

Central Electricity Authority, SP&PA Division
Sewa Bhawan, R.K. Puram, New Delhi-110066

No.66/5/99-SP&PA/140-156

Dated: 12-02-2013

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|---|---|
| 1. Member (Transmission),
Bihar State Electricity Board
Vidyut Bhavan, Baily Road,
Patna-800021. | 2. Director (System),
Damodar Valley Corporation
DVC Towers, VIP Road,
Kolkata-700054. |
| 3. Member Secretary,
Eastern Regional Power Committee,
14, Golf Club Road, Tollygange,
Kolkata-700033. | 4. Director (Commercial),
Grid Corporation of Orissa Ltd,
Jan path, Bhubaneshwar-751022. |
| 5. Director (Transmission),
Orissa Power Transmission Corporation
Ltd,
Jan path, Bhubaneshwar-751022. | 6. Director (System Operation),
West Bengal State Electricity Transmission
Company Ltd, Vidyut Bhavan, 5th Floor,
Block-D, Bidhannagar, Sector-II
Kolkata-700091. |
| 7. Principal Chief Engineer cum Secretary,
Power Department
Government of Sikkim, Sikkim. | 8. Director (Projects),
Power Grid Corporation of India
"Saudamini" Plot No. 2, Sector-29
Gurgaon-122001 |
| 9. Director (Technical),
NTPC Limited,
Engineering Office Complex,
A-8, Sector 24, Noida. | 10. Member (Transmission),
Jharkhand State Electricity Board,
In front of Main Secretariat,
Doranda, Ranchi-834002. |
| 11. Executive Director (T&RE),
NHPC Ltd, NHPC Office complex,
Sector 33, Faridabad-121003. | 12. General Manager,
Eastern Regional Load Dispatch Center, 14,
Golf Club Road, Tollygange,
Kolkata-700033. |

Sub: Summary record of discussions of the 1st-2013 Standing Committee Meeting on Power System Planning in Eastern Region held on 05-01-13 at PGCIL, Gurgaon.

Sir,

Minutes of the first meeting of year 2013 of the Standing Committee Meeting on Power System Planning in Eastern Region held on 05-01-13 at PGCIL, Gurgaon, and LTOA minutes of PGCIL are uploaded on the CEA website: www.cea.nic.in. (path to access: Wings of CEA/Power Systems/Standing Committee on Power System Planning/EASTERN REGION) for kind perusal.

Yours faithfully,



(Sumeet Kumar)

Assistant Director (SP&PA)

Copy to:

- (i) Sh. S K Soonee, CEO, POSOCO, B-9, Qutab Institutional Area, Katwaria Sarai, New Delhi-16.
- (ii) Shri Jyotimay Bhaumik, CEO, M/s DPSC Limited, Plot No.X-1,2&3, Block EP, Sector-V, Salt Lake city, Kolkata-700 091.
- (iii) Shri Varun K. Jha, Vice President, M/s Tata Steel Limited, Bistupur, Jamshedpur-831 001.
- (iv) Director(NR, WR, SR, NER, PSPM)
- (v) CEA (PSPM)

Summary record of discussions of first meeting of year 2013 of the Standing Committee Meeting on Power System Planning in Eastern Region held on 05-01-2013 at PGCIL Office, Gurgaon.

List of participants is at **Annexure-I**.

- 1.0 Member (PS), CEA welcomed the participants to the meeting. He said that as you are aware, CERC has implemented Point of Connection (PoC) tariff for inter-state transmission system (ISTS), in which transmission assets are pooled at National level and addition of ISTS assets in one region has an impact on transmission tariff of other region. Keeping this in view, meetings of all the regions have been scheduled one after other, so as to give opportunity to participants to participate in the meetings of other regions as per their interest. He then requested POWERGRID to intimate the status of already approved / ongoing transmission schemes in Eastern Region.
- 1.1 AGM (POWERGRID) stated that detailed status of approved / ongoing transmission schemes in Eastern Region would be appended along with the minutes of the meeting. The status is enclosed at **Annexure-II**.
- 1.2 Member (PS), CEA requested Director, CEA to take up the agenda item.
- 1.3 Director, CEA welcoming the participants stated that in the agenda note circulated for the meeting, it has been mentioned as 2nd meeting of year 2012, due to postponement of the meeting from 21st Dec., 2012 to 5th Jan., 2013, it has become 1st meeting of year 2013. He requested members to note the change.
- 2.0 **Confirmation of the minutes of the previous standing committee meeting held on 08-02-2012 at NRPC, New Delhi.**
- 2.1 Director, CEA stated that the minutes of the previous Standing Committee Meeting (SCM) held on 8.02.2012 at NRPC, New Delhi were circulated vide CEA letter No. 66/5/99-SP&PA/280-301 dated 9.03.2012. As no comments from any constituents has been received, the minutes may be confirmed.
- 2.2 Director (Engg.), OPTCL stated that they are not agreeable to the associated transmission system for phase-I IPPs, which has been indicated in the minutes.
- 2.3 Member (PS), CEA stated that the discussions in the meeting has been faithfully recorded in the minutes of the meeting. The transmission system associated with the phase-I of Orissa IPPs is already under implementation. If orissa wants, it can be discussed while discussing with associated transmission system with Orissa IPPs phase-II or phase –III projects.
- 2.4 There after minutes of the previous meeting were confirmed.
- 3.0 **Establishment of new 400/220kV, 2x315MVA GIS sub-station at Pandiabil instead of Uttara / Begunia / Pattanaikaya with LILO of 400kV Mendhasal-Baripada D/C line under the approved ERSS-III scheme - Modifications / further revision in the ERSS-III Scheme.**
- 3.1 Director, CEA stated that the establishment of 2x315MVA, 400/220kV substation at Uttara in Odisha along with 400 kV Uttara-Mendhasal D/C line was approved as a part of Eastern Region Strengthening Scheme (ERSS-III) in the SCM held on 14-9-2009. As the land identified for Uttara S/S was earmarked for international airport, POWERGRID along with OPTCL identified another land at Begunia. Due to land acquisition problems at Begunia, OPTCL again identified a land at Pattanaikaya between Bhubaneswar and Puri. Creation of 400/220kV, 2x315MVA GIS at

Pattanaikaya along with a 400kV D/C line to Mendhasal was discussed and agreed in the previous Standing Committee meeting held on 08-02-2012. In the meeting, it was also decided That POWERGRID and OPTCL would make a joint site visit to firm up the sub-station land.

3.2 He added that after the site visit, it was decided that the proposed GIS at Pattanaikaya would be relocated to Pandiabil. It was also decided to LILO Baripada – Mendhasal D/c line at Pandiabil, instead of a direct D/c line between Mendhasal and Pandiabil.

3.3 He said that CEA vide its letter dated 29-06-2012 agreed in-principle for the same. The modified scope for establishment of new 2x315 MVA, 400/220 kV GIS at Pandiabil would be as following, which would be implemented by POWERGRID:

- i) 2x315 MVA, 400/220kV GIS sub-station at Pandiabil
- ii) LILO of both Ckt. of Baripada - Mendhasal 400kV D/c line at Pandiabil.

3.4 AGM (POWERGRID), enquired about the 220 kV system planned by OPTCL for draws of power from the 2x315 MVA, 400/220 kV GIS sub-station at Pandiabil.

3.5 Director (Engg.), OPTCL informed that the following 220 kV sub-station along with lines has been approved by OPTCL Board.

- i. Pandiabil GIS substation- Puri 220 kV D/C line
- ii. Pandiabil GIS substation- Pratap Sasan 220 kV D/C line

3.6 Members agreed to the above changes in the ERSS-III scheme.

4.0 **Establishment of 400kV substations at Darbhanga and Motihari in North Bihar under ERSS-VI Scheme of POWERGRID– Revision in Scope**

4.1 Director, CEA stated that the following inter state works for establishment of 400 kV substations at Darbhanga and Motihari in North Bihar were, interalia, agreed in the Standing Committee Meeting held on 08-02-2012 as a part of ERSS-VI. The ERSS-VI scheme is being implemented through tariff based competitive bidding.

- Establishment of 2x500 MVA, 400/220kV sub-station at Darbhanga along with Muzaffarpur - Darbhanga 400 kV D/c line with triple snow bird conductor.
- 2x500 MVA, 400/220 kV sub-station at Motihari along with LILO of Barh - Gorakhpur 400 kV D/C quad line at Motihari

4.2 He said that land identified for establishment of AIS at Motihari and Darbhanga substations is very fertile and acquisition of f 40 – 50 acres of land at each station would affect the large number of farmers. Also, Motihari and Darbhanga substations area is low lying and flood prone, which could require large volume of earth filling.

4.3 He added that in view of difficulty in acquiring adequate quantum of land for establishing AIS at Motihari and Darbhanga, POWERGRID has proposed establishment of GIS at these locations. Further due to non-availability of 220 kV voltage level at Motihari, POWERGRID has proposed 2x200 MVA 400/132 kV transformation capacity at Motihari. CEA has given agreed in-principle for the above changes.

4.4 GM (ERLDC), asked reasons for the decreasing transformation capacity at Motihari from 2x500MVA to 2x200 MVA.

- 4.5 AGM (POWERGRID) stated that composite system studies has been carried out considering existing transmission system and New proposed transmission system of Bihar and on that basis 2x200 MVA, 400/132 S/s at Motihari has been found adequate for meeting the load demand of Motihari areas. The system studies carried out is enclosed at Exhibit-I.
- 4.6 After further discussion, Members agreed to the following modification in ERSS-VI scheme.
- Establishment of 2x500 MVA, 400/220kV GIS sub-station at Darbhanga along with Muzaffarpur - Darbhanga 400 kV D/c line with triple snow bird conductor
 - 2x200 MVA, 400/132 kV GIS sub-station at Motihari along with LILO of Barh - Gorakhpur 400 kV D/C quad line at Motihari.
- 5.0 **Converting 2x80 MVar fixed reactors at Gorakhpur end of 400kV Barh-Gorakhpur D/C line into switchable line reactors.**
- 5.1 Director, CEA stated that the Barh - Gorakhpur 400 kV D/c line is having 2x80 MVar fixed line reactors at Gorakhpur end. For better reactive power management and system operation, POWERGRID has proposed to convert these fixed reactors into switchable line reactors. The proposal has been agreed in-principle by CEA.
- 5.2 AGM (Engg.), NTPC inquired about the requirement of reactor after Barh - Gorakhpur 400 kV D/c line is LILO at Motihari.
- 5.3 AGM, POWERGRID stated that even after LILO at Motihari, the line length of each section of the line would be more than 150 km and switchable line reactors gives operational flexibility.
- 5.4 After further discussions, members agreed the proposal.
- 6.0 **Addition / Replacement of Bus Reactors at 400 kV substations i.e. Gazuwaka, Maithon, Biharsharif, Jamshedpur, Rengali, Durgapur and Rourkela.**
- 6.1 Director, CEA stated that the Eastern Regional Grid is experiencing high voltage conditions at 400 kV substations. In order to mitigate the high voltage problem, POWERGRID has proposed following bus reactors:
- i) Addition of 125 MVar Bus Reactor at Gazuwaka 400 kV (East) Bus
 - ii) Addition of 2x125 MVar Bus Reactor at Rengali 400 kV Bus
 - iii) Addition of 1x125 MVar Bus Reactor at Maithon 400 kV Bus
 - iv) Addition of 1x125 MVar Bus Reactor in parallel with existing 50MVar (3x16.67) bus reactor at Biharsharif 400kV bus, using the existing reactor bay.
 - v) Addition of 2x125 MVar Bus Reactor in parallel with existing 2x50MVar bus reactor at Jamshedpur 400 kV bus.
 - vi) Addition of 125 MVar Bus Reactor in parallel with existing 50MVar bus reactor at Rourkela 400 kV bus.
 - vii) Addition of 2x125 MVar Bus Reactor at Durgapur (Parulia) 400 kV Bus. Out of 2x125 MVar bus Reactor, 1x125 MVar Bus Reactor would be used in parallel with the existing 1x50 MVar bus reactor, using the existing reactor bay.
- 6.2 He said that in case of space constraint for parallel operation of reactors at Biharsharif, Jamshedpur, Rourkela and Durgapur 400kV buses, the existing 50 MVar reactor would be replaced by 125 MVar reactor and the 50 MVar reactors would be utilised as Regional spare.

- 6.3 GM (ERLDC) stated that in order to optimize the requirement of reactors, generators (NTPC) may be advised to absorb MVA_r (operation at leading power factor) within the capability curve of the generators instead of operating at unity power factor during high voltage condition. He added that 400 kV Baripada substation is also experiencing high voltage and proposed reactor at Baripada. CEA agreed and suggested that ERDC as system operator was authorized to give instruction to NTPC.
- 6.4 AGM, POWERGRID stated that there is space constraint at Baripada S/s.
- 6.5 Director, Project (OPTCL) wanted POWERGRID to install bus reactors at Dubri 400kV S/s of Odisha which is also experiencing very high voltage.
- 6.6 Member (PS) stated that it is general practice that the owner of the substation provides reactive compensation at his own cost. In Western Region, MSETCL, GETCO, MPPTCL and CSPTCL are installing reactors at their sub-stations. Similar practice is being followed in other regions also. If necessary, OPTCL may provide bus reactors at Dubri 400 kV substation.
- 6.7 After further discussions, members agreed with the proposal to install bus reactors at above locations and suggested to attach the voltage profile at these 400 kV substations as a justification. **(Exhibit-I)**
- 7.0 **Establishment of (i) 2x315 MVA, 400/220kV GIS sub-station at Kishanganj in Bihar instead of earlier approved AIS sub-station at Karandighi in West Bengal and (ii) associated modifications in Transmission system for transfer of power from generation projects in Sikkim to NR/WR.**
- 7.1 Director, CEA stated that the 2x315 MVA, 400/220kV AIS substation at Karandighi in West Bengal (WB) to be implemented by POWERGRID was agreed in the SCM held on 28-12-10 as a part of the transmission scheme for evacuation and transfer of power from generation projects in Sikkim. POWERGRID has informed that in spite of persistent efforts and persuasion with West Bengal for last 3 years, the land could not be acquired at Karandighi in WB.
- 7.2 He added that POWERGRID in consultation with DM, Kishanganj, Bihar have visited several sites in Kishanganj (Bihar) but could not identify suitable land measuring around 50 to 55 acres required for establishment of the proposed AIS substation. There is a fair possibility of getting about 25 acres of Govt. land in Kishanganj area for establishment of GIS. CEA has agreed in-principle for 2x315 MVA 400/220 kV GIS at Kishanganj.
- 7.3 Director, WBSTCL enquired about the efforts made by POWERGRID in procuring land at Karandighi and whether POWERGRID consulted State Government before shifting 400 kV S/s from Karandighi in West Bengal to Kishanganj in Bihar.
- 7.4 ED, POWERGRID informed that they have been perusing at all Administrative level with West Bengal Govt. for the last three years for acquiring land at Karandighi and has even met Principal Secretary / Secretary (Power) in this regard. They have written a final letter **(Annexure - III)** to WB Government before taking decision to shift the location.
- 7.5 After further discussions, following modifications in the associated transmission elements in the Sikkim Transmission System were agreed by members and there would be no change in the other transmission elements in the approved transmission scheme for evacuation and transfer of power from generation projects in Sikkim.

- **Transmission system under execution by TPTL (JV of TUL and POWERGRID) for Teesta-III (1200 MW) evacuation**
 - 400 kV Teesta-III – Mangan and Mangan-Kishanganj (Bihar) (instead of Karandighi in WB) D/C line with Quad Moose conductor
- **Transmission Scheme under the Scope of POWERGRID : Transmission System for Transfer of power from generation projects in Sikkim to NR/WR (Part-A and Part-B)**

In Part-A:

- Establishment of 2x315 MVA 400/220 kV GIS sub-station at Kishanganj in Bihar instead of Karandighi in WB.

In Part-B:

- LILO of 400 kV Teesta III – Kishanganj (Bihar) D/c line at Rangpo (Quad) (Teesta III – Kishanganj 400kV D/c line being constructed through JV route)
- 400kV Kishanganj (Bihar)– Patna D/C (Quad) line

8.0 Augmentation of Transformation Capacity at 400/220kV, 2x315 MVA Maithon Substation (PG) to 2x500 MVA

8.1 Director, CEA stated that the maximum loading on 2x315 MVA, 400/220 kV at Maithon (PG) has gone up to 300 MW on each transformer during last one year and outage of one ICT may lead to failure of other ICT due to excessive loading. The augmentation / replacement of transformers at Maithon (PG) by 2x500 MVA transformers was discussed and agreed in the 73rd OCC meeting of ER and was also agreed in the ERPC meeting. The 2x315 MVA transformers would be used as regional spare.

