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

#### No.66/5/99-SP&PA/ 1226-38

- Member (Transmission), Bihar State Electricity Board Vidyut Bhavan, Baily Road, Patna-800021.
- Member Secretary, Eastern Regional Power Committee, 14, Golf Club Road, Tollygange, Kolkata-700033.
- Director (Transmission), Orissa Power Transmission Corporation Ltd, Jan path, Bhubaneshwar-751022.
- Principal Chief Engineer cum Secretary, Power Department Government of Sikkim, Sikkim.
- Director (Technical), NTPC Limited, Engineering Office Complex, A-8, Sector 24, Noida.
- Executive Director (T&RE), NHPC Ltd, NHPC Office complex, Sector 33, Faridabad-121003.

#### Dated: 22-11-2012

- 2. Director (System), Damodar Valley Corporation DVC Towers, VIP Road, Kolkata-700054.
- 4. Director (Commercial), Grid Corporation of Orissa Ltd, Jan path, Bhubaneshwar-751022.
- Director (System Operation), West Bengal State Electricity Transmission Company Ltd, Vidyut Bhavan, 5th Floor, Block-D, Bidhannagar, Sector-II Kolkata-700091.
- Director (Projects), Power Grid Corporation of India "Saudamini" Plot No. 2, Sector-29 Gurgaon-122001
- Member (Transmission), Jharkhand State Electricity Board, In front of Main Secretariat, Doranda, Ranchi-834002.
- General Manager, Eastern Regional Load Dispatch Center, 14 Golf Club Road, Tollygange, Kolkata-700033.

#### Sub: Meeting of 2<sup>nd</sup>- 2012 Standing Committee on Power System Planning in Eastern Region.

#### Sir,

The agenda for the forthcoming Standing Committee meeting on Power System Planning in Eastern Region has been uploaded on **CEA website**: <u>www.cea.nic.in</u>. (Path to access-*Power System/Standing Committee on Power System Planning/EASTERN REGION*). The date and venue of the meeting shall be intimated soon.

Any additional issue to be discussed as an agenda may please be communicated in advance.

Yours faithfully,

R. Saha) Director (SP&PA)

**Copy to:** Shri S K Soonee, CEO, POSOCO, B-9, Qutab Institutional Area, Katwaria Sarai, New Delhi-110016 – with a request to kindly attend the meeting.

#### Agenda for 2<sup>nd</sup> - 2012 forthcoming Standing Committee Meeting in Eastern Region

#### Item-1: Establishment of new 400/220kV, 2x315MVA GIS sub-station at Pandiabil instead of Uttara / Begunia / Pattanaikia with LILO of 400kV Mendhasal-Baripada D/C line under the approved ERSS-III scheme - Modifications / further revision in the ERSS-III Scheme.

The establishment of 2x315MVA, 400/220kV substation at Uttara in Odisha along with 400kV Uttara-Mendhasal D/C line was approved as a part of ISTS Strengthening Scheme (ERSS-III) in the SCM held on 14- 9-2009. In view of the land for Uttara being earmarked for construction of an International Airport, POWERGRID in co-ordination with OPTCL identified a land at Begunia close to Uttara and proposed to establish Begunia 400/220kV GIS with LILO of 400kV Mendhasal-Baripada D/C line, instead of the earlier agreed system.

Due to land procurement/acquisition problem at Begunia, OPTCL again identified a land at Pattanaikaya between Bhubaneswar and Puri, for creating the 400/220kV, 2x315MVA GIS at Pattanaikaya with a 400kV D/C line to Mendhasal. This proposal was discussed and agreed in the previous Standing Committee meeting held on 08-02-2012 wherein it was also decided to make a joint site visit to firm up the sub-station land.

After the site visit, it is decided that the proposed GIS at Pattanaikaya would be relocated to Pandiabil. Further, it is also decided to LILO Baripada – Mendhasal D/c line at Pandiabil instead of a direct D/c line between Mendhasal and Pandiabil. CEA vide its letter dated 29-06-2012 agreed in-principle for the same.

