



सत्यमेव जयते

भारत सरकार Government of India

विद्युत मंत्रालय Ministry of Power

उत्तर पूर्वी क्षेत्रीय विद्युत समिति

North Eastern Regional Power Committee

मेघालया स्टेट हाउसिंग फिनांस को-ऑपरेटिव सोसायटी लि, बिल्डिंग

Meghalaya State Housing Finance Co-Operative Society Ltd. Building

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No.: NERPC/COM/CC\_Min/2009/1678-1714

Dated: 1<sup>st</sup> July 2009

To

1. Member (Tech), Assam State Electricity Board, Bijuli Bhawan, Paltan Bazar, Guwahati-781 001
2. Member (Tech), MeSEB, Lumjingshai, Short Round Road, Shillong - 793 001
3. Engineer-in-Chief (P&E), Department of Power, Govt. of Mizoram, Khatla, Aizawl - 796 001
4. Chief Engineer (WE Zone), Department of Power, Govt. of Arunachal Pradesh, Itanagar- 791 111
5. Chief Engineer (EE Zone), Department of Power, Govt. of Arunachal Pradesh, Itanagar- 791 111
6. Chief Engineer (P&E), Department of Power, Govt. of Nagaland, Kohima - 797 001
7. Chief Engineer (P), Electricity Department, Govt. of Manipur, Keishampat, Imphal - 795 001
8. General Manager, TSECL, Agartala - 799 001
9. General Manager, NERLDC, Dongtiah-Lower Nongrah, Lapalang, Shillong -793 006
10. ED (O&M), NERTS, PGCIL, Dongtiah-Lower Nongrah, Lapalang, Shillong -793 006
11. GM (LD&C), PGCIL, "Saudamini" Plot No. 2, Sector - 29, Gurgaon, Haryana - 122 001
12. ED (O&M), NEEPCO Ltd., Brookland Compound, Lower New Colony, Shillong-793003
13. ED (Commercial), NEEPCO Ltd., Brookland Compound, Lower New Colony, Shillong-793003
14. ED (O&M), NHPC, NHPC Office Complex, Sector-33, Faridabad, Haryana-121003
15. ED (Commercial), NHPC, NHPC Office Complex, Sector-33, Faridabad, Haryana-121003
16. Vice President, PTCIL, 2<sup>nd</sup> Floor, NBCC Tower, 15, Bhikaji Cama Place, New Delhi - 110066
17. AGM (BD), NVVN, Core 5, 3<sup>rd</sup> floor, Scope Complex, 7 Institutional Area, Lodhi Rd., N. Delhi-3
18. Member Secretary, ERPC, 14 Golf Club Road, Tollygunge, Kolkata-700033
19. Chief Engineer, GM Division, CEA, Sewa Bhawan, R.K. Puram, New Delhi - 110066

Sub: Minutes of the 11<sup>th</sup> CC meeting held on 16/06/2009 at NERPC, Shillong.

Sir,

Please find enclosed herewith the minutes of 11<sup>th</sup> Commercial Committee Meeting held at NERPC Conference Hall, Shillong on 16<sup>th</sup> June 2009 for your kind information and further necessary action please.

Encl.: As above

भवदीय / Yours faithfully,

( मनजीत सिंह / Manjit Singh )

सदस्य सचिव / Member Secretary

Copy to:

1. SA to Member(GO&D), CEA, Sewa Bhawan, R.K. Puram, New Delhi - 110066
2. Chief Engineer, AEGCL, Bijuli Bhavan, Guwahati - 781001
3. Chief Engineer, APGCL, Bijuli Bhavan, Guwahati - 781001
4. MD, CA DISCOM, Bijuli Bhavan, Guwahati - 781001
5. MD, UA DISCOM, Bijuli Bhavan, Guwahati - 781001
6. MD, LA DISCOM, Bijuli Bhavan, Guwahati - 781001
7. Chief General Manager, SLDC Complex, AEGCL, Kahilipara, Guwahati - 781019
8. S.E. (Trans. & Dist), MeSEB Lumjingshai, Short Round Road, Shillong - 793 001
9. Head of SLDC, MeSEB, Lumjingshai, Short Round Road, Shillong - 793 001
10. Head of SLDC, Department of Power, Govt. of Arunachal Pradesh, Itanagar- 791 111
11. A.C.E. (Gen & Trans), Department of Power, Govt. of Nagaland, Kohima - 797 001
12. Head of SLDC, Department of Power, Dimapur, Nagaland
13. A.C.E. (Power-I), Electricity Department, Govt. of Manipur, Keishampat, Imphal - 795 001
14. Head of SLDC, Electricity Department, Govt. of Manipur, Keishampat, Imphal - 795 001
15. S.E. (Commercial), Department of Power, Govt. of Mizoram, Khatla, Aizawl - 796 001
16. Head of SLDC, Department of Power, Govt. of Mizoram, Aizawl - 796 001
17. Head of SLDC, TSECL, Agartala - 799 001
18. Chief Engineer, Loktak HEP, Vidyut Vihar, Komkeirap, P.O. Loktak, Manipur - 795 124

**North Eastern Regional Power Committee**

**Minutes of the 11<sup>th</sup> Commercial Committee Meeting**

**Date: 16/06/2009**

**Venue: NERPC Conference Hall, Shillong**

The 11<sup>th</sup> Commercial Committee meeting of NERPC was held at the NERPC office, Shillong on 16.06.2009. The list of participants is given at Annexure-I.

Member Secretary, NERPC welcomed all the participants of the 11th Commercial Committee and briefed the members about the important issues to be discussed in the meeting. NERLDC then gave a presentation covering details on “Commercial performance of NER constituents and current issues”. A copy of the presentation is at Annexure-II.

Thereafter the agenda items were taken up.

**1. Confirmation of the minutes of 10<sup>th</sup> CC Meeting held on 24<sup>th</sup> October, 2008 at NERPC Conference Hall, Shillong.**

The Minutes of the 10<sup>th</sup> CC Meeting held at Shillong on 24<sup>th</sup> October 2008 was circulated vide no. 104/2/NERPC/CC/2008/3700-35 dated 30<sup>th</sup> October 2008. No comments were received.

***Therefore, the minutes of 10<sup>th</sup> Commercial Committee Meeting were confirmed.***

**2. Status and discussions on issues followed up from 7<sup>th</sup> NERPC meeting: -**

**2.1 BPTA for new schemes in NER: -**

**2.1.1 Status on signing of BPTA by NER beneficiaries.**

PGCIL vide letter No. NESH/Comml/N-13/17 dated 9.4.2009 indicated that in 6<sup>th</sup> NERPC meeting it was evolved that the Constituents of NER would sign the BPTA with OTPC and PGCIL for the relevant portions so that the new generation capacity does not get stranded and the NER states deprived of this power without waiting for the 90% grant and 10% loan from GOI. It further intimated that draft BPTA for new schemes in NER was forwarded to the constituents of NER for finalization and signing.

PGCIL also informed that the States of Mizoram, Nagaland, Manipur, MeSEB (Meghalaya), TSECL ( Tripura) and Arunachal Pradesh have signed the agreement. AEGCL were yet to sign the agreement and PGCIL had requested AEGCL to expedite signing of the same.

***Since Assam was not represented, the sub-committee suggested that AEGCL may be requested for signing of BPTA.***

### **2.1.2 Amendment to the list of ATS and System Strengthening of Inter-State / Regional System under POWERGRID scope of works (Pooled system of NER)**

PGCIL vide letter No.NESH/Comml/N-13/23 dated 20.04.2009 intimated that as per the corrections in list of transmission schemes on account of typographical errors approved in TCC and 7<sup>th</sup> NERPC meetings held on 23<sup>rd</sup> and 24<sup>th</sup> February 2009, it requested to incorporate these amendments in the approved list of the above transmission schemes by NERPC as per the following:-

(i) “Mariani New (PG) – Melriat (Mizoram) S/S interconnecting 132 kV D/C line” to be modified as “**Melriat (Aizawl) New (PG)** – Melriat (Mizoram) S/S interconnecting 132 kV D/C line.”

(ii) “132 kV Pasighat – Roing – Tezu – Namsai line with s/s at Roing and Tezu with 2 x 12.5 MVA, 132 kV/33 kV at each....” to be modified as “132 kV Pasighat – Roing – Tezu – Namsai line with s/s at Roing, Tezu and Namsai with 2 x 12.5 MVA, 132 KV/33 kV at each....”

***The sub-committee noted as above to incorporate necessary amendments in relevant records/documents as per the above and as approved in 7<sup>th</sup> TCC and NERPC meetings held on 23<sup>rd</sup> and 24<sup>th</sup> February 2009.***

### **2.2 R & M of various substations of POWERGRID in NER.**

PGCIL’s letter intimating the proposal for R&M of various substations of POWERGRID was circulated amongst the members. The 7<sup>th</sup> NER Power Committee had desired to discuss the same by Operation/Protection and Commercial sub-Committee of NERPC. The details of equipment proposed were also discussed in the 36<sup>th</sup> OCCM of NERPC held on 6.3.2009. The OCC sub-Committee after detailed deliberations had agreed to the above proposal for carrying out R&M works by PGCIL in view of old equipment which is phased out by manufacturer & support/spares are not available for the same and to maintain acceptable levels of reliability and adequate availability of spares. The list of substations proposed by PGCIL for R&M is given at Annexure – 2.2.

Representative from TSECL opined that R&M works may not be required for 33kV substations located in Tripura in view of coming up of additional transmission network under the new schemes and expenditure involved under the proposed R&M scheme. He therefore requested that the R&M works in respect of the above 33 kV sub-stations of Tripura may not be included in the proposed scheme. The sub-Committee further discussed. Except the above modification suggested by TSECL, the R&M proposal was recommended by the Commercial sub-Committee.

**PGCIL agreed to modify the list of the sub-stations under R&M works and would prepare the revised proposal including cost estimates accordingly for approval by the NER Power Committee.**

### **2.3 Vacation of 2.3 – 2.4 GHz frequency band and establishment of Fiber Optic Communication Scheme in lieu of existing Microwave Links in NER**

POWERGRID vide letter No. C-LDC-NER-Ltr.02 dated 16.4.2009 had indicated that in line with discussions in 7<sup>th</sup> TCC and NERPC meetings held at Shillong on 23<sup>rd</sup> and 24<sup>th</sup> February 2009, PGCIL had detailed discussions with AEGCL on 7<sup>th</sup> April 2009 regarding their requirement. PGCIL intimated that AEGCL has agreed for implementation of 789 km of fiber optics network by POWERGRID for Assam State portion (Refer to Annexure-2.3).

POWERGRID further intimated that regarding Central Sector (CS) portion, as discussed in the above TCC/NERPC meetings, a fiber optic network of around 220 km which envisages connectivity of new/upcoming Central Sector Stations in NER with tentative cost of Rs 15.25 Cr. has been worked out. This network shall facilitate connectivity to Itanagar SLDC which will avoid present usage of leased line and make system more secure. Thus a total network of 1009 km of Fiber optic in NER would comprise 789 km for AEGCL and 220 km for Central Sector portion. In a presentation (copy at Annexure 2.3) on the above subject, PGCIL had listed break-up of total requirement for 220 kms of fiber optic for Central Sector portion to ensure connectivity of new/upcoming Central Sector Stations in NER as follows:-

1. Namsai(PG) – Tinsukia	100 Kms
2. Gohpur - Itanagar (PG)	45 Kms
3. Badarpur (PG) – Silchar (PG)	37 Kms
4. Itanagar (PG) –itanagar (SLDC)	25 Kms
5. Mariani – Mariani (PG)	10 Kms
6. Bongaigaon (PG) – BTPS	3 Kms

**Total 220 Kms**

The sub-Committee members opined that in 7<sup>th</sup> TCC and NERPC meetings, the NER Power Committee had concurred to the proposal for 15 kms of Fiber Optic Network under Central Sector portion. A portion of proposed additional 205 kms also comprises of some of the sub-stations to be connected by Fiber Optic Network which are not yet commissioned and the commissioning may take more than 2-3 years' time. Therefore, the inclusion of such stations under the investment approval at this stage may be discussed. PGCIL clarified that as the connectivity has been considered in line with the approved system strengthening transmission network schemes. It said that the placement of funds would however be matching with the respective commissioning schedules. The sub-Committee therefore suggested that the feasibility report may reflect the schedules accordingly.

**The sub-Committee concurred with the above additional requirement under Central Sector portion, which is to be shared by NER constituents as per the CERC norms in line with the decision of the NERPC in 7<sup>th</sup> NERPC meeting. TSECL suggested that funding of Central Sector portion may be on 90:10 basis. The sub-Committee further discussed and observed that the sharing pattern was approved by NER Power Committee in 7<sup>th</sup> NSERPC meeting, and therefore recommended that as the work for its implementation of Vacation of 2.3–2.4 GHz frequency band of existing microwave network is to be completed within the stipulated time, the PGCIL may initiate process of preparation of Feasibility Report of the Scheme with total network of 1009 km of Fiber optic in NER comprising of 789 km for AEGCL & 220 km portion for Central Sector portion for necessary investment approval and the matter appraised to the NER Power Committee in the ensuing Special TCC and the 8<sup>th</sup> TCC and NER Power Committee meetings for approval.**

## **2.4 Payment of UCPTT arrears in installments.**

PGCIL vide letter dated 20.4.2009 have indicated that as per the CERC order dated 30.9.2008 in Petition No. 38/2008, NER constituents are to pay arrear on UCPTT revised share for the period from 01.02.2000 to 31.03.2004 based on revised sharing formula, which were circulated to NER constituents vide NERPC letter dated 15.12.2008 (details at Annexure- 2.4), in pursuance of the above-mentioned CERC order dated 30.09.2008. As per the order, the arrears are payable in eight equal quarterly installments commencing 31.3.2009 and shall be liquidated by 31<sup>st</sup> December 2010. In TCC meeting held on 23<sup>rd</sup> February 2009, TSECL had indicated that Hon'ble Appellate Tribunal had issued order dated 04.12.2008 holding the impugned order dated 07.03.2008 ( on determination of tariff for Ranganadi transmission system in NER for period from 1.4.2004 to 31.3.2009). In NERPC meeting on 24<sup>th</sup> February 2009, PGCIL had clarified that Hon'ble Appellate Tribunal order dated 4.11.2008 pertains to Appeal No. 73 of 2008 & I.A. No. 104 Of 2008 by Appellate (viz. PGCIL) is in the matter of determination of tariff for the period 01.04.2004 to 31.03.2009, wherein the appellant is aggrieved with the denial of tariff as per Regulations for the period 01.04.2004 to 31.03.2007, for which as intimated by PGCIL vide above mentioned letter dated 20.04.2009 that payment has already been effected and the subject issue pertains to payment of arrears for period from 01.02.2000 to 31.03.2004 based on revised sharing formula. In the 7<sup>th</sup> NERPC meeting, Chairperson, NERPC had suggested PGCIL to discuss the matter in forthcoming CCM of NERPC.

The sub-Committee noted the status as above. **The sub-Committee discussed the issue on the above contention of TSECL and after deliberations it was agreed that as the Hon'ble Appellate Tribunal order dated 04.12.2008 holding CERC order dated 7.3.2008 addresses the tariff determination for the period 1.4.2004 to 31.3.2009 and that the subject payment of UCPTT arrears pertains to period 1.2.2000 to 31.3.2004 while the arrears for the period 1.4.2004 to 31.3.2007 are fully cleared, the arrears payment for the period 1.2.2000 to 31.3.2004 may therefore be made as per the directives of CERC vide order dated 30.9.2008.**

PGCIL intimated that all states have cleared payment of 1<sup>st</sup> installment of UCPTT arrears for the period from 1.2.200 to 31.3.2004, except Meghalaya. MeSEB were requested to clear the same. MeSEB intimated that the payment will be made soon.

## **2.5 Pile foundation at Location no. 43 & 44 of 400 kV Balipara-Ranganadi D/c line.**

It was agreed in the 7<sup>th</sup> TCC/NERPC meetings that POWERGRID should re-structure the above tower locations with pile foundation through O&M expenditure. MS, NERPC requested PGCIL to intimate the latest status of the issue.

**AGM, NERTS intimated that work has been initiated on location no 44 and the same will be initiated for location no 43 soon. The works are expected to be completed before Sept '09.**

## **2.6 Revival of 132 kV PK Bari-Dharmanagar-Dullavcherra-Panchgram link between Assam and Tripura.**

In NER Power Committee in NERPC meeting held on 24<sup>th</sup> February 2009 it was agreed that all works under the scope of short-term solution for the above line may be completed by TSECL so as to operationalise the same by September 2009. It was agreed that the charges for reviving the link may be shared by TSECL and Assam on proportionate basis. TSECL were requested to intimate latest status of the above work.

Representatives from TSECL intimated that CT is required to be replaced and the new CT has been procured by TSECL which will be handed over to AEGCL for installation. Re-conductoring by replacement of existing conductors is also required which will be done by TSECL for Tripura portion and AEGCL for Assam portion. They also intimated that 'Financial estimate' for replacement of existing conductors is prepared by TSECL for Tripura portion and requested AEGCL to initiate the same for Assam portion.

**The sub-Committee noted as above and requested TSECL and AEGCL to monitor the detail-wise status on the activity so as to ensure in time completion of the above work and communicate the same to NERPC.**

## **2.7 Setting-up/Up-gradation of existing SLDCs in NER.**

In pursuance of discussions in 7<sup>th</sup> TCC/NERPC meetings held on 23<sup>rd</sup> & 24<sup>th</sup> February 2009 respectively at Shillong relating to setting up/up-gradation of existing SLDCs in NE Region, necessary information required by PGCIL in the desired format to prepare plan by them for setting up/upgrading the SLDCs in respect of existing facilities and future requirements concerning SCADA data acquisition and SCADA related load dispatching functions was obtained from NER constituents and was made available to PGCIL accordingly. Based on the above information, PGCIL prepared an outline plan for discussion by the Constituents in the form of presentation (copy enclosed at Annexure-2.7).

The sub-Committee discussed the details presented, wherein the load dispatching facilities needed at various SLDCs were highlighted.

PGCIL representative explained that the requirement of space for the building which would house the SCADA Control Centre should be adequate to accommodate infrastructure for conference room, video conferencing, IT systems, VPS, DG set, air-conditioning etc. The plan recommended monitoring of substations at 132 kV level and above, important tie-lines, and the generating stations. The substations to be monitored at lower voltage levels shall also comprise important 33 kV substations. SCADA/EMS systems shall comprise various hardware/software modules, RTUs interconnected through standard interfaces, reliable communication connectivity, DC Power supply systems, UPS etc. The recommended SCADA control centre shall have minimum two zones viz. the first - EMS/SCADA zone and the second one with Information Storage & Retrieval facilities concerning the real-time data collected with an option of adding more applications for scheduling, STOA functions etc. The SCADA functions shall include Network Monitoring System (NMS) for monitoring the health of communication network. The extent of facilities under Energy Management System (EMS) functions may be decided after deliberations with the constituents during DPR preparation process. The plan indicates that the 132 kV s/s RTUs shall be connected through Fiber Optic network and 33 kV S/s RTUs connected through GPRS system.

POWERGRID sought further additional details from constituents relating to identification of RTUs, type and identification of live data required from the reporting RTUs and connectivity of RTUs for FO links. The sub-Committee discussed the matter. Upon query, regarding implementation modalities, POWERGRID intimated that for establishment of the project, the process would involve preparation of DPR based on the specific requirements of each of the NER states in respect of the SCADA system and tying up of necessary funds by the States for the same. POWERGRID intimated that Government of Mizoram, P&E Department have chosen POWERGRID as consultants for preparing the DPR for CAPEX (Capital Expenditure) for setting up new modernized SLDC for Mizoram. POWERGRID shall be sending the necessary offer to Mizoram for preparation of the DPR by them. DPR shall include all aspects of establishing the full-fledged SLDC. The sub-Committee further noted that Electricity Department of Govt. of Manipur vide their letter No. 2/20/RED-II/2009-ED/1492-94 dated 20.5.2009 had requested POWERGRID to prepare a comprehensive estimate and arrange revival/full functioning of the SLDC, Manipur and arrange implementation by them on consultancy route for which necessary fund will be made available by the Electricity Department, Govt. of Manipur. POWERGRID representative said that in case the other States also decide to proceed through consultancy route as above, the same may be intimated to it so that further action is taken. As the preparation of DPR for CAPEX involves Consultancy Charge, the same shall be intimated by it accordingly.