8.2 Members agreed with the proposal.

9.0 Augmentation of transformation capacity at 220/132 kV, 2x100 MVA Ara substation of POWERGRID with an additional 1x160 MVA 220/132 kV ICT.

9.1 Director, CEA stated that loading on 2x100 MVA transformers at 220/132 kV Ara substation has been more than 90 MW and maximum loading has gone up to 120 MW on couple of occasions. If one ICT trips, the may also trip on overloading thus casing huge load shedding by BSEB. This issue was discussed in the previous Standing Committee meeting held on 08-02-2012 but was not agreed upon. Subsequently, the issue was discussed in ERPC on 25th August, 2012 and augmentation of transformation capacity at 220/132 kV Ara substation by 1x160 MVA was agreed. POWERGRID was requested to go ahead with its procurement action.

9.2 Members agreed to this augmentation proposal.

10.0 Augmentation of transformation capacity at 400/220 kV, 2x315MVA Muzaffarpur substation of POWERGRID with an additional 1x500 MVA 400/220 kV ICT.

10.1 Director, CEA stated that presently 400/220 kV Muzaffarpur substation of POWERGRID is having transformation capacity 2x315MVA. POWEGRID has

informed that the total power being transferred through these ICTs is generally 400 MW during peak hour and it has gone to 470 MW in month of December, 2012. Outage of one ICT would lead to failure of other ICT due to excessive loading. Keeping in view, POWERGRID has proposed to augment the transformation capacity of 400/220 kV, 2x315MVA Muzaffarpur substation with an additional 1x500 MVA 400/220 kV ICT.

10.2 After discussion, members agreed to the proposal of additional 1x500 MVA 400/220 kV ICT at Muzaffarpur substation.

11.0 Requirement of additional spare converter transformers (single phase unit) for 2x500 MW Gazuwaka and 1X500 MW Sasaram HVDC back-to-back (B-t-B) stations.

11.1 Director, CEA stated that the HVDC Back-to-Back (B-t-B) Stations at Gazuwaka (Between ER and SR) and Sasaram (between ER-NR) were planned for exchange of power during contingencies between the two connecting regions. These links are being utilised for continuous exchange of power between connecting regions. Each pole of B-t-B has six single phase converter transformers. The pole-I at Gazuwaka was commissioned in Sep. 1999 and is of AREVA make and pole-II at Gazuwaka was commissioned in March 2005 and is of ABB. Gazuwaka has total no. of 14 converter transformers, which include two no spare transformers one for each pole. The B-t-B at Sasaram was commissioned in Dec. 2002 and is of AREVA make. Sasaram has 7 No conveter transformers, which include one number of spare converter transformer.

11.2 He said that POWERGRID has informed that these links are being utilised continuously and on load tap changers on these transformers are subjected to enormous stress which affects the life of transformers. Multiple unit failure of converter transformers may lead to outage of one pole for longer period of time thereby reducing inter regional exchange capacity. For improving the reliability and grid security POWERGRID has proposed one additional spare converter transformers for each pole at Gazuwaka and Sasaram. He requested POWERGRID to make a presentation in this regard.

11.3 ED, POWERGRID in its presentation highlighted that high failure rate of converter transformers is a world wide phenomenon and gave details of the failures observed at Gazuwaka and Sasaram. He said that these converter transformers are off shore manufactured items and have high lead time of procurement. On a query about the reasons for high failure rate of converter transformers, he said that in HVDC frequent power order changes takes place, which requires frequent operation of tap changers on converter transformers. This causes enormous stress on the converter transformers.

11.4 He stated that the procurement of spare converter transformers at Gazuwaka have been agreed by the constituents of SR in the 33rd standing committee meeting of SR held on 20th October, 2011 at New Delhi.

11.5 After further deliberations, members agreed to the proposal of POWERGRID to procure one spare converter transformer at Sasaram (AREVA make) and two spare converter transformers at Gazuwaka one for each pole (One AREVA make, other ABB make).

12.0 Proposal for procurement of one Spare single phase unit of 500 MVA 765/400 kV ICTs for Eastern Region

- 12.1 Director, CEA stated that at present ten (10) units of single phase 765/400 kV, 500 MVA, transformers are under operation at Gaya (3x1500 MVA) Sub-station which includes one spare. Also four(4) more units of single phase 500 MVA, 765/400 kV transformers including one spare are scheduled for commissioning by 31.03.2013 at Sasaram (1x1500 MVA) sub-station. POWERGRID has informed that these units are manufactured at off shore works of Hyosung (South Korea) and Crompton Greaves (Hungary). Any major failure of these ICT would be repaired at off shore works, which is a time consuming process. Further, additional failure of any unit would cause transmission constraint. Therefore, POWERGRID has proposed to procure one 765/400 kV 500 MVA unit as spare for Eastern Region.
- 12.2 AGM, POWERGRID stated that 765kV Gaya-Balia–Lucknow and Gaya-Sasaram-Fatehpur is high power transmission corridor and multiple failure of these units may lead to overloading of the other units operating in parallel and may cause transmission constraint at 765 kV level. He added that as these transformers were manufactured at off-shore works of manufacturer, any major failure of these ICTs shall necessitate repair at their off-shore works only, which takes 2-3 years for transportation of the unit from site to works and back. In view of the above, POWERGRID has proposed to procure one (1) no. single phase 765/400 kV ICT of 500 MVA capacity as spare for ER.
- 12.3 On a query from member, where these spare unit would be placed, AGM, POWERGRID replied that the spare unit be placed at Gaya.
- 12.4 After further discussions, members agreed to the proposal of procurement of one no. 765/400 kV 500 MVA single phase transformer.
- 13.0 **Connectivity to DPSC Ltd. (Distribution licensee in WB) through establishment of 400kV sub-station at Chalbalpur (West Bengal) and LILO of one circuit of 400kV Mejia- Maithon D/C line at Chalbalpur**
- 13.1 Director, CEA stated that Dishergarh Power Supply Company (DPSC), is a private sector distribution licensee, which is presently supplying power to consumers in its licensed area of Asansol, West Bengal. They have estimated that load in the area would grow to the extent of 500 MW by 2015-16 and would increase further to 1000 MW progressively in future. In order to meet such load growth, DPSC intended to create a 400kV Chalbalpur S/S in West Bengal by LILO of one circuit of 400 kV Mejia-Maithon D/C ISTS line and sought direct connectivity for 500 MW from the CTU. The issue was discussed in the LTA / connectivity meeting on 29-07-2011 and standing committee meeting on 08-02-2012 wherein WBSETCL had emphasized that DPSC should take in principle approval from WBERC. Subsequently, DPSC had filed a petition in CERC, which directed CTU to expeditiously process the application for grant of connectivity as per Connectivity Regulation. **(Annexure-IV)**
- 13.2 He added that the matter was also discussed in CEA on 10-10-2012 among various stake holders. In the meeting WBSETCL informed that DPSC has signed connection agreement with them for drawal of 250 MVA in phases through 220 kV interconnection. DPSC has also obtained in principle clearance from DVC in March 2012 for procurement of additional 200 MW power through 220 kV connectivity with DVC network. In the meeting, DPSC has informed that they have applied for 500 MW connectivity with ISTS network in order to procure power at competitive prices for the benefit of their consumers. In the meeting, connectivity to DPSC was granted by LILO of one circuit of Mejia-Maithon 400 kV D/C line at Chalbalpur S/S,

the connectivity arrangement would be implemented by DPSC. While granting connectivity, it was clarified that DPSC is an intra-state entity in the state of West Bengal and there would be no change in the status of DPSC as intra-state entity under control area of WBSLDC.

- 13.3 Director, WBSTCL objected to the grant of connectivity to DPSC by CTU without the permission of the WBERC. He stated that as per 18th EPS load of DPSC area by the end of 12th plan would be about 180 MW and DPSC has already signed a connection agreement with them for drawal of 250 MVA in phases through 220kV interconnections. DPSC has also obtained the in-principle clearance from DVC for procurement of additional 200 MW of power at 220 kV. Keeping this in view, establishment of 400kV S/s at Chhalbalpur by DPSC is not justified.
- 13.4 Member (PS) clarified that connectivity to the DPSC was granted after CERC directed CTU to expeditiously process the application of the petitioner for grant of connectivity in accordance with Connectivity Regulations. Before that, the issue was discussed among various stake holders including WBSTCL in the meeting at CEA on 10-10-2012 and consent of all stake holders for the grant of connectivity was taken. Further, for implementing the above connectivity arrangement, DPSC has to seek investment approval from WBERC and WBSTCL may present their views / objections to the WBERC at that time.
- 13.5 After further discussions, members agreed to the grant of connectivity to DPSC.

14.0 Transmission system associated with Phase-II generation projects in Sikkim under the scope of Govt. of Sikkim.

- 14.1 This matter was not discussed in the meeting, as there was no one present from Department of Power, Government of Sikkim in the meeting.

15.0 Requirement of Multi Circuit Towers in some transmission corridors under implementation by POWERGRID.

- 15.1 AGM, POWERGRID stated that they are facing severe RoW problems in certain stretches of following transmission lines being constructed by POWERGRID especially when the lines are approaching near sub-stations due increased habitation and narrow availability of corridor. Use of multi circuit tower is proposed to overcome the problem.

i) Multi Circuit Towers in forest portion of Maithon - Gaya and Koderma - Gaya 400kV D/c quad line

AGM, POWERGRID stated that Maithon-Gaya and Koderma-Gaya 400kV D/c Quad lines are under construction as part of transmission system associated with DVC and Maithon RB generation projects. Both these lines are passing through forest areas in Jharkhand and Bihar. In order to optimize the RoW requirement as well as to minimize forest involvement, multi circuit towers are being proposed in the forest portion about 36 kms of common route of Maithon-Gaya and Koderma-Gaya 400kV D/C Quad lines.

ii) Multi Ckt. Towers for termination of Jharkhand Pool (Chandwa) - Gaya and Nabinagar-II - Gaya 400kV D/c quad line at Gaya – 3km.

AGM, POWERGRID stated that Jharkhand Pool (Chandwa)-Gaya 400 kV D/c (Quad) line is under construction by POWERGRID as part of Transmission

System for Phase-1 generation projects in Jharkhand and West Bengal. Nabinagar II - Gaya 400 kV D/c (Quad) line is under construction by POWERGRID as part of Transmission System associated with Nabinagar-II generation project of NTPC. Use of Multi circuit towers is proposed for terminating these two lines at Gaya for about 3 km of route length.

iii) Multi Circuit Towers for termination of Kishanganj - Patna and Nabinagar II - Patna 400kV D/c (Quad) line at Patna – 3.5 km

AGM, POWERGRID stated that 400 kV Kishanganj - Patna D/c (Quad) line is under implementation as part of Transmission System for Phase-I Generation Projects in Sikkim. Nabinagar II - Patna 400kV D/c (Quad) line is under implementation as part of Transmission System associated with Nabinagar-II generation project of NTPC. Use of multi circuit towers for about 3.5 kms route length is proposed for termination of these lines at Patna sub-station.

iv) Multi Circuit Towers for termination of 4 nos. 400 kV D/c lines at Ranchi (New) 765/400 kV sub-station

POWERGRID informed that following 4 nos. 400 kV D/c transmission lines are under implementation / approved under different projects which are to be terminated at Ranchi (New) 765/ 400 kV sub-station.

Sl.	Transmission Line	Associated Scheme	Status
1.	Jharkhand Pool (Chandwa) – Ranchi New 400 kV D/c line (Quad Moose Conductor)	Transmission System for Phase-I Generation Projects in Jharkhand & West Bengal	Under Implementation by POWERGRID
2.	Patratu – Ranchi New 400 kV D/c line (Twin Moose Conductor)	JSEB Scheme	Under implementation by POWERGRID as consultancy work of JSEB
3.	Purulia PSPP – Ranchi New 400 kV D/c line (Twin Moose Conductor)	Eastern Region Strengthening Scheme-VII	To be implemented through Tariff Based Competitive Bidding
4.	North Karanpura – Ranchi New 400 kV D/c line (Quad Moose Conductor)	North Karanpura Transmission System	To be implemented by POWERGRID matching with North Kanapura generation project of NTPC

Severe Right-of-Way constraints are envisaged in termination of these lines at Ranchi New sub-station. In view of the above, it is prudent to plan the termination of these lines on multi-circuit towers near Ranchi New sub-station. Accordingly, following arrangement has been proposed :

a. Termination of lines at Sl. 1 & 2 above i.e. Jharkhand Pool (Chandwa) – Ranchi New 400 kV D/c line (Quad Moose Conductor) & Patratu – Ranchi New 400 kV D/c line (Twin Moose Conductor) on one multi-circuit tower :

The multi circuit towers shall be constructed by POWERGRID as part of Jharkhand Pool (Chandwa) – Ranchi New 400 kV D/c line (Quad Moose Conductor) and the same shall be utilized for stringing of Patratu – Ranchi

New 400 kV D/c line (Twin Moose Conductor) of JSEB which is being constructed by POWERGRID as a consultancy works of JSEB.

It is envisaged that 6 nos multi circuit towers having a route length of about 2-2.5 kms. would be required.

b. Termination of lines at Sl. 3 & 4 above i.e. Purulia PSPP – Ranchi New 400 kV D/c line (Twin Moose Conductor) & North Karanpura – Ranchi New 400 kV D/c line (Quad Moose Conductor) on one multi-circuit tower :

The multi circuit towers shall be constructed as a part of Purulia PSPP - Ranchi New 400 kV D/c line which is to be implemented through Tariff Based Competitive Bidding. Subsequently, the same would be utilized for stringing of North Karanpura - Ranchi New 400 kV D/c (quad) line of POWERGRID for termination at Ranchi,

It is envisaged that 6 nos multi circuit towers having a route length of 1.5 – 2 kms. would be required. Regarding construction of multi circuit tower portion proposed to be established through competitive bidding process, POWERGRID would co-ordinate with the BPC i.e. PFC for inclusion of same under Purulia – Ranchi New 400 kV D/c line of ERSS-VII scheme

15.2 Members agreed to the proposal of use of multi circuit towers for the above lines.

16.0 Establishment of 765/400 kV Pooling Station at Sundargarh instead of Jharsuguda

16.1 Director, CEA stated that establishment of 765/400 kV Pooling Station as Jharsuguda was approved as part of Transmission System for Phase-I Generation Projects in Orissa. POWERGRID has informed that due to non-availability of land at Jharsuguda, the Pooling Station is now being established at Sundargarh. Accordingly, all references to Jharsuguda corresponding to 'Transmission System for Phase-I Generation Projects in Orissa' would be replaced by Sundargarh.

16.2 AGM, POWERGRID informed that land for substation at Sundargarh has been acquired and it will be completed by May, 2014.

16.3 Members noted the change.

17.0 Underlying transmission arrangement of STUs for drawal of power from PGCIL's new sub-stations under Eastern Region Strengthening Scheme-III (ERSS-III)

17.1 Director, SP&PA stated that under ERSS-III, following new ISTS 400 kV sub-stations are being implemented by POWERGRID, which are under various stages of completion.

