

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/498-511

Date: 25th May, 2012

To

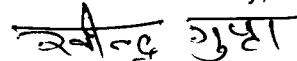
- | | | | |
|----|--|----|--|
| 1 | The Member (PS),
Central Electricity Authority,
Sewa Bhawan, R. K. Puram,
New Delhi-110066 | 8 | Chief Engineer (Trans),
Nuclear Power Corp. of India Ltd.,
9S30, VS Bhavan, Anushakti Nagar,
Mumbai-400094
Fax 022-25993570 |
| 2 | The Member Secretary,
Western Regional Power Committee,
MIDC Area, Marol, Andheri East, Mumbai
Fax 022 28370193 | 9 | The Executive Director (Engg.),
NTPC Ltd., Engg. Office Complex,
A-8, Sector-24, NOIDA 201301
Fax 0120-2410201/2410211 |
| 3 | The Director (Projects),
Power Grid Corp. of India Ltd.,
"Saudamini", Plot No. 2, Sector-29,
Gurgaon-122001
Fax 0124-2571760/2571932 | 10 | The Chief Engineer,
Electricity Department,
The Government of Goa, Panaji
Fax 0832 2222354 |
| 4 | Chairman and Managing Director,
MPPTCL, Shakti Bhawan,
Rampur, Jabalpur-482008
Fax 0761 2664141 | 11 | Executive Engineer (Projects)
UT of Dadra & Nagar Haveli,
Department of Electricity , Silvassa
Ph. 0260-2642338/2230771 |
| 5 | The Managing Director,
CSPTCL, Dangania,
Raipur (CG)-492013
Fax 0771 2574246/ 4066566 | 12 | Executive Engineer
Administration of Daman & Diu (U.T.)
Department of Electricity
Moti Daman-396220
Ph. 0260-2250889, 2254745 |
| 6 | The Managing Director,
GETCO, Sardar Patel Vidyut Bhawan,
Race Course, Baroda-390007
Fax 0265-2338164 | 13 | GM, WRLDC
Plot no F-3, MIDC Area, Msarol,
Andheri(East) Mumbai-400093
Fax no 022-28235434 |
| 7. | Director (Operation),
MAHATRANSCO, 'Prakashgad', Plot
No.G-9, Bandra-East, Mumbai-400051
Fax 022-26390383/26595258 | 14 | CEO, POSOCO
B-9, Qutab Institutional Area, Katwaria Sarai
New Delhi-110016
Fax 011-26852747 |

Sub: Minutes of the 34th meeting of the Standing Committee on Power System Planning in Western Region held on 9th May 2012 at NRPC, Katwaria Sarai, New Delhi.

Sir,

The minutes of the 34th meeting of the Standing Committee on Power System Planning in Western Region held on 9th May 2012 at NRPC, Katwaria Sarai, New Delhi are available on CEA website (www.cea.nic.in at the following link: Home page-Wing Specific Document-Power Systems-Standing Committee on Power System Planning-Western Region).

Yours faithfully,



(Ravinder Gupta)
Director, SP&PA

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./ 498-511

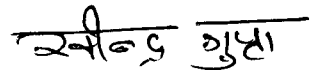
दिनांक: 25.05.2012

- | | | | |
|---|--|----|---|
| 1 | सदस्य (विद्युत प्रणाली),
केन्द्रीय विद्युत प्राधिकरण,
सेवा भवन, आर के पुरम्,
नई दिल्ली-110066 | 8 | मुख्य अभियंता (पारेषण),
न्यूक्लीयर पावर कॉरपोरेशन ऑफ इंडिया लि,
9एस30, वीएस भवन, अणुशक्ति नगर,
मुम्बई-400094 फैक्स सं. 022-25993570 |
| 2 | सदस्य सचिव,
पश्चिमी क्षेत्रीय विद्युत समिति, एम. आई. डी. सी क्षेत्र,
मेरोल, अधेरी पूर्व, मुम्बई-400094
फैक्स सं. 022-28370193 | 9 | कार्यपालक निदेशक (अभियांत्रिकी),
नेशनल थर्मल पावर कॉरपोरेशन लि,
इंजीनियरिंग ऑफिस कॉम्प्लैक्स, ए-8, सैक्टर-24,
नोएडा-201301 फैक्स सं. 0124-2410201 |
| 3 | निदेशक (परियोजना),
पावरग्रिड कॉरपोरेशन ऑफ इंडिया लि,
सौदागिनी, प्लाट सं. 2, सैक्टर-29, गुडगाँव-122001
फैक्स सं. 0124-2571760 | 10 | मुख्य अभियंता,
विद्युत विभाग, गोवा सरकार, पणजी
फैक्स सं. 0832-2222354 |
| 4 | अध्यक्ष एवं प्रबन्ध निदेशक,
एम.पी.पी.टी.सी.एल. शक्ति भवन,
रामपुर, जबलपुर-482008
फैक्स सं. 0761-2664141 | 11 | कार्यपालक इंजीनियर (परियोजनाए),
दादरा एवं नागर हवेली संघ शासित क्षेत्र,,
विद्युत विभाग, सिलवांसा,
फोन नं. 0260-2642338 |
| 5 | प्रबन्ध निदेशक
छत्तीसगढ़ रा. वि. बोर्ड,
दानगनिया, रायपुर (छत्तीसगढ़) -492013
फैक्स सं. 0771-2574246 | 12 | कार्यपालक इंजीनियर,
विद्युत विभाग, दमन एवं दीव संघशासित क्षेत्र प्रशासन,
मोती दमन, पिन-396220
फोन नं. 0260-2250889, 2254745 |
| 6 | प्रबन्ध निदेशक,
जी.ई.ट्रां.नि.लि, सरदार पटेल विद्युत भवन,
रेस कोर्स, बड़ोदा-390007
फैक्स सं. 0265-2338164 | 13 | कार्यपालक निदेशक, (विशेष आमंत्रित),
डब्लू आर एल डी सी, प्लॉट संख्या-एफ 3,
एम आई डी सी एरिया, मेरोल,
अधेरी पूर्व, मुम्बई-400093,
फैक्स संख्या-022-28235434 |
| 7 | निदेशक (प्रचालन),
महाद्रासको, प्रकाशगड, प्लॉट संख्या-जी 9,
बांद्रा-पूर्व, मुम्बई-400051
फैक्स 022-26390383 / 26595258 | 14 | कार्यपालक निदेशक, एनएलजीसी
बी-9, कुतुब इन्स्टीट्यूशनल एरिया,
कटवारिया सराय, नई दिल्ली-110016
फैक्स 011-26852747 |

विषय :- पश्चिमी क्षेत्र की विद्युत प्रणाली योजना पर आयोजित की गयी स्थाई समिति की 34वीं बैठक का कार्यवृत्त।
महोदय,

पश्चिमी क्षेत्र की विद्युत प्रणाली योजना पर 9th May 2012 को आयोजित की गयी स्थाई समिति की 34वीं बैठक का कार्यवृत्त केन्द्रीय विद्युत प्राधिकरण की वेबसाइट www.cea.nic.in {लिंक Home page-Wing Specific Document-Power Systems-Standing Committee on Power System Planning-Western Region} पर उपलब्ध है।

संलग्न - उपरोक्त

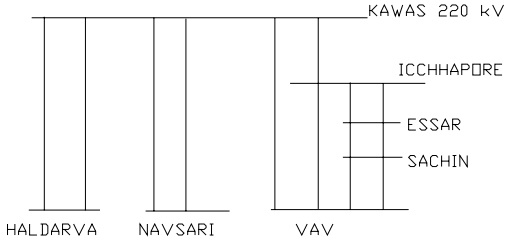
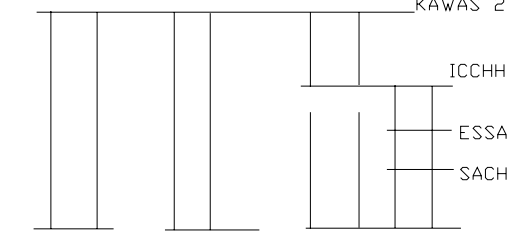
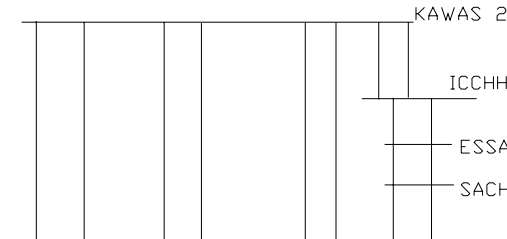
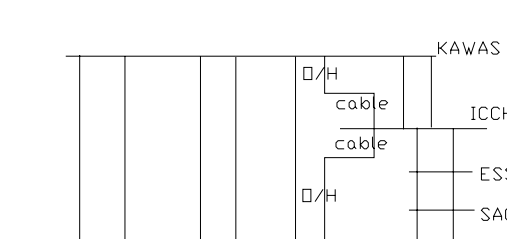


{रविंद्र गुप्ता}
निदेशक

Minutes of the 34th Meeting of Standing Committee on Power System Planning of Western Region held on Wednesday 9th May 2012

- 1.0 The 34th meeting of the Standing Committee on Power System Planning of Western Region was held on Wednesday 9th May 2012 at NRPC, Katwaria Sarai, New Delhi. The list of participants is at Annex – I.
- 1.1 The meeting was chaired by Member (PS), CEA. He welcomed all the participants to the meeting and requested Director (SP&PA) to take up the agenda items.
- 2.0 **Confirmation of the minutes of 33rd meeting of the Standing Committee on Power System Planning in Western Region (SCPSPWR) held on 21st October 2011 at NRPC, Katwaria Sarai, New Delhi.**
- 2.1 The minutes of the 33rd SCPSPWR issued vide CEA letter No.26/10/2011-SP&PA/1669-1682 dated 15th November 2011 were confirmed.
- 3.0 **Review of Progress on Earlier Agreed Transmission Schemes**
- 3.1 Director (SP&PA), CEA requested POWERGRID and constituents to intimate the latest status of progress of ongoing / earlier agreed transmission schemes.
- 3.2 Regarding implementation of 10 no. of 125 MVAR (six no. by PGCIL and four no. by GETCO) bus reactors agreed in the previous SCM, POWERGRID intimated that NIT for the 6 nos. of 125 MVAR reactors would be issued by mid of May 2012. MD, GETCO intimated that orders for the reactors under their scope would be placed within a month's time and its implementation would start in another 6 to 7 months. The reactor for Varsana has already reached the site.
- 3.3 Regarding the 1x500 MVA transformer at Boisar, POWERGRID intimated that the same is ready for award and is likely to be commissioned by May 2014. MSETCL intimated that the three nos. of 220 kV D/C lines from Boisar 400/220 kV substation would be implemented in the matching time frame of 500 MVA, 400/220 kV ICT at Boisar.
- 3.4 The details of the status of implementation of the earlier agreed schemes under construction / approved furnished by POWERGRID is enclosed as Annexure-II.
- 4.0 **Overloading of Kawas – Ichhapore 220 kV S/C line. Agenda item proposed by WRPC.**
- 4.1 Director (SP&PA), CEA stated that the evacuation system of Kawas CGPP of NTPC with installed capacity of 656 MW (4X106 +2X116) comprised of three number of 220 kV D/C lines; one each to Navsari, Haldarva and Vav. Subsequently, one circuit of Kawas - Vav 220 kV D/C line was looped in looped out at Ichhapore.
- 4.2 Director (SP&PA), CEA said that NTPC has informed that Kawas-Ichhapore 220 kV line loading is exceeding 200 MW and on few occasions power flow on this line has reached to the tune of 300-350 MW. This has resulted in damage to the insulators and other bay equipments and even tripping of Kawas generating station. The issue

of overloading of Kawas- Ichhapore 220 kV line has been deliberated in various OCC meetings of WRPC. To mitigate the problem, three options as given below, has been studied at WRPC forum and WRPC has recommended option-III for immediate implementation and depending upon the availability of space at Ichhapore for accommodating two more bays, option III-A could be taken up in future.

OPTION I	Replacement of the 220 kV Kawas-Ichhapore portion of conductor with high ampacity conductor	
OPTION II	LILO of the second Kawas-Vav line at Ichhapore and keeping the Vav-Ichhapore portion open at Ichhapore end and charged from Vav end	
OPTION III	Restore the Kawas-Vav 220 kV D/C line, as per original scheme and add a new 220 kV D/C line between Kawas - Ichhapore	
OPTION III-A	Option III + LILO of one circuit of Kawas - Vav at Ichhapore. The LILO to be established through 220 kV cable.	

- 4.3 Member Secretary, WRPC endorsed the above.
- 4.4 M/s NTPC / GETCO informed that option-III is presently under implementation and is likely to be completed by the end of May 2012.
- 4.5 Managing Director, GETCO stated that the problem of overloading of Kawas-Ichhapore line has arisen because of increased drawl by M/s ESSAR and low generation at their generating plant. He said that they would like to implement the OPTION III-A in future, which involves LILO of one ckt of Kawas-Vav 220 kV D/C line at Ichhapore through cable and confirmed the availability of space for 2 no. line bays

at Ichhapore. He added that issues relating to implementing agency and bearing of cost of this LILO arrangement needs to be sorted out with M/s ESSAR.

4.6 After further deliberations, members endorsed the implementation of OPTION III to overcome the overloading of Kawas – Ichhapore 220 kV S/C line.

4.7 Regarding OPTION III-A, on the request of GETCO, it was decided that further deliberation would be held between GETCO, ESSAR and CEA.

5.0 MSETCL proposal of connectivity of Ghodbunder with Boisar.

5.1 Director (SP&PA), CEA stated that in the 33rd Standing Committee on Power System Planning in WR, it was decided that POWERGRID and MSETCL would carry out a joint survey to assess the availability of space at 400 kV Boisar sub-station for termination of 400 kV D/C line from Ghodbunder. Subsequently, MSETCL has intimated that joint survey was carried out by PGCIL, MSETCL and R-Infra officials on 28th October 2011 and in the space available at Boisar 400 kV substation only four nos. of AIS bays could be accommodated, which has already been reserved by POWERGRID for termination of 400 kV D/C lines from Aurangabad and Navsari. Therefore, MSETCL has suggested that to create space for terminating Ghodbunder – Boisar 400 kV D/C line, POWERGRID may implement two AIS bays as GIS bays at Boisar.

5.2 POWERGRID informed that two nos. of AIS bays for terminating Navsari – Boisar 400 kV D/C line was already under implementation and two nos. AIS bays for Aurangabad – Boisar 400 kV D/c line was ready for award.

5.3 Member (PS), CEA stated that connectivity of Ghodbunder with Boisar would help in meeting the load of Mumbai area and requested POWERGRID to review the two number of AIS bays at Boisar for terminating the 400 kV D/C line from Aurangabad and convert it to GIS bays to accommodate the termination of Ghodbunder – Boisar 400 kV D/C line.

5.4 POWERGRID stated that they have to take approval of their management for the converting two no. AIS bays into GIS bays.

5.5 After further deliberation, POWERGRID was requested to implement the two no. of AIS bays at Boisar for terminating Aurangabad – Boisar 400 kV D/c line as GIS bays, to accommodate the termination of Ghodbunder – Boisar 400 kV D/C line at Boisar.

6.0 High Voltage Studies in Western Region.

6.1 Director (SP&PA), CEA stated that in the 33rd Standing Committee on Power System Planning in WR, to contain the over voltages during off peak conditions in Western Region grid, 10 numbers of 125 MVAR bus reactors were agreed. In the meeting, it was also decided that WRPC along with WR constituents would carry out studies to assess the additional reactive compensation requirement, including sizing of dynamic compensation in Western Region network. Accordingly, the studies were carried out by WRPC System Study Group and a meeting of the Study Group of WRPC along with CEA and POWERGRID representatives was held on 16.04.2012 at WRPC Mumbai. In the meeting additional 17 (seventeen) nos. of 125 MVAR, 400 kV bus reactors were identified at the following locations:

S.NO.	Location of the Bus Reactor	UTILITY	Rating
1	Nanded	MSETCL	125 MVAR
2	Sholapur	MSETCL	125 MVAR
3	Kolhapur	MSETCL	125 MVAR
4	Jetpur	GETCO	125 MVAR
5	Damoh	PGCIL	125 MVAR
6	Zerda	GETCO	125 MVAR
7	Nagda	MPPTCL	125 MVAR
8	Bhopal	MPPTCL	125 MVAR
9	Bachau	PGCIL	125 MVAR
10	Pirana	PGCIL	125 MVAR
11	Itarsi	PGCIL	125 MVAR
12	Seoni	PGCIL	125 MVAR
13	Limdi	GETCO	125 MVAR
14	Aurangabad	MSETCL	125 MVAR
15	Parli	PGCIL	125 MVAR
16	Raipur	PGCIL	125 MVAR
17	Akola	MSETCL	125 MVAR

- 6.2 Superintending Engineer, WRPC made a presentation on the studies made and the methodology adopted. The study report is enclosed at Annexure-III. He stated that the off-peak data for 2013-14 conditions, as provided by POWERGRID, which also included the ten nos. of reactors approved in the previous meeting was used as Base Case. In the Base Case, it was observed that generators were absorbing MVAR, but in actual practice generators do not absorb MVAR and as such the field voltages observed are very high. To contain the high voltages, additional 17 (seventeen) nos. of 125 MVAR, 400 kV bus reactors were identified at the above locations using the principle of voltage sensitivity of the nodes / buses towards reactive compensation (Q-V analysis) and judgment.
- 6.3 GM, WRLDC supporting the proposal of installation of reactors in Western Region, requested to expedite the implementation of the reactors proposed at Zerda, Bachau, Rajkot, Versana and Pirana in Gujarat area. This would help in controlling high voltage and extending start up power to CGPL Mundra and APL Mundra in case of an emergency. He further intimated that the reactor proposed at Damoh could be shifted to Birsinghpur, if its implementation was possible within two years, otherwise it could be implemented at Damoh itself. Also very high voltage is observed at Bhadrawati substation during peak hours and keeping in view the grid security aspects, the lines connected to Bhadrawati cannot be switched off to control over voltage, therefore reactive compensation was also required at Bhadrawati substation. He further requested to provide one 125 MVAR reactor at Gwalior 400 kV substation. Regarding dynamic compensation, he suggested provision of SVC at Indore / Bina and Pune / Sholapur in view of impending WR-SR grid synchronization. He requested the Standing Committee to consider the above suggestions in planning of Western Regional Grid.
- 6.4 Member Secretary, WRPC stated WRLDC has also participated in the studies carried at WRPC Mumbai of 16.04.2012 to identify the additional compensation requirement. The scope of studies was limited to steady state only and no dynamic studies were carried out. Regarding provision of reactor at Bhadrawati, Superintending Engineer, WRPC stated that the Bhadrawati substation was connected to the generators at Chandrapur and its voltage sensitivity was very less,

therefore a very huge amount of reactive compensation would be required to control the over voltage. He further stated that no reactor at Gwalior substation was proposed, as its voltage was within limits even though Gwalior had good voltage sensitivity.