**The sub-Committee suggested that based on the inputs given by NER constituents to the POWERGRID and in line with features highlighted for the SLDCs in the above presentation, POWERGRID may prepare a preliminary feasibility report for each of the constituent comprising function-wise estimated expenditure detail including the consultancy charge etc. for further needful by them. The matter for entrusting POWERGRID the work for preparation of necessary DPR for CAPEX, or otherwise, may be discussed in the ensuing special TCC meeting and 8<sup>th</sup> TCC and NERPC meetings for concurrence/decision on the same.**

### **3. Other issues: -**

#### **3.1 Issue of Provisional REA by first week of every month.**

POWERGRID vide letters no. NESH/Comml./N-13/26 dated 21.04.09 and no. NESH:Comml/N-13/88 dated 18.05.09 requested to issue Provisional REA by first week of every month. It was intimated that as the SEMs' data for the last week of month is not available by first week of the next month, the provisional REA based on scheduling data furnished by NERLDC may be issued and revised REA may be issued after receipt of SEM data from NERLDC normally by second week of the next month and the consequent SEMs' obtainable frequency dependent revised schedules for Central Sector Gas Power Stations. In such a case, SEMs' data dependent portion like Open Cycle generation of AGBPP of NEEPCO etc. which would not be included in the monthly provisional REA being proposed for issue in the first week would require raising of supplementary/revised bills by the utility on issue of the revised REA and final bills settled accordingly.

PGCIL indicated that since delay in issue of final REA upon receipt of SEMs data causes delay in billing, it would be preferable to issue REA by first week of every month.

NEEPCO opined that the provisional REA does not reflect 'Open Cycle Generation'

which is required for billing energy charge to constituents. As bill can be raised only once in a month for a particular LC, it is preferable to issue only one final REA for each month. The sub-Committee discussed the issue. The NER constituents were also of the view that bills should be raised only once as processing and settling bills each month upon issue of the revised REA as above would not be in order. In view of the same, the constituents suggested that only one monthly REA based on receipt of entire data of SEMs and the final generation schedules should be issued.

**After deliberation, the sub-Committee decided that one final REA will be issued for each month as early as possible upon receipt of necessary SEMs' data from the NERLDC.**

### **3.2 Refund of transmission charges on UI: -**

In pursuance of judgment by the Hon'ble Appellate Tribunal of Electricity, vide order dated 11.3.2008 on Appeal 118 of 2006 by the NEEPCO (appellant) and subsequent request by NEEPCO seeking reimbursement from the PGCIL of the excess payment relating to regional transmission charges on energy injected into grid as UI in excess of schedule, Commercial sub-committee in 10<sup>th</sup> CCM held on 24.10.2008 had upon seeking further status on the reimbursement, PGCIL had intimated that claim raised by NEEPCO was being examined by them and they would revert back.

The sub-committee in the above meeting had suggested that as the matter relates to settlement between the PGCIL & the NEEPCO and concerns reimbursement by the PGCIL to the NEEPCO relating to transmission charge on UI in excess of schedule, the same may be resolved bilaterally.

POWERGRID requested vide letter no. NESH/Comml/N-10/596 and even Nos. N-13/17 & 23 dated 23.03.2009, 09.04.2009 and 20.04.2009 respectively intimated that net amount of Rs 58888487/- which was received by PGCIL in respect of transmission charge on UI from Nov'2003 to March'2007 from NEEPCO is arranged to be reimbursed to them. Further, out of total amount of Rs 61965087/-, which was received from NEEPCO, refund of depooled amount of Rs 3076600/- given to NER constituents corresponding to depooled portion as per the REAs for the above period is to be returned by them to NEEPCO. Similarly out of total amount of Rs 7168431/-, which was received from NHPC, refund of depooled amount of Rs 379131/-, given to NER constituents corresponding to depooled portion is to be returned by them to NHPC. The break-up of constituent-wise details to be refunded to generators as per the judgment of Appellate Tribunal for Electricity furnished by POWERGRID is at Annexure 3.2.

In the above context, it is indicated that PGCIL had on 7<sup>th</sup> July 2008 filed in the Registry of the Hon'ble Supreme Court, Petition of Appeal from the Judgement & Order dated 11.03.2008 of the Hon'ble Appellate Tribunal for Electricity at New Delhi in the Appeal no: 118 of 2006 and the case has been registered as "Civil appeal no: 4733 of 2008" and the same has been admitted by the Hon'ble Supreme Court of India on 7<sup>th</sup> November 2008. In the light of above, PGCIL may like to reconsider about giving effect to the intent of their letter under reference.

#### *Discussions of the sub-committee.*

**Members agreed that in line with the Hon'ble Appellate Tribunal's order dt. 11.03.2008, the depooled amount distributed to constituents may be refunded to the appellant. It was agreed that PGCIL may raise bill for depooled amount to constituents and refund the same to the appellant accordingly.**

### **3.3 Downloading of SEM data from SEM meters.**

#### **3.3.1 Downloading Special Energy Meter data through RS-485 – NERLDC.**

NERLDC vide letter No NERLDC/Comml/104/1341 dated 9.4.2009 intimated that in line with the decision taken in 5<sup>th</sup> TCC/5<sup>th</sup> NERPC meetings held at Gangtok on 25<sup>th</sup> & 26<sup>th</sup> April 2008, POWERGRID, NERTS has issued LOA to M/s Larsen & Toubro vide letter dated 06.04.2009 for supply and Erection of 20 nos RS-485 to RS-232 converter suitable for L&T energy meter. NERTS shall implement RS-485 Scheme in all NER metering location with more than 2 SEMs.

*Discussions of the sub-committee.*

**AGM, NERTS informed the members that the above work is expected to be completed by July 2009.**

#### **3.3.2 Format of downloading SEM data from SEM meters .**

Executive Engineer (Commercial), NERPC indicated that NERPC experiences problems while preparing energy accounts as for a particular SEM number for the same period of time, several repetitions of recorded data (sometimes as many as 20 repetitions) are being encountered which results in erroneous compilation of the meter readings. He requested to ensure that data from each particular SEM is downloaded only once for the concerned period.

*Discussions of the sub-committee.*

**The sub-Committee discussed the matter. It was agreed that the processed SEMs' data furnished by NERLDC to NERPC Secretariat for energy accounting shall not contain several repetitions of reading from the same SEM meter. Only the last reading out of such repeatedly recorded data of the SEM retained for each of such time blocks may be provided for the energy accounting.**

#### **3.3.3 Delay in sending of SEM data to NERLDC – NERPC.**

It was intimated that the SEMs' data for a week is to be sent on the next Monday by mail to NERLDC for immediate energy accounting. Delay in receiving of SEMs' data causes delay in preparation of UI Account, Reactive Energy Accounts and Regional Energy Accounts (monthly).

**NERLDC/NER constituents were requested that the concerned personnel responsible for the above work are advised to do the needful.**

### **3.4 Implementing of CERC (Terms and Conditions of Tariff) Regulations, 2009.**

The new CERC (Terms and Conditions of Tariff) Regulations, 2009 have since been effective in the region w.e.f 1.4.2009.

NEEPCO vide letter No. NEEPCO/GM/COMML/T-2/2009-10/2223 dated 11.6.2009 had indicated following matter which were discussed in this meeting given hereunder.

#### PAFM of Khandong & Kopili-II.

NEEPCO indicated that as per the new tariff regulations mentioned above, a combined Normative Annual Plant Availability Factor figure (NAPAF) for Khandong and Kopili Stage II has now been specified; accordingly the monthly REAs also reflect combined PAFM figures for both the above stations. NEEPCO opined that as the PAFM is now combined, the Khandong and Kopili Stage II units should be operated as one single power plant and accordingly the Declared Capacity, Schedule etc should also get included in the REAs in combined manner, based on the combined share allocation for each of the both above hydro power stations as single hydro power station.

Regarding the above, NERLDC clarified that although combined PAFM is to be reflected, but the combined DC and schedule cannot be reflected as the share allocation done by Ministry Power, Government of India for the above Central Sector Stations is for each of the above individual hydro power stations and the same are to be considered accordingly in the real-time operation. Therefore, DC and schedule data for the above station is furnished as individual station for REA preparation.

**The sub-Committee discussed the issue. After deliberations, it was decided that as the new tariff regulation mentioned above specifies a combined Normative Annual Plant Availability Factor figure (NAPAF) for Khandong and Kopili Stage II hydro generating stations, the combined PAFM may continue to be computed and reflected in the monthly REAs accordingly & as the prevailing tariff for the above hydro generating stations comprises of individual capacity charge and the share allocation, the DC and Schedule data for the stations may also be issued according to the individual share allocations till any change in the pattern of allocation is received from the authorities.**

#### Primary Energy Rate for Hydro Stations

The sub-Committee suggested that as per the new Tariff Regulations, 2009, the Energy Charge Rate (ECR) of Hydro Power Stations is now to be calculated as per the Regulations 22(5), 22(6) and 22(7), the energy charge rate figure may now not be included in the REAs and the same may be reflected by the C.S. Generating utilities as per the calculation and attached with their bills.

#### Capacity charges for thermal and hydro power stations for a calendar month

The sub-Committee further suggested that as per the new Tariff Regulations, 2009, the Capacity charges payable to Thermal & Hydro Power Stations for a calendar month are to be computed as per the Regulations 21(2) & 22(2) respectively, the capacity charge figure may now not be reflected in the REAs and the same may be included by the concerned C.S. Generating utilities as per the calculation and attached with their bills.

Maximum Available Capacity of Loktak HEP.

The sub-Committee noted that Loktak power station has been de-rated to 100 MW w.e.f 1<sup>st</sup> April 2009 to 30<sup>th</sup> November 2009 by CEA vide letter no. CEA/PLG/DM/545(De-rating)/Loktak/2008/102-144 dated 3.7.2008 for period from 1.4.2009 to 30.11.2009 for operational purposes. NHPC vide letter No. NH/O&M/GMC/81/2545-46 dated 5.6.2009 had however requested considering this de-rated capacity of 100 MW for Loktak HEP for billing purpose and to reflect the same in REAs. The sub-Committee pointed out for the purpose of incentive and capacity charges calculations, CERC vide order dated 4<sup>th</sup> October 2006 (Petition No. 171/2004) has directed to consider 105 MW beyond 31.03.2008 in respect of Loktak Power Station. The sub-Committee suggested that the same should continue to be reflected in the REAs in view of the CERC directives in the matter for commercial purposes.

**In view of the above, the sub-Committee decided that 105 MW should be considered for Loktak HEP for the purpose of incentive and capacity charges calculation.**

Share allocation of Kopili HEP.

NEEPCO pointed out that the total share allocation as shown in the monthly REA for Kopili HEP is 99.999 % and not exactly 100 %. It was also observed that similar problem also exists for Kopili stage II and Kathalguri stations. This was found due to rounding off of decimals of the calculated percentage share allocation figure. The sub-Committee suggested that the correction may be carried out appropriately w.e.f the monthly REAs of April 2009 onwards.

**In view of above, the share of the constituent having the lowest allocation in the corresponding Power Plant has been raised by 0.001 % in order to make the total share allocation as 100% and the revised REAs for the month of April 2009 and May 2009 have been issued accordingly.**

**3.4.1 Payment of Transmission Charges for Inter-State Transmission System:**

According to Regulation 32(3) of CERC (Terms and Conditions of Tariff) Regulation 2009, monthly energy account (REA) issued by Member Secretary of the Regional Power Committee shall also include a statement specifying the ratio in which transmission charges for that month are to be shared by the transmission users in accordance with regulation 33.

As per regulation 23(4), the transmission licensee shall raise the bill for the transmission charge (inclusive of incentive) for a month based on its estimate of Transmission System Availability Factor (TAFM). Adjustments, if any, shall be made on the basis of the TAFM to be verified by RLDC and certified by the Member Secretary, of the Regional Power Committee of the concerned region within 30 days from the last day of the relevant month.

Based on the provisional REA issued by NERPC and estimated TAFM of POWERGRID, monthly bill for Transmission Charges inclusive of incentive shall be raised by POWERGRID.

In view of above, the TAFM for relevant month certified by NERPC shall need to be issued by 30<sup>th</sup> of following month and to be included in REA of the following month.

Discussions of the sub-committee.

The sub-committee noted that the above issue was discussed in the 38<sup>th</sup> OCC meeting of NERPC. As per the discussions therein, agreed that PGCIL shall submit to NERPC Secretariat the transmission monthly availability data of the relevant month along with the calculation sheet (in excel format) of estimated TAFM by first week of every month to be reflected in monthly REAs. Further, PGCIL shall submit the final details of transmission availability data and the calculation sheet (in excel format) to NERPC Secretariat after duly verified by NERLDC and considering the comment/modifications suggested, if any, by the any constituent beneficiary(ies) within 20 days from the last day of relevant month for final certification by NERPC by 30<sup>th</sup> of the following month and inclusion of the same in REA of the following month.

**3.5 Procedure for Disbursement of UI charges collected in the pool account: -**

It was intimated that Arunachal Pradesh, Mizoram, TSECL and Manipur had given their consent for option 'A', i.e. "the UI charges collected in the pool account are to be disbursed to all the constituents of the pool, including neighboring regions, in proportion to UI charges receivable by them, without giving priority to any particular constituent(s) of the pool".

The sub-Committee noted that presently procedure of disbursement of general UI pool under Option 'C' i.e. giving priority to the neighboring regions in the matter of disbursement of UI charges is being followed. States of Assam and Meghalaya had yet to give their consent for the option.

**The sub-Committee in view of the above position after discussion decided that the present method of disbursement under option 'C' i.e. giving priority to the neighboring regions in the matter of disbursement of UI charges may continue to be followed, even as some constituents have given consent for option 'A' and while from the other constituents the same is yet to be received.**

**3.6 Status on availability of SEMs' data: -**

NERLDC vide letter No. NERLDC/Comml/104/1341 dated 9.4.2009 intimated that data-receipt from following locations is irregular:

**a. 220 kV Kathalguri- Tinsukhia :** Reading from Tinsukhia is irregular (ASEB)

AGM, NERTS intimated the members that CMRI / DCD in Tinsukia has to be returned to POWER for replacement. As Assam was not represented, it was decided to intimate AEGCL for needful action.

**b. 220 kV Kathalguri- Deomali :** Reading from Deomali not being received (AP)

As Arunachal Pradesh was not represented, it was decided to intimate AP for needful action.

**c. 33kV Rupai-Namsai:** Reading from Rupai is irregular (ASEB)

As Assam was not represented, it was decided to intimate AEGCL for needful action.

- d. 132/66kV Bawktlang-Kolasib: Reading from Bawklang is irregular (Mizoram)  
Representative from Mizoram agreed to look into the issue and pursue the same.
- e. 132kV Bairabi-Kolasib: Reading from Bairabi is irregular (Mizoram)  
Representative from Mizoram agreed to look into the issue and pursue the same.

### **3.7 Outstanding and LC.**

PGCIL's letter indicating the outstanding as on 08.04.2009 and LC requirement from April 2009 to September 2009 vis-a vis availability was circulated amongst the members and the same was deliberated.

It was intimated that Nagaland has already enhanced the LC amount to 163 lakhs per month. Meghalaya is having an LC of 250 lakhs against requirement of 261 lakhs. Representative from Meghalaya agreed to pursue the issue after receipt of request for enhancement of LC from POWERGRID. Rests of the states are having sufficient LC available.

UI outstanding as on 04.06.2009 was also circulated and discussed. It was observed that outstanding of UI payable to pool for Mizoram and Nagaland are Rs. 3.74 Crores and Rs. 1.16 Crores respectively. Representative from Mizoram agreed to clear the outstanding amount at the earliest. Nagaland State were requested to clear the outstanding amount at the earliest.

### **3.8 North East-Northern/Western Interconnector-I project.**

PGCIL vide letter No. C/CP/NER-NR.WR Intr-I dated 27<sup>th</sup> February 2009 had intimated that the Board of Directors of POWERGRID have accorded investment approval for "North East-Northern /Western Interconnector-I" project of estimated cost of Rs 11130.19 Cr. The commissioning schedule as intimated by PGCIL is 54 months for Part-A and 48 months for parts B and C from the date of approval.

**The sub-Committee noted as above.**

### **3.9 Inclusion of traders in NERPC member.**

CEA's letter No. 8/X/ACT/GM-09/343 dated 25.2.2009 regarding requirements of traders to be included in the list for RPC membership as per MOP's resolution dated 9.5.2008 was circulated, the list of first five traders in alphabetical order and their membership during the year 2009-10 in various RPCs was discussed. In line with the above resolution dated 25.2.2009 of MOP, New Delhi and in consideration of CEA's intimation as above, NVVNL would be member of NER Power Committee for the year 2009-10.

**The sub-Committee noted as above.**

#### **4.0 Any other item.**

Agenda items from NERLDC: -

#### **4.1 Presentation by NERLDC on key commercial issues of 2008-09 and latest developments.**

Copy of presentation at (Annexure-II)

##### Format for weekly UI account.

During the presentation implementation details for CERC (Unscheduled Interchange charges and related matters), Regulations, 2009 was discussed. It was intimated that at present the additional UI charges due to overdrawl/under injection below 49.2 Hz are reflected under Table A of the weekly UI account of NERPC. The additional UI charges are to be kept in the UI pool account which may not be disbursed to the constituents and may be utilized subsequently as directed in the Regulation 11 of the above CERC notification dated 30.3.2009 and therefore is reflected separately in Table A as mentioned above.

Further, it was intimated that at present, the net receivable or payable amount for UI charges is reflected under Table C in the weekly UI account issued by NERPC Sectt. NERLDC indicated that in view of difficulties which may arise in receipt/disbursement of UI charges, the receivable amount without adjustment of additional UI charge payable should only be reflected under receivable column of Table C instead of reflecting the adjusted net receivable amount. However the payable amount after adjusting the additional UI charge payable may be reflected under payable column of Table C as at present.

The sub-Committee discussed the matter. It was agreed to amend the format for Table 'C' as suggested above.

#### **4.2 Outstanding UI payment.**

Already discussed under item 3.7

#### **4.3 UI interest bill for the year 2008-09.**

CM, NERLDC intimated that NERLDC has raised the final UI interest bill for the year 2008-09 on 20<sup>th</sup> May 2009. Out of the three constituents in payable mode, Arunachal Pradesh and Nagaland have already made payment. Meghalaya is to pay Rs. 1.31 Crores. On payment by MeSEB, UI interest till 31<sup>st</sup> March 2009 would be settled. The sub-Committee requested MeSEB to make payment of the same at the earliest.

#### **4.4 Bank interest earned in UI account.**

CM, NERLDC intimated that subsequent to discussion in the 3<sup>rd</sup> TCC / 4<sup>th</sup> NERPC meetings held at Itanagar on 20<sup>th</sup> / 21<sup>st</sup> August 2007 regarding services of SBI vis-à-vis private banks like AXIS bank, the matter regarding interest to be provided in UI Pool Account maintained at SBI, Laitumkhrach (current account) was taken up with the Bank. From April 2008, Bank started providing interest in UI account through temporary fixed deposits of the amounts available in Pool.

He also intimated that the amount accumulated in 2008-09 is Rs. 29.16 lakhs. The amount can be disbursed to the constituents in proportion to the net UI receivables during the year, or for other gainful utilization as agreed by the members.

**The sub-Committee suggested that such interest accumulated may be utilized gainfully for training, capacity addition, etc. The same may be put up to RPC for approval.**

#### 4.5 NER Reactive Pool Account status.

CM, NERLDC intimated that subsequent to closing of FY 2008-09, amount available in Reactive Pool Account after all pay-outs to receivable constituents would be Rs. 3.38 Crores. Out of this, expenditure on training / seminar till date has been Rs. 56.42 lakhs (including a partial portion of Rs. 32.66 lakhs paid against study visit abroad for Group-I) thereby leaving an amount of Rs. 2.82 Crores for future training which includes outstanding dues and payoffs as given below:-

State	Amount (Rs)
Arunachal Pradesh	325437
MeSEB	2406175
Mizoram	249965
Nagaland	1894102
Tripura	1040319
Assam	1098570 ( to be paid off)

**The constituents were requested to liquidate the outstanding amount as above.**

#### 4.6 Energy metering problem in Balipara S/S of POWERGRID.

CM, NERLDC intimated that there are large mismatches in SEM readings of Balipara S/S of POWERGRID. It was intimated by NERLDC that the matter has already been taken up with the concerned. Balipara being a crucial location connected to inlet points of AP (Khupi), ASEB (Samaguri, Depota, Gohpur), NEEPCO (Ranganadi HEP); accuracy in Energy Metering is extremely important.