- i) 2x200 MVA, 400/132 kV sub-stations at Lakhisarai and Banka in Bihar
- ii) 2x315 MVA, 400/220 kV at Chaibasa and Daltonganj in Jharkhand
- iii) 2x315 MVA, 400/220 kV at Bolangir, Keonjhar and Pandiabil in Odisha

- 17.2 He requested that Bihar, Jharkhand and Odisha may kindly intimate the transmission arrangement for drawl of power from these sub-stations and status of implementation of the same.
- 17.3 Director, OPTCL intimated following lines for drawl of power from 400/220 kV Bolangir (PG) sub-station.
- i) LILO of Burla-Bolangir 220 kV S/C line at Bolangir (PG) (expected by March, 13)
 - ii) Bolangir (OPTCL) – Bolangir (PG) 220 kV S/C (to be awarded shortly)
 - iii) Kisinga-Bolangir (PG) 220 kV S/C lines (to be awarded shortly)
- 17.4 Director, OPTCL also informed Keonjhar (PG)- Nayagarh 220 kV D/C line for drawl of power from 400/220 kV Keonjhar (PG) sub-station which is anticipated to be commissioned within two years. He added that other lines from Keonjhar and drawal arrangement from Pandiabil would be intimated to CEA shortly.
- 17.5 As no representative from Bihar and Jharkhand were present in the meeting, Bihar and Jharkhand would be requested to provide drawl arrangement from ISTS stations mentioned above.
- 18.0 Unified Real Time Dynamic State Measurement (URTDSM) scheme as a part of Smart Transmission Grid Development.**
- 18.1 COO, CTU stated that the Unified Real Time Dynamic State Measurement (URTDSM) Project was approved in the Joint Standing Committee Meeting held on 5th March 2012. As per Joint Standing Committee approval, 15% of the PMUs to be installed under this project are to be manufactured in India. Subsequent to this approval, the matter was discussed with prospective bidders. During discussions with the bidders, it emerged that 15 % PMU to be manufactured in India is a small quantity to attract Vendors to establish manufacturing facility in India. Hence this percentage needs to be enhanced. This enhanced provision shall help establish indigenous manufacturing and utilities shall also have the benefit of O&M support available within India. Therefore, it is proposed to increase the provision of the PMUs to be installed under URTDSM project to be manufactured in India from 15 % to 30%.
- 18.2 Members agreed to the change.
- 19.0 Proposal of Static VAR Compensators (SVC) in Eastern Region.**
- 19.1 Director, CEA stated that enquiry committee was constituted by Ministry of Power to analyse the causes of grid disturbances in NEW Grid in July 2012 under the chairmanship of Chairperson, CEA. The committee, interalia, recommended installation of adequate static and dynamic reactive power compensators to provide voltage support under steady state and dynamic conditions.
- 19.2 He added that system studies have been carried out jointly by CEA and POWERGRID corresponding to 2016-17 time frame, peak load condition considering all India network to identify / estimate the dynamic reactive power support requirement. In initial set of studies, 24 locations were identified based on voltage profile, short circuit level, interconnection with generating switchyard, location of existing / planned FACTS devices, availability of space etc. The voltage

variations observed at these locations during last year were very high in the range of 40-60 kV. The studies were conducted considering SVC of ± 600 MVar at candidate location one at a time.

- 19.3 He said that the studies were analysed and it was found that SVCs try to use its maximum range in first swing, while actual usage of SVC capacity was in the range of ± 200 MVar to ± 250 MVar. Accordingly, a size of ± 400 MVar was considered as optimum size with additional benefit of ± 150 MVar to ± 200 MVar during steady state. Based upon the above studies, 11 no. of locations were chosen in All India Grid for providing dynamic reactive compensation in first phase. Further studies were carried out considering ± 400 MVar SVC at these eleven locations and 4 more existing / approved SVCs in Northern Region simultaneously. Based on the studies, SVC of ± 400 MVar is proposed at four locations i.e. a) Rourkela b) Ranchi (New) c) Kishanganj and d) Jeypore in Eastern Region.
- 19.4 GM, POWERGRID stated that SVC are fast becoming obsolete and the committee should consider provision of STATCOM instead of SVC for providing dynamic reactive support. He added that STATCOM has faster response time, require less space and world wide, STATCOMs are preferred over SVCs.
- 19.5 GM, ERLDC stated that voltage variations observed at Jeypore 400 kV bus is very high and it would be appropriate if an SVC of ± 400 MVar is also considered at Jeypore.
- 19.6 Member (PS), CEA stated that each dynamic compensator involves substantial investment and it would be appropriate if detail system studies are carried out before selecting any additional node for providing dynamic reactive compensation.
- 19.7 After, further discussions dynamic reactive power shunt compensations (SVC/STATCOM of proven capacity) was agreed at following locations in Eastern region in first phase:
- a) Rourkela ± 400 MVar
 - b) Ranchi (New) ± 400 MVar
 - c) Kishanganj ± 400 MVar
 - d) Jeypore ± 400 MVar
- 20.0 **Provision of Bus and line reactor at Barh proposed by ERLDC in Eastern Region.**
- 20.1 GM, ERLDC stated that Eastern Grid is experiencing very high voltage during off peak hour. In order to control and overcome high voltage problems in ER, following bus / line reactors as given below are proposed:
- a) 1x125 MVar bus Reactor at Barh by NTPC
 - b) Installation of reactors (s) at 400 kV system by WBSETCL
 - i) 2x80 MVar bus reactor at Purulia PSP
 - ii) 1x80 MVar switchable line reactor at Bidhannagar end for each ckt of 400 kV PPSP-Bidhannagar D/C line
 - iii) 1x80 MVar switchable line reactor at Arambag end for each ckt of 400kV PPSP-Arambag D/C line
- 20.2 AGM, NTPC stated that 2x63 MVar line reactors at Barh end are existing for 400 kV Barh-Gorakhpur D/C Quad line. Both circuits of this line will be LILO at Motihari 400/132kV S/s resulting in reduced line length.

- 20.3 ED, POWERGRID stated that line length of each section of 400kV Barh- Motihari – Gorakhpur D/C will be more than 160kms. He suggested that voltage must be controlled at the generation end so NTPC should install 1x125MVA bus reactor at Barh.
- 20.4 After further discussions, NTPC agreed to provide 1x125 MVA bus reactor at Barh.
- 20.5 Director (Operation) WBSTCL stated that there is no space at Purulia PSP. They have a piece of land near Purulia PSP and have a proposal for establishment of Purulia switching station, where the lines from Purulia PSP would be LILO. They have not got permission from forest department for establishing the switching station. He requested POWERGRID to install reactors at these locations.
- 20.6 Member(PS) stated that it is general practice followed in all region that the owner of the substation provides reactor at their substation.
- 20.7 After further discussions, WBSTCL agreed to provide reactor at Purulia switching station after getting clearance from forest authorities for establishing Purulia switching station and would explore the possibility of providing switchable line reactors at Bidhannagar and Arambag.
- 21.0 **Short closure of Durgapur-Jamshedpur 400 kV D/C line being implemented as part of Eastern Region System Strengthening Scheme-I (ERSSS-I)**
- 21.1 AGM, POWERGRID stated that Durgapur-Jamshedpur 400 kV D/C is being implemented as part of ERSSS-I. The construction for this line started in 2007 and after making good progress, work was stopped in Andal area due to objections from WBIDC. After a delay of two years, the route was diverted in consultation with WBIDC, ECL and other agencies. The work on diverted route started in Dec., 2009. This diversion has resulted in abandoning of 26 casted foundation in earlier route. After considerable progress in the diverted route, mainly in ECL coal mine area, CISF and security staff of ECL forcibly stopped the work . Subsequently, ECL suggested an alternative route, which is opposite direction. Walk over survey of the alternative route indicated that it passes through industrial area, protected forest area and thickly populated area of Durgapur Industrial township and is unfeasible.
- 21.2 He said the issue was discussed in SCM in New Delhi on 20.09.2010, wherein, it was decided that till the portion of the line between Durgapur (PG) and DSTPP (DVC) gets completed, the line may be terminated at DSTPP (DVC) thus forming DSTPP (DVC) – Jamshedpur for 400 kV D/C line. After the completion of Durgapur (PG)-DSTPP (DVC) portion of the line, the line may be reconfigured as Durgapur (PG)-Jamshedpur 400 kV D/C line with one circuit being LILO at DSTPP (DVC).
- 21.3 He added the line has been terminated at DSTPP (DVC) and is under operation as DSTPP (DVC)–Jamshedpur for 400 kV D/C line. In view of no progress in Durgapur (PG)-DSTPP (DVC) section of the line, POWERGRID has proposed the following.
- a) Final configuration of the line may be modified as DSTPP (DVC)-Jamshedpur 400 kV D/C line, instead of Durgapur (PG)–Jamshedpur 400 kV D/C line
 - b) Dismantling of tower / Structures erected between DSTPP (DVC) and Durgapur (PG) and kept as regional spare.
 - c) Utilization of 2 no. 400 kV line bays at Durgapur (PG) for future line.
- 21.4 Members agreed with the proposal.

22.0 **Review of Transmission Planning Criteria**

- 22.1 Director, CEA stated that the Enquiry Committee headed by Chairperson, CEA for grid events in July 2012 has recommended that transmission planning criteria needs to be reviewed in the context of market scenario within three months. In this regard, a note on the issues relating to “Review of Planning Criteria” has been prepared. A copy of this note and the existing “Manual on Transmission Planning Criteria” are available on CEA website.
- 22.2 He said that comments on the Review of Planning Criteria have been received from some utilities and based on that Planning Criterion is being reviewed and the draft would be ready soon.
- 22.3 He requested members who have not send their comments / suggestions to give their views / suggestions at earliest.

23.0 **Integrated planning for State transmission system:**

- 23.1 Director, CEA stated that as per section 39 of the Electricity Act, STUs need to carry out their planning function related to intra-state transmission in coordination with the CEA and CTU. There have been a few instances in the past, when the STU has planned important transmission system or allowed connectivity to large generation capacities without involving CEA and CTU and this may result in congestion / operational difficulties for the ISTS/national grid. It is proposed that STU should evolve following of their systems involving CEA and CTU.
- (a) 220 kV and above system
 - (b) Large scale harnessing of renewable generation
 - (c) System for evacuation of power from a complex having generation capacity of 250 MW and above in case of conventional generation and 50 MW and above in case of renewable generation.

24.0 **State wise assessment of Load Generation Scenario of Eastern Region:**

- 24.1 Director, CEA said that in order to have reasonably correct assessment of load generation scenario, STUs are requested to provide seasonal load and generation in the format given in the agenda note. **(Annexure-V)**

ANNEXURE- I

List of participants for the 1st Standing Committee Meeting on Power System Planning in ER held on 05.01.2013 at POWERGRID, Gurgaon.

S.N.	S/Shri	Designation	Organization	Mobile/Tel no	E mail address
1	Ravinder	Member (PS)	CEA	26102721	
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10	Ramachandra	CM(CTU)	PGCIL	9910378128	
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29	N. Nallarasani	DGM, NLDC	POSOCO	9449599190	
30	U.K. Verma	GM, ERLDC	POSOCO	8902496220	
31	Surajit Banerjee	ERLDC	POSOCO	9433041823	suroitb@gmail.com
32	Dinkar Divate	GM	NTPC	9650992237	
33	S.S.Mishra	AGM (Comml)	NTPC	9650991145	
34	Anil Kashik	DGM	NTPC	9650992088	
35	Shyam Kumar	AGM	NTPC		

STATUS OF PROJECTS UNDER IMPLEMENTATION BY POWERGRID IN EASTERN REGION

Sl. No.	Name of the Trans line	GoI / BoD Appl.	Est. Cost	Commissioning Schedule	Remarks / Constraints & assistance required.
1	Common Scheme for 765KV Pooling Station and Network Associated with DVC & Maithon RB Project etc and Inport by NR & WR via ER	Aug'08	7075.33	Dec'13	
	400KV D/C Maithon-Gaya line (Q) (Including. M/C portion - 39 Kms)			Mar'13	Forest clearance delayed and IInd stage accorded in Aug'12. Permission to work given on 8.11.12 from Jharkhand Govt. Contingency arrangement being planned to connect Maithon -Gaya with Koderma-Gaya, by-passing multi-ckt portion in forest, to form Maithon-Koderma line anticipated by Jan'13.
	765KV S/C Gaya - Sasaram line			Mar'12	Commissioned in Mar'12 alongwith Sasaram-Fatehpur section to form Gaya-Fatehpur line through mid-point reactor at Sasaram.
	765KV S/C Gaya - Balia line			Feb'12	Line completed in Feb'12. Commissioned with contingency arrangement alongwith Biharshariff-Sasaram line to form Gaya-Biharshariff and Sasaram-Balia line which were commissioned in Jan'12 & Feb'12 respectively..
	765KV S/C Ranchi - WR Pooling Station *			Dec'13	Completion delayed due to delayed in land acquisition for Ranchi S/s (Acquired in May'11) & disturbance by MOISt Group on 7/4/12 . Forest clearance (Ist stage awaited). Critical
	765KV S/C Balia - Lucknow line			Feb'12	Line commissioned in Feb'12.
	400KV D/C Ranchi (New) -Ranchi line -I (Quad)			Dec'13	Matching with completion of Ranchi S/Stn & Ranchi-WR Pooling stn. line . Critical. Construction works held up due to obstruction by NHAI.
	400KV D/C Ranchi (New) -Ranchi line - II (Quad)			Dec'13	Matching with completion of Ranchi S/Stn & Ranchi-WR Pooling stn. line . Critical. Construction works held up due to obstruction by NHAI.

	400KV D/C Lucknow (New) - Lucknow line - II (Quad)			Feb'12	Line commissioned in Feb'12.
	LILO of 400KV D/C Barh - Balia at Patna (Q)			Nov'12	Line commissioned in Nov'12.
	LILO of both Ckt of Allahabad - Mainpuri at Fatehpur			July'12	Line commissioned in July'12.
2	Supplementary Transmission System Associated with DVC & Maithon Right Bank Proejct	Aug'08	2360.95	Dec'13	
	400KV D/C Maithon RB - Ranchi (PG) line			Dec'11	Line commissioned in Dec'11.
	400KV D/C Bokaro TPS Extn.- Koderma TPS line			Dec'13*	Gen. project (Bokaro STPP) delayed beyond 2012-13*. Final forest clearance also awaited (199 Ha).
	400KV D/C Koderma - Gaya line (Quad)(Including. M/C portion -39 Kms)			Mar'13	Forest clearance delayed and IInd stage accorded in Aug'12. Permission to work given on 8.11.12 from Jharkhand Govt.Contingency arrangement being planned to connect Maithon - Gaya with Koderma-Gaya, by-passing multi-ckt portion in forest, to form Maithon-Koderma line anticipated by Jan'13.
	400KV D/C Mejia - Maithon line			Nov'11	Line commissioned in Nov'11
	765KV S/C Sasaram - Fatehapur line-I*			Mar'12	Commissioned in Mar'12 alongwith Gaya - Sasaram section to form Gaya-Fatehpur line through mid-point reactor at Sasaram.
	765KV S/C Fatehpur - Agra line			May'12	Line commissioned in May'12
	400KV D/C Biharshariff - Sasaram line (Quad)			Feb'12	Ckt-I commissioned Jan'12 and Ckt-II commissioned with contigency arrangement alongwith Biharshariff-Sasaram line to form Gaya-Biharshariff commissioned in Jan'12 and Sasaram-Balia in Feb'12.
	LILO of 400KV S/C Singrauli - Kanpur line at Fatehpur			Jan'12	Line commissioned in Jan'12.
	LILO of 400KV S/C Allahabad - Kanpur line at Fatehpur			Dec'11	Line commissioned in Dec'11.
	LILO of 220KV D/C Fatehpur (UPPCL) - Kanpur (UPPCL) line at Fatehpur			Dec'11	Line commissioned in Dec'11.

	LILO of 220KV D/C Dehri - Bodhgaya line at Gaya			Mar'12	Ckt-I commissioned in Jan'12 & Ckt-II in Mar'12.
3	Eastern Region Strengthening Scheme - I	Oct'06	975.96	Mar'13	
	400KV D/C Durgapur - Jamshedpur			April'12	Major portion of the line from Andal (DSTPS) up to Jamshedpur has been commissioned in April'12. Implementation of balance portion of line falling in Coal belt & Andal Airport zone abandoned due to severe RoW issues.
	400KV D/C Jamshedpur - Baripada			May'12	Severe ROW problem being faced in Jharkhand at 12 locs. (5 Kms). Matter continuously being taken up with chief Sec. & distt administration. The transmission line has been commissioned from Baripada to DVC Jamshedpur S/stn. (220Ckm) by connecting to the LILO of arrangement earlier planned on 01 ckt of Jamshedpur -Baripada line.
	400KV D/C Baripada - Mendhasal			Aug'11	Line completed & commissioned on 29.08.11.
	Re-conductoring of 400KV D/C Siliguri - Purnea line (HTLS Cond.)			Mar'13	Supply of conductor has been delayed due to earth quack in Japan and flood in Thailand which has delayed the supply of material & delayed the erection. Works stopped due to non-availability of S/D.
4	Immediate evacuation system for NABINAGAR TPS	Feb'10	215.86	Jun'12	
	400KV D/C Nabinagar - Sasaram line (Twin lapwing))			Jun'12	Line commissioned in Jun'12.
5	Eastern Region Strengthening Scheme - III	July'10	1272.8	Sep'14	
	400KV D/C Sasaram - Deltonganj line			Sep'14	Completion matching with Daltanganj S/s delayed due to non-availability of sub station site. Stringing commenced from Dec'12.
	LILO of Baripada - Mendhasal 400 kV D/c at Pandiabil			Sep'14	Completion matching with Pandiabil sub-station, Tendering under progress, likely to be delayed due to delay in getting sub-station land
	LILO of 400KV D/C Kahalgaon - Biharshariff line (Ist line) at Lakhisarai			Mar'13	Completion matching with Lakhisarai S/S (land acquired).
	LILO of 400KV D/C Kahalgaon - Biharshariff line (2nd line) at Banka			Nov'12	Line commissioned in Nov'12.

