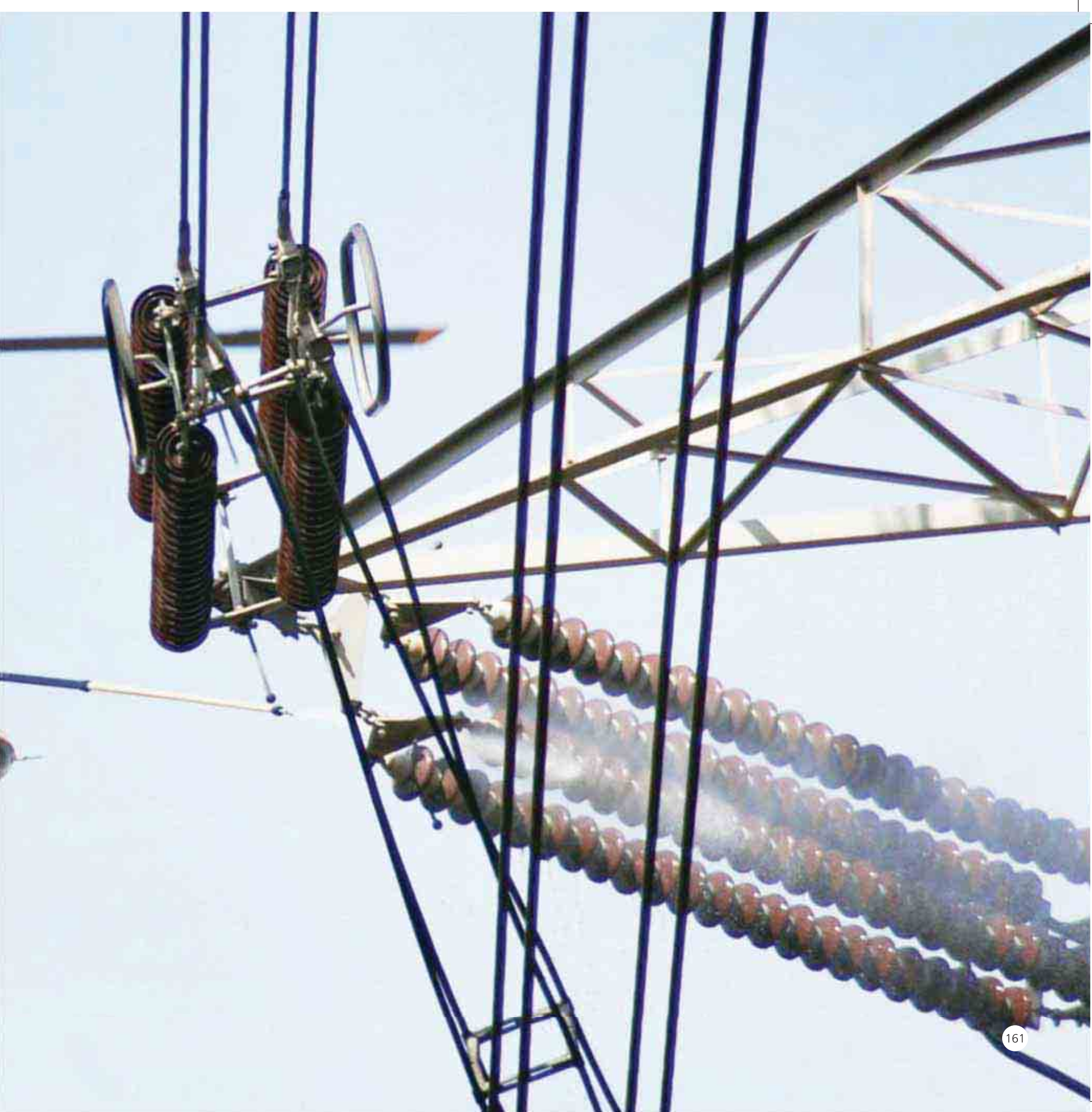


Keonjhar 400/220kV Sub-Station Odisha

- Commissioned on 31.01.2013.
- Automated Sub-station and strengthening the North Eastern part of Odisha with LILO of 400 kV Rengali-Baripada Transmission Line.

*Washing of Carbon & Dust Pollution
with Water through Helicopter*





ERTS - II



Maithon 400/220kV Sub-Station Burdwan, West Bengal

- Commissioned on 31.12.1992.
- Evacuating bulk power mainly from various generating stations like KHSTPP (NTPC) and various projects of Damodar Valley Corporation.

Malda 400/200/132kV Sub-Station West Bengal

- Commissioned on 01.10.1986.
- Inter-regional transmission link between ER-I & ER-II with transformation capacity of 1000 MVA.
- Introduced new methodology replacing bolted type connector with compressor type connector at all voltage levels.





220kV New Melli GIS Switching Station Sikkim

- Commissioned on 19.05.2015.
- New Melli GIS is the pooling station of up-coming HEPs (IPP Route) of medium capacity (100 MW) viz. DANS, SIGA, Jal Power etc. Power is evacuated through 220kV connectivity with 400/220 RANGPO GIS.
- GIS is of ALSTOM origin and has provision of 14 feeders.
- It is an unmanned Sub-station (Operation).
- New Melli is built in 20 Acres land on the banks of river Rangit at village Tokal near Jorethang (12Km) of South Sikkim.
- Nearest tourist locations- Namchi (Hill station) (25Km) & Pelling (Kanchenjunga view) (60Km).



Rengali 400/220kV Sub-Station Angul, Odisha

- Commissioned on 18.03.1990.
- Sub-station consists of 4 nos. of 400 kV line.
- 40 % Fixed Series Capacitor (FSC) System.

ERTS - II



Rourkela 400/200kV Sub-Station Odisha

- Commissioned on 31.08.1993.
- East West corridor connecting Sub-station of Eastern region.

Subhasgram 400/220kV Sub-Station 24 Parganas, West Bengal

- Commissioned on 30.02.2007.
- Evacuation of bulk power to be generated by UMPP of NTPC and various IPPs around Sundargarh & Angul district.





Siliguri 400/220/132kV Sub-Station Jalpaiguri, West Bengal

- 220/132kV Commissioned on 01.10.1986.
- 400kV Commissioned on 01.08.2003.
- Important Sub-station in Indian Grid connecting three regions and with Bhutan.
- First 400kV Sub-station of the country with international connectivity and dedicated to the nation by Hon'ble MOP on 30.05.2007.