AGM, NERTS informed the members that the problem of mismatches in energy recorded by SEM readings of Balipara S/S was due to calibration problem.

**The sub-Committee requested that NERTS, POWERGRID may attend to the calibration problem at Balipara sub-station on priority as this sub-station is an important location for energy metering.**

#### 4.7 Additional items for discussion from MeSEB ( letter ref No. SLDC/E-2/2009-10/X dated 9.6.2009

##### 4.7.1 Overhead charges on AMC

MeSEB representative indicated that rate of overhead charges on AMC for maintenance of SCADA/EEMS installed at SLDC(s) will be charged @ 16% of the cost of items as per the agreement signed between POWERGRID and the NER constituents. However as per the MOU the rate may be fixed as mutually agreed and requested PGCIL to consider reducing the rate as 16% rate is on the higher side.

PGCIL intimated that the issue was also discussed in the UCC meeting held in June 2009, wherein it was opined by PGCIL that the reasonable rate desired by the constituents may be intimated to them for looking into the matter further. MeSEB were requested to furnish the details to PGCIL accordingly.

#### **4.7.2 Inconsistency of information on the REA.**

The matter regarding ECR and fixed charges is as already discussed in item 3.4 above.

The matter regarding necessity of showing additional UI charges payable in the provisional UI account was discussed in item No. 4.1 above.

#### **4.7.3 Signing of PPA with OTPC regarding Pallatana project.**

MeSEB representative indicated that there is deviation in the manner of raising the bills from the normal procedure and OTPC does not want to modify from the Clause. "Either Party may raise a bill on the other party ( "Supplementary Bill") on account of :.

- (i) Adjustments required by REA ( if applicable)
- (ii) Tariff payment for change in parameters, pursuant provisions on Schedule 7; or
- (iii) Change in law as provided in Article 13,

And such Bill shall be paid by the either Party", As it trespasses the other constituents' right.

The sub-Committee noted the above observation of MeSEB and opined that so far as REA norms are concerned the energy accounting methodology and related matters are to be followed as per the CERC Tariff Regulations, 2009.

#### **5. Date and venue of next meeting.**

The date and venue for the next meeting will be intimated in due course.

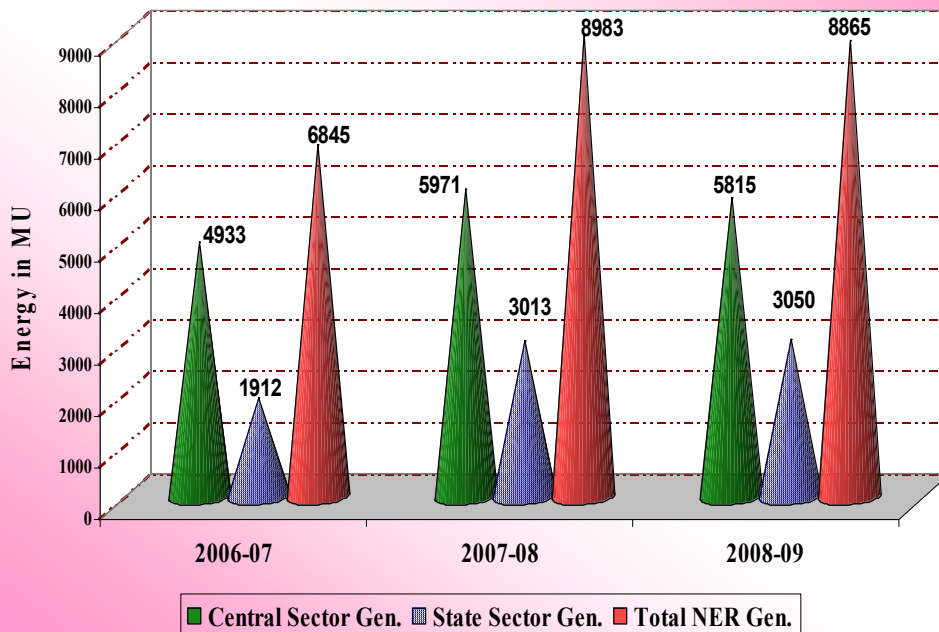
**LIST OF PARTICIPANTS IN THE 11th C.C MEETING OF NERPC**

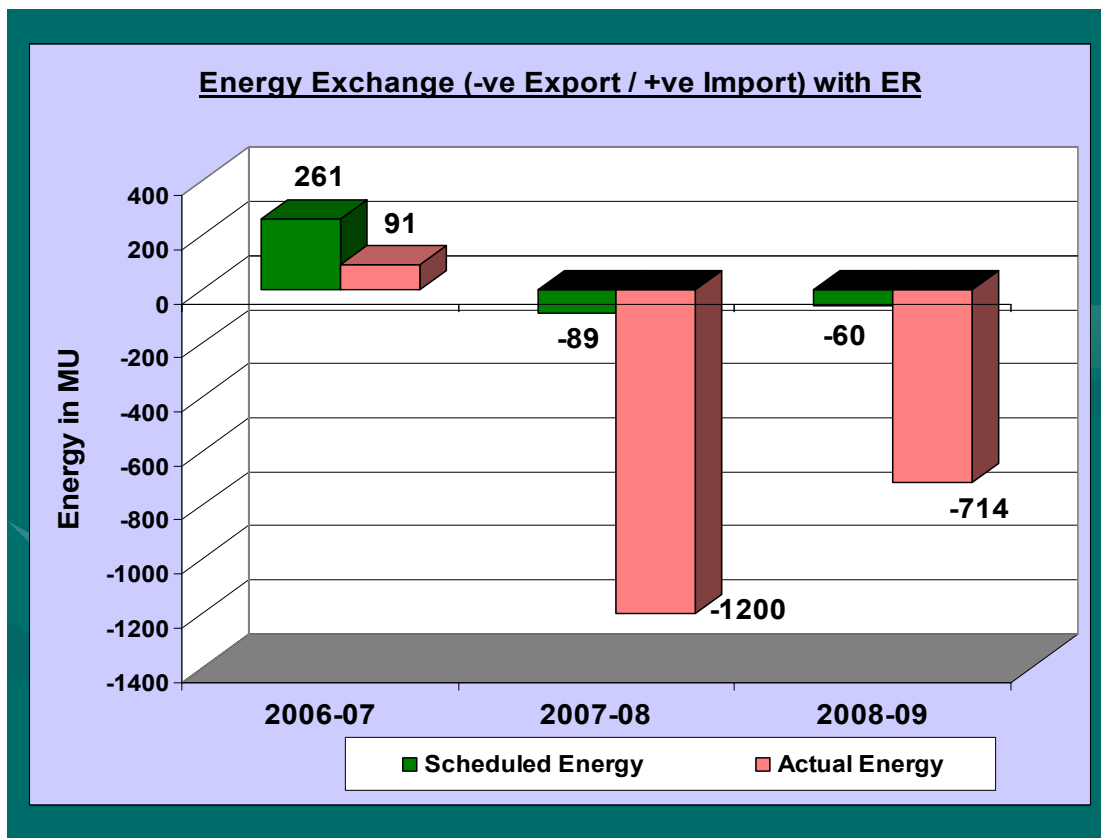
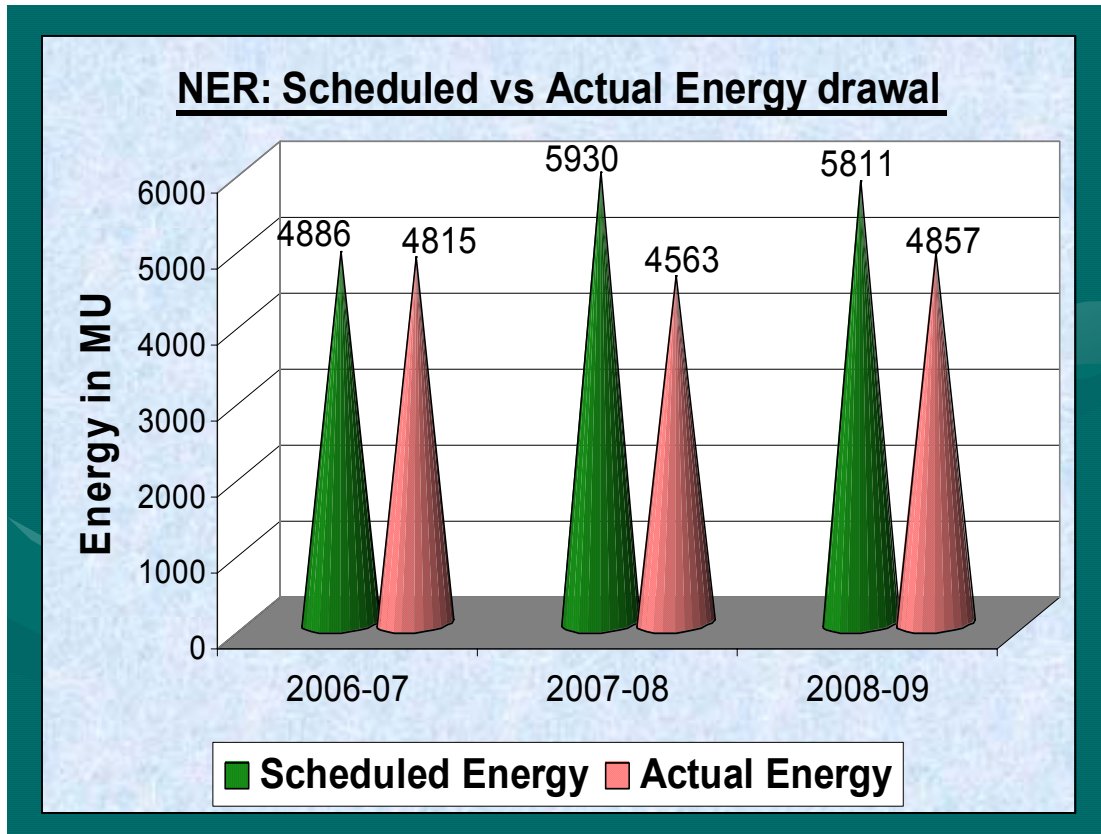
S. N.	NAME OF PARTICIPANT	DESIGNATION
<b>ARUNACHAL PRADESH</b>		
	Not represented	
<b>ASEB</b>		
	Not represented	
<b>MANIPUR</b>		
	Not represented	
<b>MEGHALAYA</b>		
1.	T.Passah	S.E. (SLDC)
2.	S.S.Kharmih	E.E. (SM)
3.	D.J.Lyngdoh	A.E.E (SLDC)
4.	L.Nongkhlaw	A.E.E (PLCC)
<b>MIZORAM</b>		
1.	V.Rodingliana	S.E. (Commercial)
<b>NAGALAND</b>		
	Not represented	
<b>TRIPURA</b>		
1.	A.Gan.Chaudhuri	D.G.M (Comm & Tariff)
2.	A.Das	Sr. Manager (C&SO)
<b>NEEPCO</b>		
1.	B.K.Chakraborty	Sr. Manager (E)
2.	D.Chakraborty	Sr. Manager (E)
3.	Arup Ch. Sarmah	Sr. Manager (E)
4.	C. Ranee	Manager (F) (Comml)
<b>NERLDC</b>		
1.	L.K.Kanungo	General Manager
2.	T.S.Singh	D.G.M
3.	M.Hussain	Chief Manager
4.	Anusha Baruah	Asst. Engineer
<b>NERTS (PGCIL)</b>		
1.	Ajoy Patir	A.G.M (O&M)
2.	A.K.Das	Chief Manager (Comml)
3.	H.S.Kaushal	Chief Manager (LD&C)
4.	P. Kanungo	
5.	A. Sinha	
<b>NHPC</b>		
	Not represented	
<b>Trading Companies</b>		
	Not represented	
<b>NERPC</b>		
1.	Manjit Singh	Member Secretary
2.	A.K.Jain	S.E. (Comml)
3.	B.Sarkhel	S.E. (Opn)
4.	Satbir Singh	E.E. (Opn-II)
5.	Lalrinsanga	E.E. (Comml)
6.	S.M.Aimol	A.E.E
7.	D.K.Bauri	A.E.E

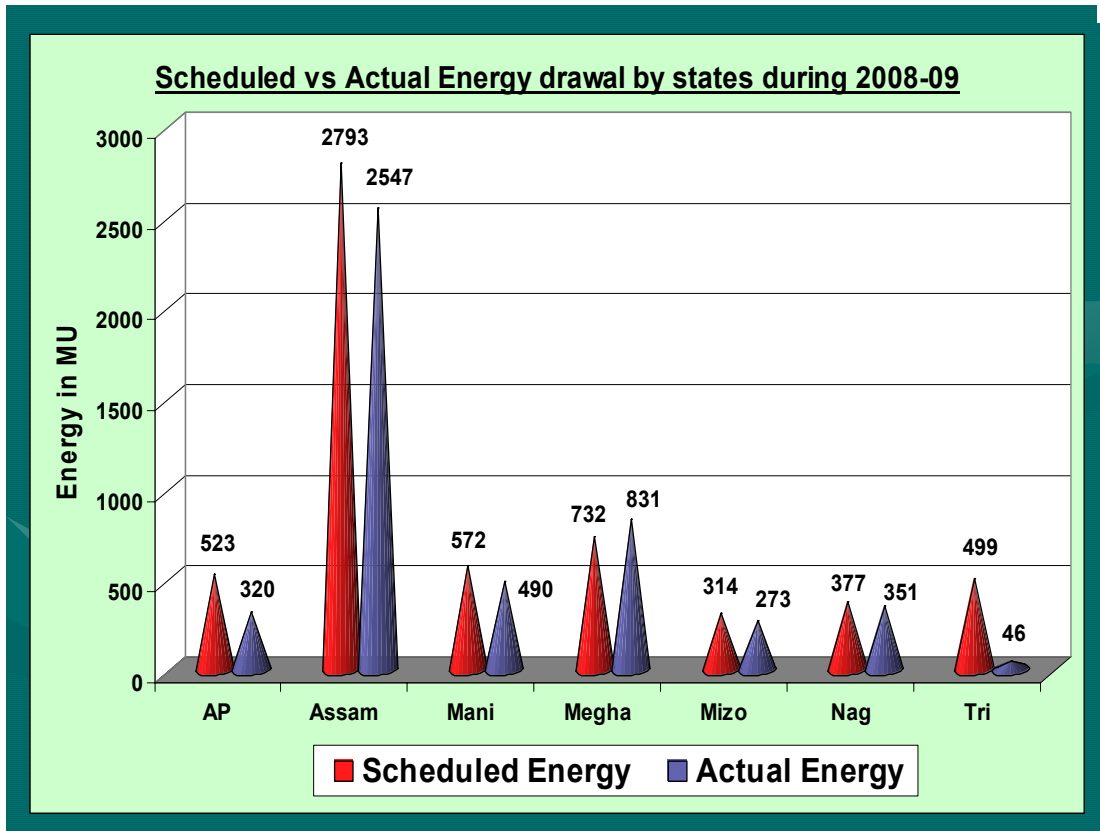
# Commercial Performance of NER Constituents and Current Issues

Presentation by NERLDC,  
Shillong

**Generation in NER during the last three years**







### Participation in Electricity Market : Arunachal Pradesh

UI Charges (Rs. In Crores)			
Year	Payable	Receivable	Net (+) payable
2006-07	20.18	12.13	8.05
2007-08	21.06	9.82	11.24
2008-09	23.91	6.81	17.09

Year	LTOA (MU)	STOA (MU)		Px (MU)	
	Purchase	Sale	Purchase	Sale	Purchase
2006-07	0.00	143.26	0.00		
2007-08	0.00	175.31	0.00		
2008-09	0.00	235.84	0.00	0.00	0.00

**Participation in Electricity Market : Assam**

Year	UI Charges (Rs. In Crores)		
	Payable	Receivable	Net (+) payable
2006-07	6.79	81.63	-74.84
2007-08	0.00	317.95	-317.95
2008-09	4.78	248.79	-244.01

Year	LTOA (MU)	STOA ( MU)		Px ( MU)	
	Purchase	Sale	Purchase	Sale	Purchase
2006-07	485.64	67.23	86.09		
2007-08	372.39	67.50	89.63		
2008-09	382.63	215.76	164.68	50.35	0.00

**Participation in Electricity Market : Manipur**

Year	UI Charges (Rs. In Crores)		
	Payable	Receivable	Net (+) payable
2006-07	10.29	15.53	-5.24
2007-08	3.04	45.28	-42.24
2008-09	5.63	65.60	-59.98

Year	LTOA (MU)	STOA ( MU)		Px ( MU)	
	Purchase	Sale	Purchase	Sale	Purchase
2006-07	0.00	0.00	0.00		
2007-08	0.00	0.00	0.00		
2008-09	0.00	0.00	0.00	0.00	0.00

**Participation in Electricity Market : Meghalaya**

Year	UI Charges (Rs. In Crores)		
	Payable	Receivable	Net (+) payable
2006-07	74.69	0.64	74.05
2007-08	12.35	25.14	-12.79
2008-09	16.32	54.67	-38.36

Year	LTOA (MU)	STOA ( MU)		Px ( MU)	
	Purchase	Sale	Purchase	Sale	Purchase
2006-07	6.29	39.89	173.88		
2007-08	139.08	107.54	22.41		
2008-09	160.56	17.86	19.49	0.00	0.00

**Participation in Electricity Market : Mizoram**

Year	UI Charges (Rs. In Crores)		
	Payable	Receivable	Net (+) payable
2006-07	4.00	11.85	-7.85
2007-08	3.52	32.30	-28.78
2008-09	8.89	35.89	-27.00

Year	LTOA (MU)	STOA ( MU)		Px ( MU)	
	Purchase	Sale	Purchase	Sale	Purchase
2006-07	0.00	0.33	0.28		
2007-08	0.00	0.54	0.70		
2008-09	0.00	0.66	0.69	24.38	2.77