	LILO of 400KV S/C Meramundali - Jeypore line at Bolangir			Aug'12	Line commissioned in Aug'12.
	LILO of 400KV S/C Rengali - Baripada line at Keonjhar			Jan'13	
	LILO of 400KV D/C (one ckt) Baripada - Mendhasal line at Dubri (OPTCL)			Mar'13	Progress affected due to ROW problem & forest clearance.
	LILO of 400KV D/C (both ckt) Jamshedpur - Rourkela line at Chaibasa			Sep'14	Completion matching with Chaibasa S/S (land yet to be acquired).
6	Transmission System for Phase-I Generation Projects in ORISSA - Part - A.	Sep'10	2074.86	May'14	Completion likely to slip due to forest clearance.
	765KV S/C Angul Pooling station - Jharsuguda Pooling station line -I			May'14	Forest clearance awaited. Critical.
	765KV S/C Angul Pooling station - Jharsuguda Pooling station line -II			May'14	Forest clearance awaited. Critical.
	LILO of 400KV D/C Rourkela - Raigarh at Jharsuguda Pooling stn.			May'14	Forest clearance awaited. Critical.
	LILO of 400KV S/C Meramunali - Jeypore at Angul Pooling stn.			May'14	
	LILO of one ckt 400KV D/C Talchar - Meramundali at Angul Pooling station.			May'14	
7	Transmission System for Phase-I Generation Projects in ORISSA - Part - B.	Dec'10	2743.19	July'14	
	LILO of 765KV S/C Ranchi - Sipat (Bilaspur) Pooling Station at Dharamjaygarh / near Korba			May'14	
	765 KV D/C Jharsuguda Pooling Station - Dharamjaygarh line *			May'14	Realignment of a portion of line required due to coal area of Maha Tamil coal fields.
	765 KV D/C Dharamjaygarh - Jabalpur Pooling Station line			July'14	
	400 KV D/C Jabalpur Pooling Station - Jabalpur (High Capacity) line			July'14	

8	Transmission System for Phase-I Generation Projects in ORISSA - Part - C.	Mar'11	2569.25	Dec'14	
	765 KV D/C Jabalpur Pooling Station - Bina line			July'14	
	765 KV S/C Bina - Gwalior line (3rd Ckt)			July'14	
	765KV S/C Gwalior-Jaipur line (2nd Ckt) *			Dec'14	
	765 KV S/C Jaipur - Bhiwani line			Dec'14	
9	Immediate evacuation system with BARH - II TPS	Dec'11	901.77	Aug'14	
	400 KV D/C Barh - II TPS - Gorakhpur line (Quad) *			Aug'14	
10	Transmission System for Phase-I Generation Projects in Jharkhand and West Bengal - Part - A1.	Oct'11	558.26	Nov'13	
	400KV D/C Ranchi (765/400KV S/S) - Jharkhand Pool - Gaya line (Quad)			Nov'13	Forest Involvement (205 Ha)
11	Transmission System for Phase-I Generation Projects in Jharkhand and West Bengal - Part - A2.	Dec'11	2422.66	Sep'14	
	765KV S/C Ranchi New(765/400KV S/S) - Dharamjaygarh / Near Korba line *			Sep'14	
	765KV S/C Gaya - Varanasi line *			Sep'14	
	765KV S/C Balia - Varanasi line			Sep'14	
12	Transmission System for Phase-I Generation Projects in Jharkhand and West Bengal - Part - B.	Feb'12	3201.44	Nov'14	
	765KV D/C Varanasi - Kanpur line			Nov'14	
	765KV S/C Kanpur - Jhatikara line			Nov'14	
	400KV D/C Kanpur (new) - Kanpur (Exit.) line (Q)			Nov'14	

	400KV Connectivity at Varanasi S/Stn. - 400KV D/C Varanasi-Sarnath line - LILO of 400KV Sasaram-Allahabad at Varanasi. - Opening of LILO of one ckt of Sasaram-Allahabad line at Sarnath.			Nov'14	
13	Transmission System for Development of Pooling Station in Northern region Part of West Bengal and Transfer of Power from BHUTAN to NR/WR.	Apr'10	4404.57	Jan'15	
	LILO of Bishwanath Chariali - Agra HVDC line at New Pooling Station in Alipurduar for parallel operation of the HVDC stn.			Jan'15	Award under progress.
	LILO fo 400KV D/C Bongaigaon - Siliguri line at New Pooling Station in Alipurduar (Pvt. Sector)			Jan'15	Award under progress.
	LILO of 400KV D/C Tala - Siliguri line at New Pooling Station in Alipurduar			Jan'15	Award under progress.
	400KV D/C Punatsangchu-1 (Gen. Proj. in Bhutan) - Alipurduar line (HTLS Cond.) India Portion.			Jan'15	Award under progress.
	LILO of 220KV D/C Birpara - Salakati line at New Pooling Station in Alipurduar			Jan'15	Award under progress.
	Earth Electrode line at New Pooling Station in Alipurduar & Agra end.			Jan'15	Award under progress.
14	Transmission System for Transfer of Power from Generation Project in SIKKIM to NR/WR Part - A.	May'10	250.03	Nov'13	Completion likely to slip due to delay in acquisition of land for Kishanganj s/s. Alternate land being explored.
	LILO of Siliguri (Existing) - Purnea 400KV D/C line (Q) at New Pooling station at Kishanganj			Nov'13	Completion matching with Sub sttion. (delay due to delay in land acquisition).

	LILO of Siliguri (Existing) - Purnea 400KV D/C line (on which reconductoring is being carried out) at Kishanganj with QUAD Cond.			Nov'13	- Do -
	LILO of Siliguri - Dalkhola 220KV D/C line at New Pooling station Kishanganj			Nov'13	- Do -
	LILO of Gangtok - Melli 132KV S/C line up to Rangpo.			Nov'13	
15	Transmission System for Transfer of Power from Generation Project in SIKKIM to NR/WR Part - B.	Mar'11	1585.12	Nov'13	
	400KV D/C Kishanganj - Patna line (Quad)			Nov'13	
	LILO of 400KV D/C Teesta-V - Siliguri line at Rangpo (1 D/C & 1.5 M/C)			Nov'13	
	LILO of Teesta-III - Kishanganj 400KV D/C (Q) at Rangpo (21 D/C+1.5 M/C) (being constructed under JV rout)			Nov'13	
	220KV D/C Rangpo - New Melli line (twin moose) (20.5 D/C & 1.5 M/C)			Nov'13	
	LILO of 132KV S/C Gangtok - Rangit line at Rangpo			Nov'13	
16	Interconnection Between Electrical Grid of India and Bunladesh-India Portion	Oct'10	160.32	Mar'13	
	400KV D/C Baharampur (India) - Bheramera (B' Deash) line - India Portion			Mar'13	
	LILO of Farakka - Jeerat 400KV S/C line at Baharampur (India)			Mar'13	

पावरग्रिड कारपोरेशन ऑफ इंडिया लिमिटेड

POWER GRID CORPORATION OF INDIA LIMITED

(भारत सरकार का उद्यम) / (A GOVERNMENT OF INDIA ENTERPRISE)



पावरग्रिड

400 के. वी. करणादिघी / 220 के. वी. दालकोला उपकेन्द्र, पूर्वी क्षेत्र - II
400KV KARANDIGHI / 220KV DALKHOLA SUBSTATION, EASTERN REGION-II

पोस्ट - दालकोला, जिला - उत्तर दिनाजपुर (प. बं.), पिन - 733201

P.O. : DALKHOLA, DIST : UTTAR DINAJPUR (W.B.), PIN : 733201

दूरभाष/Tel. : (03525) 255184, 255169, फैक्स/Fax : 255547, ई-मेल / e-mail : dalkhola_substation@yahoo.co.in

Ref. No. PG/ER-II/DLK/400KV-SS/100/08

Date : 08.01.2013

To
The District Magistrate & Collector,
Raiganj at Karnajora,
Distt: Uttar Dinajpur.

Sub : Refund of deposited money with respect to LA Case No. 31/2009 - 2010 to 37/2009-2010
to Power Grid Corporation of India Ltd.

Respected Sir,

This has reference to our letter No. PG/ER-II/DLK/400KV-SS/100/728 dated 06/12/2012 regarding the subject matter. We had requested that the land for construction of 400/220KV Sub-station of Powergrid Corporation of India Ltd. at Karandighi, Distt: Uttar Dinajpur against LA Case No. 31/2009-2012 to 37/2009-2010 may kindly be handed over to Powergrid immediately. This is required for establishment of 400/220KV Sub-station on extremely urgent basis for evacuation of Power from several hydro power stations in Sikkim, expected to start generation progressively from March, 2013.

We are extremely regretted to mention that the requisite land has not been handed over to Powergrid within the stipulated period. Keeping in view of the facts and immediate requirement/possession of the land for evacuation of power to be generated in Sikkim, we are in the process of a contingency plan and therefore we do not require this particular land at Karandighi. It is therefore requested to kindly arrange refund of the money deposited to your office (Rs.15,45,03,232.00) on account of 64.10 acres of land at Karandighi. Details of amount deposited to your office is annexed at 'A'.

An early action is requested please.

With regards,

Yours faithfully

(S K Roy)

DGM/ Dalkhola

Copy to :

- 01) Divisional Commissioner, Jalpaiguri.
- 02) Principal Secretary (Land & Land Reforms),
Govt. of West Bengal, Writers Building, Kolkata-700001
- 03) Spl. Land Acquisition Officer, Karnajora, Raiganj (UD).

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

पंजीकृत कार्यालय : बी - 9, कुतुब इंस्टीटयुशनल एरिया, कटवारिया सराय, नई दिल्ली - 110016
Registration Office : B-9, Qutab Institutional Area, Katwaria Sarai, New Delhi - 110016

पावरग्रिड कारपोरेशन ऑफ इंडिया लिमिटेड

POWER GRID CORPORATION OF INDIA LIMITED

(भारत सरकार का उद्यम) / (A GOVERNMENT OF INDIA ENTERPRISE)



पावरग्रिड

400 के. वी. करणदिघी / 220 के. वी. दालकोला उपकेन्द्र, पूर्वी क्षेत्र - II
400KV KARANDIGHI / 220KV DALKHOLA SUBSTATION, EASTERN REGION-II

पोस्ट - दालकोला, जिला - उत्तर दिनाजपुर (प. बं.), पिन - 733201

P.O. : DALKHOLA, DIST : UTTAR DINAJPUR (W.B.), PIN : 733201

दूरभाष/Tel. : (03525) 255184, 255169, फैक्स/Fax : 255547, ई-मेल / e-mail : dalkhola_substation@yahoo.co.in

Ref.No. PG/ER-II/DLK/400KV-SS/100/728

Date : 06.12.2012

To
The District Magistrate & Collector,
Raiganj at Karnajora,
Distt: Uttar Dinajpur.

Sub : Urgent need of handing over of possession of land at Karandighi, Uttar Dinajpur for construction of 400/220KV Sub-station of Power Grid Corporation of India Ltd. (LA Case No. 31/2009-2010 to 37/2009-2010)

Respected Sir,

This has reference to the various discussions and correspondences on establishment of 400/220 KV Sub-station at Karandighi, Distt: Uttar Dinajpur by Power Grid Corporation of India Ltd (POWERGRID) for the purpose of evacuation of Hydel Power of Sikkim. You are kindly aware that POWERGRID had placed an application for acquisition of 64.10 acres of land at Karandighi block, Uttar Dinajpur on 26th March, 2010.

We appreciate that the Government of West Bengal had approved the award in respect of acquisition of 64.10 acres of land in Mouza: Malkot / Alipur in Karandighi Block, Uttar Dinajpur on 03rd February, 2012 and extended all support for acquiring the land under LA Act. The key mile stone dates in regard to the process of acquisition followed under LA Deptt. Uttar Dinajpur are mentioned hereunder.

- Application of POWERGRID for acquisition of land for the subject establishment to LA department, Raiganj, Uttar Dinajpur - 26th March, 2010.
- Deposit of full and final payment against land to LA, Collector, Uttar Dinajpur - 28th Sept. 2010.
- Declaration for acquisition of land by Govt. of West Bengal - 30th Nov. 2010.
- Cabinet approval of the Project by West Bengal Govt. and subsequent approval of Governor of West Bengal - 3rd February, 2012.

Contd.....P/2.

ofc.

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

पंजीकृत कार्यालय : बी - 9, कुतुब इंस्टीटयुशनल एरिया, कटवारिया सराय, नई दिल्ली - 110016
Registration Office : B-9, Qutab Institutional Area, Katwaria Sarai, New Delhi - 110016



- :: (2) :: -

You are kindly aware that the subject Extra High Voltage Substation is part of transmission system required for evacuation of power from several Hydro Power Stations in Sikkim which are expected to start Generation progressively from March 2013. However, because of non-availability of land, POWERGRID is unable to start construction work of the substation which even with compressed schedule will require about one and a half year time for completion.

With due regards it is submitted that despite approval of award by Govt. of West Bengal on 3rd February 2012, POWERGRID has neither got possession nor there appears to be any commitment on firm date by which land will be handed over to POWERGRID.

In view of above it is requested that POWERGRID may kindly be handed over of possession of the land within a fortnight or else the money deposited (Rs. 15,45,03,232=00) towards land acquisition may kindly be refunded to POWERGRID.

An early action is requested please.

Thanking you

Yours faithfully


(SK Roy)
DGM/ Dalkhola

Copy to :

- 01) Divisional Commissioner, Jalpaiguri.
- 02) Principal Secretary (Land & Land Reforms),
Govt. of West Bengal, Writers Building, Kolkata-700001
- 03) Spl. Land Acquisition Officer, Karnojora, Raiganj (UD).

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, सेक्टर-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.

केन्द्रीय कार्यालय / CORPORATE CENTRE

C/ENG/E/00/SEF/PLG

Date: 12-10-2012

Distribution : As per list enclosed

Sub : Record Note of Discussion of the meeting among CEA, CTU, WBSETCL and DPSC regarding grant of Connectivity to DPSC Ltd. held in the office of Member (PS), CEA, New Delhi on October 10, 2012

Sir,

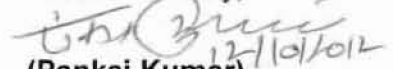
This is with reference to the application for grant of Connectivity for 500 MW to DPSC in the state of West Bengal. In this regard, it is to mention that the matter was discussed in the LT(O)/A/Connectivity meeting held on 29-07-2011 as well as in the meeting of Standing Committee for transmission system planning in Eastern Region held on 08/02/2012 but the proposed arrangement for connectivity could not be finalized as WBSETCL emphasized upon the need for taking in-principle approval from WBERC by DPSC. Subsequently, DPSC filed a petition in CERC (Petition No. 158/MP/2012) and CERC in its order dated 21-09-2012 has directed the CTU to expeditiously process the application of the petitioner for grant of connectivity in accordance with Connectivity Regulations.

In order to arrive at a decision in regard to the connectivity application of DPSC, a meeting among CEA, CTU, WBSETCL and DPSC was held in the office of Member (PS), CEA, New Delhi on October 10, 2012. Record note of discussions of the meeting is enclosed.

Based on the decisions taken in the meeting, intimation for grant of connectivity to DPSC Ltd. is issued and the same is enclosed herewith.

