



**Government of India  
Ministry of Power  
Central Electricity Authority  
Office of Member (Power Systems)  
Sewa Bhawan, R. K. Puram, New Delhi-110066**



[ISO: 9001:2008]

No. 100/1/EC/2012-SP&PA/681-693

Dated: June 21, 2012

To

- |                                                                                                                                                                                                            |                                                                                                                         |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|
| 1. Shri S. Jayaraman<br>Member, CERC<br>Chanderlok Building,<br>36 Janpath,<br>New Delhi - 110001                                                                                                          | 2. Dr. Jaipal Singh<br>Member (E&C),<br>Central Electricity Authority<br>Sewa Bhawan, R.K. Puram,<br>New Delhi - 110066 |
| 3. Joint Secretary (Trans.),<br>Ministry of Power,<br>Shram Shakti Bhawan, Rafi Marg,<br>New Delhi - 110001                                                                                                | 4. Shri I.A. Khan<br>Adviser, Planning Commission,<br>Yojana Bhawan, Parliament Street,<br>New Delhi – 110001           |
| 5. Director (Transmission)<br>Ministry of Power,<br>Shram Shakti Bhawan, Rafi Marg,<br>New Delhi – 110001                                                                                                  | 6. Shri I. S. Jha<br>Director (Projects), POWERGRID<br>Saudamini, Plot No. 2, Sector-29,<br>Gurgaon – 122001            |
| 7. Secretary, CERC<br>Chanderlok Building,<br>36, Janpath,<br>New Delhi-110001                                                                                                                             | 8. Shri V. V. R. K. Rao<br>Former Chairman, CEA<br>B-9/C, DDA Flats, Maya Puri,<br>New Delhi -110064                    |
| 9. Shri A. K. Mago<br>Former Chief Secretary(Govt. of<br>Maha.),<br>C/o Dr. Rita Malhotra,<br>40, Pushpanjali, Vikas Marg Extension,<br>(opp. Anand Vihar Colony),<br>Delhi - 110092<br>(Tel. 9811088098). |                                                                                                                         |

**Subject: Minutes of the 29<sup>th</sup> meeting of Empowered Committee on Transmission held on June 15, 2012 at CERC, New Delhi.**

The 29<sup>th</sup> meeting of the Empowered Committee, constituted in accordance with guidelines for encouraging competition in development of transmission projects, was held on June 15, 2012 under the Chairmanship of Shri S. Jayaraman, Member, CERC. Minutes of the meeting are enclosed herewith.

(Ravinder)  
Member (PS)

Copy to:

- i) CMD, REC, Core-4 Scope Complex, 7 Lodhi Road, New Delhi-110003
- ii) CMD, PFC, Urjanidhi, 1 Barakhmba Lane, New Delhi -110001
- iii) Shri S. K. Gupta, CEO, RECTPCL, Core-4 SCOPE Complex, 7 Lodhi Road, New Delhi – 110 003. (Fax-011-24102576)
- iv) Shri N. D Tyagi, CEO, PFC Consulting Ltd, First Floor, Urjanidhi, 1 Barakhmba Lane, New Delhi -110001 (Fax- 011-23456170)

**Minutes of the 29<sup>th</sup> meeting of the Empowered Committee, constituted in accordance with guidelines for encouraging competition in development of transmission projects, held on June 15, 2012 at CERC, New Delhi**

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1. List of Participants is enclosed at Annexure-I.
2. Chairperson, Empowered Committee (EC) welcomed the members and the participants to the meeting. The minutes of 28<sup>th</sup> meeting of the Empowered Committee circulated vide letter No. 100/1/EC/2012-SP&PA dated March 01, 2012 was thereafter confirmed.
3. **Review of the progress of transmission projects under bidding process**
  - 3.1 **Transmission system associated with IPPs of Vemagiri area-Package A**
    - 3.1.1 RECTPCL informed that, at RFQ stage, total 28 bidders had submitted response to RFQ and 22 bidders were short listed for next stage of bidding i.e. RFP stage. It was further informed that, out of 22 short listed bidders, 18 bidders had purchased the RFP document. The Non-Financial & Financial bids have been submitted by following 7 bidders on due date and time i.e. 15.02.2012:
      - (i) M/s Power Grid Corporation of India Limited
      - (ii) M/s L&T Infrastructure & Development Limited
      - (iii) M/s Sterlite Grid Limited
      - (iv) M/s IVRCL Limited
      - (v) Consortium of Elecnor, S.A.– KEC International Ltd.
      - (vi) Consortium of Ind Bharath Power Gencom Ltd.- Megha Engineering & infrastructures Ltd.
      - (vii) Consortium of NCC Infrastructure Holdings Limited – BS Transcomm limited

Financial bid were received from above seven bidders and the same were opened on 07.03.2012. The lowest levelised transmission tariff as quoted by M/s Power Grid Corporation Of India Limited of Rs. 1197.4035 million per annum was lowest. The Letter of Intent was issued on 20.03.2012 and the SPV (M/s Vemagiri Transmission System Limited) was transferred to M/s Powergrid on 18.04.2012. It was further informed that, based on the estimated cost of Rs. 1300 crore, the levelised transmission tariff based on CERC norms was worked out by the BPC as Rs. 1805.9663 million per annum. The lowest levelised transmission tariff as quoted by

M/s Power Grid Corporation Of India Limited of Rs. 1197.4035 million per annum is 33.70% lower as compare to tariff computed based on CERC norms.

