No.10/8/2015-Trans
Government of India
Ministry of Power
Shram Shakti Bhawan, Rafi Marg, New Delhi-110001

Dated, 6th August, 2015

Meeting Notice

Subject : Meeting to discuss concept on General Network Access (GNA) etc.

Secretary, Ministry of Power will take a meeting on **18.08.2015 at 10.00 am** in the Committee Room (Labour), C-Wing, 1st Floor, Shram Shakti Bhawan, Ministry of Power, New Delhi in which the following agenda issues would be discussed.

(i) Concept of General Network Access (GNA) – Brief on GNA along with expectations from States/UTs is at **Annex-I**.

(ii) Planning of State Transmission Network aligning with 20 Years Perspective Plan on transmission –Brief along with presentation on 20 years plan from States is at **Annex-II**.

(iii) Expediting proposals for Power System Development Fund (PSDF) from the States and faster implementation of the already sanctioned projects under the scheme - Brief background is at **Annex-III**.

(iv) 24x7 documents - Planning and Execution. Brief background along with expectations from the States/UTs is at **Annex-IV**.

(v) Resolving Right of Way (RoW) issues in 20 important transmission lines (where action is to be expedited) by the States – List furnished by PGCIL is at **Annex-V.**

(vi) Green Energy Corridors: Part-I and II – Brief background is at **Annex-VI**.

(vii) Reliable communication and Data Acquisition System upto 132 kV sub-stations by PGCIL and below 132 kV level upto 33 kV level by CEA. Schemes to be prepared by CEA and PGCIL of their respective portion of various regions of the country in consultation with STUs - Brief background is at **Annex-VII**.

The agenda has also been uploaded on the Ministry of Power website www.powermin.nic.in (path to access-Home page-Current Notices - Meeting Notice and Agenda).

2. **Kindly make it convenient to attend the meeting.**

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To

1. Chairperson, CEA, New Delhi with request to make presentation on GNA etc.
2. Member (PS), CEA, New Delhi.
3. Principal Secretary/Secretary (Power/Energy) of all States/UTs.

...2/-

4. Chairman/CMDs of all States/UTs Transmission Utilities.
5. CMD, PGCIL, Gurgaon with a request to make presentation on (v) and (vii) - upto 132 kv substations.
6. COO (CTU-Plg.), PGCIL, Gurgaon.
7. CEO, POSOCO, New Delhi.
8. Secretary, CERC, New Delhi.
9. CEO, Sterlite Grid Limited, New Delhi-110065.
10. CEO, Adani Power Limited, Gurgaon-122001 (Haryana).
11. CEO, Reliance Power Transmission Limited, Gurgaon-122002 (Haryana)

Copy to:

PPS to Secretary (P) / AS (BNS)/ JS (Trans)/ Director (Trans)/US(Trans)/US(PG)/US(OM)

Copy also forwarded to:

1. Deputy Secretary (Admn), Ministry of Labour with the request to book the Committee Room (Labour) for the aforesaid meeting for around half-day.

2. Technical Director, NIC, MoP with the request to host this on MoP website as mentioned in para 1 above.

3. S.O.(Admn- III), Ministry of Power, S.S.Bhawan, New Delhi with the request to make necessary arrangements for refreshments of around 75 officials.

4. Reception Officer, MoP, New Delhi.

Annex-I

Brief on General Network Access (GNA) for ensuring adequacy in the planning and development of Inter-State Transmission System

GNA is the ability in MW to draw or supply from a given point/zone of connection (PoC) to any ISTS point as assessed by the CTU through system studies. Since a strong all India mesh grid would emerge by end of 12th Plan i.e. 2016-17, it should be possible to do planning with fair degree of certainty without prior knowledge of pairs of injection and drawal. System strengthening for additional drawal and additional injection could be done without knowing the contracted source of purchase or sale because power in a meshed network would be transferred by displacement. In other words, the generator and the States/Consumer could be given **General Network Access** (GNA) to ISTS for the agreed quantum of power (MW). A GNA agreement could become the driver for investment. The new approach should therefore involve introduction of General Network Access (GNA) mechanism in Inter-State Transmission System for transmission system development and hassle free access to the transmission system by the Generators.

Benefit of GNA

- New transmission corridors could be planned based on GNA requirement, which would help in a great way to remove congestion in transmission corridors.
- Generators shall not be liable to pay notional point of drawal charges
- Generators shall not have to declare target beneficiaries
- Generators shall have access to ISTS grid with flexibility for point of drawal subject to conditions laid down at the time of grant of GNA.
- Drawing Utilities shall also access to ISTS to the extent of their GNA and get the system created for power transfer over ISTS from anywhere in the grid.
- This will give them flexibility to purchase power through long / medium / short term transactions/agreements depending upon their need and economic considerations and without any transmission restrictions.

CERC has brought out a Staff paper in September 2014 on Transmission Planning, Connectivity LTA, MToA and other related issues. In its staff apper, CERC has asked stakeholder to comment on:

a) need of connectivity
b) Issues of bank guarantee
c) Issues on delay in commissioning
d) GNA, transmission planning
e) Allocation of transmission for power market, shallow/deep connections etc.

Staff paper has also proposed to do transmission planning based on:

a) installed capacity,
b) to make regulation of transmission planning process
c) suggested to adopt either GNA or an alternate to GNA
d) accordingly, amend related regulation of CERC.

For full detais, please refer to CERC website, www.cercind.gov.in (path to access – Home – Rules & Regulations - Staff Paper on Transmission Planning, Connectivity, Long/ Medium Term Open Access and other Related Issues - Staff Paper). A concept paper prepared by CEA on GNA is at **Annexure-I**.

Expectations from the States: States may come up with their views on GNA in order to finalise the framework for implementation of GNA.

Annexure-I to Annex-I

General Network Access

for

Ensuring adequacy in the planning and development of Inter State Transmission System

Ensuring adequacy in the planning and development of Inter State Transmission System

Contents

Ensuring adequacy in the planning and development of Inter State Transmission System

1.0 Background

The planning of transmission system to meet long term requirements of ISGS (Inter State Generating Station) projects is being carried out since 1975. In earlier time the ISGS only consisted of generating stations of central sector companies i.e. NTPC, NHPC, NLC, NPCILetc with known beneficiaries. Slowly, the predominance of central sector projects which have known beneficiaries (as determined by Central Government in the form of allocations) started fading out and now more and more of private sector generation projects (IPPs) are being envisaged which intend to sell power to two or more States. The current generation addition programme of 88 GW during 12th Plan has about 47 GW capacity under private sector as compared to only 26 GW under central sector. A part of this 47 GW capacity is being tied up by State utilities under long/medium term contracts.

The planning of transmission system for central sector ISGS was carried out with the prior knowledge of quantum of power, point of injection and point of drawal. Even for transfer of 15% unallocated power of central sector projects, to different parts of the country from time to time, there was rarely any problem of congestion because of the inherent margins built-up in transmission system which take care of flexibility required for transfer this unallocated capacity.

Enactment of the Electricity Act, 2003 has opened up hitherto constrained electricity market which was characterized by long term PPAs and inability of Distribution Companies and consumers to have a choice of suppliers. Besides, de-licensing generation and removing controls on captive generation, the provision regarding availability of non-discriminatory open access in transmission from the very beginning and distribution in phased manner is an important feature of the Act. This creates enabling environment for competition among generators/traders to choose their customers and vice-versa.

In 2005, government notified tariff policy which mandated that all the States/DISCOMs would buy electricity through competitive bidding. However, the response of Distribution utilities for inviting case-1/ case-2 bids, to meet their long term requirement of power, is not satisfactory. In absence of firm beneficiaries, the transmission is being developed based on target beneficiaries

indicated by the generation project developers, which results in sub-optimal utilization in one part of grid or congestion in another part.

The CERC Regulation for open access in Inter-State Transmission System (ISTS) was introduced in 2004. The regulation had the provision for obtaining Long Term Access (LTA) and Short Term Open Access (STOA). The information about the point of injection, points of drawal and the quantum were required to be furnished upfront. The request for fresh connectivity to ISTS was processed simultaneously with the grant of LTA.

As the IPPs found difficulties in finalizing beneficiaries at the time of LTA application, CERC brought new Regulation in 2009 having separate provisions of Connectivity, Medium Term Open Access (MTOA) and Long Term Access(LTA). The 2009 regulations for LTA do not require upfront declaration of firm beneficiaries. However, it requires the IPPs to declare the target region of anticipated drawal.

2.0 Transmission planning for ISGS as per present CERC regulations

Access to inter-State transmission system is governed by the regulations of the Central Regulatory Commission. As per existing CERC Regulations i.e. 'Grant of Connectivity, Long-term Access and Medium-term Open Access in inter-State Transmission and related matters Regulations, 2009' and 'Open Access in inter-State Transmission) Regulations, 2008', any generator can seek connectivity with the grid for a specified quantum of power and can seek transmission access for power transfer through Long Term Access (LTA), Medium Term Open Access (MTOA) and Short Term Open Access (STOA) as detailed below. The Central Transmission Utility (CTU) is the nodal agency for providing long term (12 to 25 years) access and medium term (3 months to 3 years). The nodal agency for grant of short term open access (up to one month) is the Regional Load Dispatch centre. The nodal agency for providing transmission access to the power exchanges is the National Load Dispatch Centre.

2.1 Salient Features of LTA

- LTA involves requirement of power transfer from 12 to 25 years.
- If strengthening of transmission system is required for reliable transfer of the LTA quantum, the process of grant of LTA should be completed at least 4-5 years prior to

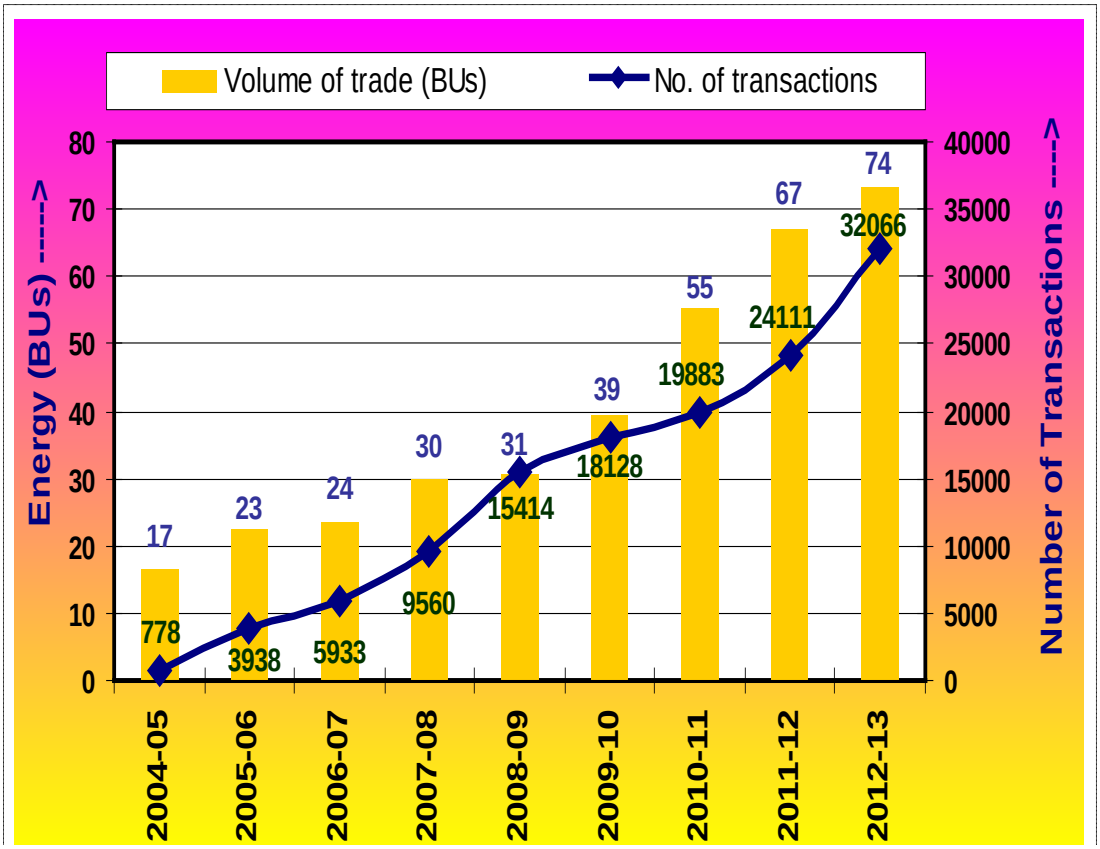
commencement of LTA due date.

- As per the regulations, LTA can be sought in two ways i.e. LTA Point-to-point' and 'LTA with Target Region' depending on whether the beneficiaries are known or not.
- For 'LTA Point-to-point' (i.e. with finalized beneficiaries), the point of injection, point of drawal and quantum of power transfer should be known. In this case, the relevant injection and drawal charges are recovered from the buyer.
- For 'LTA with Target Region', the point of injection, target region of drawal and quantum of power transfer should be known. In this case, the injection charges and drawal charges of the target region are paid by the generator.
- Till August 2013, CTU had received 218 nos. of Applications for Long-term Access with Installed Capacity of 1,79,300 MW and LTA sought was for 1,32,000 MW. Out of this, LTA was granted to 148 nos. of Applicants for LTA quantum of 83,000 MW. Details are given at Annex-I.
- Till March 2014, CTU had received 223 nos. of applications for Long-term Access with Installed Capacity of about 1,79,700 MW and LTA sought was for about 1,34,000 MW. Out of this, LTA has been granted to 148 nos. of Applicants for LTA quantum of 80,000 MW. 40 nos. of applications have been closed/withdrawn. The balance 35 nos. of applications are under process some of which has already been discussed in the standing Committee, however most of these generation projects have poor progress and therefore, they are under hold. Details are given at **Annexure-I**.

2.2 Salient Features of MTOA and STOA

- MTOA involves requirement of power transfer from 3 months to 3 years while STOA involves requirement of power transfer up to 1 month.

- MTOA/STOA provides the opportunity of selling and buying power from any location (source) to any location(destination) in the grid.
- No augmentation in the transmission system is carried out for grant of MTOA/STOA. The grant of MTOA/STOA is based on the available margin in the existing/under-construction transmission system.
- Till March, 2014 CTU has received 127 applications seeking MTOA for about 15,300 MW of power transfer. Out of these, MTOA has been granted to 48 nos. applicants for about 4,500 MW where transmission margins were available. 14 nos. of applications are still under process. The balance applications were closed due to reasons like non-availability of the margins in the transmission corridors and incomplete applications. The details are given at **Annexure-II**.
- The number of STOA transactions cleared every year is very large as depicted in the following graph:



2.3 Salient features of regulations for Connectivity

- Under this provision, the generator can request to get connected to the ISTS system without any upfront commitment for sharing of transmission charges.
- The provisions of Connectivity do not mandate for system strengthening and thus do not ensure delivery of power from the connected generator. This generator leans on the existing grid, causes congestion and risks stability of the grid.
- There is a need to make the concept of Connectivity meaningful by allowing system strengthening to done commensurate with the installed capacity of the generating station seeking Connectivity.
- Till March 2014, CTU had received 190 nos. of applications for Connectivity with an installed capacity of about 1,95,000 MW. Out of this, Connectivity was granted to 79 nos. applicants for about 70,000 MW installed capacity. 43 nos. of applications have

been closed/withdrawn. 51 nos. of applications have been discussed in the Standing Committee Meeting, however due to poor progress most of them are under hold and balance applications of 17 nos. are under process. Out of the 190 Connectivity applicants, only 90 applicants had applied for Long-term Access. The details are given at **Annexure-III**.