**Participation in Electricity Market : Nagaland**

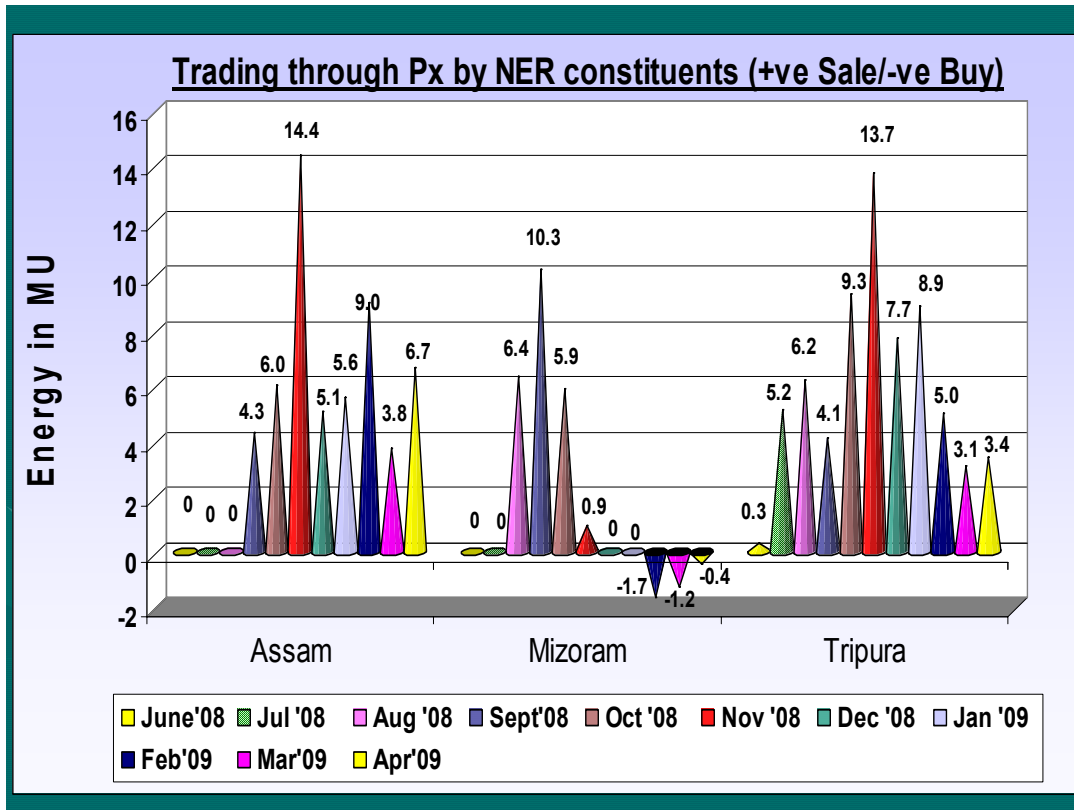
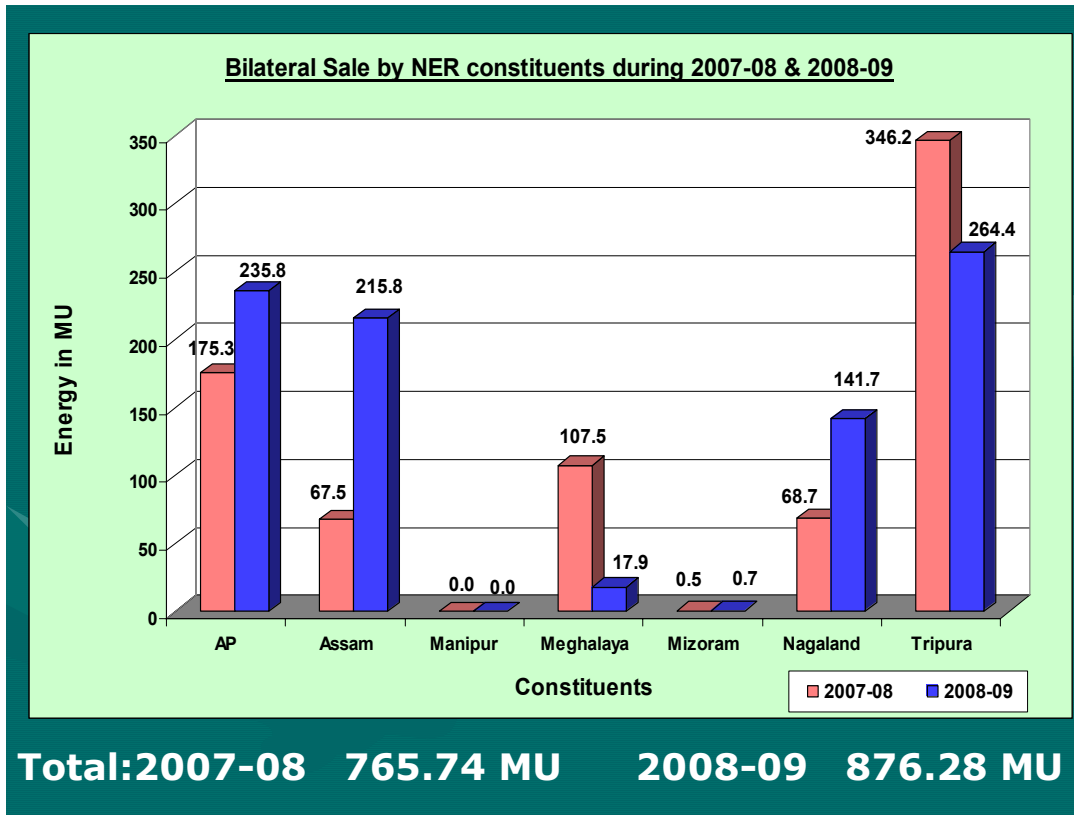
Year	UI Charges (Rs. In Crores)		
	Payable	Receivable	Net (+) payable
2006-07	23.61	4.47	19.14
2007-08	10.30	10.70	-0.39
2008-09	12.58	11.53	1.05

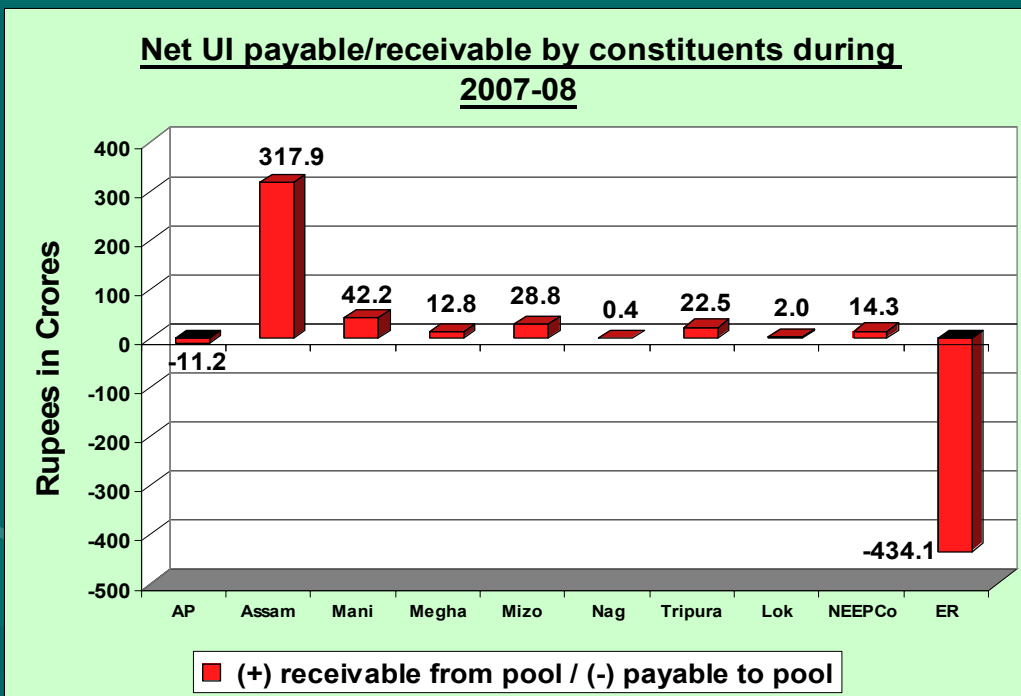
Year	LTOA (MU)	STOA (MU)		Px (MU)	
	Purchase	Sale	Purchase	Sale	Purchase
2006-07	0.00	14.65	0.00		
2007-08	15.51	68.68	1.38		
2008-09	133.80	141.72	0.00	0.00	0.00

**Participation in Electricity Market : Tripura**

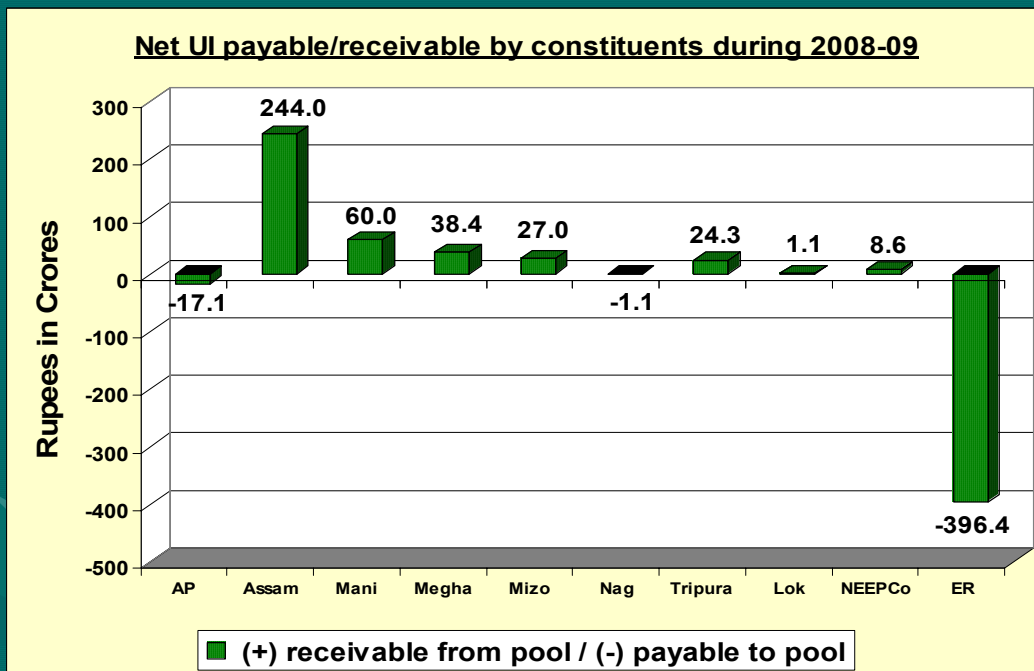
Year	UI Charges (Rs. In Crores)		
	Payable	Receivable	Net (+) payable
2006-07	1.79	20.45	-18.66
2007-08	3.98	26.47	-22.48
2008-09	5.07	29.38	-24.30

Year	LTOA (MU)	STOA (MU)		Px (MU)	
	Purchase	Sale	Purchase	Sale	Purchase
2006-07	95.26	360.33	1.01		
2007-08	0.00	346.17	2.26		
2008-09	0.00	264.45	13.88	66.35	0.00

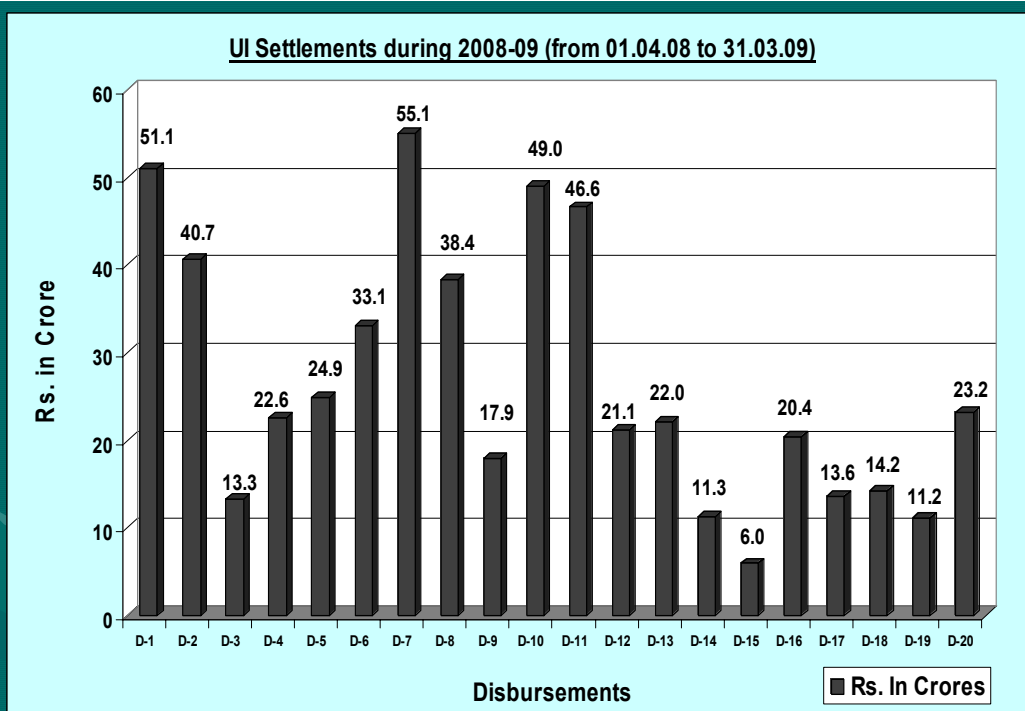




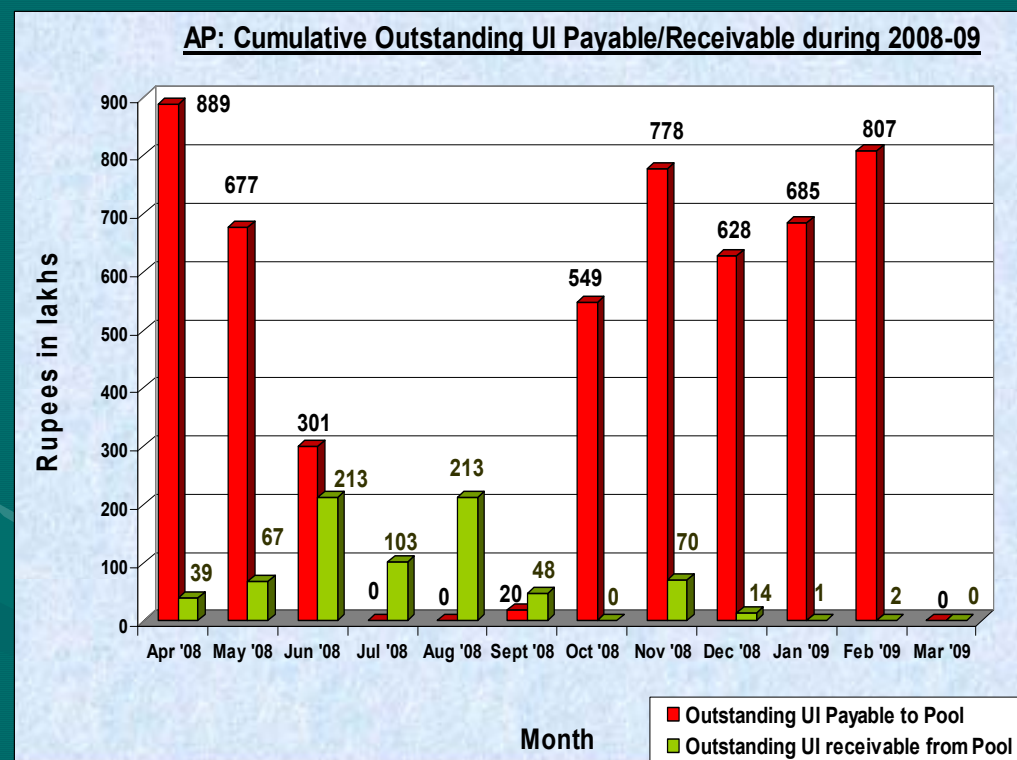
**Total billed during 2007-08: Rs. 494.85 crores**  
**Differential amount due to thermal ISGS capping:Rs. 4.51 crores**

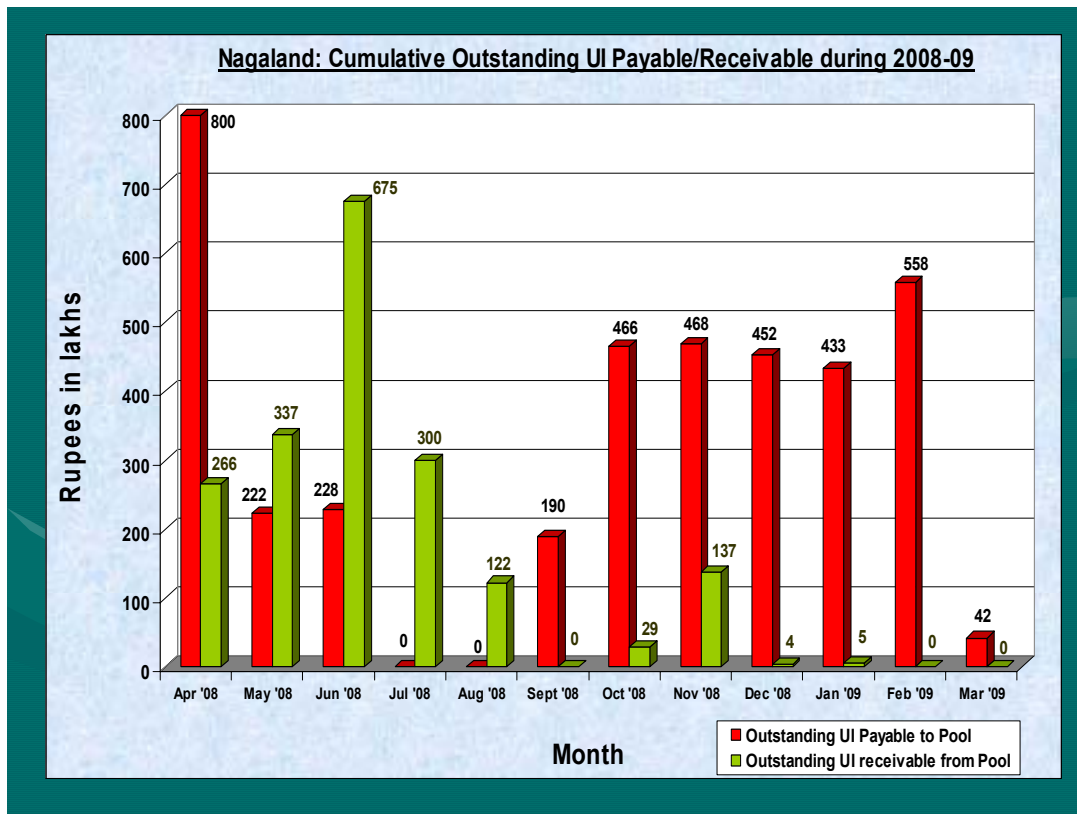
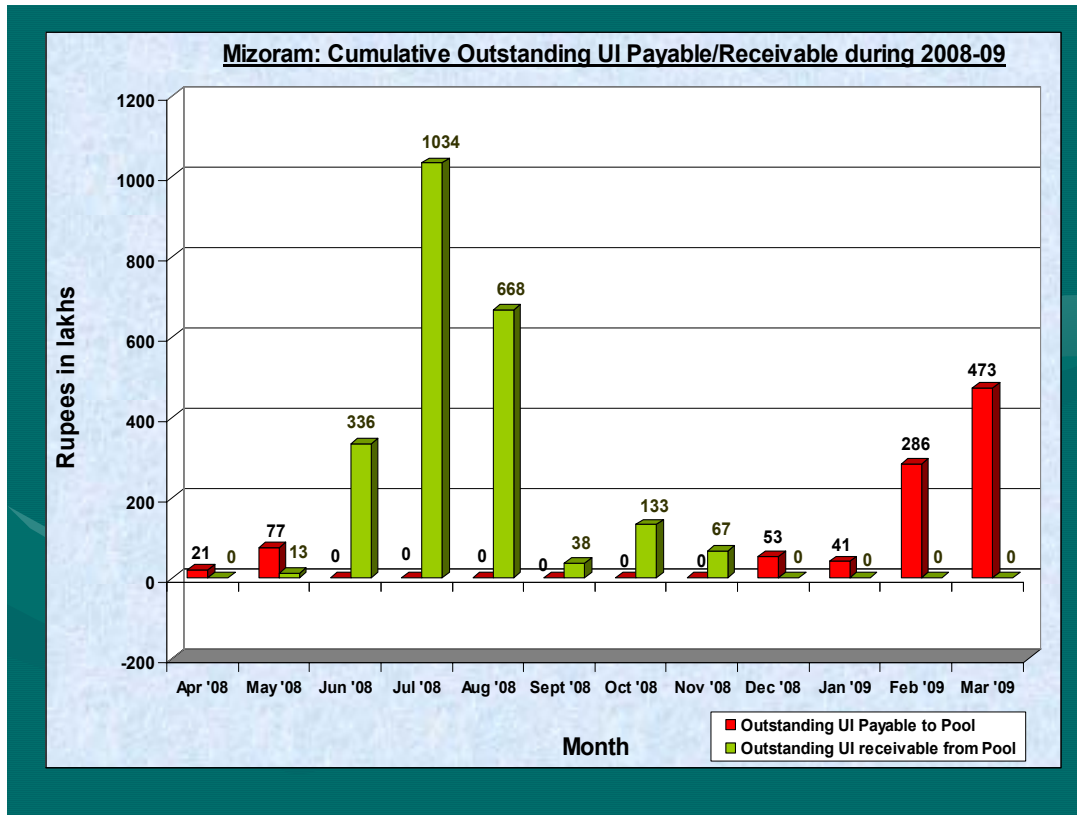