- 6.5 Regarding the provision of reactor at Birsinghpur instead of at Damoh, it was observed that implementation time of reactors was 22 to 24 months, therefore it was decided that the reactor would be provided at Damoh only. Regarding the request for provision of reactors at Gwalior by WRLDC, it was agreed in view of the good voltage sensitivity of the Gwalior bus. On the issue of provision of Dynamic compensation, it was decided that Studies for finalizing the location and size of the same would be carried out by CTU in association with CEA.
- 6.6 The issue of absorption of MVARs by the generators was discussed at length. Member (Power System), CEA enquired WRLDC about the VARs absorption by the generators and their contribution in controlling the high voltage prevailing in the grid. NLDC representative stated that in the planning horizon, it is desirable to have generators operating at unity power factor. But in actual operation, RLDC's directions regarding reactive power generation/absorption has to be followed by all generators and instances of non-compliance could be taken up with CERC. GM, WRLDC informed that VARs absorption was not done by the generators and for this many notices have also been issued to the generators. After deliberation, it was decided WRLDC would file petition before CERC for imposing fine on the generators for not absorbing VARs as per the provisions made in the Grid Code.
- 6.7 MSETCL stated that subsequent to the meeting of the study group held on 16.04.2012 at WRPC Mumbai, they have also carried out the studies to assess the reactor requirement in their system for the year 2013-14. As per their studies, they have proposed to install 18 nos. of 125 MVAR bus reactors, one each at Akola-I, Bhusawal-II, Chakan, Karad, Khaperkheda, Kolhapur, Koradi-II, Nanded, Solapur, Chandrapur-II, Warora, Kudus, Lonikhand-II, Hinjewadi, Kesurdi, Alkud, Nasik and Akola-II 400 kV substations. These 18 locations include the four substations (Nanded, Solapur, Kolhapur and Akola) at which 125 MVAR has been recommended by the WRPC study group. Regarding the reactor at Aurangabad substation, MSETCL stated that their studies do not suggest requirement of reactor at Aurangabad and may be deleted from the list of reactors suggested by the Study Group.
- 6.8 MPPTCL intimated that 2X50 MVAR bus reactors were already installed at Nagda and 80 MVAR bus reactors were proposed to be installed at Bhopal and Indore. In addition, 50 MVAR bus reactors were also proposed to be installed at Katni, Cheggaon, Pithampur, Julwaniya and Ashta 400 kV substations of MPPTCL. He enquired about the quantum of reactors considered in the Base Case at Nagda. It was clarified that 2X50 MVAR bus reactors has been considered in the Base Case and 125 MVAR bus reactor proposed at Nagda was an additional requirement.
- 6.9 DGM, POWERGRID stated that they were in agreement with 125 MVAR bus reactor proposed at Damoh, Bachau, Pirana, Seoni, Parli and Raipur 400 kV sustations. At Itarsi 400 kV substation, 3X50 MVAR MVAR bus reactors are already in service. It was proposed to replace the 2X50 MVAR bus reactors by installing 2X125 MVAR bus reactors and used the replaced 2X50 MVAR bus reactors as spares. The POWERGRID proposal was agreed by the members.

- 6.10 Managing Director, GETCO stated that 125 MVAR bus reactor has been proposed at Jetpur, Zerda and Limbdi 400 kV substations in GETCO system. They have already planned installation of 125 MVAR bus reactors at Zerda and Limbdi but at Jetpur 63 MVAR bus reactor have been planned. He further stated that in GETCO system installation of many bus reactors has been proposed by the Standing Committee to contain the high voltage conditions. But the high voltages are mainly due to the ISTS network, therefore the installation of bus reactors should be done by CTU and not by the individual utility.
- 6.11 Member (Power System), CEA stated that this issue has been already decided in the previous Standing Committee meeting and as per the practice in other regions, the reactive compensation provision in STU sub-stations would be implemented by respective STU and the same in ISTS sub-stations would be implemented by POWEGRID.
- 6.12 After further deliberations, provision of the bus reactors at seventeen locations was agreed to contain the voltage conditions in WR grid. These reactors are in addition to the 10 nos. of bus reactors (4 nos. by GETCO and 6 nos. by PGCIL) already agreed in the 33rd SCM. The list is as given below:

S.NO.	Location of the Bus Reactor	UTILITY	Rating
1	Nanded	MSETCL	125 MVAR
2	Sholapur	MSETCL	125 MVAR
3	Kolhapur	MSETCL	125 MVAR
4	Akola	MSETCL	125 MVAR
5	Jetpur	GETCO	63 MVAR
6	Zerda	GETCO	125 MVAR
7	Limbdi (Chorania)	GETCO	125 MVAR
8	Nagda	MPPTCL	125 MVAR
9	Bhopal	MPPTCL	80 MVAR
10	Damoh	PGCIL	125 MVAR
11	Bachau	PGCIL	125 MVAR
12	Pirana	PGCIL	125 MVAR
13	Itarsi *	PGCIL	2X125 MVAR
14	Seoni	PGCIL	125 MVAR
15	Parli	PGCIL	125 MVAR
16	Raipur	PGCIL	125 MVAR
17	Gwalior	PGCIL	125 MVAR

* To replace existing 2X50 MVAR reactors at Itarsi substation and this shall be used as spares.

- 7.0 CSPTCL proposal of LILO of 400 kV S/c line between Raipur (PG) and Khedamera (Bhilai) at Raipur (Raita) 400kV substation and provision of 125 MVAR bus reactor at Raipur (Raita).**
- 7.1 Director (SP&PA), CEA stated that in the 33rd SCSPWR, the CSPTCL proposal of LILO of 400kV S/c line between Raipur (PG) and Khedamera (Bhilai) S/c at their proposed Raipur (Raita) 400kV substation was agreed along provision of 125 MVAR bus reactor at Raita and switchable line reactors in both circuits of Raita – Jagdalpur 400 kV D/C line at Jagdalpur end. Subsequently, CSPTCL has intimated that they have planned installation of 50 MVAR line reactors and 80 MVAR switchable line

reactors at Raipur (Raita) end and Jagdalpur end of the Raipur(Raita) – Jagdalpur 400 kV D/C line respectively. In view of the planned line reactors, CSPTCL were not providing any bus reactor at Raipur (Raita) 400 kV Substation. Accordingly, CSPTCL has requested to review the decision of provision of 125 MVAR bus reactor at Raipur (Raita) 400 kV substation taken in the last standing committee meeting.

- 7.2 CSPTCL representative stated that three nos. of 400 kV D/C lines has been planned with Raita 400 kV substation along with a 50 MVAR line reactor on each line (provision of 300 MVAR reactors) at Raita end. In view of this, CSPTCL has requested to review the decision of provision of 125 MVAR bus reactor at Raipur (Raita) 400 kV substation.
- 7.3 In view of high voltage prevailing around Raipur area during off-peak conditions, CSPTCL was requested to implement the line reactors associated with Raita-Jagdalpur 400 kV D/C line at Raita end as switchable line reactors, instead of the agreed 125 MVAR bus reactor. The line reactor needs to be implemented in the matching time frame of implementation of the LILO of 400kV S/c line between Raipur (PG) and Khedamera (Bhilai) S/c at Raipur (Raita) 400 kV substation. After deliberation, CSPTCL agreed for provision of 2x50 MVAR switchable line reactors at Raita end instead of 125 MVAR bus reactor at Raita.

8.0 Review of Daman & Diu's proposal of LILO of one circuit of Vapi-Magarwada 220kV D/C line at Ringanwada 220/66 kV substation.

- 8.1 Director (SP&PA), CEA stated that the scheme for establishment of 220/66 kV Ringanwada substation by LILO of one circuit of Vapi-Magarwada 220kV D/C line at Ringanwada was agreed in the special meeting of Standing Committee on Power System Planning in WR held on 18th April 2009. Subsequently, to meet the growing demand of Daman & Diu, establishment of 2X315 MVA, 400/220 kV Magarwada GIS substation by LILO of both circuits of Navsari-Boisar 400 kV D/C line (to be implemented by PGCIL) was agreed in the 29th and 32nd SCM of WR. Further for drawl of power from Magarwada (PG) substation, the following two no. of 220 kV D/C lines from Magarwada (PG) substation has been agreed in 30th SCM of WR to be implemented by Electricity Department, Daman & Diu:

- (i) Magarwada (PG)- Magarwada (existing) 220 kV D/C line.
- (ii) Magarwada (PG)- Ringanwada 220 kV D/C line.

- 8.2 Director (SP&PA), CEA further stated that Electricity Department, Daman & Diu has intimated that they would not implement the LILO of one circuit of Vapi-Magarwada 220kV D/C line at the proposed Ringanwada 220/66 kV substation. In view of the direct connectivity of the proposed 220/66 kV Ringanwada substation with the Magarwada (PG) through Magarwada (PG)-Ringanwada 220 kV D/C line, the proposal of Daman & Diu may be accepted.
- 8.3 POWERGRID intimated that the implementation schedule of the Magarwada 400 kV GIS substation was January 2014. Electricity Department, Daman & Diu was requested to implement the 220 kV lines planned from Magarwada 400/220 kV substation in the matching time frame.
- 8.4 In view of direct connectivity to Ringanwada through Magarwada GIS (PG)-Ringanwada 220 kV D/C line, members agreed to Daman & Diu's proposal of not

implementing the LILO of one circuit of Vapi-Magarwada 220kV D/C line at Ringanwada 220/66 kV substation.

9.0 GETCO proposal for LILO of one circuit of 400 kV D/C Mundra UMPP – Chorania line at Halvad (GETCO) substation, as an interim arrangement.

9.1 Director (SP&PA), CEA stated that as decided in the previous SCM, GETCO's proposal of LILO of one circuit of 400kV D/C Mundra UMPP–Chorania line at 400 kV Halvad substation has been studied considering the following 400 kV lines planned by GETCO along with Halvad 400 kV substation:

- (i) Varsana – Halvad 400 kV D/C (quad) line.
- (ii) Halvad – Vadavi 400 kV D/C line.
- (iii) LILO of Adani – Hadala 400 kV line at Halvad.

The preliminary study carried out in CEA, shows no change in the power flow pattern on the lines connected with Halvad 400 kV substation after considering the LILO of one circuit of 400 kV D/C Mundra UMPP – Chorania line at Halvad and the same was also discussed with GETCO.

9.2 Subsequently, GETCO had requested to make LILO of one circuit of 400kV D/C Mundra UMPP –Chorania line at 400kV Halvad substation as an interim arrangement for operation flexibility, till the availability of planned network (400kV D/C Varsana-Halvad and 400kV D/C Halvad-Vadavi line). They have also intimated that Mundra UMPP – Chorania 400 kV D/C line was passing in close proximity to their proposed Halvad substation.

9.3 Managing Director, GETCO intimated that the NIT for Varsana-Halvad and Halvad-Vadavi 400kV D/C lines would be issued within a month and their commissioning is expected by December 2014. The Halvad 400 kV substation along with LILO of Adani–Hadala 400 kV line at Halvad and the interim arrangement proposed would be completed by March 2013.

9.4 After deliberations, members agreed with the GETCO proposal of LILO of one circuit of 400 kV D/C Mundra UMPP – Chorania line at Halvad (GETCO) substation, as an interim arrangement. With the commissioning of the planned network, GETCO would restore the line to its original configuration.

10.0 Conversion of fixed line reactors to switchable line reactors associated with Aurangabad-Pune and Pune-Parli 400 kV D/C lines at Pune 400 kV substation.

10.1 Director (SP&PA), CEA stated that in 32nd Standing Committee Meeting on Power System Planning in Western Region held on 13 May 2011, because of RoW problem faced by POWERGRID in implementing Pune (PG) – Pune 765/400 kV (GIS) 400 kV D/C (quad) line, it was decided to LILO both circuits of Aurangabad (MSETCL)–Pune (PG) 400 kV D/C line and Pune (PG)-Parli (PG) 400 kV D/C line at Pune GIS thus forming:

- a) Pune (PG) – Pune 765/400 kV (GIS) 400 kV 2XD/C line
- b) Aurangabad (MSETCL) – Pune 765/400 kV (GIS) 400 kV D/C line
- c) Pune 765/400 kV (GIS) – Parli (PG) 400 kV D/C line

Considering the length of 400 kV lines of Aurangabad-Pune (GIS) and Parli- Pune (GIS), 50 MVAR line reactors were provided by POWERGRID on each circuit at Pune (GIS) end (4x50 MVAR) and the same was agreed by CEA.

- 10.2 Director (SP&PA), CEA further stated that the Aurangabad-Pune D/C 400kV line and 400kV Pune-Parli D/C line is being implemented through IPTC. The 400 kV substation at Pune along with the four nos. of 50 MVAR line reactors at Pune end (for earlier Pune-Aurangabad 400 kV D/C and Pune-Parli 400 kV D/C lines) was under the scope of POWERGRID. With revised interconnection, there would be four nos. of 50 MVAR line reactors at Pune end for the Pune (PG) – Pune 765/400 kV (GIS) 400 kV 2XD/C line. This being short line, POWERGRID has now proposed to convert the 50 MVAR line reactors at Pune end into switchable line reactors.
- 10.3 Members agreed with the proposal of POWERGRID to convert the 50 MVAR line reactors (four nos.) in each circuit of Pune (PG) – Pune 765/400 kV (GIS) 400 kV 2XD/C line at Pune end into switchable line reactors.
- 11.0 Interconnection of Navsari 400 kV (GIS) and Vapi 400 kV substation as an interim arrangement.**
- 11.1 Director (SP&PA), CEA stated that the Gandhar–Navsari-Boisar 400 kV D/C line along with establishment of 400/220, 2X 315 MVA substation at Navsari was being implemented by POWERGRID as a part transmission system associated with Mundra UMPP. The Vapi – Navi Mumbai 400 kV D/c line was also being implemented by POWERGRID under Western Region System Strengthening Scheme-V. Due to ROW constraints, Navsari–Boisar 400 kV D/c line and Vapi–Navi Mumbai 400 kV D/c line has been planned to be implemented on multi circuit towers in certain stretches of these lines. POWERGRID has informed that Navsari 400/220 kV S/s along with Gandhar – Navsari 400kV D/c line was in advanced stage of completion. However, the multi circuit portion of Vapi–Navi Mumbai and Navsari – Boisar D/c line was scheduled for commissioning at a later date due to ROW problems. In order to transfer power from Mundra UMPP till completion of these lines, POWERGRID has proposed that completed portion of 400 kV D/c Navsari–Boisar line and 400 kV Vapi – Navi Mumbai line may be inter connected with each other at the point where multi circuit portion was starting. This would result in interconnection of Navsari with Vapi through Navsari – Vapi 400 kV D/c line.
- 11.2 Director (SP&PA), CEA further stated that Navsari – Vapi 400 kV D/C line (as an interim arrangement) would enable power transfer from Navsari to Vapi and would provide 2nd feed to 400/220 kV Vapi S/s which was supplying power to load centers in Gujarat, UT of DNH, UT of DD and Maharashtra.
- 11.3 In view of the delay in implementation of the multi circuit portion of the Navsari–Boisar and Vapi-Navi Mumbai 400 kV D/C lines, members agreed to the proposal of POWERGRID to interconnect these two lines at a point where multi circuit portion was starting as an interim arrangement.
- 12.0 Laying of 765kV D/C towers instead of S/c towers in RoW constraints stretches of 765kV 2xS/C Vindhyachal pooling station –Satna – Gwalior line.**
- 12.1 Director (SP&PA), CEA stated that the Vindhyachal pooling station – Satna 765 kV 2XS/c line (265 km) and Satna – Gwalior 765 kV 2X S/c line (392 km) have been

agreed as part of common transmission system for WR and NR associated with evacuation of power from Rihand-III and Vindhyachal-IV generation projects of NTPC. POWERGRID has informed that ROW constraints are being faced on these lines (for about 115 km route length) due to involvement of forest stretches and development of coal block mines which have been recently identified and allocated to coal mining companies. Therefore, POWERGRID has proposed to implement these lines as D/c lines in the portions where ROW constraints are being faced.

- 12.2 Managing Director, GETCO stated that to avoid ROW constraints we should plan 765kV 1XD/C configuration instead of 2XS/C configuration in future and in ROW constraint areas, 400 kV lines on multi circuit towers in place of 400 kV D/C lines needs to be implemented.
- 12.3 POWERGRID stated that in the initial stages of development of 800 kV system, 765 kV S/C transmission lines were planned but after the development of 765 kV D/C tower, 765 kV D/C lines are being planned wherever required. DGM POWERGRID stated that RoW constraints are also being faced in some cases when the line approaches a sub-station having many interconnections and in these cases few spans of transmission lines near the substation needs to be planned on multi circuit towers.
- 12.4 Member (Power System), CEA stated that grid security aspects in case of 765 kV D/C tower outage also needs to be studied while planning for 765 kV D/C lines.
- 12.5 NTPC representative stated that Sasan-Satna 765 kV lines were struck up due to Forest Clearance issues. The forest related issues in the Vindhyachal pooling station–Satna–Gwalior 765 kV lines was of major concern. Implementation of Vindhyachal pooling station–Satna–Gwalior 765 kV lines needs to be expedited to avoid constraints in evacuation of power from Vindhyachal –IV and Rihand-III.
- 12.6 After further deliberations, members agreed with the POWERGRID proposal of laying of 765kV D/C tower instead of S/c towers in RoW constraint stretches of 765kV 2xS/C Vindhyachal pooling station –Satna – Gwalior line. It was also agreed that in general, in forest stretches and Row constraint areas including approach section near sub-station, 400 kV multi circuit tower may be used instead of 400 kV D/C towers and 765 kV D/C tower may be used instead of 765 kV S/C towers.
- 13.0 LILO of 220 kV Raigarh (CSPTCL)-Budhipadar line at 400/220 kV Raigarh PGCIL substation- Proposal by CSPTCL.**
- 13.1 Director (SP&PA), CEA stated that the CSPTCL proposal of LILO of 220 kV Raigarh (CSPTCL) - Budhipadar line at 400/220 Raigarh POWERGRID substation was agreed by WR constituents in the 32nd SCM and the availability of 2 no. 220 kV bays at Raigarh (PG) was also confirmed by POWERGRID. Raigarh (CSPTCL) - Budhipadar 220 kV line being an inter-regional line, therefore, it was also agreed to put up the agenda in the SCM of ER for discussion with the Eastern Region constituents. Subsequently, the proposal was taken up in the SCM of ER held on 08.02.2012. The proposal was agreed by the ERPC in its 21st TCC/ERPC meeting held on 20/21st April 2012.
- 13.2 Members took note of the above proposal. CSPTCL informed that the above proposal would be implemented by March 2013.