3.0 Issues in the present planning process

3.1 The present planning process

- The planning of transmission system for new ISGS seeking LTA is carried out based on the quantum of power, point of injection, point of drawal, time frame requirement of power transfer etc.
- Transmission schemes are also evolved as grid strengthening schemes based on the projected likely future power scenarios and operational feedback.
- The transmission system so planned has transmission margins which inherently get created on account of the following:
  - Transmission planning is done for peak power transfer, whereas, actual operational condition varies from time to time
  - requirement to meet specified reliability criteria(N-1/N-1-1),
  - adoption of higher capacity or higher voltage transmission line to conserve ROW for future generation potential or power transfer requirements,
  - the lumpy nature of transmission elements,
- The transmission margins are utilized for power transfer under MTOA and STOA.

3.2 Issues regarding creation of adequate transmission system

- CERC regulations allow system strengthening (fresh investment) on the basis of application for LTA. No system strengthening can be done while giving Connectivity, MTOA or STOA. The investment of the transmission system is therefore made on the

assurance of payment of transmission charges for a longer period by the LTA users.

- The existing philosophy is based on the premise that long term PPAs are predominant. Short term market, seeking MTOA/STOA, shall be catered through available margins.

3.3 Issues regarding drawal capacity for States

- Historically, additional drawal capacity for the States was created whenever new central/ISGS power projects came up with known beneficiaries. New drawal points/ transformation capacity additions for States were created on request by the STU considering the total demand projections and quantum of allocated power and grid requirements base on load growth after agreement in the Standing Committee for power system planning. It is often found that the drawal requirement of many states is more than the allocated power. Transmission system so created to meet the drawal requirement of the states fulfills the need of that particular state, however, the charges are shared by all the beneficiaries.

- There are no specific formulations in CERC regulation for creation of drawal capacity for the States corresponding to the grant of 'Connectivity' or the 'LTA with Target Regions'.

3.4 Issues related to 'Connectivity' provisions

- CERC regulations provide for free of cost connectivity to ISTS. This provides incentive for generators to under-declare their LTA requirement and to piggy ride on the existing transmission network. By simply getting connectivity, the generation developer can avoid the liability of paying monthly transmission charges which would be payable under LTA service.

3.5 Issues related to target region LTAs

- Under this service, the generation developer has to undertake to pay transmission service charges (PoC injection + PoC notional

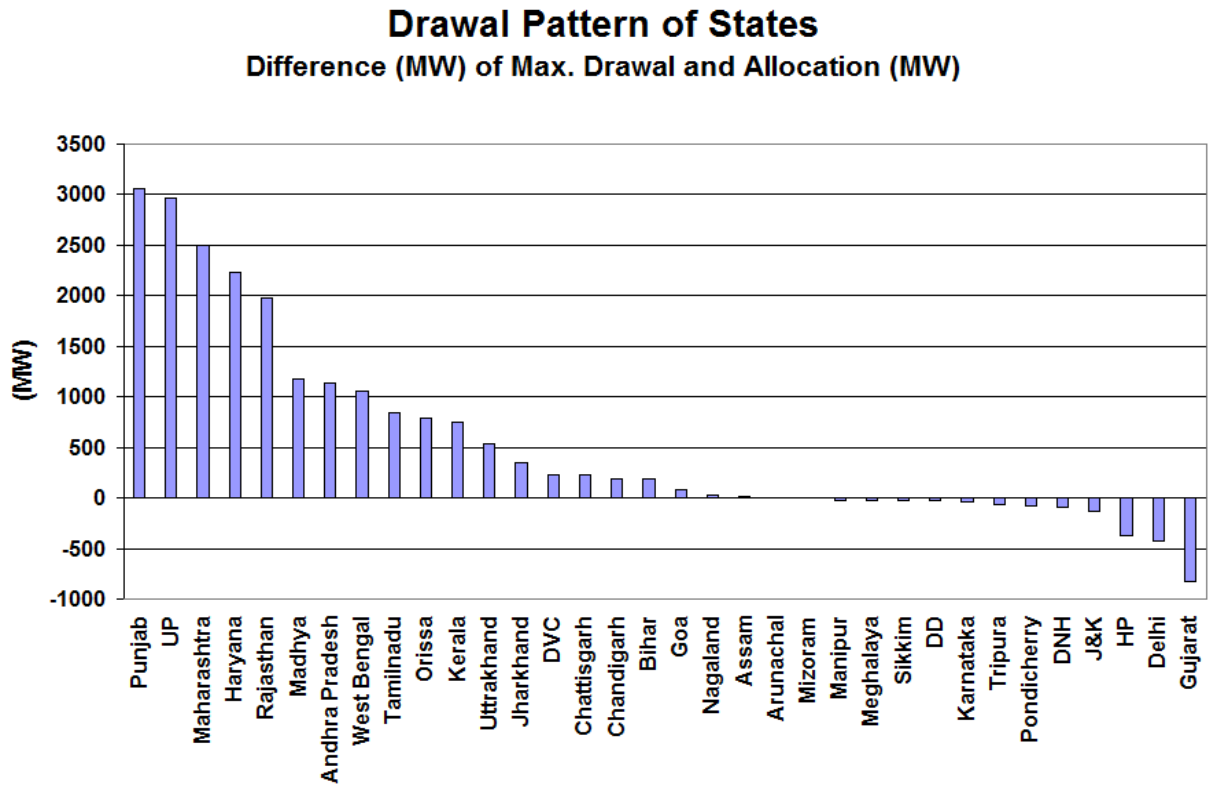
drawal) for 25 years. However in lieu of the above commitment to pay, the generation developer is not provided any service at all as long term customer. Generation developers who seek LTA (target region) have to separately stand in the queue for MTOA or STOA for actually scheduling their power. The charges paid by them for availing MTOA or STOA service are not adjusted against their monthly LTA bill if they sell power outside the declared target region or through PX. This is resulting in double payment by the generators.

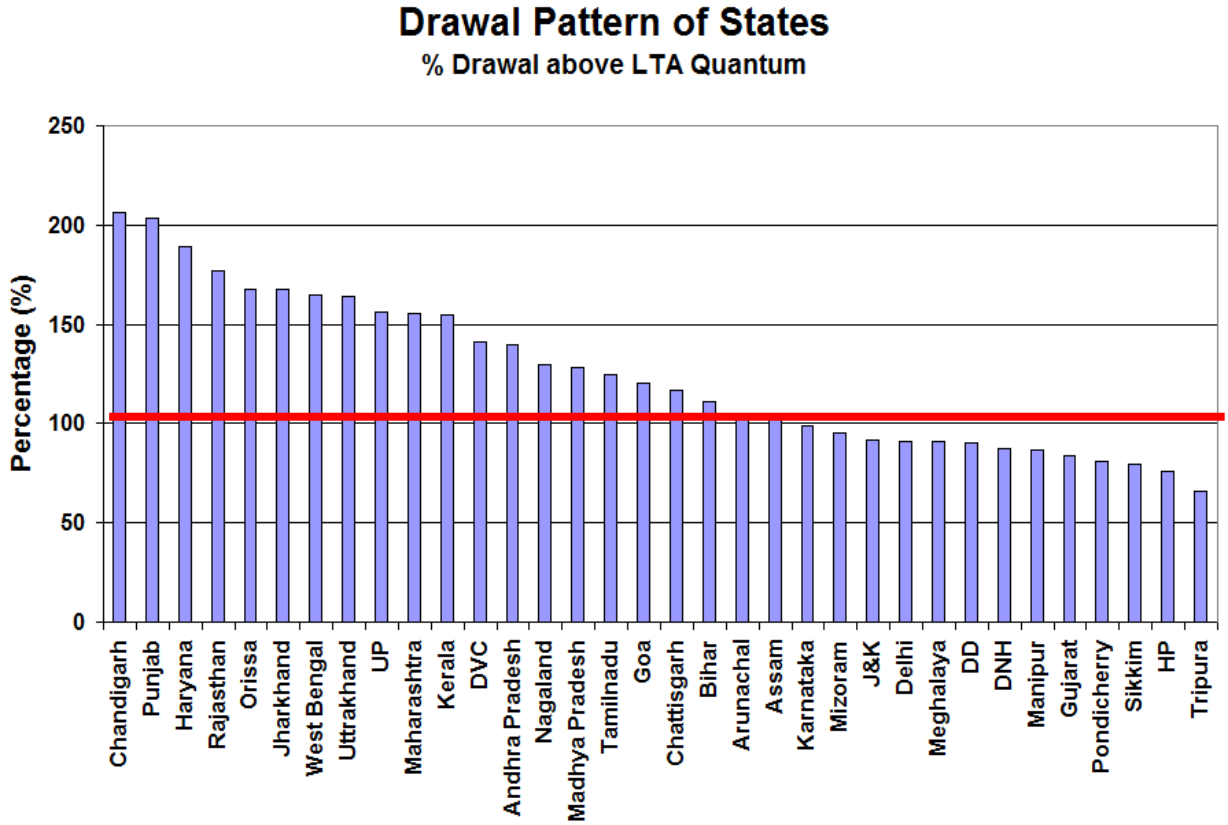
- The generation developers are resorting to LTA based on target region as they are not able to finalise the long term beneficiaries. The root cause of this is that the power procurements through Case-I bidding route are not getting finalized by the respective States and also due to delay in bidding process and various litigations. Significant amount of power transfer takes place under MTOA/STOA. This is leading to congestion in various transmission corridors across the country. The difference between LTA and total drawal by the states is in following Table and depicted in the charts:

Drawal of power by the States in addition to LTA Quantum during 2012-13

S.No.	State	Max. Peak Demand Met (MW)	Max Drawl So far (MW)	LTA Quantum (MW)	Difference (MW) of Max Drawl and Allocation (MW)	Percentage Drawal above LTA Quantum
1	Punjab	8751	6027	2963	3064	203
2	UP	12048	8217	5251	2966	156
3	Maharashtra	16765	7049	4545	2504	155
4	Haryana	6725	4735	2501	2234	189
5	Rajasthan	8515	4555	2571	1984	177
6	Madhya Pradesh	9462	5304	4127	1177	129
7	Andhra Pradesh	11630	4005	2871	1134	139
8	West Bengal	7249	2694	1636	1058	165
9	Tamilnadu	11053	4315	3466	849	124

S.No.	State	Max. Peak Demand Met (MW)	Max Drawl So far (MW)	LTA Quantum (MW)	Difference (MW) of Max Drawl and Allocation (MW)	Percentage Drawal above LTA Quantum
10	Orissa	3694	1955	1165	790	168
11	Kerala	3262	2095	1352	743	155
12	Uttrakhand	1674	1368	834	534	164
13	Jharkhand	1172	866	517	349	168
14	DVC	2470	797	566	231	141
15	Chattisgarh	3134	1593	1365	228	117
16	Chandigarh	340	363	176	187	206
17	Bihar	1784	1905	1719	186	111
18	Goa	475	450	374	76	120
19	Nagaland	109	139	107	32	130
20	Assam	1148	878	860	18	102
21	Arunachal	114	140	137	3	102
22	Mizoram	73	76	80	-4	95
23	Manipur	120	122	141	-19	87
24	Meghalaya	330	218	240	-22	91
25	Sikkim	95	114	143	-29	80
26	DD	286	289	319	-30	91
27	Karnataka	8761	2722	2756	-34	99
28	Tripura	228	128	195	-67	66
29	Pondicherry	320	322	397	-75	81
30	DNH	629	623	711	-88	88
31	J&K	1817	1564	1701	-137	92
32	HP	1672	1149	1515	-366	76
33	Delhi	5642	4295	4722	-427	91
34	Gujarat	11960	4208	5041	-833	83





4.0 Transmission charges - POC based mechanism

- National Electricity Policy and Tariff Policy mandate that national inter-state transmission tariff frame work should be sensitive to distance, direction and quantum of flow. Accordingly, CERC on June 16, 2010 notified the Regulations of sharing inter-state transmission charges. The method described in the Regulations is known as point of connection (PoC) tariff. The point of connection tariff calculation is based on hybrid method which uses marginal participation method for nodal charges and average participation method for selection of slack buses.
- NLDC has been designated as implementing agency for calculation of PoC charges. In this method transmission charges are calculated for the transmission network owned, operated and maintained by ISTS (inter-state transmission system) licensee and the transmission assets certified by RPC used for transfer of inter-state power. The yearly transmission charges of ISTS licensee are to be recovered fully.
- It is based on the load flow results and the input data i.e. network topology, approved injection and approved withdrawal data is obtained from each of the designated ISTS customer (DIC) and transmission licensee. YTC (yearly transmission charges) data for each ISTS line is provided by CTU / transmission licensees. The basic network data is truncated to have 132 kV and above assets for NER while 400 kV and above assets for rest of country. This truncated network is transported to Web net software developed by IIT, Mumbai, which calculates the transmission charges for each node by using the hybrid method.
- Average YTC per circuit km for each voltage and conductor configuration is calculated. The cost is allocated to each transmission line by multiplying its ckt km with average cost for that voltage level and conductor configurations. The nodal allocation of cost is done by adding the proportionate cost of each of transmission line used by that node. Nodal cost so obtained is then divided by approved injection / approved demand at that node to get PoC.
- At present, half of YTC is recovered through above PoC method and other half through National Postage Stamp method to moderate the PoC rate. In order to avoid tariff shock, this is further moderated by introducing three slab rates.
- Recently, CERC has circulated certain draft amendments proposed in the existing PoC mechanism for discussion / comments of various stake holders.

5.0 Need for a new approach for transmission service

- A way out has to be found as the long term PPA may not materialize at the time of planning for transmission to a significant extent. The existing transmission service products and approach to planning need to be reviewed so as to provide flexibility to buyers and sellers. New transmission systems would have to be developed to cater to the need of short/medium term market including power exchanges (PX). However, any fresh investment should be supported by commitment to pay for it. States like Punjab, Tamil Nadu, Haryana, UP etc. who are availing far more import capacity through ISTS than their LTA capacity should proportionally share the PoC charges at the point of drawal.
- We have to recognize the fact that short/ medium term market can no longer be restricted to “spare margins” on the lines, which was the basic premise of the first open access regulations introduced in 2004 when long term PPAs were predominant. As of now fresh investment in transmission is permitted only for providing long term access. It needs to be recognized that in the current scenario if short term/ medium/PX transactions are curtailed it results in significant bottling up of generation and distress to DISCOMs.
- In the absence of known beneficiaries, whether through allocations, case-I biddings, MOU etc, it is not possible to optimize creating transmission system of adequate capacity, in appropriate direction and in matching timeframe.
- It is required that:
    - The IPPs/generators should be given comfort to sell their powers under long/medium/short-term time frame with lesser congestion events.
    - The transmission system is built with due commitment from its users i.e. the (i) injectors (generators, captive plants and surplus State utilities) and (ii) drawing entities (State utilities and bulk consumers).
    - The commitment not only gives the States a responsibility to properly assess their expectations from the ISTS but also gives them the right to get adequate transmission capacity created for their use. Thus commitment is necessary to optimize the transmission system and to ensure that stranded transmission assets do not get created.
    - Sharing of transmission charges becomes fairer and equitable with commitment from all stake holders i.e. injecting entities, LTA costumers, MTOA and STOA customers.

- Since a strong all India mesh grid would emerge by end of 12th Plan i.e. 2016-17, it should be possible to do planning with fair degree of certainty without prior knowledge of pairs of injection and drawal. System strengthening for additional drawal and additional injection could be done without knowing the contracted source of purchase or sale because power in a meshed network would be transferred by displacement. In other words, the generator and the States/Consumer could be given **General Network Access** (GNA) to ISTS for the agreed quantum of power (MW). A GNA agreement could become the driver for investment.
- The new approach should therefore involve introduction of General Network Access (GNA) mechanism in Inter-State Transmission System for transmission system development and hassle free access to the transmission system by the Generators.