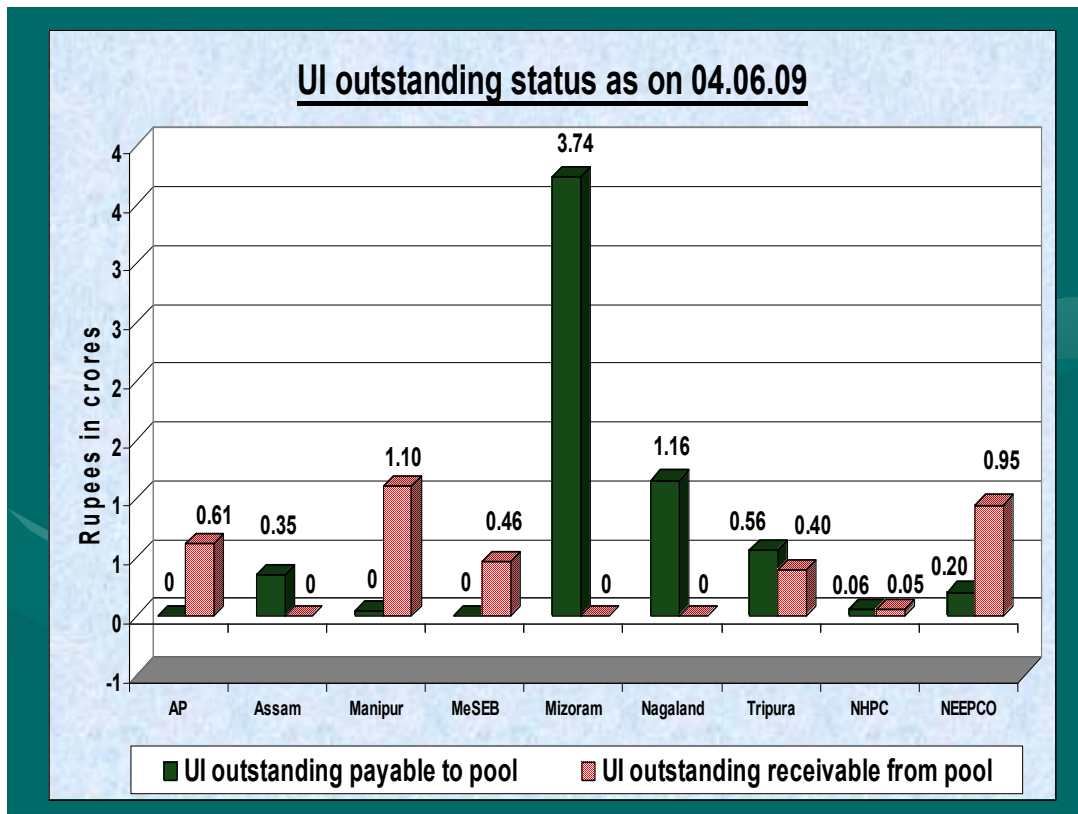
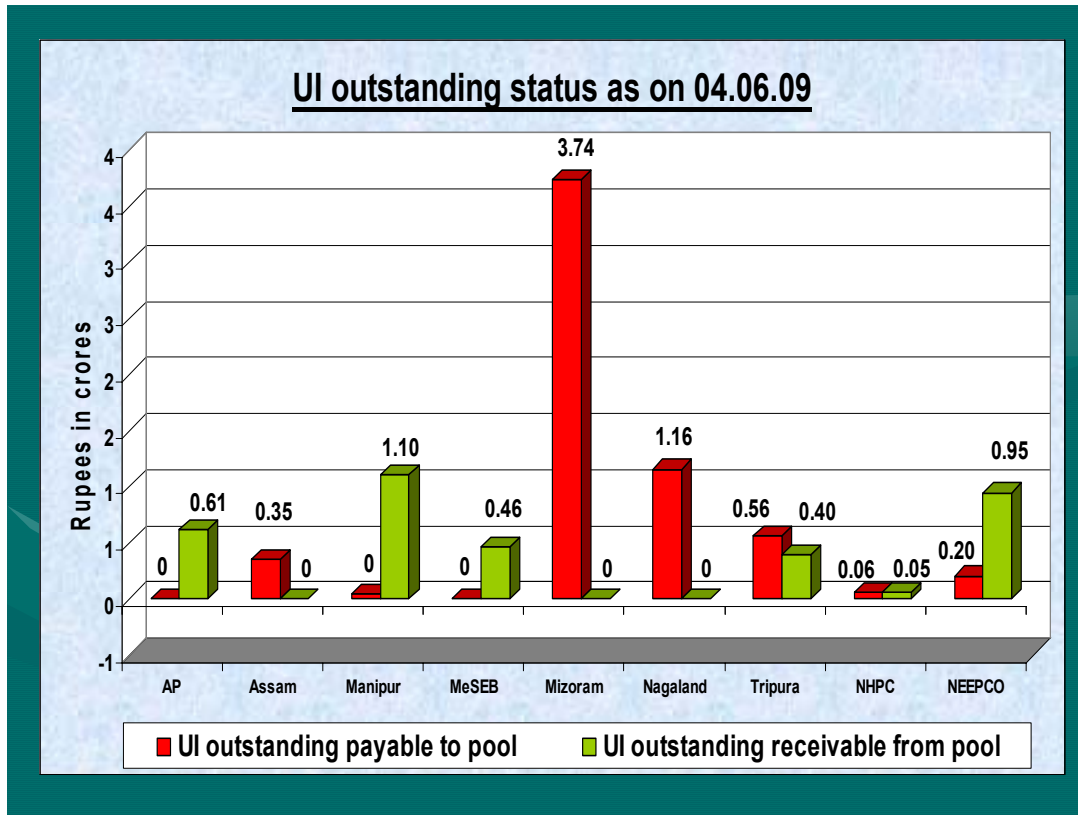
**Total billed during 2008-09: Rs. 512.79 crores**  
**Differential amount due to thermal ISGS capping:Rs. 11.26 crores**



**Total amount disbursed during 2008-09: Rs. 535.5 crs**







## UI Interest

- Provisional interest bills dated 20.04.09 was raised by NERPC on Ar. Pradesh and Nagaland as per CERC directive.
- Final UI Interest Bill for the year 2008-09 raised by NERLDC on 20.05.09.

Sl. No.	Constituents	UI Interest payable	UI Interest Receivable
1	Ar. Pradesh	4516133	0
2	Assam	0	10636681
3	Manipur	0	3241875
4	Meghalaya	13101686	0
5	Mizoram	0	766042
6	Nagaland	673501	0
7	Tripura	0	2179148
8	Loktak	0	105673
9	NeepCo	0	1361900
Total (Rs.)		18291320	18291320

## UI Interest

- Ar. Pradesh and Nagaland has already made payment.
- MeSEB is to pay Rs. 1.31 crores.
- On payment by MeSEB, UI interest till 31<sup>st</sup> March 2009 will be settled.

## **Bank Interest earned in UI Account**

- NER UI pool Account is maintained at SBI, Laitumkhrah, Shillong .
- Bank started providing interest in UI Account from April'08.
- Amount accumulated in 2008-09 is Rs. 29.16 Lakhs.

## **NER Reactive Pool Account status**

- Subsequent to closing of FY 2008-09, amount available in Reactive pool account after pay-outs to all receivable constituents is Rs. 3.38 crs.
- Expenditure on training/seminar is Rs. 56.42 lacs.
- Balance amount for future trainings is Rs. 2.82 crs.
- This is subject to realization of outstanding dues as below and payout of Rs. 10.99 lacs to ASEB:
 

- Ar. Pradesh	Rs. 3.25 lacs
- MeSEB	Rs. 24.06. lacs
- Mizoram	Rs. 2.5 lacs
- Nagaland	Rs. 18.94 lacs
- Tripura	Rs. 10.40 lacs

## NER Reactive Pool Account status

### REACTIVE POOL ACCOUNT DETAILS : 2008-09 (After disbursement dated 26/05/09)

As on 10.06.2009

Reactive accounts up to week - 52 (23.03.09 to 29.03.09)

( Figures in Rupees )

Sl. No	States	Outstanding Amount (31.03.08)	Amount payable to pool	Amount paid to pool	Amount Receivable from pool	Amount Received from pool	Outstanding payable (+) / receivable(-)	Outstanding Amount (31.03.08) as on 31.03.09
		1	2	3	4	5	6=(1+2-3)-(4-5)	7
1	Ar. Pradesh	734183	1866214	2274960	0	0	325437	0
2	Assam	0	0	0	3261756	2163186	-1098570	0
3	Manipur	474201	460282	929535	3906	0	1042	0
4	Meghalaya	2027322	379806	0	952	0	2406175	2027322
5	Mizoram	54724	417111	221798	71	0	249965	0
6	Nagaland	1983084	32780	0	121762	0	1894102	1983084
7	Tripura	0	1157655	0	117336	0	1040319	0
<b>TOTAL</b>		<b>5273513</b>	<b>4313847</b>	<b>3426293</b>	<b>3505783</b>	<b>2163186</b>	<b>4818470</b>	<b>4010405</b>

1 Amount frozen as on 31-03-08 Rs. 32054538

2 Amount frozen as on 31-03-09 Rs. 808064

3 Reactive interest paid to pool Rs. 962996

4 Total amount available in pool Rs. 33825598

5 Amount spent

a. Training Rs. 1875630

b. Seminar Rs. 500000

c. Foreign trg. Rs. 3266486

Total Rs. 5642116

6 Balance available amount Rs. 28183481 @

@ Balance available considering realisation of outstanding dues of Rs. 4818470/-

## Tax Deduction at Source (TDS) on STOA charges

➤ Our letter dated 01.05.2009 to all constituents, on applicability of TDS on payment of STOA charges

➤ Application of TDS on payment of PowerGrid charges i.e

- Application fee
- Operating charges of RLDCs
- Transmission charges of CTU lines

### Tax Deduction at Source (TDS) on STOA charges

- Applicants to deduct 1.6995% as TDS on PowerGrid portions of total STOA charges of an approved transaction.
- Applicants not to deduct TDS on remaining portion of STOA charges i.e
  - SLDC Operating charges
  - Transmission charges of STU lines
- Constituents are to furnish PAN number to NERLDC.

## Modification of Page 1 (Table C) Of Weekly UI Account

## UNSCHEDULED INTERCHANGE ACCOUNT STATEMENT

For the period 04/05/09 to 10/05/09

## A. ABSTRACT OF UNSCHEDULED INTERCHANGES

Organisation	UI charges		Additional UI charges payable (Rs.)
	Receivable (Rs.)	Payable (Rs.)	
Ar. Pradesh	2627421.87	0.00	144018.15
Assam	35871057.38	0.00	378794.48
Manipur	1060033.30	0.00	334317.29
Meghalaya	2338418.75	0.00	498212.91
Mizoram	0.00	3779019.63	295656.30
Nagaland	0.00	4848162.62	530590.93
Tripura	0.00	3657125.55	692525.84
Loktak	539872.03	0.00	0.00
Khandong	0.00	170222.84	0.00
Kopili	14951.44	0.00	0.00
Kopili - II	9164.85	0.00	0.00
Doyang	0.00	82055.64	0.00
Ranganadi	4591537.24	0.00	0.00
RC Nagar	716275.81	0.00	4873.48
Kathalguri	349918.48	0.00	91464.22
ER		36491067.00	0.00
<b>Total</b>	<b>48118651.15</b>	<b>49027653.28</b>	<b>2970453.60</b>

## C. DETATLS OF UI AMOUNT PAYABLE / RECEIVABLE

Organisation	Existing table		Proposed by NERLDC	
	Receivable (Rs.)	Payable (Rs.)	Receivable (Rs.)	Payable (Rs.)
Ar. Pradesh	2483403.72	0.00	2627421.87	144018.15
Assam	35492262.90	0.00	35871057.38	378794.48
Manipur	725716.01	0.00	1060033.30	334317.29
Meghalaya	1840205.84	0.00	2338418.75	498212.91
Mizoram	0.00	4074675.93	0.00	4074675.93
Nagaland	0.00	5378753.55	0.00	5378753.55
Tripura	0.00	4349651.39	0.00	4349651.39
Loktak	539872.03	0.00	539872.03	0.00
Khandong	0.00	170222.84	0.00	170222.84
Kopili	14951.44	0.00	14951.44	0.00
Kopili - II	9164.85	0.00	9164.85	0.00
Doyang	0.00	82055.64	0.00	82055.64
Ranganadi	4591537.24	0.00	4591537.24	0.00
RC Nagar	711402.33	0.00	716275.81	4873.48
Kathalguri	258454.26	0.00	349918.48	91464.22
ER	0.00	36491067.00		36491067.00
<b>Total</b>	<b>46666970.62</b>	<b>50546426.33</b>	<b>48118651.15</b>	<b>51998106.88</b>

- UI settlement is currently being done as per Table A.
- Payables / Receivables are considered separately without adjustment of Addl. UI charges.
- Additional UI charges paid to pool are kept in bank.
- Simple and unproblematic settlement.

## ISSUES

- Receivable figures in existing Table C are after adjustment of Additional UI charges.
- Settlement and Reconciliation as per Table C. In existing format, actual payable/receivable figures will not get reflected as receivable is artificially reduced.
- UI Interest calculation as per existing Table C will not reflect correct interest payable/receivable.
- Outstanding payable/receivable status will also be incorrect.

## Argument

- NEEPCO case : **Settlement without adjustment of payables / receivables.**
- In this week NEEPCO:
  - Receivable from pool: Rs. 56.82 lakhs.
  - Payable to pool: Rs.3.49 lakhs.
- NEEPCO pays Rs.3.49 lakhs to pool and receives Rs. 56.82 lakhs from pool.
- **If netting is done, NEEPCO will not pay anything and receive Rs. 53.33 lakhs from pool.**

## Current Issues

## **Latest CERC Regulations :**

### **Central Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2009.**

- ✓ **Indian Electricity Grid Code (Amendment) Regulations, 2009.**
- ✓ **Central Electricity Regulatory Commission (Unscheduled Interchange charges and related matters) Regulations, 2009.**
- ✓ **Central Electricity Regulatory commission (Open Access in inter-State Transmission) (Amendment) Regulations, 2009.**

## **CERC Stipulations / Orders**

### **Grid Indiscipline**

- **CERC imposes fine on APTransco for grid indiscipline.**
- **CERC imposes fine on TNEB, KPTCL, RRVPNL for grid indiscipline.**

## CERC Stipulations / Orders

- ? CERC issued order in the matter of “Default in payment of Unscheduled Interchanges (UI) charges for the energy drawn in excess of the drawal schedule by Nagaland.”
- ? CERC issued order in the matter of “Default in payment of Unscheduled Interchanges (UI) charges for the energy drawn in excess of the drawal schedule by Ar. Pradesh.”
- ? CERC imposed a penalty of Rs. 25000/- each on Nagaland and Ar. Pradesh vide orders dtd. 31<sup>st</sup> March, 2009.

## Latest Issues

- ✓ Approach Paper on “ Formulating pricing Methodology for Inter-State Transmission in India”.
- ✓ Central Electricity regulatory Commission (Fees and Charges of Regional Load Dispatch Centre and other related matters) Regulations, 2009.
- ✓ Satnam Singh Committee Report.
- ✓ Forum of Load Despatchers (FOLD).



# RENOVATION & MODERNIZATION OF OLD POWERGRID STATIONS OF NORTH EASTERN REGION

## OPERATION OF POWERGRID IN NER

POWERGRID, NERTS IS OPERATING 14 (FOURTEEN) NOS. SUBSTATIONS AND ASSOCIATED TRANSMISSION LINES OF ABOUT 4182 CKT KMS.

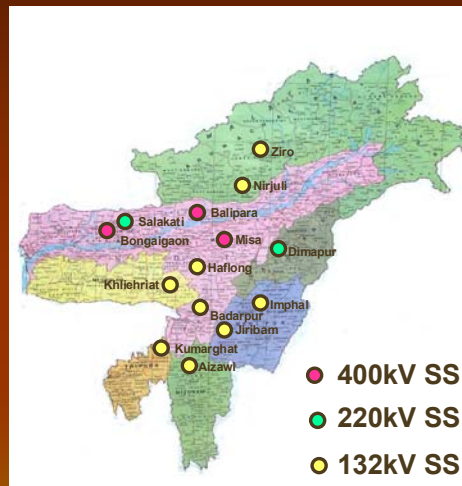
VOLTAGE LEVEL OF SS ARE:

400kV : 3 (THREE) NOS.

220kV : 2 (TWO) NOS.

132kV : 9 (NINE) NOS.

IN ADDITION POWERGRID ALSO MAINTAINS ITS BAYS AT SUBSTATIONS OF OTHER UTILITY.



**PROPOSED R&M STATIONS****ADDITIONAL TRANSMISSION SYSTEM**

SN	Name of Substations/Bays	DOCO	State
1	JIRIBAM SS: Loktak # 1, Haflong, Pailapool, Aizawl & Transformer Bays	1986, 1986, 1992, 1988 & 1885	Manipur
2	KUMARGHAT SS: Badarpur, PK Bari, Aizawl and Transformer	2000, *, 1989, 1989	Tripura
3	AIZAWL SS:	1988	Mizoram
4	HAFLONG SS: Khandong, Jiribam, AEGCL and Bus Coupler	1987	Assam

**PROPOSED R&M STATIONS****GOHPUR ITANAGAR TRANSMISSION SYSTEM**

SN	Name of Substations/Bays	DOCO	State
1	Gohpur (AEGCL) SS: 132kV Nirjuli bay	1991	Assam
2	Nirjuli SS: 132kV ICT # I & II Bays and 33kV Bays	1991	Arunachal

**PROPOSED R&M STATIONS****KOPI LI TRANSMISSION SYSTEM**

SN	Name of Substations/Bays	DOCO	State
1	Samaguri SS: 220kV Misa bay # I & II	1984	Assam
2	Khliehriat (MeSEB) SS: 132kV Khliehriat (PG) bay	1984	Meghalaya

**PROPOSED R&M STATIONS****KATHALGURI TRANSMISSION SYSTEM**

SN	Name of Substations/Bays	DOCO	State
1	Misa SS: 400kV Balipara # I & II Bay	1999	Assam
2	Balipara SS: 400kV Misa # I & II and 400kV Bongaigaon # I & II Bay	1999	Assam
3	Bongaigaon SS: 400kV Balipara # I & II	1999	Assam

## WHY R&M OF THE STATIONS ?

- The equipments / Relays installed in all these Substations / bays were manufactured in early 1980`s and become old & obsolete.
- No service support from the OEM.
- The availability and performance of the equipments / Relays are fast declining.
- The primary equipments namely Circuit breakers, Isolators and the secondary equipments namely protection devices, DC system had become a matter of concern due to its age, obsolescence and reliability

## R&M - JIRIBAM SS

SN	ACTIVITIES	QTY
1	Replacement of 145kV Minimum Oil Circuit Breakers (MOCB), Model: HLR145-2501E/BLG302, Make: BHEL, Yr of Mfg: 1984	5 Set
2	Replacement of electromechanical distance protection relays. Type: MM3V, Make: English Electric, Yr. of mfg: 1984-85	5 Set
3	Replacement of old Battery Chargers and Banks which has completed more than 20 years in service.	1Set
4	Replacement of AC distribution panel comprising of switch/fuse units	1Set

**R&M - KUMARGHAT SS**

SN	ACTIVITIES	QTY
1	Replacement of 145kV Minimum Oil Circuit Breakers (MOCB), Model: HLR145-2501E/BLG302, Make: BHEL, Yr of Mfg: 1984	2 Set
2	Replacement of electromechanical distance protection relays. Type: MM3V, Make: English Electric, Yr. of mfg: 1984-85	2 Set
3	Replacement of old Battery Chargers and Banks which has completed more than 20 years in service.	1Set
4	Replacement of AC distribution panel comprising of switch/fuse units	1Set
5	Replacement of 33kV MOCB`s	1Set

**R&M - AIZAWL SS**

SN	ACTIVITIES	QTY
1	Replacement of 145kV Minimum Oil Circuit Breakers (MOCB), Model: HLR145-2501E/BLG302, Make: BHEL, Yr of Mfg: 1984	3 Set
2	Replacement of electromechanical distance protection relays. Type: MM3V, Make: English Electric, Yr. of mfg: 1984-85	1Set
3	Replacement of old Battery Chargers and Banks which has completed more than 20 years in service.	1Set
4	Replacement of AC distribution panel comprising of switch/fuse units	1Set

R&M - HAFLONG SS

SN	ACTIVITIES	QTY
1	Replacement of 145kV Minimum Oil Circuit Breakers (MOCB), Model: HLR145-2501E/BLG302, Make: BHEL, Yr of Mfg: 1984	4 Set
2	Replacement of electromechanical distance protection relays. Type: MM3V, Make: English Electric, Yr. of mfg: 1984-85	1Set
3	Replacement of old Battery Chargers and Banks which has completed more than 20 years in service.	1Set
4	Replacement of AC distribution panel comprising of switch/fuse units	1Set

R&M - GOHPUR (AEGCL) SS

SN	ACTIVITIES	QTY
1	Replacement of 145kV Minimum Oil Circuit Breakers (MOCB), Model: HLR145-2501E/BLG302, Make: BHEL,	1Set

**R&M - NIRJULI SS**

SN	ACTIVITIES	QTY
1	Replacement of 145kV SF6 Circuit Breaker, Type: 3ARS, Model: HLR/BLG500, Make: BHEL. YOM: 1996 & 1989	2Set
2	Replacement of 33kV Minimum Oil Circuit Breakers (MOCB)	5 Set

**R&M - SAMAGURI (AEGCL) SS**

SN	ACTIVITIES	QTY
1	Replacement of 245kV Minimum Oil Circuit Breakers (MOCB), Model: HLR245-2503EBS, Make: BHEL, Yr. of Mfg: 1984	2 Set

R&M - KHLIEHRIAT (MeSEB) SS

SN	ACTIVITIES	QTY
1	Replacement of 145kV Minimum Oil Circuit Breakers (MOCB), Model: HLR145-2501E/BLG 302, Make: BHEL Yr. of Mfg: 1984	1 Set

R&M - MISA, BALIPARA & BONGAIGAON SS

SN	ACTIVITIES	QTY
1	Retrofitting of Main # I Phase Comparison Protection Relay, Type: P40, Make: M/S Alstom connected in 400kV Misa, Baliapara & Bongaigaon Transmission lines. Cause: Mal-operation, Non-operation, repeated failure of modules and no service support/spares available from the manufacturer.	9 Set

**R&M - TOTAL ESTIMATED EXPENDITURE**

SN	SUBSTATIONS	COST (Lakh)
1	Replacement of 2 nos. 245kV, 18 nos. 145kV and 6 nos. of 33kV MOCB including 1 sets of O&M spare of each rating	284.02
2	Replacement of 4 nos. of 110V Battery Bank and Battery Charger	33.70
3	Replacement of 9 sets of obsolete Electromechanical DPR Scheme including 1 set of O&M spare relay	76.20
4	Replacement of 4 sets of 430V LTAC	35.77
5	Replacement of obsolete P40 Scheme at Misa, Balipara and Bongaigaon (PG) Sub Station - 8 sets + 1 relay spare	24.74

Total (in Rs.) = 454.44 Lakhs

**R&M - EASTERN REGION**

Excerpts from :

MINUTES OF THE 8TH MEETING OF EASTERN REGIONAL POWER COMMITTEE held on 21.11.2008 (Friday) at Hotel Royal Residency, Bodhgaya.

