भारत सरकार
केन्द्रीय विद्युत प्राधिकरण
प्रणाली योजना एवं परियोजना मूल्यांकन प्रभाग
सेवा भवन, रामकृष्णपुरम्, नई दिल्ली 110066

क• सं• : 26/10/2011–प्र. यो. प. मू./46-59 दिनांक: 20.01.2011

1 सदस्य (विद्युत प्रणाली),
केन्द्रीय विद्युत प्राधिकरण,
सेवा भवन, आर के पुरम,
नई दिल्ली–110066

2 सदस्य सचिव,
पश्चिमी क्षेत्रीय विद्युत समिति, एम. आई. डी. सी क्षेत्र,
मेरोल, अंधेरी पूर्व, मुम्बई–400094
फैक्स सं. 022–28370193

3 निदेशक (परियोजना),
पावरग्रिड कार्रपोरेशन ऑफ इंडिया लि•,
सौदामिनी, प्लाट सं• 2, सैक्टर–29, गुडगॉव–122001
फैक्स सं. 95124–2571760

4 अध्यक्ष एवं प्रबन्ध निदेशक,
एम.पी.पी.टी.सी.एल. शक्ति भवन,
रामपुर, जबलपुर–482008
फैक्स सं. 0761–2665593

5 सदस्य (पारेषण एवं वितरण)
छत्तीसगढ़ रा. वि. बोर्ड,
दानगनिया, रायपुर (छत्तीसगढ) –492013
फैक्स सं. 0771–4066566

6 प्रबन्ध निदेशक,
जी.ई.ट्रां.नि.लि, सरदार पटेल विद्युत भवन,
रेस कोर्स, बड़ोदा–390007
फैक्स सं. 0265–2338152

7 निदेशक (प्रचालन),
महाट्रांसको, प्रकाशगड, प्लॉट संख्या–जी 9,
बांद्रा–पूर्व, मुम्बई–400051
फैक्स 022–26390383/26595258

8 श्री एम एल जाधव, मुख्य अभियंता (पारेषण),
न्यूक्लीयर पावर कॉरपोरेशन ऑफ इंडिया लि,
9एस30, वीएस भवन, अणुशक्ति नगर,
मुम्बई–400094 फैक्स सं. 022–25993570

9 कार्यपालक निदेशक (अभियांत्रिकी),
नेशनल थर्मल पावर कॉरपोरेशन लि,
इंजीनियरिंग ऑफिस कॉम्पलैक्स, ए–8, सैक्टर–24,
नोएडा–201301 फैक्स सं. 0124–2410201

10 मुख्य अभियंता,
विद्युत विभाग, गोवा सरकार, पणजी
फैक्स सं. 0832–2222354

11 कार्यपालक इंजीनियर (परियोजनाए),
दादरा एवं नागर हवेली संघ शासित क्षेत्र,,
विद्युत विभाग, सिलवासा,
फोन न• 0260–2642787

12 कार्यपालक इंजीनियर,
विद्युत विभाग, दमन एवं दीव संघशासित क्षेत्र प्रशासन,
मोती दमन, पिन–396220
फोन न• 0260–2250889, 2254745

13 कार्यपालक निदेशक, (विशेष आमंत्रित),
डब्लू आर एल डी सी, प्लॉट संख्या–एफ 3,
एम आई डी सी एरिया, मरोल,
अंधेरी पूर्व, मुम्बई–400093,
फैक्स संख्या–022–28235434

14 कार्यपालक निदेशक, एनएलडीसी
बी–9, कुतुब इन्स्टीट्यूशनल एरिया,
कटवारिया सराय, नई दिल्ली–110016
फैक्स 011–28052046

विषय :– पश्चिमी क्षेत्र कीं विद्युत प्रणाली योजना पर 27 दिसम्बर 2010 को पावरग्रिड कार्रपोरेशन ऑफ इंडिया लि• गुडगॉव में आयोजित की गयी की स्थाई समिति की 31वीं बैठक का कार्यवृत्त।

महोदय,

पश्चिमी क्षेत्र की विद्युत प्रणाली योजना पर 27 दिसम्बर 2010 को पावरग्रिड कार्रपोरेशन ऑफ इंडिया लि• गुडगॉव में आयोजित की गयी की स्थाई समिति की 31वीं बैठक का कार्यवृत्त केन्द्रीय विद्युत प्राधिकरण की वेबसाइट www.cea.nic.in पर लिंक Home page – Power Systems-Standing Committee on Power System Planning-Western Region) पर उपलब्ध है।

संलग्न – उपरोक्त

20/01/2011
for (पी• के• पाहवा)
निदेशक

Govt. of India
Central Electricity Authority
System Planning & Project Appraisal Division
Sewa Bhawan, R.K. Puram, New Delhi – 110066.

No. 26/10/2011-SP&PA/ **Date: 20th January, 2011**

To

1 The Member (PS),
Central Electricity Authority,
Sewa Bhawan, R. K. Puram,
New Delhi-110066

2 The Member Secretary,
Western Regional Power Committee,
MIDC Area, Marol, Andheri East, Mumbai
Fax 022 28370193

3 The Director (Projects),
Power Grid Corp. of India Ltd., "Saudamini",
Plot No. 2, Sector-29, Gurgaon-122001
Fax 0124-2571760/2571932

4 Chairman and Managing Director,
MPPTCL, Shakti Bhawan,
Rampur, Jabalpur-482008
Fax 0761 2664141

5 The Managing Director,
CSPTCL, Dangania,
Raipur (CG)-492013
Fax 0771 2574246/ 4066566

6 The Managing Director,
GETCO, Sardar Patel Vidyut Bhawan,
Race Course, Baroda-390007
Fax 0265-2338164

7. Director (Operation),
MAHATRANSCO, 'Prakashgad', Plot No.G-9,
Bandra-East, Mumbai-400051
Fax 022-26390383/26595258

8 Shri M.L Jadhav, Chief Engineer (Trans),
Nuclear Power Corp. of India Ltd.,
9S30, VS Bhavan, Anushakti Nagar,
Mumbai-400094
Fax 022-25993570

9 The Executive Director (Engg.),
NTPC Ltd., Engg. Office Complex,
A-8, Sector-24, NOIDA 201301
Fax 0120-2410201/2410211

10 The Chief Engineer,
Electricity Department,
The Government of Goa, Panaji
Fax 0832 2222354

11 Executive Engineer (Projects)
UT of Dadra & Nagar Haveli,
Department of Electricity , Silvassa
Ph. 0260-2642338/2230771

12 Executive Engineer
Administration of Daman & Diu (U.T.)
Department of Electricity
Moti Daman-396220
Ph. 0260-2250889, 2254745

13 ED, WRLDC (invitee)
Plot no F-3, MIDC Area, Msarol,
Andheri(East) Mumbai-400093
Fax no 022-28235434

14 Executive Director, NLDC (invitee)
B-9, Qutab Institutinal Area, Katwaria Sarai
New Delhi-110016
Fax 011-26852747

Sub: Minutes of the 31st meeting of the Standing Committee on Power System Planning in Western Region held on 27th December 2010 at PGCIL, Gurgaon.

Sir,

The minutes of the 31st meeting of the Standing Committee on Power System Planning in Western Region held on 27th December 2010 at PGCIL, Gurgaon are available on CEA website (www.cea.nic.in at the following link: Home page-Power Systems-Standing Committee on Power System Planning-Western Region).

Yours faithfully,

20/1/2011

for (P. K. Pahwa)
Director, SP&PA

Minutes of the 31st Meeting of Standing Committee on Power System Planning of Western Region held on 27th December 2010.

1.0 The 31st meeting of the Standing Committee on Power System Planning of Western Region was held on Monday the 27th December, 2010 at " Saudamini", PGCIL, Sector – 29, Gurgaon. The list of participants is at Annex – 1.

1.1 Member (Power System), CEA welcomed the participants to the meeting and stated that based on interaction with various power utilities it had emerged that about 1,31,000 MW capacity was under various stages of construction / implementation. Even if 80 % of the projects materialize, transmission capacity for about 100,000 MW of capacity additions would be required during the next six to seven years. It needs to be assessed whether the already planned high capacity transmission corridors would be adequate or additional corridors would be required for this quantum of capacity addition. The transmission system needs to be planned with adequate margins well in advance so that sufficient time was available for implementation. The gas based projects and solar plants were short gestation period projects and if adequate margins are available then power from such short gestation projects could be absorbed in the existing grid. The Standing Committee on transmission planning needs to consider these aspects while planning the transmission system.

1.2 Director (Projects), PGCIL stated that acquisition of land for building substations and Right of Way for laying of transmission line was a challenge in building transmission system. He informed that acquisition of land was yet to take place for the proposed pooling stations at Raigarh, Raipur, Champa and Aurangabad 765/400 kV substations. Irrespective of the delays in acquiring land for substations and the RoW constraints for transmission lines, the commissioning schedule for the generation was more or less fixed. This reduced the time available for implementing the transmission system. He requested constituents to support in overcoming ROW problems by adopting technological options like GIS technology, high capacity transmission corridors etc. He further stated that the RoW problems were more severe in urban areas, therefore the transmission lines should be terminated on the periphery of the urban areas and in principle approval should be there for use of underground cables for stretches where RoW was an issue.

1.3 CE (SP&PA), CEA stated that a large number of applications were being made for connectivity and the present grid was not adequate to accommodate such large number of connectivity requests. The Connectivity and LTA has to be granted based on the ground progress of the generation project with respect to the land availability, fuel linkage, Environmental Clearance etc. The agenda items were thereafter taken up.

2.0 Confirmation of the minutes of 30th meeting of the Standing Committee on Power System Planning in Western Region held on 8th July 2010 at New Delhi.

2.1 Director (SP&PA) stated that the minutes of the 30th SCM were issued vide CEA letter No.26/10/2009-SP&PA/146-159 dated 09th August 2010. Subsequently, GETCO vide their letter no. SE (CP&SS)/System/517-520/42 dated 01.09.2010 had sent their comments / observations on para 9.5 and 11.5 of the minutes.

2.2 With regard to para 9.5 GETCO had pointed out that this para of minutes states that PGCIL and GETCO would jointly survey and sort out the issue of acquisition of suitable land for setting up 765/400 kV substation at Vadora. They had observed that responsibility of acquisition of land was that of PGCIL and GETCO would only assist PGCIL in identifying land. Accordingly, they had proposed modification of this para.

2.3 With regard to para 11.5 GETCO had pointed out that Bhimsar (Bhachau) – Versana 400 kV D/c line had been agreed as System Strengthening Scheme. GETCO had requested for modification of this para to indicate Bhimsar (Bhachau) – Versana 400 kV D/c line as System Strengthening under Mundra UMPP transmission system.

2.4 With regard to the above modifications in para 11.5 proposed by GETCO, Director (SP&PA) stated that Bhimsar (Bhachau) – Versana 400 kV D/c line cannot form part of Mundra transmission as Mundra UMPP ATS was finalized long back and was under implementation. Therefore this line has to be implemented as a separate system strengthening scheme. Also discussions in the last meeting were on similar lines as reflected in the minutes. Hence, no amendment for this para was required.

2.5 Director (SP&PA) stated that PGCIL had pointed out that on page 32 of the minutes "Application for Grant of Long Term Open Access "under 1.0 "MB Power (Madhya Pradesh) Ltd" the Jabalpur pool – Bina 765 kV S/C line (3rd circuit) was mentioned as System Strengthening in WR instead of "Common transmission System for WR and NR".

2.6 The minutes of the 30th SCM issued vide CEA letter No.26/10/2009-SP&PA/146-159 dated 09th August 2010 were thereafter confirmed with the following amendments:

- On page 15 Para 9.5 modified to read as under:

  "9.5 The proposal of 765/400 kV GIS substation at Pune was agreed. Regarding 765/400 kV substation at Vadodra it was decided that GETCO would assist PGCIL in identifying suitable land for setting up 765/400 kV AIS substation."