6.0 General Network Access(GNA)

6.1 The definition of GNA

- GNA is the ability in MW to draw or supply from a given point/zone of connection (PoC) to any ISTS point as assessed by the CTU through system studies.

6.2 Broad planning concept under GNA

- Transmission system strengthening to be carried out based on GNA requirements of the generators and the States and in accordance with the CEA(Technical Standards for Connectivity to Grid) Regulation.
- The concept of PoC charges has de-linked the transmission charges and losses from the notional path of commercial transaction of power. GNA is also not path specific. Accordingly, charges for GNA could be aligned with the PoC mechanism.
- While granting GNA, the generation and load scenarios and other assumptions would need to be declared.
- There would be instances where the transmission system (ISTS) to fulfill GNA as required by the States/or generators is not built/or is delayed, therefore, is need to assess effective GNA on day/month/quarter/year ahead basis. The transmission charges may be based on effective GNA.
- Mode of commercial arrangement(s) between the generators/sellers and States/buyers not to have any bearing on General Network Access, unlike the present provisions under LTA, MTOA etc.

6.3 Process for implementation and grant of GNA

- Generators would need to specify the ex-bus installed capacity connected with the ISTS grid (in case of captive plants - maximum power they plan to inject into the grid) as requested GNA quantum for injection of power.
- States need to specify their maximum power drawal requirements as requested GNA quantum for drawal of power.
- The effective GNA would be as assessed by CTU through system studies and considering the transmission system planned through the coordinated planning process and planning criteria of CEA.
- The States, which are also planning to inject into ISTS, would need to specify the quantum of maximum power injection as requested GNA quantum for injection.
- For availing GNA, the injector (i.e. the generator or the surplus State) shall not be required to specify target customer.
- Similarly, the drawing entities (the deficitStates or the bulk consumers) shall not be required to specify the source of supply of power.
- GNA holders shall have the option to avail
  - LTA point to point (i.e. having PPA with beneficiaries)
  - MTOA
  - STOA
- Requirement of GNA (drawl / injection) to be assessed by the generators, bulk consumers or States at least with 4-5 years in advance.
- System strengthening for drawal by the States would be driven by GNA
- States shall have to sign the GNA with CTU to be treated as preferred customer.
- STUs of respective state to be nodal agency for above in line with Section-39 of the Act. STU to avail GNA on behalf of all intra-state entities i.e. DISCOMs, embedded generators, CPPs etc.
- Entities seeking GNA shall have to sign agreement, furnish BG etc. for enabling implementation of the transmission system.
- All existing LTA, or long-term allocations should be converted to GNA.

- The transmission service under 'Connectivity' and 'LTA with target regions' gets replaced by GNA.
- The difference between LTA/ MTA/ STOA users shall be in the priority of scheduling.

6.4 The tenures under GNA mechanism

- The GNA may be for a period of 12 years to ensure recovery of investment in transmission. Whether to keep this as 12 years or a longer time period i.e. up to 25 years, may be deliberated through CERC's regulatory process.
- For scheduling under GNA, it is proposed that - the LTA Point-to-point can be for a minimum period of 5 years, MTOA for one year fixed tenure, with window opening twice a year, and the STOA for period up to 1 month.
- Here it is highlighted that GNA is only for transmission service and is not proposed to be linked with long, medium or short term power purchase agreements.

7.0 Methodology for assessing GNA requirement

Following methodology is proposed to work out GNA requirement of the injecting as well as drawing entities:

7.1 For generation Projects:

a) Each generator is expected to seek a minimum GNA ($GNA_{G,MIN}$), which shall be:

$GNA_{G,MIN} = P_{IC} (1 – AUX/100)$

where:

P_{IC} = Rated installed capacity of the generating unit/plant, in MW
AUX = Normative auxiliary consumption, in % of installed capacity

b) A generator, however, may seek a GNA which may be higher than the $GNA_{G,Min}$. This may be due to a different value of actual auxiliary consumption and/or permissible overload capacity of the generating units. With a higher GNA, the generator can ensure sufficient transmission capacity for selling its power up to the enhanced GNA he has sought.

7.2 For states:

a) Generally, the States would need to seek a 'Drawal GNA' (i.e. $GNA_{STATE,DRAW}$) to ensure sufficient transmission capacity to draw/buy

power over ISTS from the Inter state generating stations or from other surplus state utilities.

However, the States which expect to become surplus during some period of the year, would also be required to seek an 'Injection GNA' (i.e. $GNA_{STATE,INJECT}$), so as to ensure that sufficient transmission capacity is created to inject into ISTS for selling his surplus power to buyers in other States.

The above GNA(s) would need to be worked out for each target year, i.e. for the next 5th year on rolling basis.

GNA requirement may be worked out as follows:

b) $GNA_{STATE,DRAW}$ = Maximum of ($D_{PK,Qi} - G_{AV,Qi}$) ,

Where: Qi = quarter of the year i.e. Q1, Q2, Q3 and Q4

c) $D_{PK,Qi}$is peak demand for ith quarter

$D_{PK,Qi} = M_{Qi} \times D_{peak}$

D_{peak}= Projected annual peak demand of the State for the target year. This may be taken from the projections of 18th EPS of CEA. This, however, may be corrected considering projections based on historical demand data. If the projected demand based on historical data is within $\pm$ 10% of EPS data then the EPS figure may be taken. The States may also consider a higher value of D_{peak} based on their own projections.

M_{Qi} = Multiplying factor, for ith quarter. This is the ratio of peak demand in the ith quarter to the annual peak demand, and can be derived from the historic demand data of monthly peaks, of the state, for at least last five years.

d) $G_{AV,Qi}$is generation availability from following types of generating stations located in the State which are either existing or are likely to be available in ith quarter of the target year:

- the state-sector generating stations,
- IPPs having contract with state DISCOMs and for which the STU has built its transmission system to evacuate power for consuming in the State,
- the central sector generation dedicated to that state for which the STU has built its transmission system to evacuate power

$G_{AV,Qi} = H_{AV,Qi} + T_{AV}$ ($H_{AV,Qi}$ is generation availability from hydro plants, and T_{AV} is generation availability from thermal plants)

where:

$H_{AV,Qi} = K_{H,Qi} \times H_{IC}$

H_{IC} = Total installed capacity of hydro plants

$K_{H,Qi}$ = A multiplying factor which is to be derived from the historic data of availability, hydrological pattern etc. The State may consider a conservative value like bad monsoon season or an average value for the quarter.

$T_{AV} = K_1 \times K_2 \times K_3 \times T_{IC}$

T_{IC} = Total installed capacity of thermal plants

K_1 = (1-auxiliry consumption in pu), or may be taken as point 0.9

K_2 = plant outage factor, may be taken as 0.95

K_3 = partial/forced outage factor, may be taken as 0.97

e) There may be a scenario, where, a State may back down its own generation and/or that of the IPPs with whom it has long term PPA and instead buys power from ISGS through use of ISTS to meet its demand, because it feels that it would still be economical even after paying fixed charges for generation capacity that has been backed down, the additional ISTS transmission charges and the additional transmission losses. In such a scenario, the State may however, seek a higher drawal GNA than the value of $GNA_{STATE,DRAW}$ as calculated above, to ensure sufficient ISTS transmission is created for the State to fulfill his requirements.

f) A States which expects to become surplus during some period of the year, would also be required to seek separately an injection GNA i.e. $GNA_{STATE,INJECT}$. The 'Injection GNA' would be a value between a range of (MIN, MAX). The State, depending on its requirement, can select a value for 'Injection GNA' in this range that so as to ensure sufficient ISTS capacity to export power from the State.

Where, 'MIN' is the conservative estimate. If the $GNA_{STATE,DRAW}$, as calculated in the procedure given above, becomes –ve for any quarter, then this can be taken as 'MIN' for the target year, otherwise 'MIN' may be taken as 'zero'.

For obtaining 'MAX', the calculation procedure of $GNA_{STATE,DRAW}$may be repeated but with following modifications:

- Take light load instead of peak demand,
- Take optimistic value instead of a conservative value of $K_{H,Qi}$,
- Consider injection from wind and solar power sources also. The States rich in wind / solar power would have to analyze daily and seasonal variation pattern of wind/solar generation and take the demand and hydro generations accordingly. For example, wind generation may be high during the night (10 to 12 pm), whereas, solar power is available during the day hours (10 am to 5 pm) and is maximum during the period 12 to 2 pm. These States would have to work out the time period when there is maximum generation from wind/solar and hydro put together and consider the corresponding demand, if they want to sell the surplus power available in their State.

g) Total GNA of the state would be a 'combination' of $GNA_{STATE,DRAW}$ AND $GNA_{STATE,INJECT}$ and not an algebraic sum as there would a common transmission system to serve both drawal and injection. For example, suppose a States requires 'Drawal GNA' of 3000 MW and 'Injection GNA' of 900 MW. If the transmission system created to serve 3000 MW of drawal is also able to serve a maximum of 400 MW export from the State (i.e. injection of 400 MW by State into ISTS), then total GNA of the State would be 3500 MW (3000 – 400 + 900). If the transmission system created to serve 3000 MW of drawal is also sufficient to export 900 MW from the State, then total GNA of the State would remain 3000 MW only (3000 – 900 + 900).

8.0 Transmission Pricing Mechanism under GNA

8.1 Broad Pricing Mechanism through PoC

- Transmission rates to be calculated considering GNA
- GNA holder would pay POC injection or drawal charges as the case may be.
- Generators/drawing entity will pay GNA charges from the contracted date or actual date whichever is earlier. Provisions for delay in creation of sufficient transmission capacity would be needed in regulations.
- Any power transfer beyond the GNA capacity may be entertained only for STOA service at a premium rate.
- The design for implementation of GNA should be such that, it encourages the customers to apply for Long Term Access. For this, Multi part tariff may be implemented as proposed in the GNA paper.

- Accordingly, while recovering transmission charges, some part should be recovered on the basis of General Network Access (GNA) and some part from LTA/MTOA granted. The customers transacting through short term transactions within GNA quantum of the State would thus pay charges for full year. Thus, those who are involved in the transactions through short term would effectively pay more per unit of energy compared to the long term.
- While planning the transmission system based on GNA, 15% to 20% margin may be kept for future growth. This provision may be included in the policy/regulation.

8.2 A suggested multi-part tariff mechanism for ISTS services

Total annual inter-State transmission charges may be recovered in two parts. One part being 'fixed component(FC)' and the other 'Variable component (VC)'. The FC shall be in proportion to the GNA sought to account for the investment made in creating transmission capacity to serve this GNA. The VC may be linked with actual commercial arrangement(i.e. PPA whether Long, medium or short term) in which, preference may be given for point-to-point LTA transactions over the MTOA/STOA/PX transactions. A broad scheme of recovery of transmission charges under this mechanism is given below. The percentages/parameters associated with various components are indicative and can be improved upon.

Suppose we need to recover Rs 100 crore per month during a particular quarter, then the FC and VC can be recovered as follows:

	Rate (formula) applicable	Amount recovered	Applicable for
	Fixed Component(FC):		
(i)	GNA x 75% of POC rate	Rs. 75 crore	All users
	Variable Components (VC):		
(ii)	LTA x 20% of POC rate	Rs. 10-15 crore	Users having point-to-point LTA (within GNA quantum)
(iii)	(MTOA/STOA) x 30% of POC rate	Rs. 10-15 crore	MTOA / STOA users (within GNA quantum)

Note:

1. In above, POC rate is in Rs per MW at the point of injection/drawal.
2. Any under /over recovery to be adjusted in proportion to first bill.
3. The above rates to be applicable for transactions up to GNA quantum.

4. The rate for STOA over and above the GNA to be at premium rate of say 400% in Rs per unit of energy
5. Further, excess use of transmission (based on Regional Transmission Deviation Account) should be charged at a still higher rate e.g. 6 – 10 times the POC rate in Rs per unit of energy.
6. A provision for LTA(target region) may also be kept under VC.

9.0 Benefit of GNA

- New transmission corridors could be planned based on GNA requirement, which would help in a great way to remove congestion in transmission corridors.
- Generators shall not be liable to pay notional point of drawal charges
- Generators shall not have to declare target beneficiaries
- Generators shall have access to ISTS grid with flexibility for point of drawal subject to conditions laid down at the time of grant of GNA.
- Drawing Utilities shall also access to ISTS to the extent of their GNA and get the system created for power transfer over ISTS from anywhere in the grid.
- This will give them flexibility to purchase power through long / medium / short term transactions/agreements depending upon their need and economic considerations and without any transmission restrictions.

10.0 Action Points

- CERC to modify the regulations on ‘Connectivity, LTA & MTOA’, regulation on Short-term Open Access in ISTS and the regulation on sharing of transmission charges to incorporate the GNA concept.
- The planning procedures pertaining to GNA to be incorporated in the CEA’s transmission planning criteria / CEA’s coordinated planning procedure.
- CEA, CTU and POSOCO to help the States to work out their GNA requirements for the next target year i.e. fifth year.
- CTU along with CEA and POSOCO to workout GNA capabilities.

---- x ---- x ---- x ---- x ----x ----

Annex-II

Preparation of 20 years transmission perspective plan (TPP) upto 2035

The '20-year Perspective Transmission Plan' has been formulated by CEA in two parts.

Part- I : Evolving Transmission System Additions for 13th Plan i.e. up to 2021-22

Part- II: Evolving Transmission Corridors for period 2022-35 i.e. 14th, 15th Plans and beyond up to 2035.

The perspective transmission plan would basically be indicative in nature and cover the transmission systems at 400kV and above voltage levels. The planned transmission systems would need to be reviewed based on the actual developments particularly relating to location of generation plants and demand and the programme and policies of various states. The planned systems may be Inter-State or Intra-state transmission system as may be firmed up later through the transmission planning process of Standing Committees on Power System Planning.

In respect of part one, i.e. upto 13th Plan end, transmission system has been evolved based on State-wise demand projections and generation plants under various stages of implementation.

In regard to part two, as the generation has been de-licensed and generation plants in this timeframe are yet to take off, it is not possible to identify the optimum generation plan for 2022-34. In such a scenario, it is prudent to identify the transmission plan in accordance with the location of generation resources/generation potential along with projected demand. In this regard, the result of the Report of the "Working Group on Integrated Strategy for Bulk Transport of Energy", in respect of state-wise and fuel-wise generation capacity requirements has been used. This report is part of the Report of National Transport Development Policy Committee (NTDPC) setup by Cabinet Secretariat. The Report covers aspects related to fuel requirement of power plant and corresponding transport requirements for use of coal, production of petroleum, natural gas, and steel industries up to 2032.

The Intra-state transmission systems:

The intra-state transmission system (Intra-STS) is to be developed by the State Transmission Utilities. Their network planning, scheme formulation and the programme of intra-state transmission development need to take into account the transmission system requirements for evacuation of power from state sector and private sector generation projects for intra-state benefit, absorption of power made available through ISTS, meeting the load growth in different areas of the State and to improve the reliability of their system. For a coordinated development process aiming at perspective optimization in meeting the growth targets, it would be appropriate that the State Transmission Utilities prepare their State Electricity Plans taking advantage of development plans for regional grid system and focusing on the specific requirements of the concerned State.

At present, CEA is consulting the States and seeking information in respect of load projections and intra-State transmission requirements. Almost all States have appointed Nodal Officer for providing information to CEA so that 20 years transmission perspective plan accounts for the constraint-free transmission system.

For further details, please refer to CEA website: www.cea.nic.in (Path to access: Home - Power System Wing ~ Standing Committee on Power System Planning ~ All India~ "Brief note on 20 year Perspective Plan" and "Final Draft Report- 20 year perspective plan").