Thanking you,

Yours faithfully,


12/10/2012

(Pankaj Kumar)

Executive Director (Engg-SEF)

Distribution List :

<p>Shri Ravinder Member(PS) Central Electricity Authority Sewa Bhawan, R. K. Puram, New Delhi – 110066 Fax : 011-26170572</p>	<p>Shri P. K. Ghosh Head – T&D Planning & Power Purchase DPSC Ltd. Plot-X-1,2&3, Block-EP Sector-V, Salt Lake, Kolkata-700091 E-Mail : pk.ghosh@dpscl.com Fax : 033-23575678</p>
<p>Shri S. K. Soonee CEO, POSOCO B-9, Qutub Institutional Area Katwaria Sarai, New Delhi-110016 Fax: 011-26524525, 26536901</p>	<p>Shri A. Bandhyopadhyay Member Secretary Eastern Regional Power Committee 14, Golf Club Road, Tollygunge Kolkata - 700033 Fax : 033-24221802</p>
<p>Shri Rajiv Bansal Secretary Central Electricity Regulatory Commission 3 rd & 4 th Floor, Chanderlok Building, 36, Janpath, New Delhi- 110001 Fax: 91-11-23753923</p>	<p>Secretary West Bengal Electricity Regulatory Commission Poura Bhavan (3 rd Floor) Block-FD , 415-A, Bidhannagar Kolkata - 700106 Fax:033-23593397</p>
<p>Shri A. C. Sarkar Managing Director West Bengal State Electricity Transmission Company Ltd. (WBSETCL) Vidyut Bhawan, 8th Floor, Block-D, Bidhannagar Salt Lake, Sector-II, Kolkata-700091 Tel : 033-23370206; Fax-033-2337206</p>	<p>Member (Transmission) Bihar State Electricity Board Vidyut Bhawan, Bailey Road Patna - 800021</p>
<p>Director (Systems) Damodar Valley Corporation DVC Towers, VIP Road Kolkata - 700054</p>	<p>Director (Engineering) Orissa Power Transmission Corporation Ltd. Janpath, Bhubaneswar - 751022</p>
<p>Member (Transmission) Jharkhand State Electricity Board Engineering Building HEC, Dhurwa, Ranchi - 834004</p>	<p>Principal Chief Engineer cum Secretary Power Department Government of Sikkim Kazi Road, Gangtok – 737101(Sikkim)</p>

Copy to :

ED, ERTS-II / ED, Commercial / CEO (POSOCO) / GM, ERLDC

**Record Note of Discussion of the meeting among CEA, CTU, WBSETCL and DPSC
regarding grant of Connectivity to DPSC Ltd. held in the office of Member (PS), CEA,
New Delhi on October 10, 2012**

List of participants is enclosed at **Annexure-1**.

Opening the discussion, Member(PS), CEA stated that the meeting has been called to implement the order of the CERC dated 21-09-2012, wherein the CERC has directed the CTU to expeditiously process the application of the petitioner (DPSC Ltd.) for grant of connectivity in accordance with Connectivity Regulations. He further highlighted that, DPSC is an intra-state distribution licensee within the jurisdiction of WBERC and as per section-39 of the Electricity Act, the STU is to ensure the development of transmission system for supply of power to DPSC.

WBSETCL submitted that the demand projection of DPSC for 2016-17 condition has been considered as 180MW in the draft 18th EPS of CEA, to be published shortly. Accordingly, WBSETCL carried out perspective transmission plan for 2016-17 condition, considering DPSC load as 180MW, and the plan was approved by WBERC. DPSC stated that they have carried out independent studies and according to that the load growth is expected to be around 650MW in next 5 years time. On enquiry about the present drawl arrangement, DPSC stated that at present it draws about 190MVA through 7-8 nos 33kV interconnections with Kamaleswari (220/132/33 kV) & Kalapahari (132/33 kV) sub-stations of DVC and 2 nos. 33kV interconnections with Asansol sub-station of WBSEDCL. WBSETCL pointed out that the demand projection/load forecast of DPSC has not been approved by WBERC which is mandatory as per the Grid code of WBERC.

Regarding connectivity and additional power supply to DPSC, WBSETCL stated that DPSC has already signed a connection agreement with them for drawal of 250MVA in phases through 220kV interconnections. The copy of the connection agreement is enclosed at **Annexure-2**. It also emerged that DPSC has obtained the in-principle clearance from DVC in March, 2012 for procurement of additional 200MW to be drawn through 220kV connectivity with the DVC network. A copy of the DVC letter in this regard is enclosed at **Annexure-3**. WBSETCL stated that considering the above connectivity with WBSETCL (STU) and DVC, additional connectivity with ISTS for drawal of 500 MVA power would be an over provision, however keeping in view the inconsistent load projection of DPSC, it was opined that further connectivity with ISTS would lead to over-planning and over investment on the part of DPSC. As regards CERC order, CTU pointed out that para-4 of the order stated as

"the petitioner has submitted that as the petitioner has no interface with the network of WBSETCL and as per the connectivity proposed, there will be no interface with the state network".

They were of the view that submission of DPSC Ltd. to the CERC was incorrect.

CTU stated that ISTS connectivity to DPSC through LILO of one circuit of 400 kV Mejia-Maithon D/c line (PG) to the 400kV Chalbalpur substation to be established by DPSC, was discussed in the standing committee / LTOA meeting on 08/02/2012. It could not be finalized as WBSETCL emphasized upon the need for taking in-principle approval from WBERC by DPSC.

WBSETCL stated that they have no objection to the above ISTS connectivity of DPSC, however, they may review the connectivity of DPSC with the state network as WBSETCL's investment towards this connectivity may become redundant and burden to the consumers of the State.

In regard to requirement of ISTS connectivity, DPSC submitted that they have applied for 500MW connectivity to Inter State Transmission System as they intend to procure electricity at competitive price for the benefit of the consumer in their area. It was added that the connectivity with ISTS network would allow them drawal of reliable and secure power which is otherwise difficult due to frequent congestion in the state transmission system. In this regard, Member (PS) stated that any procurement of power by DPSC from outside West Bengal has to be approved by the WBERC. It was also clarified that the proposed arrangement for grant of connectivity would require the concurrence of the Standing Committee on Power System Planning in Eastern Region. DPSC was agreeable to the same.

After deliberations, it was decided to grant connectivity to DPSC through LILO of one circuit of Mejia-Maithon D/c line to the 400kV Chalbalpur substation of DPSC. The transmission system for the above connectivity would be implemented by DPSC. It was also decided that the above scheme would be discussed in the forthcoming Standing Committee meeting on Power System Planning of Eastern Region for concurrence of the constituents. Member (PS), CEA stated that with this grant of connectivity to DPSC, it should be clarified that DPSC is an intra-state entity in the state of West Bengal and there would be no change in the status of DPSC as an intra-state entity under the control area of WBSLDC.

CEA

1. Shri Ravinder, Member(PS)
2. Shri K. K. Arya, CE(SP & PA)
3. Dr. R. Saha, Director (SP & PA)

CTU (POWERGRID)

1. Shri Ashok Pal, DGM(SEF)
2. Shri Ramachandra, CM(SEF)

WBSETCL

1. Shri P. Saha, CE(CPD)
2. Shri A. Karmakar, SE(E), CPD

DPSC

1. Shri R.D. Prabhakar, President (Transmission)
2. Tariq H. Naqvi, Head (Corporate Affairs)



पश्चिम बंगाल पश्चिम बंगाल WEST BENGAL

F 894290

CONNECTION AGREEMENT

This Connection Agreement (the "Agreement") is made in accordance with West Bengal Electricity Regulatory Commission (State Electricity Grid Code) Regulations, 2007 the 26th day of September, 2012 by and between :

DPSC Ltd., formerly Dishergarh Power Supply Co. Ltd., a Distribution Licensee in the State of West Bengal for supply of electricity in Ranigunj-Asansol belt of the State, has become a deemed licensee in terms of the first proviso to section 14 of the Act having its Registered Office at "Centre for Excellence", Plot No. X-1,2 & 3, Block - EP, Sector - V, Salt Lake City, Kolkata - 700 091 (hereinafter "DPSC" which expression shall unless repugnant to the context or meaning thereof shall be deemed to include its successors and permitted assigns) of the first part.

And

West Bengal State Electricity Transmission Company Limited (A Govt. of West Bengal Enterprise), a company incorporated under the Companies Act, 1956, having its Registered Office at Vidyut Bhavan, Block - DJ, Sector - II, Bidhannagar, Kolkata - 700 091, (hereinafter "WBSETCL", which expression shall unless repugnant to the context or meaning thereof shall be deemed to include its successors and permitted assigns) of the second part.



J. Sharmah

- 1.2h) The 220 Kv transmission line being a part of the service line of the state transmission system, DPSC Limited shall hand over the 220 kV transmission line assets to WBSETCL at the time of commissioning. The financial consideration for handing over of the transmission lines by DPSC Limited to WBSETCL and mode of its payment shall be as approved/directed by WBERC.
- 1.2i) Necessary cost, as approved by the WBERC will be paid by WBSETCL to DPSC Limited after transfer of such assets. Payment mode will be as determined by WBERC.
- 1.2j) Operation of the transmission lines and the corresponding 220 kV line bays at the J.K. Nagar substation will be done by DPSC Limited in consultation with and concurrence of the State Load Despatch Centre ("SLDC").
- 1.2k) DPSC Limited shall keep provision of seating enclosure for supervisor/operators' of WBSETCL in the control room of JK Nagar 220 KV sub-station, as per requirement of WBSETCL.
- 1.2l) DPSC Limited shall furnish an unconditional and irrevocable Bank Guarantee as per approved Format in favour of WBSETCL at time of handing over the newly constructed 220 KV Transmission line for an amount equal to ten percent (10%) of the total project cost as per this Agreement, from a Scheduled Bank in India. The Bank Guarantee shall be valid for fifteen (15) months so as to cover Defect Liability Period for twelve (12) months from the date of issue of Taking Over Certificate (TOC) by WBSETCL. The Bank Guarantee shall have also further claim period for ninety (90) days thereafter (i.e. after expiry of Defect Liability Period).

DPSC Limited shall remain responsible for the entire transmission line for any damage/defects during the entire defect liability period and to set right by DPSC Limited at their own cost. The value of the Bank Guarantee is not to be construed as limiting the damages under Defects Liability Period. The Bank Guarantee will be en-cashed by WBSETCL in the event of failure to set right the damages/defects by DPSC Limited within reasonable time period. WBSETCL reserves the right to verify the authenticity of the Bank Guarantee from the issuing bank.

The Bank Guarantee shall be returned to DPSC Limited within ninety (90) days after receipt of application for release of Bank Guarantee along with certification regarding completion of Defects Liability Period. No claim shall be made against the Guarantee after the issue of Defects Liability Certificate by WBSETCL. However, no costs shall be paid for the Bank Guarantee by WBSETCL, irrespective of date of release.

- 1.2m) All rights of the 220 KV Transmission line shall assignable to WBSETCL by DPSC Limited after handing over.

2) Definitions and Interpretation

In this agreement unless the context otherwise requires the definitions of terms used shall be as follows:

Definitions:

In these Regulations, unless the context otherwise requires :

- 1) "Act" means the Electricity Act, 2003;
- 2) "Area Load Despatch Centre" or "ALDC" means Area Load Despatch Centre which may be declared as such by SLDC with the approval of the Commission;
- 3) "ABT" means Availability Based Tariff as specified in the Tariff Regulations;
- 4) "Beneficiary" means an agency who draws and / or injects power from / to State Grid;
- 5) "Bilateral Exchange of Power" means exchange of power under any agreement between the persons as allowed under the Act;
- 6) "CEA" means Central Electricity Authority;
- 7) "Commission" means the 'West Bengal Electricity Regulatory Commission' in short, called WBERC;
- 8) "Ex-Power Plant" means net sent out of a generating station in MW/MWH measured at all outgoing lines / feeders from the generating station;
- 9) "Forced Outage" means an outage of a Generating Unit or a transmission facility due to a fault or other reasons, which has not been planned;
- 10) "CPP" means Captive Power Plant as defined in the Act;
- 11) "Generating Station" means Generating Stations including CPPs;



4) Drawal of Power and Connectivity Conditions

- a) The connection point for drawal of power by DPSCCL from the STS shall be at STU periphery i.e. the gantry of J. K. Nagar 220/33 KV Sub-station of DPSCCL.
- b) DPSCCL agrees that all EHV outdoor switchyard equipment to be used for this connectivity shall comply with standard of Bureau of Indian Standards (BIS)/International Electro Technical Commission (IEC)/ prevailing code of practice and CEA (Technical Standards for Construction of Electrical Plants and Electrical Lines) Regulations 2010. All equipment shall be designed, manufactured, tested and certified in accordance with the quality assurance requirements as per IEC/BIS standards.
- c) DPSCCL agrees that the 220 KV Transmission line shall be constructed as per provisions of the Act & Regulations made time to time.
- d) DPSCCL confirms that any other requirement not mentioned herein in respect of above connectivity as per provisions of the Act & Regulation thereafter shall be complied by them.
- e) DPSCCL agrees to meet all Technical and Commercial requirements of the STU & SLDC as per provisions of the Act, Rules & Regulations made from time to time.

5) Metering Requirements

Metering requirement at the inter-connection points shall be governed by the latest Metering Code approved by the Commission. WBSETCL and DPSCCL agree to abide by the Central Electricity Authority (Installation and Operation of Meters) Regulations, 2006 or such other Regulation as may be made under the Act from time to time.

Any disputes relating to inter-entity metering between the STU / Transmission Licensee and Generating Company / Distributing Licensee / Open Access Users / Transmission Licensee shall be settled in accordance with the procedures stipulated under relevant Power Purchase Agreement / in the metering Committee as the case may be. In case of unresolved dispute, the matter may be referred to WBERC for adjudication and reference for arbitrations

6) Equipment at Connection Points

- a) DPSCCL and WBSETCL confirm that their respective equipment at Connection Point shall comply with the technical and design criteria specified in the WBEGC and CEA Regulations.
- b) Single Line Diagram showing arrangement of equipment belonging to DPSCCL and/ or WBSETCL at the connection point are appended with this agreement as **Annexure-III** and also made available to the SLDC. The parties herein agree that they shall not alter the arrangement of equipment at the connection point without consent of other party.
- c) DPSCCL confirm that before physical connection of their systems at the connection point, they shall take prior approval of the STU and the SLDC.

7) Site Common Drawing

- a) Site Common Drawing shall be prepared for the connection point and shall include site layout, electrical layout details of protection and common services drawings. The detailed drawings for the portion of DPSCCL & WBSETCL at the connection point, duly approved by WBSETCL, are appended with this agreement as **Annexure-IV**.
- b) If any change in the drawing is found necessary, either by DPSCCL or the WBSETCL, the details shall be exchanged between them as soon as possible.

8) Site Responsibility Schedule

DPSCCL shall submit post commissioning Site Responsibility Schedule to WBSETCL as per **Annexure - I** for compliance.

9) Capital Expenditure

DPSCCL agrees that till commissioning and handing over of the Project to WBSETCL, Capital Expenditure for construction of the 220 KV transmission lines (both present & future) and all costs related to and/or arising from the necessity for reinforcements or extension of the system for establishment of connectivity with the STU transmission system shall be borne by DPSCCL.



16) Settlement of Dispute & Arbitration:

This agreement shall be governed by and construed in accordance with the laws of India. Any dispute or difference arising out of this Agreement shall be amicably settled between DPSC, WBSETCL & WBSEDCL.

In the event of non-settlement of disputes, it may be referred to arbitration to be conducted in accordance with the Arbitration & Conciliation Act, 1996 or any statutory modification thereof. The venue of arbitration shall be Kolkata only.

17) Jurisdiction:

All disputes between the parties shall be subject to the jurisdiction of courts situated at Kolkata.


18) Term of Agreement

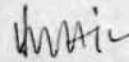
This connection agreement shall take effect from the date of signing and remain valid unless both the parties with mutual agreement decide to amend/modified or terminate it.

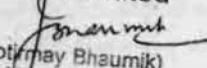
In witness where of the parties have signed this agreement on the day, month and year first written above.

For and on behalf of
**West Bengal State Electricity
Transmission Co. Ltd.**

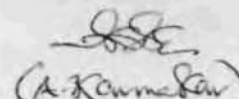
For and on behalf of
DPSC Ltd.


(P. Saha)
Chief Engineer
Central Planning Department
WBSETCL
Bidyut Bhavan

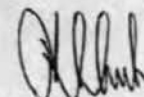

Somnath Bhattacharya
Chief Engineer: Engg. Deptt.
W. B. S. E. T. C. L.