- On page 32 of the minutes under Application for Grant of Long Term Open Access for MB Power (Madhya Pradesh) Ltd the s.no (vii) amended as under:

(vii)	LTOA granted	➢ Transmission System Strengthening in WR: Jabalpur Pooling Station – Bina 765kV S/c (3rd) *(Implementation through Pvt. Sector)* ➢ Common Transmission System Strengthening already identified with IPPs in Madhya Pradesh, Chattishgarh (getting pooled at Bilaspur) and Orissa

to be modified to

(vii)	LTOA granted	➢ Transmission System Strengthening Common for WR and NR: Jabalpur Pooling Station – Bina 765kV S/c (3rd) *(Implementation through Pvt. Sector)* ➢ Common Transmission System Strengthening already identified with IPPs. in Madhya Pradesh, Chattishgarh (getting pooled at Bilaspur) and Orissa

3.0 Transmission system associated with 1400 MW (2X700 MW) Kakrapar Atomic Power Project Unit 3 & 4 (2x700MW).

3.1 Director (SP&PA), CEA stated that Kakrapar Atomic Power Project Unit 3 & 4 (2x700 MW) was proposed by NPCIL near village Vyara in Surat District, Gujarat. Based on information furnished by NPCIL the commissioning schedule was Unit 3 -Dec 2015 and Unit 4 - June 2016. Power from the project was fully allocated to the constituents of WR. He further stated that the existing Unit 1 & 2 of (2X220 MW) of Kakrapar Atomic Power Project was stepped up

at 220 kV level and the proposed Unit 3 & 4 of (2X700 MW) of Kakrapar Atomic Power Project would be stepped up to 400 kV level.

3.2 DGM, PGCIL made a presentation of the studies carried out by them corresponding to 2015-16 conditions and stated that peak demand of WR considered was about 70,000 MW against the projected demand of about 60,000MW as per 17th EPS. This higher demand was on account of large no of IPPs who had been granted open access and had indicated WR as their target beneficiaries. Two alternatives were studied as under:

Alternative-1

- Kakrapar NPP – Navsari 400kV D/c – 65 km
- Kakrapar NPP – Vapi 400kV D/c – 120 km

Estimated Cost- about Rs 250 Cr

Alternative-2

- Kakrapar NPP – Navsari 400kV 2xD/c – 65 km
- Augmentation of transformation capacity of 400/220kV S/s at Navsari with 1x500MVA ICT

Estimated Cost- about Rs 225 Cr

3.3 DGM, PGCIL further stated that the loading on the 400 kV lines from the Kakrapar NPP in both the alternatives was within limits in base case as well as contingency conditions. However, higher loadings were observed on 220kV Navsari(PG)-Navsari (GETCO) D/c line in the Gujarat network. To overcome this additional 220 kV outlets from Navsari(PG) was required.

3.4 Director (SP&PA), CEA stated that alternative -1 was a better proposal from reliability point of view as KAPP gets connected to two separate transmission corridors, one towards Gujarat via Navsari and other towards Maharashtra via Vapi.

3.5 NPCIL representative stated that they had applied for Long Term Access for this project and the transmission system would be required 6 months prior to the commissioning schedule for carrying out pre-commissioning activities viz July 2015.

3.6 Director (Projects), PGCIL suggested that NPCIL may interconnect the 400 kV and 220 kV voltage level as this would provide connectivity to the Unit 3 & 4 and also provide an alternative path thus improving reliability.

3.7 Executive Director, WRTS-I, PGCIL stated that the alternative - 2 was better from implementation point of view as it involved less RoW as compared to Alternative 1. However in both the alternatives, in certain stretches of the transmission route multi circuit tower might be required to overcome the RoW issues.

3.8 NPCIL representative stated that there were space constraints in 220 kV switchyard for providing interconnection between 220 kV and 400 kV level. He opined that multi circuit towers may be avoided as there would be no evacuation outlets in case of tower outage in the multi circuit stretch.

3.9 To a query from NPCIL regarding requirement of bus reactor at generation switchyard it was clarified by PGCIL that 125 MVAR bus reactor was required at 400 kV generator switchyard of Kakrapara Atomic Power Plant.

3.10 After deliberations the transmission system for evacuation of Kakrapar Atomic Power Project unit 3 &4 (2X700 MW) was agreed as under. It was also decided that additional System strengthening, if required for absorption of power shall be identified separately.

Transmission system for evacuation of Kakrapar Atomic Power Project unit 3 &4 (2X700 MW)

- Kakrapar NPP – Navsari 400kV D/c
- Kakrapar NPP – Vapi 400kV D/c

To off take power and to overcome loading on Navsari (PG)-Navsari (GETCO) 220 kV D/c line additional outlets from Navsari(PG) needs to be planned. It was decided that additional strengthening, if required, for different states to facilitate absorption of power shall be identified separately.

4.0 Transmission system associated with 4000 MW (6X660) Chhattisgarh UMPP

4.1 Director (SP&PA), CEA stated that Chhattisgarh UMPP was proposed to come up near Village Salka and Khamaria in Surguja Distt. Chhattisgarh. For the above project, M/s Chhattisgarh Surguja Power Ltd has applied for Long Term Open Access. The tentative unit wise commissioning schedule was Unit-I – Dec 2016, Unit-II – May 2017, Unit-III – Dec 2017, Unit-IV – May 2018, Unit-V – Dec 2018, Unit-VI – May 2019. The details of procurer wise allocation of power was as under:

Sl.No.	Beneficiary	Allocation(MW)
Western Region		
1	Chhattisgarh	2000
2	Maharashtra	1000
3	Madhya Pradesh	425
4	Gujarat	275
5	Goa	200
6	UT DD	50
7	UT DNH	50
	Total	**4000**

4.2 He further stated that the preliminary information on the Chattishgarh UMPP was intimated in the 30th Standing Committee meeting held on 8th July 2010 and it was also decided that the evacuation voltage level for Chattishgarh UMPP would be at 765 kV level.

4.3 DGM, PGCIL made presentation on the Load Flow studies carried out by them to evolve the transmission system of Chattishgarh UMPP. He stated that Load generation scenario and network configuration of Western Region corresponding to 2016-17 time frame was considered taking into account various Central/State/Private Sector generation projects proposed to be set up by that time frame. Peak demand in WR was considered as 75,000 MW which was about 15% higher than the projected demand growth of about 65,000 MW as per the 17th EPS. The higher load growth was considered in view of the availability of additional power from various IPPs generation projects located in Chhattisgarh, Madhya Pradesh, Orrisa, Jharkhand, Andhra Pradesh and Tamilnadu who were in advance stage of development and were scheduled for commissioning progressively by the above time frame. The proposed system would also facilitate to cater to demand beyond 2016-17 to certain extent. The following two alternatives were studied :

Alternative 1

(i) Chhattisgarh UMPP- Jabalpur Poling Station 765kV D/c – 350 km
(ii) Chhattisgarh UMPP- Champa Poling Station 765kV D/c – 150 km
(iii) Jabalpur Poling Station – Bhopal 765kV D/c – 330 km
(iv) Bhopal – Indore 765kV 2nd S/c – 180 km
(v) Indore - Vadodra 765kV 2nd S/c – 300 km
(vi) Jabalpur Pool – Damoh 400kV D/c -180 km
(vii) Vadodra- Karamsad 400kV D/c (Quad)
(viii) LILO of Ranchi – Sipat 400kV D/c line at Chhattisgarh UMPP 400kV - 60 km
(ix) Establishment of 2x1000 MVA, 765/400kV substation at Chhattisgarh UMPP (under the scope of generation developer)
(x) Augmentation of transformation capacity at 765/400kV Indore and Vadodra Substation each by 1x1500 MVA

Broad Estimated cost: Rs. 5000 Cr.

Alternative 2

(i) Chhattisgarh UMPP- Suitable location near Seoni 765kV D/c – 380 km
(ii) Chhattisgarh UMPP- Champa Poling Station 765kV D/c – 150 km
(iii) LILO of Seoni-Bina 765 kV line at Suitable location near Seoni- 25 km
(iv) Suitable location near Seoni – Khandwa 765 kV D/C line – 380 km
(v) Khandwa - Vadodra 765kV D/C – 370 km
(vi) Vadodra- Karamsad 400kV D/c (Quad)
(vii) LILO of Ranchi – Sipat 400kV D/c line at Chhattisgarh UMPP 400kV - 60 km
(viii) Establishment of 2x1000 MVA, 765/400kV substation at Chhattisgarh UMPP (under the scope of generation developer)
(ix) Establishment of 2x1000 MVA, 765/400kV substation at Khandwa and at Suitable location near Seoni.
(x) Augmentation of transformation capacity at 765/400kV Vadodra Substation each by 2x1500 MVA

Broad Estimated cost: Rs. 5800 Cr.

In alternative - 1, connectivity of Chhattisgarh UMPP with Jabalpur Pooling Station as well as Champa Pooling station at 765kV level and for further transfer of power strengthening of 765kV Jabalpur Pooling Station-Vadodra transmission corridor via Bhopal/Indore was proposed. For dispersal of power from 400kV network onwards, transmission strengthening with 400kV high capacity D/c lines from Jabalpur Pool to Damoh as well as Vadodra to Karamsad was proposed. In view of the critical loading of Indore and Vadodra 765/400kV ICT, installation of 3rd 1500 MVA transformer was proposed at these locations. Further connectivity at 400 kV level with the grid was through LILO of Ranchi-Sipat 400kV D/c line at Chattisgarh UMPP. Loadings on major transmission lines in normal as well as contingency conditions were in order. Power transfer to other beneficiaries of WR shall be through displacement.

In alternative 2, connectivity of Chhattisgarh UMPP with Champa Pooling station at 765kV level and a new corridor viz Chhattisgarh UMPP- Seoni(new) – Khandwa – Vadodra 765 kV D/C line was proposed. As the distance between Chattishgarh UMPP and Seoni was more than 400 km, the line would be terminated at new substation near Seoni to be established by making LILO of Seoni-Bina 765 kV line. This would connect the Seoni (new) substation with the existing Seoni substation which was already connected with Southern as well as Northern part of the Western Region grid. For dispersal of power from 400kV network onwards, transmission strengthening with 400kV high capacity D/c lines from Vadodra to Karamsad was proposed. In view of the critical loading of Vadodra 765/400kV ICT, installation of 2X 1500 MVA transformers was proposed. Further to provide connectivity of UMPP at 400kV level with

the grid, LILO of Ranchi-Sipat 400kV D/c line was proposed. Loadings on major transmission lines in normal as well as contingency conditions were in order. Power transfer to other beneficiaries of WR would be through displacement.

4.4 DGM, PGCIL stated that both of the above alternatives were technically suitable, however alternative 2 involved development of new 765/400 kV substations near Seoni and Khandwa whereas alternative -1 utilized the already planned substations for interconnections. As alternative - 2 involved building of new corridor along with new 765/400 kV substation at Seoni and Khandwa the estimated cost of alternative -2 was about Rs 800 crores more than alternative-1.

4.5 PFC representative informed that the RfQ for the 4000 MW Chhattisgarh UMPP was issued in March 2010. The date for submission of responses to RfQ was initially May 2010 but the same had been extended from time to time as the coal blocks for the project has been declared as no-go area by MoEF. The date for submission of response to RfQ was now 8th March 2011. After RfQ stage, 225 days would be required for completing the bidding process for the selection of the developer.

4.6 To a query, DGM, PGCIL informed that 1x330 MVAR bus reactor was required at 765 kV generator switchyard of Chhattissgarh UMPP and this had to be provided by the generation developer.