14.0 Provision of 63 MVAR line reactor for one circuit of Raipur – Bhadrawati 400 kV line at Raipur end.

14.1 Director (SP&PA), CEA stated that Splitting of bus along with reconfiguration/shifting of terminating lines at Raipur 400kV substation has been agreed in the 28th meeting of Standing Committee in Western Region held on 06.12.2008 at Aurangabad. As per the agreed scheme, the following reconfiguration/shifting of lines has to be carried out:

- (i) Bypassing of Korba-Bhatapara-Raipur-Bhilai 400 kV line at Raipur. Thus resulting in Korba-Bhatapara-Bhilai 400 kV line and releasing of two line bays in Raipur section A.
- (ii) Shifting of Bhadrawati circuit II & III from Raipur section B to Raipur section A in the two line bays made available by the above bypassing.

The reactive compensation existing at Raipur end for Raipur–Bhadrawati 400kV D/c line and Bhatapara – Raipur 400kV S/c line are:

- (i) 1x63MVAR line reactor at Raipur end for each circuit of Raipur – Bhadrawati 400kV D/c line.
- (ii) 1x50MVAR line reactor at Raipur end for Bhatapara – Raipur 400kV S/c line.

14.2 He further stated that POWERGRID has proposed shifting of Bhadrawati circuit –II and III from Raipur section B to section A without shifting of associated line reactors, in view of the complicacy involved in swapping of the transmission lines including shifting of line reactors. With this only 1x50MVAR line reactor (of earlier Bhatapara – Raipur 400kV S/c line) shall be available for one circuit and there shall be no line reactor for other circuit. Since, Raipur–Bhadrawati line is 345 km long, POWERGRID has proposed a new 1x63MVAR line reactor at Raipur end for the other circuit.

14.3 After deliberations, members agreed to the provision of a new 63 MVAR line reactor for one of circuit of Raipur –Bhadrawati 400 kV D/C line at Raipur end.

15.0 Establishment of Varanasi- Balia 765 kV S/C line instead LILO of 765kV Gaya – Balia 765 kV S/C line at Varanasi 765/400 kV substation.

15.1 Director (SP&PA), CEA stated the in the Tilaiya UMPP located in Jharkhand, Eastern Region, Northern Region and Western Region had share of 1500 MW, 1700 MW and 800 MW respectively. The generation specific transmission system associated with Tilaiya UMPP was agreed in the 28th SCM of WR. The subsequent revisions in the generation specific transmission system were brought to the notice of WR constituents in the 30th & 31st SCM. The revised system is given below:

- (i) Tilaiya - Gaya 765 kV S/c line.
- (ii) Tilaiya - Balia 765 kV D/c line.
- (iii) LILO of one circuit of 765kV Tilaiya - Balia D/c line at Gaya.

Further, LILO of 765kV Gaya – Balia 765 kV S/C line at Varanasi 765/400 kV substation has been agreed as a part of System Strengthening in NR associated with IPP projects in Jharkhand & West Bengal.

- 15.2 He further stated that POWERGRID has informed that they have selected the site for establishment of Varanasi substation. The estimated LILO distance of Gaya – Balia 765 kV S/c line at Varanasi comes to about 110 km and for implementing this LILO, 110 km of 765 kV D/c line would have to be constructed. Apart from this LILO, Gaya-Varanasi 765 kV S/C line has also been agreed as a part of System Strengthening in NR associated with IPP projects in Jharkhand & West Bengal. As a result, there would be two 765 kV S/C lines between Gaya and Varanasi (one direct link and other as a part of LILO) and long LILO distance would result into unbalanced loading on Gaya – Varanasi 765 kV lines.
- 15.3 He added that in view of the above, POWERGRID has proposed to implement Varanasi – Balia 765 kV S/c line instead of LILO of 765kV Gaya – Balia 765 kV line at Varanasi 765/400 kV GIS. With this 765 kV S/C line between Varanasi and Balia, construction of 110 km of 765kV D/c line, for establishing the LILO would not be required and there would be overall reduction in the cost of the project. This proposal has been discussed and agreed in the Standing Committee Meeting of Eastern Region held on 08-02-2012 at NRPC New Delhi and in 21st TCC/ERPC meeting of Eastern Region held on 21-04-2012.
- 15.4 Members took note of the above.
- 16.0 Proposals put up for discussion by MSETCL during the meeting.**
- 16.1 Commissioning of 400/220kV ICT-III with bays at Wardha by POWERGRID.**
- 16.1.1 MSETCL intimated that 400/220kV ICT-III at Wardha has been commissioned along with bays by POWERGRID. In view of many generation projects coming up around Wardha area, they would not be able to draw additional power from Wardha at 220 kV level. Therefore the ICT-III along with associated bays at Wardha will remain unutilized and payment of transmission charges for the same will be undue burden on Maharashtra.
- 16.1.2 ED (Commercial), POWERGRID stated that ICT at Wardha is already commissioned hence monthly charges will be payable from 1st March, 2012.
- 16.1.3 The issue was further deliberated and it was decided that POWERGRID would shift the 400/220kV ICT-III at Wardha to Bhadrawati HVDC back-to-back station / some other location. It was also agreed by the members that the applicable transmission charges would continue to be paid to POWERGRID during the shifting period of the ICT and further, the additional expenditure to be incurred by POWERGRID towards dismantling, shifting of the said ICT may be capitalized as Additional Capitalisation under the said assets.
- 16.2 Deletion of associated 220 kV bays from the 1X315 MVA ICT at Bhadrawati for to HVDC station:**
- 16.2.1 MSETCL representative informed that provision of 1X315 MVA ICT along with associated 220 kV bays at Bhadrawati for reliable auxiliary power supply to HVDC station has been agreed. There are many generation projects coming up in vicinity of Bhadrawati, therefore utilization of 220 kV bays for drawl of power from Bhadrawati cannot be ensured. Therefore, it is suggested that POWERGRID may avail the auxiliary power supply at EHV level from MSETCL. And in case, POWERGRID was

going ahead with the implementation of 315 MVA ICT, provision of 220 kV bays should be deleted from the scope to avoid bay charges.

- 16.2.2 POWERGRID stated that the provision of 1X315 MVA ICT along with 220 kV bays at Bhadrawati for reliable auxiliary power supply to HVDC station has been discussed and agreed in the last SCM and also in WRPC meeting. In view of the high utilization factor of this inter-regional link, for reliable auxiliary supply to the HVDC back-to-back station at Bhadrawati, 1X315 MVA ICT was essential. This kind of arrangement also exists at other HVDC stations.
- 16.2.3 After deliberations, it was decided that the 220 kV bays associated with the 400/220kV ICT at Bhadrawati HVDC station would be taken up for implementation by POWERGRID as and when requested by MSETCL.

17.0 Open Access Meeting.

- 17.1 The minutes of the Connectivity, Open Access (Medium term and Long term) cases discussed in the 16th meeting of WR constituents regarding Connectivity / Long Term Access (LTA) applications in Western Region received from POWERGRID is enclosed as Annexure-OA.

The meeting ended with thanks to the chair.

List of Participants during the 34th Meeting of Standing Committee of Power System Planning in WR held on 09-05-2012 at NRPC, New Delhi.

S.No.	Name (S/Sh)	Designation	Contact No	Fax No/E-mail
CEA				
1.	Ravinder	Member (PS)	09971568444	ravinders.only@gmail.com
2.	Ravinder Gupta	Director (SP &PA)	011-26732369	ravindergpt@yahoo.com
3.	A. K. Yadav	Dy.Dir. (SP&PA)	011-26732308	awd@rediffmail.com
4.	Shivani Sharma	Dy.Dir. (SP&PA)	011-26732309	shivani0004@gmail.com
POWERGRID				
5.	Pankaj Kumar	ED	09873549049	pankaj@powergridindia.com
6.	R.K.Singh	ED,WRTS II	09687721111	rksingh@powergridindia.com
7.	Mahinder Singh	ED (comml)	09910379477	mahendersingh@powergridindia.com
8.	S. K. Gupta	GM ,WRTS II	09428504051	skgupta.59@gmail.com
9.	N.K. Jain	GM(comml)	09910378087	nkjain.cc@gmail.com
10.	Avinash M. Pavgi	AGM, Engg	09910378086	apavgi@powergridindia.com
11.	Anjali Banga	Ch.Mgr	09910378015	bangaanjali407@gmail.com
12.	Manju Gupta	DGM	09910378111	manju@powergridindia.com
13.	Prashant	Design Engr	09560050236	prashant.pandey@powergridindia.com
14.	Bhaskar Wagh	Design Engr	09560890352	bhaskarwagh@powergrid.in
15.	Parneet Kaur	Engineer		parneet.kaur@powergrid.in
WRPC				
16.	S.D.Taksande	Member Secretary	09820878384	sureshtaksande@rediffmail.com
17.	Satyanarayan S	SE	09223399938	satyaguru@yahoo.com
MPPTCL				
18.	R.Sethi	CE(Plg&PS)	09425805228	sethi.ravi@indiatimes.com
19.	M.M.Dhoke	EE(PS)	09425805237	mmdhoke@gmail.com
GETCO/GUVNL				
20.	S.K.Negi	MD,GETCO	09879200622	md.getco@gebmail.com
21.	U.C.Patel	ACE,GETCO	09909934998	stu.getco@gebmail.com
22.	Shashank Suman	ME,GETCO	09687663763	mtpasj.getco@gebmail.com
23.	P.J.Jani	EE,GUVNL	09879618754	
MSETCL				
24.	U.G.Zalte	Director(Operation)	09619079999	
25.	Kelkar S.G	Exe. Director	09167279940	
26.	N. R. Sonkavday	SE (STU)	09987783924	n.sonkavday@rediffmail.com
CSPTCL				
27.	R.K.Mehta	CE (C&P)	09425357004	rkshmehta2@gmail.com
28.	H.K.Pandey	SE(Planning)	09826460053	harish-pandey123@rediffmail.com
Daman				
29.	A.N.Damania	AE(Project)	09825782962	damaniaanil@rediffmail.com

NTPC Ltd.				
30.	P.K.Goyal	DGM	09650990220	pkgoyal01@ntpc.co.in
31.	S. S. Mishra	DGM	09650991145	ssmishra@ntpceoc.co.in
32.	Suchitra Maggon	DGM	09650990428	smaggon@ntpc.co.in
33.	Anil Kaushik	CDE	09650992088	anilkaushik@ntpceoc.co.in
34.	Shilpa Agarwal	DM	09650992680	sagarwal@ntpc.co.in
35.	Rajesh Jain	SM	09650994073	rajeshjain02@ntpc.co.in
POSOCO				
36.	P. Pentayya	GM(WRLDC)	09869072437	ppentayya@gmail.com
37.	S. R. Narasimhan	DGM(NLDC)	09971117022	srnarasimhan@gmail.com
38.	M. Pradeep Reddy	Engineer(NLDC)	08800977993	pradeep_906@yahoo.com

STATUS OF WESTERN REGION TRANSMISSION SCHEME

Sl. No.	Description of Scheme	Estimated Cost (Rs. Cr)	Date of firming up in WR standing committee	Date of FR	Date of investment approval	Target date as of now	Remarks
1	<p>Western Region System Strengthening Scheme-II</p> <p>Set-A: For absorbing import in eastern and central part of WR Grid (POWERGRID)</p> <p>a) Raipur – Wardha 400kV D/c</p> <p>b) Seoni – Wardha 765kV 2nd S/c (initially to be operated at 400kV)</p> <p>c) Wardha – Parli(PG) 400kV D/c (Quad)</p> <p>d) Bhadravati – Parli(PG) 400kV D/c</p> <p>e) Parli(MSEB) – Parli(PG) 400kV D/c</p> <p>Set-B: For regional strengthening in Southern Maharashtra (100 % private)</p> <p>a) Parli(PG) - Pune 400kV D/c</p> <p>b) Pune – Aurangabad 400kV D/c</p> <p>c) Parli(PG) – Solapur 400kV D/c.</p> <p>d) Solapur - Kolhapur 400kV D/c</p> <p>e) LILO of Lonikhand – Kalwa 400kV D/c line at Pune</p> <p>f) LILO of Sholapur – Karad 400kV S/c line at South Solapur</p> <p>Set-C: For regional strengthening in Gujarat (100 % private)</p> <p>a) Rajgarh – Karamsad 400kV D/c</p> <p>b) Limdi(Chorania) – Ranchodpura 400kV D/c</p> <p>c) Ranchodpura – Zerda(Kansari) 400kV D/c</p>	5222 (Powergrid portion)	20 th (23.01.04)	Sep'05 (Rev)	July'06		<p>Under implementation</p> <p>Dec'12</p> <p>commissioned</p> <p>commissioned</p> <p>commissioned</p> <p>commissioned</p> <p>Implementation by M/s Reliance</p> <p>Sep'12</p> <p>Nov'12</p> <p>commissioned</p> <p>May'12</p> <p>May'12</p> <p>one ckt commissioned</p> <p>commissioned</p> <p>Implementation by M/s Reliance</p> <p>Nov'12</p> <p>commissioned</p> <p>commissioned</p>

	<p>Set-D: For regional Strengthening in Northern Madhya Pradesh (POWERGRID)</p> <p>a) Korba STPP – Birsinghpur 400kV D/c</p> <p>b) Birsinghpur - Damoh 400kV D/c</p> <p>c) Damoh - Bhopal 400kV D/c</p> <p>d) Bina – Gwalior 765kV 2nd S/c (initially to be operated at 400kV).</p> <p>Sub-Stations (POWERGRID)</p> <p>a) Establishment of 400/220kV 2x315MVA substation at Pune and South Solapur</p> <p>b) Establishment of 400kV switching station at Parli(PG)</p> <p>c) 25% Fixed Series Compensation at Rajgarh & Wardha</p>						<p>commissioned</p> <p>commissioned</p> <p>commissioned</p> <p>commissioned</p> <p>commissioned</p> <p>commissioned</p> <p>commissioned at Rajgarh</p>
2	<p>Western Region System Strengthening -V</p> <p>a) 400 kV Vapi- Navi Mumbai D/c</p> <p>b) LILO of 400 kV Lonikhand/Pune - Kalwa line at Navi Mumbai</p> <p>c) Establishment of 400/220 kV, 2 x 315 MVA new S/s (GIS) at Navi Mumbai</p> <p>d) 220 kV Vapi- Khadoli D/c</p>	478	25 th (30.09.06)	Jan'07	Dec'07	<p>May'12</p> <p>May'12</p> <p>May'12</p>	<p>Under implementation</p> <p>Schedule uncertain as severe RoW problems</p> <p>commissioned</p>
3	<p>Western Region System Strengthening -VI</p> <p>a) Pirana – Dehgam 400 kV D/c.</p> <p>b) Establishment of 400/220 kV, 2 x 315 MVA S/s at Pirana</p> <p>c) Installation of additional 400/220 kV, 1x315 MVA transformers along with associated 220 kV line bays at Wardha, Pune, Gwalior, Raipur and Bina(PG)</p>	311	25 th (30.09.06)	Jan'07	Feb'08	Nov'11	<p>commissioned</p> <p>commissioned</p> <p>commissioned</p>