DPSC Limited

(Jyotirmay Bhaumik)
Chief Executive Officer

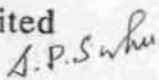
In the presence of


(A. K. Kumar)
Superintending Engineer (E)
Central Planning Department
WBSETCL
Viduyt Bhavan

In the presence of


P. K. Ghosh
Head (T&D Planning & Power Purchase)
DPSC Limited
Plot No X-1, 2 & 3, Block-EP
Sector-V, Salt Lake City, Kolkata-700 091



DPSC Limited

D. P. SAHU
DGM - T&D PROJECTS



PLANNING / CONNECTIVITY DATA

Generation

1. Name of Power Station
2. Station type - Thermal (coal, gas, oil), Hydro (Reservoir type), ROR (with hours of Storage / Pump Storage), GT/CCGT.
3. Station capacity -
 - (i) Total capacity (ii) Number of units & size
- 4.1 Thermal Station -
 - (i) Rating of Boiler, Turbine & major auxiliaries
 - (ii) Peaking availability and peaking capability
- 4.2 GT/CCGT -
 - (i) Natural gas / LNG / Oil
 - (ii) Salient details of GT/CCGT
 - (iii) Peaking availability & peaking capacity
- 4.3 Hydro -
 - (i) Schematic layout showing dam reservoir area, water conductor system, fore bay, powerhouse etc.
 - (ii) Rating of turbine & other major equipment
 - (iii) Reservoir data and operating table
 - (iv) Operating head maximum & minimum
- 4.4 Captive power plant
 - (i) Salient details including plant capacity & exchange of power.
- 5.1 Generators -
 - (i) Type
 - (ii) Rating / MVA
 - (iii) Voltage
 - (iv) Speed
 - (v) Inertia constant H (MW Sec/MVA)
 - (vi) Rated P.F
 - (vii) Reactive power capability
 - (viii) S.C. ratio
 - (ix) X_d, X_{1d}, X_{11d} (Saturated & Unsaturated)
 - (x) X_q, X_{1q}, X_{11q} (Saturated & Unsaturated)
 - (xi) T_{1do}, T_{11do}
 - (xii) T_{1qo}, T_{11qo}
 - (xiii) Stator resistant & leakage reactance or Potier Reactance
 - (xiv) Stator time constant
 - (xv) Rated field current
 - (xvi) Neutral grounding
 - (xvii) Generator Capability Curve
6. Generators Transformer
 - (i) Type
 - (ii) Rated capacity / MVA
 - (iii) Voltage ratio & vector group
 - (iv) Tap changer range
 - (v) On load / Off load tap changer
 - (vi) Percentage impedance - Positive & Zero Sequence
 - (vii) Grounding of Generator Transformer
 - (viii) X / R Ratio
- 7.1 Excitation -
 - (i) Type of excitation
 - (ii) Rated field voltage, maximum & minimum field voltage



Distribution Data

- 1.1 Name of S/S of STU from where connection shall be made :- LILO on 220 KV D/C towers of STPS-Durgapur 220 KV S/C Line of WBSETCL, LILO point at Mangalpur.
- 1.2 Quantum of power (MW) / MVA to be drawn / injected from / to of STU S/S and voltage and no. of circuits required :- Initially up to 130 MVA at 220 KV in First phase from WBSETCL
- 1.3 The length and size of the feeder and no. of distribution S/S connects to the feeder for supply of load to distribution area :- Initially 10 Nos. 33 KV D/C out going feeder.
- 1.4 Reactive compensation used to control reactive drawal from STU, feeder-wise :- NIL
- 1.6 Details of protection & metering for the feeders :- O/C & E/F
- 1.7 Type of Load or Load characteristic (whether constant power or Voltage impendence, etc.) :- Coal mines, PHEs, WBSEDCL and Process Industries.

Load Forecast Data

1. Consumer data - Furnish categories of consumers, their nos., connected load.
2. Peak load and energy forecast for each connection point / in the face point for each category of load for each of the succeeding 10 years.
3. Methodology and assumptions on which forecast made.
4. If supply is received from more than one STU S/S, the S/S-wise break-up of peak load & energy projections for each of succeeding 10 years with estimated daily load curve.
5. Details of bulk load 5 MW & above, Voltage of supply, S/S from which is to be fed.



By land delivery.

WEST BENGAL STATE ELECTRICITY TRANSMISSION COMPANY LIMITED
(A Govt. of West Bengal Enterprise)



WBSETCL

OFFICE OF THE CHIEF ENGINEER , ENGINEERING DEPARTMENT
VIDYUT BHAVAN 9TH FLOOR A - BLOCK
SALT LAKE CITY KOLKATA - 700 091
PHONE : (033) 2359 4943 FAX : (033) 2337 1955
E-mail : ceed10@yahoo. in

Memo No. CE/ED/DPSC/ 635

Dated : 19/09/2012

To
The Head – T&D and Planning
M/s DPSC Limited
Plot No. X-1, 2&3
Block EP, Sector – V, Salt Lake City, Kolkata-700091

Sub. : Approval of Single Line Diagram Drawing of proposed 220KV J.K. Nagar Sub-Station of M/S DPSC

Ref. DPSC/HO/WBSETCL/139, Dated 14.09.2012

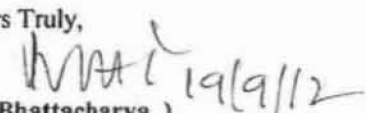
Dear Sir,

On scrutinizing subject drawings received vide your letter under ref. (i), We are forwarding one copy of the Approved SLD drawing (No. JKNS-DWG-E-101, Rev. 0) with our comments as marked on the body of the drawing by red marking as well as stated below for your reference , record and compliance of the same.

- The 220KV Cable to be used shall be of 800 Sq. mm, single core, XLPE insulated, U/G, copper(single run cable per phase is to be considered).
- The equipments like 220 KV class CT, PT, CVT, WT, LA etc. shall have to be procured complying our technical specification and as per approved drawing to be issued from this end after submission of the same from your end.
- VA burden etc to comply as commented on the enclosed drawing.

Enco : One copy of as stated above. drawing

Yours Truly,


(S Bhattacharya)
Chief Engineer : Engineering Deptt.



Registered Office : "Vidyut Bhavan", Bidhannagar, Block – DJ, Sector – II, Kolkata – 700 091
Telephones : 033 2359 1930 to 1940, Fax : 033 2359 1954

WBSETCL



DAMODAR VALLEY CORPORATION
COMMERCIAL DEPARTMENT
DVC TOWERS: VIP ROAD
KOLKATA-700 054

No. Coml./PS/DPSC/Burnpur/ 8297

- 2 MAR 2012

To
The Head (T&D, Planning & Power Purchase),
DPSC Ltd.,
Block EP, Sector - V,
Salt Lake City,
Kolkata - 700 091.

Subject : Request for Drawal of RTC power upto 100 MVA in phases (to be enhanced to 200 MVA finally) from Burnpur S/s (220 KV) of DVC.
Reference : Letter of DPSC: 1. HO/DVC/11-12/91 dated 17/02/2012.
2. HO/DVC/11-12/53 dated 29/02/2012

Dear Sir,

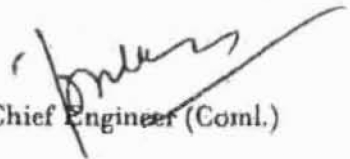
Reference is invited to your letters mentioned above, wherein it has been stated that DPSC intends to draw 100 MVA RTC power in phases and to be enhanced up to 200 MVA finally at 220 KV voltage level from DVC 220 KV Burnpur substation. Accordingly, you have requested DVC to allot 2 Nos. of 220 KV bays at Burnpur 220 KV substation.

In this context, please note that your request for the proposed power supply including allocation of 2-Nos. bays at Burnpur S/s is agreed 'in-principle' subject to the condition that there is no technical constraint. DVC is exploring the technical feasibility survey for the same and will be intimated to you in due course.

In the mean time, you are requested to forward your application with the requisite application fees for the subject power in the DVC prescribed format. The application format is enclosed for your ready reference.

Please also indicate whether you, as a licensee intend to take the subject power under 'intra-state' ABT mode.

Yours faithfully,


Chief Engineer (Coml.)

Copy to: The Director (Coml.), DVC, Kolkata.

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, सेक्टर-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.

केन्द्रीय कार्यालय / CORPORATE CENTRE

C/ENG/E/00/SEF/CON

Date: 12-10-2012

Shri P. K. Ghosh
Head – T&D Planning & Power Purchase
DPSC Ltd.
Plot-X-1,2&3, Block-EP
Sector-V, Salt Lake, Kolkata-700091
E-Mail : pk.ghosh@dpscl.com

Sub: Intimation for grant of Connectivity

Sir,

This is with reference to your application for grant of Connectivity for 500 MW to your proposed Chalbalpur 400 kV sub-station in district Burdwan of West Bengal.

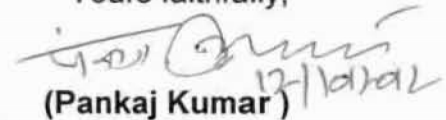
In this regard, it is to mention that the matter was discussed in the LT(O)/A/Connectivity meeting held on 29-07-2011 as well as in the meeting of Standing Committee for transmission system planning in Eastern Region held on 08/02/2012 but the proposed arrangement for connectivity could not be finalized as WBSETCL emphasized upon the need for taking in-principle approval from WBERC by DPSC. Subsequently, DPSC filed a petition in CERC (Petition No. 158/MP/2012) and CERC in its order dated 21-09-2012 has directed the CTU to expeditiously process the application of the petitioner for grant of connectivity in accordance with Connectivity Regulations. The matter was further discussed in a meeting among CEA, CTU, WBSETCL and DPSC held in the office of Member(PS), CEA on 10-10-2012. In line with the decision taken in the meeting, the intimation for grant of connectivity is enclosed.

Here it is to mention that DPSC is an intra-state entity in the state of West Bengal. With this grant of connectivity to DPSC, there would be no change in the status of DPSC as an intra-state entity under the control area of WBSLDC.

In this regard, you are requested to apply for signing of Connection Agreement so as to enable your proposed Chalbalpur 400 kV sub-station to get connected to the Inter State Transmission System (ISTS).

Thanking you,

Yours faithfully,


(Pankaj Kumar)

Executive Director (SEF, CE & ERP)

Copy to:

Shri K. K. Arya Chief Engineer(SP&PA), CEA, Sewa Bhawan, R K Puram New Delhi 11 00 66	Member Secretary Eastern Regional Power Committee 14, Golf Club Road, Tollygunge Kolkata 700 033
--	---

Copy for kind information to:

Shri Ravinder
Member(PS), CEA
Sewa Bhawan, R K Puram
New Delhi 11 00 66

The Secretary
Central Electricity Regulatory Commission (CERC)
3rd & 4th Floor, Chanderlok Building
36, Janpath Road,
New Delhi-110 001

Director (Operation)
West Bengal State Electricity Transmission Company Ltd,
Vidyut Bhavan, 5th Floor
Block-D, Bidhannagar, Sector-II
Kolkata-700091

ED, ERTS-II / ED, Commercial / CEO (POSOCO) / GM, ERLDC

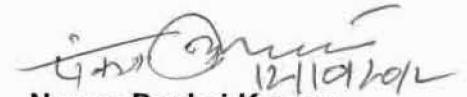
Intimation for grant of Connectivity

1	Intimation No.	C/SEF/TA/C/E/12/05
	Date :	12-10-2012
2	Ref. Application No. & Date	NIL dated 10-05-2012
3	Name of the Applicant	DPSC Ltd
4	Address for Correspondence	Shri P. K. Ghosh Head – T&D Planning & Power Purchase DPSC Ltd. Plot-X-1,2&3, Block-EP Sector-V, Salt Lake, Kolkata-700091 E-Mail : pk.ghosh@dpscl.com
5	Nature of the Applicant	
	Generator (other than captive)	-
	Captive Generator	-
	Bulk Consumer	- Distribution Licensee
6	Details for Connectivity	
6a	Capacity(MW) for which connectivity is granted	500 MW
6b	Point at which Connectivity is granted	Chalbalpur 400kV sub-station of DPSC (to be established by DPSC)
6c	Date from which connectivity is granted	July-2014
6d	Transmission System Required for Connectivity	LILO of Mejia – Maithon 400 kV line at Chalbalpur 400 kV sub-station of DPSC
6e	Implementing Agency for transmission system required for connectivity	Applicant
6f	Agencies between which agreement is to be signed for implementation of transmission system required for connectivity	Not Applicable
7	Transmission Charges Applicable for the transmission System	Not Applicable
8	Amount (in Rupees) for which Bank Guarantee is to be provided by the applicant	Not Applicable
9	Location of the Generating Station / Bulk Consumer	
	Nearest Village / Town	Village – Chalbalpur
	District	Burdwan
	State	West Bengal
	Latitude	23 ^o 43.5' N
	Longitude	86 ^o 54' E
10	Installed Capacity of the Generating Station	NA

		Unit-1	
		Unit-2	
11	Commissioning Schedule of the Generating Station		NA
		Unit-1	
		Unit-2	

Note :

1. Applicant shall provide Special protection Scheme (SPS) integrated into their system. Details of SPS and its setting shall be worked out by the applicant in consultation with ERLDC/ ERPC separately.
2. Applicant shall have to inform likely date of synchronization to the SLDC/RLDC concerned at least one month in advance and obtain their concurrence for the same.
3. The applicant shall abide by all provisions of the Electricity Act, 2003, the CERC regulation 2009 (Grant of Connectivity, Long-term Access and Medium-term Open Access in inter-State Transmission and related matters) Central Electricity Authority (Technical Standards for connectivity to the Grid) and Indian Electricity Grid Code as amended from time to time.
4. In case of any major development, if there is any change in the transmission system to achieve overall optimization of the system, then, above details would be modified on mutual consent.
5. In case, in future, any other long-term transmission customer(s) is/are granted open access through the transmission system detailed above (subject to technical feasibility), he/they would also share the applicable transmission charges.



Name: Pankaj Kumar

Designation: ED (SEF, CE & ERP)

Place: Gurgaon
Date : 12-10-2012

To,

Shri P. K. Ghosh
Head – T&D Planning & Power Purchase
DPSC Ltd.
Plot-X-1,2&3, Block-EP
Sector-V, Salt Lake, Kolkata-700091
E-Mail : pk.ghosh@dpscl.com

Annexure-V

Statewise assessment of the Load Generation Scenario of Eastern Region.

For the assessment of load generation scenario, all STUs of Eastern Region are requested to provide the seasonal load and generation data in prescribed format given below.

State:

LOAD

	201 4-15	201 6-17	201 9-20
Summer Peak			
Summer Off- Peak			
Winter Peak			
Winter off- Peak			
Monsoon Peak			
Monsoon Off-Peak			

18th EPS Load			
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State:

GENERATION

		2014-15		2016-17		2019-20	
		Installed Capacity	Dispatch	Installed Capacity	Dispatch	Installed Capacity	Dispatch
Summer Peak	Thermal						
	Hydro						
	Wind						
	Solar						
Summer Off- Peak	Thermal						
	Hydro						
	Wind						
	Solar						
Winter Peak	Thermal						
	Hydro						
	Wind						
	Solar						

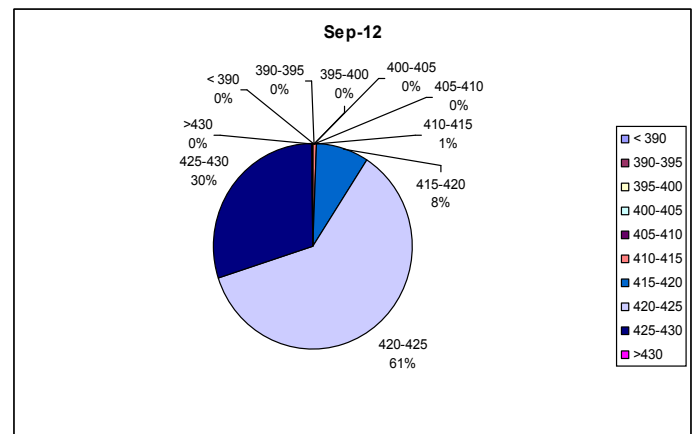
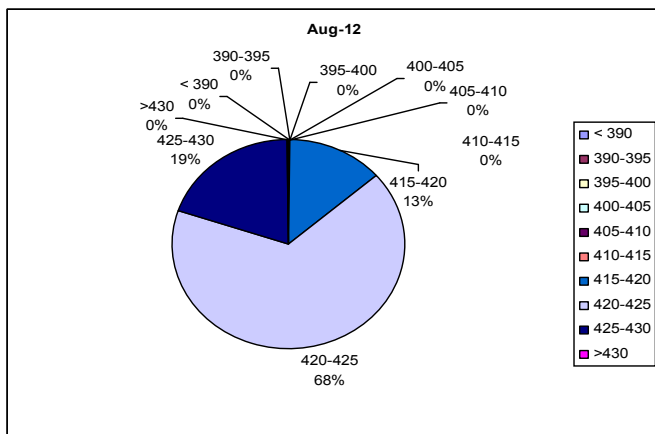
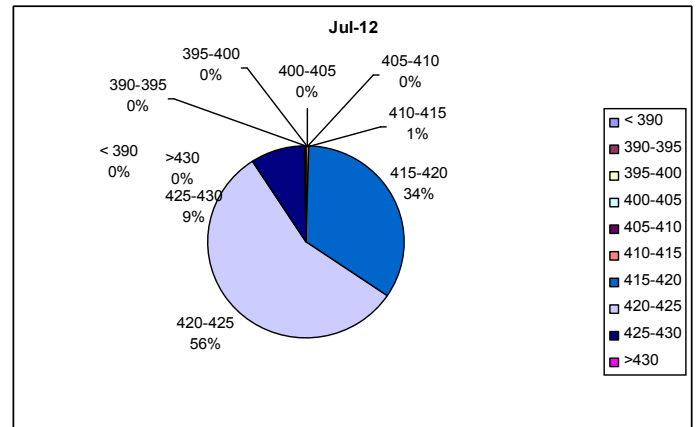
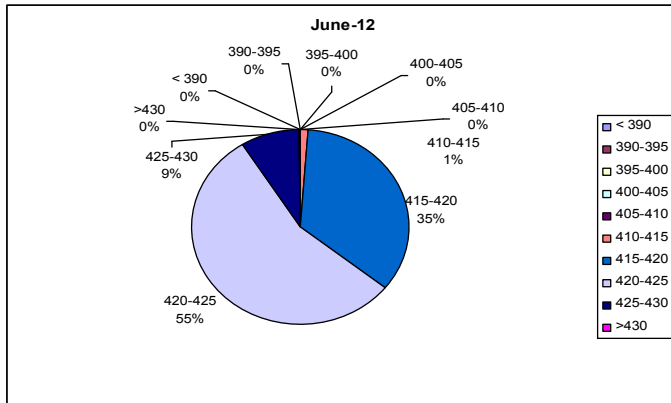
Winter off- Peak	Thermal						
	Hydro						
	Wind						
	Solar						
Monsoon Peak	Thermal						
	Hydro						
	Wind						
	Solar						
Monsoon Off-Peak	Thermal						
	Hydro						
	Wind						
	Solar						