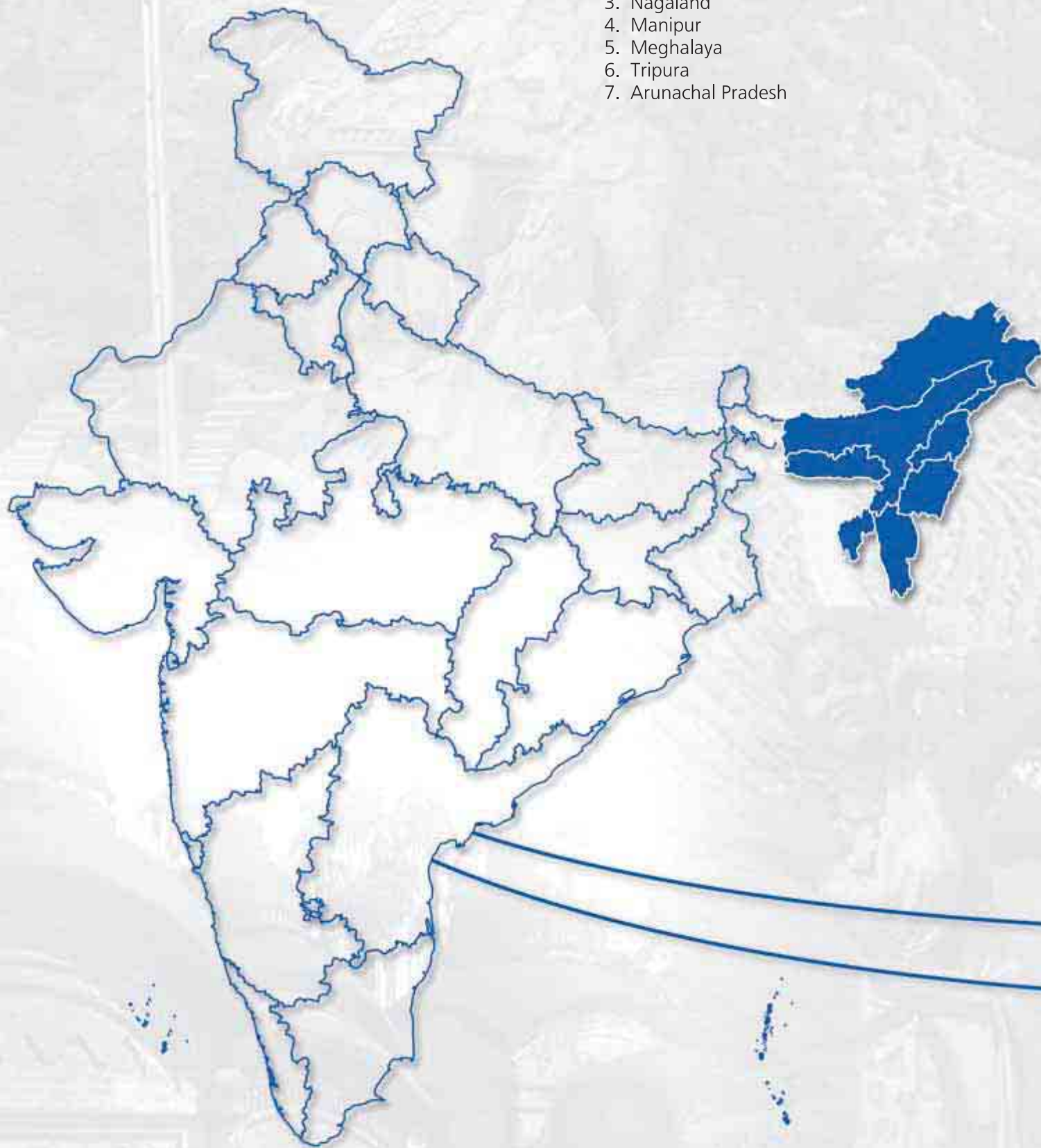


Talcher HVDC Bi-pole Station Odisha

- Commissioned on 15.09.2002.
- One of the largest HVDC projects of POWERGRID.
- Most critical transmission system linking the Central Grid to the Southern Grid.

States Covered Under North Eastern Region

1. Mizoram
2. Assam
3. Nagaland
4. Manipur
5. Meghalaya
6. Tripura
7. Arunachal Pradesh



TOTAL ASSETS UPTO 31.03.2016		
TOTAL LINE LENGTH	:	9344.1 CIRCUIT KILOMETRES
TOTAL SUB-STATION	:	19
HVDC STATION	:	1
765kV SUB-STATION	:	0
765kV GIS	:	0
400kV SUB-STATION	:	5
400kV GIS	:	0
220kV SUB-STATION	:	3
220kV GIS	:	1
132kV	:	9
TOTAL MEGAVOLT AMPERE	:	4570

North Eastern Region Transmission System

NERTS



Aizawl 132kV Sub-Station Mizoram

- Commissioned on 01.09.1988.
- Sub-station was taken over by POWERGRID in 1991. The entire Mizoram state depends upon the POWERGRID supply.

Bongaigaon-Salakati 400/220/132kV Sub-Station Kokrajhar, Assam

- Commissioned : Bongaigaon in 1998
: Salakati by NHPC in 1987.
- Sub-station for development of the local youth of the region in the areas of overhead tower erection, stringing and dismantling as a part of the "Capacity Building Programme".



Balipara 400/220/132kV Sub-Station Sonitpur, Assam

- Sub-station built on land measuring 22.67 hectare, which is declared as Protected Area by the Govt. of Assam.
- Situated on the bank of a rivulet and inhabited by tribal of Assam in plains.



Badarpur 132kV Sub-Station Hailakandi, Assam

- Commissioned on 03.04.1999.
- Plays a very important role in the power scenario of Barak Valley, which is connected to 05 states viz Assam, Meghalaya, Tripura, Mizoram & Manipur by Power Transmission Line.

NERTS



HVDC Biswanath Chariali, Assam

- Commissioned on 01.11.15 (POLE 1).
- +/- 800 KV, 3000 MW HVDC Converter Station.
- ± 800 kV, 6000 MW HVDC Multi Terminal Transmission System having terminal stations at Biswanath Chariali (in NER), Alipurduar (in ER) and Agra (in NR) to transmit bulk power from Biswanath Chariali and Alipurduar to Agra over a distance of approximately 1728 km.
- In the normal power flow direction, 3000 MW power will flow from Biswanath Chariali to Agra. However, provisions have been made for reverse power flow, Agra to Biswanath Chariali. The maximum capacity in reverse power flow is 1500 MW. For each converter station at BNC, APD and Agra there are earth electrode stations located at a small distance away from the converter stations.

Dimapur 220/132kV Sub-Station Nagaland

- Commissioned on 16.04.1995.
- First 132kV GIS Sub-station of NERTS.



Haflong 132kV Sub-Station

Dimapur, Assam

- Commissioned in June, 1986.
- Assam is totally dependent on the availability of Power at the Haflong Sub-station.



132kV Imphal Sub-Station

Manipur

- Commissioned on 17.06.1995.
- It handles about 60% of the State's power requirement.
- Power supply to the entire Imphal city and other adjoining districts.



Panoramic View of Upcoming Sub-station on Tough Mountainous Terrain





NERTS



Jiribam 132kV Sub-Station Imphal, Manipur

- Commissioned on 01.09.1988.
- Switching Sub-station connected with Loktak Power station, Manipur.

Khliehriat 132kV Sub-Station Meghalaya

- Commissioned on 27.02.1999.
- Switching Sub-station, remote operated from Badarpur.
- Only EHV Sub-station in Meghalaya, which connects the Khandang Power Generation project of NEEPCO & 132 kV Sub-station of Meghalaya State Electricity board.



Kumarghat 132kV Sub-Station Unakoti, Tripura

- Commissioned on 06.04.1987.
- Taken over from NEEPCO.



Mariani 220kV Substation Nagaland

- Commissioned on 30.03.2013.
- 220kV Switching Station with a 20 MVAR Bus Reactor.
- Sub-station is surrounded by natural beauty and hills of Nagaland.

NERTS



Misa 400/220/33kV Sub-Station Nagaon, Assam

- Commissioned on 01.07.1995.
- Heart of Power Transmission in North Eastern Region.
- Transmission Line Management Institute (TLMI) is also located at Misa.

220kV/132kV GIS Stations Mokokchung, Nagaland

- Commissioned on 01.08.2015 & 01.09.2015.
- Now with the commissioning of the transmission project by POWERGRID, an alternate route for transmission of power to Nagaland is available. Mokokchung has an exquisitely picturesque landscape surrounded by vibrant green hued mountains.



Nirjuli 132/33kV Sub-Station Arunachal Pradesh

- Commissioned on 22.05.1991.
- 132 kV Lines, Gohpur-Nirjuli & Nirjuli-Ranganadi, one with 1x10 MVA and other is of 16 MVA Capacity.



Silchar 400/132kV Sub-Station Cachar, Assam

- Commissioned on 01.05.2012.
- Station is a boon for Barak Valley of Assam and NER for transfer of bulk power from Pallatana GBPP to Assam, Manipur, Mizoram, Meghalaya etc.