- 3.1.2 CTU said that the system was originally planned considering 2 nos of IPPs viz. Samalkot Power Limited (Installed Capacity IC : 2400 MW & LTA quantum : 2200 MW), Spectrum Power (Installed Capacity IC : 1400 MW & LTA quantum : 1350 MW). The Spectrum power had requested to cancel the TSA it had earlier signed. The Samalkot Power had indicated in Feb, 2012 that their project implementation was as per plan and shall be commissioned by Dec' 2012.
- 3.1.3 RECTPCL informed that M/s Spectrum Power Generation Limited had requested to cancel the Transmission Service Agreement as they would not be getting gas for their project till 2015-16 based on advisory issued by the Central Government. CTU has also advised RECTPCL that the Contract Performance Guarantee (CPG) provided by M/s POWERGRID should not be issued to M/s Spectrum Power.
- 3.1.4 Director(Projects), POWERGRID said that the CPG should not be given to IPP/Generator and instead can be placed with CTU as custodian. He elaborated that in both the cases viz. Vemagiri Transmission system and Nagapattinam Transmission system there is a uncertainty with respect to materialization of generation projects and under such circumstances it would not be prudent to hand over the CPG from TSP to generation developer. To avoid legal hassles in future he urged that the Committee may take a decision to take back the CPG already handed over to generation developers and keep them with some government body like BPC, CEA or CTU. He further observed that decision for encashing, if required, can be taken through Empowered Committee. The matter was deliberated at length and Empowered Committee decided that RECTPCL may forward the Contract Performance Guarantee, in respect of M/s Spectrum Power Limited, to the CTU.
- 3.1.5 Director(Projects),POWERGRID informed that land acquisition for Vemagiri Pooling Station and Khammam Substations is under progress and the land for Hyderabad Substation has been acquired.
- 3.1.6 Chairperson, Empowered Committee observed that presently only Samlakot generation is left as the LTA beneficiary of this scheme, and whether this scheme should still be implemented as availability gas is also uncertain. Member(PS), CEA said that with proposed Angul-Srikakulam-Vemagiri 765kV link, the system covered in this scheme would not be a stranded asset. The Committee felt that in view of uncertainty of gas the implementation of gas based projects may get delayed and it would be prudent to get first hand information from the site for which a team of CEA and POWERGRID may visit the Vemagiri area.

### **3.2 Transmission system associated with IPPs of Nagapattinam / Cuddalore area- Package A:**

- 3.2.1 PFCCL informed that for this project, a SPV namely "Nagapattinam - Madhugiri Transmission Company Limited" (NMTCL) incorporated on May 20, 2011. At RfQ stage 18 bidders were short listed and out of them 15 bidders purchased the RfP

document. Following 5 bidders submitted their RfP Bids on February 10, 2012 and RfP (Non-Financial) Bids were opened on same day:

- (i) NCC Infrastructure Holdings Limited
- (ii) Ind-Barath Power Infra Ltd.- Megha Engineering & Infrastructure Ltd.(JV)
- (iii) IVRCL assets and holding Ltd.
- (iv) Power Grid Corporation of India Limited
- (v) Sterlite Grid Limited

RfP (Financial) Bids of 5 Bidders was opened on February 29, 2012. Power Grid Corporation of India Limited was declared as successful bidder quoting the lowest Annual levelized Transmission Charge of Rs. 987.02 Million. Letter of Intent to the Power Grid Corporation of India Limited (PGCIL) was issued on March 06, 2012. The SPV was transferred to successful Bidder i.e PGCIL on March 29, 2012.