4	<p>Tr. System of Sasan Ultra Mega Power Project (4000 MW)</p> <p>Transmission Lines</p> <p>a) Sasan – Satna 765 kV 2xS/c</p> <p>b) Satna - Bina(PG) 765 kV 2xS/c</p> <p>c) Bina(PG)-Indore(PG) 765 kV S/c</p> <p>d) LILO of Vindhychal-Jabalpur 400 kV D/c at Sasan</p> <p>e) Indore (MP)– Indore(PG) 400kV D/c (Quad)</p> <p>f) Bina(PG)-Bina(MP) 400 kV D/c</p> <p>Substations</p> <p>a) Establishment of new 765/400 kV, 2x1500MVA substation at Gwalior and 765/400 kV, 2x1000 MVA at Bina(PG) for charging of Bina-Gwalior and Agra-Gwalior 2xS/c lines at 765 kV level</p> <p>b) Provision of 765 kV Bays for charging of Seoni- Bina S/c line at 765 kV level</p> <p>c) Establishment of new 765/400 kV, 2x1000 MVA substation at Satna</p> <p>d) Establishment of new 765/400 kV, 2x1500 MVA substation at Indore(PG)</p>	7032	26th (23.02.07)	Jun'07	Dec'08	<p>one ckt. - June'12</p> <p>2nd ckt. - Dec'12</p> <p>Dec'12</p> <p>Dec'12</p> <p>Dec'12</p> <p>Dec'12</p> <p>Dec'12</p> <p>Dec'12</p> <p>Dec'12</p> <p>Dec'12</p> <p>Jun'13</p> <p>Dec'12</p>	<p>Under implementation</p> <p>one ckt commissioned</p> <p>commissioned</p> <p>Test charged Mar'12</p> <p>Part Commissioned</p>
5	<p>Tr. System of Mundra Ultra Mega Power Project (4000 MW)</p> <p>Transmission Lines</p> <p>a) Mundra – Bachchau-Ranchodpura 400 kV (Triple) D/c</p> <p>b) Mundra – Jetpur 400 kV (Triple) D/c</p> <p>c) Mundra – Limbdi 400 kV (Triple) D/c</p> <p>d) Gandhar-Navsari 400 kV D/c</p> <p>e) Navsari- Boisar 400 kV D/c</p>	4825	26th (23.02.07)	Jun'07	Oct'08	<p>Sep'12</p> <p>May'12</p> <p>Mar'13</p>	<p>Under implementation</p> <p>commissioned</p> <p>commissioned</p>

	f) LILO of both circuits of Kawas-Navsari 220 kV D/c at Navsari (PG)					Jun'12	
	g) Wardha-Aurangabad 400 kV(Quad) D/c (with provision to upgrade at 1200 kV at later date)					July'13	
	h) 400kV Aurangabad (PG) - Aurangabad(MSETCL) line and shifting of 400kV ankola-Aurangabad (MSETCL) to Aurangabad (PG)					Sep'13	
	Substations						
	a) 40% Fixed Series Compensation each on Wardha - Aurangabad 400 kV D/c at Wardha end					Oct'12	
	b) Establishment of new 400/220 kV, 2x315 MVA substation at Navsari & Bachchau					Navsari - Jun'12	Bachchau commissioned
	c) Establishment of new 765/400 kV, 3x1500 MVA, substation at Wardha for charging of Seoni - Wardha 2xS/c lines at 765 kV level...						commissioned
6	Western Region strengthening scheme-X	446	27 th (30.07.07)	Sep'07	Feb'09	Feb'12	commissioned
	a) Establishment of 400/765kV 2x1500MVA WR Pooling Station near Sipat..						commissioned
	b) LILO of Sipat-Seoni 765kV S/c at WR Pooling Station...						commissioned
7	Western Region strengthening scheme-XI	425.28	27 th (30.07.07)	Nov'08	Feb'09		Under implementation
	a) LILO of Sipat-Seoni 765kV 2 nd S/c at WR Pooling Station.						.commissioned
	b) Installation of 765/400kV, 1x1500MVA 3rd transformer at WR Pooling Station					June'12	
8	Tr. System associated with DVC, Maithon in ER (Part system)	7076	27 th (30.07.07)	Sept'07	Aug'08	Mar'13	Under implementation
	a) Ranchi-WR Pooling Station 765kV S/c						
9	Transmission system associated with Krishnapatnam (5x800 MW) (WR Portion)	1923	27 th (30.07.07)	Jan'08		Oct'14	Under implementation
	a) Raichur – Sholapur 765 kV S/c						
	b) Sholapur – Pune 765 kV S/c						

	c) LILO of 400kV Aurangabad-Pune D/c & Parli- Pune D/c lines at Pune(GIS) d) Establishment of new 765/400 kV substations at Sholapur & Pune with 2x1500 MVA transformation capacity						
10	Split Bus arrangement and reconfiguration/shifting of terminating lines at Raipur 400kV S/s a) Splitting 400kV Raipur bus into two sections between existing line bays of Chandrapur-1 & Chandrapur-2 through bus sectionaliser. b) Bypass 400kV Bhatapara-Raipur-Bhilai line at Raipur and restore the line as 400kV Bhatapara-Bhilai S/c c) Shifting of Chandrapur-2 and Chandrapur-3 line bays from Section Raipur-B* to Raipur-A*.	16	28 th (06.12.08)	Apr'09	Aug'10	June'12	Under implementation commissioned
11	Installation of 125 MVAr Bus reactor at 400kV Rajgarh S/s	10	Special SCM (18.04.09)	Jun'09	July'10	June'12	Under implementation
12	Associated transmission system of VSTPP-IV and Rihand-III a) Rihand-III- Vindhyachal Pool 765 kV D/c (initially to be op. at 400kV) b) Vindhyachal-IV Vindhyachal Pool 400kV D/c(Quad) c) Vindhyachal Pool-Satna 765 kV 2xS/c d) Satna -Gwalior 765 kV 2xS/c e) Gwalior – Jaipur(South) 765 kV S/c f) Vindhyachal Pool-Sasan 765 kV S/c g) Vindhyachal Pool-Sasan 400 kV D/c h) Establishment of 765/400kV, 2x1500 MVA substation at Vindhyachal Pool	4673	29th (10.09.09)	Sep'09	Mar'10	March'13 Nov'12 Nov'12 Nov'12 Mar'13 Nov'12 Nov'12 March'13	Under implementation Land acquisition problem

13	Associated transmission system of Mauda Transmission System a) Mauda – Wardha 400kV D/c (Quad) -125 km	470	29th (10.09.09)	Oct'09	Feb'10		Under implementation 2nd ckt - May'12 one ckt commissioned
14	Establishment of 400/220kV substation in UT DNH a) LILO of Vapi- Navi Mumbai 400kV D/c at Kala S/s in UT DNH b) Establishment of 400/220kV, 2x315 MVA substation at Kala in UT DNH	182	28 th (06.12.08)	Jan'10	Jul'11		Under implementation Jul'13 Jul'13
15	Installation of 400/220kV, 1x315MVA transformer (3rd) at Vapi(PG)	21	30 th (08.07.10)	Nov'10	Sep'11	Feb'13	Under implementation
16	Spare transformers/reactors in WR a) 4 nos. 315 MVA ICTs, 1x125+1x80 MVAR shunt reactors	64	15 th WRPC (12.11.10)	Sep'10	Aug'11		Under implementation Dec'12
17	Establishment of 400/220kV substation in UT Daman a) LILO of Navsari- Boisar 400kV D/c at Magarwada in UT Daman-30 km b) Establishment of 400/220kV, 2x315 MVA substation at Magarwada	260	30 th (08.07.10)	Mar'10	Jan'12		Under implementation Jan'14 Jan'14
18	Western Region System Strengthening Scheme-XIII a) Bachau(PG) – Versana(GETCO) 400kV D/c - 10 km	50	30 th (08.07.10)	Jan'11	Dec'11		Under implementation Sep'13
19	Solapur STPP(2x660MW) transmission system a) Solapur STPP – Solapur (PG) 400kV D/c b) Solapur STPP – Pune(PG) [Pune S/s under Krishnapatnam UMPP] 400kV D/c (Quad) c) Augmentation of 400/220kV ICT by 1x315MVA transformer (3 rd) at Solapur (PG)	630	30th (08.07.10)	Jul'11	Investment approval awaited	matching with generation project	Gen. developer to inform comm. Schedule

20	Augmentation of transformer and bays in Western Region a) Installation of 400/220kV, 1x315MVA transformer (3rd) at Mapusa(PG) along with 2 nos. 220kV line bays at Mapusa (PG) sub station b) Installation of 400/220kV, 1x500MVA transformer (3rd) at Navsari c) Two nos. 400kV line bays at 765/400kV Indore(PG) Substation d) Two nos. 220kV line bays at 400/220kV Pirana(PG) Substation.	65	30th/32nd (WR SCM)	Aug'11		Dec'13 Dec'13	Part under implementation
21	Transmission system for evacuation of Kakrapar Atomic Power Project unit 3 &4 (2x700 MW) a) Kakrapar NPP – Navsari 400kV D/c – 65 km b) Kakrapar NPP – Vapi 400kV D/c - 120 km	250	31 st (27.12.10)			matching with geeneration project	DPR under preparation
22	Transmission System associated with Mauda Stage-II (2x660 MW) a) Mauda II – Betul 400KV D/c (Quad)-210 km b) Betul– Khandwa 400KV D/c (Quad)-180 km c) Khandwa – Rajgarh 400kV D/c (2nd)-215 km d) Establishment of 400/220kV 2x315MVA substation at Betul	1100	32 nd (13.05.11)		Investment approval awaited	matching with geeneration project	Gen. developer to inform comm. Schedule
22	Provision of 1x315MVA ICT for reliable auxilliary power supply at HVDV back to back station at Bhadravati	200	33 rd (21.10.11)				DPR under approval

**Report of Study Committee of WRPC on additional Reactive Compensation in
Western Region for 2013-14**

Annexure-III

1. **Introduction:** In the 33rd SCM held on October 23rd 2011 at New Delhi, ten reactors, two variable reactors and one SVC were proposed. The SCM approved ten fixed switchable reactors and it was decided that WR Study group shall study requirement of additional reactive compensation including sizing of dynamic compensation for 2013-14 conditions. The list of reactors recommended in the above SCM are as follows:

S.NO.	Location of the Bus Reactor	UTILITY	Rating
1	Jabalpur	PGCIL	125 MVAR
2	Khandwa	PGCIL	125 MVAR
3	Shujalpur	PGCIL	125 MVAR
4	Bhatapara	PGCIL	125 MVAR
5	Raigarh	PGCIL	125 MVAR
6	Aurangabad	PGCIL	125 MVAR
7	Ranchodpura	GETCO	125 MVAR
8	Varsana	GETCO	125 MVAR
9	Rajkot	GETCO	125 MVAR
10	Amreli	GETCO	125 MVAR

2. Subsequently PGCIL handed over following cases to WRPC for the WR Study Group:
- (i) Off-Peak Case for 2013-14 Conditions with and without Reactors
 - (ii) Results in text bus wise for above with reactor case.
3. The above Base Cases were PTI Format Data File (Text ASCII Files). Since WRPC uses SIMPOW as its power flow package, efforts were made to programmatically convert the data from PTI format to SIMPOW format using VB.net to minimize errors during copying. However the cases would not converge in SIMPOW.
4. Subsequently programs were written in MATLAB and load flow carried out in MATLAB. Reasons for non convergence were mainly due to interpreting PTI data. Once these were sorted out, the load flow converged in MATLAB with results as per PTI.
5. The results of MATLAB Load Flow were checked by comparing to PTI in PGCIL, Gurgaon on 27.03.2012, before proceeding with assessment of additional reactive compensation requirement. The results of Load Flow were tallying in both the software. At this time the peak case with and without reactors for 2013-14 were taken from PGCIL representatives. Also results of transient stability using an SVC at Indore were given to CEA and WRPC Study Group for perusal by PGCIL (transient stability data not given).
6. The WR Study Group met on 16.04.2012 at WRPC Mumbai and finalized the report for recommending reactors to forthcoming SCM.
7. **Load Flow Results Analysis:** The demand scenario considered in the base cases with and without reactor by PGCIL is as follows.

Report of Study Committee of WRPC on additional Reactive Compensation in Western Region for 2013-14

Case	WR Load	WR Generation	All India Load	All India Gen
Off-Peak	34569 +j 8227	35404-j 9529	107542+j 29759	110741-j12864
Peak	50000+j11906	51436+j 11977	122975+j 33439	127370+j8874

8. The variation in load from Peak Case to Off peak case is about 87% reduction for All India and about 68% for WR. This corresponds to a typical reduction in load on seasonal basis for WR grid.
9. The power factor considered was WR 96% and overall 97%. This represents a fairly low reactive demand from loads, during off peak conditions, and appears to be in order. Some of transformer taps are not at unity. Generally, during planning, unity taps on ICTs are preferred, leaving tap changing as an operational margin.

Need for Additional Reactive Compensation Requirement:

10. In the above off peak case with ten reactors proposed and approved in the 33rd SCM, all busses were within stipulated voltage limits as per TPC(for 400 kV (+/- 5%) and 220 and 132 kV (+/- 10%) levels.)
11. Further as the system demand is decreased to 68%, **no line is required to be opened.**
12. Synchronous generators were **absorbing MVAR in large amount.**
13. In practice, synchronous generators rarely absorb MVAR. Hence the field voltages are very high.
14. **If generators absorb MVAR, then the case requires no additional compensation. In fact there is no need to even open lines from peak to off peak cases studied by CTU.**
15. The system planning load flow case assumed generators to absorb MVAR, and Generators rarely operate in leading mode absorbing MVAR. To fulfill the assumptions made in planning, therefore there is a need to absorb the MVAR locally at the generator bus itself so that active power is dispatched at near to rated voltage. If generators are reluctant to absorb the MVAR by their machines, then policy of installing of switchable shunt reactors at generating stations is an alternate solution and is the best place to locate reactors. This is in line with TPC. (At present it is understood that for new generators about 10-12% MVAR is planned. This may be raised to 25 %). This policy may be discussed in the forthcoming SCM meeting.
16. Keeping the above facts in view, WR Study Committee performed the following activities on the base off peak case submitted by PGCIL.
17. In order to answer the query where to put additional reactive compensation, Merit-Order of Sensitive busses was found out using Q-V Analysis. Nodes that are

Report of Study Committee of WRPC on additional Reactive Compensation in Western Region for 2013-14

sensitive require a smaller reactor MVAR to produce large changes in voltage. This gives the quick idea as to which busses are most effective/sensitive.

18. In a linearized case the kV difference that one is likely to get when one installs a 100 MVAR reactor is shown adjacent column as voltage relief. Sensitivity or effectiveness wise Merit-Order is given at Enclosure-1.
19. **Steady State Q-V Analysis (Theory):** The load flow equation for off-peak conditions was obtained. For the same in equation form it can be written as

$$\Delta P = [J1 \dots J2][\Delta \delta]$$

$$\Delta Q = [J3 \dots J4][\Delta V] \dots \dots \dots \text{(Eqn 1a \& 1b)}$$
20. When inverted we get relation that $\Delta V = G\Delta Q$ where $\Delta P = 0$ which is true for small changes in the operating point. The sensitivity is shown by G matrix. This indicates the change in voltage per Q installed at the bus.
21. **Choosing Locations:** The reactors were chosen using two factors in mind. (a) The sensitivity (b) Using some judgment keeping voltage at that bus, elsewhere compensation etc. The Study Group members discussed the locations of the reactors and recommended them keeping above factors in view. The list of reactors is given below.
22. **Variable reactors:** Location at Pirana was proposed for variable reactor. The sensitivity at this bus is very low. Hence a fixed reactive compensation was recommended.
23. **SVC:** A SVC was recommended at Indore on the basis of transient stability case run by CTU. As seen from voltage sensitivity values of WR Study Group, Indore has low sensitivity. Under the peak and off-peak conditions for 2013-14, the voltages are on the higher side. Before undertaking transient stability studies, the voltage stability/instability from steady state conditions has to be examined. Since the above case does not indicate voltage stability concerns in the steady state, hence requirement for SVC at Indore for 2013-14 conditions could not be recommended by Study Group. The matter may be further deliberated in the SCM.
24. Based on the above load flow sensitivity approach reactors are recommended at following 400 kV busses.

S.NO.	Location of the Bus Reactor	UTILITY	Rating
1	Nanded	MSETCL	125 MVAR
2	Sholapur	MSETCL	125 MVAR
3	Kolhapur	MSETCL	125 MVAR
4	Jetpur	GETCO	125 MVAR
5	Damoh	PGCIL	125 MVAR
6	Zerda	GETCO	125 MVAR
7	Nagda	MPPTCL	125 MVAR
8	Bhopal	MPPTCL	125 MVAR
9	Bachau	PGCIL	125 MVAR
10	Pirana	PGCIL	125 MVAR
11	Itarsi	PGCIL	125 MVAR

**Report of Study Committee of WRPC on additional Reactive Compensation in
Western Region for 2013-14**

12	Seoni	PGCIL	125 MVAR
13	Limdi	GETCO	125 MVAR
14	Aurangabad	MPPTCL	125 MVAR
15	Parli	PGCIL	125 MVAR
16	Raipur	PGCIL	125 MVAR
17	Akola	MSETCL	125 MVAR

Note on Conversion of PTI Cases:

1. All the modeling/data in PTI were reproduced in MATLAB, with the single exception of HVDCs. HVDC were modeled as load injections (of values from the result of the Base Case of PTI). This was done to save time. This also does not affect the results of the present objective of reactive compensation and as such can be accepted.
2. It is understood with discussion from PGCIL engineers that cards pertaining to Transformer Adjustment and Inter-Area exchanges though enabled in software data of PTI were overridden manually. Hence automatic tap-changing of transformers during load flow iterations and multi-swing area control dispatch facilities were not used.
3. The results of the with and without reactors cases in MATLAB and PTI match in acceptable ranges considering the small changes in HVDC load modeling.
4. Q limits of generators in load flow were checked manually.
5. Sensitivity Matrix was computed in MATLAB.

**Report of Study Committee of WRPC on additional Reactive Compensation in
Western Region for 2013-14**

Enclosure-1

Rank	BusNo	Name	VoltBefore	Sensitivity	del-V	ShuntPresent
1	820	MAPUSA4	1.056291	0.022397	8.958717	-1.13
2	834	NANDED4	1.073614	0.013406	5.362338	0
3	822	SOLPR4	1.039047	0.012608	5.043127	0
4	919	AMRL4	1.083117	0.012077	4.830612	-0.45
5	902	SAMI	1.056546	0.011005	4.402192	-0.45
6	740	BHATP4	1.048915	0.009865	3.946134	0
7	737	SUJLPR	1.071601	0.009082	3.632733	-0.57
8	1152	SOLPRPG	1.044305	0.008788	3.515318	-0.57
9	821	KOLHPR	1.036678	0.008321	3.328217	-0.72
10	909	JETPR4	1.086598	0.008183	3.273356	-0.45
11	915	ESSR-PG	1.032349	0.007896	3.158305	0
12	1142	DAMH4	1.048614	0.007635	3.054124	-0.57
13	1141	JBLPR4	1.06154	0.007552	3.02093	-0.57
14	735	BHOPL	1.069559	0.007141	2.856438	0
15	827	NAGOTHN4	1.011771	0.007137	2.854993	-0.72
16	920	ZRDA4	1.039238	0.006825	2.730059	-0.45
17	916	RJKT4	1.076692	0.006747	2.698632	-0.45
18	741	KHANDW4	1.057781	0.006107	2.442635	-1.13
19	911	NAVSAR4	1.026236	0.005971	2.388555	-0.57
20	738	GWALOR4	1.020233	0.005827	2.33094	-2.71
21	736	NAGDA4	1.071307	0.00562	2.247939	-0.9
22	908	NRDPR4	1.040565	0.005283	2.113353	-0.72
23	831	PUNEPG	1.024036	0.005249	2.099416	0
24	913	KALA	1.021159	0.005065	2.025935	-0.72
25	1164	RAIGARH	1.065065	0.004955	1.981993	-0.57
26	734	BHPL40	1.06905	0.004898	1.959098	0
27	904	MGRWD4	1.020142	0.004845	1.938025	-0.72
28	745	JBLPOOL	1.015974	0.004837	1.934905	-2.26
29	829	DHULEPG4	1.051071	0.004803	1.921281	-0.72
30	903	VARSN	1.063339	0.00469	1.875871	-0.45
31	910	KRMSAD	1.050298	0.004687	1.874908	-1.57
32	828	DHULE	1.052979	0.004533	1.81307	-0.9
33	826	BLSWR4	1.045233	0.004355	1.741876	0
34	824	LONIKHD4	1.020585	0.004247	1.698922	0
35	739	INDOR-PG	1.047525	0.004229	1.691642	-1.13
36	912	VAP4	1.021368	0.004229	1.69159	0
37	917	BACHCAU	1.070846	0.004101	1.64051	-0.57
38	727	RAJGARH4	1.051721	0.00401	1.604034	-1.7
39	901	PIRANA4	1.057667	0.003976	1.59032	0
40	732	ITARS4	1.067258	0.003971	1.588527	-0.45