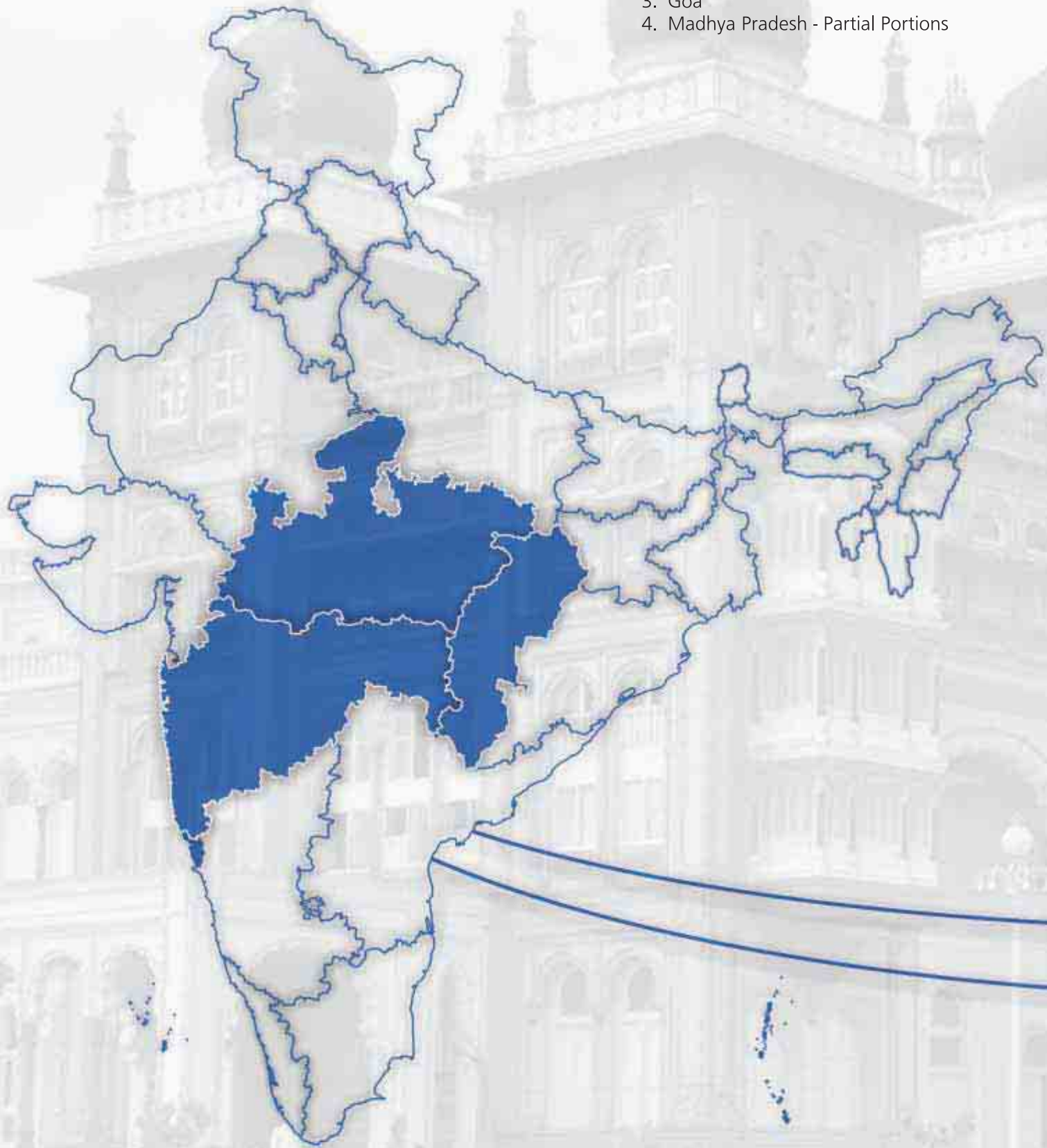
Ziro 132/33kV Sub-Station Lower Subansiri, Arunachal Pradesh

- Commissioned on 31.03.2004.
- Remotely operated from Balipara Sub-station.



States Covered Under Western Region - I

1. Chhattisgarh
2. Maharashtra
3. Goa
4. Madhya Pradesh - Partial Portions



WRTS-I

TOTAL ASSETS UPTO 31.03.2016

TOTAL LINE LENGTH	:	16431.6
		CIRCUIT KILOMETRES
TOTAL SUB-STATION	:	20
HVDC STATION	:	1
765kV SUB-STATION	:	10
765kV GIS	:	1
400kV SUB-STATION	:	7
400kV GIS	:	1
220kV SUB-STATION	:	0
220kV GIS	:	0
132kV	:	0
TOTAL MEGAVOLT AMPERE	:	50,738

Western Region Transmission System - I

WRTS-I



Aurangabad 765/400/220kV Sub-Station Maharashtra

- Commissioned on 01.02.2014.
- It is a Pooling Sub-station which evacuates power mainly from 765kV Wardha and 765kV Dhule Sub-stations and strengthens the 400kV and 220kV System of MSETCL through 400kV Akola and 400kV Waluj Sub-stations

Boisar, 400/220kV Sub-Station Thane, Maharashtra

- Commissioned in July, 2005.
- For evacuation of Power from TAPS (Tarapur-NPCIL) unit 3 & 4. Total transforming capacity 630 MVA.





Bhadrawati HVDC & 400kV Sub-Station Chandrapur, Maharashtra

- Commissioned : 400kV Station on 28.03.1989
HVDC Pole-1 on 01.10.1997
HVDC Pole-2 on 01.03.1998.
- Station being remotely operated from HVDC station control room.
- HVDC Bhadrawati station was installed as part of this plan to interconnect the western and southern grids.



Bhatapara 400/200kV Sub-Station Chhattisgarh

- Commissioned on 29.11.2007.
- This sub-station is unique in the sense that it is one of the first automated Sub-stations in India based on IEC 61850 standard.
- It is remotely operated from Manesar.

WRTS-I



Bilaspur 765/400kV Pooling Station Chhattisgarh

- Commissioned on 31.03.2012.
- Many IPPs in Chhattisgarh as well as NTPC Sipat power are sending their power through Bilaspur Sub-station.

Dharamjaygarh 765/400 kV Pooling Station Korba, Chhattisgarh

- Commissioned on 01.04. 2014.
- Important Pooling Station for evacuation of power from various Independent Power Producers (IPPs) located in Chhattisgarh, Jharkhand, Odisha, West Bengal and Southern Part of the country.





Kolhapur GIS

- Evacuation of power for Southern Region.



Mapusa 400/220kV Sub-Station Goa

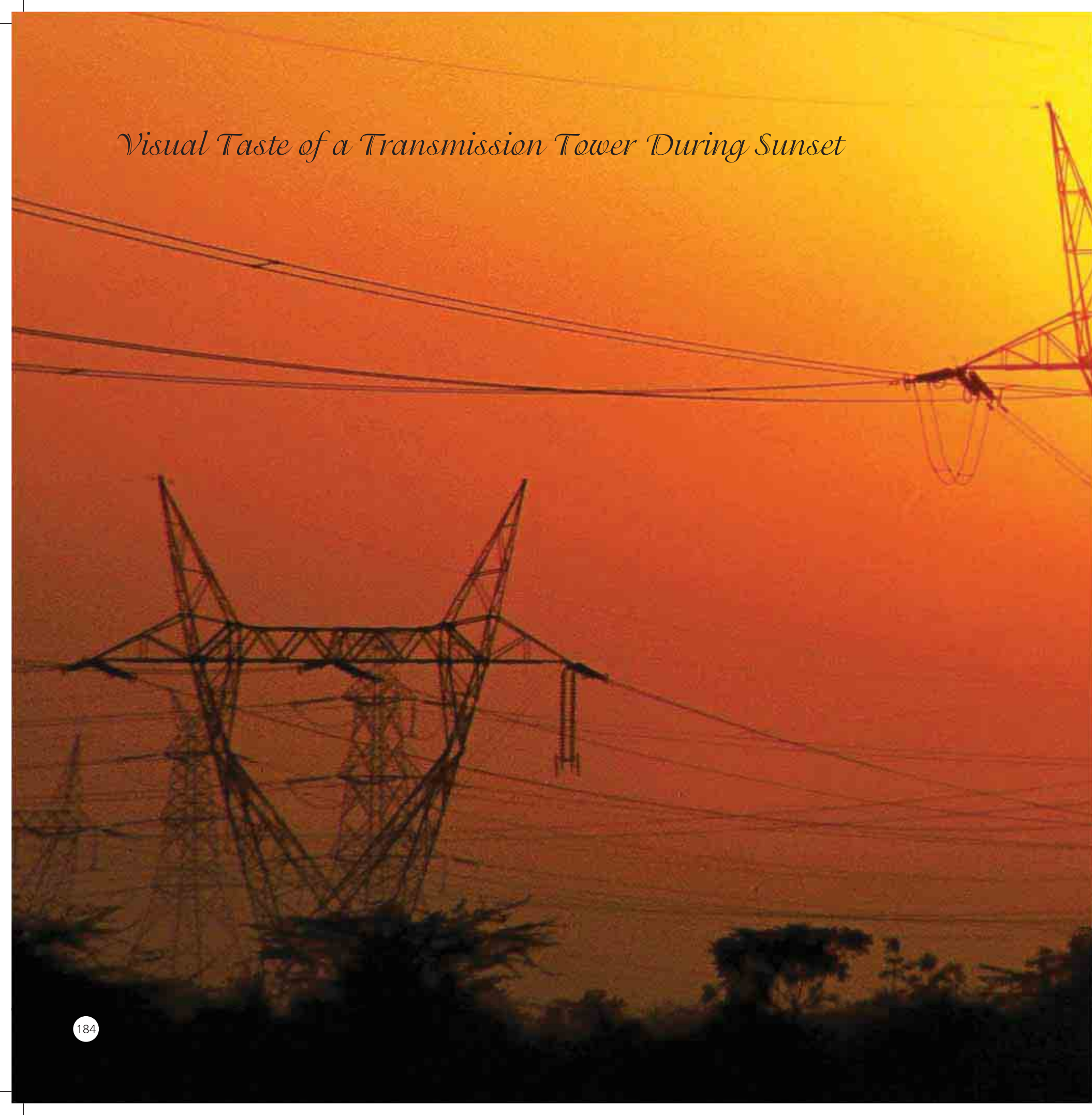
- Commissioned on 15.11.2002.
- An important link of the Western Region strengthening scheme for Goa.