4.7 GETCO representative stated that there were space constraints for terminating 400 kV lines at Kasor (Karamsad) 400 kV substation and suggested for terminating the proposed 400 kV lines from Vadodra at some other location in Gujarat. He further stated that the Bhopal – Indore – Vadodara 765 kV S/C was proposed in the evacuation system for Chattishgarh UMPP. This was in addition to the already agreed Bhopal – Indore – Vadodara 765 kV S/C line under System Strengthening in WR associated with IPP generation projects. This would result in 2XS/C 765 kV line configuration in the Bhopal – Indore – Vadodara corridor. He suggested for adopting 1XD/C lines in this corridor instead of 2X S/C to conserve the Right of Way.

4.8 DGM, PGCIL suggested that a new 400 kV substation near Karmsad or any suitable location may be established as part of above transmission scheme for interconnection from Vadodra 765/400 kV substation

4.9 Director (Projects), PGCIL stated that the 1st ckt was to match the IPPs generation projects coming up in Orrisa complex whereas the 2nd ckt would be matched with Chhattisgarh UMPP and there was gap of about 3 years in the time schedule of these projects. Also hot line stringing of 2nd 765 kV ckt on D/C tower was not feasible.

4.10 Executive Director, MSETCL observed that in both the proposed alternatives no connectivity was provided with the Maharastra system for absorbing their share of 1000 MW from the Chattishgarh UMPP.

4.11 Chief Engineer (PS), MPPTCL stated that for absorbing power in to their system additional links from Damoh 400 kV substation were required.

4.12 The two alternatives were further discussed and it was decided to adopt alternative - 1. It was also decided that further System Strengthening requirement, if any, for absorption of power by the beneficiaries of WR shall be identified in association with STUs as part of Regional System Strengthening. In view of non availability of space at Kasor 400 kV susbstation, GETCO was requested to inform the suitable location in Gujarat for interconnection with Vadodara 765/400 kV substation. The agreed transmission system was as under:

Transmission system associated with Chattishgarh UMPP (5x800 MW)

(i) Chhattisgarh UMPP- Jabalpur Poling Station 765kV D/c – 350 km
(ii) Chhattisgarh UMPP- Champa Poling Station 765kV D/c – 150 km
(iii) Jabalpur Poling Station – Bhopal 765kV D/c – 330 km
(iv) Bhopal – Indore 765kV 2nd S/c – 180 km
(v) Indore - Vadodra 765kV 2nd S/c – 300 km
(vi) Jabalpur Pool – Damoh 400kV D/c -180 km
(vii) Vadodra- Karamsad/ alternative location 400kV D/c (Quad)
(viii) LILO of Ranchi – Sipat 400kV D/c line at Chhattisgarh UMPP 400kV-60 km
(ix) Establishment of 2x1000 MVA, 765/400kV substation at Chhattisgarh UMPP(under the scope of generation developer)
(x) Augmentation of transformation capacity at 765/400kV Indore and Vadodra Substation each by 1x1500 MVA

5.0 Transmission system of Mauda Stage-II (1320 MW) and Bus Splitting arrangement at 400kV Wardha(PG) S/S

5.1 Director (SP&PA), CEA stated that the transmission System for Mauda Stage-I (1000 MW) was agreed in the 29th meeting of SCM with two 400 kV D/c quad outlets; one to Wardha and other to Khaperkheda (MSETCL). The agreed transmission system took in to account that Mauda-II would also be materializing. Subsequently due to space constraints at Khaperkheda it emerged that it would not be possible to terminate the line at Khaperkheda substation. The transmission system of Mauda Stage-I (1000 MW) and Mauda Stage-II (1320 MW) of NTPC was again discussed in the 30th Standing Committee meeting and under Mauda Stage-I one number of quad line to Wardha was agreed and it was decided that other quad line outlet would be covered under Mauda Stage-II (1320 MW). He requested PGCIL to present the alternatives studied for Mauda stage-II evacuation system.

5.2 DGM, PGCIL made presentation on the alternatives proposed

Alternative 1

(i) Mauda Stage-II- Wardha 400kV D/c (Quad)

Alternative 2

(i) Mauda II – Suitable location near Chindwara 400KV D/c (Quad)
(ii) Suitable location near Chindwara– Khandwa 400KV D/c (Quad)
(iii) Khandwa – Rajgarh 400kV D/c (2nd)
(iv) Establishment of 400/220kV 2X500 MVA substation at the suitable location near Chindwara

5.3 Director (SP&PA), CEA stated that Mauda Stage-I was already agreed to be connected to Wardha. There were large no of existing/planned interconnections at Wardha. Also, there was a proposal of interregional line from Hyderabad to be terminated at Wardha 765 kV. The fault level at Wardha 400 kV was expected to exceed the limit of 40 kA and to overcome this bus splitting at Wardha was agreed. Despite bus splitting at Wardha PGCIL had indicated the fault levels at Wardha 400 kV would continue to be in the upper band. Connecting Mauda Stage-I and Mauda Stage-2 to the same corridor was therefore not a prudent solution.

5.4 To a query from NTPC regarding need for bus reactor it was clarified by PGCIL that a 125 MVAR reactor at their generator switchyard would be required.

5.5 The issue was deliberated and following transmission system was agreed as the associated transmission system for Mauda stage-II. :

Transmission System associated with Mauda Stage-II (2x660 MW)

(i) Mauda II – Suitable location near Chindwara 400KV D/c (Quad)
(ii) Suitable location near Chindwara– Khandwa 400KV D/c (Quad)
(iii) Khandwa – Rajgarh 400kV D/c (2nd)
(iv) Establishment of 400/220kV 2X500MVA substation at a suitable location near Chindwara

5.6 For establishing of 400/220 kV, 2x500 MVA substation at Chindwara, MPPTCL was requested to assist PGCIL in identifying the suitable location.

5.7 Director (SP&PA), CEA stated that in the 30th SCM to contain the short circuit level, the bus splitting at Wardha 400 kV bus was agreed. The bus splitting arrangement (as indicated in agenda) proposed by PGCIL needs a review in view of the 400 kV D/C line from Mauda Stage-II getting terminated at Chindwara instead of at Wardha.

5.8 Executive Director, MSETCL stated that in Vidarbha region a lot of generation projects were coming up, as such drawal requirements from the Wardha 765/400/220 kV substation to feed the loads in that area was less. Therefore he suggested review of provision of 3rd 1X1500 MVA, 765/400 kV ICT and 400/220 kV transformers at Wardha.

5.9 DGM, PGCIL stated that with the proposed bus splitting at Wardha, two nos 765/400 kV ICTs on Section A and one 765/400 kV ICT on section B had been provided. From reliability consideration all the three numbers of ICTs were required.

5.10 The issue was deliberated and it was decided that interconnection at split Section A and B of Wardha 400 kV bus would further discussed and decided between CEA and PGCIL.

6.0 Transmission System Associated with the Orissa UMPP (5x800MW) and Phase-II IPPs in Orissa.

6.1 DGM, PGCIL stated that Orissa Ultra Mega Power Project (4000 MW) was proposed to be set up near Bhedabahal village in Sundergarh district of Orissa by Orissa Integrated Power Ltd. (OIPL). OIPL has applied for grant of Long Term Open Access. The unit wise commissioning schedule as indicated was March 2016, September 2016, March 2017, September 2017 and March 2018 for Unit-1, Unit-2, Unit-3, Unit-4 and Unit-5 respectively. Ministry of Power vide their letter No. 12/11.2010-UMPP dated 24-09-2010 had allocated the power to the following states from the Orissa UMPP (4000MW):

Sl.No.	Beneficiary	Allocation(MW)
Eastern Region		
1	Orissa	1300
Northern Region		
2	Punjab	500
3	Rajasthan	400
4	Haryana	400
5	Uttar Pradesh	300
6	Uttarakhand	200
Western Region		
7	Madhya Pradesh	400
8	Chattishgarh	200

Southern Region		
9	Tamil Nadu	300
	Total	**4000**

6.2 He stated that transmission system for Phase-1 IPP projects in Orissa was finalized and agreed earlier. In addition, POWERGRID had received application for Connectivity/LTA from IPP project developers which were classified as Phase-II IPP projects in Orissa. The list of Phase-II IPP projects along with Phase-I IPP projects was as under:

Sl. No	LTA Applicant / Project	Installed Capacity (MW)	LTA/ Connectivity (MW)	Applied for
1. Phase-I Generation Projects				
1	Sterlite	2400	400	LTOA
2	GMR	1050	800	LTOA
3	Navbharat	1050	720	LTOA
4	Monnet	1050	900	LTOA
5	Jindal	1200	1044	LTOA
6	Lanco Babandh	2640	1600	LTOA
7	Ind Bharat	700	616	LTOA
	Total	**10090**	**6080**	
2. Phase-II Generation Projects				
1	CESC Ltd.(Orissa)	1320	900	LTOA
2	Essar Power Ltd.	1200	900	LTOA
3	Navabharat Power Private Ltd(Phase-II)	1200	1100	LTOA
4	VISA Power Ltd	1320	1250	Connectivity
5	Mahanadi Aban Power Co Ltd	1320	850	Connectivity
6	Bhushan Energy Ltd	2640	2482	Connectivity
7	Tata Power company Ltd	1320	1000	Connectivity & LTA
8	GMR Energy Limited	350	220	Connectivity & LTA
9	J R Power Gen Pvt Ltd	1980	1980	Connectivity
10	Jindal	600	522	Connectivity & LTA
11	Sterlite	(Phase-I projects)	1000	LTA
	Total	**13250**	**12204**	

6.3 DGM, PGCIL further stated that a comprehensive transmission system comprising of high capacity transmission corridors from Orissa to Western Region for Phase-I IPP Generation projects in Orissa (Quantum of power transfer 6080MW) was under implementation. The high capacity corridor mainly comprised of Angul – Jharsugada 765kV 2XS/c, Jharsugada - Dharmanjaygarh 765kV 2XS/c, Dharmjaygarh - Jabalpur 765kV D/c, Jabalpur - Bina 765kV D/c and Jabalpur – Bhopal – Indore 765kV S/c. In order to facilitate transfer of power from

Orissa UMPP and Phase-II IPPs in Orissa, a comprehensive transmission system comprising high capacity transmission link along with HVAC system was considered. For this ± 800 kV, 6000 MW HVDC line between Orissa complex and NR was proposed. Power transfer to WR shall be on the principle of displacement through the already planned HVAC system. The following aspects were considered while evolving the transmission system:

i) Due to uncertainty in progress and time-frame of Orissa IPPs, 50% dispatch of Phase-II IPPs (except Sterlite-II) was considered for the load flow studies.

ii) The transmission system was developed without considering N-1 contingency criteria of transmission planning. The augmentation in the transmission system would be planned depending upon the progress of generation projects.

iii) The power injection (1320MW) from generation projects anticipated to come up in coastal Andhra Pradesh (Srikakulam area) in Southern Region projects along with Angul – Jharsuguda - Dharamjaygarh 765kV D/c corridor (2nd corridor) was also considered.

iv) To control the heavy rush of power in the underlying 400kV system through the LILO of Rourkela-Raigarh line at Jharsuguda and the Orissa interconnection for delivery of its share from the UMPP project, split bus arrangement in Jharsuguda 400kV bus along with two units of UMPP generation project was considered.

v) Out of 4000 MW UMPP capacity, 1300 MW was allocated to Orissa. For this separate 400 kV transmission system was proposed from Orissa UMPP generation switchyard.

6.4 Based on studies the following comprehensive transmission system was proposed for evacuation of power from Orissa UMPP and Orissa phase-II IPPs:

Transmission System for Orissa UMPP

(i) ± 800 kV, 6000 MW HVDC Bi-Pole line from Angul to Bulandshahar (shared with Orissa IPP Phase-II).
(ii) 3000 MW HVDC Terminal each at Angul & Bulandshahar
(iii) Orissa UMPP - Jharsuguda 765kV D/c line.
(iv) Split Bus arrangement at Jharsuguda 765kV level
(v) Disconnection of Rourkela - Raigarh LILO arrangement at Jharsaguda.