**Report of Study Committee of WRPC on additional Reactive Compensation in
Western Region for 2013-14**

41	1154	PUNED4	1.023513	0.003936	1.574264	-0.45
42	730	SEONI4	1.041401	0.003852	1.540685	0
43	914	LIMDI4	1.076696	0.003843	1.537094	-0.45
44	833	AURNGBD4	1.052889	0.003714	1.485749	0
45	818	PARLI-NE	1.050227	0.003658	1.463141	-0.57
46	918	RNCHP4	1.066347	0.003639	1.455733	-0.45
47	823	KARAD4	1.025366	0.003582	1.432608	-0.72
48	731	RAIPR5	1.049937	0.003567	1.426637	0
49	817	PARLI4	1.04968	0.003458	1.383034	0
50	905	GANGEB4	1.037194	0.003426	1.370335	0
51	907	BARODA4	1.052509	0.003385	1.354154	0
52	832	KHARGHR4	1.011593	0.003269	1.307444	0
53	835	NAVIMUM	1.014041	0.003219	1.287405	-0.57
54	728	BHLAI4	1.050287	0.003192	1.276897	0
55	1155	AURBDPG	1.055855	0.003118	1.247272	0
56	726	SATNA4	1.042547	0.003112	1.244876	-0.45
57	742	SIPAT	1.037894	0.003063	1.22517	0
58	819	AKOLA	1.061145	0.002879	1.151482	0
59	733	INDORE4	1.057041	0.002851	1.140544	-1.13
60	1163	GNTPC4	1.037679	0.002753	1.101247	0
61	825	KLWA4	1.01164	0.002538	1.01506	0
62	1162	DEHGAM	1.058643	0.00233	0.931915	-1.7
63	743	WR-POOL	1.0158	0.002297	0.918955	0
64	906	ASOJ4	1.054222	0.002212	0.884811	-0.45
65	836	PADGHE	1.016856	0.002098	0.83929	7
66	724	SASAN4	1.016533	0.002057	0.822715	0
67	1151	WARDHA4	1.050724	0.001802	0.720767	-0.45
68	816	WAROR4	1.053139	0.001801	0.720322	0
69	837	BOISAR	1.021607	0.001772	0.708632	0
70	1166	CHAMPA-I	1.006646	0.001763	0.705249	-0.72
71	922	CHAMP-2	1.004052	0.001597	0.638759	0
72	815	KORD-III	1.068166	0.001571	0.628291	0
73	729	RAIPUR	1.063939	0.001435	0.574151	-0.72
74	744	DHRMJY4	1.001183	0.001231	0.492339	0
75	830	BHUSAWL4	1.050646	0.001225	0.489997	0
76	1165	RAIGAR-1	1.000274	0.001139	0.455546	-0.72
77	1153	BHADVT	1.047547	0.000931	0.372288	0
78	725	BINA(MP)	1.047936	0.000288	0.11518	-0.9
79	1140	BINA(PG)	1.047897	0.000281	0.112529	-0.57

Report of Study Committee of WRPC on additional Reactive Compensation in Western Region for 2013-14

220 kV Nodes						
Rank	BusNo	Name	VoltBefore	Sensitivity	del-V	ShuntPresent
1	879	BHATIA	1.11171	0.129035	28.387715	0
2	864	RNVV22	1.09104	0.065875	14.492485	0
3	1150	AMNGR2	0.954719	0.051957	11.430489	0
4	1138	RTLM2	1.01052	0.049861	10.969361	0
5	869	ANJAR2	0.960778	0.044739	9.842587	0
6	772	PUSAD2	1.06483	0.032678	7.189087	0
7	798	PARAS	1.0573	0.032664	7.186043	0
8	865	KESHD2	1.118098	0.030262	6.657687	1
9	866	KODNR2	1.114963	0.029468	6.483026	0.6
10	777	PONDA	1.089185	0.028745	6.323797	3.1
11	886	DHOKDR	1.105867	0.027882	6.133961	0
12	897	PLTN2	1.075043	0.027713	6.096828	0
13	1149	NAGOTHN2	1.004625	0.027164	5.976082	0
14	814	BHANDRA2	1.038495	0.024731	5.440753	0
15	1159	PIPAV2	1.107385	0.022776	5.010815	0
16	721	MALNPR2	0.998638	0.022378	4.923202	0
17	778	SLPR22	1.019786	0.021075	4.636451	0
18	775	SATAR2	1.02034	0.02086	4.589275	0
19	715	BRWH22	1.027309	0.020786	4.572864	0
20	773	NANDD2	1.095566	0.0206	4.532079	2.5
21	895	VRTJ	1.063419	0.020384	4.484588	0
22	793	CHLSNG	1.032891	0.02017	4.437439	0
23	808	TALOJA	0.995408	0.020114	4.424988	0
24	707	SEONI2	1.031279	0.019851	4.367279	0
25	706	PITHAMPR	0.998532	0.019765	4.348304	0
26	722	BHTPR	1.036232	0.019611	4.314492	0
27	718	UJAN22	1.084543	0.018837	4.144132	1.8
28	776	BADNER	1.04918	0.018809	4.138011	0
29	769	AMRVTI	1.050686	0.01878	4.131658	0
30	876	VRMGAM	1.058144	0.0187	4.113949	0
31	810	KOLSAT	0.99394	0.018397	4.047325	0
32	714	NEPNR	1.045562	0.018223	4.009122	0
33	705	JULWAN12	1.014787	0.017967	3.95273	0
34	720	BHTPRA	1.037978	0.017851	3.927187	0
35	898	AMRL2	1.087819	0.017685	3.89068	0
36	863	BVNR22	1.06524	0.017345	3.815932	0
37	710	SUJPR2	1.072523	0.017277	3.801018	0
38	856	MORBI	1.070324	0.017166	3.776598	0
39	860	GNDL22	1.087455	0.017056	3.752338	1
40	792	DHULE2	1.061139	0.016373	3.602145	2

**Report of Study Committee of WRPC on additional Reactive Compensation in
Western Region for 2013-14**

41	899	ZRDA2	1.019204	0.016266	3.57846	0
42	774	AKOLA2	1.047689	0.016172	3.557804	0
43	717	DAMH22	1.032759	0.015739	3.46255	0
44	1137	RAJGARH2	1.013771	0.015494	3.408744	0
45	1161	GOGA	1.06408	0.015478	3.405143	0
46	807	LPRSRM	0.998927	0.015368	3.381028	0
47	800	AURBDPG	1.012932	0.015229	3.350321	-3
48	723	RAIGARH	1.042016	0.014957	3.290617	0
49	785	PHURSG	0.980772	0.014862	3.269653	0
50	890	PNNDRO	1.000205	0.014652	3.223332	0
51	711	JBLPR2	1.051352	0.014409	3.170001	0
52	784	PARVTI	0.979489	0.014356	3.158362	0
53	878	SVRKND	1.093399	0.01391	3.060097	0
54	1139	GWALOR2	1.009788	0.013833	3.043335	0
55	788	BHOSRI	0.987635	0.013417	2.951682	0
56	780	CNWD22	0.978045	0.01309	2.879863	0
57	799	BHIVPR	0.995886	0.012913	2.840818	0
58	813	GODBR	0.977021	0.012771	2.809645	0
59	855	PIRN220	1.05432	0.01276	2.807146	0
60	781	KNDLG2	0.981581	0.012664	2.786139	0
61	801	AURANG2	1.021217	0.012611	2.77432	0
62	893	RJKT	1.083384	0.012466	2.742572	0
63	858	VARSN	1.047273	0.012237	2.692109	0
64	719	NAGDA2	1.072397	0.012099	2.661859	0
65	1148	KOLHPR	1.03323	0.011888	2.615442	0
66	713	INDR22	1.094487	0.011807	2.597635	3.5
67	894	BSTN	1.000383	0.011621	2.556712	0
68	709	RAIPR2	1.033084	0.010774	2.370196	0
69	809	KHRBAO	0.995846	0.010601	2.332251	0
70	1160	JTPR22	1.105951	0.010544	2.319753	3
71	868	GODR22	1.033952	0.010497	2.309322	0
72	786	THEUR	0.993034	0.010179	2.23929	0
73	884	NANKHKR	1.005077	0.010121	2.226686	0
74	708	BHLI22	1.03677	0.010039	2.208487	0
75	885	NAKTRN	1.000159	0.010012	2.202569	0
76	892	BHLD	1.007153	0.01001	2.202242	0
77	703	KATNI2	1.022496	0.009922	2.182756	0
78	794	AMBER	0.987603	0.00974	2.142885	0
79	704	SATNA2PG	1.025406	0.009442	2.07726	0
80	1158	MHSN22	1.00466	0.009064	1.99417	0
81	896	RNCHP2	1.0575	0.00895	1.969021	1
82	1136	BINA22	1.059641	0.008872	1.951932	2
83	790	PUNE	1.010841	0.008776	1.930671	0

**Report of Study Committee of WRPC on additional Reactive Compensation in
Western Region for 2013-14**

84	811	PLGHR	1.003827	0.008584	1.888559	0
85	812	VRSOVE	0.979321	0.008233	1.811286	0
86	716	BHPL22	1.083171	0.008196	1.80316	4.5
87	881	MOBHA	1.029341	0.008155	1.794084	0
88	702	SATNA2	1.011791	0.00814	1.790738	0
89	779	KARD22	1.032065	0.007935	1.745608	2
90	712	ITARS2	1.051005	0.007882	1.733937	0
91	861	RJPD22	1.019798	0.007761	1.707346	0
92	891	CHTL	1.033306	0.007743	1.703509	0
93	888	CHIKLI	1.005684	0.007731	1.700772	0
94	791	BLSWR2	1.013472	0.007692	1.692314	0
95	787	LONIKN	1.003338	0.007598	1.671505	2
96	887	KPDVJ	1.043018	0.007409	1.629917	0
97	771	WAROR2	1.039201	0.007388	1.625333	0
98	804	BOISAR	1.005607	0.006561	1.44345	0
99	877	LIMDI	1.073105	0.006542	1.439215	1
100	770	WARDA2	1.060192	0.006225	1.369499	0
101	880	ZAGODIA	1.011486	0.006146	1.352169	0
102	883	SACHN	0.999137	0.0057	1.254067	0
103	872	JMBVA2	1.029988	0.005616	1.235583	0
104	805	MULUND	0.987481	0.005524	1.21521	0
105	870	KIM2	0.99958	0.005473	1.204149	0
106	874	NAVSRI	1.003054	0.005291	1.163956	0
107	900	DHSR2	1.032721	0.005282	1.161967	0
108	803	PADGHE	0.994536	0.005065	1.114301	0
109	806	NERUL	0.999867	0.005061	1.113409	0
110	873	KRMSD2	1.042456	0.004383	0.964215	0
111	889	BARDLI	1.008631	0.004199	0.923754	0
112	871	NRDPR2	1.025476	0.004136	0.909816	2
113	802	NAVIMUM	0.997726	0.003772	0.82991	0
114	867	ASOJ22	1.044561	0.003765	0.828225	0
115	768	AMZR22	1.059077	0.003724	0.819301	0
116	859	VALTAN	1.000004	0.003647	0.802357	0
117	796	DHARAV	0.995802	0.003329	0.732273	0
118	789	BORVL2	0.989316	0.003204	0.70487	0
119	857	RNSN22	1.048126	0.003023	0.664965	0
120	875	VAPI	1.011031	0.002915	0.641315	0
121	797	KHRGHR	1.001136	0.002854	0.627919	0
122	795	SALSET	0.992325	0.002814	0.619144	0
123	862	BRCH22	1.017238	0.002695	0.592925	0
124	782	APTA22	0.997147	0.002393	0.526547	0
125	783	KALWA2	0.994114	0.002393	0.526533	0
126	882	ICHAPOR	0.999709	0.0019	0.417898	0

पावर ग्रिड कारपोरेशन ऑफ इंडिया लिमिटेड
(भारत सरकार का उद्यम)
POWER GRID CORPORATION OF INDIA LIMITED
(A Government of India Enterprise)



केन्द्रीय कार्यालय : "सौदामिनी" प्लॉट सं. 2, सैक्टर-29, गुडगाँव-122 001, हरियाणा
फोन : 0124-2571700-719, फैक्स : 0124-2571760, 0124-2571761 तार 'नेटग्रिड'
Corporate Office : "Saudamini" Plot No. 2, Sector-29, Gurgaon-122 001. Haryana
Tel. : 0124-2571700-719, Fax: 0124-2571760, 0124-2571761 Gram : 'NATGRID'

संदर्भ संख्या / Ref. No.

C/SEFW/06/OA-16/MOM

23rd May, 2012

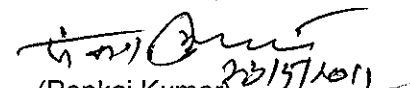
1.	Shri Ravinder Member (PS) Central Electricity Authority Sewa Bhawan, R.K.Puram New Delhi-110 066	2.	Chairmann & Managing Director MPPTCL, Block No. 3 Shakti Bhawan, Rampur, Jabalpur-482 008
3.	The Member Secretary Western Regional Power Committee MIDC area, Marol, Andheri (E) Mumbai 400 093	4.	Executive Engineer (Projects) Electricity Department UT of Dadra & Nagar Havelli, Post Naroli-396 235 Silvassa
5.	Shri K. K. Arya Chief Engineer(SP & PA) Central Electricity Authority Sewa Bhawan, R.K.Puram New Delhi-110 066	6.	The Chief Engineer Electricity Department The Government of Goa Panaji
7.	Managing Director Gujarat Energy Transmission Corp. Ltd, Sardar Patel Vidyut Bhawan, Race Course, Vadodra -390 007	8.	Shri R.K. Oke Chief Engineer(Transmission) Nuclear Power Corp. of India Ltd. 12 th Floor, North wing, VS Bhawan Anushaktinagar, Mumbai-400 094
9.	Executive Engineer UT of Daman & Diu Administration, OIDC Corporate Office, Plot No. 35 Somnath, Daman Pin 396210	10.	Director (Operation) MSETCL. 4 th Floor, "Prakashganga" Plot No. C-19, E-Block Bandra – Kurla Complex, Bandra(East), Mumbai- 400051
11.	Managing Director Chhattisgarh State Transmission Co. Ltd. Dangania Raipur- 492 013	12.	Executive Director (Engg.) NTPC Ltd, EOC, Plot no. A-8A, Sector-24, Post Box. 13, Noida 201 301 (U.P)
13.	CEO POSOCO B-9, Qutab Institutional Area Katwaria Sarai, New Delhi-110 016	14.	GM, WRLDC F-3, M.I.D.C. Area Marol, Andheri (E) Mumbai-400 093

Sub: Minutes of the 16th meeting of WR Constituents regarding Connectivity/Open Access Applications held at NRPC, New Delhi on 09th May, 2012

Sir,

The minutes of the 16th meeting of WR Constituents regarding Connectivity/Open Access Applications held at NRPC, New Delhi on 09th May, 2012 are available at POWERGRID website (www.powergridindia.com → Quick links → Long term open access).

Yours faithfully,


(Pankaj Kumar) 23/5/2012

Copy to: As per the enclosed list

Executive Director (SEF, CE, IT & ERP)

पंजीकृत कार्यालय : बी-9, कूतब इंस्टीट्यूशनल एरिया, कटवारिया सराय, नई दिल्ली-110016 दूरभाष : 011-26560121 फैक्स : 011-26560039 तार 'नेटग्रिड'
Registered Office : B-9, Qutab Institutional Area, Katwaria Sarai, New Delhi-110016 Tel. : 011-26560121 Fax : 011-26560039 Gram : 'NATGRID'

स्वहित एवं राष्ट्रहित में ऊर्जा बचाएं
Save Energy for Benefit of Self and Nation

1.	Sh. A. K Kinra Director Dwarkesh Energy Limited Gulab Bhawan, 3 rd floor, 6, Bahadur Shah Zafar Marg New Delhi -110002	2.	Sh. Atanu Ghosh Chowdhury Vice President (Power) Bharat Aluminium Company Ltd. BALCO Nagar, Korba, Chhattisgarh Pin: 495684
3.	Sh. Naushad Ahmed Director Reliable Thermal Power Limited C-101, Ground Floor East of Kailash New Delhi -110065	4.	Sh. Subrata De DGM (Engg) NTPC- SAIL Power Co. (P) Ltd. 4 th Floor, NBCC Tower 16, Bhikaji kama Place New Delhi 110066
5.	Sh. Charan Singh Chief Electrical Distribution Engineer South East Central Railway New GM Office 1 st Floor, Bilaspur, Chhattisgarh -495004	6.	Sh. T. P. Vijaysarathy Executive Director (Corporate) Torrent Power Ltd. Torrent House, Off Ashram Road, Ahmedabad - 380009
7.	Sh. E. Ravi Keshav Director & Chief Operating Officer M/s Lanco Vidarbha Thermal Power Pvt. Ltd. Plot No. 397, Phase-III, Udyog Vihar, Gurgaon-122016, Haryana	8.	Sh. K. K. Agarwal C.E.O. M/s Jinbhiuvish Power Generations Pvt. Ltd. 155, A-wing, Mittal Tower, Opp. to Vidhan Bhawan, Nariman point, Mumbai, 400021
9.	Sh. H. M. Jain Vice President ACB (India) Ltd. 7 th Floor, Corporate Tower, Ambience Mall, NH-8 Gurgaon, Haryana -122001	10.	Sh. Suren Jain Managing Director Jaiprakash Power Ventures Ltd. Sector 128, Noida - 201304
11.	Sh. Jitendra Mahapatra Head Electrical Jhabua Power Limited Avantha Power & Infrastructure Ltd. 6 th & 7 th Floor Vatika City Point M.G. Raod Gurgaon -122002	12.	Sh. S.K Sharma AGM NTPC Limited NTPC Bhawan, Core-7, Scope Complex 7, Institutional Area, Lodhi Road New Delhi -110003
13.	Sh. Pankaj Verma Senior Vice President Jaypee Siddhi Cement Plant Jaypeevihar, Vill- Majhgawan P.O- Bharatpur, Distt. –Sindhi (M.P)	14.	Mr. I. R. Venkatraman Asst. General Manager Ellora Paper Mills Ltd 6th Floor, Landmark Building, Ramdaspath, Wardha Road, Nagpur – 440004

15.	Col. A. K. Dubey Chief Administrator (CEO) Sona Power Pvt. Ltd. 35/75, Punjabi Colony, Near SBI Zonal Office, Katora Talab, Raipur, Chhattisgarh	16.	Mr. B.L. Agrawal Director Godawari Energy Ltd., First Floor, Hira Arcade, Near New Bus Stand, Pandri, Raipur
17.	Mr. R.K. Agarwal Executive Director Sarda Energy and Minerals Ltd., 1st Floor, Vaujiya Bhawan, Jail Road, Devendra Nagar square, Raipur-492001	18.	Mr. Satish Shrikhande General Manager, Regal Energy Ltd., 6th Floor, Land Mark Building, Ramdaspath, Wardha Road, Nagpur – 440010
19.	Mr. Ankush Goyal Executive, Ozone Steel and Power Limited, BF-2, First Floor, Rajiv Plaza, Opposite Axis bank, Bilaspur (C.G)	20.	Mr. Ashok Kumar Chadha Director, Jain Energy (Chhattisgarh) Pvt. Ltd., 5th Floor, Premlata, 39, Shakespeare Sarani, Kolkata – 70017
21.	Mr. N. H. Hussaini Vice President, Shri Lakshmi Power Ltd., B 2/3, 3rd Floor, C.G. Elite, Opposite Mandi Gate, Pandri, Raipur (Chhattisgarh)	22.	Mr. C. S. Mani Director (Technical) Petronet LNG Ltd. 1st Floor, World Trade Centre, Babar Road, Barakhambha Lane, New Delhi - 110001
23.	Mr. Neeraj Agarwal VP-Thermal Welspun Energy Annapur Pvt. Ltd. 3rd Floor, The Press Trust of India Building 4, Parliament Street New Delhi 110001	24.	Mr. R.K. Madan CEO Adani Power Dahej Limited Adani house, Plot no.83, Sector-32, Gurgaon-122001
25.	Mr. Pramod Gupta Sr. Vice President Bharuch Power Limited Dhirubhai Ambani Knowledge City I-Block, 2nd floor, North Wing, Thane Belapur Road, Koparkhairane, Navi Mumbai (Maharashtra) – 400710	26.	Mr. R. Mani Mathavan Vice President Astarc Power Pvt Ltd. Astarc house, 76/79, Makwana Lane, Takpada. Off. Andheri Kurla Road, Marol, Andheri (East), Mumbai-400059

**Minutes of 16th Meeting of Western Region constituents regarding
Connectivity/Open Access Applications held on 09th May, 2012 at NRPC,
New Delhi**

List of participants is enclosed at Annexure-1.