Parli 400kV Sub-Station Beed, Maharashtra

- Commissioned on 01.06.2011.
- It wheels around 2000 MW to cater to the load of Western Maharashtra.



Visual Taste of a Transmission Tower During Sunset





WRTS-I



Pune 765 (GIS)/400/200kV Sub-Station Pune, Maharashtra

- 400 kV Commissioned on 15.04.2011 & 765 kV (GIS) on 06.03.2015.
- India's first GIS Sub-station charged at 765 kV voltage level.
- Sub-station is constructed as a part of Western Region Strengthening Scheme-II.

Raipur (DURG) 765/400 kV Pooling Station Chhattisgarh

- 400 kV Commissioned on 23.10.99 & 765 kV in March, 2013.
- Important Pooling Station for evacuation of power from various Independent Power Producers (IPPs) and strengthening of Western Grid.



Raigarh 765/400/220kV Sub-Station Chhattisgarh

- 400 kV Commissioned on 30.12.2007, 765 kV Kotra in April, 2013 & 756 kV Tamnar in Oct 2013.
- ± 800 kV, 6000 MW HVDC Station being established under Raigarh – Pugalur HVDC Bipole Transmission System
- Remotely operated Sub-station from Raipur. (Second Sub-station in WR-I region).



Solapur 765/400/220kV Sub-Station Maharashtra

- 400 kV Commissioned on 21.01.2011 & 765 kV on 01.01.2014.
- Facilitates import of about 4000 MW power from Northern Region to Western Region & improves power situation of WR.

Seoni 765/400/220kV Sub-Station Madhya Pradesh

- Commissioned on 20.06.2007.
- 1st 765kV Sub-station of India.

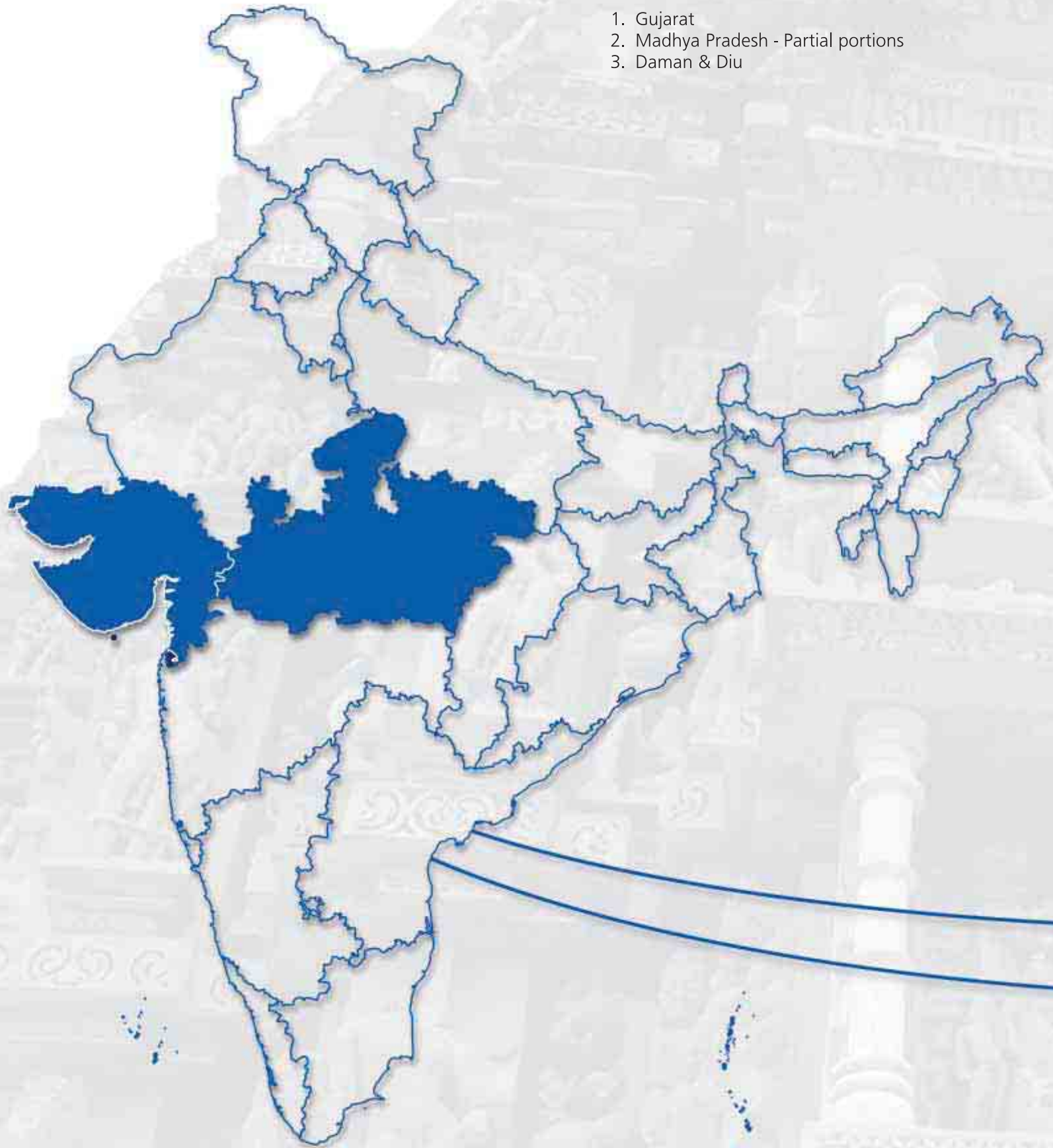


Wardha 765/400/220kV Sub-Station Maharashtra

- 400 kV Commissioned on 29.03.2009 & 765 kV on 01.03.2012.
- Playing vital role in connecting various generation plants e.g. NTPC, Mauda (1000MW), IEPL, Bela (1980MW), Adani, Tirora (1980MW) with National Grid, i.e. New Grid.

States Covered Under Western Region - II

1. Gujarat
2. Madhya Pradesh - Partial portions
3. Daman & Diu



WRTS-II

TOTAL ASSETS UPTO 31.03.2016

TOTAL LINE LENGTH	:	21856.6
		CIRCUIT KILOMETRES
TOTAL SUB-STATION	:	21
HVDC STATION	:	0
765kV SUB-STATION	:	6
765kV GIS	:	1
400kV SUB-STATION	:	11
400kV GIS	:	3
220kV SUB-STATION	:	0
220kV GIS	:	0
132kV	:	0
TOTAL MEGAVOLT AMPERE	:	30,710

Western Region Transmission System -II

WRTS-II



Bhachau 400/220kV Sub-Station Kutch, Gujarat

- Commissioned on 29.09.2011.
- It was commissioned under Mundra UMPP Transmission System and is presently under O&M since 29.09.2011.

Bina 765/400kV Sub-Station Sagar, Madhya Pradesh

- Commissioned on 23.03.2007.
- Unique Sub-station of national importance as it handles voltages of 220 kV, 400 kV, 765 kV and 1200 kV levels.
- One of the biggest Sub-stations in India and is also a part of intra regional link between Western & Northern Power Grids.
- POWERGRID along with the Ministry of Power, Govt. of India and 35 leading Indian manufacturers of electrical equipment has established world's first 1200 kV Test Station.





Dehgam 400/220kV Sub-Station Gandhinagar, Gujarat

- Commissioned on 29.04.1995.
- Important Sub-station for inter-state transmission of power from Gujarat to MP. Contributes in transmission of power to Maharashtra and Rajasthan as well. Remotely operates Pirana Sub-station.



Damoh 400/220kV Sub-Station Madhya Pradesh

- Commissioned in August, 2008.
- Station is directly connected to MPPGNCO, Birshingpur for evacuation of Power & further connected to Bhopal MPPTCL.