ITEM NO.6.4 REPLACEMENT OF VARIOUS OLD SWITCHGEARS AND PROTECTION RELAYS IN THE STATIONS OF POWERGRID ER-I  
(TCC Agenda submitted by POWERGRID)

## R&M - EASTERN REGION

### ➤ Replacement of old ABCBs at Purnea with SF6 CBs

At Purnea S/S, there are 6 sets of ABCBs, the performance of which are not reliable. The CBs are already 22 years old and obsolete and therefore, getting spares is very difficult. In case of any major problem in the CBs, it may lead to long outage thus resulting into the problem of power evacuation from the 220 / 132 kV sub-station. Hence, the ABCBs are required to be replaced immediately with SF6 CBs as per modern trend. The cost involvement for the replacement will be Rs.99 lacs (approx.)

## R&M - EASTERN REGION

### ➤ Retrofitting of BOMCO & GRPS make Isolators and Earth Switches at Purnea S/s

There are some 22 years old and obsolete pneumatic driven isolator and earth switches in the 220 kV/132 kV Purnea S/S. The isolators and earth switches are giving repeated problems and requiring frequent maintenance. As the equipments are very old, the service / spare for the equipments are also not available. Due to problem in these isolators /earth switches, power supply from 220 / 132 kV Purnea S/S to BSEB system frequently gets interrupted. These isolators and earth switches are required to be retrofitted immediately. The cost involvement for the retrofitting will be Rs.70.00 lacs (approx.)

## R&M - EASTERN REGION

- Retrofitting of Differential Relays of the Transformers connected with BSEB / JSEB at Jamshedpur and Biharshariff S/S (Make: ABB)

At Biharshariff S/S, there are 3 nos. of 315 MVA, 400 / 220 kV ICTs and at Jamshedpur, there are 2 nos. 315 MVA, 400/220 kV ICTs for feeding power to BSEB/JSEB respectively. These ICTs are catering major load of BSEB/JSEB systems. 2 nos. ICTs at Biharshariff and 2 8th ERPC Meeting Minutes 10 nos. ICTs at Jamshedpur were commissioned in 1991/92. The main static type differential relays used for the protection of the ICTs are very old and obsolete due to which the manufacturer is not interested in providing any support services for repairing etc. In addition to that, in the ICT feeders disturbance recorders are also not installed, for analyzing the disturbances in the ICTs. Considering the high rate of failure of the ICTs in the recent times, it is proposed to replace the old differential relays with numerical type of differential relays having disturbance recorder feature. Therefore, in addition to having reliable protection, these new differential relays will help in analyzing the fault. The total cost involvement for the replacement of differential relays at Biharshariff and Jamshedpur will be Rs. 18 lacs (approx.).

## R&M - EASTERN REGION

- Replacement of Pilot Wire Protection at Purnea S/S for the Kishanganj Line.

As per the earlier scheme, the 132 kV Kishanganj feeder was connected to nearby BSEB S/S in Purnea (1 KM away). Accordingly, pilot wire protection was provided for the protection of the said line. However, later on this feeder is terminated at Kishanganj station of BSEB, which is around 70 KM from Purnea. As the pilot wire protection cannot be used for the said length of the line, therefore, the line is presently protected only by back up over current protection having high time delay. Hence, providing of a distance protection in the said feeder is required very urgently. For providing a modern numerical type distance protection relay in this feeder, total cost involvement will be Rs.2.5 lacs (approx.).

## R&M - EASTERN REGION

- Replacement of old Distance Protection Relays of Biharshariff and Jamshedpur S/S (Make : ABB)

The Biharshariff and Jamshedpur S/S are very important stations of POWERGRID having connection with the generating stations as well as having inter-regional tie lines. These stations are also feeding important loads of BSEB/JSEB. In these stations the distance protections provided in some of the old feeders, commissioned in the year 1991-92 are quite obsolete and hence giving frequent problems, putting the system in danger. The distance protection relays are now not reparable and the manufacturers have also stopped providing services for these relays. Hence, the reliable operation of these feeders these old relays are required to be replaced immediately. At Jamshedpur S/S, 4 relays and at Biharshariff S/S 5 relays are required to be replaced and replacement cost of these old relays with numerical relays the cost involvement will be Rs.20 lacs (approx.) Members of OCC have already agreed for the replacement of the above on operational ground. Approximate cost for replacement is Rs.2.10 crores.

## R&M - EASTERN REGION

### **DELIBERATIONS IN THE COMMERCIAL SUB-COMMITTEE MEETING**

- Commercial Sub-Committee members noted the consent of the members of OCC regarding replacement of the above on operational ground. After deliberations, Commercial Sub-Committee recommended replacement of the above at a total cost of Rs.2.10 Crores subject to approval in TCC and ERPC meetings.
- TCC members may please approve.

## R&M - EASTERN REGION

### DELIBERATION IN THE TCC MEETING

- TCC members noted the consent of OCC and Commercial Sub-Committee members regarding replacement of the above items at a total cost of Rs.2.10 Crore. TCC also recommended the replacement of the above with the condition that the book value of the existing items should be deducted from the total cost of the newly procured items.
- Put up to ERPC for approval.

## R&M - EASTERN REGION

### DELIBERATION IN THE ERPC MEETING

- ERPC approved the replacement of various old switchgears and protection relays in the sub-stations of Powergrid at an estimated cost of Rs. 2.10 crore. Powergrid should ensure that the book values of the old equipment are deducted from the cost of the newly procured items for capitalisation of assets.

## CONCLUSION

- The R&M of all the stated Substations/ bays are very critical and important as:
  - ✓ These stations are the sole feeding point to a States
  - ✓ Critical for evacuation of Central Sector generation
  - ✓ Feeding some important places of States


*To ensure the reliability of these Substations and healthiness of all the primary and secondary equipments, Renovation & Modernization (R&M) of Substations and bays is inevitable*




**REPLACEMENT OF  
EXISTING ULDC MICROWAVE LINKS  
WITH  
FIBER OPTIC SYSTEM  
by**

**Corporate LD&C Department -POWERGRID**

CORPORATE LD&C DEPT.

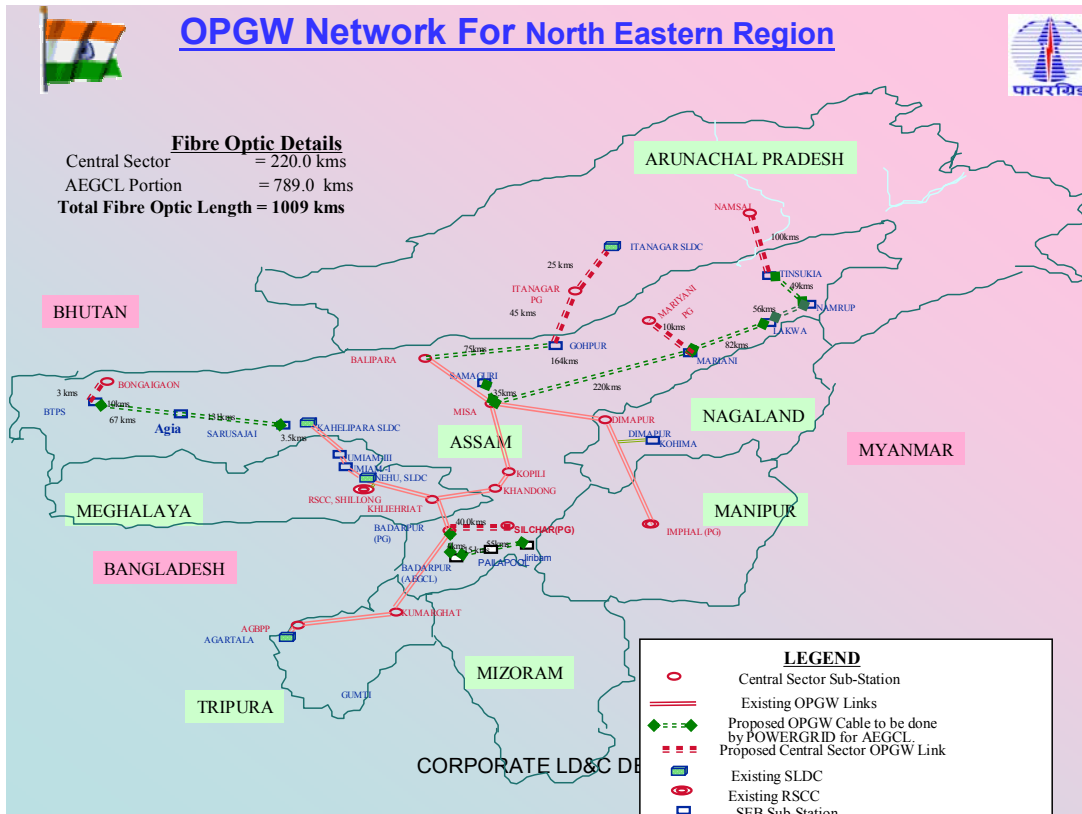


## POST TCC DEVELOPMENTS



- The consent of CS portion of 15 kms FOTS was also obtained as CS portion by all the NER constituents in TCC .
- Post TCC –deliberations, AEGCL has given consent to POWERGRID for setting up 789 Kms of Fiber Optic Transmission Systems vide MoM 07-04-2009.
- The individual cost of the constituents shall be available only after the approval of FR.
- Meanwhile, new power systems of regional & national interest are also upcoming. eg. Pallantala

CORPORATE LD&C DEPT.





## Strengthening of North Eastern Region Power System

- Considering new power systems , a total of 220 kms of FOTS is required to built up under CS, including the earlier agreed 15 kms.
- Consent of all the NER constituents is required for the same.
- Since the time frame given by DOC is only 2 years from 4-11-2008, the time left is very short.

CORPORATE LD&C DEPT.



## **PRESENTATION ON ESTABLISHMENT OF STATE LOAD DESPATCH CENTRE**

**By  
LD&C Department**

**POWER GRID CORPORATION OF INDIA LTD.**

***11-05-2009***

CORPORATE LD&C DEPT.



## PRESENT SCENARIO



Constituent	SLDC status (Main)	SLDC status/WEB Connectivity (Backup)	Dedicated Connectivity of data & Voice with s/s
Manipur	Not exists	Not exists	No
Mizoram	Not exists	Not exists	No
Auranch Pradesh	Not exists	Not exists	No
Nagaland	Not exists	Not exists	Yes , PLCC
Tripura	Exists	Not exists	No
Assam	Exists	Not exists	Yes, PLCC, MW & FO
Meghalaya	Exists	Not exists	No

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## REQUIREMENTS



Constituent	SLDC/Backup SLDC establishment/ Grid Information on Web	Sub-Stations Monitored to be SLDC	Metering & Settlement System (Automation)
Manipur	Yes	10 – 132 kV 16 – 33 kV	Only SEM and EM meters. Modernization & Automation required.
Mizoram	Yes	8 – 132 kV 36 – 33 kV 34 – 33 kV (New)	Not proper Automation required
Auranchal Pradesh	Yes	27 – (New) 8 – 132 kV & above	Manually done Automation Required*
Nagaland	Yes	6 – 132 kV 13 – (New)	SEMs at present Automation Required*
Tripura	Yes	8 -132 kV 15 – (New) - DMS 33 kV	Tri vector meter in use Automation required
Assam	Yes	51 – 132 kV	Automation of metering required
Meghalaya	Yes*	23 – 132 & 220 kV	Sub-station automation also required*

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## CURRENT STATUS of SEBs WITH NO SLDC

- One Remote Console (RC)
- Presently only few s/s monitored.
- Only PLCC / PSTN connectivity, No captive wideband communication network.
- The temporary monitoring centre (RC) being usually managed without any UPS.
- No availability of DG sets.

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## REQUIREMENTS ANALYSIS

- Full-Fledged SLDC
- Dedicated Communication system with high availability & reliability is required between the CC & s/s for Voice & Data communication.
- Auxiliary Power Supply (APS) required at CCs & s/s with proper back-up.
- No. of s/s to be monitored
  - 132 kV
  - 33 kV
- Requirement of Back-up SLDC – needs analysis.

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## SCADA



### Benefits

- - Better Operational And Management Control
- - Availability Of Historic Data For Post Disturbance Analysis
- - Integration With MIS For Better Management Control
- -Improved Customer Service

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## Proposed System



- Hardware/Software for SCADA System
- Common Database Tools
- Cyber Security & Data Security
- Weather Stations
- Website, NMS & Perimeter Security

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## Proposed Infrastructure

- Conference Room
- Video Conferencing
- IT Systems
- VPS
- DG Set
- Air-Conditioning

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## Stations to be Monitored

Recommendation for stations to be monitored

- All 132 KV & Above sub-stations
- Tie-Lines
- Important - 33 kV s/s
- Generating Stations

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## Establishment of SCADA/EMS

### CONTROL CENTRE



SCADA/EMS System consists of

- Building
- Control Centre H/w & S/w on LAN
- RTUs at Substation/ site
- Communication Connectivity
- Transducers or Energy Meters at Substations/ site
- DCPS System , UPS
- DG Set

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## DESIGN FEATURES



- OPEN SYSTEM ARCHITECTURE –Using Standard Interfaces.
- INTEGRATION WITH RLDC
- EXPANDIBILITY OF THE SYSTEM
- PERFORMANCE
- COMMUNICATION

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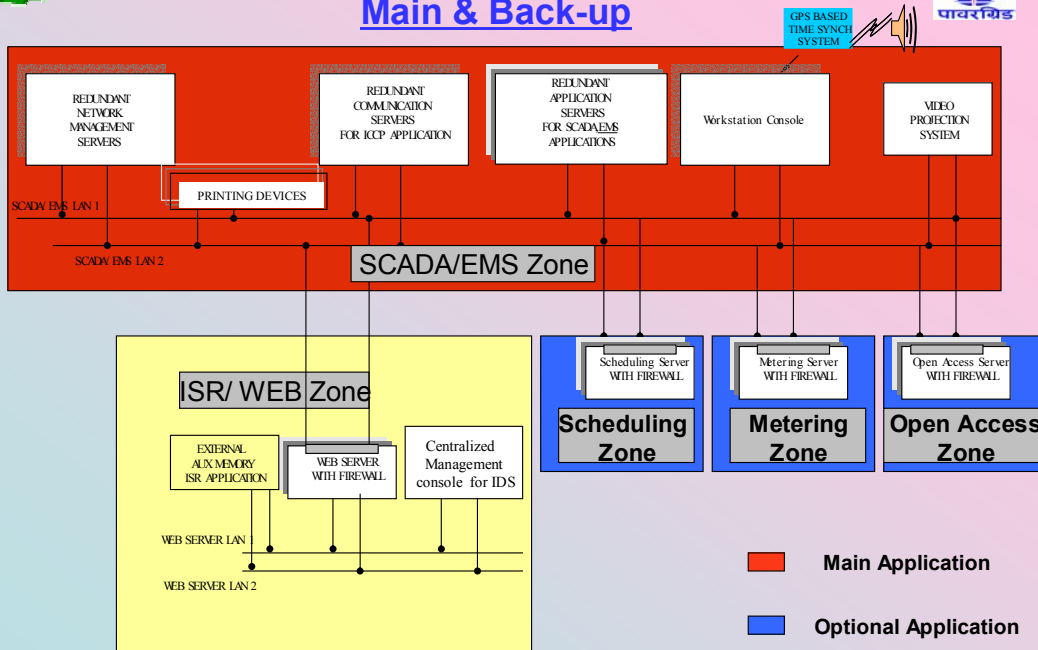
## SCADA Control Centre

- A Typical Control Centre Architecture follows- with minimum Two Zones
  - EMS/SCADA Zone
  - ISR/ WEB Zone (Information Storage & Retrieval)
  
- More applications depend upon the requirement of the constituents.
  - Scheduling
  - STOA ( SHORT TERM OPEN ACCESS)

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## Typical Architecture- EMS/SCADA Control Centre Main & Back-up



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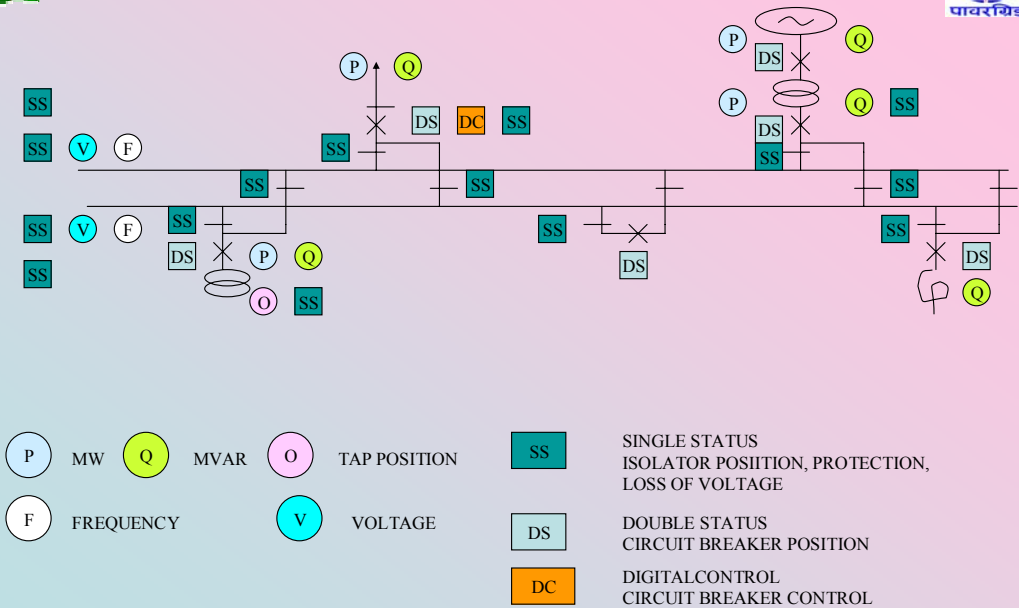
## SCADA/EMS Functions

- **SCADA FUNCTIONS**
- DATA ACQUISITION
- SUPERVISORY CONTROL
- HISTORICAL INFORMATION STORAGE & RETRIEVAL (ISR)
- **NMS FUNCTIONS**
- FOR MONITORING THE HEALTH OF THE NETWORK
- **EMS FUNCTIONS** NEED DELIBERATIONS WHILE PREPARING THE DPR.