Maximum Export/Import requirement of State considering various contingencies:

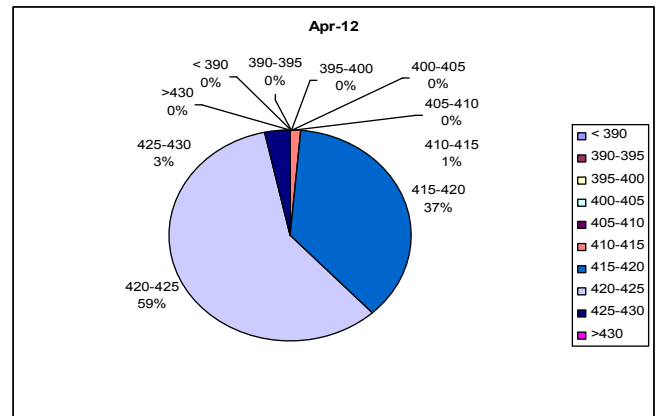
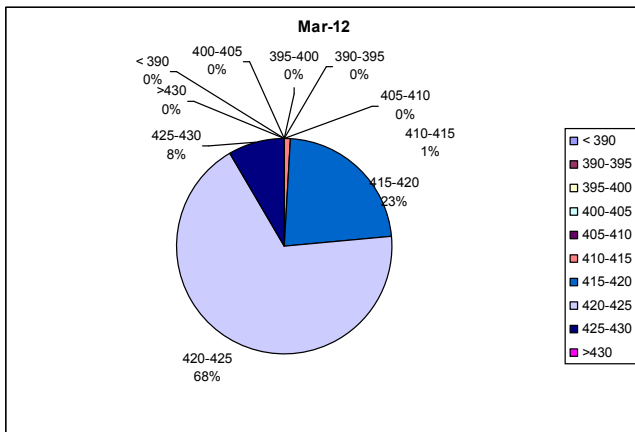
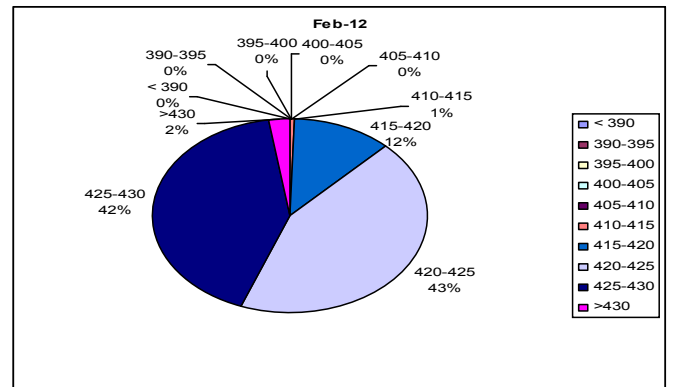
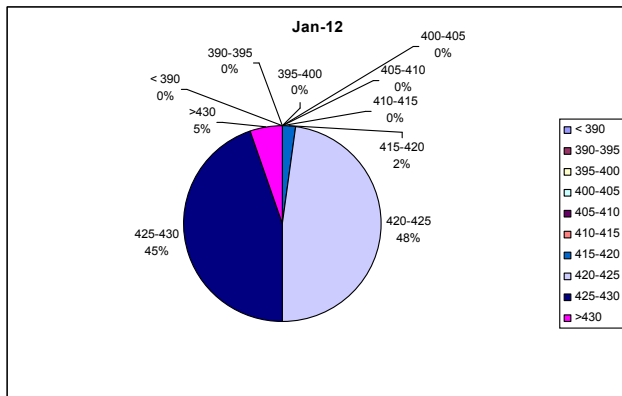
	201 4-15	201 6-17	201 9-20
Summer Peak			
Summer Off- Peak			
Winter Peak			
Winter off- Peak			
Monsoon Peak			
Monsoon Off-Peak			

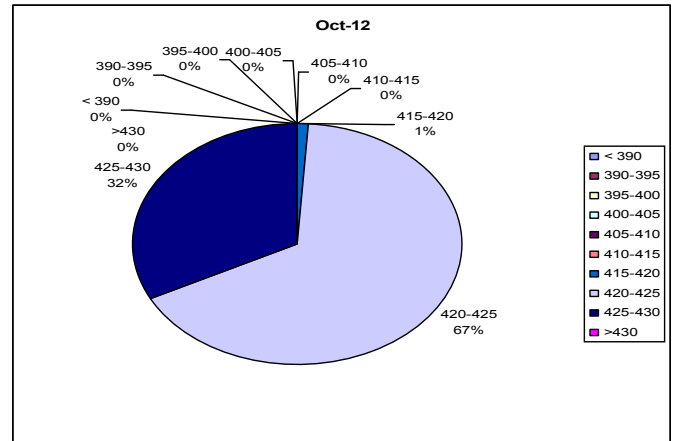
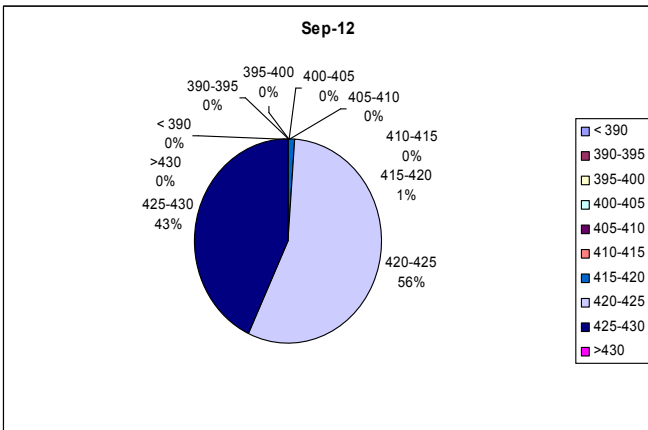
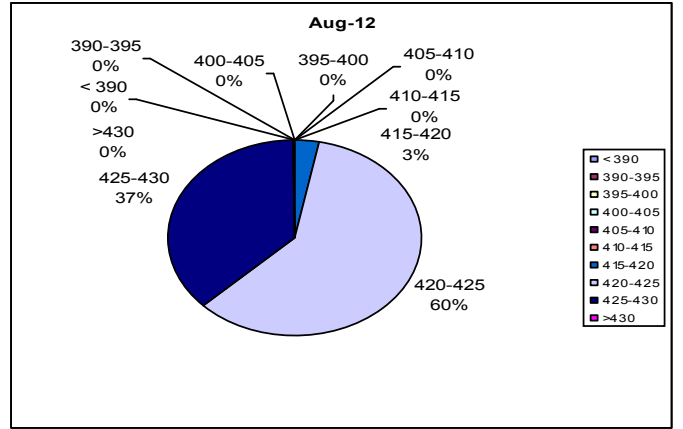
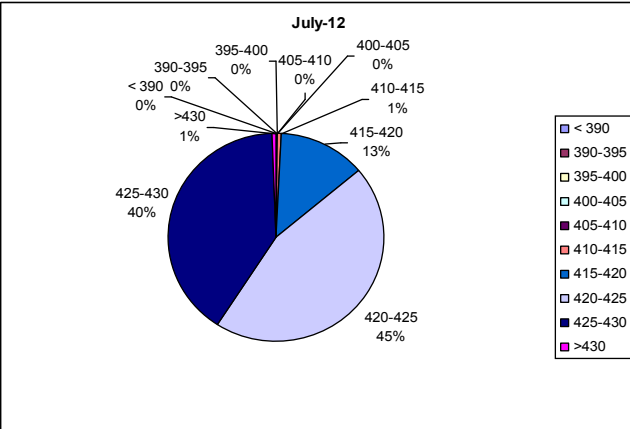
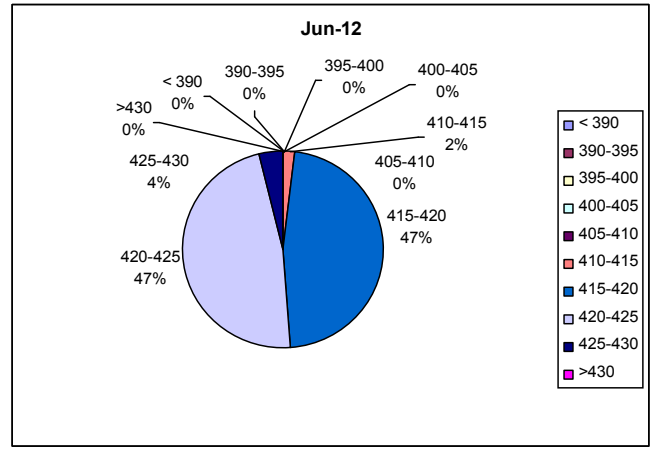
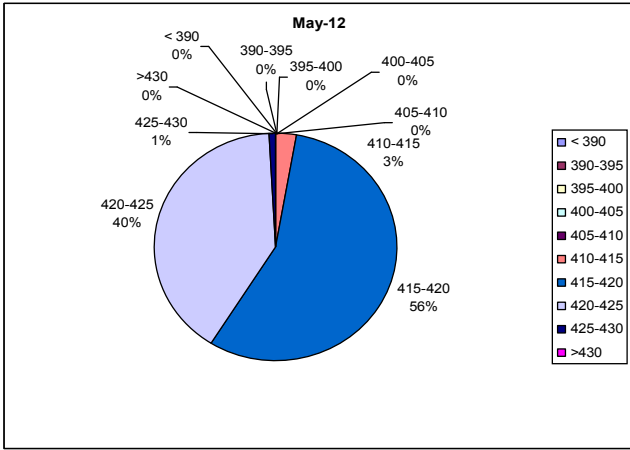
Voltage profiles of Substations in Eastern Region

Durgapur Substation

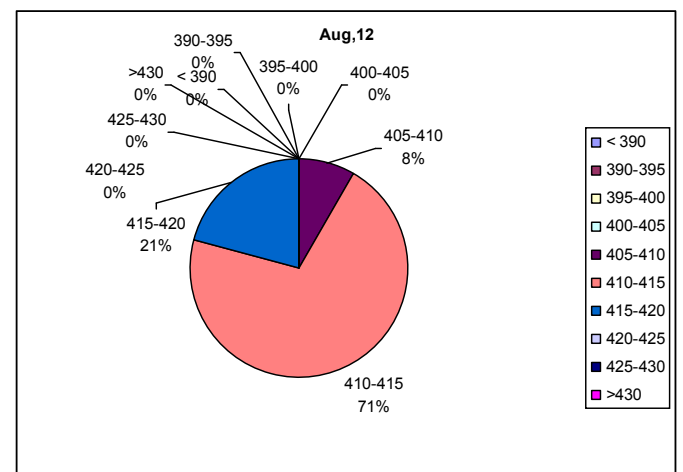
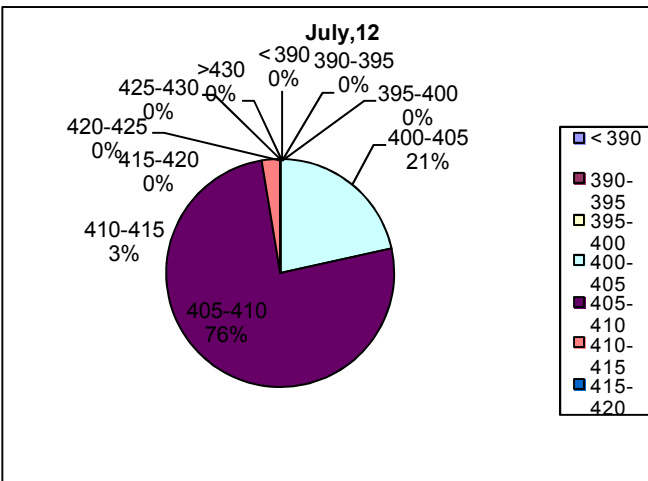


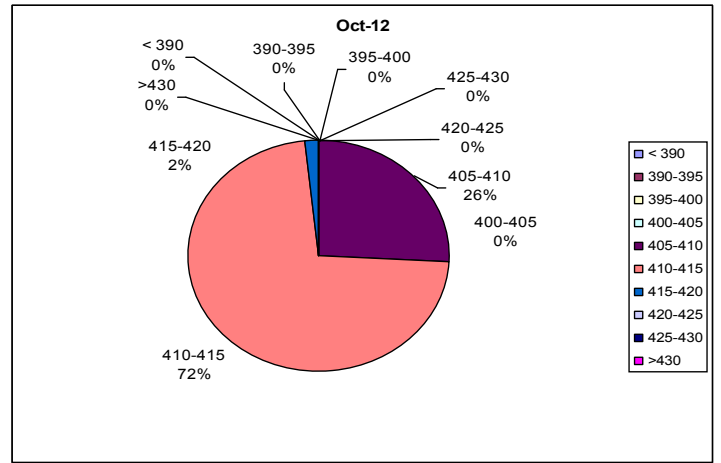
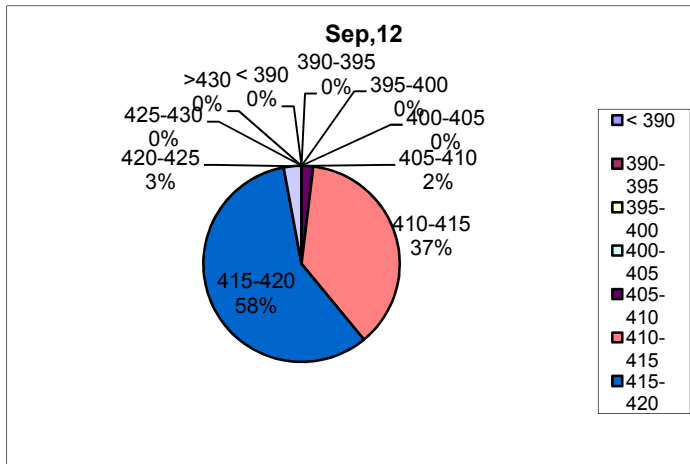
Maithon Substation