WRTS-II



Gwalior 765/400/220kV Sub-Station Madhya Pradesh

- Commissioned 400/220kV in March 2007, 765kV in March 2013
- Vital Sub-station to link Western Region and Northern Region, which can transfer bulk power from Western Region to Northern Region & visa versa.



Itarsi 400/220kV Sub-Station Madhya Pradesh

- Commissioned on 13.05.1987.
- One of the oldest Sub-station of WR-II. equipped with Oil Testing Laboratory (IOTL Lab). Itarsi Regional Training Centre EDC Itarsi. Imparts training to all.



Indore 765/400kV Sub-Station Madhya Pradesh

- Commissioned on 30.06.2013.
- Connecting 765 kV Grid from MP to Gujarat.



Jabalpur 765/400kV Pooling Station Madhya Pradesh

- Commissioned on 30.12.2013.
- To play a major role in power evacuation at 765kV voltage level from Odisha UMPP, Chhattisgarh UMPP and NTPC's Gadarwara Super Thermal Power Station.
- Station will provide strength & stability to National Grid and also strengthen the Western & Northern Grid.



Jabalpur 400/220kV Sub-Station Madhya Pradesh

- Commissioned on 01.10.1989.
- Major trunk route for evacuation of power to the tune of 1600 to 2000 MW from Super Thermal Power station of NTPC, Vidhyanchal, Korba.



Kala 400/220kV GIS Sub-Station Silvassa, Dadra & Nagar Haveli

- Commissioned on 31.03.2014.
- Sub-station is connected to 400 kV Magarwada Sub-station on 400 kV side and 220 kV Khadoli and Kharadpada Sub-station on 220 kV side.
- KALA Sub-station provides a major share of total power (300 MW) consumed by UT of Dadra & Nagar haveli.



Khandwa 400/220kV Sub-Station Madhya Pradesh

- Commissioned on 17.12.2004.
- Sub-station contains Dhule-1&2 lines, which provide a link for the inter-state power transmission between Maharashtra and Madhya Pradesh.



Magarwada 400/220 kV GIS Sub-station Daman & Diu, UT

- Commissioned on 02.11.2014.
- The Sub-station caters power transmission to Daman town of Union Territory of Daman and Diu.
- Sub-station is situated on the banks of river Daman-Ganga in Moti Daman in Union Territory of Daman and Diu.

*1200kV, the World's Highest Voltage Level
Transmission Project at Bina, MP*





WRTS-II



Navsari 400/220kV GIS Sub-Station Surat, Gujarat

- Commissioned on 24.07.2012.
- First EHV GIS Sub-station to strengthen Western Region Transmission System.
- Sub-station is part of Mundra Transmission system.
- Commissioned to evacuate power from Mundra UMPP (Gujarat) and connected with NTPC Jhanor and NTPC Kawas (Gujarat).

Pirana 400/200kV Sub-Station Ahmedabad, Gujarat

- Commissioned on 28.02.2011.
- Sub-station made in six levels : Three levels in 400 kV and three levels in 220 kV.



Rajgarh 400/220kV Sub-Station Dhar, Madhya Pradesh

- Commissioned on 31.03.2008.
- It has got the distinction of being POWERGRID's first Remote Operated Sub-station in WR-II where SAS (SCADA) System is in operation.



Satna , 765/400/220kV Sub-Station Madhya Pradesh

- Commissioned on 06.04.1999.
- First 765kV Sub-station System commissioned of WR-II.
- Sub-station has connection to major generating thermal stations of NTPC, Sasan, JP and Rihand Project.



Shujalpur 400/220kV Sub-Station Shajapur, Madhya Pradesh

- Commissioned on 30.05.2011.
- It is SAS Sub-station based on IEC-61850 protocol.

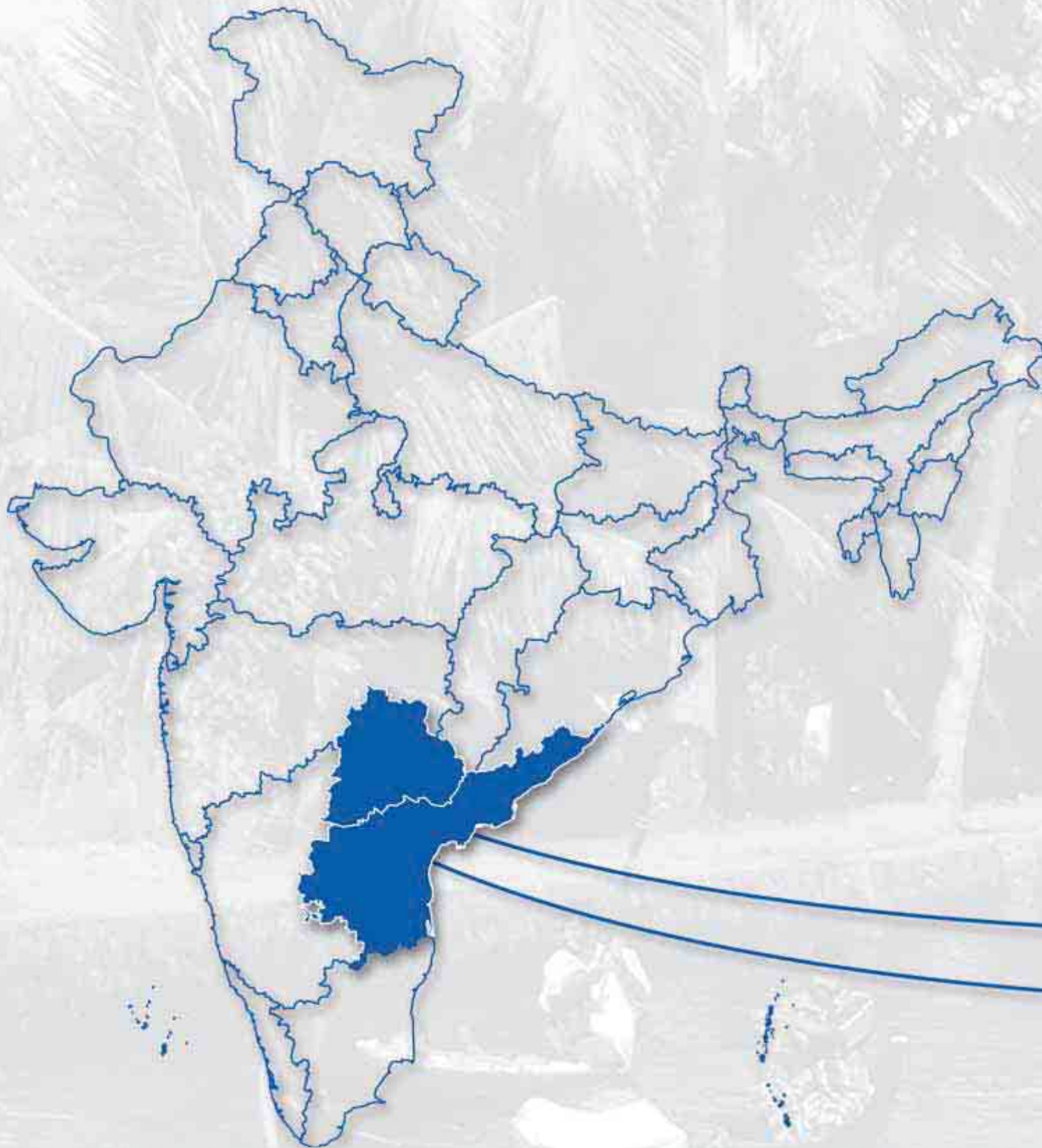
Vapi 400/220kV Sub-Station Valsad, Gujarat

- Commissioned on 07.07.2005.
- 1st Sub-station in Valsad district and 2nd of POWERGRID in Gujarat.
- Important source of power supply for Union Territory of Daman and Diu & DNH.



States Covered Under Southern Region - I

1. Andhra Pradesh
2. Telangana



SRTS-I

TOTAL ASSETS UPTO 31.03.2016

TOTAL LINE LENGTH	:	14141.47
		CIRCUIT KILOMETRES
TOTAL SUB-STATION	:	14
HVDC STATION	:	1
765kV SUB-STATION	:	3
765kV GIS	:	0
400kV SUB-STATION	:	10
400kV GIS	:	0
220kV SUB-STATION	:	0
220kV GIS	:	0
132kV	:	0
TOTAL MEGAVOLT AMPERE	:	17911.2

Project Status for the year 2016-17 (Upto August 31st, 2016)

1. KPKUNTA (COMMISSIONED ON 28.04.16)

Southern Region Transmission System - I

SRTS-I



Gajuwaka & HVDC Vizag I & II Ukkunagaram, Visakhapatnam, Andhra Pradesh

The HVAC and HVDC Vizag Poles I & II were commissioned in June 1991, September 1999 and March 2005 respectively.