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## TELEMETRY



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## Installation of RTUs at Substations with Transducers or Energy Meters

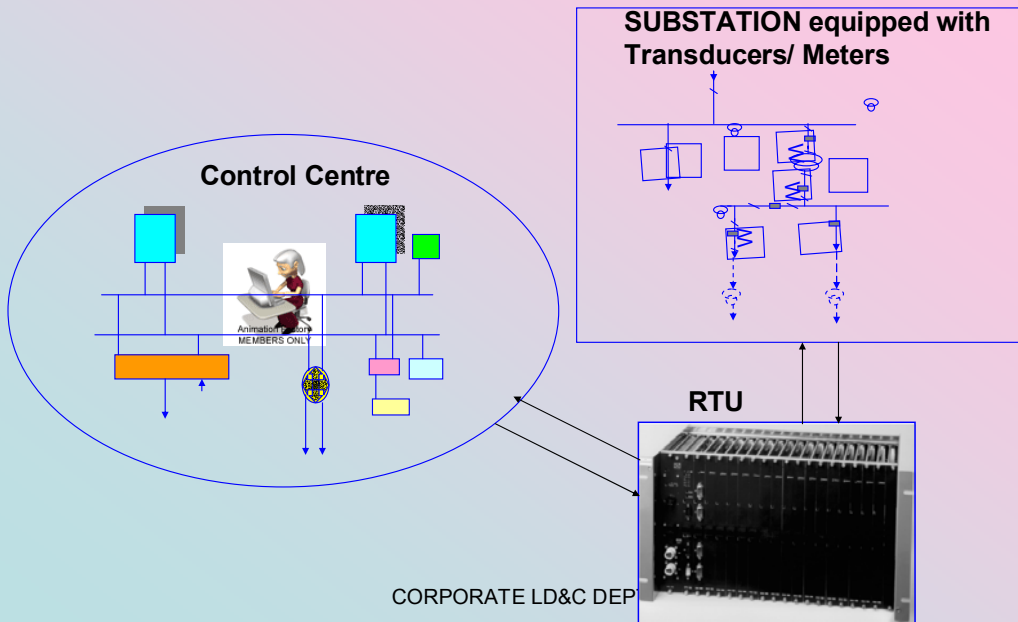


**INPUT of RTU - DIGITAL STATUS & ANALOG**  
**OUTPUT from RTU - DIGITAL CONTROL**

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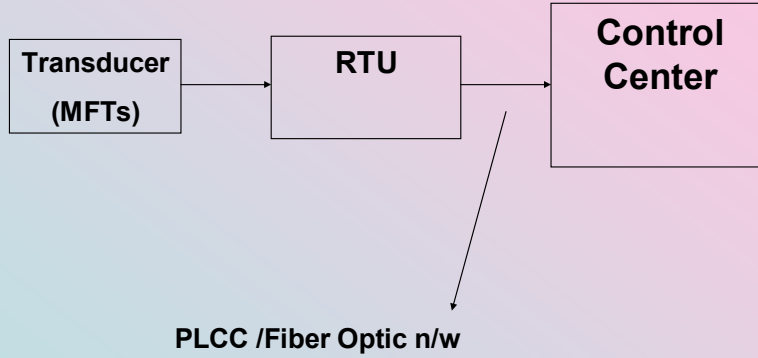


## Typical SCADA/EMS System Configuration





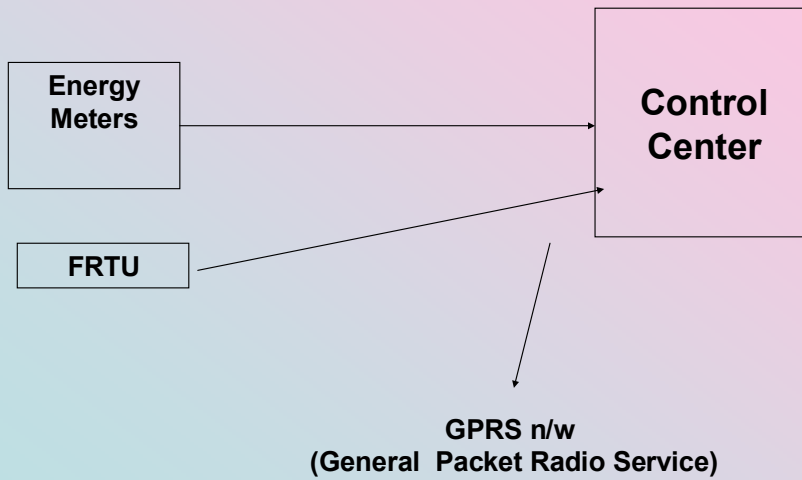
### Telemetry for 132 KV & above



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### Telemetry for 33 kV s/s



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## Standard Interfaces

- RTU to Control Centre data exchange
  - IEC 870-5-101/ 104
  
- Control Centre (CC) to Control Centre data exchange
  - Static
    - Vendor tool-existing
    - CIM based –target- for CC modeling freedom
  - Dynamic
    - ICCP – SCADA-All CC need not be from same Vendor
  
- Application to Application data exchange
  - CIM ( Common Information Model)– SCADA data exchange
    - Application in same CC need not belong to one Vendor/platform-under evolution

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## Present vs. Future

### Present

- SCADA Visibility from 2 RTUs.
- RTU Coverage- Upto 220/ 132 KV
- Monitor: 132KV & above, Tie Lines & Gen Stations.
- Network analysis- By RLDC
- Decision making- nil

### Future

- SCADA Visibility-reqd 78 RTUs (132 KV- 8 nos, rest 33 KV)
- RTU Coverage- Upto 33 KV
- Monitoring: Multifold increase
- Network analysis- By States also.
- Decision Making:
  - Remote Load Shedding
  - Full visibility of Entire power flow.
  - Data availability through Web

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## COMMUNICATION REQUIREMENTS

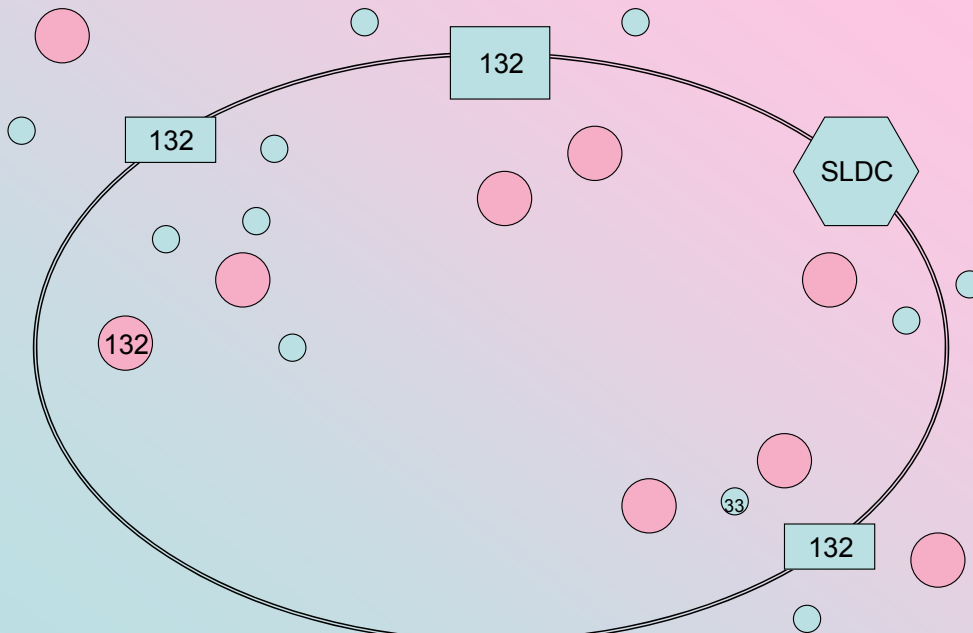


- All 132 kV s/s RTUs shall be connected through Fiber Optic network.
- All 33 kV RTUs connected be connected through GPRS system.
- Future RTUs can be connected through the main FO ring either by GPRS / FO links.
- The wideband connectivity can give access to
  - Data from RTUs
  - Data from RLDC
  - MIS activities.
  - VAS services
  - Internet access etc.
  - Business leads.

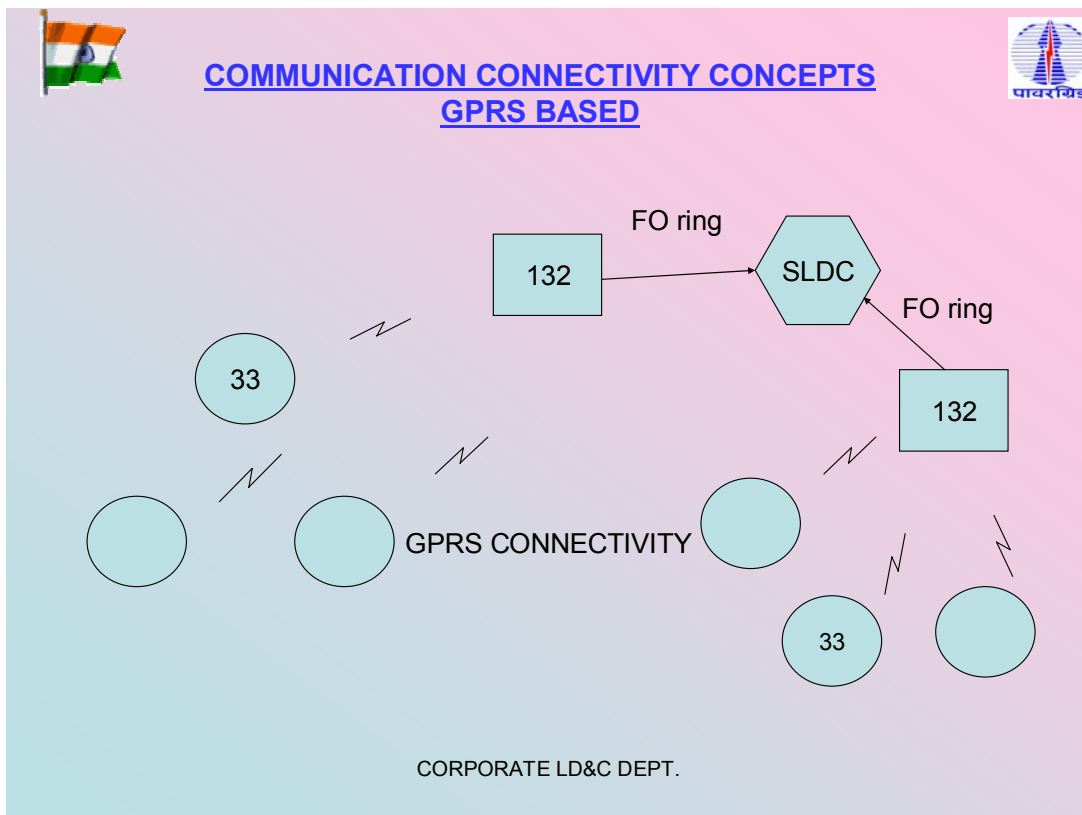
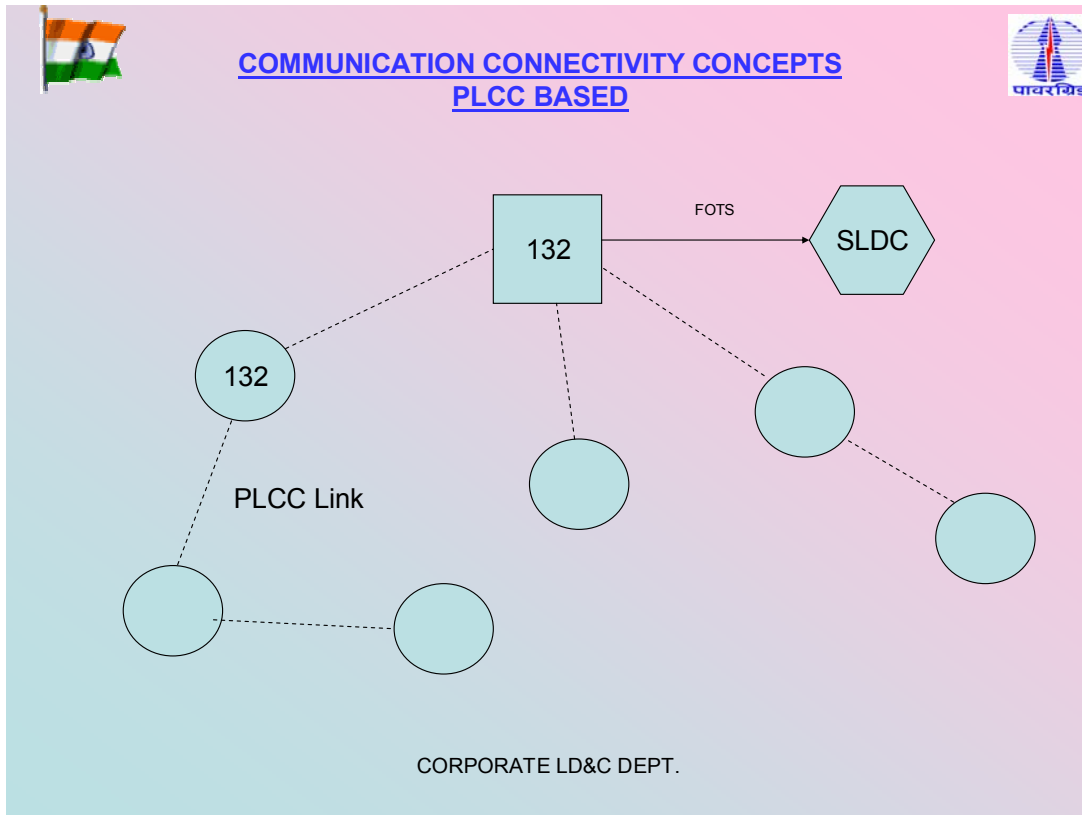
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## COMMUNICATION CONNECTIVITY CONCEPTS FOTS BACKBONE RING



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## AUXILLARY POWER SYSTEM REQUIREMENTS



### At Control Centre

- DCPS System ( -48 V)
- UPS in 1+1 load sharing mode with VRLA batteries.
- DG sets

### At RTUs

- DCPS system with typical 8 hours backup with Batteries.

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## MORE DETAILS REQUIRED



- Identification of RTUs.
- What live data is required from the reporting RTUs ?
- Connectivity for FO links

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## INITIATIVE BY MIZORAM FOR SLDC ESTABLISHMENT



• **19-05-2009**

• Government of Mizoram , P& E Department has chosen POWERGRID for preparing the DPR for CAPEX for setting up new modernized SLDC for Mizoram.

• **11-06-2009**

• Meeting with P&E department officials with POWERGRID and minutes signed.

• POWERGRID shall send the complete offer to Mizoram to prepare the DPR.

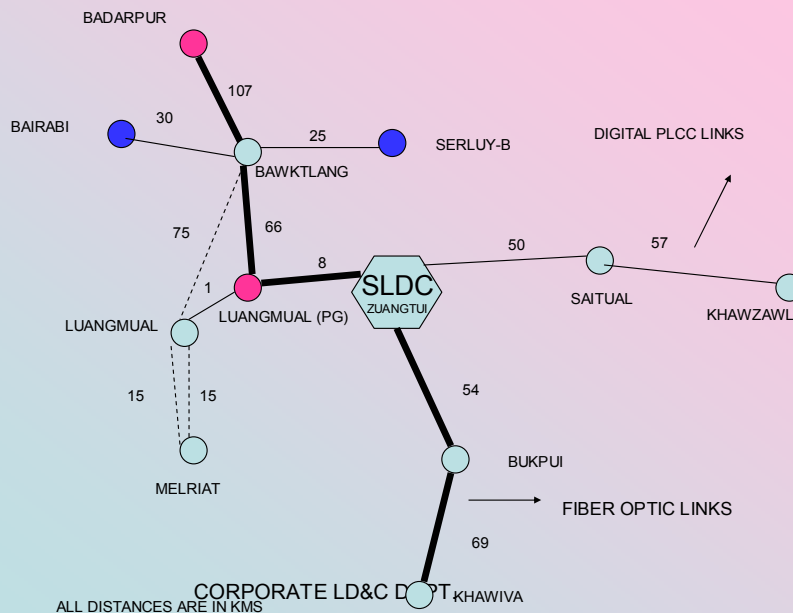
• DPR preparation shall include all aspects of establishing the full-fledged SLDC.

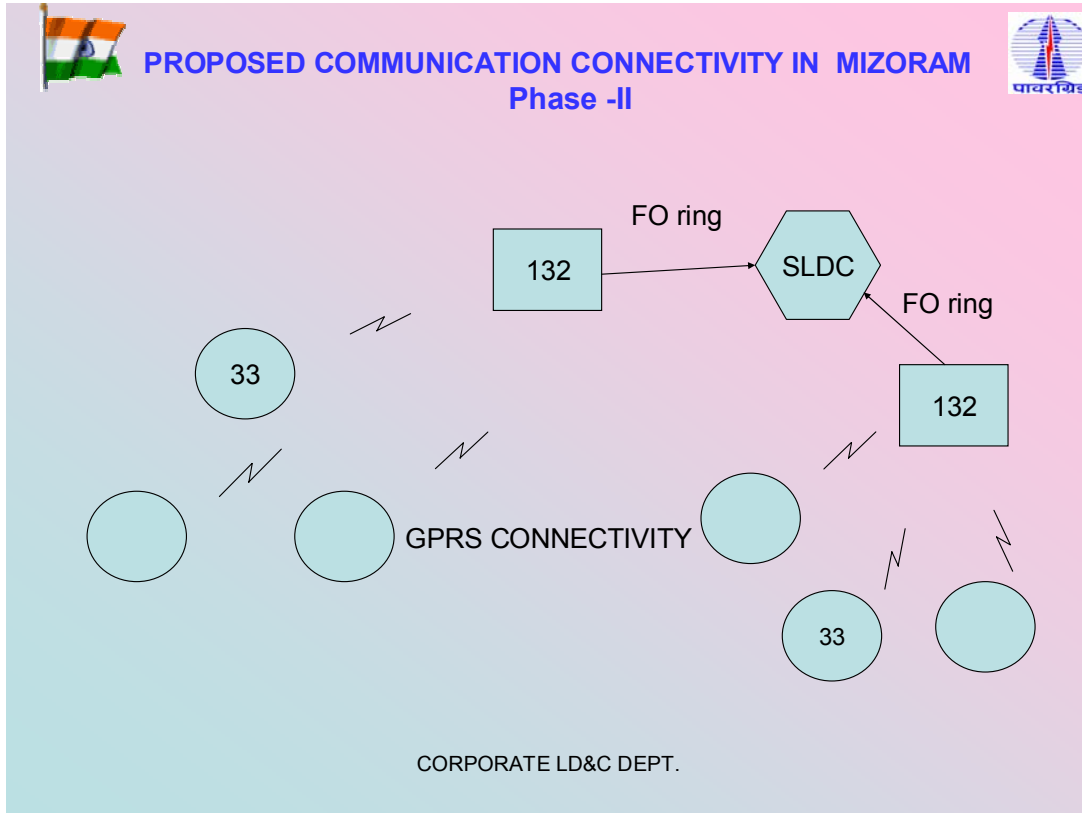
• Mizoram P&E dept. officials clarified that , after approval of DPR & tying up of funds , they shall again approach POWERGRID for realizing the project.

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## PROPOSED COMMUNICATION CONNECTIVITY IN MIZORAM Phase -I





**WHY POWERGRID FOR IMPLEMENTATION SUPPORT IN SLDC PROJECT**

- POWERGRID Being CTU is well familiar with requirement of Power Sector
- POWERGRID has vast experience in implementation of projects in Transmission, SCADA/EMS and Communication.
- Excellent Track Record on timely completion of Projects. Consistently receiving MOU wards .
- Trust of Utilities within India and abroad on timely implementation of projects.

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## **POWERGRID EXPERIENCE IN THE FIELD OF SCADA/EMS & TELECOMMUNICATION**



- System Coordination & Control Projects for all Regions
  - FOTS-8440 kms (OPGW)
  - Microwave Hops-165 nos.
  - Control Centres-77
  - RTUs- 1059
  
- POWERGRID Telecom Diversification Project
  - FOTS - > 20000 kms (OPGW / Underground)
  - DWDM Technology
  - STM 16 capacity

CORPORATE LD&C DEPT.