In view of the above, the modified scope for establishment of new 2x315 MVA, 400/220 kV GIS at Pandiabil would be as following :

- 2x315 MVA, 400/220kV GIS sub-station at Pandiabil
- LILO of Baripada Mendhasal 400kV D/c line at Pandiabil

#### Members may kindly note and concur.

#### Item-2: Establishment of 400kV substations at Darbhanga and Motihari in North Bihar under ERSS-VI Scheme of POWERGRID– Revision in Scope

The following Inter-State works for establishment of 400kV substations at Darbhanga and Motihari in north Bihar were inter-alia decided in the Standing Committee meeting held on 08-02-2012:

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

Subsequently, POWERGRID informed that lands identified for Motihari and Dharbhanga substations were very fertile in nature and acquisition of land of 40 – 50 acres for each station would affect the large number of farmers. The respective area is also low lying and flood prone, which could require large volume of earth filling.

In view of above and difficulty in acquiring adequate quantum of land for AIS at Motihari and Dharbhanga, POWERGRID vide its letter dated 07-06-2012 proposed following modifications in the scheme :

- Establishment of GIS sub-stations instead of earlier approved AIS sub-stations at Darbhanga and Motihari
- 2x200 MVA, 400/132 kV new sub-station at Motihari instead of earlier approved 2x500 MVA, 400/220 kV new sub-station; 2x500 MVA 400/220 kV ICTS at Darbhanga

CEA vide its letter dated 26-06-2012 agreed in-principle for the same.

#### Members may kindly note and concur.

#### Item-3: Converting 2 X 80 MVAr fixed reactors at Gorakhpur end of 400kV Barh-Gorakhpur D/C line into switchable line reactors.

The existing Barh - Gorakhpur 400 kV D/c line is having 2x80 MVAR fixed line reactors at Gorakhpur end, which need to be converted into switchable line reactors for better reactive power management and system operation. On the proposal of POWERGRID, CEA vide its letter dated 29-06-2012 agreed in-principle.

#### Members may note and concur.

#### Item-4: Addition / Replacement of Bus Reactors Gazuwaka, Maithon, Biharsharif ,Jamshedpur, Mithon,Rengai,Durgapur & Rourkela.

In view of severe high voltage conditions being experienced in Eastern regional grid, following reactive compensation augmentation has been proposed by POWERGRID:

• Addition of 125 MVAR Bus Reactor at Gazuwaka 400 kV (East) Bus

- Addition of 2x125 MVAR Bus Reactor at Rengali 400 kV Bus
- Addition of 125 MVAR Bus Reactor at Maithon 400 kV Bus
- Addition of 125 MVAR Bus Reactor in parallel with existing 50MVAR (3x16.67) bus reactor at Biharsharif 400kV bus, using the existing reactor bay #.
- Addition of 2x125 MVAR Bus Reactor in parallel with existing 2x50MVAR bus reactor at Jamshedpur 400kV bus #
- Addition of 125 MVAR Bus Reactor in parallel with existing 50MVAR bus reactor at Rourkela 400kV bus #
- Addition of 2x125 MVAR Bus Reactor at Durgapur (Parulia) 400 kV Bus. Out of 2x125MVAr bus reactor, 1x125MVAR Bus Reactor would be used in parallel with the existing 1x50MVAR bus reactor, using the existing reactor bay #.
- [# Note: If there is space constraint for parallel operation of reactors, the existing 50MVAr reactor (each) would be replaced by the 125MVAR reactor. In that case, the 50MVAr reactor would be utilised as Regional spare]

#### Members may discuss and concur.

#### Item-5: 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.

POWERGRID is to implement a 2x315 MVA, 400/220kV AIS substation at Karandighi in West Bengal as decided 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. In this regard, POWERGRID vide its letter dated 31-08-2012 intimated that in spite of persistent efforts and persuasion with West Bengal for last 3 years, the land could not be acquired at Karandighi in West Bengal. As an alternative, POWERGRID was looking for an alternative land at Kishanganj in Bihar for the above substation. Towards this, 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.

Keeping in view the fact that a considerable time has already been lost in identification and selection of the suitable land for the substation at Karandighi and that the generation projects in Sikkim would start coming up progressively starting from the end of 2012, it is proposed that the substation would be constructed as GIS instead of AIS to avoid further delay. The area for the GIS substation would be less in size to the tune of about 25 acres and as per assessment there would be a fair possibility of getting a suitable Govt. land of required size in Kishanganj area through support from Bihar State. CEA vide its letter dated 13-09-2012 agreed in-principle for the GIS.

In view of the above revision of the substation location, the modifications in the associated transmission elements in the Sikkim Transmission System are given below.

#### Transmission system under execution by TPTL ( JV of TUL and POWERGRID) for Teesta-III (1200 MW) evacuation

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

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.