1. ED (SEF, CE, IT & ERP), POWERGRID welcomed the members and participants to the 16th meeting of WR constituents regarding Connectivity/Open Access applications. He informed that a number of applications have been received for Connectivity and Long-term access from various generation projects in Western Region as per CERC (Grant of Connectivity, Long-term Access and Medium-term Open access in inter-State transmission and related matters) regulations, 2009. The applicants have also submitted the status of projects and commissioning schedule.
2. POWERGRID presented the cases for 5 nos. of Connectivity applications, 2 nos. LTA and 2 nos. Connectivity & LTA applications for deliberations. In addition, other agenda items were also deliberated.

A summary on the deliberations on each application/ item is as under:

A. Confirmation of the minutes of 15th meeting of WR Constituents regarding Connectivity/Open Access applications in WR held on 21.10.11 at New Delhi

The minutes of the 15th meeting of WR Constituents were confirmed.

B. Applications for Grant of Connectivity

B1) Dwarkesh Energy Limited (2X660MW), Distt. Khandwa, M.P

POWERGRID informed that M/s Dwarkesh Energy Limited had applied for connectivity of its 1320MW gen. project in M.P as per the CERC regulations, 2009. Application details are as follows:

- Project Capacity - 1320MW (2x660 MW)
- Connectivity applied for/from – 1240.8MW/Oct'15
- Commissioning schedule – Jul'16, Mar'17
- Location: Distt: Khandwa, M.P.

Status of the generation project as informed by generation developer is as below:

Land	Required: 750Acres, Acquired- 250 Acres & In-Possession-37Acres (5%)
Environmental clearance	TOR received from MoEF. EIA completed and approved and Public Hearing to be held.
Fuel	Long term Coal Linkage Application submitted to MoC
Water	In- principle approval obtained from river Indra Sagar

POWERGRID stated that in view of the project capacity, unit size as well as the proximity of the generation project, following **“In-Principle connectivity”** of project had been proposed in the agenda:

- Dwarkesh Energy TPS – Indore 765kV D/c

After deliberations in the meeting, it was agreed that, in view of the very little progress made by the generation project so far, their connectivity application may be deferred till next meeting. However, it was informed to M/s Dwarkesh Energy Ltd. that provision of following may be kept in the switchyard of the generation project:

- Generation step up at :765kV
- 765kV line bays : 2 nos.
- 765kV bus reactor : 1x330 MVAR
- 765kV bus reactor bay: 1 no.

POWERGRID requested applicant to keep them informed about the status of the generating project so that application may be processed accordingly.

B2) Reliable Thermal Power Ltd. (2X660MW), Distt. Rewa, M.P

POWERGRID informed that M/s Reliable Thermal Power Limited had applied for connectivity of its 1320MW gen. project in M.P as per the CERC regulations, 2009. Application details are as follows:

- Project Capacity - 1320MW (2x660 MW)
- Connectivity applied for/from – 1235MW/Jun'16
- Commissioning schedule – Jun'16, Dec'16
- Location: Distt: Rewa, M.P

Status of the generation project as informed by generation developer is as below:

Land	Required: 750Acres, Acquired- 90 Acres (12%)
Environmental clearance	TOR issued by MoEF. EIA report is under preparation.
Fuel	Long term Coal Linkage Application submitted to MoC
Water	40MCM water from river Tamas has been allotted by WRD, GoMP

POWERGRID stated that in view of the project capacity, unit size as well as the proximity of the generation project, following “**In-Principle connectivity**” of project had been proposed in the agenda:

- Reliable TPS –Vindhyachal Pool 765kV D/c

After deliberations in the meeting, it was agreed that, in view of the very little progress made by the generation project so far, their connectivity application may be deferred till next meeting. However, it was informed to M/s Reliable Thermal Power Ltd. that provision of following may be kept in the switchyard of the generation project:

- Generation step up at :765kV
- 765kV line bays : 2 nos.
- 765kV bus reactor : 1x330 MVAR
- 765kV bus reactor bay: 1 no.

POWERGRID requested applicant to keep them informed about the status of the generating project so that application may be processed accordingly.

B3) NTPC-SAIL Power Co (P) Ltd. (2X250MW), Distt. Durg, Chhattisgarh

POWERGRID informed that M/s NTPC-SAIL Power Co (P) Limited had applied for connectivity of its 500 MW gen. project in Chhattisgarh as per the CERC regulations, 2009. Application details are as follows:

- Project Capacity - 500MW (2x250 MW)
- Connectivity applied for/from – 500MW/2014-15
- Commissioning schedule – 2014 onwards
- Location: Distt: Durg, Chhattisgarh

Status of the generation project as informed by generation developer is as below:

Land	Land for township and plant to be accommodated with the land acquired for stage-I of the project. 200 Acres of additional land required for ash dyke and ash pipeline corridor.
Environmental clearance	TOR for carrying out EIA study for the project has been given by MoEF
Fuel	Long term Coal Linkage Application submitted to MoC
Water	Mahanadi project, WRC Chhattisgarh had given consent for 0.6 TMC per annum of water for the proposed Stage-II (2X250 MW) project vide letter dated 28.07.2010. However, the same has been taken up with GoCH for restoration of the same.

POWERGRID stated that in view of the project capacity, unit size as well as the proximity of the generation project, following “**In-Principle connectivity**” of project had been proposed in the agenda:

- 400kV Bus extension at the existing NTPC-SAIL (NSPCL) 400/220kV switchyard (Under the scope of generation developer)

During the meeting, it was agreed that, in view of the very little progress with respect to fuel and environmental clearance made by the generation project so far, their connectivity application may be deferred till next meeting. POWERGRID requested applicant to keep the status of the generating project informed so that their application may be processed accordingly.

B4) South East Central Railways (100MW)

POWERGRID informed that South East Central Railway had applied as per the CERC regulations, 2009 for Connectivity of 100MW as bulk consumer in Chhattisgarh state to draw their share of power allocated by Railway Board from Nabinagar Thermal Power Plant for Railway Traction Purpose. Application details are as follows:

- Connectivity applied for/from – 100MW/ Apr'13
- Location: Bhilai, Chhattisgarh
- Generation Station Location : Nabinagar TPS, Bihar

Applicant informed that to draw this power, they will be establishing a 220/132 kV substation at Bhilai in Chhattisgarh which shall be connected to various traction substations. POWERGRID enquired about the load balancing arrangements employed by Railways. Applicant informed that standard procedure of load balancing was being adopted in this case also and shall be submitted to POWERGRID for information.

After deliberations, following **connectivity to SEC railways was agreed:**

- Bhilai (SEC Railways) – Raipur 220kV D/c line

Further, considering the desired date of connectivity (Apr'13), and long length of the line, **applicant agreed to develop the connectivity transmission system** including 2 nos. 220kV line bays at Raipur(PG).

B5) BALCO Ltd. (4X300 +2X67.5), Distt. Korba, Chhattisgarh

POWERGRID informed that as per CERC Regulations, 2004, LTOA has been granted for 584 MW (200 MW to M/s BALCO and 384 MW to CSPTCL) from the 4x300 MW TPS of M/s BALCO in Chhattisgarh with the following dedicated system –

- BALCO TPS –Dharamjaygarh S/s 400kV D/c line (being implemented by generation developer)
- Interim arrangement : LILO of Korba – Birsinghpur 400kV one ckt. at BALCO TPS (Implemented by generation developer)

Now, M/s BALCO have applied for additional connectivity of 135MW (total connectivity – 1200 + 135= 1335 MW) from its generation project in Distt. Korba, Chhattisgarh as per the CERC regulations, 2009. Application details are as follows:

- Project Capacity =1335MW (4X300 + 2X67.5)
- Connectivity applied for/from – 135MW (2X67.5)/ Feb'12
- Commissioning schedule (unit wise)- Existing
- Location: Distt: Korba, Chhattisgarh

M/s BALCO informed that they want additional connectivity of two units from its 4X67.5MW CPP to the CTU network. Till now, this CPP is connected to BALCO MRSDS switchyard which in turn is connected to CSEB Korba East through 220 kV D/c line. Excess Power of 265MW from this plant is sold through short term access.

Since, M/s BALCO has applied for connectivity of 2 units from its 4X67.5MW CPP to the CTU network, CSPTCL stated its concern over physical segregation of these units. CSPTCL stated that since the balance two units shall be

connected to their 220kV Korba (E) station, foolproof segregation is required at all levels – Bus bar, auxiliary power supply, generator transformer etc.

M/s BALCO stated that they have given an undertaking that these two units shall be segregated before connecting to the CTU, so that these two units are physically disconnected from STU grid and at no point of time there exist a parallel interconnection with STU and CTU system. To ensure this, they will remove circuit breakers and isolators between these units. M/s BALCO also confirmed that separate auxiliary supply system has been provided for these two units.

CSPTCL stated that they have put up the proposal for approval of their management which is expected shortly. M/s BALCO requested them to expedite the same so that these units may be connected by month end.

After the deliberations, it was **agreed to provide connectivity for their additional 2X67.5 MW generation project** through interconnection with the busbar of 4x300 MW TPS.

In view of the above, provision of following at generation switchyard, which shall be under the scope of M/s BALCO was agreed:

- Complete physical segregation of 2X67.5MW units (including busbar, auxiliary supply etc.) from the other two units connected to STU.
- 6 km 220kV line along with bays at both ends for interconnection of these units with 4X300MW TPS bus bar.

However, **the grant of above connectivity shall be subject to obtaining clearance from CSPTCL.**

C. Applications for Grant of Long Term Access (LTA)

C1) Jhabua Power Ltd. (2X600MW), Distt. Seoni, M.P

POWERGRID informed that M/s Jhabua Power Ltd. had applied for Long term Access (LTA) from its 1200MW generation project in Distt. Seoni, M.P. as per the CERC regulations, 2009. A brief of the application is as under:

Installed Capacity (MW)	2x600=1200 (Ph-I:600MW, Ph-II: 600MW) Village/Town-Barela, District-Seoni, M.P.
LTA required (MW)	210 MW
Date from which LTA is Required	Apr'14 (25 Years)

Comm. schedule (Unit Wise)	U-1: Feb'13 onwards
Target Beneficiaries/Regions	210 MW (M.P in WR -210 MW)

Status of the generation project as informed by generation developer is as below:

Land	Available 100% for phase-I, available 89.44% for phase-II
Environmental clearance	Available for Phase-I. For Phase-II TOR available and public hearing conducted
Fuel	Available for Phase-I. In process for Phase-II
Water	Available for both phases
EPC	Awarded

POWERGRID stated that M/s Jhabua Power Ltd. was granted following connectivity for this project in the 14th meeting of WR constituents regarding Connectivity / Open access applications held on 13.05.11:

- Jhabua TPS –Jabalpur Pool 400kV D/c (High capacity)

The above line is to be implemented by the generation developer. POWERGRID asked the status of the above line. M/s Jhabua Power informed that the line is about 55km long and involves 30 Acres forest. Section 68 for the same has been applied.

M/s Jhabua Power informed that they have signed a PPA with M.P. for supplying 210 MW power from above project. They informed that their plant is likely to be commissioned in Feb'13 however; they require start up power from Oct'12. CEA stated that the progress of their dedicated line is very slow and it is quite likely that connection with ISTS will not be available in matching time frame. POWERGRID requested M/s Jhabua Power to make arrangement for start up power from STU network.

CEA asked about the status of the Jabalpur Pooling station being implemented by POWERGRID. POWERGRID informed that Jabalpur Pooling station shall be available by Aug'13. Keeping in view the early commissioning schedule of generation project, M/s Jhabua Power has been provided connection with Jabalpur (existing) as an interim arrangement.

After deliberations, following was agreed as part of Long term Access (LTA) to M/s Jhabua Power Ltd.

a. **Long Term Access granted to M/s Jhabua Power Ltd.** for transfer of 210 MW power from their 1200MW generation project in Distt. Seoni, M.P to M.P in WR with following system strengthening scheme:

Transmission system strengthening in WR

- Jabalpur Pooling station – Bina 765kV S/c (3rd) – with 1st unit

- Jabalpur Pooling station – Bhopal –Indore 765kV S/c – with 2nd unit

Above transmission lines are already under implementation through tariff based competitive bidding with a completion schedule of Mar'14. Hence LTA shall be granted from Apr'14 (for 25 years).

- M/s Jhabua shall sign LTA Agreement and TSA with POWERGRID for sharing of transmission charges corresponding to 210 MW.
- The sharing of Charges shall be as per CERC Regulations as amended from time to time.
- LTA shall be effective from the date of availability of identified transmission system strengthening or date of LTA granted whichever is later.

C2) Jaypee Sidhi Cement Plant (2X60 +35MW), Distt. Sidhi, M.P

POWERGRID informed that M/s Jaypee Sidhi Cement Plant had applied for Long term Access (LTA) from its 155MW generation project in Distt. Sidhi, M.P as per the CERC regulations, 2009. A brief of the application is as under:

Installed Capacity (MW)	2x60+35MW=155MW District-Sidhi, M.P
LTA required (MW)	140 MW
Date from which LTA is Required	Jan'15 (12 Years)
Comm. schedule (Unit Wise)	U-1(35MW) : Operational U-2(60MW) : Jun'12 U-3(60MW) : Aug'12
Target Beneficiaries/Regions	NR (49 MW) + ER(14MW) +WR(63MW) +SR (14MW)

Status of the generation project as informed by generation developer is as below:

Land	100% in possession
Environmental clearance	Received
Fuel	Imported coal
Water	1600 KL/Day approved to draw from Ban Sagar canal.
EPC	Awarded for Main equipment

M/s Jaypee informed that their Sidhi Cement Plant was granted connectivity by M.P at their 220/132kV Silpara (Rewa) S/s of MPPTCL which is connected to 220 kV Satna S/s of MPPTCL.

CEA enquired about the beneficiaries in various regions from this plant. M/s Jaypee Sidhi Cement stated that they intend to supply power from this plant to their cement plants in Northern, Western, Southern and Eastern region. CEA asked them to submit documents regarding their status as captive plant. M/s Jaypee Sidhi Cement agreed for the same.

POWERGRID stated that the proposed 220kV line for connectivity between Satna (MPPTCL) and Satna (PG) substation shall be a dedicated line and hence should be implemented by generation developer. MPPTCL stated that this line shall be implemented by STU on behalf of applicant.

After deliberations, **LTA was agreed to be provided to M/s Jaypee Sidhi Cement Plant** with following system strengthening and other conditions:

(a) Long term Access granted to M/s Jaypee Sidhi Cement Plant for transfer of 140MW power to target beneficiaries in WR/SR/NR/ER [WR- 63MW, SR-14MW, ER-14MW & NR-49MW] through following transmission system.

- Satna (MPPTCL) –Satna (PG) 220kV D/c (2nd) line.

This line along with the end bays shall be implemented and owned by STU. However, the cost of the lines and bays at both ends shall be borne by the generation developer.

(b) M/s Jaypee shall sign LTAA and TSA with POWERGRID for sharing of transmission charges corresponding to 140 MW.

(c) The sharing of Charges shall be as per CERC Regulations as amended from time to time.

(c) LTA shall be effective from the date of availability of identified transmission system strengthening or date of LTA sought whichever is later.

D. Applications for Grant of Connectivity & Long Term Access

D1) NTPC Ltd. Vindhyachal – V (1X500MW)

POWERGRID informed that M/s NTPC Ltd. Vindhyachal –V has applied for connectivity and LTA of its 500MW generation project at Dist – Singrauli, in M.P as per the CERC Regulations, 2009. Application details are as under:

Generation Project	1X500MW (500MW) District – Singrauli, State – M.P
Commissioning schedule	U-1: May'15
Connectivity sought for	500MW from 2014-15
LTA sought for	495.78 MW from Mar'15 (25 Years)
Target beneficiary	495.78 MW-WR [MP Tradeco: 129.04 MW, CSPDCL: 32.9MW, GUVNL: 110.34MW, MSEDCL: 138.29MW, GOA: 5.47MW, UT-DNH: 3.24MW, UT-DD:2.09MW]

Status of the generation project as informed by generation developer is as below:

Land	Land available for plant & township. 260 Acres of land required for ash disposal area which is proposed to be accommodated within VSTPP stage-IV identified land for ash dyke area.
Environment clearance	EC received on 02/05/12.
Fuel Arrangement	NTPC board has approved coal linkage through NTPC captive mine at Pakri – Barwadih. However, separate coal linkage is also being pursued with MoC.
Water arrangement	Requirement of water met from surplus water available in water agreement with state govt. during earlier stages.