- 3.2.2 CTU said that the scheme was originally approved considering 2 nos of IPPs viz. PEL Power Limited (PEL) (Installed Capacity IC : 1050 MW & LTA quantum : 987 MW) and IL & FS Tamil Nadu Power Company Ltd. (ITPCL) (IC : 1200 MW & LTA quantum : 1150 MW ). However, PEL Power Ltd in Jan, 2012 informed that Consent for Establishment from Tamil Nadu Pollution control board is not forthcoming and therefore they are not in a position to sign TSA required as per the SBD for TBCB. However, this transmission corridor being green field it was decided to proceed ahead with the remaining IL&FS project who had signed the TSA. However, recently National Green Tribunal has suspended the Environment Clearance to IL&FS, had directed them to carry out a cumulative impact assessment and had also directed MoEF to initiate a Carrying Capacity Study taking into account the assimilating and supportive capacity of the region. This study may be completed within a period of maximum of 3 years. NGT has further directed MOE&F to review the Environment Clearance based on the cumulative impact assessment study and stipulate any additional Environmental conditions, if required. In view of these developments POWERGRID has filed a petition in CERC seeking direction with respect to implementation the transmission system awarded to their company through the TBCB process.
- 3.2.3 Chairman, Empowered Committee observed that as the IL&FS Tamil Nadu Project, for which this scheme is primarily implemented, has become uncertain, therefore, implementation of the transmission scheme should be reviewed. He further said that the Committee should recommend for keeping the implementation of the transmission scheme on hold. He also observed that the issues relating to compensation to bidder shall be addressed during hearing on the petition which POWERGRID has filed in the matter.
- 3.2.4 Committee recommended for keeping the implementation of the transmission on hold till there is clarity on the materialization of generation project.

**3.3 Transmission system associated with DGEN TPS (1200 MW) of Torrent Power Ltd. AND Inter-connection between Srinagar (Uttrakhand) and Tehri**

3.3.1 Member (PS), CEA said that this scheme is under bidding by PFC Consulting Ltd. RfQ stage of bid process for selection of TSP for the transmission project has been completed. Following is covered in scope of this scheme:

**Scope:**

| Transmission System                                                              | Estimated Line length | Estimated cost ( Rs crores ) |
|----------------------------------------------------------------------------------|-----------------------|------------------------------|
| i) DGEN TPS-Vadodara 400 kV D/C (twin Moose)                                     | 100 km                | 120                          |
| ii) Two no. 400 kV line bays (GIS) at Vododara (PG) S/S                          |                       | 20                           |
| iii) Navsari-Bheestan 220 kV D/C line                                            | 15 km                 | 11                           |
| iv) Two no. 220 kV line bays at Navsari (PG) S/S                                 |                       | 4                            |
| v) Two no. 220 kV line bays at Bheestan (GETCO) S/S (new S/S at Popda(Bheestan)) |                       | 4                            |
| vi) Srinagar-Tehri Pooling station 400 kV D/C (Quad)                             | 25 km                 | 61                           |
| vii) Two no. 400 kV line bays at Srinagar (PTCUL) S/S                            |                       | *                            |
| viii) Two no. 400 kV (GIS) line bays at Tehri Pooling Station (PG)               |                       | *                            |
| <b>Estimated cost ( Rs crores )</b>                                              |                       | <b>Rs. 220 Cr.</b>           |

3.3.2 PFCCCL informed that for this project, a SPV namely DGEN & Uttrakhand Transmission Company Limited” (DUTCL) was incorporated on November 15, 2011. 9 Bidders submitted their responses to RFQ by the due date i.e. January 31, 2012 and were opened on the same day. 8 Bidders were declared as qualified on May 16, 2012 for participating in the RfP Stage.

3.3.3 Member(PS) said that estimated cost of this scheme has reduced to Rs. 220 Crore from earlier Rs. 453 Cr. This was due to – (i) due to change in location of Bheestan and Tehri P.S., lengths of the corresponding lines have reduced, and (ii) the 400kV bays at Srinagar and Tehri PS are now proposed to be built under regulated tariff (RT) mechanism instead of TBCB earlier.

3.3.4 Director(Projects), POWERGRID said that augmentation of S/s at Srinagar as a hybrid of AIS and GIS would be difficult at this stage, also, looking at status of associated generation projects in Srinagar/Tehri area, the Srinagar-Tehri Pooling station 400 kV D/C line may be deferred for time being.

- 3.3.5 Chairman, EC said that as a part of this scheme is in Western Region and the other in Northern Region, it may be difficult to manage the whole package by a single developer, therefore, committee may consider splitting the scheme.
- 3.3.6 The Committee agreed to split the project and defer the Srinagar-Tehri Pooling station 400 kV D/C line. Accordingly, following would be scope of the modified scheme:

**Scope:**

| Transmission System                                                              | Estimated Line length | Estimated cost (Rs crores ) |
|----------------------------------------------------------------------------------|-----------------------|-----------------------------|
| i) DGEN TPS-Vadodara 400 kV D/C (twin Moose)                                     | 100 km                | 120                         |
| ii) Two no. 400 kV line bays (GIS) at Vododara (PG) S/S                          |                       | 20                          |
| iii) Navsari-Bheestan 220 kV D/C line                                            | 15 km                 | 12                          |
| iv) Two no. 220 kV line bays at Navsari (PG) S/S                                 |                       | 4                           |
| v) Two no. 220 kV line bays at Bheestan (GETCO) S/S (new S/S at Popda(Bheestan)) |                       | 4                           |
| <b>Estimated cost ( Rs crores )</b>                                              |                       | <b>160</b>                  |

- 3.3.7 It was agreed that MoP would get the scheme re-notified as per above scope.
- 3.3.8 Shri VVRK Rao said that as scope of works under this scheme has changed, therefore, RfQ may have to be redone. It was agreed that PFCCL would re-issue the RfQ stating revised scope. It was also agreed that the SPV and BEC would remain same. It was also agreed that existing SBD may be used for RfQ.
- 3.3.9 Committee also agreed that a team from CEA and CTU should visit DGEN project site to assess their status and availability of fuel.