#### Members may note and concur.

#### Item-6: Augmentation of Transformation Capacity at 400/220kV, 2x315 MVA Maithon Substation (PG) to 2x500 MVA

Loading pattern of 2x315 MVA, 400/220 kV ICTs at Maithon (PG) Sub-station during last one year revealed that maximum loading on each ICT at Maithon has gone up to 300 MW on some occasions. The aggregate power flow through the ICTs had exceeded 500 MW on quite a few occasions. In the 73rd OCC meeting, ERLDC illustrated the loading pattern of 2x315 MVA ICTs at Maithon sub-station. It was noted that. It was

apprehended that outage of one ICT would lead to failure of other ICT due to excessive loading. Therefore, the requirement of ICT augmentation was accepted by members.

In view of such loading pattern on the ICTs and to meet any eventuality in the event of failure of any one of the ICTs, POWERGRID has proposed augmentation of transformation Capacity at 400/220 kV Maithon Substation. Keeping in view the space constraints at Maithon, POWERGRID has suggested to replace 2x315 MVA ICTs at Maithon sub-station by 2x500 MVA ICTs and to use the existing 2x315 MVA ICTs as spare transformers or for augmentation/expansion of sub-station (PG) capacity. It was agreed in the ERPC forum.

#### Members may discuss and concur.

### Item-7: Augmentation of transformation capacity at 220/132 kV Ara substation of POWERGRID with an additional 1x160 MVA 220/132 kV ICT.

Loading pattern of 2x100 MVA ICTs at 220/132 kV Ara substation indicates more than 90 MW and maximum loading touched up to 120 MW on couple of occasions. In such condition, if one ICT trips, the other ICT would also trip resulting into huge load shedding for BSEB. The matter was discussed in the previous Standing Committee meeting held on 08-02-2012 but the same was not agreed upon. Subsequently, the matter was finally discussed in ERPC forum on 25<sup>th</sup> August, 2012, augmentation of transformation capacity at 220/132 kV Ara substation by 1x160 MVA was agreed and POWERGRID was requested to go ahead with its procurement action.

#### Members may kindly note and concur.

#### Item-8: Requirement of additional spare converter transformers (singl phase unit) for 2x500 MW Gazuwaka & 1X500 MW Sasaram HVDC back-to-back (B-t-B) stations.

The proposal was discussed in the previous Standing Committee meeting wherein Members were of the view that this proposal could be considered later. In view of improving reliability and grid security, additional spare converter transformer at Gazuwaka and Sasaram is required.

The HVDC Back-to-Back (B-t-B) Stations at Gazuwaka (1x500MW of AREVA + 1x500MW of ABB) and Sasaram (1x500MW of ABB) have since been in operation as given hereunder:

VIZAG/Gazuwaka B-t-B (2x500MW)	Date
Pole-I :	01.09.1999
Pole-II :	01.03.2005
SASARAM B-t-B (1x500MW)	
Pole I :	01.12.2002

While the above links were planned for exchange of power during contingencies, these are being utilized for continuous exchange of Power between the two connected Regions and operated at times as power evacuation corridor. The reliability and security of both the grids depend upon the reliable operations of these links. Each Pole of a Back-to-Back station is equipped with six (6) units of single phase Converter Transformers/pole. Vizag HVDC B-t-B station is having population of twelve (12) nos. single phase Converter Transformers with a provision of one spare per pole, and Back-to-Back station at Sasaram is having six (6) nos. Converter Transformers with a provision of one spare. These Links/Transformers are being operated on continuous basis to control MW flow, voltage etc. in the integrated Grid and their on load tap changers are subjected to enormous stress causing long term effect on their life. For multiple unit failures at a station, it leads to long outage of a pole leading to reduction of evacuation capacity by 500MW.

In order to improve reliability of HVDC System, POWERGRID has proposed for provision of an additional spare single phase Converter Transformer unit for each Pole at Sasaram & Vizag HVDC links, which as a practice, is being followed at the other HVDC Stations viz. Talcher, Kolar, Biswanath Chariyali, Agra, Balia, Bhiwadi etc. As per the present installation & make of converter transformers at Sasaram & Vizag, the following converter transformer shall be needed to be procured by POWERGRID.