POWERGRID enquired about the status of EPC for the project. NTPC informed that order for turbine and boiler has been placed on BHEL on 03rd May'12 with completion schedule of 36 months. POWERGRID enquired about the status of development of NTPC captive mine at Pakri-Barwadih. NTPC stated that mine developer and operator (MDO) has been appointed.

Connectivity

POWERGRID stated that M/s NTPC Ltd. has already four stages of the Vindhyachal project in the same premises. The total capacity of these four stages is 4260MW. Out of these, stage-I, II & III are on the same bus whereas stage –IV is on a separate bus. In view of the project capacity and unit size, following **connectivity to M/s NTPC Ltd. Vindhyachal –V (500MW) was agreed:**

- Generation step up at 400kV level & interconnection to 400kV Bus of Vindhyachal TPS-IV Switchyard (under the scope of generation developer)

Considering above connectivity arrangement, provision of following at generation switchyard shall be implemented by M/s NTPC Ltd.:

- 400kV bus reactor : 1X125 MVAR
- 400kV bus reactor bay : 1no.

The connectivity system shall be implemented by generation developer.

Long Term Access (LTA)

POWERGRID stated that as per the application, NTPC has applied LTA on behalf of beneficiaries and hence LTA agreement shall be signed by beneficiaries. WR constituents were of the view that since MOP allocation from this project is tentative therefore LTA agreement should be signed by NTPC at this stage. However, NTPC insisted that LTAA and TSA are to be signed by

beneficiaries. After discussion, beneficiaries agreed to sign LTAA and TSA with POWEGRID/Transmission Licensee with the provision of modification in quantum of power, in case there are any changes in final allocation made by MOP to various constituents from VSTPP-V.

In the agenda, following transmission system was proposed for providing LTA to VSTPP-V -:

- (i) Vindhayachal Pooling station – Jabalpur Pooling station 765kV D/c
- (ii) Jabalpur Pooling station – Bhopal 765kV D/c
- (iii) Bhopal – Indore 765kV 2nd S/c
- (iv) 1X1500MVA, 765/400kV ICT at Vindhayachal Pooling station.

Member (PS), CEA stated that element (ii) and (iii) above have been agreed as transmission system for Chhattisgarh UMPP and as on date, there is no certainty in the commissioning schedule of Chhattisgarh UMPP.

After further deliberations, grant of Long term access to M/s NTPC Ltd. Vindhayachal –V for transfer of total 495.78 MW power from its generation project (1X500MW) near Singrauli, M.P to target beneficiaries was agreed with following system strengthening and other conditions:

- (a) **Long term Access granted to M/s NTPC Ltd. Vindhayachal -V** for transfer of 495.78MW power from their 500MW generation project at Singrauli, M.P. to beneficiaries in WR [MP Tradeco: 129.04 MW, CSPDCL: 32.94MW, GUVNL: 110,34MW, MSEDCL: 138.29MW, GOA: 5.47MW, UT-DNH: 3.24MW, UT-DD: 2.09MW], with following system strengthening.

Transmission system strengthening

- (i) Vindhayachal Pooling station – Jabalpur Pooling station 765kV D/c
- (ii) 1X1500MVA, 765/400kV ICT at Vindhayachal Pooling station

Transmission element at (i) above shall be implemented by Transmission Licensee selected through Tariff Based Competitive Bidding. As both end points of the line are owned by POWERGRID, line bays and reactors at these substations for the above line shall be implemented by POWERGRID. Further, WR constituents stated that as the Vindhayachal Pooling station is owned by POWERGRID, so, augmentation of transformation capacity that is element at (ii) above should also be implemented by POWERGRID.

- (b) WR constituents shall sign LTA Agreement/TSA with POWERGRID for sharing of transmission charges corresponding to 495.78MW and other applicable charges as per CERC norms.
- (c) The sharing of Charges shall be as per CERC Regulations as amended from time to time.
- (d) LTA shall be effective from the date of availability of identified transmission system strengthening or date of LTA sought whichever is later.

D2) NTPC Ltd. Khargone (2X660MW)

POWERGRID informed that M/s NTPC Ltd. Khargone has applied for connectivity and LTA of its 1320MW (2X660MW) generation project at Distt – Khargone, in M. P. as per the CERC Regulations, 2009. Application details are as under :

Generation Project	2X660MW (1320MW) District – Khargone, State – M.P
Commissioning schedule	U-1: Dec'15 U-2: Jun'16
Connectivity sought for	1320MW from Apr'15
LTA sought for	1308.87 MW from Dec'15 (25 Years)
Target beneficiary	1308.87MW - WR 1308.87MW [MP Tradeco: 654.53 MW, CSPDCL: 52.36MW, GUVNL: 173.14MW, MSEDCL: 215.73MW, GOA: 8.64MW, UT-DNH: 4.97MW, UT-DD:3.26MW]

Status of the generation project as informed by generation developer is as below:

Land	Total Required: 1121.5 Acres, Acquired –Nil & Possessed- Nil.
Environment clearance	EIA study report submitted. MoEF clearance application under progress.
Fuel Arrangement	Application submitted to MoC
Water arrangement	In-Principle commitment for 55 cusec of water is available from Govt. of MP vide letter dated 02.02.10

In the agenda, in view of the project capacity and unit size, following “In-Principle” connectivity of the M/s NTPC Ltd. Khargone (1320MW) was proposed:

- Khargone TPS – Indore 765kV D/c line.

M/s NTPC stated that the ultimate capacity of the project is 1320MW and no further expansion has been planned. Further, the project land profile is highly undulating with hard rocky strata and there is acute space constraint. Therefore, M/s NTPC requested that the connectivity and power evacuation of the project may be granted at 400kV level.

M/s NTPC informed that the land acquisition activities for the project are under advanced stage of completion/possession and NIT for the EPC package project has already been done in Feb'12, considering 400kV generation switchyard. Considering above, the generation step up of Khargone TPS was agreed as 400kV.

However, in view of the progress of the project, it was agreed that connectivity and LTA application of NTPC Ltd. Khargone TPS may be deferred till the next meeting.

NTPC requested to provide the scope of switchyard. It was agreed that provision of following at generation switchyard, implementation of which shall be under **the scope of M/s NTPC Ltd.** shall be kept:

- Generation step up at : 400kV
- 400kV line bays : 4nos.
- 400kV bus reactor : 1X125MVAR
- 400kV bus reactor bay : 1no

E. For the grant of Connectivity, following are to be noted:

For all the generation projects who have applied for Connectivity under CERC regulation, 2009, in addition to other applicable provisions in CERC regulations 2009 on Grant of connectivity, Long Term Access and Medium-term Open Access in inter-state transmission and related matters, following are to be noted:

- The grant of connectivity shall not entitle above applicants to interchange any power with the grid unless they obtains long-term access, medium term open access or short term open access. However, the above IPP shall be allowed to undertake interchange of power including drawl of power for commissioning activities and injection of infirm power in to the grid during full load testing before being put into commercial operation, even before availing any type of open access, after obtaining permission of the concerned regional load dispatch centre, which shall keep grid security in view while granting such permission.
- Above applicants are required to inform/confirm following to facilitate connectivity:
 - i) Likely date of synchronization, likely quantum and period of injection of infirm power before being put into commercial operation to the SLDC and RLDC concerned at least one month in advance.
 - ii) In case the dedicated transmission system upto point of connection is to be undertaken by Inter-State Transmission Licensee, the applicants need to sign transmission agreement with CTU within one month of grant of connectivity, furnish requisite Bank Guarantee and fulfill other terms & conditions as stipulated in the CERC Regulations/Detailed Procedure, 2009 in this regard.
 - iii) The applicants shall abide by all provisions of the Electricity Act, 2003, CERC (Grant of Connectivity, Long-term Access and Medium-term Open Access in inter-State transmission and related matters) Regulations, 2009, CEA (Technical Standards for connectivity to the Grid) and Indian Electricity Grid Code as amended from time to time.

- iv) All the applicants shall have to apply for "Connection Offer" to CTU at least more than 2 years prior to physical interconnection as well as have to sign "Connection Agreement" with CTU prior to physical interconnection as per CERC Regulations, 2009.
- Transmission system strengthening to facilitate power transfer on long-term basis shall be identified once above applicants apply for Long-term Access as per CERC Regulations, 2009.

F. For the grant of LTA, following are to be noted:

- i) LTA shall be effected subject to that applicant shall have to firm up PPA at least for 50% of LTA quantum 3 years prior to the intended date of availing LTA as per CERC regulations, 2009 and intimate to POWERGRID.
- ii) The date of commencement of LTA shall be applicable from at least 3 years and 9 months (9 months time required for project preparation and investment approval) from firming up beneficiaries and signing of BPTA with them.
- iii) For the balance capacity (not exceeding 50% of LTA sought for) for which exact source of supply or destination could not be firmed up on long-term basis, the augmentation/system strengthening further from the target region shall be taken up only after identification of exact source/destination. CTU shall be allowed up to 3 years time for such augmentation/system strengthening from the target region to the exact source/destination. During such period applicants shall be liable to pay the transmission charges up to the target region.
- iv) Applicant/beneficiaries shall share the transmission charges of the above proposed strengthening schemes.
- v) Payment of such transmission charges for the balance capacity for which exact source on long term basis is not known, shall not entitle the applicant any right over the transmission system up to the target region and CTU may release this balance transmission capacity up to target region for short-term open access or the medium term open access till the applicant firms up source/destination on long-term basis and its operationalisation.
- vi) The applicant shall enter into long term access agreement (LTAA) with POWERGRID within 30 days. In case transmission system of Inter state transmission licensee other than CTU is used, an agreement shall be signed between the applicant and such inter-State transmission licensee, in line with the provisions of the CERC regulations 2009.
- vii) Implementation of System augmentation/strengthening required to effect LTA, shall be taken up by POWERGRID only after fulfillment of conditions under para (ii) above as well as signing of LTAA/ TSA & submission of required BG by applicant as per provision of CERC regulations 2009. The time frame for commissioning of above system strengthening shall be 9 months in addition to construction time for the transmission project as given in the CERC(Terms and Conditions of Tariff) Regulations 2009.

viii)The nodal agency may change system strengthening requirements identified for a particular applicant project on the basis of any subsequent study carried out on its own motion or on another application for LTA, with the purpose of optimum utilization of the transmission system or to conserve limited right-of-way, and in such event, the changes carried out by the nodal agency shall be intimated to the applicant, or any other person associated with the LTA. Provided that the optimized system shall not work to the disadvantage of the applicant.

The applicant shall abide by all provisions of the Electricity Act, 2003, CERC(Grant of Connectivity, Long-term Access and Medium-term Open Access in inter-State transmission and related matters) Regulations, 2009, CEA (Technical Standards for connectivity to the Grid) and Indian Electricity Grid Code as amended from time to time.

G. Modifications regarding time period and drawl arrangement in Long term Access granted to Torrent Energy Ltd., Ahmedabad

i. Extension of the time period of LTA granted to TEL, Ahmedabad.

POWERGRID informed that Long Term Open Access has been granted to M/s Torrent Energy Limited (TEL) for transfer of 1200MW power from their gas based generation project (DGEN) in Distt: Bharuch, Gujarat with following beneficiaries:-

Sr. No.	Entity	Target Quantum
1	Torrent Power Limited (Ahmadabad and Others)	400MW
2	Western Region	400MW
3	Northern Region	400MW

The above open access was granted for 12 years and 1 month in 14th meeting of Western Region Constituents regarding Connectivity/Open access applications held on 13.05.11.

M/s TEL stated that they have signed PPA with TPL, Ahmedabad for 25 years on 4th Jan, 2011. They informed that the term of Power Purchase Agreement signed with M/s TPL Ahmadabad and the term of Long Term Open Access of 400 MW granted for drawl at TPL, Ahmadabad is not consistent. Hence, they requested to modify the term of Long Term Open Access granted for 400MW, drawl at TPL, Ahmadabad from 12 years and one month to 25 years.

POWERGRID asked about the status of approval of PPA with TPL Ahmedabad. M/s TEL informed that PPA is under approval of Hon'ble Gujrat Electricity Regulatory Commission. After the deliberations, it was agreed to modify the term of LTOA granted for 400MW, drawl at TPL, Ahmedabad from 12 years and one month to 25 years, subject to approval of PPA from GERC. The term for balance 800MW will remain same at 12 years one month.

ii. **Establishment of 400 kV S/s at Gota for drawl at TPL, Ahmedabad from DGEN plant**

POWERGRID informed that in 14th meeting of WR Constituents regarding connectivity/OA applications, following dedicated system for drawl at TPL Ahmadabad from DGEN plant was agreed:

- LILO of one ckt of 400kV Dehgam – Pirana D/c line at 400kV Nicol.

Thereafter M/s TEL have requested to allow establishment of another 400kV substation at Gota through LILO of one ckt. of Chorania – Ranchodpura 400kV D/c line for drawl at TPL Ahmadabad from DGEN plant. GETCO has also recommended establishment of 400kV substation at Gota by TEL in order to cater the load growth in and around Ahmadabad city.

CEA opined that this substation being an important substation may be established by STU. MD, GETCO stated that Gota substation may be developed by Torrent Energy Ltd. However, GETCO would like to have 2 nos. line bays in this substation for interconnection with their system. M/s TEL raised apprehension about the overloading of Chorania – Ranchodpura line in case of drawl by GETCO as well as TPL. In response, MD, GETCO suggested to LILO both circuits of Chorania – Ranchodpura line at Gota.

M/s TEL stated that above arrangement would entail extra expenditure. Hence, GETCO should bear expenditure incurred towards second LILO, two bays and land cost towards these.

After discussions, it was decided that establishment of 400kV Gota S/s through LILO of Chorania – Ranchodpura 400kV D/c line for drawl at TPL Ahmadabad from DGEN plant by M/s TEL may be deliberated further.

M/s Torrent further stated that they have been granted connectivity for their 382.5 MW UNOSUGEN plant through LILO of 400kV SUGEN TPS – Pirana (TPL) one ckt. at UNOSUGEN TPL switchyard. This 400kV line has been implemented by Torrent POWERGRID Ltd., a transmission licensee company whereas LILO would be implemented by UNOSUGEN TPL, the generation developer. They enquired whether the license needs to be taken/ revised for implementation of LILO. POWERGRID stated that since LILO would be implemented by generation developer, no license is required to be taken for the same.

M/s Torrent informed that they have signed PPA of 35 MW with M.P. from their UNOSUGEN plant. They enquired whether they can supply this power through the connectivity arrangement being implemented by them. POWERGRID clarified that M/s Torrent need to apply for MTOA/ LTA from their plant for transfer of this power to M.P.

M/s Torrent further stated that LTOA was earlier provided for 500 MW from their SUGEN power plant for transfer to TP AEC, TP SEC, MP and Maharashtra over dedicated transmission system built by JV of Torrent and Powergrid (SUGEN-Pirana 400kV D/c and LILO of Gandhar – Vapi 400kV S/c line at SUGEN). They informed that they have signed PPA of 100MW with M.P. from that plant. Since PPA for balance power is yet to be signed. They requested to reduce the quantum

of LTOA from SUGEN plant to 300MW. Since, no transmission system strengthening has been identified for power transfer from SUGEN plant, it was agreed that **LTOA quantum from SUGEN plant may be revised from 500MW to 300MW.**

H. Modification of LTOA Quantum of M/s ACB (India) Ltd.

POWERGRID informed that M/s ACB (India) Ltd. was granted LTOA for transfer of 270MW from their 2X135MW generation project coming up at Vill: Kasaipalli, Distt: Korba, Chhattisgarh as per CERC (Open access in ISTS) Regulations, 2004. Now they have requested for reduction in LTOA quantum to 243MW.

M/s ACB (India) Ltd. stated that as per the CERC (Open access in ISTS) regulations, 2004, LTOA was granted for the total installed capacity of the project as at that time, the transmission charges were based on pooled capacity of all the generation plants in the region. However, as per the new CERC Tariff mechanism, transmission charges are to be levied on the basis of power injected. Therefore, M/s ACB(India) Ltd. requested to revise the LTOA quantum from 270MW to 243MW. Member(PS), CEA stated that in view of modification in Tariff mechanism, the revision in LTOA quantum may be considered. In the agenda, proposal of revision of target beneficiaries as under was put up:

- GUVNL : 208 MW (200MW+8MW(4%) for PoC & withdrawal losses)
- CSPTCL : 35MW

M/s ACB(India) Ltd., informed that the power allocation of Chhattisgarh from their project has been reduced to 12MW. Therefore beneficiaries from reduced quantum may be changed to GUVNL -208MW, CSPTCL -12MW and WR – 23MW.

After deliberations, it was agreed by the WR constituents to **revise the quantum of LTOA of M/s ACB (India) Ltd. from 270 MW to 243MW** with following beneficiaries:

- GUVNL : 208 MW (200MW+8MW(4%) for PoC & withdrawal losses)
- CSPTCL : 12MW
- WR : 23 MW

I. Interim transmission system arrangement for M/s Jaiprakash Power Venture Ltd., (JPVL) Madhya Pradesh

POWERGRID informed that M/s Jaiprakash Power Venture Ltd. was granted LTOA as per CERC Regulations, 2004 for the transfer of Power from Jaypee Nigrie STPP (1320MW) with the following dedicated transmission sysetm:

- Jaypee Nigrie STPP – Satna 400 kV D/c (High Capacity) line (implementation by generation developer)

M/s JPVL informed that the above line (156 km) is under implementation. However, it traverses through difficult terrain including forest areas and hills. On

query from POWERGRID M/s JVPL informed that about 54 Acres of degraded forest land is en-route their line and case for forest clearance has been submitted. Forest clearance is expected by Oct'12. M/s JVPL informed that Unit-1 of their project is scheduled for commissioning by Apr'13, however, they intend to draw start up power from Oct'12. Due to delay in forest clearance, the above dedicated line may not be available to provide start up power required in Oct'12.

M/s JVPL also informed that there is no interconnection of their plant with STU network. Therefore M/s JVPL requested to provide some interim arrangement till the availability of their dedicated line. They stated that they had requested for the same earlier also and the matter was discussed in 14th LTOA meeting held on 13.05.2011. In the meeting it was decided that any backup arrangement shall be reviewed in case there is a mismatch between availability of dedicated transmission line and the project commissioning schedule.