Transmission System for IPPs in Orissa Phase-II

(i) ± 800 kV, 6000 MW HVDC Bi-Pole line from Angul to Bulandshahar (shared with Orissa UMPP).
(ii) 3000 MW HVDC Terminal each at Angul & Bulandshahar.
(iii) New 4x1500MVA, 765/400kV substation at Dhenkanal.
(iv) LILO of Angul – Jharsuguda 765kV 2xS/c at Dhenkanal.
(v) Angul- Jharsuguda- Dharamjaygargh 765 kV D/c line *(shared with SR IPPs in AP).*

Note: Transmission charges of Orissa UMPP (with 3000MW HVDC terminal) are to be shared by beneficiaries of Orissa UMPP other than Orissa as per their allocation. However transmission charges for ± 800 kV 6000MW HVDC line section shall be shared by Orissa UMPP beneficiaries & Orissa Phase-II IPPs.

6.5 Director (SP&PA), CEA informed that beneficiaries of Orissa UMPP were constituents of Eastern, Western, Northern and Southern Region. The comprehensive transmission system for evacuation of power from Orissa UMPP and Orissa Phase-II IPPs was also an agenda item for the forthcoming meetings of SCM of Eastern Region and Northern Region.

6.6 SE, GETCO stated that agenda for Orissa UMPP was made available recently and they had very little time to study the proposed evacuation system. He requested that in future agenda should be circulated well in advance.

6.7 After further deliberation, the comprehensive transmission system for evacuation of power from Orissa UMPP and Orissa phase-II IPPs as proposed above was agreed.

7.0 Connectivity and Long Term Open Access Applications pertaining to new IPP Generation Projects in Nagapattinam / Cuddalore and Vemagiri area of Southern Region with target beneficiaries in Western/Northern/Southern Region.

7.1 DGM, PGCIL informed that POWERGRID had received following applications for Connectivity and Long-term Access in Nagapattinam / Cuddalore Area (Tamil Nadu) in Southern Region:

Nagapattinam / Cuddalore area

A. Connectivity Applications

Sl. No.	Applicant	Connectivity applied for (MW)	Connectivity required from
1.	Sindya Power Generation Co. Pvt. Ltd.	970	April, 2013
2.	Chettinad Power Corporation Ltd.	1200	September, 2013
3.	Empee Power & Infrastructure Pvt. Ltd.	1241	April, 2013
4.	PPN Power Generating Co. Pvt. Ltd.	1080	1st quarter, 2013
	Total	**4491**	

B. LTA Applications

S. No.	Applicant	Installed Capacity (MW)	LTOA applied for (MW)	Time Frame	Quantum allocated in the region		
					SR	**WR**	**NR**
1.	NSL Power Pvt. Ltd.*	1320	800	2012	267	267	266
2.	PEL Power Ltd.*	1050	987	June, 2013	700	0	287
3.	IL&FS Tamil Nadu Power Co. Ltd.*	1200	1150	June, 2013	575	575	0
4.	Sindya Power Generation Co. Pvt. **	1050	970	Dec., 2013	650	250	70
5.	Chettinad Power Coporation Pvt. Ltd. **	1320	1110	Dec., 2013	500	500	110
6.	Empee Power & Infrastructure Pvt. Ltd. **	1320	1241	April, 2014	496	496	248
	Total	7260	6258		3188	2088	981

****** Applicants at Sl. nos. – 1 to 3 has applied under regulations, 2004 and***

******** Applicant at Sl. nos. – 4 to 6 have applied under regulations, 2009.***

7.2 DGM, PGCIL stated that the IPPs have indicated SR, WR and NR as their target beneficiaries. For transfer of power from Nagapattinam/Cuddalore area, to WR/NR it was proposed to develop a new Narendra-Kolhapur transmission corridor. Earlier the Kolhapur 1000 MW HVDC back-to-back link along with Narendra – Kolhapur 400 kV D/c line was agreed which was scheduled for commissioning in the year 2010-11, anticipating the operational surplus in Southern Region including power from various upcoming IPPs in Srikakulan, Tuticorin,

Krishnapatnam complex. This HVDC link was envisaged to transfer power from South to West/North as an intermediate arrangement till the commissioning of Raichur - Sholapur 765 kV lines which would lead to synchronization of entire country at single frequency. Further, the 1000 MW HVDC back-to-back at Kolhapur was to be accomplished through a new 500 MW HVDC module and shifting of 500 MW HVDC modules from Sasaram. However, during the process of tendering/awarding the 1000 MW HVDC back-to-back at Kolhapur it was seen that the cost associated with the shifting and re-commissioning of HVDC module was not a techno-economic solution. Considering the time for implementation of HVDC link at Kolhapur which also involved shifting of Sasaram HVDC module which was normally in the range of 2-3 years this link can now be established only by 2013-14 which would closely match with the implementation schedule of Raichur – Sholapur 765 kV lines as a part of Krishnapatman UMPP. In view of this the 1000 MW HVDC back-to-back at Kolhapur along with Narendra – Kolhapur 400 kV D/c line was reviewed and the Narendra – Kolhapur corridor was now planned at 765 kV level in place of earlier agreed 400kV level. This review was carried out in association with the transmission system strengthening requirement for IPP projects proposed in the Nagapattinam / Cuddalore area. This corridor would be in addition to the already Raichur – Sholapur 765 kV lines. Transmission charges for the transmission scheme would be borne by the generation developers till the finalization of beneficiaries.

Transmission System associated with new IPP Generation Projects in Nagapattinam / Cuddalore

(i) New 765/400kV Pooling station at Nagapattinam (GIS) with 4x1500 MVA transformers
(ii) Nagapattinam Pooling Station – Salem 765kV D/c line
(iii) Salem – Madhugiri 765 kV S/c line – 2
(iv) Madhugiri – Narendra 765kV D/c line
(v) Narendra – Kolhapur 765kV D/c line (765 kV operation)
(vi) Kolhapur – Padghe 765 kV D/c one circuit via Pune (765 kV operation)
(vii) New 765/400kV Pooling station each at Narendra (GIS) and Kolhapur(GIS) with 2x1500 MVA transformers
(viii) Provision of 2x1500 MVA, 765/400 kV transformers each at Madhugiri and Salem
(ix) Charging of Salem – Madhugiri 765 kV S/c line – 1 (planned with Tuticorin LTOA projects) at its rated voltage
(x) LILO of Neyveli – Trichy 400kV S/c line at Nagapattinam Pooling Station for interim arrangement which later shall be bypassed

7.3 Accordingly, in place of 1000 MW HVDC back to back at Kolhapur along with 400kV Narendra-Kolhapur D/c line, following transmission system was proposed to be considered as inter-regional System Strengthening Scheme between SR-WR. Transmission charges for these would be initially borne by the IPP project developers of SR till finalization of beneficiaries.

(i) New 400 kV substations each at Narendra (GIS) and Kolhapur (GIS) (to be upgraded to 765 kV)
(ii) Narendra – Kolhapur 765kV D/c line (initially to be operated at 400 kV)
(iii) LILO of both circuits of existing Kolhapur – Mapusa 400 kV D/c line at proposed Kolhapur 400 kV s/s
(iv) 400 kV interconnection between Narendra (existing) and Narendra 400 kV GIS S/s
(v) Kolhapur – Padghe 765 kV D/c one circuit via Pune(initially to be operated at 400 kV)

7.4 Considering synchronous operation of SR with rest of the country by 2013-14 through Raichur-Sholapur 765 kV 2xS/C lines it was desirable that Narendra-Kolhapur 765 kV D/C line was available by that time frame for smooth synchronization. Accordingly the Narendra-Kolhapur 765 kV D/C along with the necessary interconnections were proposed to be taken up

separately matching with the time frame of Raichur-Sholapur 765 kV lines and progress of various IPPs in SR. The 765 kV operation of this link shall however be undertaken matching with the progress of generation projects in Nagapattinam / Cuddalore area**.**

Members in principle agreed to the above proposal.

7.5 DGM, PGCIL informed that POWERGRID has received following applications for Connectivity and Long-term Access in Vemagiri area (Andhra Pradesh) in Southern Region:

Vemagiri Area, Andhra Pradesh

A. Connectivity Applications

S. No.	Applicant	Connectivity applied for (MW)	Connectivity required from
1.	Spectrum Power Generation Ltd.	1400	September, 2013
2.	Reliance Infrastructure Limited	2400	Sept., 2012 / Sept., 2013
3.	GVK Gautami Power Ltd.	800	September, 2012
4.	GVK Power (Jegurupadu) Pvt. Ltd	800	September, 2012
5.	Rajanagarm Gas Power Pvt. Ltd.	1100	December, 2012
6.	RVK Energy (Rajahmundry) Pvt. Ltd.	360	September, 2011
	Total	6860	

B. LTA Applications

S. No.	Applicant	Installed Capacity (MW)	LTOA applied for (MW)	Time Frame	Target Beneficiary Regions		
					SR	WR	NR
1.	Spectrum Power Generation Limited	1400	1350	March, 2013	1120	330	-
2.	Reliance Infrastructure	2400	2200	January, 2012	1500	700	-
3.	GVK Gautami Power Ltd.	800	800	Sept., 2012	433	100	267
4.	GVK Power (Jegurupadu) Pvt. Ltd	800	800	Sept., 2012	520	100	180
	Total	5400	5150		3573	1230	447

7.6 DGM, PGCIL informed that the transmission system discussed and agreed for evacuation of generation projects in Vemagiri generation complexes in SR was as under.

Common Transmission System for Vemagiri IPPs:

(i) Establishment of 765/400kV GIS Pooling station at Vemagiri with 4x1500 MVA transformer with sectionalisation arrangement to control short circuit MVA.
(ii) LILO of Gazuwaka – Vijayawada 400kV S/c line at Vemagiri Pooling Station for initial integration with SR grid and which later shall be bypassed
(iii) Establishment of 765/400kV GIS Pooling station at Khammam & Hyderabad with 2x1500 MVA transformers each.

(iv) Hyderabad 765/400 kV S/s – Hyderabad (existing) 400 kV D/c (quad) line
(v) Khammam 765/400 kV S/s – Khammam (existing) 400 kV D/c (quad) line
(vi) Vemagiri Pooling Station – Khammam 2x765kV D/c line
(vii) Khammam – Hyderabad 2x765 kV D/c line
(viii) Hyderabad – Wardha 765 kV D/c line
(ix) Wardha – Jabalpur Pooling station 765 kV D/c
(x) Beyond Jabalpur Pooling Station the transmission system will be provided integrating with the proposed High Capacity Power Transmission Corridor – IX i.e. Jabalpur Pooling Station – Orai – Bulandshahr 765 kV S/c depending upon the inter-regional power transfer.

7.7 In the Southern region meeting regarding Long Term Access/Connectivity application held on 16.11.10, the above transmission corridor was discussed and agreed. Transmission charges for the above transmission scheme will be borne by the generation developer till finalization of beneficiaries.

Members agreed to the above.

8.0 Transmission System for Tilaiyya (4000 MW) UMPP

8.1 Director (SP&PA) stated that the following revised generation specific transmission system of Tilaiya UMPP was intimated during the 30th Standing Committee Meeting of Western Region held on September 10, 2009:

- Tilaiyya UMPP – Balia 765kV D/c line
- Tilaiyya UMPP – Gaya 765kV S/C line

Further, LILO of one ckt. of Tilaiyya UMPP – Balia 765 kV D/C line at Varanasi as a part of System Strengthening in NR has been agreed by the NR constituents

8.2 Subsequent to the above meeting to provide reliability of power supply to Gaya from Tilaiya UMPP, provision of second in-feed to Gaya through LILO of one circuit of Tilaiya UMPP – Balia 765kV D/c line was discussed and agreed in the Standing Committee meeting of Eastern Region held on 20-09-2010. Accordingly, the revised generation specific transmission system for Tilaiya UMPP would be as following:

(i) 765kV Tilaiya- Gaya S/c
(ii) 765kV Tilaiya-Balia D/c } Already agreed

(iii) LILO of one circuit of 765kV Tilaiya-Balia D/c line at Gaya } Additional element

Further, due to delay in commissioning of Tilaiya UMPP project, LILO of 765kV Gaya – Balia line at Varanasi in NR would be done in place of earlier agreed LILO of Tilaiya – Balia line at Varanasi as a part of System Strengthening in NR.