Expections from the States: States may bring up their own Intra-State transmission plan as per their requirements which should align with the Inter-State Transmission System of the country. States may help CEA in sending the complete data needed for firming up 20 years perspective plan on transmission. The implementation of firmed up transmission schemes would commence thereafter.

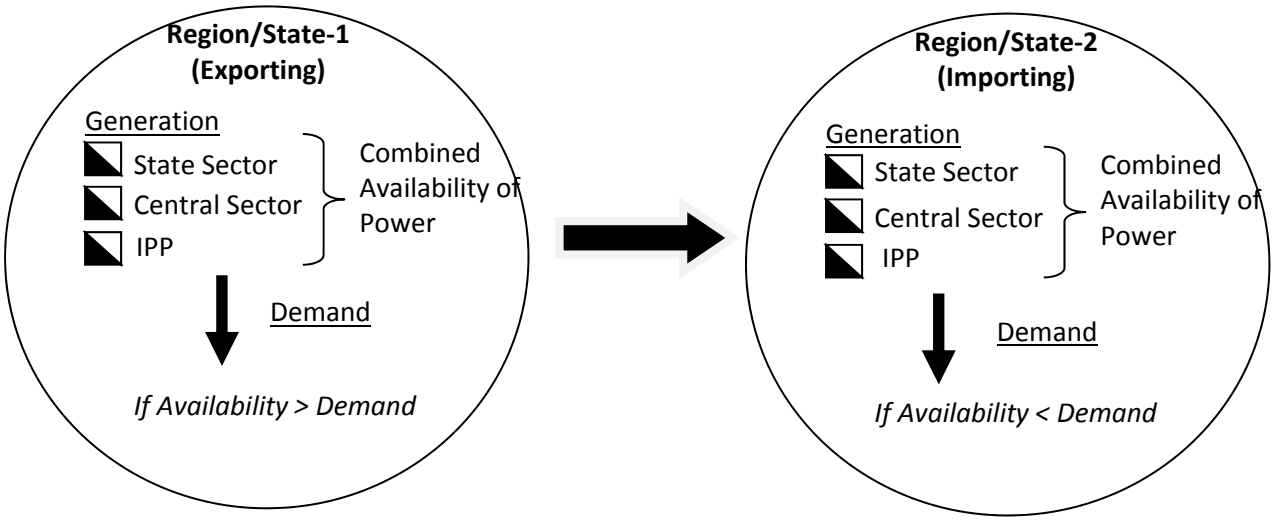
Perspective Plan for Transmission

(New)

Background

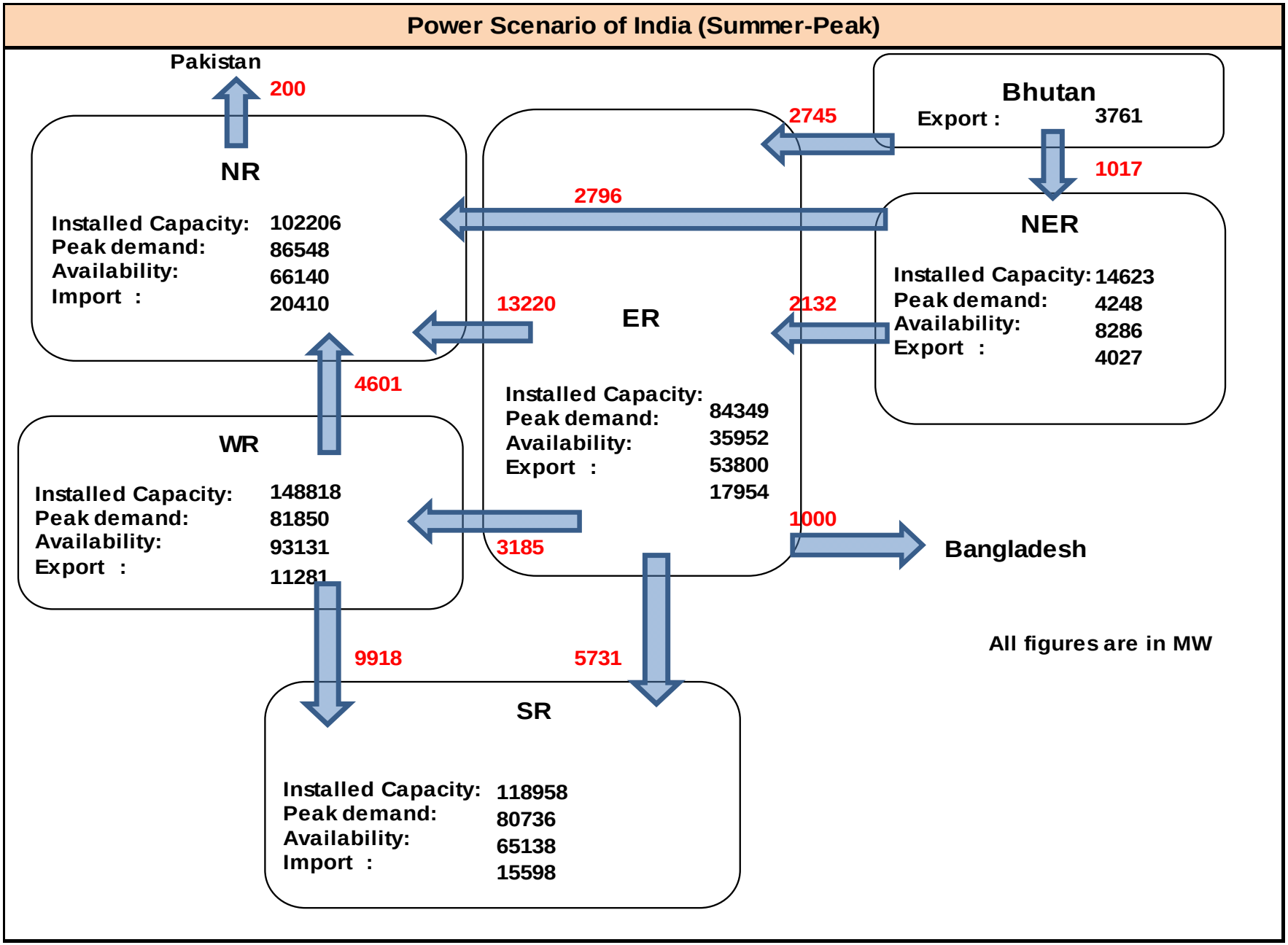
- A 20-year perspective transmission plan for period 2014-34 was prepared by CEA in August 2014, in association with PGCIL and POSOCO, and under guidance of Ministry of Power.
- The report is available on CEA's website www.cea.nic.in
- The report envisages a load growth of 283 GW (as per 18th EPS) and generation capacity of 469 GW by end of 13th Plan (2021-22).
- This plan mainly focused on the 400kV and above voltage level transmission system
- The Perspective Plan for 14th plan and beyond (2022-2034) was based on broad assumptions, and is only indicative in nature

Planning Methodology



- Transmission System planning based on Region-wise Import Export Requirement, worked out for 3 Seasons : Winter, Summer and Monsoon (to improve for Monthly/Quarterly)
- Top-to-Bottom Approach : detailing of 220kV and below system – to be carried out
- State-wise import-Export requirement to be worked out
- RES Capacity Integration to be worked out

Inter-regional power flow during Summer-peak condition



Installed Capacity during 12th and 13th Plans

(in MW)

Plan-Wise Generation Addition (Region - Wise)				
	Up to July 2014 (Actual) (A)	Balance in XII Plan (B)	Addition in XIII Plan (C)	Total (End of XIII Plan) (D = A+B+C)
NR	64387	20929	16890	102206
WR	91847	36709	20262	148818
SR	57232	38650	23076	118958
ER	33881	12738	31195	77813
NER	2910	3511	8202	14623
Bhutan	1416	3066	2120	6602
Total	**251673**	**115603**	**101745**	**469020**

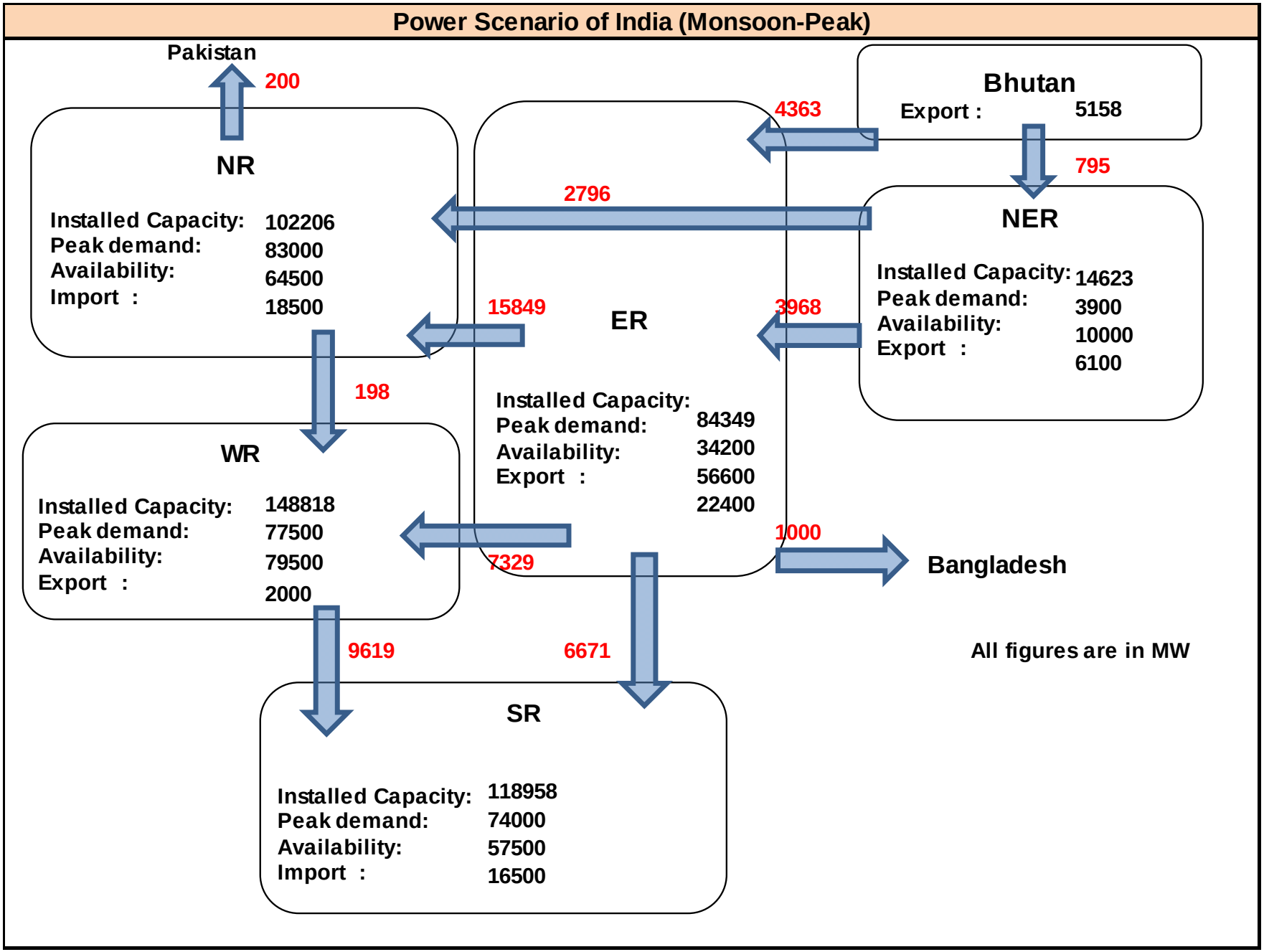
*88537 MW planned capacity + 9624 MW additional capacity, + about 25000 MW capacity under construction, and about 33000 MW of renewable capacity

Installed Capacity fuel-wise by end of 13th Plan (in MW)

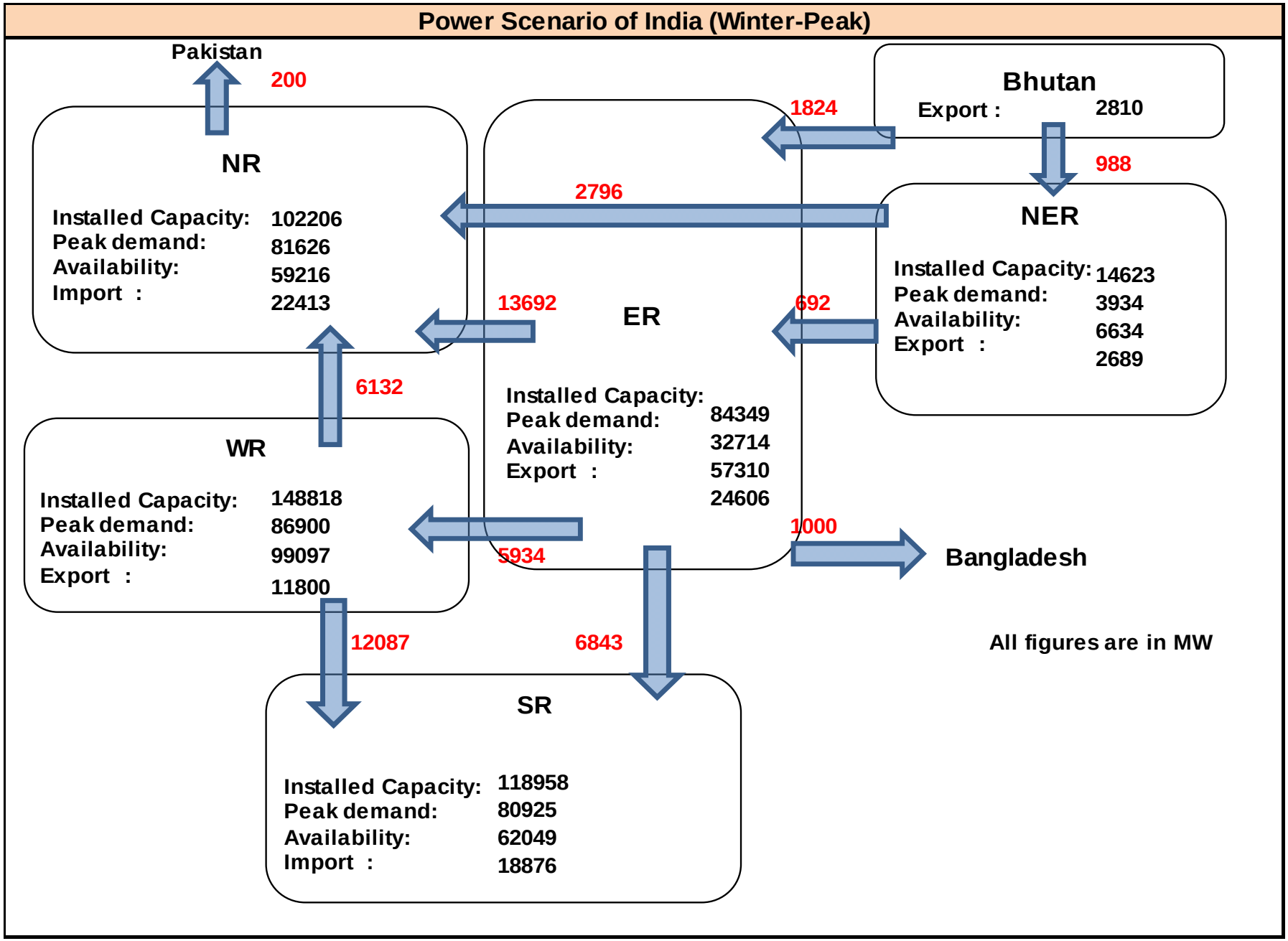
	Fuel Mix of Generation (Region Wise) (end of XIII Plan)						Demand
	Coal	Nuclear	Gas	Hydro	RES	Total	
NR	**51238**	**4420**	**6714**	**26656**	**13178**	**102206**	**86461**
WR	106478	3940	11804	7879	18717	148818	86054
SR	**59520**	**4820**	**9673**	**12765**	**32180**	**118958**	**82199**
ER	68617	0	207	8572	417	77813	35928
NER	810	0	1803	11358	651	14623	4056
Bhutan	0	0	0	6602	0	6602	1000
Total	286663	13180	30202	73832	65143	469020	**283470 #**