HVAC: The 400kV Sub-station is connected to the southern grid. It helps in evacuating power from 1000MW HVDC Link and 2000 MW NTPC Simhadri Power Plant.

HVDC Pole-I: • Capacity 500 MW • Connected to Eastern grid with 400kV D/C Jeypore-Gajuwaka lines.

HVDC Pole-II: • Capacity 500MW • Connected to Eastern Grid through East Bus extension from HVDC Pole-1. Vizag HVDC Link also serves as a backup for 2500 MW Talcher-Kolar HVDC Link.

Gooty 400kV Sub-Station Anantapur, Andhra Pradesh

- Commissioned on 30.03.1991.
- Evacuates power from Ramagundam generating station through Nagarjunasagar sub-station to Karnataka state.



Hyderabad 400 kV Sub-Station Ranga Reddy, Andhra Pradesh

- Commissioned on 20.09.1984.
- First 400kV Sub-station in India under Central PSUs.
- The Sub-station has CEA accredited Hot Line Training Institute (HLTI) and Central Insulating Oil Testing Laboratory (CIOTL).



Khammam 400/220kV Sub-Station Andhra Pradesh

- Commissioned on 27.03.1992.
- Sub-station constructed under CTP (Central Transmission Project) to evacuate power from RSTPP, Ramagundam.
- Conventional Sub-station made remote-operated w.e.f. 01.04.2010.

SRTS-I



Kurnool 765/400 kV Sub-Station Andhra Pradesh

- Commissioned on 31.03.2014.
- Vital link to National Grid Connecting Tamil Nadu (765 kV D/C Kurnool- Thiruvalam line), Karnataka (765 kV S/C Two lines), Andhra Pradesh (765 kV D/C Kurnool-Nellore line).
- Biggest station in South India with 6 nos. of 765 kV feeders, 4 nos. of 400 kV feeders with 2 nos. of ICT of 1500 MVA capacity.

Kadapa 400kV Sub-Station Secunderabad, Andhra Pradesh

- Commissioned on 01.02.1986.
- Equipped with two 40% Fixed Series Compensation in NC-I & II feeders.





Munirabad 400 kV Sub-Station Koppal, Karnataka

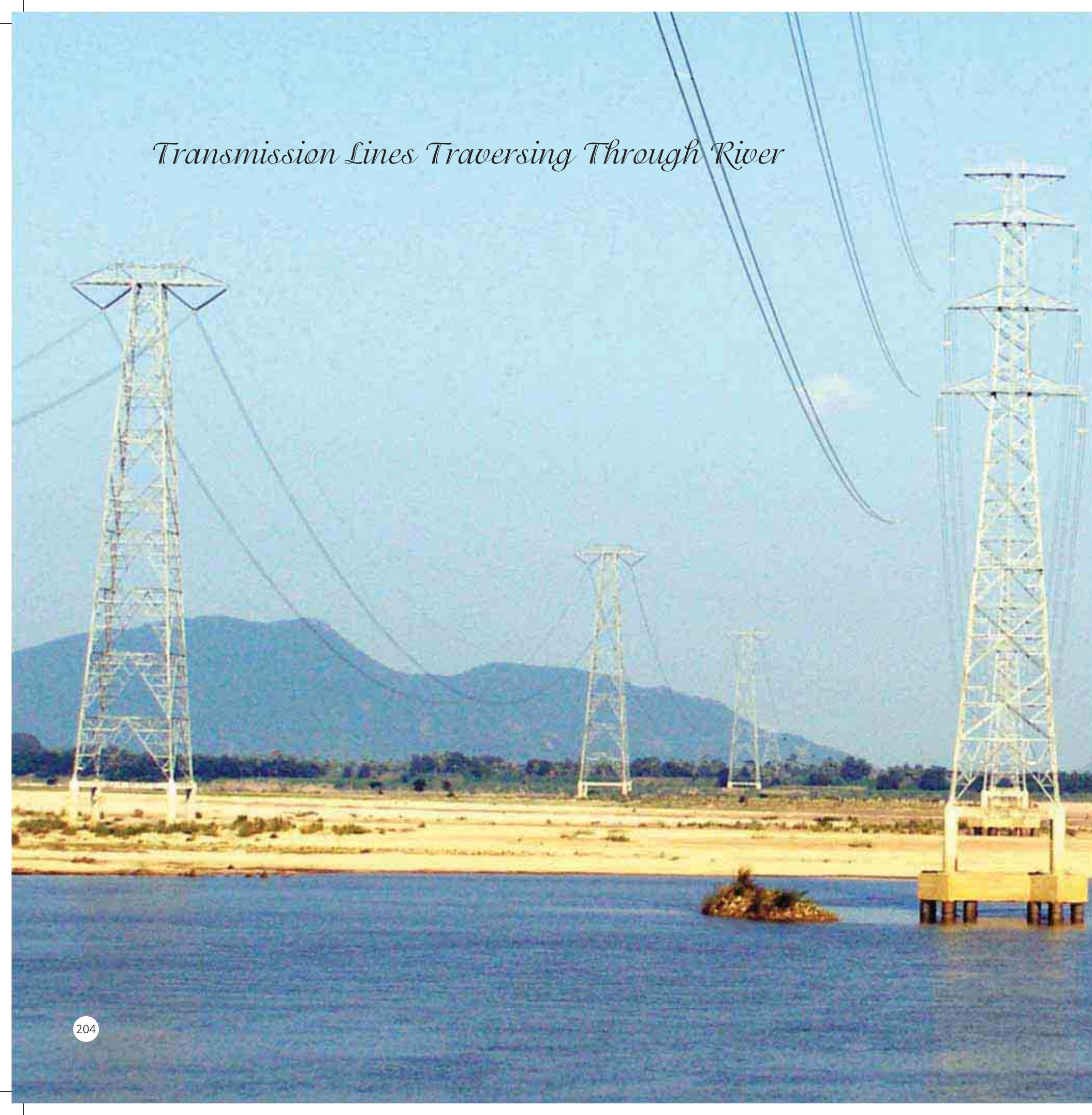
- Commissioned on 01.08.1989.
- Evacuates power generated at Raichur Thermal Power Station of M/s KPCL.