Members took note of the above.

9.0 Review of 765kV Aurangabad - Padghe transmission corridor as a part of IPPs generation projects in Chhattisgarh.

9.1 Director (SP&PA) stated that transmission system associated with upcoming IPP generation project in Chhattisgarh was discussed and agreed in 29th/30th Standing Committee meetings on Power System Planning in WR. Subsequently, MSETCL had informed that they had planned 400kV Kudus (Padghe II) substation along with 400kV Aurangabad (MSETCL) – Babhaleshwar – Kudus D/c Quad line. Therefore 765kV Padghe (PG) S/s and 765kV Aurangabad (PG) - Padghe(PG) D/C line agreed as a part of transmission system for IPPs in

Chhattisgarh, may not be required by them. Further, MSETCL had also informed that about 3300 MW generation project was proposed near Dhule. For this earlier agreed 400kV interconnections of Dhule(PG) with Nasik and Malegaon as part of transmission system of IPP generation projects in Chhattisgarh may not be required. In view of this, earlier evolved corridors for IPP projects in Chhattisgarh were reviewed by CEA and PGCIL and the following additions/deletions were proposed:

Addition in earlier scope

- 765kV Aurangabad - Dhule –Vadodara 2nd S/c

Deletion from earlier scope

- 765kV Aurangabad- Padghe(PG) D/c line
- 400kV Padghe(PG) – Padghe(MSTECL) Quad D/c line
- Dhule(PG) –Malegaon 400kV D/c (Quad)
- Dhule(PG) –Nasik 400kV D/c (Quad)
- Establishment of 765/400kV,2x1500 MVA S/s at Padghe (GIS)

9.2 Executive Director, MSETCL stated that Narendra-Kohalapur-Padghe 765 kV D/C lines were being proposed as part of transmission system for IPP generation projects in Nagapattinam/Cuddalore area in Southern Region. In case of deletion of Aurangabad-Padghe 765 kV D/C line along with Padghe substation, the 765 kV Padge substation would not be available for terminating these lines. He further stated that Padghe 765 kV substation was getting connected from Aurangabad and Kolhapur and was required for reliable supply to Mumbai area, as such there was no need to delete the Aurangabad - Padhge corridor.

9.3 Director (Projects), PGCIL stated that for establishing the Padghe 765/400 kV substation, a suitable location with minimum ROW constraints needs to be explored jointly by PGCIL and MSETCL.

9.4 Member Secretary, WRPC informed that MSETCL had informed them regarding the evacuation system from their proposed Dondaicha generation project near Dhule. The evacuation system consisted of three 400 kV D/C outlets one each to Dhule(MSETCL), Malegaon and Nasik.

9.5 The issue was deliberated and it was decided that at present no additions/deletions to the already planned transmission system should be done. It was decided that 400 kV interconnections from Dhule(PG) to Malegaon and Nasik could be reviewed in a years time frame, if required.

10.0 Evacuation of power from generation projects coming up in Sikkim and Bhutan

10.1 Director (SP&PA) stated that transmission system comprising of three parts for evacuation of power from various IPP generation projects coming up in Sikkim and generation projects in Bhutan was discussed during the 29th Standing Committee Meeting of Western Region held on September 10, 2009. Transmission System comprised of three parts viz Part –A Transmission System for development of pooling stations at Kishanganj and associated transmission works, Part-B Transmission System for development of pooling substations within Sikkim and transfer of power to a new pooling station Kishanganj in northern Part of West Bengal/Bihar, and Part-C Transmission System for development of pooling station in Northern part of West Bengal and transfer of power from Bhutan to NR/WR. The following changes/modifications were subsequently agreed in the Standing Committee meeting of Eastern Region held on 20-09-2010.

Under Part-A LILO of Siliguri-Purnea 400 kV D/C line (being reconductored with HTLS conductor) at Kishanganj substation would be with quad conductor instead of the HTLS conductor.

The Part-B of the scheme included establishment of 400/220kV, 10x167 MVA (Single Phase transformers) at New Melli GIS substation and 220/132kV, 3x100 MVA GIS S/s at Rangpo. Subsequently, based on the survey, it was found by PGCIL that due to transportation constraints, it would not be possible to transport the 167 MVA transformers to the site and transformer upto 40 MVA only can reach the New Melli S/s. Accordingly, scope of works in respect of substation at Rangpo and New Melli was reviewed and modified under Part-B as under:

- Establish a 400/220/132 kV new sub-station at Rangpo (400/220kV, 16x105 MVA, 1 ph transformers and 220/132kV, 3x100 MVA)
- 220 kV switching station at New Melli.
- LILO of 400 kV D/c lines (Teesta-III to Kishanganj and Teesta-V to Siliguri) earlier proposed at New Melli would now be done at Rangpo.

Under Part-C 400 kV lines from Phunatsanchu I & II which were earlier proposed with HTLS conductors were reviewed and revised to twin moose conductor up to Bhutan Border and Quad conductor in Indian territory.

10.2 The revised transmission System incorporating the above modifications was as under:

Transmission System for transfer of power from generation projects in Sikkim to NR / WR.

Part-A

- Establishment of New 2x315 MVA, 400kV sub-station at Kishanganj
- LILO of Siliguri (Existing) – Purnea 400kV D/c line(quad) at new pooling station Kishanganj
- LILO of Siliguri (Existing) – Purnea 400kV D/c line (on which reconductoring is being carried out) at Kishanganj with higher capacity (quad) conductor
- LILO of Siliguri – Dalkhola 220kV D/c line at new pooling station Kishanganj
- LILO of Gangtok-Melli 132kV S/c line upto Rangpo, where Chuzachen-Rangpo 132kV D/c would be connected so as to form Chuzachen-Gangtok and Chuzachen-Melli 132kV S/c lines. [This would be a temporary arrangement till establishment of Rangpo pooling substation under Part-B of the scheme and termination of Gangtok-Rangpo, Melli-Rangpo and Chuzachen-Rangpo 132kV lines at Rangpo]

Part-B

- Establishment of 400/220/132kV (400/220kV, 16x105 MVA, Single Phase transformers and 220/132kV, 3x100MVA) Gas Insulated Substation at Rangpo
- Establishment of 220kV Gas Insulated switching station at New Melli
- LILO of Teesta III – Kishanganj 400kV D/c line (quad, Teesta III – Kishanganj 400kV D/c line to be constructed through JV route) at Rangpo
- Rangpo – New Melli 220kV D/c line (with twin Moose conductor)
- LILO of Gangtok-Rangit 132kV S/c line at Rangpo and termination of Gangtok-Rangpo/Chujachen and Melli – Rangpo/Chujachen 132kV lines (constructed under part-A through LILO of Gangtok-Melli 132kV S/c line upto Rangpo) at Rangpo sub-station
- LILO of Teesta V – Siliguri 400kV D/c line at Rangpo
- Kishanganj – Patna 400kV D/c (quad) line

Part-C

- New 400kV AC & HVDC sub-station with + 800kV, 3000MW converter module at new pooling station in Alipurduar
- Extension of + 800 kV HVDC station with 3000 MW inverter module at Agra
- LILO of Bishwanath Chariali – Agra HVDC line at new pooling station in Alipurduar for parallel operation of the HVDC station
- LILO of Bongaigaon – Siliguri 400kV D/c line at new pooling station in Alipurduar
- LILO of Tala-Siliguri 400kV D/c line at new pooling station in Alipurduar
- LILO of Birpara-Salakati 220 kV D/C line at New Pooling station in Alipurduar
- Punatsangchu-I (generation project in Bhutan)-Alipurduar 400 kV D/C with quad conductor (Indian portion)

Members took note of the above

11.0 Proposals of GETCO for interconnection of STU and CTU network in Gujarat

11.1 LILO of Wanakbori TPS – Soja (GETCO) 400 kV S/C line at Dehgam (PG) substation

11.1.1 SE, GETCO stated that the evacuation of power from the Wanakbori TPS 1470 MW (7X210 MW) was through Wanakbori TPS – Soja 400 kV 2XS/C lines and Wanakbori TPS – Asoj 400 kV S/C line. Out of the Wanakbori TPS – Soja 400 kV 2XS/C lines, one ckt was already made LILO at Dehgam (PG) substation. Further, expansion of Wanakbori TPS by 800 MW was planned by GETCO in the 12th five year plan. For evacuation of additional 800 MW, Wanakbori TPS – Soja 400 kV D/C line and Soja – Zerda 400 kV D/C line was planned. In view of the expansion and to overcome the uneven loading of Wanakbori TPS – Dehgam 400 kV S/C line and Wanakbori TPS – Soja 400 kV S/C line, they had proposed LILO of the 2nd Wanakbori TPS – Soja 400 kV S/C line also at Dehgam (PG) substation.

11.1.2 PGCIL confirmed availability of space for two nos. of 400 kV bays at Dehgam for the LILO arrangement.

11.1.3 The above proposal was agreed and shall be developed by GETCO.

11.2 Koasamba (GETCO) – Vapi (PG) 400 kV D/C line.

11.2.1 SE, GETCO stated that at present there was only one in feed to Vapi (PG) 400 kV substation through Sugen – Vapi 400 kV S/C line. Critical loading on these lines necessitates backing down of generation at Sugen. Further, with completion of Vapi – Navi Mumbai 400 kV D/C line, an additional outlet from Vapi, may result in further loading of the Sugen – Vapi 400 kV S/C line. In view of this, they had proposed Koasamba (GETCO) – Vapi (PG) 400 kV D/C line to have a strong interconnection between STU and CTU network in South Gujarat area having substantial industrial load and generation projects.

11.2.2 DGM, PGCIL stated that at Vapi 400/220 kV substation already a number of interconnections viz. from Kawas –II(1300 MW) and Kakrapar (1400 MW) had been planned/ proposed. In view of this there was space constraint for further interconnections at Vapi.

11.2.3 After discussion, the termination of Kosamba(GETCO) - Vapi(PG) 400 kV D/c line at Vapi(PG) was agreed to be developed by GETCO. With the commissioning of Kawas-II – Vapi (PG) 400 kV D/c line the Kosamba(GETCO) - Vapi(PG) 400 kV D/c line would be LILOed into one circuit of Kawas-Vapi 400 kV line.

11.3 LILO of one ckt. of the proposed Ukai TPS – Kosamba (GETCO) 400 kV D/C line at Navsari (PG) 400 kV substation.

11.3.1 SE, GETCO informed that expansion of existing Ukai TPS with 1X500 MW unit was planned. For evacuation of power from this Unit -6 (500 MW) Ukai TPS- Kosamba 400 kV D/C line was planned. Further for interconnection at 400 kV level with interstate network LILO one ckt. of the Ukai TPS – Kosamba (GETCO) 400 kV D/C line at Navsari (PG) was proposed.

11.3.2 Director (Projects), PGCIL stated that a number of interconnections were planned at Navsari(PG). In view of this, the proposed LILO may not be necessary.

11.3.3 It was decided that this proposal would be reexamined by GETCO in consultation with PGCIL.

11.4 **Provision of 2 nos. 220 kV feeder bays at Pirana (PG) 400 kV substation.**

11.4.1 Director (SP&PA), CEA stated that in the 30th Standing Committee meeting held on 8th July 2010, as part of Transmission system strengthening in WR associated with Pipavav Energy Pvt. Ltd (1200 MW), Pirana - Dehgam 400 kV D/C line (2nd) and installation of 1X315 MVA , 400/220 kV ICT (3rd) at Pirana was agreed. With the provision of 3rd ICT at Pirana, GETCO had requested for provision of two no. of 220 kV bays at Pirana substation for drawal of power from Pirana 400 kV substation.