with diversity without Bangladesh Export

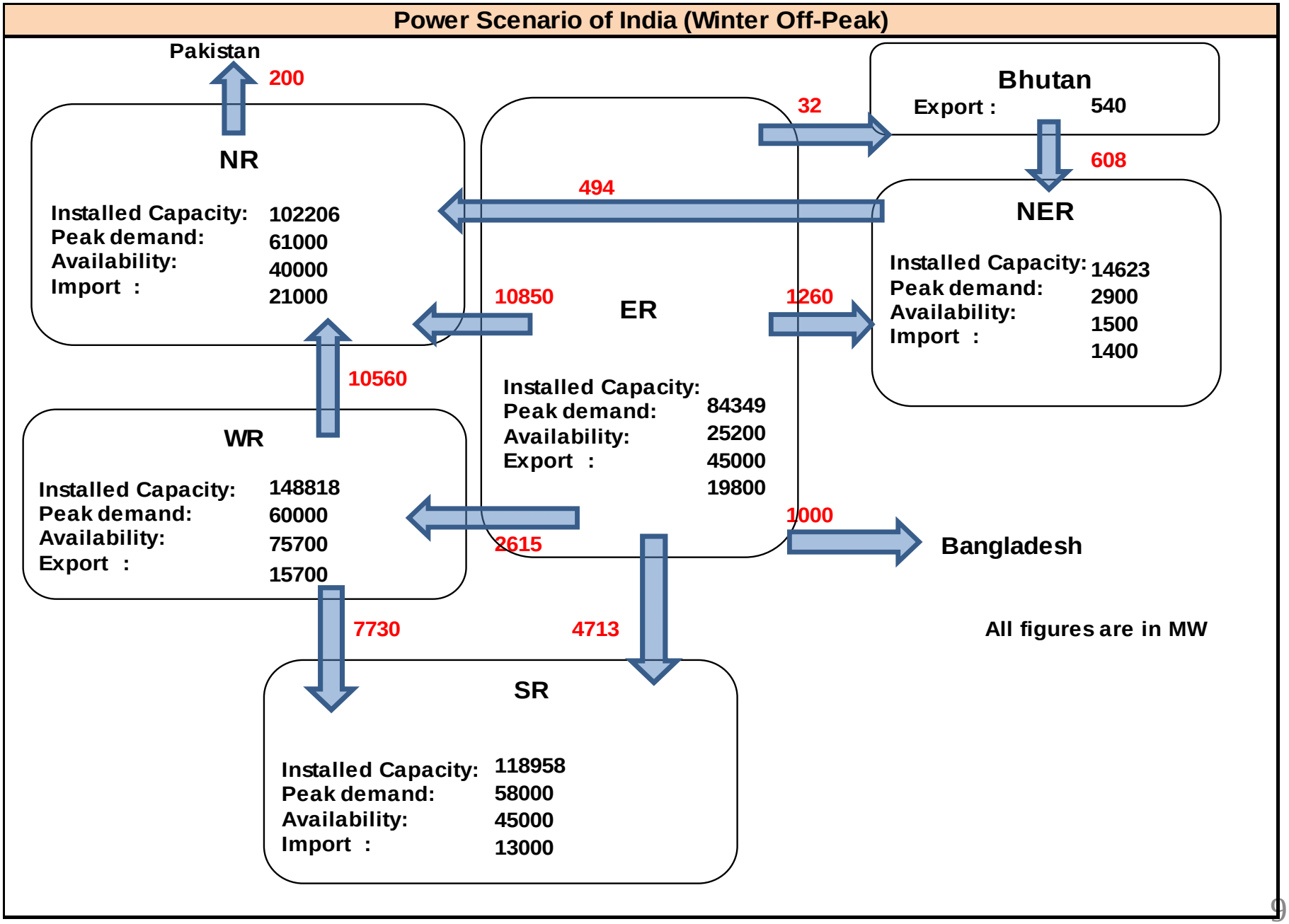
Inter-regional power flow during Monsoon-peak condition



Inter-regional power flow during Winter-peak condition



Inter-regional power flow during Winter-off-peak condition



Transmission System Required upto 13th Plan Condition

Transmission Lines (400kV and above system) (values in ckm)	At end of 11th Plan	Expected Addition in 12th Plan	Expected by end of 12th Plan	Expected Addition in 13th Plan	Expected by end of 13th Plan
HVDC Bipole lines	9432	7440	16872	10600	27472
765 kV	5250	27000	32250	22200	54450
400 kV	106819	38000	144819	30000	174819
Total	**121501**	**72440**	**193941**	**62800**	**256741**

Substations (AC & HVDC) (400kV and above)	At end of 11th Plan	Expected Addition in 12th Plan	Expected by end of 12th Plan	Expected Addition in 13th Plan	Expected by end of 13th Plan
HVDC Terminals:					
HVDC back-to-back	3000	0	3000	0	3000
HVDC Bipole terminals	6750	12750	19500	15000	34500
Total- HVDC Terminal Capacity, MW	9750	12750	22500	15000	37500
AC Substations					
765 kV	25000	149000	174000	79000	253000
400 kV	151027	45000	196027	49000	245027
Total- AC Substation capacity, MVA	**176027**	**194000**	**370027**	**128000**	**498027**

Total Fund requirement would be about Rs 2,60,000 Crore
(assuming about Rs. 100,000 crore for 220kV and below systems)

Strengthening of Existing Transmission Corridors

- Following Transmission Corridors envisaged to be re-conductored with higher capacity Conductor / upgraded at higher voltage level

Northern Region:

- Singrauli – Anpara 400 kV S/c line
- Meerut – Muzaffarnagar 400 kV S/c line
- Ballabagarh – Badarpur 220 kV S/c line

Southern Region:

- Kolar – Hosur 400 kV D/c line
- Kaiga – Guttur 400 kV D/c line

Eastern Region:

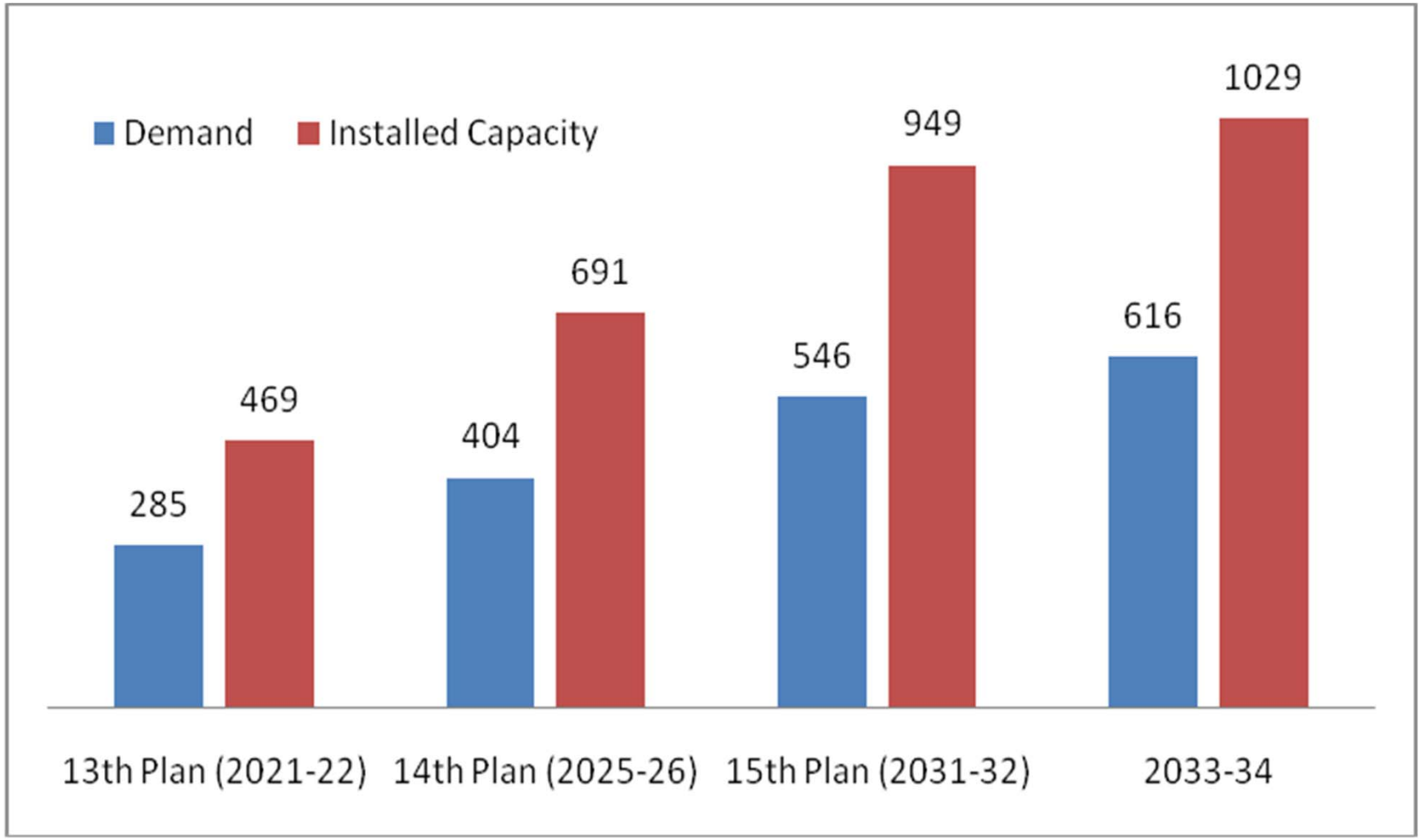
- Maithon RB – Maithon 400 kV D/c line
- Maithon – Raghunathpur 400 kV line
- Jeypore – Jayanagar 220 kV D/c line

North Eastern Region:

- Biswanath Chariyali – Balipara 400 kV 2XD/c line
- Balipara – Bongaigaon 400 kV D/c line
- Byrnihat –Misa 220 kV D/c line (to be upgraded to 400 kV High capacity line)

Plan-wise Growth in Generation and Demand assumed for the purpose of perspective plan

All Figures in GW



Generation Scenario – I

Table – 6.3 : Region-wise Installed Capacity and Demand at the end of 14th plan (Scenario-I)

All Figures in MW

Region	Installed Capacity by the end of 14th Plan (2026-27) (Scenario - I)							Peak Demand
	Coal	Nuclear	Thermal	Hydro	Gas	Res.	Total	
NR	63959	7220	71179	38945	14946	39719	164789	121979
WR	128847	8240	137087	7879	19217	43402	207585	120620
SR	72907	6220	79127	13436	29214	47663	169440	118764
ER	87486	0	87486	9064	1779	3294	101623	53053
NER	810	0	810	18006	3043	1840	23699	6169
SAARC	0	0	0	23986	0	0	23986	3200
Total	**354009**	**21680**	**375689**	**111316**	**68199**	**135918**	**691122**	**403800**

Table – 6.4 : Region-wise Installed Capacity and Demand by the end of 15th plan (Scenario-I)

Region	Installed Capacity by the end of 15th Plan (2031-32) (Scenario - I)							Peak Demand
	Coal	Nuclear	Thermal	Hydro	Gas	Res.	Total	
NR	71846	10020	81866	43317	41058	64932	231173	164236
WR	155437	15089	170526	8011	32791	71568	282896	163222
SR	86834	10471	97305	13436	40791	66025	217557	165336
ER	111820	0	111820	9811	1779	5406	128816	72874
NER	810	0	810	35370	2463	2890	41533	8450
SAARC	0	0	0	46534	0	0	46534	4300
Total	**426747**	**35580**	**462327**	**156479**	**118882**	**210821**	**948509**	**546000**

Generation Scenario – II

All Figures in MW

Table – 6.3 : Region-wise Installed Capacity and Demand at the end of 14th plan (Scenario-II)

Region	Installed Capacity by the end of 14th Plan (2026-27) (Scenario - II)							Peak Demand
	Coal	Nuclear	Thermal	Hydro	Gas	Res.	Total	
NR	68076	7220	75295.5	38945	10830	39719	164789	121979
WR	132554	8240	140794	7879	15511	43402	207585	120620
SR	82678	6220	88898	13436	19444	47663	169441	118764
ER	88272	0	88272	9064	993	3294	101623	53053
NER	1430	0	1430	18006	2423	1840	23699	6169
SAARC	0	0	0	23986	0	0	23986	3200
Total	**373009**	**21680**	**394689**	**111316**	**49200**	**135918**	**691123**	**403800**

Table – 6.4 : Region-wise Installed Capacity and Demand by the end of 15th plan (Scenario-II)

Region	Installed Capacity by the end of 15th Plan (2031-32) (Scenario - II)							Peak Demand
	Coal	Nuclear	Thermal	Hydro	Gas	Res.	Total	
NR	88743	10020	98762.5	43317	23886	64932	230897	164236
WR	165931	15089	181020	8011	22298	71568	282896	163222
SR	102394	10471	112865	13436	25232	66025	217558	165336
ER	112606	0	112606	9811	993	5406	128816	72874
NER	1208	0	1208	35370	2108	2890	41576	8450
SAARC	0	0	0	46534	0	0	46534	4300
Total	**470880**	**35580**	**506460**	**156479**	**74516**	**210821**	**948276**	**546000**

Generation Scenario – for 2033-34

All Figures in MW

Region	Installed Capacity by the end of 2033-34							Peak Demand (2033-34) MW
	Coal	Nuclear	Thermal (Coal+ Nuclear)	Hydro	Gas	Res.	Total	
NR	82623	10020	92643	43317	45164	64932	246056	184987
WR	178753	15089	193842	8011	36070	71568	309491	184214
SR	99859	10471	110330	13436	44870	66025	234661	188730
ER	128593	0	128593	9811	1957	5406	145767	82740
NER	932	0	932	35370	2709	2890	41901	9583
SAARC Exchange	0	0	0	51534	0	0	51534	4500
Total	**490759**	**35580**	**526339**	**161479**	**130771**	**210821**	**1029410**	**615700**