**Sasaram:** one single phase unit of  $400/\sqrt{3}/93/\sqrt{3}/93kV$ , 234MVA rating (AREVA) **Gazuwaka:** one single phase unit of  $400/\sqrt{3}/93/\sqrt{3}/93kV$ , 234MVA rating (AREVA) & one single phase unit of  $400/\sqrt{3}/74.5/\sqrt{3}/74.5kV$ , 201.2MVA rating (ABB) It may be noted that the requirement of two spare converter transformers at Gazuwaka HVDC B-t-B stations was agreed by the constituents of SR in the 33<sup>rd</sup> Standing Committee meeting of SR held on 20<sup>th</sup> October 2011 at NRPC, New Delhi.

POWERGRID may give a presentation in this regard.

#### Members may deliberate and concur.

# Item-9: Proposal for procurement of one Spare single phase unit of 765/400 kV ICTs for Eastern Region

Presently, ten (10) units of 500 MVA, 765/400 kV ICTs (3x1500 MVA) at Gaya Substation are in operation and four(4) more units of 500 MVA, 765/400 kV ICTs (1x1500 MVA) are scheduled for commissioning by 31.03.2013 at Sasaram. These transformers were manufactured at off-shore works of Hyosung (South Korea) and CG (Hungary). Any major failure of these ICTs shall necessitate repair in their off-shore works only, which is time consuming because of long time for transportation of the unit from site to works & back and manufacture of winding. Any failure of these units may lead to overloading of the other units operating in parallel and may cause transmission constraint at 765 kV level specially in view of ensuing commissioning of various power projects in the Region. 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.

#### Members may discuss and concur.

#### Item-10: 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

Dishergarh Power Supply Company (DPSC), a private sector distribution licensee, provides supply 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 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 directed the CTU to expeditiously process the application of the petitioner for grant of connectivity in accordance with Connectivity Regulations.

Subsequently, the matter was discussed in a meeting among CEA, CTU/POWERGRID, WBSETCL and DPSC held in the office of Member(PS), CEA on 10-10-2012. In the meeting WBSETCL informed that DPSC has already signed a connection agreement with them for drawal of 250MVA in phases through 220kV interconnections. It also emerged that DPSC 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. DPSC submitted that they 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. Connectivity with ISTS network would allow DPSC to draw reliable and secure power which is otherwise difficult due to frequent congestion in the state transmission system.

As decided in the meeting, the grant of connectivity was issued to DPSC on 12-10-2012 through LILO of one circuit of Mejia-Maithon D/c line to the 400kV Chalbalpur substation of DPSC, clarifiing 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. The transmission system for the above connectivity would be implemented by DPSC.

#### Members may note and concur.

### Item-11: Transmission system associated with Phase-II generation projects in Sikkim under the scope of Govt. of Sikkim.

For immediate evacuation of power from Tingting (99 MW) and Tashiding (99 MW) project in Rangit basin under Phase-II, the following scheme was planned under the scope of Govt. of Sikkim:

- Establishment of 220kV GIS Pooling Station near Tashiding
- Pooling station near Tashiding New Melli 220kV D/c with twin moose conductor

Keeping in view the urgency of development of the above transmission system, it was discussed in the meeting in regard to Connectivity / Open Access with the constituents of Eastern Region held on 08-02-2012 at NRPC, Delhi that the implementation of the scheme could be taken up by ISTS licensee through tariff based competitive bidding. The representative from Govt. of Sikkim mentioned that the above transmission system would be implemented matching with the commissioning of generation projects.

In the meeting held in CEA on 19-7-12 with the project developers, PGCIL and DoP,Sikkim, Sikkim informed that new location and land for the 220kV Tashiding GIS pooling station was identified and process of acquisition etc. was targeted by 20<sup>th</sup> Sept., 2012. Later, Sikkim intimated for two more months i.e. by Nov., 2012, to finalize and complete the land acquisition process etc., assuring commissioning of the above transmission system matching with the commissioning of the HEPs. **Sikkim may furnish the status and progress.** 

### Item-12: Requirement of Multi Circuit Towers in some transmission corridors under implementation by POWERGRID.

The following transmission lines being constructed by POWERGRID have faced severe Right of Way problems in a certain stretch due to which multi circuit towers are being used.

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

Maithon-Gaya & Koderma-Gaya 400kV D/c quad line are under construction as part of transmission system associated with DVC & Maithon RB generation projects. Both these lines are passing through forest areas are various sections in Jharkhand and Bihar. In order to optimize the RoW requirement as well as to minimize forest involvement, multi circuit towers are being used in the forest portion of Maithon-Gaya & Koderma-Gaya 400kV D/C quad lines.