11.4.2 The above proposal of GETCO was agreed. PGCIL clarified that the two no. 220 kV bays would be provided along with the 3rd 1X315 MVA ICT proposed under Transmission system strengthening in WR associated with Pipavav Energy Pvt. Ltd. In case the 220 kV bays were required by GETCO prior to that, then GETCO would need to bear their cost.

11.5 **LILO of 400 KV D/C Vadavi (Ranchhodpura) - Zerda (Kansari) line at proposed 400/220 KV Sankhari (GETCO) substation**

11.5.1 SE, GETCO stated that Solar Park1 & 2 (590+500 MW) at Sankhari in Gujarat was proposed. The injection from Solar park would be in range of 300 MW to 600 MW. For facilitating evacuation of power they propose to LILO one circuit 400 KV D/C Vadavi (Ranchhodpura) - Zerda (Kansari) line at 400/220 KV Sankhari (GETCO) substation. In addition, LILO of one D/C ckt of Mundra(Adani)- Zerda 2x400 kV D/C lines at Sankhari was also proposed.

11.5.2 Chief Engineer (SP&PA), stated that the solar power needs to be encouraged by facilitating interconnection with the grid.

11.5.3 Members felt that the interconnection of the 400 kV Vadavi (Ranchhodpura) - Zerda (Kansari) line as well as Mundra(Adani)- Zerda 400 kV D/C lines at Sankhari could result in additional injection in to ISTS apart from Solar Power from Sankhari.

11.5.4 After discussions, LILO of one circuit of 400 KV D/C Vadavi (Ranchhodpura) - Zerda (Kansari) line at proposed 400/220 KV Sankhari (GETCO) substation to be undertaken by GETCO at their cost was agreed. GETCO confirmed they would drop the proposal of LILO of Mundra-Zerda 400 kV lines at Sankhari.

12.0 Proposal of MPPTCL for interconnection of Pithampur (MPPTCL) 400 kV substation with Indore (PG) 765/400 kV substation

12.1 CE (PS), MPPTCL stated that they had proposed the connectivity of their Pithampur 400 kV substation through Indore (PG) – Pithampur (MPPTCL) 400 kV D/C line.

12.2 PGCIL confirmed the availability of space for two nos. of 400 kV bays at Indore (PG) 765/400 kV substation. The two no. of 400 kV bays would be covered under System Strengthening Scheme.

12.3 Members agreed the above proposal. The Indore (PG) – Pithampur (MPPTCL) 400 kV D/C line would be under scope of MPPTCL and the two no. 400 kV bays at Indore (PG) 765/400 kV substation would be covered under regional system Strengthening Scheme.

13.0 Termination of Aurangabad – Khargar 400 kV line at Boisar in place of Khargar

13.1 Director (SP&PA), CEA stated that in the last meeting, it was decided that the issue of termination of Aurangabad – Kharghar 400 kV D/C (quad) line (covered under Transmission system within WR associated with new IPP projects in Chattishgarh) at Kharghar or at any other location would be further discussed and decided between CEA, PGCIL and MSETCL. PGCIL was also to examine the possibility of establishing a 400 kV GIS bays in the available space in view of the limited space availability at Boisar for future expansion. Subsequent to the last meeting deliberations were held on the issue and Aurangabad – Kharghar 400 kV D/C (quad) was now proposed to be terminated at Boisar (PG) instead of Khargar.

13.2 SE, MSETCL informed that for drawal of power from Boisar to their load centers, Boisar – Ghodbunder 400 kV D/C line and Boisar to Vikroli 400 kV D/c line were planned . For this they required 4 nos. of bays at 400 kV and 6 nos. of bays at 220 kV Boisar.

13.3 Executive Director, WRTS-I, PGCIL stated that there were only six bays available at 400 kV for future expansion against which five no bays (2 nos. for Aurangabad- Boisar, 2 no. for Navsari- Boisar and one no. for ICT at Boisar) were already been planned. As such bays were not available for terminating the 400 kV lines proposed by MSETCL.

13.4 Director (Operation), MSETCL stated that in case of bays constraints they may be allowed LILO of their proposed 400 kV lines with ISTS lines.

13.5 The termination of Aurangabad- Kharghar 400 kV D/c line at Boisar instead earlier proposed at Kharghar was noted. Regarding the interconnection of lines proposed by MSETCL at Boisar, it was decided that same would be further discussed between PGCIL and MSETCL.

14.0 Interconnection between Aurangabad(PG) – Aurangabad (MSETCL) 400 kV D/C (quad) line under System Strengthening in WR for Mundra UMPP

14.1 The Aurangabad (PG) –Aurangabad (MSETCL) 400 kV D/C (quad) was agreed as Regional System strengthening scheme in WR under Mundra UMPP Transmission system. Due to non availability of space at Aurangabad (MSETCL), termination of Akola – Aurangabad (MSETCL) 400 kV D/C line at Aurangabad (PG) instead of at Aurangabad (MSETCL) was agreed in the special SCM of WR. The bays available at Aurangabad (MSETCL) due to this change in termination were to be used for Aurangabad (PG) –Aurangabad (MSETCL) 400 kV D/C (quad) line.

14.2 During the last meeting PGCIL had proposed LILO of 400 kV Akola - Aurangabad (MSETCL) at Aurangabad (PG) instead of termination of Akola-Aurangabad (MSETCL) 400 kV D/C line at Aurangabad (PG). Since the LILO of 400 kV Akola-Aurangabad (MSETCL) at Aurangabad (PG) was resulting into interconnection between Aurangabad (MSETCL) and Aurangabad (PG) through a 400 kV D/C twin moose line instead of quad line as agreed earlier, therefore it was decided that the issue could be further deliberated.

14.3 The issue of interconnection between Aurangabad (MSETCL) and Aurangabad (PG) was deliberated amongst MSETCL, CEA and PGCIL and it was decided to implement the interconnections already agreed in the Special meeting of Standing Committee held on 18.04.2009 at Mumbai, as given under:

- Aurangabad (PG) – Aurangabad (MSETCL) 400 kV Quad D/C line.
- Akola – Aurangabad (MSETCL) 400 kV D/C line would be diverted to Aurangabad (PG).

14.4 PGCIL informed that above shifting of line (along with line reactors) would increase the length of Akola – Aurangabad from 240km to about 300km. Further, to address the RoW problem for termination of line between Aurangabad (PG) and Aurangabad (MSETCL), multi-circuit towers (for about 55km stretch) would be required in this corridor. The multicircuit tower would carry Akola- Aurangabad (PG) 400 kV D/C Twin Moose line and Aurangabad (PG) – Aurangabad (MSETCL) 400 kV Quad D/C line.

Members took note of the above.

15.0 Implementation of 400 kV bays at Bhopal (MPPTCL) 400 kV substation by MPPTCL and Dhule (MSETCL) 400 kV substation by MSETCL for termination of 400 kV D/C quad line from Bhopal 765/400 kV and Dhule (IPTC) 765/400 kV substation respectively.

15.1 Director(SP&PA), CEA stated that 765/400 kV substations at Bhopal(IPTC) and Dhule (IPTC) substation covered under System Strengthening in WR associated with IPPs in Orissa and Chattishgarh respectively were being implemented through the competitive bidding route. Their interconnection with the existing grid was through Bhopal (IPTC)- Bhopal(MPPTCL) 400 kV D/C quad line and Dhule(IPTC)- Dhule (MSETCL) 400 kV quad line. The construction of 400 kV line bays at Bhopal 400 kV (MPPTCL) and Dhule 400 kV (MSETCL) substations would be by the respective STUs. MPPTCL and MSETCL had agreed for construction of line bays. The tariff for the 2 no 400 kV lines bays at Bhopal 400 kV(MPPTCL) and for 2 no 400 kV line bays at Dhule 400 kV(MSETCL) substation would form a part of national pool for interstate transmission charges.

15.2 CE (PS), MPPTCL stated that the gantry structure in their substation at Bhopal was for twin moose conductor. Therefore termination of quad lines at their substation would be difficult.

15.3 It was clarified that the stretch between the last tower and bays could be strung with HTLS conductor.

Members took note of the above.

16.0 Establishment of 765/400kV GIS substation at Vadodra.

16.1 Director(SP&A) stated that establishment of 765/400kV substation at Vadodra was agreed as a part of WR System Strengthening for IPP projects in Madhya Pradesh and Chhattisgarh (being pooled at Bilaspur Polling station). In the last meeting, due to difficulty in getting land PGCIL had proposed Vadodra 765/400 kV with GIS technology instead of AIS and it was decided that GETCO would assist PGCIL in getting the required land for AIS substation. Subsequently, PGCIL had interacted with GETCO and they had agreed to 765/400kV substation at Vadodara with GIS technology.

Members agreed to the above.

17.0 Long Term Open Access for Rupin HEP (45 MW) in Northern Region

PGCIL informed that M/s Shri Bajrang Power & Ispat Ltd. had applied for LTOA in ISTS for transfer 45 MW of power to Punjab/ Rajasthan (22.5 MW) in NR and to Maharashtra (22.5 MW) in WR from the proposed Rupin HEP (45MW), Himachal Pradesh. The commissioning schedule for generation project is indicated as June 2014 and Long Term Open Access was desired from June 2014 for 40 years. The application was discussed during the Long term Open Access Meeting with Northern Region Constituents held on 23/02/2010 at NRPC, New Delhi, wherein LTOA to M/s Shri Bajrang Power & Ispat Ltd. was agreed to be granted. The transfer of 22.5 MW power to Maharashtra shall be through displacement for which ISTS network was found adequate.

Considering above, it was agreed to grant Long term access to M/s Shri Bajrang Power & Ispat Ltd. for transfer 22.5 MW power to Maharashtra in WR from the proposed Rupin HEP (45MW).

18.0 Open Access Meeting

The summary of the Connectivity, Open Access (Medium term and Long term) cases discussed in the 13th meeting of WR constituents regarding Connectivity/Long Term Access (LTA) applications in Western Region is enclosed as **Summary - OA**. The detailed minutes of the meeting would be issued by PGCIL.

Annexure -1

List of Participants during the 31st Meeting of Standing Committee of Power System Planning in WR held on 27.12.2010 at PGCIL, Sector-29, Gurgaon.