**3.4 Evacuation System for Vizag-Vemagiri Projects- Hinduja (1040 MW)**

- 3.4.1 Member (PS), CEA said that this scheme is under bidding by REC Transmission Projects Co. Limited. RfQ for the scheme has been issued. The bidding process has been deferred as per the decision taken in 28<sup>th</sup> Empowered Committee Meeting as the Hinduja generation developer was not coming forward to sign BPTA/LTAA and submission of the requisite Bank Guarantee. Director(Projects)POWERGRID said that Hinduja has still neither signed the BPTA/LTAA nor submitted the requisite Bank Guarantee.
- 3.4.2 Member (PS), CEA proposed that the Hinduja Generation switchyard - Vemagiri-II Pooling Station 400kV Quad D/C line may be deleted from the scope of this scheme and be replaced with Srikakulam PP – Vemagiri-II 765kV D/C line. This line has been approved in the 33<sup>rd</sup> & 34<sup>th</sup> meeting of the Standing Committee on Power

System Planning of Southern Region as system strengthening requirement in the light of injection from Eastern Region through Angul- Srikakulam 765kV link.

- 3.4.3 These aspects were discussed and accordingly, it was agreed that name of the scheme may be changed to “System Strengthening in Southern Region for import of power from Eastern Region”, and following will be scope of the modified scheme:

**Scope:**

| Transmission Scheme                                            | Estimated Line length | Estimated cost ( Rs crores ) |
|----------------------------------------------------------------|-----------------------|------------------------------|
| (i) Srikakulam PP - Vemagiri-II Pooling Station 765kV D/C line | 350                   | 1000                         |
| (ii) Khammam (new)-Nagarjun Sagar 400 kV D/C line              | 150                   | 180                          |
| <b>Estimated cost ( Rs crores )</b>                            |                       | 1180                         |

- 3.4.4 It was agreed that RECTPCL would redo the RfQ. Also that the SPV and BEC would remain the same. It was also agreed that existing SBD may be used for RfQ. JS, MoP agreed to get the scheme re-notified with revised scope.

- 3.4.5 CTU would provide 2 Nos of 765 kV bays at Vemagiri Pooling Station and 2 Nos of 765 kV bays at Srikakulam Pooling Station as augmentation work for their Substations. They would also upgrade the Vemagiri Pooling Station to 765kV matching with commissioning of the Srikakulam PP - Vemagiri-II Pooling Station 765kV D/C line.

**4.0 Review of notified transmission schemes for start of bidding process**

**4.1 Transmission System associated with IPPs of Vemagiri Area- Package-B**

Member(PS), CEA said that Vemagiri Pooling Station – Khammam – Hyderabad 2<sup>nd</sup> 765 kV D/c line was planned in view of number of gas based projects in Vemagiri area. There is uncertainty in availability of gas for these projects, however, with Angul-Srikakulam-Vemagiri 765kV, there would be power injection at Vemagiri. The Committee discussed the issue and decided that a team from CEA and POWERGRID should visit Vemagiri project sites to assess their status. Decision to initiate bidding process for this scheme would be taken after report of this site visit.

**4.2 Transmission System associated with IPPs of Nagapattinam/Cuddalore area - Package-C”:**

Member(PS), CEA said that this scheme was planned for evacuation of power from generation projects coming in Nagapattinam/Cuddalore area. Now only one project i.e. ILFS is coming in this area, and as such there is a need to review this scheme. He said that the Kolhapur – Padghe line may not be needed as of now and may be



deleted from this package. The Madhugiri- Narendra line has been included in the ATS for Kudgi generation.

**4.3 Transmission System associated with IPPs of Vemagiri Area- Package-C**

Director(Projects) said that in view of sufficient in-feed up to Wardha 765kV S/S for import of power to Southern Region through the Wardha-Hyderabad line, the Wardha – Jabalpur Pooling Station 765kV D/c line covered in this scheme may not be needed as of now. The Committee agreed to defer initiating bidding process for this scheme.