Member(PS), CEA enquired whether interim arrangement is required to only draw start up power or for injection of power also after commissioning of the project. M/s JVPL stated that all out efforts shall be made to complete the line matching with the generation project, however in case of any mismatch, interim arrangement shall also be used for injection of power.

After deliberations, **following Interim Arrangement was agreed for M/s JVPL:**

- LILO of one ckt. of 400kV Vindhyachal –Satna at Nigre TPS.

It was also agreed that the above proposed interim arrangement is temporary arrangement. The generation developer shall make best efforts to complete the connectivity line as soon as possible. When the connectivity line is completed, the LILO of one ckt of 400kV Vindhyachal – Satna line at Nigrie TPS shall be opened and 400kV Vindhyachal – Satna line shall be restored to its original configuration.

The cost of implementing interim arrangement, its opening after availability of connectivity line and restoration of 400kV Vindhyachal – Satna line to its original configuration shall be borne by the generation developer. It was also agreed that M/s Jaiprakash Power Ventures Ltd. shall provide Special Protection System (SPS) at the generation switchyard and its setting shall be carried out in consultation with WRLDC/WRPC.

J. Cancellation of Connectivity to M/s Lanco Vidarbha TPL in ISTS

POWERGRID informed that M/s Lanco Vidarbha Thermal Power Pvt. Ltd. (LVTPPL) was provided connectivity for their 1320MW generation project in Maharashtra by CTU through LILO of 765kV Seoni – Wardha S/c line in 12th LTOA meeting held on 08.07.2010 as per CERC Regulations 2009. A letter was received from MSETCL in which they stated that this project has been granted connectivity by MSETCL in STU network. POWERGRID stated that this amounts to dual connectivity and hence, if applicant wants to retain connectivity with STU, the connectivity granted to M/s Lanco Vidarbha Thermal Power Pvt. Ltd by CTU in the ISTS may be withdrawn.

M/s LVTPPL stated that they had PPA with Maharashtra for 55% of power from their generation plant. Balance 45% is yet to be tied up and may be transferred outside the state of Maharashtra. Therefore, they had applied for connectivity both to STU and CTU so that power may be transferred to the respective network. Member(PS), CEA informed that the grant of connectivity does not entitle an applicant to interchange any power with the grid unless it obtains Open Access. M/s LVTPPL stated that since the transmission system through which MSETCL has granted them connectivity is not likely to be available in the time frame of commissioning of their plant, they need to be connected with CTU network. POWERGRID asked MSETCL about the implementation schedule of their transmission system evolved for M/s LVTPPL. MSETCL stated that they shall connect the generation project of M/s LVTPPL at Wardha Pooling station to be developed by MSETCL which is yet to be awarded.

Considering the delay in MSETCL connectivity system, it was agreed that **M/s Lanco Vidarbha Thermal Power Pvt. Ltd. shall withdraw their connectivity from Maharashtra and retain their connectivity with CTU.** It was informed to the generation developer that they should apply for short term open access/ Medium term open access/ Long term access from respective nodal agency for evacuation of their power. MSETCL agreed to give a letter regarding cancellation of connectivity of M/s Lanco Vidarbha Thermal Power Pvt. Ltd.

K. Connectivity to M/s Jinbhuvish Power Gen. Pvt. Ltd.in ISTS

POWERGRID informed that M/s Jinbhuvish Power Gen. Pvt. Ltd. (JPGPL) was granted In-principle connectivity by CTU in 32nd Standing committee on power system planning in WR through LILO of one ckt of 400 kV Wardha – Parli D/c line for their 600MW plant in Maharashtra. Further it was agreed in meeting that JPGPL shall withdraw its application for connectivity from STU. M/s Jinbhuvish Power Gen. Pvt. Ltd. informed that they have received the letter for cancellation of connectivity from MSETCL and submitted the same. Since, the connectivity of M/s JPGPL with STU has been cancelled, it was agreed that their connectivity with CTU through above mentioned line may be retained.

POWERGRID asked M/s JPGPL about the progress of their generating plant. JPGPL informed that coal linkage for their plant is available and environmental clearance is yet to be received. The commissioning schedule of their plant is Unit-1: Dec'14, Unit 2: Mar'15. However, they require start up power from Sep'14. CEA stated that considering the commissioning schedule of the project, the generation developer should apply for LTA so that transmission system for evacuation may be identified and implemented. POWERGRID enquired about the status of the dedicated line identified for connectivity. M/s JPGPL informed that survey of the line has been completed. CEA informed that they need to take Section 68 approval before implementing the line. The applicant was asked to apply for Section 68 immediately.

After further deliberations it was agreed to **grant "final" connectivity to M/s Jinbhuvish Power Generation Pvt. Ltd. for their 600MW generation project in Maharashtra** with following transmission system

- LILO of one ckt of 400kV Wardha – Parli D/c (Quad) line at JPGPL TPS

The above line shall be **implemented by generation developer** and provision of following shall be kept at generation switchyard, implementation of which shall be under the scope of generation developer:

- 400kV Line bays : 2 nos.
- 400kV Bus Reactor : 1x80MVAR
- 400kV Bus Reactor bay : 1 no.
- 400kV Switchable line reactor : 1x80MVAR
(for JPGPL – Parli section)

Transmission system strengthening shall be identified to facilitate power transfer on long term basis once M/s Jinbhuvish Power Generation Pvt. Ltd. applies for Long term Access as per CERC Regulations, 2009.

L. Closure of Long pending Connectivity / LTA applications due to non-satisfactory progress of generation projects.

POWERGRID informed that the grant of Connectivity and LTA as per the CERC Regulation, 2009 is a time bound activity (connectivity to be granted in 60 days and LTA in 120/180 days). Further, it is directed by Hon'ble CERC that the transmission system development should be phased, to avoid creation of redundant capacity. In the past, to facilitate project development activities, POWERGRID had granted provisional connectivity/LTA even to projects who had not achieved important milestones. In the 15th meeting of WR Constituents regarding connectivity/ Open Access applications, it was agreed that based on the progress of such projects within 6-12 months, either final connectivity/LTA shall be granted or application shall be closed. Uncertainty in the generation project complicates the matter, especially in the scenario of implementation of transmission system through competitive bidding, where the selected bidder is not liable to delay/advance the commissioning schedule to match with the generation progress.

In this regard, at present there are number of Connectivity & LTA applications pending for about 1 to 1½ years as per details given below. These generation projects have not shown much progress.

LTOA applications (As per CERC Regulations, 2004)

Sl. No	LTOA Applicant	Time frame	Applied for Connectivity & LTA Quantum	Date of Application	Pending since (months)
1.	Sona Power Ltd.	March, 2015	LTOA –1320 MW	28.07.08	44
2.	Godawari Energy Ltd.	July 2015	LTOA –1025 MW	29.09.08	42
3.	Sarda Energy & Minerals Ltd.	Jun'16, Dec'16	LTOA –1200 MW	10.07.08	44

Connectivity/LTA Applications (As per CERC Regulations, 2009)

Sl. No	Connectivity/LTA Applicant	Time frame	Connectivity/ LTA Quantum	Date of Application	Pending since (months)
1.	NTPC Ltd. Barethi - I	Sep, 2016	Connectivity – 1320 MW	29.04.11	12
2.	NTPC Ltd. Lara - I	May 2016	Conn – 1600MW LTA - 1586.51MW	29.04.11	12
3.	Regal Energy Ltd.	July'14	Conn –2640 MW	30.12.10	16
4.	Ozone Steel and Power Limited	June'14	Conn –350 MW LTA – 350 MW	31.12.10	17
5.	Jain Energy (Chhattisgarh) Pvt. Ltd	Mar'14	Conn –1320 MW	11.03.11	16
6.	Shri Lakshmi Power Ltd	June'13	Conn –360MW LTA – 213 MW	10.01.11	15
7.	Welspun Energy Madhya Pradesh Pvt. Ltd.	Oct'14	Conn – 1980 MW	16.03.11	10
8.	Adani Power Dahej Limited	Mar'15	Conn – 2640 MW	12.07.10	21
9.	Bharuch Power Limited	Mar'16	Conn – 7200 MW	06.07.10	21
10.	Astarc Power Pvt Ltd.	Dec'15	Conn – 1241 MW	21.09.10	19
11.	Ellora Paper Mills Ltd	Dec'14	Conn – 2640 MW	03.05.11	12
12.	Petronet LNG Ltd.	Jan'14	Conn – 1200 MW	24.06.11	10

Member(PS), CEA stated that in view of the unsatisfactory progress of these projects, to avoid unrealistic planning, it is preferable that these applications may be closed now and they may apply afresh whenever the project has made progress.

Some of the applicants stated that getting the clearances is not in their hands and if the applications are closed at this stage, this may affect their financial closure which is expected shortly. Further, they are waiting for the meeting of the coal linkage committee which is expected to be held in one to two months time. Member(PS) stated that the applications cannot be kept pending indefinitely and applicants have the option of applying again, when some progress has been achieved. However, considering the request of the applicants, it was agreed that they shall inform CTU about their progress periodically and CTU shall review their progress on 1st Nov, 2012. **In case desired milestones like coal linkage, land possession, environmental clearance, EPC award etc. for above projects are not achieved by the above generation projects till 1st Nov, 2012, they shall be considered closed. In case of achieving the above milestones, the generator developers shall inform CTU.**

M. Grant of MTOA

POWERGRID informed that in response to applications received from Electricity Department UT DNH and Electricity Department UT DD for transfer of 64MW and 22MW power respectively from NSPCL (2x250MW) generating station located in

Bhilai, the proposal for grant of MTOA were earlier circulated to WR Constituents and WRLDC.

As no observations in this regard were received, MTOA was granted to Electricity Department UT DNH and Electricity Department UT DD for transfer of 64MW and 22MW power respectively. MTOA has been granted to UT DNH and UT DD for the period of 01.08.2012 to 31.03.2013 or signing of MTOA/TSA arrangements whichever is later. Members noted the above.

The meeting ended with a vote of thanks to the Chair and all the participants

----- X-----

Annexure-I

**16th Meeting of WR Constituents for Connectivity and
Long Term Access(LTA) applications
Date: 09.05.2012, Venue: NRPC, New Delhi**

S. No.	NAME	DESIGNATION	ORGANIZATION	MOBILE NO./ PHONE	E-MAIL
	S/SHRI				
1	Ravinder	Member (PS)	CEA	011-26102045	
2	S.D. Taksande	MS	WRPC	9820878384	sureshtaksande@rediffmail.com
3	Satyanarayan S	SE	WRPC	9223399938	satyaguru@yahoo.com
4	Ravinder Gupta	Director	CEA, SP&PA	9968286184	-
5	Awdhesh Kumar Yadav	DD	CEA, SP&PA	9868664087	awd.cea@gmail.com
6	Shivani Sharma	DD	CEA, SP&PA	9717686780	shivani0004@gmail.com
7	Pankaj Kumar	ED(SEF,IT,ERP & CE)	POWERGRID	9873549044	pankaj@powergridindia.com
8	R.K. Singh	ED(WR-II)	POWERGRID	9687721111	rk Singh@powergrid.com
9	S.K.Gupta	GM (Proj), WR-II	POWERGRID	9428504051	skgupta.59@gmail.com
10	N.K. Jain	GM (Comml.)	POWERGRID	9910378087	nkjain.cc@gmail.com
11	P.Pentayya	GM (WRLDC)	POSOCO	9869072437	ppentayya@gmail.com
12	Avinash M.Pavgi	AGM (SEF)	POWERGRID	9910378086	apavgi@powergridindia.com
13	Manju Gupta	DGM(SEF)	POWERGRID	9910378111	manju@powergridindia.com
14	S.R. Narsimhan	DGM(NLDC)	POSOCO	9971117022	snarsimhan@gmail.com
15	Anjali Banga	Ch.Manager (Comml.)	POWERGRID	9910378015	bangaanjali407@gmail.com
16	Prashant	DE (SEF)	POWERGRID	9560050236	prashant.pandey@powergridindia.com
17	Baskar Wagh	DE (SEF)	POWERGRID	9560890352	bhaskarwagh@powergrid.in
18	Parneet Kaur	DE (SEF)	POWERGRID	8826896845	parneet.kaur@powergrid.in
19	M.Pradeep Reddy	Engr.(NLDC)	POSOCO	8800977993	pradeep_906@yahoo.com
20	S.K. Negi	MD	GETCO	9879200622	md.getco@gebmil.com
21	U.C Patel	ACE	GETCO	9909934998	stu.getco@gebmil.com
22	Shashank Suman	ME	GETCO	9687663763	mtpassi.getco@gebmil.com
23	P.J. Jani	E.E	GUVNL	9879618754	
24	R.K. Mehta	CE (C&A)	CSPTCL	9425357004	rkshmehta2@gmail.com
25	H.K. Pandey	SE (Planning)	CSPTCL	9826460053	harish_pandey123@rediffmail.com
26	M.M. Dhoke	EE (PS)	MPPTCL	9425805237	mmdhoke@gmail.com
27	R. Sethi	CE (PL & PS)	MPPTCL	9425805228	sethi.ravi@indiatimes.com
28	U.G. Zalte	Director (operations)	MSETCL	9619079999	
29	Kelkar S.G	Exe-Director (Operations)	MSETCL	9167279940	
30	N.R. Sonkavday	SE-STU	MSETCL	9987783924	n.sonkavday@rediffmail.com
31	A.N. Damania	AE(projects)	Daman Elect. Deptt.	9825782962	
32	S.S. Mishra	DGM(Engg)	NTPC Ltd	9650991145	ssmishra@ntpc.co.in
33	P.K Goyal	DGM	NTPC	9650990220	pkgoyal01@ntpc.co.in
34	Suchitra Maggon	DGM(Comml)	NTPC	9650990428	smaggon@ntpc.co.in
35	Shilpa Agarwal	DM(Comml)	NTPC	9650992680	sagarwal@ntpc.co.in
36	Anil Kaushik	CDE	NTPC	9650992088	anilkaushik@ntpc.co.in
37	Rajesh Jain	SM	NTPC	9650994073	Rajeshjain02@ntpc.co.in
38	Devendra Patel	GM Power	BALCO Korba	9893122359	devendra.patel@vedanta.co.in
39	Bhushan Kumar	Manager Projects	Petronet LNG Limited	9873715286	bhushan@petronetlng.com
40	G.P. Singh	Advisor	JP group	9810227533	gp.singh@jalindia.co.in
41	S.Sen	Director	JP group	9811211329	s.sen@jalindia.co.in

42	Narendra Singh	Sr. GM	JPVL		
43	Alok Gupta	Dy.GM	JPVL	9717364276	alok.gupta@jalindia.co.in
44	Pankaj Verma	Junior Vice President	JSCP	9425824490	pankaj.verma@jalindia.co.in
45	Anshul Garg	Sr. Manager	JPVL	9873746888	anshul.garg@jalindia.co.in
46	Col. A. K. Dubey	CEO	Sona Power	9752011165	sonapower@gmail.com
47	N.H. Hussaini	V.P	Shri Lakshmi Power	9300114920	hussaini@shrilakshmienergy.in
48	G. M. Tekchandani	Consultant	Sona, Ozone, JEL&Srilakshmi	9827269100	pecpltd@gmail.com
49	Rahul Sharma	Manager	Adani Power Dahej Ltd.	9654364016	rahul.sharma@adani.com
50	S.C. Tripathi	Associate VP	Jain group	8800931666	suresh.tripathi@jaingroup.co.in
51	S.S. Rajnekar	AVP	Jinbhuvish Power Gen .	9403964973	rajsr@jinbhuvish.com
52	Amit Vishnoi	Dy. Manager (Engg)	NSPCL	9650994534	amit.mspcl@gmail.com
53	Subrata De	DGM (Engg)	NSPCL	9650994516	subratade.ntpc@gmail.com
54	Vivek Bhardwaj	Mgr. (CP& Comm.)	NSPCL	9650999179	bvivek7b@rediffmail.com
55	Satyajit Ganguly	Sr VP –BD & Strategy	LANCO	9650902233	satyajit.ganguly@lancogroup.com
56	K.J. Varkey	Director	LANCO Vidharbha Power Ltd.		
57	P.S. Dutta Gupta	VP/SEML	SEML	9752090024	pduttagupta@sewml.co.in
58	Jotiba Jadhav	Sr. Manager	Astarc Power Pvt. Ltd.	7738360925	jotiba.jadhav@astarc.com
59	Jinal Mehta	Director	Torrent Energy	02641612299	jinalmehta@torrentpower.com
60	Deepak Dalal	ED	Torrent Energy	9227433549	ddalal@torrentpower.com
61	Jagrut Vyas	ED	Torrent Power	9227209000	jagrutvyas@torrentpower.com
62	K.K. Shah	V.P (special project)	Torrent Power	9824027015	kkshah@torrentpower.com
63	Omkar Kapoor	Head Power business	Dwarkesh Energy	9818883965	omkar.kapoor@jkm.com
64	Naivedhya	GM (Corp. Bus Div.)	Dwarkesh Energy	9971799327	naivedhya@jkm.com
65	Awical Dubey	GM (E&I)	Godawari Energy Ltd.	09893900554	awical.dubey@ggelindia.com
66	V.K. Shrivastava	DGM CA	Godawari Energy Ltd.	9810442576	vkshrivastav@gelpower.in
67	Pradeep Shukla	GM	Godawari Energy Ltd.	09893900553	pradeep.shukla@gelpower.in
68	Yogesh Partaity	Dy. CEE	South East Railway	09752475304	dycwwtrd@secr.railnet.gov.in
69	H.M. Jain	V.P (Power)	ACB (I) Ltd.	9953150412	acbpower@gmail.com
70	J. Mahapatra	GM	Avantha Power JPL	9899408949	
71	Bhaskar Bhattachary	HOD (Engg)	NSPCL	9650994508	bhaskar@ntpceoc.co.in
72	Atanu Ghosh Chowdhry	VP (Power)	BALCO	9981996750	atanu.ghoshchowdhry@vedanta.co.in
73	B. Bhambhani	Advisor	Reliable Thermal Power Ltd.	9910184559	naushadahmed67@gmail.com
74	Anand Kr. Gupta	Project Executive	Reliable Thermal Power Ltd.	9717512356	anandkumar107@gmail.com
75	Rajinder Singh	Sr. VP	Reliable Thermal Power Ltd.	9911320525	bankavtrs@yahoo.com