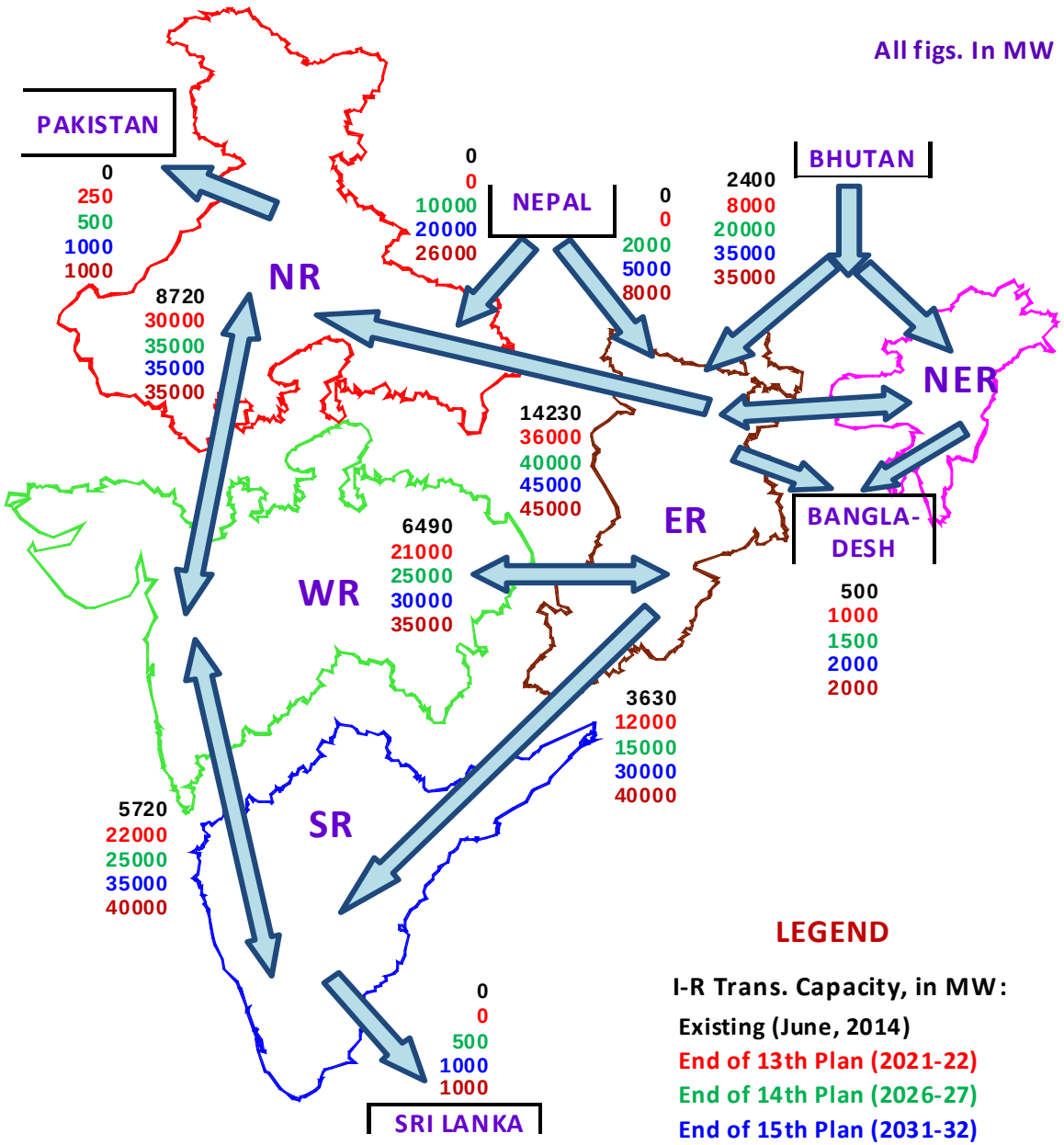
Maximum Import/ Export of different Regions / SAARC Countries

Region	13th Plan (2021-22)	14th Plan (2026-27)	15th Plan (2031-32)	2033-34
NR (Import)	22000	23000	34000	44000
WR (Export)	16000	28000	30000	33000
SR (Import)	19000	21000	42000	51000
ER (Export)	25000	30000	31000	35000
NER (Export)	6000	14000	27000	44000
Bhutan (Export)	6600	14000	26500	26500
Nepal (Export)	0	10000	20000	25000
Sri Lanka (Import)	0	500	800	1000
B'Desh (Import)	1000	1500	2000	2000
Pakistan (Import)	200	500	800	1000

Inter-Regional Transmission Capacity (upto 2033-34)

(including SAARC Exchanges)

All figs. In MW



LEGEND

I-R Trans. Capacity, in MW:

Existing (June, 2014)

End of 13th Plan (2021-22)

End of 14th Plan (2026-27)

End of 15th Plan (2031-32)

End of 2033-34

Next Step

- Broadly, the transmission expansion needs of ISTS network and also state transmission networks for period up to 2019 are already under implementation.

- A transmission plan based on better rationale and including 220kV systems of the states, for which implementation process could be initiated, is required to be worked out for period up to end of 13th Plan i.e. 2021-22.

➢ To work out complete transmission needs for the 13th Plan period, especially 2019-20, 2020-21, and 2021-22, MoP, vide their OM dated 06-04-2015 has chalked out a programme. This programme of action is to be completed by Sept 2015, and includes furnishing of base data by the states .

Time Line

Activity	Target
1-Compilation of Data	15.4.2015
2-Development of Load generation	22.4.2015
3-Creating load flow models	22.5.2015
4-Interation with Nodal Officers and updation of load flow models	31.5.2015
5- Load flow studies for identifying transmission addition requirement	15.7.2015
6-Short ckt studies, Stabilty studies, SSR studies, Voltage stability studies	15.8.2015
7-Final studies including contingencies and TTC assessment	31.8.2015
8-Preparation of report of the studies, formulation of transmission schemes	30.9.2015

Status till now

- Most of the states have furnished data; however, the data sent by them is not complete. MoP (by JS(Trans)) has written D.O. letters to all the states on 28-04-2015. Further, CEA has also written letters to all the states during 12-31 May 2015
- Notwithstanding the non-availability of complete data, CEA and PGCIL has initiated modeling exercise based on part data, and as per activity no 2 and 3 of MoP OM.

- It is important at this stage that the generation plan for period up to end of 13th Plan (2015-22) should be firmed up.
- It must also include RE generation additions with location, capacity, type and expected CoD.

Status till now

- Regarding load data, since 19th EPS is presently under process, we may go ahead with the load growth data as provided by States. And the same has been considered while working out the draft LGBR
- For activity no. 3, the load flow modeling as per data furnished by States has been completed for all the states except for the States of some states of Northern region.
- CEA with help from PGCIL has emailed the substation-wise load data, transmission line data and sub-station data to the states of SR, WR, ER and NER on 17th, 17th, 22nd and 29th June 2015, respectively.
- Further it is mentioned that MoP on 16th July, 2014 has directed PGCIL for - “Appointment of Consultancy Firm to review transmission system transfer capability and review of operational and long term planning- under Package B”.

Way Ahead

- ✓ Firming up of generation addition programme/ plan for period up to 2022 (including RES generation).
- ✓ CEA and CTU to continue State-wise interaction and joint studies for evolving transmission schemes
- ✓ PGCIL has already identified consultant firm (L1)under Package-B, and award of work may very soon be placed. We must take this opportunity to prepare new Perspective Transmission Plan, through the consultant which is inter-alia part of his TOR
- ✓ Though the new transmission schemes are being identified through the process of coordinated transmission planning process of CEA (regional standing committees), the Perspective Plan would optimize these efforts.
- ✓ Start of Implementation Process as per due approval process of Central and State governments


Thank you!

Annex-III

Power System Development Fund (PSDF)

1. PSDF is a regulatory fund constituted by Central Electricity Regulatory Commission (CERC) vide CERC (PSDF) Regulations 2010, notified on 4th June, 2010. Subsequently in line with the scheme for operationalisation of the PSDF issued by the Ministry of Power vide letter dated 10th January, 2014, CERC (PSDF) Regulation 2014 was notified vide CERC notification dated 9th June, 2014 and PSDF Regulation, 2010 was repealed. The PSDF Regulations stipulate that the balances in the regulatory pool accounts, operated in accordance with the Regulations of CERC regarding Deviation Settlement / Unscheduled Interchange (DSM/ UI) Charges, Congestion Revenue, Congestion Charges and Reactive Energy Charges shall be periodically transferred to PSDF.

2. In line with the CERC (PSDF) 2014 Regulations and as further elaborated in the PSDF guidelines/procedures issued by the Ministry of Power, the funds from PSDF shall be utilized for the categories of projects specified in the Regulations and further elaborated in the Guidelines. Relevant extract from the Guidelines is reproduced below.

"5. Utilization of the Fund

5.1. In accordance with the Fund Regulations as amended from time to time and MoP Communication, the following categories of projects will be eligible for funding from PSDF:

(a) Creating necessary transmission systems' of strategic importance based on operational feedback by Load Despatch Centers for relieving congestion in Inter-State Transmission Systems (ISTS) and intra-state system which are incidental to the ISTS.
(b) Installation of shunt capacitors, series compensators and other reactive energy generators including reactive energy absorption, dynamic reactive support etc. for improvement of voltage profile in the Grid.
(c) Installation of standard and special protection schemes, pilot and demonstrative projects, projects for setting right the discrepancies identified in the protection audits on regional basis, any communication/measurement/ monitoring scheme including installation of Phasor Measurement Units (PMUs) etc.
(d) Renovation and Modernization (R&M) of transmission and distribution systems for relieving congestion.
(e) Any other scheme/project in furtherance of the above objectives, such as, conducting technical studies and capacity building, etc.

5.2. PSDF shall also be utilized for the projects proposed by distribution utilities in the above areas which are incidental to inter-state transmission system and have a bearing on grid safety and security, provided that these projects are not covered under any other scheme of the Government of India, such as Restructured Accelerated Power Development & Reforms Programme (RAPDRP), Rajiv Gandhi GrameenVidyutikaranYojana (RGGVY) / National Electricity Fund (NEF) etc (as per para 4(2) of the Fund Regulations).

5.3 Other schemes benefiting large number of utilities collectively and having a significant impact towards the power system development and grid operation shall also be considered for funding from PSDF, on case to case basis."

3. The quantum of grant for various categories of projects / schemes shall vary from 75% to 100% depending on the category of project. Relevant extract from the Guidelines is reproduced below.

"6. Funding Pattern

6.1 Funding towards projects/schemes shall be in the form of grant only and such assistance in the form of Grant in Aid will be subject to all the applicable terms and conditions prescribed under the General Financial Rules of Government of India and extant instructions issued by Ministry of Finance from time to time relating to Grant in Aid Assistance. Assistance through interest subsidy or grant of financial assistance at concessional rate of interest shall not be considered.

6.2 The minimum threshold levels of project outlays for schemes to be considered for funding from PSDF shall be Rs. 5 Lacs.

6.3 Subject to availability of Funds and admissibility, the quantum of grant towards the Project Cost Estimate as accepted by Appraisal Committee shall depend on the type of project/scheme as deliberated above under para 5.1(a) to 5.1(e) and shall be as follows:

(i) Upto 75% grant for schemes mentioned in para 5.1(a) & 5.1(d) above
(ii) Upto 90% grant for schemes mentioned in para 5.1(b) & 5.1(c) above
(iii) Upto 100% grant for schemes mentioned in para 5.1(e) above.
(iv) Schemes from the States of North-Eastern region and other hilly States viz J&K, Sikkim, Himachal Pradesh and Uttarakhand shall also be eligible for grant upto 100% notwithstanding the percentage of grant specified in 6.3 (i) and 6.3 (ii) above."

1. The Regional Power Committees, Generating Companies, Transmission Licensees, Distribution Licensees and the Load Despatch Centers are eligible to avail funding from PSDF.

2. NLDC has been designated as the Nodal Agency for implementation of the PSDF. The eligible entities submit the proposals to the Nodal Agency. The process of approval is through a three tier structure described as below:

   a. Scrutiny (techno-economic appraisal) and prioritization by Appraisal Committee headed by Chairperson-CEA. This committee is assisted by a Techno Economic Sub Group headed by Member (GO&D), CEA for technical examination of the schemes.
   b. After scrutinizing of the proposals by the Appraisal Committee, CERC ascertains that the projects / scheme(s) / activities are covered within the scope of PSDF Regulations.

c. After concurrence of the scheme by CERC, the scheme is placed for approval of the Inter-Ministerial Monitoring committee headed by Secretary Power and for sanction of the fund from the PSDF.

6. In accordance with the PSDF Regulations, the guidelines / procedures framed by the Nodal Agency after deliberations in the Appraisal Committee, the Monitoring Committee and consultations with CERC were issued by the Ministry of Power on 18th Sept, 2014. Under these guidelines, the formats for submission of the schemes, process of disbursement of grant and formats for disbursement of grant etc have been approved. The entities submit the schemes as per the formats prescribed in these guidelines.

7. The disbursement of the funds is carried out in a phased manner for schemes in all categories which are approved for funding from PSDF. As a normal practice, the release of the funds shall be made in three installments as per the details given below:
   i. First Stage: 30% of the grant after issuance of Letter of Award
   ii. Second / Intermediate Stage(s): 60% of the grant after utilization of the grant disbursed in first installment and consumption of self contribution of the entity
   iii. Final Stage: Balance 10% of the grant on completion of the scheme.

8. So far grant of Rs 1628.09 crore has been approved by the Ministry of Power / Monitoring Committee. Status of the schemes under various stages of approval and the summary is enclosed as **Annexure-I**.

9. Disbursement of funds from PSDF for the approved schemes shall de done after signing and submission of the copy of letter of awards. So far five entities (schemes approved on 31.12.2014) have signed the agreement. Signing of the agreement of eight schemes approved on 19.3.2015 under process. Rs 185.46 crore released by the ministry for disbursement of first installment of the grant shall be released after submission of the LOA details. Entities have been asked to submit the LOA details for disbursement of funds.

POWER SYSTEM DEVELOPMENT FUND (PSDF)

Summary status of the schemes submitted by the entities for funding from PSDF

Status as on 06.07..2015 — **All figures in Rupees crore**

Sr.No	Name of the entity Figures in the bracket indicate estimated cost of the scheme	Total number of schemes	Estimated cost of the scheme as per DPR	Estimated cost recommended	Grant approved / recommended	Further action plan / remarks
Format D1	**Schemes approved by Monitoring Committee** Schemes approved by Monitoring Committee POWERGRID (374.63), Kerala (97.9), Rajasthan (159.53+23.96),West Bengal (136.45) Assam(382.48), Odhisa (180.56), Karnataka (26.93), Nagaland (39.96), Bihar (74.13), UP(176.5+279.19), Gujarat (1.72+3.7),TamilNadu(202), Puducherry(13.98), Meghalaya(102.80)	**17**	**2276.42**	**1846.87**	**1628.09**	Agreement signed for Six schemes. Signing of the agreement of seven schemes approved on 19.3.2015 under process. Reminders sent vide letter dated 26.6.2015. Rs 185.46 crore released by MoP for disbursement of first installment of the grant. Entities have been asked to submit the LOA details for disbursement of funds.
Format D2	**Schemes recommended by Appraisal Committee** J&K (182.44+101.81), Mizoram(31.38), Telangana(72.60), NRPC(6.45), Assam(57.13)	**06**	**543.03**	**436.08**		The scheme of J&K shall be forwarded to CERC after receipt of approval of the state government.Schemes of Tamilnadu, Pudduchery, Gujarat and Meghalaya shall be placed befofre the Monitoring Committee for appropval in the next meeting.
Format D3	**Schemes under the process of approval: inputs sought from entities:** UP (80.0), J&K (47.72), Tripura (79.95) Karnataka (77.4), Punjab (4.5+582.37+25.82),Andhra Pradesh (17.77)), Telengana (32.87), Chhattisgarh (2.25), West Bengal(1211.43), Arunachal Pradesh (33.45), Delhi(37.26), Uttarakhand (7.08), Himachal Pradesh (68.59), MP(173.0+320.0+81+10+88.50),Manipur(29.82), Powergrid(1059.49), Meghalaya(41.9316)	**23**	**4109.21**			Inputs received from Punjab, Chatishgarh, UP, HP and Delhi. Other entities being pursued to submit the details. After receipt of the details, the schemes shall be appraised by further examined.
Format D4	Schemes under the process of approval: details being examined. , Andhra Pradesh (106.32), BBMB (27.18), Gujarat (37.15+48.13+54.8+1.62), Telanganan(53.63), Punjab(8.35)	**8**	**337.18**			Under examination.
Format D5	Schemes not considered eligible for funding from PSDF. Rajasthan (234.22+193.77), UP(2741.01), NTPC(98.95), Gujarat (8.18+13.17)	**6**	**3289.3**			Schemes did not qualify under any criteria for funding from PSDF.
	Name of the States/UTs which have yet to submit the schemes. Haryana, Chandigarh, Jharkhand, Goa, ,D&D, DNH, Maharashtra, Sikkim, Andaman &Nicobar, Lakshadweep	**10**				
	Total	**60**	**10555.14**	**2282.95**	**1628.09**	

Annex-IV

Progress of Preparation of State Specific 24 x 7- Power For All (PFA) Documents:

Government of India have taken a joint initiative with respective state Govt. for preparation of State specific documents for providing 24 X 7 power supply to all households/homes, industrial & commercial consumers and adequate supply of power to Agricultural consumer as per state policy. To begin with, 24x7 power for all (PFA) documents has been prepared for the states of Rajasthan & Andhra Pradesh which are available on website of MoP. The documents for Bihar, Goa and Uttarkhand have been finalized and are expected to be signed shortly. The preparation of State specific documents for other States of Uttar Pradesh, Meghalaya, Telangana, Assam, Jharkhand and Arunachal Pradesh have been taken up.