**5.0 Issues related to revision of Standard Bid Documents(SBD) for aligning with the POC(Point of Connection) mechanism of sharing of transmission charges.**

- 5.1 Member(PS), CEA said that the existing RfQ, RfP and TSA documents for Tariff Based Competitive Bidding need to be revised based on new Point of Connection(PoC) mechanism of sharing of transmission charges of the ISTS. Using existing SBD under the present PoC based mechanism is causing considerable difficulties in the carrying out the bidding process. Now the charges are not to be recovered individually by each TSP, the “long term customers“ now are all the utilities, drawing entities and generators using the ISTS (now known as DIC), “lead long term customer “ cannot be identified and existing SBD does not have provisions to accommodate these new concepts. A draft amendment in the SBD has been submitted to MoP. This matter was also taken up in previous meetings of the EC.
- 5.2 Chairperson, EC requested JS, Ministry of Power to expedite the modifications to the SBD aligning with the PoC mechanism. JS, MoP agreed to expedite.
- 5.3 Regarding the new/ongoing schemes where bidding process is to be started, it was decided that the process may be initiated using existing RfQ. By the time the projects reach RfP stage, the SBD should be revised by the MoP.

**6.0 New schemes to be taken up through Tariff Based Competitive Bidding**

Following transmission schemes were agreed to be taken up through Tariff Based Competitive Bidding. The schemes may be notified by the Government accordingly.

**6.1 Name of the Scheme: ‘Bairasuil HEP – Sarna 220kV line’**

**Scope:**

| <b>Transmission Scheme</b>               | <b>Estimated Line Length (km)</b> | <b>Estimated Cost (Rs. Cr.)</b> |
|------------------------------------------|-----------------------------------|---------------------------------|
| (i) Bairasuil HEP – Sarna 220kV D/c line | 80                                | 70                              |
| <b>Estimated cost ( Rs crores )</b>      |                                   | 70                              |

**Note:**

- Bairasuil – Sarna 220 kV D/c line to be bunched at both ends.
- Provision of 1 no. of 220 kV bay at Bairasuil by NHPC
- Provision of 1 no. of 220 kV bay at Sarna (PSTCL) by POWERGRID
- CTU to coordinate bays at Bairasuil HEP by NHPC and Sarna S/S by POWERGRID
- Associated bays to be provided by POWERGRID/Generator to be matched with commissioning of the transmission scheme – CTU to coordinate.

**6.2 Name of the Scheme: ‘Transmission System for Patran 400kV S/S’**

**Scope:**

| <b>Transmission Scheme</b>                                                                     | <b>Estimated Line Length (km)</b>          | <b>Estimated Cost (Rs. Cr.)</b> |
|------------------------------------------------------------------------------------------------|--------------------------------------------|---------------------------------|
| (i) Creation of <b>2x500 MVA</b> , 400/220 kV Substation at Patran                             |                                            | 100                             |
| (ii) LILO of both circuits of Patiala-Kaithal 400kV D/c at Patran (Triple snow Bird Conductor) | 30                                         | 100                             |
| (iii) 400kV Bays                                                                               | 6                                          |                                 |
| (iv) 220kV Bays                                                                                | 8                                          |                                 |
| (v) Space for spare Bays                                                                       | <b>400kV: 6 no.</b><br><b>220kV: 6 no.</b> |                                 |
| <b>Estimated cost ( Rs crores )</b>                                                            |                                            | 200                             |

**Note:**

- CTU to provide tower locations in and around Patran for deciding location of the new S/S.

**6.3 Name of the Scheme: ‘ATS of Unchahar TPS’**

**Scope:**

| <b>Transmission Scheme</b>            | <b>Estimated Line Length (km)</b> | <b>Estimated Cost (Rs. Cr.)</b> |
|---------------------------------------|-----------------------------------|---------------------------------|
| i) Unchahar – Fatehpur 400kV D/C line | 60                                | 70                              |
| <b>Estimated cost ( Rs crores )</b>   |                                   | 70                              |

**Note:**

- The system to be made ready by March 2015
- CTU to confirm availability of 2 no. 400kV bays at Unchahar switchyard of NTPC
- CTU to provide bays at POWERGRID's Fatehpur S/S
- Associated bays to be provided by POWERGRID/Generator to be matched with commissioning of the transmission scheme – CTU to coordinate.

**6.4 Name of the Scheme: 'Part ATS of RAPP U-7&8 in Rajasthan'**

**Scope:**

| <b>Transmission Scheme</b>          | <b>Estimated Line Length (km)</b> | <b>Estimated Cost (Rs. Cr.)</b> |
|-------------------------------------|-----------------------------------|---------------------------------|
| (i) RAPP - Shujalpur 400kV D/C line | 260                               | 310                             |
| <b>Estimated cost ( Rs crores )</b> |                                   | <b>310</b>                      |

**Note:**

- CTU to confirm availability of 2 no. 400kV bays at RAPP 7&8 switchyard
- POWERGRID to provide 2 nos. of bays at their Shujalpur S/S.
- CTU to confirm requirement of line reactors for the above line (50 MVAR on each circuit at each end)
- CTU to confirm estimated length and cost of the scheme
- CTU to confirm schedule of RAPP U7&8 generation
- The system to be made ready by December 2016
- Associated bays to be provided by POWERGRID/Generator to be matched with commissioning of the transmission scheme – CTU to coordinate.