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

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 & West Bengal. Nabinagar II - Gaya 400kV D/c (quad) line to be constructed by POWERGRID as part of Transmission System associated with Nabinagar-II generation project of NTPC. Due to rising habitation and narrow corridor in the vicinity of Gaya sub-station, it is difficult to terminate these two 400 kV D/c lines on separate towers. Hence, POWERGRID is terminating these two lines at Gaya on multi circuit towers having route length of about 3 kms.

### (iii) Multi Circuit Towers for termination of Jharkhand Pool (Chandwa) – Ranchi (New) 400kV D/c (quad) line at Ranchi – 1km.

Jharkhand Pool (Chandwa) - Ranchi 400 kV D/c (quad) line is under construction by POWERGRID as part of Transmission System for Phase-1 generation projects in Jharkhand & West Bengal. Due to rising habitation and narrow corridor in the vicinity of Ranchi (New) sub-station, getting RoW for termination of lines is becoming difficult. Hence, POWERGRID is terminating Jharkhand Pool (Chandwa) - Ranchi 400 kV D/c (quad) line at Ranchi (New) on multi circuit towers having route length of about one km. Presently, Jharkhand Pool (Chandwa) - Ranchi 400 kV D/c (quad) line will be taken on multi circuit towers and there will be provision for taking another 400 kV D/c line on the same multi circuit towers in future.

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

The 400kV 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. Both these 400 kV D/c lines are entering Patna sub-station from West side. Due to thick population in the vicinity of the sub-station, it is difficult to take both these 400 kV D/c lines on separate towers. In view of the above, the lines shall be taken on multi circuit towers for about 3.5 kms before termination at Patna sub-station.

#### Members may note and concur.

### Item-13: Establishment of 765/400 kV Pooling Station at Sundargarh instead of Jharsuguda

Establishment of 765/400 kV Pooling Station as Jharsuguda was approved as part of Transmission System for Phase-I Generation Projects in Orissa. However, due to non-

availability of land at Jharsuguda, the Pooling Station is now being established at Sundergarh. Accordingly, all references to Jharsuguda corresponding to 'Transmission System for Phase-I Generation Projects in Orissa' would be replaced by Sundergarh.

#### Members may note.

# Item-14: Underlying transmission arrangement of STUs for drawal of power from PGCIL's new sub-stations under Eastern Region Strengthening Scheme-III (ERSS-III)

Following new ISTS 400 kV sub-stations under ERSS-III scheme of POWERGRID are under various stages of completion.

- 2x200 MVA, 400/132 kV sub-stations at Lakhisarai & Banka in Bihar
- 2x315 MVA, 400/220 kV at Chaibasa & Daltonganj in Jharkhand
- 2x315 MVA, 400/220 kV at Bolangir, Keonjhar & Pandiabil

Bihar, Jharkhand & Odisha may kindly intimate the transmission arrangement for drawl of power from these sub-stations and status of implementation of the same.

#### Members may discuss.

## Item-15: Unified Real Time Dynamic State Measurement (URTDSM) scheme as a part of Smart Transmission Grid Development.

The Unified Real Time Dynamic State Measurement (URTDSM) Project was approved in the Joint Standing Committee Meeting held on 5th March 2012. In line to approval, the Detailed Project Report (DPR) has been finalized and petition has also been filed with CERC for Regulatory Approval. As per advice of CERC, the project details have also been discussed in the RPC forums of WR, NR, ER & SR. The project details shall be discussed in the upcoming NERPC meeting. Broadly the scope under the DPR is as follows:

- (I) Installation of 1739 PMUs.
- (II) Computer hardware and software at SLDC/RLDC/NLDCs.
- (III) Installation OPGW based communication system (approx 10667 km).
- (IV) Development of analytics.
- (V) Consultancy services.

The estimated Project Cost as per DPR is Rs. 655.98 Crores. Installation of PMUs and associated communication system at IPPs has been included in the DPR. The NIT for this shall be issued shortly.

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 during the discussion with prospective Bidders, it has emerged that 15% of PMU quantity may not attract the Vendors to establish manufacturing facility in India. Hence this percentage is to be enhanced. This enhanced provision shall help establish indigenous manufacturing and utilities shall also have O&M support available within India. Therefore, provision for 30% PMUs to be manufactured & supplied from India shall be kept under URTDSM Project.

#### Members may note and concur.