For preparation of state specific documents for other states, 3 consultants i.e. M/s Crisil, M/s Mecon& M/s Deloitte have been appointed. The target for completion of the documents for all states / UTs is December 2015.

Completion Schedule of Preparedness of state specific 24x7 Power For All (PFA) document

Consultant	(July-August 2015)	(Sep.-Oct. 2015)	(Nov.-Dec. 2015)
M/S Crisil Package-A	Uttarakhand	Uttar Pradesh	
	Goa	Chhattishgarh	Tripura
	Meghalaya	Madhya Pradesh	Daman and Diu
	Odisha	Karnataka	Puducherry
M/S Mecon Package-B	Bihar	Gujarat	Nagaland
	Telangana	Punjab	Manipur
	Haryana	Kerala	Mizoram
		Delhi	Lakshadweep
			Dadra & Nagar Haveli
			Chandigarh
M/S Deloitte Package-C	Jharkhand	West Bengal	Himachal Pradesh
	Assam	Sikkim	J&K
	Maharashtra	Tamil Nadu	A&N Island
		Arunachal Pradesh	

Expectations from the States: All the States (except AP & Rajasthan) may finalise their documents so that it is signed as per above schedule. They would be assited by the Consultants appointed for this purpose.

Annex-V (As on 27.7.2015)

Right of Way issues :
State-wise Critical Issues related to PGCIL's projects requiring intervention of the States

❖ ASSAM

RoW Issues:

i. **400kV BiswanathChariyali – Lower Subansiri line** (Schedule – Feb'13 / Anticipated Completion - uncertain)

Progress: Foundation: 656/ 909; Erection 424/ 909, Stringing: 99/683 ckms

- Severe RoW problem due to local disturbance created by various pressure groups. Works almost stalled since Dec, 2011.
- POWERGRID has been compelled to stop the execution entirely by foreclosing the contracts.
- Issues to be resolved with the groups so that the project is revived and work recommenced.

ii. **±800kV HVDC BipoleBiswanathChariyali - Agra line** (Schedule – Aug'13 / Anticipated Completion – Aug/ Sep`15)

Progress: Foundation: 4369/ 4369; Erection 4360/ 4369, Stringing: 3446/ 3506 ckms

- Progress of the line in Assam is seriously affected due to local disturbance created by various groups. Still one no. tower could not be erected due to severe RoW in Kokrajhar District.

- Work being executed with CRPF protection/ District administration support.

❖ UTTAR PRADESH

Transmission Project Implementation Issues:

i. **400kV D/c (Q) Dehradun – Baghpat line**
(Schedule – Nov`11 / Anticipated completion - Mar'16)

Progress: Foundation: 397/ 443; Erection 376/ 443, Stringing: 71/330 ckms

- Severe Right of Way (RoW) problems are being encountered in several districts of Western Uttar Pradesh (Saharanpur)
- Matter is being solved with help of District Administration

ii. **LILO of 400kV D/C Quad Kaithal-Meerut line at Bagpat**
(Schedule – Feb`12 / Anticipated completion - Mar'16)

Progress: Foundation: 171/ 177; Erection 157/ 177, Stringing: 51/122 ckms

- RoW problems are being encountered in Locations in Bagpat District which are being solved out with the help of administration.

❖ **KARNATAKA**

Transmission project implementation issues

1. **400kV D/c Dharmapuri (Salem New) – Somanahalli**
(Sch. Comp.- Aug'2014 Anticipated Completion: Oct'15)

Progress: Foundation: 309/336; Erection 265/ 336, Stringing: 85/120kms

Issues:

- 27 locations/ 34.5km held up due to severe Right of Way (RoW) problems being faced at locations falling in Bangalore (Urban) District (28.5km in Anektal Taluk, 6km in Bangalore South Taluk).
- Works affected at a number of locations because of severe RoW issue due to obstructions from activists of 'Karnataka Raithu Sangha' Bangalore (Urban) Distt.

- **Compensation:**

S. No.	Compensation as per DC order Dt: 02/21.01.2015	Decision
1.	Tower footing area	100% of market value
2.	Stringing Corridor (23 mtr considered)	55% of market value

- Considering above, the total compensation amount works out to Rs. 99.1 crore

2. 400kV D/c Madhugiri – Yelahanka line
(Sch. Comp.- June'2014 Anticipated Completion: Oct'15)

Progress: Foundation: 129/ 177; Erection 91/ 177, Stringing: 0/ 66 kms

Issues:

- Villagers are demanding higher compensation per location and even not agreeing to the compensation decided by District Collectors. Over and above, they are demanding the compensation towards diminishing value of land for the line corridor.

- Total 47 locations held up due to RoW issues & obstruction from activists of 'Karnataka Raithu Sangha' in Districts – Tumkur (2 locs.), Bangalore (Urban) (35 locs.) and Bangalore (Rural) (10 locs.)

3. 400kV D/c Yelahanka LILO
(Sch. Comp.- June'2012 Anticipated Completion: Dec'15)

Progress: Foundation: 25/ 25; Erection 25/ 25, Stringing: 5.5/ 9.5 kms

Issues:

- Total 4km stringing held up due to RoW in Bangalore (Urban) District due to obstruction from activists of 'Karnataka Raithu Sangha' and locals.

- As per the Hon'ble High Court Order, Rs. 9 crore has been deposited against the compensation assessment of Rs. 12 crore for Corridor with Principal District Judge, Bangalore. Total 39 Nos. of petitions filed for claiming the compensation, out of which Judgment has been pronounced on 02 nos. of cases. Court Orders awaited.

- Court intending to give about 55% value of land at Rs. 90 lac/acre for corridor– approxRs. 18 crore.

- **This order is proposed to be challenged as the local farmers association is demanding this compensation in all lines under execution.**

- **Compensation:**

S. No.	Compensation as per DC order Dt: 12.01.2012	Decision
1.	Tower footing area	100% of market value
2.	Stringing Corridor	60% of market value

4. 765kV S/c Madhugiri – Dharmapuri (Salem) line
(Sch. Comp.- June'2014 Anticipated Completion: Nov'15)

Progress: Foundation: 581/ 645; Erection 472/ 645, Stringing: 75/ 245 kms

Issues:

- Line passes through Tumkur, Bangalore Urban, Bangalore Rural, KolarDistts. In Karnataka.
- Total 65 locations held up due to RoW in Districts - Tumkur (12 locs.), Bangalore (Rural) (44 locs.) & Chick Ballapur (9 Locs.) due to obstruction from activists of 'Karnataka Raithu Sangha'

❖ **KERALA**

RoW Issues:

1. 400kV D/c Edamon (KSEB) – Muvattupuzha line
(Sch. Comp.- November'2008 Anticipated Completion: uncertain)

Progress: Foundation: 159/438; Erection 85/ 438, Stringing: 10/149kms
Issues:

- Govt. of Kerala issued Order vide letter dated 09.08.2014 for enhanced compensation of Rs. 341 crore which was again revised by Govt. of Kerala on 20.01.2015. As per revised GO, the entire financial liability is to the tune of Rs. 1020 crore, to be borne by the State Govt and KSEB equally.
- Disbursement of compensation yet to be made by the State Govt and KSEB.
- The work can start only when State Govt. and KSEB disburse the compensation.
- Mode and modalities of compensation likely to undergo changes in view of recent intervention by MoP to have uniform policy on compensation.

West Bengal

RoW Issues:

1. **±800kV HVDC BiswanathChariyali – AgraBipole line**

Foundation: 4369/ 4369; Erection 4360/ 4369, Stringing: 3446/ 3506 ckms

Issues:

- Severe RoW as work in a stretch of 2.6kms (2 No's tower erection) of ± 800kV HVDC BiswanathChariyali - Agra Bipole line in village DakshinAltagram Block Dhupguri, JalpaiguriDistt. ofWest Bengal held up for a long time.
- Matter already taken up with State &Distt. Admn. at higher management level, however stalemate continues.
- Chief Secretary, Govt. of West Bengal has been requested to provide police protection.

❖ **Odisha**

Status of Forest clearance proposals pending with State Govt:

1. **765 kV D/C Srikakulam Pooling Station – Angul line, 98.32 ha.**
   (Sch. Comp.- June'15 Anticipated Completion: August'16)

   - Proposal resubmitted on 03.01.13. Odisha Space Applications Centre (ORSAC) report obtained and submitted to DFO in Oct'13.
   - Proposal for all divisions forwarded to DFO Athagarh (Nodal DFO) for combining. Proposal forwarded to RCCF, Angul on 26.02.15. Proposal forwarded to NO on 20.04.15.
   - PCCF forwarded proposal to Secretary (F) on 29.05.15.
   - **Proposal forwarded to RMoEF&CC, Bhubaneswar for processing and Stage-I approval on 01.07.2015.**
   - Proposal under process at RMoEF, BBSR for stage-I clearance by Aug 1st week.

2. **765 kV D/C Angul-Jharsuguda – 2nd , 401.745 ha.**
   (Sch. Comp.- December'15 Anticipated Completion: March'16)

   - Proposal submitted to Nodal Officer (NO) on 07.05.14.
   - Proposal forwarded to DFOs for formulation.
   - FRA certificate from District Collector Sundargarh and Jharsuguda received**.**
   - **FRA certificates from District Collectors of Angul, Sambalpur, Athamalik, Rairakhol and Bamraawaited.**

3. **765 kV D/C Jharsuguda-Dharamjaygarh – 2nd , 54.927 ha.**
   (Sch. Comp.- December'15 Anticipated Completion: March'16)

- Proposal submitted on 25.03.14.
- Proposal forwarded by NO to DFO, Sundargarh on 30.05.14.
- FRA certificate obtained from District Collector, Sundargarh.
- **Proposal under formulation with RCCF, Rourkela.**

RoW issues:

1. **765kV S/c Angul – Jharsuguda line – I**

   Progress: Foundation: 508/510; Tower erection: 497/510; Stringing: 145/192

- Severe RoW issue (villages – Ogi, Para, Antuliya, Tapdhole, Paikaisahi in Anguldistt and village –Ladubahal in Sambalpur disttt) is affecting the completion of line.
- **Continuous support from police and Magistrate (Angul& Sambalpur) required for completion the line. 30 km stringing affected due to above RoW issues**

❖ **<u>MAHARASHTRA</u>**

Status of Forest clearance proposals pending with State Govt:

1. 765 kV D/C Aurangabad-Phadge line, 144.3 ha.

- Proposal submitted in Feb' 2014. Proposal for all 5 divisions forwarded to DCF, Thane (Combining officer). DCF, Thane raised queries from concerned DCFs and clarification submitted.
- DCF Thane forwarded proposal to CCF Thane on 02.06.15.
- CCF inspection completed on 17.06.15 and proposal forwarded to NO on 06.07.15.
- **State Govtto recommend proposal to RMoEF&CC, Nagpur for processing and Stage-I approval.**

❖ **<u>Madhya Pradesh</u>**

1. 765 KV S/C Vindhyachal - Satna Transmission line-2nd – 271 Ckm

Progress: Foundation: 586/586; Tower erection: 586/586; Stringing: 265/271

Issues: ROW

- Foundation and Tower Erection completed, Only 6.5 kms Stringing held up due to Severe Right of Way (ROW) problems from land owners in Village Kulpura, Bihata, Narhati&Patharhata (Tehsil: Uchehara, District: Satna). Compensation, as approved by revenue officials has already been disbursed to 70% of land owner. Balance land owners not accepting the compensation. Despite continuous follow up with the district administration for finding an amicable and early solution to the ROW problem persisting for the last six months, there is no change in the status. CMD, POWERGRID already held meeting with Ch. Secy., Govt. of MP on 18th June'15.

❖ **<u>Jammu & Kashmir</u>**

1. **Status of Forest clearance proposals pending with State Govt:**
   400 kV D/c Kishenpur-New Wanpoh Transmission line (2.3506 ha in Chakore Reserve in J&K)

Progress: Foundation: 375/399; Tower erection: 311/399; Stringing: 142/278 ckm

- Forest Clearance was obtained subject to Wildlife Clearance on 17.05.13 & 10.06.13.
- Standing Committee of NBWL recommended proposal during meeting on Aug12-13, 2014.
- Hon'able Supreme Court granted permission for construction on 22.08.14, subject to conditions imposed by Chief Wild Life warden..
- Chief Wildlife Warden forwarded the case to Forest Advisory Committee of J&K which recommended the proposal on 08.06.15 and minutes issued on 20.07.2015.
- The recommendation shall be put up to cabinet for approval.

2. <u>Issues in execution of the Project 'Srinagar – Leh Transmission System'</u>

- **Signing of Bi-Partite MoU between JKPDD & POWERGRID & Waiver of state level Taxes :**

  After rounds of discussions with JKPDD, the draft of MoU was finalised and forwarded to JKPDD in Dec'14. Further to this, the matter was also discussed during review meeting chaired by Home Secretary, Govt. of India at New Delhi on 28th May'15. It was informed by Principal Secretary (Power), Govt of J&K that MoU shall be signed in 15 days and issue of state level Tax waiver shall be resolved expeditiously.

- **Handing over of Land for Kargil 220/66 kV S/s (New) :**

  The S/s land measuring 150 Mtrs X 350 Mtrs has been identified by JKPDD however the same is yet to be handed over to POWERGRID for commencement of work. It may be mentioned here that Award for Kargil S/s has been placed and early handing over of Land shall facilitate expeditious implementation of works. The project is scheduled to be completed in Sep'17.

Annex-VI

Green Energy Corridor – I :

Green Energy Corridor (GEC) Rs.- 34000 crore

- About 33 GW renewable capacity addition in 12th plan is envisaged in various Renewable resource rich States viz. Tamil Nadu, AP, Karnataka, Gujarat, Maharashtra, Rajasthan, HP and J&K. To facilitate integration of envisaged Renewable Generation capacity, a comprehensive transmission plan comprising intra state and inter-state transmission system (ISTS) strengthening as well as Control Infrastructure (including REMC) has been identified under "Green Energy Corridors". The intra State transmission system is to be funded as KfW loan (40% of the cost), NCEF grant (40% of the cost) and the remaining 20% as State contribution.

1. Intra State Tranche-I (Tamil Nadu & Rajasthan)

Tamil Nadu published NIT for **Package IV** on 14/9/14 and tender opened on 30/10/14. Based on concurrence of KfW on 09.02.2015, the contract was awarded on 30.06.2015. NIT for **package V** published on 26.10.2014 and opened on 12.12.2014. TN wrote to KfW on 23.07.2015 for concurrence for award of contract. The same is awaited.