**6.5 Name of Scheme : 'Transmission System for Connectivity for NCC Power Projects Ltd. (1320 MW)'**

**Scope:**

| <b>Transmission Scheme</b>                                                     | <b>Estimated Line Length (km)</b> | <b>Estimated Cost (Rs. In Crores)</b> |
|--------------------------------------------------------------------------------|-----------------------------------|---------------------------------------|
| i) NCC Generation switchyard – Nellore Pooling Station 400 kV D/c (Quad) line. | 50                                | 100                                   |
| <b>Estimated Cost Rs. Crore</b>                                                |                                   | <b>100</b>                            |

**Note:**

- The system to be made ready by April 2015
- POWERGRID to provide 2 Nos of 400 kV bays at Nellore Pooling Station
- Associated bays to be provided by POWERGRID/Generator to be matched with commissioning of the transmission scheme – CTU to coordinate.

**6.6 Name of Scheme : Transmission System required for evacuation of power from Kudgi TPS (3x800 MW in Phase-I) of NTPC Limited**

**Scope:**

| <b>Transmission Scheme</b>                            | <b>Estimated Line Length (km)</b> | <b>Estimated Cost (Rs. In Crores)</b> |
|-------------------------------------------------------|-----------------------------------|---------------------------------------|
| i) Kudgi TPS – Narendra (New) 400 kV 2xD/C quad lines | 10                                | 40                                    |
| ii) Narendra (New) – Madhugiri 765 kV D/c line        | 350                               | 1000                                  |
| iii) Madhugiri – Bidadi 400 kV D/c (quad) line.       | 100                               | 200                                   |
| <b>Estimated Cost (Rs. Crore)</b>                     |                                   | <b>1240</b>                           |

**Note:**

- POWERGRID to provide 6 Nos of 400 kV bays at Narendra (New), 4 Nos of 400 kV bays at Madhugiri, and 2 Nos of 400 kV bays at Bidadi
- POWERGRID to confirm 4 Nos of 400 kV bays at Kudgi generation switchyard of NTPC
- The system to be made ready by June 2015
- Associated bays to be provided by POWERGRID/Generator to be matched with commissioning of the transmission scheme – CTU to coordinate.

**6.7 Name of Scheme : Eastern Region System Strengthening Scheme-VII**

**Scope:**

| <b>Transmission Scheme</b>                           | <b>Estimated Line Length (km)</b> | <b>Estimated Cost (Rs. Crores)</b> |
|------------------------------------------------------|-----------------------------------|------------------------------------|
| (i) Purulia PSP(WB) – Ranchi(PG) 400kV D/c line      | 140                               | 170                                |
| (ii) Kharagpur(WBSTCL) - Chaibasa(PG) 400kV D/c line | 170                               | 200                                |
| <b>Estimated Cost (Rs. Crore)</b>                    |                                   | <b>370</b>                         |

**Note:**

- POWERGRID to provide 2 no. of 400kV bays with line reactor(s) at Ranchi(PG) and Chaibasa(PG) - to be implemented under regulated tariff mechanism
- POWERGRID to provide 2 no. of 400kV bays at Purulia(WB) and Kharagpur(WB) to be implemented under regulated tariff mechanism as ISTS.
- Associated bays to be provided by POWERGRID/Generator to be matched with commissioning of the transmission scheme – CTU to coordinate.

**6.8 Name of Scheme : Eastern Region System Strengthening Scheme-VI**

6.8.1 Director (Projects), POWERGRID said that there is a change in scope of this scheme from what was approved in the Standing Committee and they have requested CEA to give 'in-principle' approval for revised transmission scheme. He further informed that the land in Mothihari and Darbhanga are very fertile and as farmers are marginal, acquisition of 42 to 50 acres of land required for construction of each substation may affect a large number of farmers. Apart from this, the area is low lying and flood prone which would require a large volume of earth filling. In view of this, it is proposed that both the substations may be implemented as GIS instead of AIS type. He further said that they have carried out system studies in association with Bihar State Electricity Board for future requirement of transmission system in Bihar and it is observed that it would be more effective to supply load centres of Bihar from proposed Mothihari substation through 132 kV lines. Therefore, instead of earlier planned 400/220 kV S/S, establishment of a 400/132 kV S/S at Mothihari would be a better option.