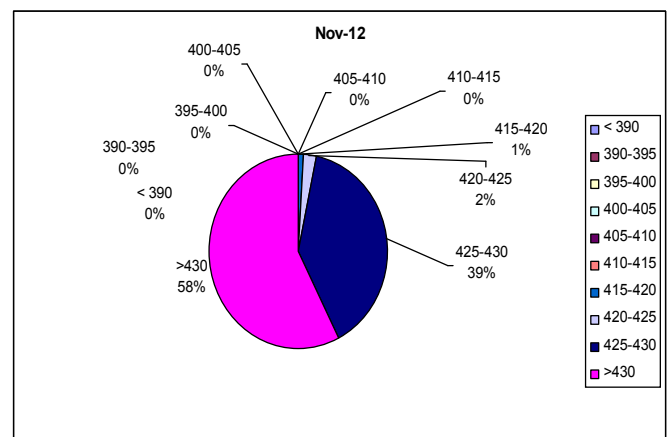
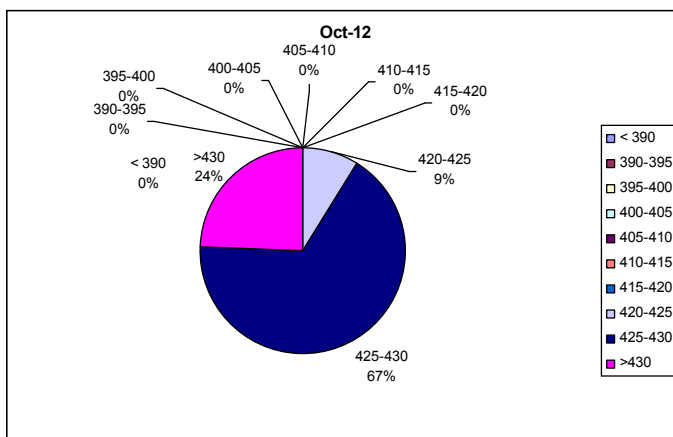
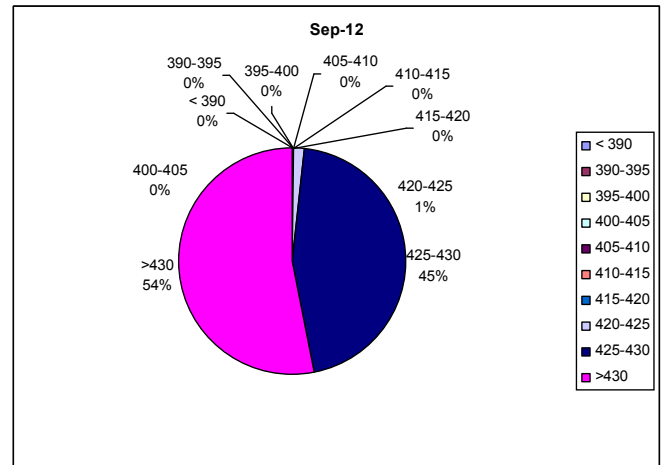
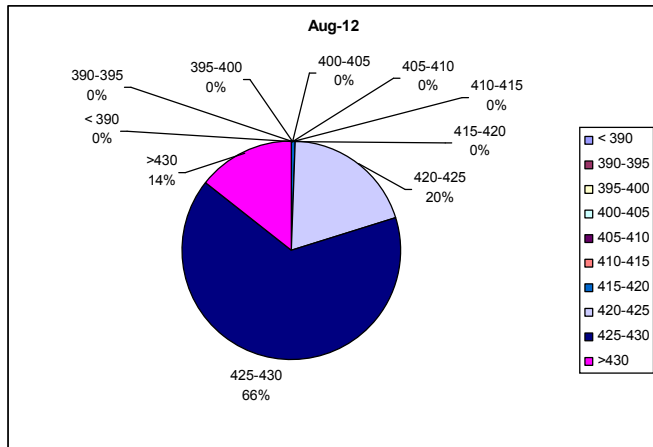
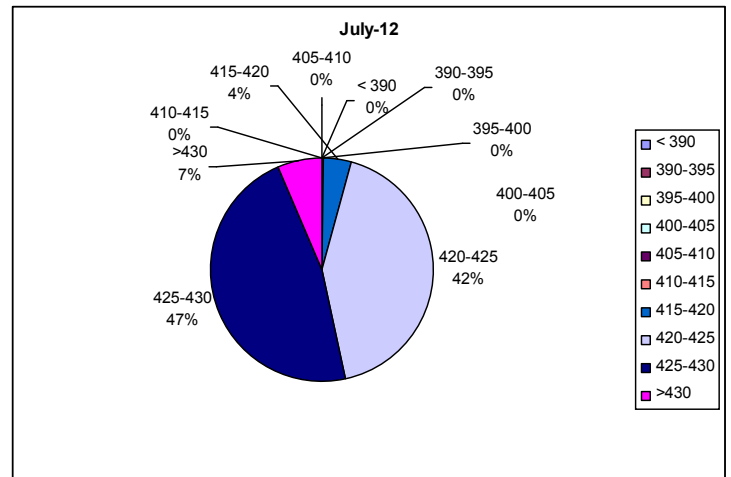
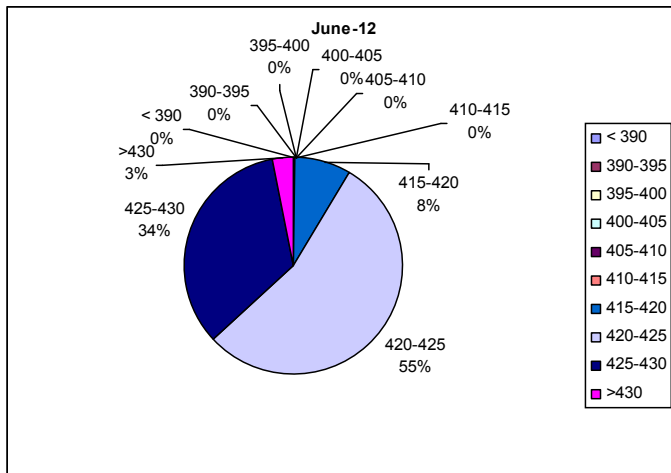


Rengali Substation

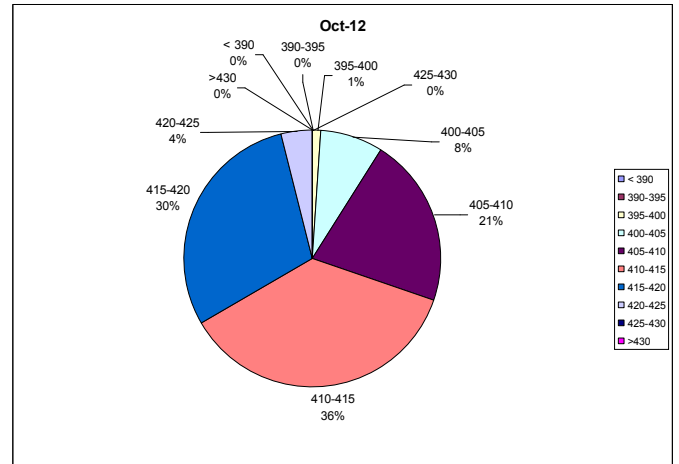
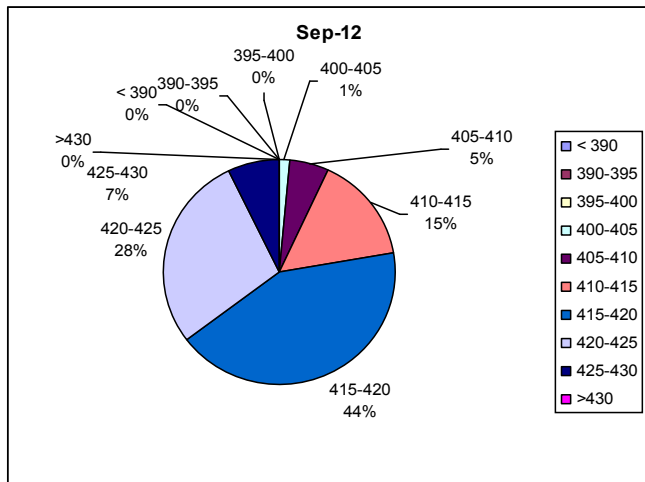
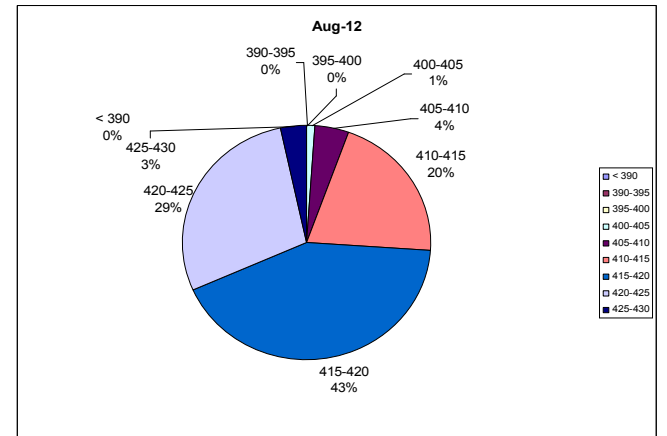
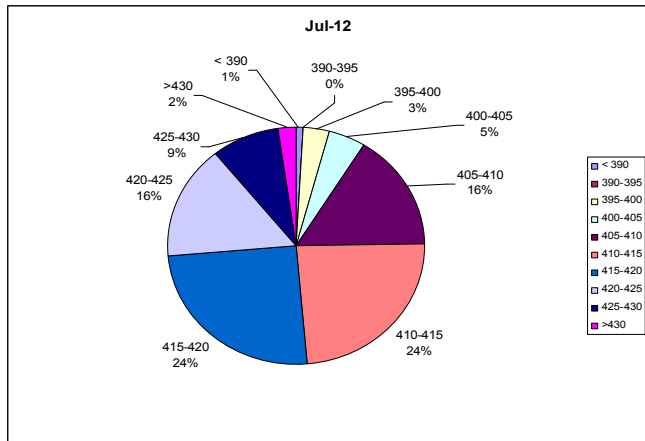
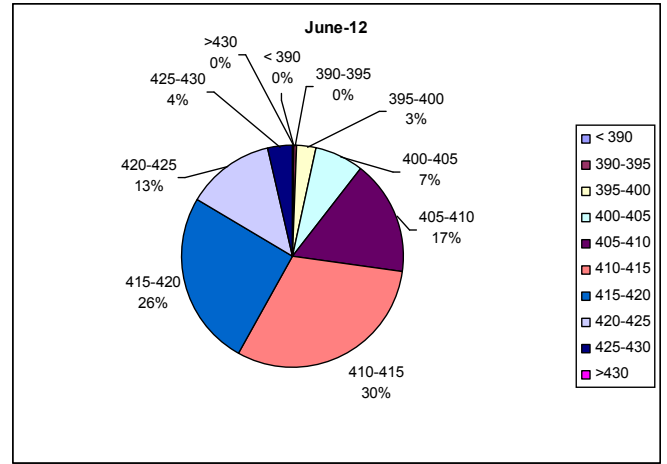
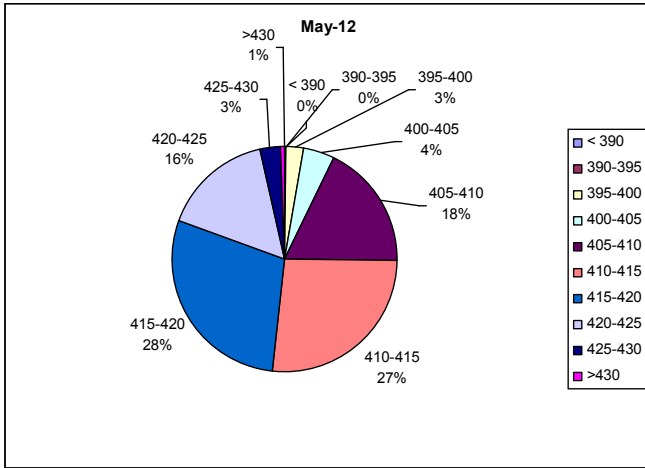




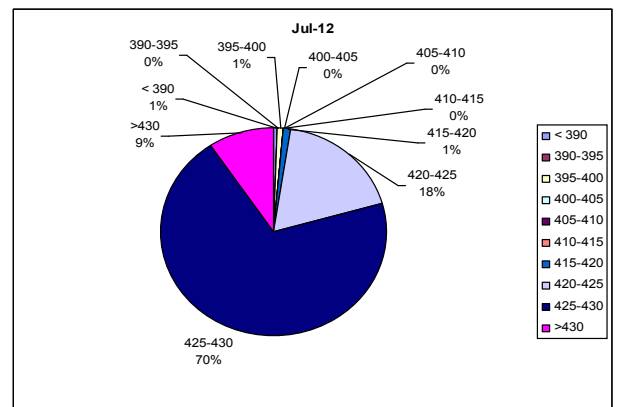
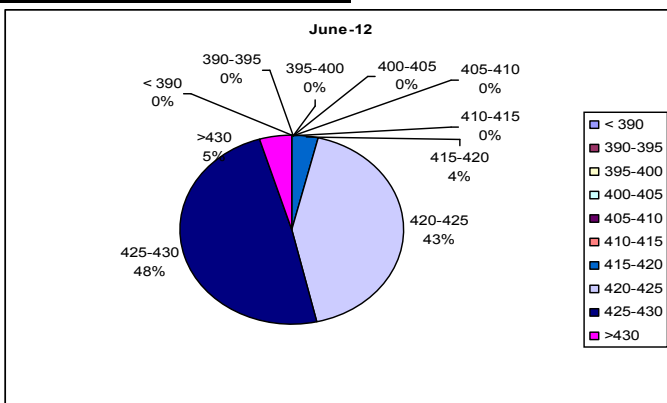
Rourkela Substation

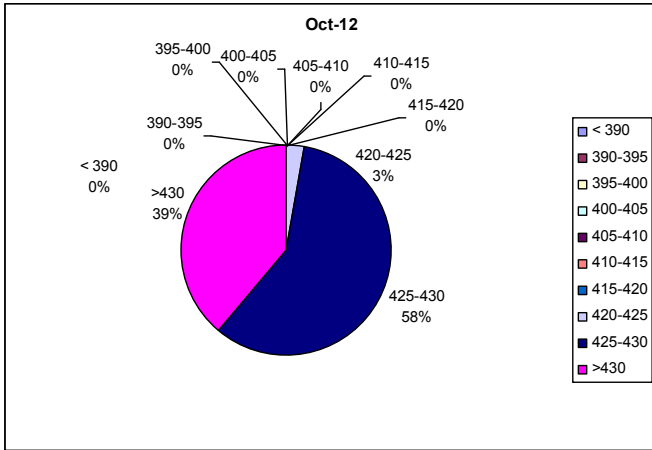
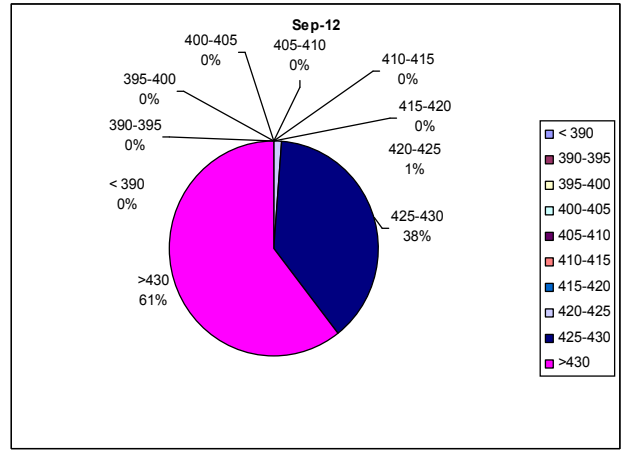
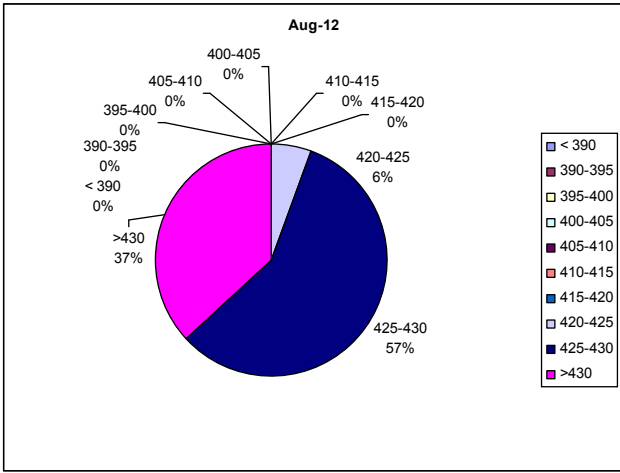


Biharshariff Substation

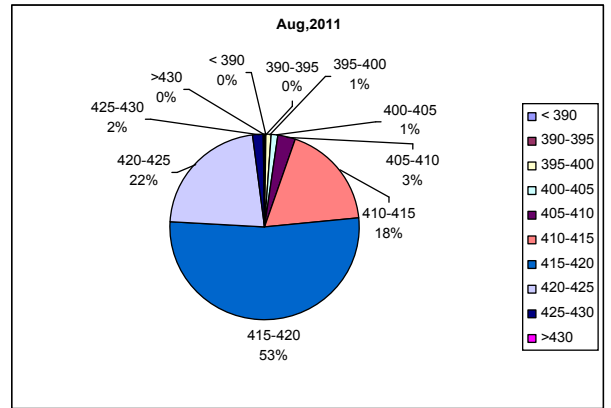


Jamshedpur Substation





Jeypore Substation



Jeypore Substation