TN submitted 3 no packages (I, II, III) to KfW on 27/10/14. KfW gave concurrence on 3. no packages on 14th Nov./12th December 2013. NIT published for package 1 on 18.01.2015. NIT for package II and III published on 22.02.2015. Tender shall be opened for package I on 26.03.2015, Package II and Package III on 18.04.2015 and placement of award has been scheduled in August 2015. For **Package 1**, TN wrote to KfW on 23.07.2015 for concurrence for opening of price bid , which is awaited. For **Package II**, Techno-commercial Tender Analysis is under process. However, proposal is sent to CEA for scope reduction of 400KV DC line from Kayathar- Koilpatty(PGCIL SS) due to non-availability of 400KV bays at Koilpatty (PGCIL SS). For **Package III**, Proposal for awarding of contract is approved by Board Level tender Committee and is being placed before the ensuing Board meeting in August'15.

RajasthanKfW gave NOC on Bid documents of package I (package of 400 kV GSS Jaisalmer) and subsequently tender opened on 2/7/2015. **For Package 2**, KfW gave NOC on 11.02.2015 and subsequently tender opened on 1/8/2015. **Package 3 & 4** has been sent to KfW on 24.4.2015 and NOC (NIT to be issued subsequently) is awaited. **For Package 5,** Tender is scheduled to open on 10/9/2015.For **Package 6** NIT is to be published after allotment of land. **Package 7** has beensent to KfW on 25.5.2015 and KfW is yet to give NOC. **Package 8** has beensent to KfW on 18.5.2015 and NOC is awaited. For **Package 9 and 10,** documents are ready and NOC is awaited from KfW.

For Tamil Nadu, loan agreement for financial assistance of Euro 76 million and for Rajasthan Euro 49 million from KfW, Germany has been signed.

Intra State Tranche-II & III

States	Status
Gujarat*	KfWconcurred the DPR. KfW appraisal mission visited Gujarat during 13-14/10/14. The proposal has been approved by the State Government (Finance Department) and tender documents are under preparation.
Karnataka	CEA concurred the proposal on 07/11/2014. Karnataka submitted DPR / proposal of the revised scope to KfW. Some clarification sought by KfW.MNRE vide letter dated 30/6/2015 has written to Energy Dept, Karnataka that loan cannot be granted directly to KPTCL and requested ACS to intervene in the matter. ACS, Karnataka vide letter dated 14/7/2015 requested MNRE to release 40% of the project cost as grant from MNRE delinking from KfW loan. MNRE vide letter dated 29.7.2015 sought clarification from M/o.Finance (DEA & DoE) whether Karnataka can avail approved 40% grant from NCEF for their project if the State decide not take KfW loan.
Andhra Pradesh	The No Objection Certificate for 1st package was issued by M/s. KfW vide letter dated 18/6/2015. Bid opened on 01.08.2015.Work contracts are scheduled to be awarded on 30.10.2015.
Himachal Pradesh*	Commercial document submitted by HPSEB has been approved by KfW. KfW requested HPSEB and HPPTCL to follow JICA formats. Package –wise Technical documents are under preparation and were scheduled to be completed by 15th July.NIT to be issued by August end. Loan agreement approved by Govt of H.P.
Maharashtra	Revised proposal of Rs.362 Crore sent to DEA by MNRE.Proposal is under scrutiny in Finance Department of Govt. of Maharashtra
Madhya Pradesh	CEA has vetted the proposal. Based on feedback, revised DPR is yet to be submitted by MP to KfW.

The Note on "Creation of Intra-stae transmission system in the States of A.P, Gujarat, Himachal Pradesh, Karnataka, Madhya Pradesh, Maharashtra and Rajasthan" has been approved by the Cabinet on 16.7.2015 at an estimated cost of Rs.8,458.68 crore with GoI contribution from National Clean Energy fund of Rs.3,419.47 crore as recommended by IMG meeting.

2. **Monitoring Consultant-** KfW submitted tender document for appointment for monitoring consultant with revised modality of tendering. The revised document prepared by PGCIL was discussed with States in a meeting held in CEA on 23rd July, 2015. Certain issues were highlighted and a meeting would be called for resolving among PGCIL, CEA and KfW.

3. **Inter State Tranche-I, II & III (PGCIL)**

- Intra State Transmission system of GECs shall be implemented by respective State Transmission Utilities (STU) and Inter-state transmission system of GECs is being implemented by POWERGRID as GEC: ISTS (Part A, B, C&D).

- The total estimated Project cost of GEC:ISTS Part-A, B &C as per DPR is about Rs. 7500 crores

a. Status of award of packages under GEC – A, B & C (KfW financing)

- Bids for all (14Nos.) transmission line (Tower) packages & all (6Nos.) sub-station packages have been opened and are under evaluation. Further, six more bids, pertaining to Transformers, Reactors and Insulators have also been opened and are under evaluation.

- The awards started progressively from April, 2015.

b. Status of financial closure

- Loan Agreement between POWERGRID and KfW, Germany and Guarantee Agreement between DEA, MoF (Govt. of India) and KfW has been signed on 17 Dec 2014 for Sovereign Guaranteed Loan amount of Euro 500 million towards GEC:ISTS Part-A, B & C.

- Guarantee fee towards the subject Loan has been paid by POWERGRID to the Govt. of India as per the terms of GFR 2005.

- All conditions precedent for effectiveness of the Loan Agreement have been fulfilled by POWERGRID and the Loan effectiveness is expected by end April'15.

c. Status of REMC

- German Govt. through GiZ, Germany is providing technical assistance (2 million Euro) for REMC establishment, forecasting, balancing, market design and network management in connection with grid integration of renewable power.

- GiZ has awarded contract in Dec'14 to consortium of E&Y India, E&Y Germany, University of Oldenburg, Fraunhofer IWES and Fichtner& Co. to provide consultancy on above scope which is divided in various packages.

- Recommendations on Work Package-I which includes Renewable Energy Management Centers and grid balancing have been submitted by the GIZ and comments of different stakeholders have been sought.

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Brief on Green Energy Corridors-II: Part-A
(A Plan for Integration of Ultra mega Solar Power parks)

Government of India has an ambitious plan to establish 1,00,000 MW Solar and 65,000 MW Wind generation in next five years. Solar capacity targets of 1,00,000 MW by 2021-22 includes setting up of 25 solar parks in various States, each with a capacity of 500 to 1000 MW (as ultra-mega solar power projects) thereby targeting around 20,000 MW solar capacity. These solar parks will be put in place in a span of 5 years (2014-15 to 2018-19). Balance Solar capacity comprises 40,000 MW Roof top Solar PV and 40,000 MW through distributed solar generation.

To evolve plan for Grid integration of large scale solar/wind generation capacities, POWERGRID has been entrusted by Ministry of Power (MOP) to formulate Grid Integration Plan for envisaged renewable capacity addition by 2021-22 as Green Energy Corridors-II. ***As the information on pocket wise capacity addition plan of various Renewable generation is still awaited from various states, it was decided that power evacuation arrangement for the identified Solar Power Parks of over 20,000 MW capacity in twelve (12) states may be evolved as Green Energy Corridors-II Part-A.*** Further, MOP directed that ***POWERGRID shall prepare plans for the Solar capacity proposed to be evacuated on InterState only.*** For capacities to be absorbed within states through Intra state shall be planned by respective STUs.

As per the information from MOP/MNRE (MOP letter dated 17.02.15 & MNRE letters dated 16.12.14, 03.01.15, 28.01.15), details have been consolidated regarding UMSPPs as under. It is observed that out of ***total 22,100 MW Ultra Mega Solar Power Park (UMSPP) capacity envisaged in 12 states, about 17,620 MW capacity including 7,5000MW in J&K is proposed to be evacuated on Inter-state and balance about 4480 MW by STU over Intra state network***. List of proposed UMSPP is enclosed. However, it was also decided that ***for Leh&Kargil UMSPP, J&K (7500 MW), a conceptual transmission plan*** may be prepared.

Studies were carried out to evolve evacuation/transmission system for interconnection of above proposed UMSPP with ISTS network. Estimated cost of ISTS scheme for 10,120 MW is about Rs. 8081 Cr. However, strengthening of ***Intra State Transmission network for absorption of power need to be identified by the respective STUs***. Provision of similar order of investment (Rs. 8000 Cr.) for IntraState strengthening has been kept. In addition, provision of Rs. 2000-3000 cr. has been kept as part of control infrastructure including large scale energy storage facilities.

For 7,500 MW capacity in Leh&Kargil areas, broad contour for ISTS transmission plan has been highlighted at an estimated cost of Rs. 27,605 cr. with provision of about Rs. 10,000 cr. for IntraState strengthening.

Way Forward

- CEA to give in-principle approval of the identified ISTS schemes and Section-68 to undertake implementation of ISTS scheme. **The same have been in-principle agreed in the recently concluded meetings of Standing Committee on Power System Planning in Northern and western Regions subject to the application for long term access by the generation developers.**
- Respective STU may identify matching IntraState transmission strengthening
- Application of Connectivity & Long-term Access by solar park developer/SECI to facilitate filing of petition to CERC for regulatory approval.
- POWERGRID nomination letter from Ministry of Power to undertake implementation of evacuation/transmission system of solar Power park in Telangana.

List of proposed ultra mega solar power parks (UMSPP)

S. No.	State	Capacity (MW) & Location	Type	
			Intra-State	Inter-State
1.	Gujarat	One park of 750 MW – Distt. Banaskantha		750
2	Madhya Pradesh	Two parks of 750 MW each – Distt. Rewa (750MW) – Neemuch& Agar(750MW)		1500
3	Telangana	One park of 1000 MW – Distt. Mehboob Nagar		1000
4	Andhra Pradesh	Two parks of 1500 MW & 1000 MW Distt.Anantpur (1500MW) – Distt. Kurnool (1000MW)	1000	1500
5	Karnataka	One park of 2000 MW Distt. Tumkur (2000 MW)		2000
6	Uttar Pradesh	Two parks of 370 MW & 230 MW – Jalaun (370 MW) – Sonbhadra, Allahabad &Mirjapur(230 MW)	230	370
7	Meghalaya	One park of 50 MW – Distt. West & East Jaintia hills	50	
8	Jammu & Kashmir	Leh and Kargil		7500
9.	Punjab	Two parks of 500 MW each – Patiala, Fatehgarh Sahib, Ludhiana &Gurdaspur (1000 MW)	1000	
10	Rajasthan	Four parks of 700 MW, 1000 MW, 1000 MW& 1000MW – Bhadla (1700MW) – Jaisalmer(2000MW)	700	3000
11	Tamil Nadu	One park of 500 MW – Distt. Ramanathapuram	500	
12	Odisha	Location not stated	1000	
Total		**22,100 MW**	**4480**	**17620**

Annex-VII

Reliable Communication and Data Acquisition System

Presently, reliable communication and data acquisition system is available mostly upto 220 kV substations. With growing complexity and need for better control of grid, it is planned to have such system upto 33 kV level. Need for reliable communication at 33 kV, 66 kV and 132 kV substations was also experienced after devastation caused by Hudhud cyclone in AP in Oct'14 where absence of communication between 33 kV sub-stations and Control Centre had delayed restoration of power supply as most 33 kV substation locations communicate with their Control Centre through weak communication link and in calamities like cyclone, flood etc. the communication link gets broken and it halts the process of restoration of power supply. In order to deal with the situation and to provide reliable communication and data acquisition system at 132 kV, 66 kV and 33 kV substations, MoP decided that the scheme may be prepared in two parts i.e. upto 132 kV by PGCIL and upto 33 kV by CEA (by 21.2.2015 and 21.3.2015 respectively). While the DPRs for PGCIL portion of the system upto 132 kV are ready, DPRs for CEA portion of the system upto 33 kV level yet to be firmed up.

2. CEA informed that they had worked out a Scheme of ADSS based communication network over 66 kV and 33 kV transmission lines as primary connectivity with backing up by V-SAT (Very Small Aperture Terminal) communication network at each 66kV and 33kV substation to meet contingency. The detailed proposal worked out by CEA by incorporating each component required for the scheme with an estimated cost of Rs.26,177.59 crore. As regards to source of funding, CEA suggested that funding could be considered from World Bank and IPDS. CEA further stated that after approval of the approach by Ministry of Power, States/UTs would be pursued to prepare the DPRs, which may take about 3-4 months for completion.

3 As regards the other scheme, PGCIL has prepared 5 DPRs for OPGW connectivity for substations upto 132 kV level for all the five regions of the country. MoP has asked CEA to vet these five DPRs. CEA has vetted DPRs of all regions and furnished their observations/deficiencies to PGCIL. PGCIL has submitted revised DPRs of all the five regions after rectifification of the observations of CEA. Total OPGW network size for providing connectivity of substations upto 132 kV level comes around 1,09,313 kms with estimated cost of around Rs.4,234 crore. This comprises of around 1,03,653kms of OPGW for State Sector (3473 S/s for Rs.4034.95 crore) and 5,660 kms for Central Sector/IPPs (91 S/s for Rs.1,110.2 crore). As implementation strategy, work of OPGW has to be taken simultaneously all over the country. Hence, each State to plan and execute the OPGW network in their respective state for their portion and PGCIL will take up the project pertaining to Central Sector substations.

4. Both the schemes of CEA and PGCIL are under discussion for a quite long time and the approach needs to be finalised on their way ahead in consultation with the States/STUs. Presentation was held before the Secretary (Power) on 24.7.2015. Gist of discussions held in the meeting taken by Secretary (Power), Ministry of Power on 24.7.2015 is at **Annexure-I**.

Annexure-I

Gist of discussions held in the meeting taken by Secretary (Power), Ministry of Power on 24.7.2015

To discuss providing reliable telecommunication system upto 33 kV substations across the country, Secretary (Power), Ministry of Power took a meeting on 24.7.2015. MOP has entrusted the work upto 132 kV to PGCIL; and below 132kV upto 33kV voltage level to CEA. The Secretary (Power), MOP asked CEA to put forward its point of view.

Chairperson, CEA initiated the presentation and while giving background informed that based on MOP's letter dated 28.1.2015, CEA had prepared a Scheme of V-SAT communication network at each 33kV and 66kV substation and broadband connectivity over existing copper telephone connections at the substations, wherever the same is available, with estimated cost of Rs. 2445 cr. Subsequently, Special Secretary, MOP advised CEA to modify the proposal in a way that primary connectivity should be optical fiber based communication, backed up by V-SAT connection at each 33kV & 66kV substation. The Scheme was prepared with estimated cost of Rs. 26178 cr. He opined that such large expenditure may not be optimally utilized, as large bandwidth provided by optical fiber may remain unutilized.

CEA informed that cost of about Rs. 27,000 cr. of the revised scheme covers laying of optical fiber of about 5 lakh km line length, connecting around 30,000 substations of 33kV & 66kV voltage level. It was stated that depending on requirement, different communication means e.g. Optical fiber, V-SAT, GPRS, leased telephone connection, MPLS-VPN connection, etc. may be required at 33kV & 66kV substations across the country. Therefore, instead of implementing one form of communication system across the country, actual requirement of communication system at different 33kV & 66kV substations of States/UTs be considered. Regarding grid management, it was informed that with the proposed availability of optical fiber at 132kV level, the power flow at outgoing 33kV feeders from 132kV substations can be monitored in real time. After detailed deliberations, it was decided that actual requirement of communication system at different 33kV & 66kV substations of States/UTs be considered by CEA. The State power utilities need to assess their communication requirements and CEA would collate all the requirements and inform MOP to decide further course of action. As decided in the above meeting, a proforma has been prepared by CEA and sent to all the States/STUs vide letter dated 29.7.2015 to fill the details of requirements of each substation and furnish to them.

WAY FORWARD:

Provision of reliable communication system at 33kV & 66kV substations across the country would be based on actual requirement of communication system at different 33kV & 66kV substations, as assessed by the States/UTs.