6.8.2 Member (PS) said that conveying CEA's 'in-principle' approval for this division is being processed and we may take up the scheme with revised scope for TBCB. Accordingly, the committee agreed to recommend the scheme with following scope for TBCB:

**6.8.2 Scope:**

| <b>Transmission Scheme</b>                                                                                                   | <b>Estimated Line Length (km)</b> | <b>Estimated Cost (Rs. Crores)</b> |
|------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|------------------------------------|
| (i) Creation of <b>2x500 MVA</b> , 400/220 kV <b>GIS</b> Substation at Darbhanga with space for future extension (1x500 MVA) |                                   | 120                                |
| ➤ 400 kV Line bays                                                                                                           | 2                                 |                                    |
| ➤ 400 kV ICT bays                                                                                                            | 2                                 |                                    |
| ➤ 220 kV Line bays                                                                                                           | 7                                 |                                    |
| ➤ 220 kV ICT bays                                                                                                            | 2                                 |                                    |
| ➤ Space for Future bays                                                                                                      | 400 kV -7<br>220 kV- 6            |                                    |
| ➤ 125 MVAR bus reactor                                                                                                       | 2                                 |                                    |
| ➤ Bus reactor bays.                                                                                                          | 2                                 |                                    |

| <b>Transmission Scheme</b>                                                                                                                                                                                                                                                                          | <b>Estimated Line Length (km)</b>                   | <b>Estimated Cost (Rs. Crores)</b> |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|------------------------------------|
| * - The Darbhanga S/S to be located near Darbhanga town                                                                                                                                                                                                                                             |                                                     |                                    |
| (ii) Creation of <b>2x200 MVA</b> , 400/132 kV <b>GIS</b> Substation at Mothihari with space for future extension (1x200 MVA)<br>➤ 400 kV Line bays<br>➤ 400 kV ICT bays<br>➤ 132 kV Line bays<br>➤ 132 kV ICT bays<br>➤ Space for Future bays<br><br>➤ 125 MVAR bus reactor<br>➤ Bus reactor bays. | 4<br>2<br>6<br>2<br>400 kV-5<br>132 kV -5<br>2<br>2 | 105                                |
| * - The Mothihari S/S to be located near Mothihari town                                                                                                                                                                                                                                             |                                                     |                                    |
| (iii) Muzaffarpur(PG)- Darbhanga 400 kV D/c line with triple snowbird conductor                                                                                                                                                                                                                     | 70                                                  | 100                                |
| (iv) LILO of Barh –Gorakhpur 400 kV D/c line at Mothihari, 400kV 2xD/C quad                                                                                                                                                                                                                         | 50                                                  | 200                                |
| (v) 2x80 MVAR Line reactors (Switchable) at Mothihari end (with 600 ohm NGR) for Barh-Mothihari section                                                                                                                                                                                             |                                                     | 8                                  |
| (vi) 2x50 MVAR Line reactors (fixed) at Mothihari end (with 400 NGR) for Mothihari-Gorakhpur section                                                                                                                                                                                                |                                                     | 7                                  |
| <b>Estimated Cost (Rs. Crore)</b>                                                                                                                                                                                                                                                                   |                                                     | <b>540</b>                         |

**Note:**

- POWERGRID to provide 2 no. of 400kV bays at Muzaffarpur(PG)
- Associated bays to be provided by POWERGRID to be matched with commissioning of the transmission scheme – CTU to coordinate for this.

**7.0 HVDC Bipole Strengthening in Southern Region**

7.1 Member(PS), CEA said that a HVDC Bipole line of 2500 MW capacity has been planned within Southern Region(SR) between New Pugalur and Hyderabad as system strengthening scheme to help Southern region grid to import power under of deficit scenario and export/transmit from south of SR to north of SR in case of surplus dispatch scenario. The scope of the scheme is as under:

**Scope:**

| <b>Transmission Scheme</b>                                                                                                                                                                                                                                                                             | <b>Estimated Line Length (km)</b> | <b>Estimated Cost (Rs. In Crores)</b> |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|---------------------------------------|
| i) Establishment of a New Pugalur HVDC terminal (2500 MW) with 400kV Switchyard.<br>ii) Establishment of a New Hyderabad HVDC terminal (2500 MW) with 400kV Switchyard<br><br>(* - New Hyderabad HVDC station to be located near Hyderabad<br>* - New Pugalur HVDC station to be located near Pugalur) | 2500 MW                           | 2000                                  |
| iii) Space for six no. of future line bays at each of New Hyderabad and New Pugalur HVDC stations                                                                                                                                                                                                      | --                                | --                                    |
| iv) New Pugalur HVDC – New Hyderabad HVDC bipole of $\pm$ 500kV, 2500 MW                                                                                                                                                                                                                               | 900                               | 1350                                  |
| v) New Pugalur HVDC – Udumalpet 400kV quad D/C line                                                                                                                                                                                                                                                    | 100                               | 200                                   |
| vi) New Pugalur HVDC – Pugalur 400kV quad D/C line                                                                                                                                                                                                                                                     | 100                               | 200                                   |
| vii) New Pugalur HVDC – Tuticorin Pooling Station 400kV quad D/C line                                                                                                                                                                                                                                  | 150                               | 300                                   |
| viii) New Hyderabad HVDC – Hyderabad (765/400kV PG S/S) 400kV quad 2xD/C line                                                                                                                                                                                                                          | 50                                | 200                                   |
| ix) New Hyderabad HVDC – Kurnool (765/400kV PG S/S) 400kV quad D/C line                                                                                                                                                                                                                                | 200                               | 400                                   |
| <b>Estimated Cost Rs. Crore</b>                                                                                                                                                                                                                                                                        |                                   | <b>4650</b>                           |

7.2 Chairman, Empowered Committee observed that considering high cost of this HVDC link there should be sufficient reasons to justify this capital expenditure.