S.No.	Name (S/Sh)	Designation	Contact No	E-mail
CEA				
1	S. M. Dhiman	Member (PS)	09868281520	memgod.cea@nic.in
2	Ravinder	Chief Engineer (SP&PA)	09971568444	Ravinders.only@gmail.com
3	P. K. Pahwa	Director (SP &PA)	011-26108118	
4	A. K. Yadav	Dy. Director (SP&PA)	011-26732308	awd@rediffmail.com
POWERGRID				
5	I. S. Jha	Director (Projects)	9971711886	
6	Y. K. Sehgal	ED (SEF & IT)	9650293194	yksehgal@powergridindia.com
7	D. K. Valecha	ED (WR-I)	09422811647	dkvalecha@powergridindia.com
8	S. K. Gupta	GM (Projects)	09428504051	skgupta.59@gmail.com
9	Pankaj Kumar	GM (Engg.)	09873549049	pankaj@powergridindia.com
10	Prashant Sharma	AGM (Commercial)	9910378002	prashant@powergridindia.com
11	Dr Subir Sen	DGM (SEF)	9650293185	subir@powergridindia.com
12	Manju Gupta	DGM (SEF)	09910378111	manju@powergridindia.com
13	K. K. Gupta	Ch. Mgr. (Engg.)	09422811686	kkgupta@powergridindia.com
14	Kashish Bhambhani	Dy. Mgr. (Engg.)	09971399117	kashish@powergridindia.com
WRPC				
15	Manjit Singh	Member Secretary	09820878384	hora2512@rediffmail.com
MPPTCL				
16	O. P. Jaiswal	CE (P.S.)	09425804949	ceps321@yahoo.com
GETCO				
17	B. B. Mehta	SE (CP & SS)	09879200736	bbm@gebmail.com
18	S. G. Prasad	EE (System)	09925208598	eesystem.getco@gebmail.com
19	P. J. Jani	EE (Com.), GUVNL	09879618754	
MSETCL				
20	U. G. Zalte	Director (Operation)	9619079999	
21	S. D. Shrouty	ED (STU)	09920456251	edstu@mahatransco.in
22	S. G. Kelkar	CE (LD)	09619892000	celd@rediffmail.com
23	N. R. Sonkavday	SE (STU)	09987783924	n.sonkavday@rediffmail.com
CSPTCL				
24	Vijay Singh	CE (Trans.)	09406249987	vijaysingh.cseb@gmail.com
25	P. M. Jog	ACE (C & RA)	09229677662	
CS Power Trading Co.				
26	A. K. Garg	ED	09893276323	ce_techcerr@gmail.com
UT of DD & DNH				
27	P. S. Dave	EE-II	09824461367	psdave_aum100@yahoo.co.in

NTPC Ltd.				
28	Abhijit Sen	AGM (PE)	09650992601	aksen@ntpceoc.co.in
29	S. S. Mishra	DGM (Engg.)	09650991145	ssmishra@ntpceoc.co.in
NPCIL				
30	K. P. Singh	ACE (Trans.)	09423373248	kpsingh@npcil.co.in
31	George Sebastian	ACE (Elect. Design)	09869846168	gsebastian@npcil.co.in
POSOCO				
32	S. R. Narasimhan	Dy. Gen. Mgr. (OS)	09869080665	srnarasimhan@gmail.com
PFC (Special invitee)				
33	Rishab Jain	Officer	9911148632	rishabjain@pfcindia.com
34	Damodar Balapuri	AGM	8527120008	damodar@pfcindia.com

Summary of Applications for Grant of Connectivity / Long Term Access / Medium Term Open Access

A. Applications for Grant of Connectivity

1. Bharuch Power Limited (BPL)

(i)	Generation Project Details	7200 MW (4x1600+1x800MW) 4800 MW (Natural Gas) + 2400 MW (LNG Based) Village/Town: Khanpur, Taluka:Jambusar District: Bharuch, Gujarat
(ii)	Commissioning schedule	U-1: Jun'13, U-2: Oct'13, U-3: Feb'14, U-4: Jun'14, U-5 (800 MW): Oct'14
(iii)	Connectivity sought for	7200 MW from Jan'13
i(v)	Step up Voltage	765kV
(vi)	Connectivity	➢ Application Pending: It was proposed to develop a 765 kV pooling station by LILO of Dhule-Vadodra 765 kV line at a suitable location near Bharuch/Dahej for the two projects viz. Bharuch Power Ltd & Adani Power Dahej. However it emerged that beyond pooling station there would be no capacity margins to take care of power transfer from both the projects under Short term/medium term open access. It emerged that both generation project developers should apply for LTA so that comprehensive strengthening scheme could be evolved.

2. Adani Power Dahej Ltd.(APDL)

(i)	Generation Project Details	2640MW(4x660MW) Village/Town- Suva/Dahej, District-Bharuch, Gujarat
(ii)	Commissioning schedule	U-1: Aug'13, U-2: Nov'13, U-3: Feb'14, U-4: May'14
(iii)	Connectivity sought for	2640MW from Aug'13
(iv)	Step up Voltage	765kV
(v)	Connectivity	➢ Application Pending: It was proposed to develop a 765 kV pooling station by LILO of Dhule-Vadodra 765 kV line at a suitable location near Bharuch/Dahej for the two projects viz Bharuch Power Ltd & Adani Power Dahej. However it emerged that beyond pooling station there would be no capacity margins to take care of power transfer from both the projects under Short term/medium term open access. It emerged that both generation project developers should apply for LTA so that comprehensive strengthening scheme could be evolved.

3. Shapoorji Pallonji Energy(Gujarat) Pvt. Ltd.(SPEPL)

(i)	Generation Project Details	1320 MW(2x660MW) Village/Town-Kaj,Taluka-Kodinar District-Junagadh, State-Gujarat
(ii)	Commissioning schedule	U-1: Jan'15, U-2: May'15
(iii)	Connectivity sought for	500 MW from Jan'15
(iv)	Step up Voltage	400kV
(v)	Connectivity	➢ M/s SPEPL has already been granted connectivity at 400KV Amreli (GETCO) Station by GETCO for evacuation of 800 MW to GUVNL. ➢ Applicant advised to apply for LTA so that Transmission System Strengthening for 500 MW can be identified.

4. Torrent Power Ltd.(TPL)

(i)	Generation Project Details	382.5 MW (1x382.5MW) Village/Town- Off. NH No.8,Tal-Kamrej, Distt- Surat, Gujarat
(ii)	Commissioning schedule	U-1: Jul'12
(iii)	Connectivity sought for	382.5MW from Apr'12
(iv)	Step up Voltage	400kV
(v)	Connectivity granted	➢ LILO of 400kV SUGEN- Pirana (PG) 400kV one ckt. at SUGEN TPS (382.5 MW). ➢ Applicant advised to apply for LTA so that Transmission System Strengthening can be identified.

5. NTPC Limited (Gandhar-II)

(i)	Generation Project Details	1300 MW(2x650MW) Village- Near Jhanor, Distt- Bharuch, Gujarat
(ii)	Commissioning schedule	2013-14
(iii)	Connectivity sought for	1300MW from 2013-14
(iv)	Step up Voltage	400kV
(v)	Connectivity granted	➢ Interconnection with the existing Gandhar 400kV bus. ➢ Applicant advised to apply for LTA so that Transmission System Strengthening can be identified.

6. NTPC Limited (Kawas-II)

(i)	Generation Project Details	1300 MW(2x650) Village- Near Mora, Distt- Surat, Gujarat
(ii)	Commissioning schedule	2013-14
(iii)	Connectivity sought for	1300MW from 2013-14
(iv)	Step up Voltage	400kV
(v)	Connectivity granted	➢ LILO of 400kV Kosamba-Vapi D/c at Kawas-II. ➢ Applicant advised to apply for LTA so that Transmission System Strengthening can be identified.

7. Gujarat Fluorochemicals Ltd.(GFL)

(i)	Generation Project Details	300 MW (3X100MW) Village/Town- Maliya, Distt- Rajkot, Gujarat
(ii)	Commissioning schedule	U-1: Mar'12 , U-2: Sep'12, U-3: Mar'13
(iii)	Connectivity sought for	300MW from Mar'12
(iv)	Step up Voltage	220kV
(v)	Connectivity granted	➢ GFL WPP – Bharuch(PG) 220kV D/c (Twin Zebra). ➢ Applicant advised to apply for LTA so that Transmission System Strengthening can be identified.

8. MB Power(Chhattisgarh) Ltd. (MBPL)

(i)	Generation Project Details	1320MW(2x660MW) Village/Town-Birra, Siladehi & Gatwa, District- Janjgir Champa, State-Chhattisgarh
(ii)	Commissioning schedule	U-1: Oct'14, U-2: Apr'15
(iii)	Connectivity sought for	1234 MW from Apr'14
(iv)	Step up Voltage	400kV
(v)	Connectivity granted	➢ MB TPS – Champa Pooling Station 400kV D/c(Quad). ➢ Applicant advised to apply for LTA so that Transmission System Strengthening can be identified.

9. Lanco Power Limited (LPL)

(i)	Generation Project Details	1320 MW(2x660MW) Village/Town- Pathadi District-Korba, State-Chhattisgarh
(ii)	Commissioning schedule	U-1: Aug'14, U-2: Dec'14

(iii)	Connectivity sought for	1320 MW from Jan'14
(iv)	Step up Voltage	400kV
(v)	Connectivity granted	➢ Interconnection by bus extension of Lanco (Unit- 3 & 4) switchyard to proposed generation project (Unit-5 & 6). ➢ Applicant advised to apply for LTA so that Transmission System Strengthening can be identified.

10. Banas Thermal Power Pvt. Ltd.(BTPL)

(i)	Generation Project Details	1320 MW(2x660MW) Village/Town-Sijehra, Tehsil- Vijayraghavgarh, District-Katni, State-M.P .
(ii)	Commissioning schedule	U-1:Mar'14, U-2:Jul'14
(iii)	Connectivity sought for	1320 MW from Dec'13
(iv)	Step up Voltage	400 kV
(v)	Connectivity	➢ Application Pending: As the progress of the project not found adequate in-terms of fuel linkage, land, environment clearance etc, applicant advised to prepare realistic schedule of the project and also to apply for LTA so that Transmission System Strengthening can be identified.

11. Astarc Power Pvt. Ltd.

(i)	Generation Project Details	1320 MW(2x660MW) Village/Town-Near Panhartal Village, Umred Taluka District- Nagpur, State-Maharashtra
(ii)	Commissioning schedule	U-1: Jun'15, U-2: Dec'15
(iii)	Connectivity sought for	1241 MW from Jun'14
(iv)	Step up Voltage	400kV
(v)	Connectivity	➢ Application Pending: As the progress of the project not found adequate in-terms of fuel linkage, land, environment clearance etc, applicant advised to prepare realistic schedule of the project and also to apply for LTA so that Transmission System Strengthening can be identified. ➢ For Astarc and Lanco Vidharbha project (already granted Connectivity in the last meeting) the connectivity may be reviewed by identifying a suitable pooling station and integrating it with the grid.

12. Connectivity application of M/s Tata Power Co. Ltd (Mundra Ext- 1660 MW) was not discussed as the applicant did not attend the meeting.

B. Applications for Grant of Connectivity & Long Term Access:

1. Torrent Energy Ltd.

(i)	Generation Project Details	1200MW (3x400MW) Village/Town- Dahej SEZ, Taluka-Vagra, District- Bharuch, State-Gujarat
(ii)	Commissioning schedule	U-1: Jan'13, U-2: Mar'13, U-3: May'13
(iii)	Connectivity sought for	1200MW from Oct'12
(Iv)	LTA sought for	1200 MW from Jul'13 (12 year & 1 month)
(v)	Step up Voltage	400kV
(vi)	Target Beneficiaries	400MW (TPL Ahmedabad & others), 400MW(WR) & 400MW(NR)
(vii)	Connectivity Granted	➢ TEL (DGEN) TPS – Navsari 400kV D/c line (Triple / Quad)
(viii)	LTA Granted	➢ **Transmission system strengthening in WR** (i) TEL (DGEN) TPS – Vadodara 400kV D/c (ii) Augmentation of transformation capacity of 400/220kV S/s at Navsari with 1x500MVA ICT. (iii) 220kV Navsari(PG) - Valthan/any other location to be informed by GETCO D/c line. ➢ Further voltage level for transmission system strengthening in WR-NR corridor like Vadodara-Bhinmal – Jodhpur shall be reviewed taking into account other generation projects in this complex viz. Adani Power (Dahej), Essar Power Gujarat, Pipavav Energy, Bharuch Power etc. based on their LTA applications submitted/pending to be submitted.

2. DB Power (Madhya Pradesh) Limited

(i)	Generation Project Details	1320 MW(2x660MW) Village- Gorgi, Tehsil-Deosar,Distt.- Singrauli, State-M.P
(ii)	Commissioning schedule	U-1: Jul'14, U-2: Dec'14
(iii)	Connectivity sought for	1320 MW from Mar'14
(Iv)	LTA sought for	810 MW from Mar'14 (25 years)
(v)	Step up Voltage	400kV
(vi)	Target Beneficiaries	80% WR & 20% NR
(vii)	Connectivity/ LTA	➢ Application for Connectivity and LTA deferred to next meeting.