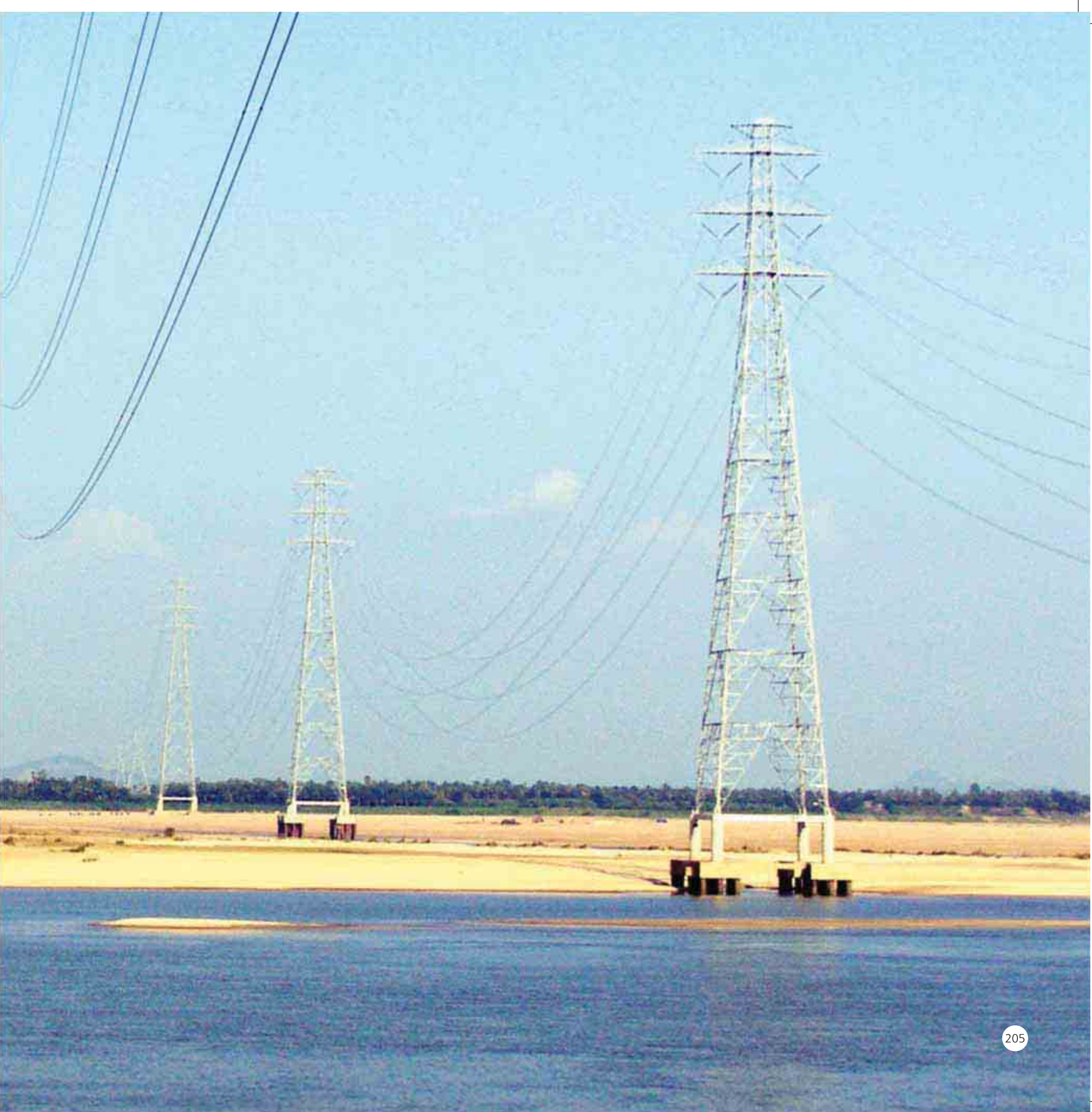


Nagarjunasagar 400kV Sub-Station Guntur, Andhra Pradesh

- Commissioned on 30.08.1985.
- More than 25 years old Sub-station.
- Was one of the biggest Sub-stations in Asia at its inception, evacuating power from NTPC, Ramagundam and also from Nagarjuna Sagar Hydro Station .

Transmission Lines Traversing Through River





SRTS-I



Nellore 765/400kV Sub-Station Andhra Pradesh

- 400 kV Commissioned on 01.02.2003 & 765 kV on 01.02.2014.
- The 765 / 400 kV Nellore Pooling Station, built on about 171 acres of land, is the first of its kind in the State of Andhra Pradesh and is also an unmanned station.

Raichur 765/400 kV Sub-Station Andhra Pradesh

- Commissioned on 31.12.2013.
- One Nation, One Grid, One Frequency has been realised with the inter-connection of NEW Grid with Southern Grid by commissioning the Raichur sub-station.
- First 765 kV/400 kV Sub-station in Southern Region.





Vijayawada 400kV Sub-Station Krishna, Andhra Pradesh

- Commissioned on 21.06.1991.
- Vijayawada Sub-station plays a vital role in the Southern Grid.
- Vijayawada Sub-station is the first sub-station in the region to have system expansion under Open Access.

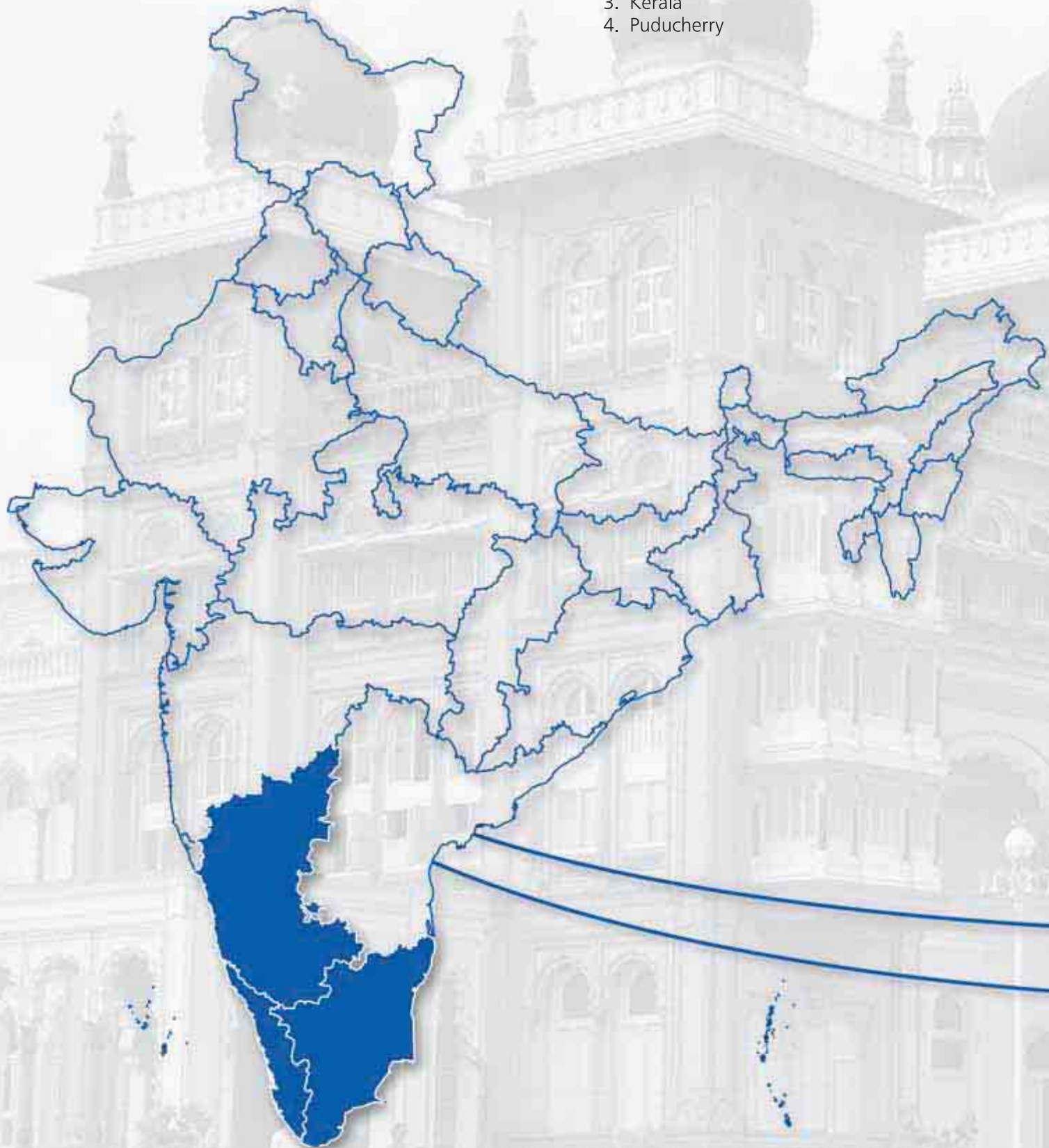
Warangal 400/220kV Sub-Station Andhra Pradesh

- Commissioned on 24.07.2009.
- 1st Unmanned Sub-station in SRTS-I.



States Covered Under Southern Region - II

1. Karnataka
2. Tamil Nadu
3. Kerala
4. Puducherry



SRTS-II

TOTAL ASSETS UPTO 31.03.2016

TOTAL LINE LENGTH	:	10408.21
		CIRCUIT KILOMETRES
TOTAL SUB-STATION	:	30
HVDC STATION	:	1
765kV SUB-STATION	:	0
765kV GIS	:	1
400kV SUB-STATION	:	24
400kV GIS	:	4
220kV SUB-STATION	:	0
220kV GIS	:	0
132kV	:	0
TOTAL MEGAVOLT AMPERE	:	21667

Southern Region Transmission System -II

SRTS-II



Arasur 400kV Sub-Station Coimbatore, Tamil Nadu

- Commissioned on 27.07.2010.
- Arasur is an automated Sub-station and is remotely controlled from Manesar.

Bidadi GIS Sub-Station Ramanagara, Karnataka

- Commissioned on 29.03.2012.
- POWERGRID's First GIS Sub-station in Southern Region.
- Commissioned with Somanahalli - Nelamangala Loop in & Loop out lines under System Strengthening Scheme of Southern Region.