7.3 It was explained that considering the uncertainties of generation addition, fuel availability and dispatchable power from wind projects in Southern Region, a need was felt to plan a system that would enable – (i) import of power into SR under deficit scenario, (ii) export in case of surplus, (iii) operate the grid under intermittency of wind generation to meet power requirements of SR constituents and also to decongest the grid. The proposed system consisting of HVDC bipole line within SR and associated 400kV link lines discussed and agreed in the 34<sup>th</sup> meeting of the Standing Committee on Power System Planning of Southern Region held on 16<sup>th</sup> April, 2012 at Hyderabad. This system is also planned to be linked with already

planned Wardha – Hyderabad 765kV D/C line & Srikakulam Pooling Station – Vemagiri-II 765kV D/C line that was earlier agreed and is also very helpful in case of import of power by SR.

- 7.4 Chairperson EC observed that the power from wind projects in Tamil Nadu would get locally absorbed in Tamil Nadu through State's transmission network and this system may not be required for evacuation of wind power in Tamil Nadu. Shri VVRK Rao observed that, because of its variable nature, only 10-15% wind injection in a grid is manageable and wanted to know that how this link would help in transmitting power from wind projects.
- 7.5 Director(Projects), POWERGRID said that this HVDC line has been planned mainly for import of power into Southern Region. He suggested that instead of HVDC terminal at Hyderabad, option of having it at Khammam may be considered.
- 7.6 Shri VVRK Rao observed that Southern region States have not carried long term PPA(s) for import of power from outside of Southern region which could justify need of this HVDC link for import of power into Southern region.
- 7.7 It was agreed to again discuss this scheme in the next meeting when CEA will come prepared with a presentation on the subject.

#### **8.0 Constitution of the Bid Evaluation Committees (BEC)**

It was agreed that BECs for new transmission schemes would be constituted after approval of Empowered Committee in its next meeting. Proposal for BEC would be prepared by CEA in consultation with respective BPC and CTU.

#### **9.0 Review of ongoing projects**

Chairman EC said that this committee should also review the ongoing projects that are being implemented through the tariff based competitive bidding process. Member(PS) said that duly constitutes Joint Monitoring Committees(JMC) are monitoring progress of these transmission projects. It was agreed that report of JMCs would be put up for review by the Empowered Committee from next meeting onwards.

#### **10.0 Expenses of BPC**

Director(Projects), POWERGRID pointed out that the methods of accounting of expenses for bid processing by PFC and REC BPCs is different, in particular, PFC retains the proceeds from sale of tender documents, where as so is not the practice with REC. Chairman EC observed that there should be a uniform practice of accounting for BPCs' working and requested Ministry of Power to sort out the matter.

- 11.0 The meeting ended with a vote of thanks to the chair.
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## Annexure - I

### List of participants of the 29<sup>th</sup> Meeting of the Empowered Committee, held on June 15, 2012

- |     |                                                   |                  |
|-----|---------------------------------------------------|------------------|
| 1.  | Shri S. Jayaraman, Member, CERC                   | Chairperson      |
| 2.  | Shri Ravinder, Member (PS), CEA                   | Member Secretary |
| 3.  | Dr. J. P. Singh, Member (E&C), CEA                | Member           |
| 4.  | Smt. Rita Acharya, Joint Secretary, MoP           | Member           |
| 5.  | Shri A. K. Saxena, Director(Trans), MoP           | Member           |
| 6.  | Shri I. S. Jha, Director (Projects), PGCIL        | Member           |
| 7.  | Shri Arun K. Mago, former Chief Secy, Maharashtra | Member           |
| 8.  | Shri V.V.R.K. Rao, former Chairman CEA            | Member           |
| 9.  | Shri Chandra Prakash, Dy. Chief(Engg.), CERC      |                  |
| 10. | Shri K.K. Arya, Chief Engineer(SP&PA), CEA        |                  |
| 11. | Shri Pardeep Jindal, Director(SP&PA), CEA         |                  |
| 12. | Shri NRLK Prasad, Dy. Director(SP&PA), CEA        |                  |
| 13. | Shri Dilip Rozekar, DGM(SEF), POWERGRID           |                  |
| 14. | Shri S. K. Gupta, CEO, RECTPCL                    |                  |
| 15. | Shri V.K. Singh, Addl. CEO, RECTPCL               |                  |
| 16. | Shri Sanjay Rai, AVP, PFCCL                       |                  |
| 17. | Shri Shwetabh Verma, Dy. Manager, PFCCL           |                  |