- A suitable pooling station may be identified to interconnect the DB TPS and Chitrangi Power (for which connectivity already granted) & system strengthening to be identified

- MPPTCL shall apply for LTOA corresponding to their quantum of allocation from above project.

3. Prakash Industries Ltd.(PIL)

(i)	Generation Project Details	625MW (5x25MW+2x100MW+2x150MW) Village- Hathneora, Champa, Distt.- Jangir Champa State-Chhattisgarh
(ii)	Commissioning schedule	(5X25MW) Units: Dec'10 to Mar'11, (2x100MW) Units: by Feb'12 , (2x150MW) Units: by Feb'13
(iii)	Connectivity sought for	500 MW from Dec'12
(Iv)	LTA sought for	500 MW from Feb'13 (25 years)
(v)	Step up Voltage	400kV
(vi)	Target Beneficiaries	NR Region (100%)
(vii)	Connectivity Granted	➢ PIL TPS – Champa Pooling Station 400kV D/c
(viii)	LTA Granted	➢ **System Strengthening** (To be shared along with M/s KPCL) (i) Upgradation of ±800kV, 3000MW HVDC bipole between Champa Pooling Station – Kurukshehtra(NR) to 6000MW along with other IPPs in Chhattisgarh (ii) Kurukshetra(NR) – Jind 400kV D/c(Quad) (iii) Kurukshetra(NR) – Suitable location near Ambala 400kV D/c(Quad) (iv) 765/400kV transformer augmentation by 2x1500 MVA at Champa pooling station ➢ LTA shall be effected from date of availability of above strengthening scheme.

4. M/s Prakash Industries Ltd had withdrawn their other Connectivity & LTA applications for its proposed 1320 MW generation project each at Champa-Jangir in Chhattisgarh as well as Annupur in MP.

C. Applications for Grant of Long Term Access (LTA) as per CERC Regulation 2009

1. Dhariwal Infrastructure

(i)	Generation Project Details	600 MW (2x300MW) Village/Town - Tadali District-Chandrapur Maharashtra
(ii)	Commissioning	U-1: Sep'12, U-2: Dec'12

	schedule	
(iii)	LTA sought for	300 MW from Nov'13 (25 years)
(Iv)	Step up Voltage	400kV
(v)	Target Beneficiaries	WR-150MW, NR-150 MW
(vi)	LTA Granted	➢ Generation project is already granted connectivity at Chandrapur-II by MSETCL for unit-I. ➢ **System strengthening in WR** (i) LILO of 400kV Bhadravati - Parli one circuit at Dhariwal TPS. (ii) Bus sectionalisation at Dhariwal TPS in between U-1 (300MW) & U-2 (300MW) and only one unit to be connected through above LILO arrangement. ➢ **Transmission system strengthening in WR-NR (to be shared with other IPPs)** (i) Jabalpur Pooling station – Orai 765 kV D/c (ii) Orai – Bulandshahar 765 kV D/c (iii) Sonepat-Kaithal 400kV D/c (Quad).

D. Applications for Grant of Long Term Open Access (LTOA) as per CERC Regulation 2004

I **32 numbers of LTOA applications, as per CERC regulation 2004** were discussed in the 30th Standing committee meeting of WR/12th meeting of WR Constituents regarding connectivity/open access wherein it was decided to review the progress of the generation projects. After review, only 9 applicants furnished the progress. However, out of these 9, only 4 applicants attended the 13th meeting of WR Constituents regarding connectivity /open access applications. In addition, 2 more applicants viz. M/s KVK and M/s Sona Power were present during the meeting who earlier didn't submit the details.

1. Karnataka Power Corporation Ltd. (KPCL)

(i)	Generation Project Details	1600MW(2x800MW) District- Janjgir-Champa, State- Chhattisgarh
(ii)	Commissioning schedule	U-1: Sep'14, U-2: Dec'14
(iii)	LTOA sought	1040MW (Karnataka in SR) from Sep'14
(iv)	Allocation for CSPTCL	560MW (WR- 336MW NR-224 MW)
(v)	Step up Voltage	400kV
(vi)	LTOA Granted	➢ **Dedicated line** • KPCL TPS – Champa Pooling Station 400kV D/c line (Quad) ➢ **<u>System strengthening to be shared with M/s Prakash Industries Ltd. for LTOA</u>** • Upgradation of ±800kV, 3000MW HVDC bipole between Champa Pooling Station – Kurukshehtra(NR) to 6000MW along with IPPs in Chhattisgarh

- Kurukshetra(NR)–Jind 400kV D/c(Quad)
- Kurukshetra(NR)–suitable location near Ambala 400kV D/c(Quad)
- 765/400kV transformer augmentation by 2x1500 MVA at Champa pooling station

2. AES Chhattisgarh Energy Ltd.

(i)	Generation Project Details	1320MW(2x660MW) District- Janjgir-Champa, State- Chhattisgarh
(ii)	Commissioning schedule	U-1 Mar'17, U-2 Sep'17.
(iii)	LTOA sought for	1100MW from Mar'17
(iv)	Step up Voltage	400kV
(v)	LTOA	➢ The progress of the project not found adequate in-terms of fuel linkage, land, environment etc, it was decided that applicant shall prepare realistic schedule of the project. Further, it was decided that the application could be closed at this stage and applicant/developer shall apply afresh as per CERC regulation 2009.

3. Suryachakra Power Corporation Ltd.

(i)	Generation Project Details	600MW(2x300MW) District-Raigarh , State-Chhattisgarh
(ii)	Commissioning schedule	U-1: Jan'14, U-2: Jan'15.
(iii)	LTOA sought for	339MW
(iv)	Allocation for CSPTCL	207MW
(v)	LTOA sought from	Jan'14
(vi)	Step up Voltage	400kV
(vi)	LTOA	➢ The progress of the project not found adequate in-terms of fuel linkage, land, environment etc, it was decided that applicant shall prepare realistic schedule of the project. Further, it was decided that the application could be closed at this stage and applicant/developer shall apply afresh as per CERC regulation 2009.

4. Today Energy (MP) Ltd.

(i)	Generation Project Details	1320MW (2x660MW) District-Narsinghpur, State-Madhya Pradesh

(ii)	Commissioning schedule	U-1: Dec'14, U-2: Jul'15
(iii)	LTOA sought for	800MW** from Dec14
(iv)	Step up Voltage	400kV
(v)	LTOA granted	**Dedicated system** ➢ Today Energy-Jabalpur Pool 400kV D/c (Quad) **System strengthening for LTOA** ➢ Transmission Charges of the following transmission system to be shared by M/s Todays Energy along with other IPPs near Bilaspur complex in Chhattisgarh & MP • Indore- Vadodra 765kV S/c • Vadodra – Pirana 400kV D/c (Quad) • Establishment of 765/400kV, 2x1500 MVA substation at Vadodra ➢ Transmission system strengthening in WR-NR (to be shared with other IPPs) • Jabalpur Pooling station – Orai 765 kV D/c • Orai – Bulandshahar 765 kV D/c • Sonepat-Kaithal 400kV D/c (Quad) ➢ Transmission Charges of the following transmission system to be shared by M/s Todays Energy along with M/s MB Power MP Ltd • Jabalpur Pooling Station – Bina 765kV S/c line (3rd) (Implementation through pvt. Sector) ➢ MPPTCL shall apply for LTOA corresponding to their quantum of allocation from above project

** GoMP allocation for 35% from M/s Today Energy

5. KVK Energy & Infrastructure Ltd.

(i)	Generation Project Details	1320MW (2x660MW) Village; Arjuni & Raseda, Akaltara Tehsil, Janjgir-Champa Distt., Chhattisgarh
(ii)	Commissioning schedule	U-1: Mar'14, U-2: Dec'14
(iii)	LTOA sought for	1200MW from Mar'14
(iv)	Step up Voltage	400kV
(v)	LTOA	The progress of the project not found adequate in-terms of fuel linkage, land, environment etc, it was decided that applicant shall prepare realistic schedule of the project. Further, it was decided that the application could be closed at this stage and applicant/developer shall apply afresh as per CERC regulation 2009.

6. Sona Power Ltd.

(i)	Generation Project Details	1320MW(2x660MW) Salkhan, Kishora, Kachanda and Mupar, Janjgir-Champa, Chhattisgarh
(ii)	Commissioning schedule	U-1: Oct'13, U-2: Oct'14
(iii)	LTOA sought for	1234 MW from Oct'13
(iv)	Step up Voltage	400kV
(v)	LTOA	➢ POWERGRID earlier proposed following system: • Sona – Champa pooling Station 400kV D/c (Quad). ➢ Based on the progress of the project, it was decided that application shall be discussed further.

II. LTOA of other IPPs in Chhattisgarh/MP/ Maharashtra as per CERC regulation 2004

As the progress of total 29 IPP projects were not satisfactory, it was decided that applications shall be closed at this stage and applicants/developers may apply afresh as per CERC regulation 2009 based on the sufficient progress of the generation project. List of applications for which LTOA was closed at this stage was as under:

a) IPP generation project in Chhattisgarh

S.no.	Developer	Installed Capacity (MW)	LTOA (MW)	Comm. Schedule
	Raigarh (Kotra)			
1	Bhushan Power & Steel Ltd.	1000	900	Dec-11
2	Patni Power Projects Pvt. Ltd.	540	540	Jan-12
3	Ispat Industries Ltd.	1200	650	Mar-12
4	Topworth Energy Pvt Ltd	1200	702	Jan-13
5	Ind Barath energy Ltd.	600	552	Feb-13
6	Essar Power Chhattisgarh	1200	750	Mar-13
7	BEC Power Pvt. Ltd.	505	450	Mar-13
8	Jindal India Thermal Power Ltd.	1320	1320	Sep-13
9	Chambal Infrastructure Ventures Ltd.	1320	1250	Dec-14
10	Suryachakra Power Corporation Ltd.	600	339	Jan'14
	Raigarh (Tamnar)			
11	Singhal Energy	270	155	Sep-11
12	Godawari Energy	1320	1234	Jul-15
13	Sarda Energy and Minerals Ltd	350	171	Jun-13
14	Mahavir Energy & Coal Benefication	60	50	Dec-14
15	Mahavir Global	540	450	Mar-16
	Champa/Janjgir			

S.no.	Developer	Installed Capacity (MW)	LTOA (MW)	Comm. Schedule
16	Torrent Power Ltd.	1320	1214	Jun-13
17	Bhushan Energy Ltd.	1000	1000	Dec-13
18	Vandana Global	1260	1050	2013-14
19	JSW Energy Ltd.	1320	800	Apr-14
20	Adhunik Thermal Energy Ltd.	1005	900	
21	AES Chhattisgarh Energy Ltd.	1320	1100	Mar'17
22	KVK Energy & Infrastructure Ltd	1320	1200	Mar'14
	Dharamjaygarh/Korba			
23	Indiabulls-Bhaiyathan	1320	500	Dec-12
24	Shyam Century Infrastructure Ltd.	600	600	Sep-13
25	Jain Energy Ltd.	1200	1092	Sep-13
26	ACB India(Aryan Coal) Pvt. Ltd.	1200	1100	Mar-15
27	Sarda Energy and Minerals Ltd.	1320	1320	Jun-16

b) IPP generation projects in MP and Maharashtra

S. No.	Applicant	Location (State)	Installed Capacity (MW)	LTA (MW)	Time Frame
28	Reliance Industries(Shadol)	MP	1050	1050	Jan'13
29	Maharashtra Energy (RPL)	Maharashtra	4000	2800	Jan'13

E. Applications for Grant of MTOA

MTOA applications of Electricity Department UT DNH for 32 MW and Electricity Department, Daman UT DD for 22MW from 500MW NSPCL (Bhilai) generating station in Chhattisgarh were discussed. It was decided that WRLDC shall inform about the availability of transmission margin for transfer of power through Vapi to UT DNH & DD. Based on above information, MTOA applications shall be reviewed.