Bangalore 400kV Sub-Station Karnataka

- Commissioned on 02.07.1986.
- 1st Extra High Voltage Sub-station to be established in the southern state of Karnataka initially receiving power from Ramagundam through Cuddapah-Bangalore 400 kV line.
- This sub-station is the life line of Silicon City of India.

Hiriyur 400/220kV Sub-Station Chitradurga, Karnataka

- Commissioned on 28.01.2004.
- Hiriyur is critical station in Karnataka as it helps in evacuating power from Bellary Thermal Power Station, Kaiga Nuclear Power Station and Wind Power in the vicinity of Nelamangala Station (Bangalore main load centre).



Hosur 400/230kV Sub-Station Tamil Nadu

- Commissioned on 22.10.2002.
- Hosur is a vital Sub-station of SR-II facilitating bulk power transmission from the Eastern Region (through Talcher- Kolar HVDC link) to Tamil Nadu and Karnataka.
- Under remote operation from Kolar sub-station since 20.01.2008.

Hassan 400/220kV Sub-Station Karnataka

- Commissioned on 30.05.2010.
- Sub-station having 6 nos. of 400 kV line bays, 2 nos. of 400/220 kV, 315 MVA ICTs, 1no. of 80 MVAR Bus Reactor and 6 nos. 220 kV line bays.
- World acclaimed temple architecture at Belur, Halebeed and Shravanabelagola.



Hassan Control Room

SRTS-II



Kalivanthapattu 400/220kV Sub-Station Kanchipuram, Tamil Nadu

- Commissioned on 12.05.2008.
- First Unmanned sub-station of POWERGRID.

Kolar 2500 MW HVDC Terminal 400/220kV Sub-Station Kolar, Karnataka

- Commissioned on 15.09.2002.
- 2000MW HVDC terminal station, importing power from Eastern Region to Southern Region through 1376Km long +/-500kV HVDC line. 2000MW Thermal Generation from NTPC, Talcher is dedicated to all the 5 Southern states of India.
- Located between 3 Southern States (Andhra Pradesh, Tamil Nadu and Karnataka).
- 200 Km from Tirupati, the world famous Balaji Temple.



Kochi 400/220kV Sub-Station Kerala

- Commissioned on 28.11.2011.
- Kochi is renowned as Queen of Arabian Sea and is the commercial capital of Kerala.



Karaikudi 400/220kV Sub-Station Sivagangai, Tamil Nadu

- Commissioned on 24.07.2009.
- Sub-station in Automation System with IEC-61850.



Kudgi 765/400 kV GIS Sub-Station Karnataka

- Commissioned on 19.11.2015.
- Kudgi GIS has been established as a part of establishing inter-regional link between Southern Region and Western Region for evacuation of power. The high capacity transmission system will facilitate in meeting the growing demand for power of Southern states and Karnataka in particular.

Kozhikode 400kV Sub-Station Kerala

- Commissioned on 14.10.2015.
- Plays a major role in meeting the power requirements of Northern Kerala.
- Strengthens the grid in Kerala by providing 400kV double circuit inter-state link.
- Very essential for maintaining the voltage profile of Northern Kerala within the desired levels.



SRTS-II



Madurai 400/230kV Sub-Station Tamil Nadu

- Commissioned on 12.03.1993.
- Sub-station construction commenced by NLC during 1990 and taken over by POWERGRID on 01.02.1992
- Sub-station is connected to Trichy, Udumalpet, Karaikudi, Tirunelveli, Pugalur and Kudankulam APP by 400 kV Lines. It is an important station for evacuation of Wind power.

Mysore 400/220kV Sub-Station Mysore, Karnataka

- Commissioned on 26.04.2006.
- Mysore station is poised to become a vital inter-state link in South-West India apart from strengthening KPTCL system in the region.
- The annual Dussehra Festival performed by royal family attracts tourists from worldwide.



Narendra 400/220kV Sub-Station Karnataka

- Commissioned on 28.10.2005.
- One of the most important and critical sub-stations of SRTS-II.
- This transmission system provides an alternate path to evacuate power from Kaiga Nuclear Power Station to North Karnataka.



765/400 kV Nagapattinam GIS Pooling Station

Ariyalur, Tamil Nadu

- Commissioned on 30.03.2015.
- GIS Pooling Station is identified for evacuation of Power from ISGS Projects in Nagapattinam/Cuddalore area of Tamil Nadu.



Pugalur 400/220kV Sub-Station

Tamil Nadu

- Commissioned on 01.09.2009.
- Sub-station Automation System and operation is controlled from Madurai.

Puducherry 400/230kV Sub-Station

Puducherry, UT

- Commissioned on 25.07.2010.
- The 400/230kV Sub-station in Puducherry was declared unmanned in SRTS-II under Sub-station Automation System controlled from Sriperumbudur w.e.f 27.01.2012 and recently connected to NTAMC, Manesar.
- Known as "French Riviera" of the East.





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Abundance Intact*



SRTS-II



Palakkad 400/220kV Sub-Station Kerala

- Commissioned on 28.02.2012.
- This project comes under System Strengthening XI of Southern Region.
- Palakkad Sub-station is the only corridor for taking the central sector power to northern Kerala.

Sriperumbudur 400kV Sub-Station Kanchipuram, Tamil Nadu

- Commissioned on 17.07.1987.
- Oldest 400 kV Sub-station of Tamil Nadu.
- Remote controlling station for Kalivanthapattu (Unmanned) & Puducherry (Unmanned) Stations.



Salem 400kV Sub-Station Tamil Nadu

- Commissioned on 19.02.1988.
- Salem is mainly the evacuation point of power from Neyveli Thermal Power Station, Kaiga Atomic Power Station and Upcoming Kundankulam Power Plant.



Tirunelveli 400/220kV Sub-Station Tamil Nadu

- Commissioned on 2008.
- Second biggest Sub-station in SRTS-II.
- Sub-station was commissioned under Transmission System for Kudankulam Atomic Power Project.

Thrissur 400kV Sub-Station Kerala

- Commissioned on 12.01.1993.
- Commencement of construction in early 1989 by NLC. Subsequently taken over by POWERGRID in 1992.



Trichy 400/230kV Sub-Station Tamil Nadu

- Commissioned on 01.01.1994.
- Sub-station is a vital link between NLC and load centres at Southern part of Tamil Nadu through TANGEDCO.

SRTS-II



Thiruvallam 765/400kV Sub-Station Tamil Nadu

- Commissioned on 01.04.2014.
- Second 765kV Gas Insulated Sub-Station (GIS) in India.
- First 765kV AC Sub-station in Southern Region - II.

Thiruvananthapuram 400/220kV Sub-Station Kerala

- Commissioned on 26.07.2005.
- Station was established under Southern Region System Strengthening Scheme-II, facilitating the power transfer through a 400 kV Double Circuit transmission line from Tirunelveli sub-station.
- This transmission system caters to the transfer of central share of electricity to the state of Kerala, including the power from Kundankulam Nuclear Power Project.



765/400kV Tuticorin Pooling Station Tamil Nadu

- Commissioned on 31.12.2014.
- Pooling station is established to pool the power to be generated in and around Tuticorin under LTOA-A.
- Presently the station is commissioned with LILO of both circuits of 400 kV Madurai-Tuticorin JV line and 1 no. of 80 MVAR Bus Reactor.



765/400/220kV Tumkur (Madhugiri) Sub-Station Karnataka

- Commissioned on 29.11.2015.
- This Project had been envisaged under System Strengthening – XIII in Southern Region. This Sub-station, after completion of construction of various transmission lines, connects 3 of the southern states namely Andhra Pradesh, Karnataka and Tamil Nadu for exchange of inter-state power transfer.

Udumalpet 400 kV Sub-Station Tirupur, Tamil Nadu

- Commissioned on 01.02.1991.
- Serves as the Primary Point of Inter-connection to Kerala with the Southern Grid for the evacuation of power imported from Talcher-Kolar HVDC Bipole and Kudankulam Project.



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**From Left to Right - Smt. Jyoti Arora, Joint Secretary, MoP; Shri Jagdish Ishwar Bhai Patel, External Director;
Shri K. Sreekant, Director (Finance), POWERGRID; Shri Pradeep Kumar, Joint Secretary & FA, MoP;
Shri I. S. Jha, Chairman & Managing Director, POWERGRID; Shri R. P. Sasmal, Director (Operations), POWERGRID;
Shri Ravi P. Singh, Director (Personnel), POWERGRID.**

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