## **POWERGRID EXPERIENCE IN THE FIELD OF SCADA/EMS & TELECOMMUNICATION**



- Bhutan Telecom
  - FOTS – 136 Kms ( incl. ADSS also)
  
- BSES, Mumbai – FOTS -105 kms (OPGW)
  
- OPGW PROJECT FOR AFGHANISTAN
  
- OPGW PROJECT FOR THPA BHUTAN

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## Conclusion



- POWERGRID's vast experience in Telecommunication and Power Transmission is an added advantage in understanding requirements of all NER constituents
- All constituents of NER shall get a similar approval from their state governments and seek approval for DPR preparation for CAPEX for the establishment /augmentation of SLDcs by POWERGRID.

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## CONSULTANCY MODALITIES



- After signing of MoA, following steps are followed.
- Preparation of all Bid documents including technical specification, BOQ, Qualifying Requirement, preparation of NIT cost estimate & Conditions of Contract etc.
- Invitation of Bids, evaluation of bids, pre-award discussion with the selected vendor, finalization of award. Placement of order/finalization of contract, issue of contract and all post contract co-ordination.
- Review and approval of contractor's drawings/documents. Witnessing of tests at test laboratory, factory and site, inspection of materials at manufacturer's works and site, and implementation of the agreed quality assurance programme.

CORPORATE LD&C DEPT.

**Details of billing for Transmission Charges of ISTS and States  
(As per CERC order dated 30.09.2008 in petition no.38/2008  
Transmission charge @ 35 paise per unit under UCPTT**

**ANNEXURE 2.4**

TABLE A	Difference to be paid (in Rs. Lakhs)											
	Feb-00	Mar-00	Apr-00	May-00	Jun-00	Jul-00	Aug-00	Sep-00	Oct-00	Nov-00	Dec-00	Total
Ar. Pradesh	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Assam	22.974660	25.206919	23.631479	24.639966	23.200296	25.556858	25.901333	23.674214	24.603795	24.229178	24.763804	268.382502
Manipur	10.588517	11.617317	10.891231	11.356021	10.692508	11.778596	11.937357	10.910927	11.339350	11.166697	11.413095	123.691618
Meghalaya	3.823250	4.194723	3.932552	4.100376	3.860798	4.252957	4.310282	3.939664	4.094357	4.032016	4.120984	44.661958
Mizoram	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Nagaland	3.025194	3.319128	3.111681	3.244474	3.054905	3.365206	3.410565	3.117308	3.239711	3.190383	3.260780	35.339337
Tripura	4.478481	4.913618	4.606516	4.803101	4.522465	4.981833	5.048982	4.614846	4.796051	4.723026	4.827241	52.316160
Total	44.890102	49.251706	46.173458	48.143938	45.330972	49.935451	50.608519	46.256960	48.073264	47.341301	48.385904	524.391575

TABLE B		
Beneficiaries	G.Total (in Rs. Lakhs)	Instalment Payments (in Rs. Lakhs)
Ar. Pradesh	0.000000	0.000000
Assam	1511.450787	188.931348
Manipur	673.968775	84.246097
Meghalaya	250.518075	31.314759
Mizoram	0.000000	0.000000
Nagaland	197.343938	24.667992
Tripura	292.247146	36.530893
Total	2925.528721	365.691090

Beneficiaries	Jan-01	Feb-01	Mar-01	Apr-01	May-01	Jun-01	Jul-01	Aug-01	Sep-01	Total
Ar. Pradesh	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Assam	25.835470	22.587978	23.368520	21.315419	21.949401	23.122243	25.740317	25.553046	26.350807	215.823201
Manipur	11.778131	10.297632	10.653473	9.717485	10.006511	10.541198	11.734752	11.649377	12.013068	98.391629
Meghalaya	4.293603	3.753902	3.883620	3.542415	3.647777	3.842692	4.277790	4.246667	4.379247	35.867714
Mizoram	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Nagaland	3.392347	2.965932	3.068422	2.798838	2.882084	3.036085	3.379853	3.355263	3.460014	28.338838
Tripura	5.022577	4.391244	4.542986	4.143851	4.267101	4.495109	5.004078	4.967672	5.122761	41.957378
Total	50.322129	43.996688	45.517021	41.518009	42.752873	45.037327	50.136789	49.772026	51.325898	420.378760

Beneficiaries	Oct-01	Nov-01	Dec-01	Jan-02	Feb-02	Mar-02	Apr-02	May-02	Jun-02	Jul-02	Aug-02	Sep-02	Oct-02	Nov-02	Dec-02	Total
Ar. Pradesh	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Assam	27.925841	28.432621	29.293704	30.909871	28.158400	27.692942	23.737717	26.066746	32.304536	34.499294	31.731552	30.485497	29.981703	26.073582	26.711891	434.005895
Manipur	12.684323	12.914510	13.305626	14.039713	12.789955	12.578537	10.782016	11.839895	14.673190	15.670081	14.412932	13.846956	13.618125	11.843000	12.132929	197.131787
Meghalaya	4.638925	4.723109	4.866148	5.134619	4.677556	4.600236	3.943211	4.330100	5.366295	5.730879	5.271114	5.064124	4.980436	4.331235	4.437268	72.095255
Mizoram	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Nagaland	3.663339	3.729819	3.842777	4.054787	3.693846	3.632787	3.113937	3.419461	4.237741	4.525651	4.162576	3.999117	3.933029	3.420358	3.504092	56.933317
Tripura	5.424039	5.522471	5.689719	6.003627	5.469209	5.378803	4.610579	5.062947	6.274513	6.700801	6.163223	5.921201	5.823349	5.064274	5.188253	84.297008
Total	54.336466	55.322529	56.997974	60.142617	54.788967	53.883306	46.187460	50.719149	62.856274	67.126706	61.741397	59.316894	58.336642	50.732448	51.974433	844.463263

Beneficiaries	Jan-03	Feb-03	Mar-03	Apr-03	May-03	Jun-03	Jul-03	Aug-03	Sep-03	Oct-03	Nov-03	Dec-03	Jan-04	Feb-04	Mar-04	Total
Ar. Pradesh	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Assam	26.223006	27.828793	31.279226	30.598731	32.617968	35.379055	35.187347	41.813716	45.518054	46.079865	55.534687	51.273331	49.245135	41.376965	43.283310	593.239189
Manipur	11.260903	11.950473	13.432187	13.139963	14.007081	15.192770	15.110445	17.955996	19.546744	19.788001	23.848170	22.018223	21.147258	17.768443	18.587081	254.753741
Meghalaya	4.327180	4.592158	5.161530	5.049238	5.382442	5.838062	5.806427	6.899875	7.511145	7.603852	9.164036	8.460850	8.126168	6.827805	7.142380	97.893148
Mizoram	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Nagaland	3.391811	3.599512	4.045807	3.957789	4.218967	4.576099	4.551303	5.408390	5.887527	5.960194	7.183127	6.631942	6.369606	5.351898	5.598474	76.732445
Tripura	5.024857	5.332558	5.993731	5.863334	6.250261	6.779341	6.742606	8.012352	8.722178	8.829832	10.641567	9.825005	9.436362	7.928662	8.293956	113.676600
Total	50.227757	53.303495	59.912482	58.609056	62.476719	67.765327	67.398129	80.090328	87.185647	88.261744	106.371587	98.209350	94.324529	79.253773	82.905201	1136.295123

- Note:**
- (-) indicates receivable by the state
  - Total Payable/ receivable to/ from PGCIL by the constituents is given at Table –B, column 1.
  - As per item 14 of CERC order dt 30th September, 2008 in Petition No 38/2008, the arrears are to be paid in eight equal quarterly installments commencing on 31.3.2009 and to be liquidated by 31.12.2010.
  - The amount to be paid in each quarterly installment is given in Table -B, column 2.

Power Grid Corporation of India Ltd.  
NERTS Coml. Dept. Shillong

Amounts Refundable to NEEPCO in line with Appellate Tribunal Order dt 11.03.2008 in Appeal No 118 of 2006

Months	Mwh Payable Energy	Amount (Rs.)					Sub-total	POWERGRID @ Rs.0.3161818/kWH	TOTALS
		ASEB @ Rs.0.01919840 /kWH	Manipur @ Rs.0.00584640 /kWH	MeSEB @ Rs.0.00306150 /kWH	Nagaland @ Rs.0.00230560 /kWH	TSECL @ Rs.0.00342630/ kWH			
Nov' 03	1724.280	33103	10081	5279	3975	5908	58347	545151	603498
Dec' 03	6719.680	129007	39286	20572	15493	23024	227382	2124506	2351888
Jan' 04	6768.580	129946	39572	20722	15606	23191	229037	2139966	2368003
Feb' 04	4320.460	82946	25259	13227	9961	14803	146197	1365964	1612181
Mar' 04	5539.460	106349	32386	16959	12772	18980	187445	1751366	1938811
<b>Sub Totals</b>	<b>25073.460</b>	<b>481351</b>	<b>146584</b>	<b>76759</b>	<b>57807</b>	<b>85906</b>	<b>848407</b>	<b>7926954</b>	<b>8778381</b>
Months	Payable Energy	ASEB @ Rs.0.00750010 /kWH	Manipur @ Rs.0.00084885 /kWH	MeSEB @ Rs.0.00113227/ kWH	Nagaland @ Rs.0.00079441/ kWH	TSECL @ Rs.0.00118741/ kWH	Sub-total	POWERGRID @ Rs.0.33853696/kWH	TOTALS
Apr' 04	3104.990	23288	2636	3516	2467	3687	35593	1051154	1086747
May' 04	5120.610	38405	4347	5798	4068	6080	58698	1733516	1792214
<b>Sub Totals</b>	<b>8225.600</b>	<b>61692.823</b>	<b>6982.301</b>	<b>9313.600</b>	<b>6534.499</b>	<b>9767.160</b>	<b>94290</b>	<b>2784670</b>	<b>2878960</b>
Months	Payable Energy	ASEB @ Rs.0.00891357 /kWH	Manipur @ Rs.0.00084476 /kWH	MeSEB @ Rs.0.00112682/ kWH	Nagaland @ Rs.0.00079059/ kWH	TSECL @ Rs.0.00141610/ kWH	Sub-total	POWERGRID @ Rs.0.33690816/kWH	TOTALS
Jun' 04	6851.140	61068	5788	7720	5416	9702	89694	2308205	2397899
Jul' 04	6338.940	56503	5355	7143	5012	8977	82988	2135641	2218629
Aug' 04	10203.570	90950	8620	11498	8067	14449	133584	3437686	3571250
Sep' 04	7030.120	62663	5939	7922	5558	9955	92037	2368505	2460642
Oct' 04	7339.130	65418	6200	8270	5802	10393	96083	2472613	2568896
Nov' 04	2633.350	23473	2225	2967	2082	3729	34475	887197	921673
Dec' 04	3567.100	31796	3013	4019	2820	5051	46700	1201785	1248485
<b>Sub Totals</b>	<b>43963.350</b>	<b>391870</b>	<b>37138</b>	<b>49539</b>	<b>34757</b>	<b>62256</b>	<b>575561</b>	<b>14811611</b>	<b>15387173</b>
Months	Payable Energy	ASEB @ Rs.0.00885403 /kWH	Manipur @ Rs.0.00083912 /kWH	MeSEB @ Rs.0.00111929/ kWH	Nagaland @ Rs.0.00312328/ kWH	TSECL @ Rs.0.00140664/ kWH	Sub-total	POWERGRID @ Rs.0.33465764/kWH	TOTALS
Jan' 05	2727.600	24150	2289	3053	8519	3837	41847	912812	954660
Feb' 05	3796.549	33615	3186	4249	11858	5340	58248	1270544	1328792
Mar' 05	3667.860	32475	3078	4105	11456	5159	56273	1227477	1283761
Apr' 05	3784.315	33506	3175	4235	11819	5323	58060	1266450	1324510
May' 05	5123.439	45363	4299	5734	16002	7207	78605	1714598	1793203
Jun' 05	3623.554	32083	3041	4055	11317	5097	55593	1212650	1268243
Jul' 05	4262.083	37737	3576	4770	13312	5995	65390	1426339	1491728
Aug' 05	4529.339	40103	3801	5069	14146	6371	69490	1515778	1685268
Sep' 05	2736.824	24232	2297	3063	8548	3850	41989	915899	967888
Oct' 05	3691.132	32681	3097	4131	11528	5192	56630	1235266	1291896
Nov' 05	5133.257	45450	4307	5745	16033	7220	78756	1717884	1796639
Dec' 05	18.235	161	15	20	57	26	280	6102	6382
Jan' 06	3531.332	31267	2963	3952	11029	4967	54179	1181787	1235968
Feb' 06	5564.350	49267	4669	6228	17379	7827	85370	1862152	1947522
Mar' 06	4032.390	35703	3384	4513	12594	5672	61866	1349470	1411336
Apr' 06	5907.263	52303	4957	6611	18450	8309	90631	1976911	2067641
May' 06	2956.613	26178	2481	3309	9234	4159	45361	989453	1034814
Jun' 06	4719.630	41788	3960	5282	14741	6639	72410	1579460	1651870
Jul' 06	3690.011	32871	3096	4130	11525	5190	56813	1234890	1291800
Aug' 06	2656.618	23522	2229	2973	8297	3737	40758	889058	928816
Sep' 06	3480.056	30813	2920	3895	10869	4895	53392	1164627	1218018
Oct' 06	4499.719	39841	3776	5036	14054	6329	69036	1505865	1574901
Nov' 06	3968.842	35123	3329	4440	12390	5580	60860	1327534	1388394
Dec' 06	3791.150	33567	3181	4243	11841	5333	58165	1268737	1326902
Jan' 07	4606.704	40788	3866	5156	14388	6480	70677	1541669	1612346
Feb' 07	2311.799	20469	1940	2587	7220	3252	35468	773661	809129
Mar' 07 (As per REA dt 13.04.07)	2763.352	24467	2319	3093	8631	3887	42396	924777	967173
<b>Sub Totals</b>	<b>101572.016</b>	<b>899322</b>	<b>86231</b>	<b>113679</b>	<b>317238</b>	<b>142871</b>	<b>1558341</b>	<b>33991851</b>	<b>35550192</b>
<b>GRAND TOTAL</b>	<b>178834</b>	<b>1834236</b>	<b>275936</b>	<b>249291</b>	<b>416336</b>	<b>300801</b>	<b>3076600</b>	<b>59515086</b>	<b>62591686</b>

*[Handwritten signature]*

ANNEXURE - 3.2

Power Grid Corporation of India Ltd.  
NERTS Coml. Dept. Shillong

Amounts Refundable to NHPC in line with Appellate Tribunal Order dt 11.03.2008 in Appeal No 118 of 2006

Months	Mwh Payable Energy	Amount (Rs.)					Sub-total	POWERGRID @ Rs.0.3161618/kWH	TOTALS
		ASEB @ Rs.0.01919840 /kWH	Manipur @ Rs.0.00584640 /kWH	MeSEB @ Rs.0.00306150 /kWH	Nagaland @ Rs.0.00230560 /kWH	TSECL @ Rs.0.00342630/ kWH			
Nov' 03	636.860	12227	3723	1950	1468	2182	21550	201351	222901
Dec' 03	977.630	18769	5716	2993	2254	3350	33081	309089	342171
Jan' 04	1177.040	22597	6881	3804	2714	4033	39829	372135	411964
Feb' 04	916.390	17593	5358	2806	2113	3140	31009	289728	320737
Mar' 04	662.870	12726	3875	2029	1528	2271	22430	209574	232005
<b>Sub Totals</b>	<b>4370.790</b>	<b>83912</b>	<b>25553</b>	<b>13381</b>	<b>10077</b>	<b>14976</b>	<b>147900</b>	<b>1381877</b>	<b>1529777</b>
Months	Mwh Payable Energy	ASEB @ Rs.0.00750010 /kWH	Manipur @ Rs.0.00084885 /kWH	MeSEB @ Rs.0.00113227/ kWH	Nagaland @ Rs.0.00079441/ kWH	TSECL @ Rs.0.00118741/ kWH	Sub-total	POWERGRID @ Rs.0.33853696/kWH	TOTALS
Apr' 04	199.990	1500	170	226	159	237	2292	67704	69997
May' 04	728.220	5462	618	825	579	865	8348	246529	254877
<b>Sub Totals</b>	<b>928.210</b>	<b>6961.668</b>	<b>787.911</b>	<b>1050.984</b>	<b>737.379</b>	<b>1102.166</b>	<b>10640</b>	<b>314233</b>	<b>324874</b>
Months	Mwh Payable Energy	ASEB @ Rs.0.00891357 /kWH	Manipur @ Rs.0.00084476 /kWH	MeSEB @ Rs.0.00112682/ kWH	Nagaland @ Rs.0.00079059/ kWH	TSECL @ Rs.0.00141610/ kWH	Sub-total	POWERGRID @ Rs.0.33690816/kWH	TOTALS
Jun' 04	2766.970	24664	2337	3118	2188	3918	36225	932215	968440
Jul' 04	288.840	2575	244	325	228	409	3781	97313	101094
Aug' 04	469.600	4186	397	529	371	665	6148	158212	164360
Sep' 04	426.340	3800	360	480	337	604	5582	143637	149219
Oct' 04	495.800	4419	419	559	392	702	6491	167039	173630
Nov' 04	596.100	5313	504	672	471	844	7804	200831	208635
Dec' 04	439.110	3914	371	495	347	622	5749	147940	153689
<b>Sub Totals</b>	<b>5482.760</b>	<b>48871</b>	<b>4832</b>	<b>6178</b>	<b>4335</b>	<b>7764</b>	<b>71779</b>	<b>1847187</b>	<b>1918966</b>
Months	Mwh Payable Energy	ASEB @ Rs.0.00885403 /kWH	Manipur @ Rs.0.00083912 /kWH	MeSEB @ Rs.0.00111929/ kWH	Nagaland @ Rs.0.00312328/ kWH	TSECL @ Rs.0.00140664/ kWH	Sub-total	POWERGRID @ Rs.0.33465764/kWH	TOTALS
Jan' 05	403.240	3570	338	451	1259	567	6187	134947	141134
Feb' 05	338.950	3001	284	379	1059	477	5200	113432	118632
Mar' 05	234.910	2080	197	263	734	330	3604	78614	82218
Apr' 05	212.373	1880	178	238	663	299	3258	71072	74331
May' 05	306.542	2714	257	343	957	431	4703	102587	107290
Jun' 05	254.281	2251	213	285	794	358	3901	85097	88998
Jul' 05	488.093	4322	410	546	1524	687	7488	163344	170832
Aug' 05	469.808	4160	394	526	1467	661	7208	157225	164433
Sep' 05	467.028	4135	392	523	1459	657	7165	156294	163460
Oct' 05	555.752	4921	466	622	1736	782	8526	185987	194513
Nov' 05	529.595	4689	444	593	1654	745	8125	177233	185368
Dec' 05	0.000	0	0	0	0	0	0	0	0
Jan' 06	528.755	4682	444	592	1651	744	8112	176952	185064
Feb' 06	359.422	3182	302	402	1123	506	5514	120283	125798
Mar' 06	362.057	3206	304	405	1131	509	5555	121165	126720
Apr' 06	233.045	2063	196	261	728	328	3575	77990	81566
May' 06	60.273	534	51	67	188	85	925	20171	21098
Jun' 06	399.262	3535	335	447	1247	562	6126	133616	139742
Jul' 06	537.264	4757	451	601	1678	756	8243	179800	188042
Aug' 06	517.369	4581	434	579	1616	728	7938	173141	181079
Sep' 06	532.103	4711	446	596	1662	748	8164	178072	186236
Oct' 06	571.071	5056	479	639	1784	803	8762	191113	199875
Nov' 06	378.644	3353	318	424	1183	533	5809	126716	132625
Dec' 06	308.600	2732	259	345	964	434	4735	103275	108010
Jan' 07	193.633	1714	162	217	605	272	2971	64801	67772
Feb' 07	200.752	1777	168	225	627	282	3080	67183	70263
Mar' 07 (As per REA dt 13.04.07)	256.652	2272	215	287	802	361	3938	85891	89628
<b>Sub Totals</b>	<b>9699.474</b>	<b>85879</b>	<b>8139</b>	<b>10856</b>	<b>30294</b>	<b>13643</b>	<b>148812</b>	<b>3246003</b>	<b>3394815</b>
<b>GRAND TOTAL</b>	<b>20481</b>	<b>225624</b>	<b>39112</b>	<b>31466</b>	<b>45443</b>	<b>37485</b>	<b>379131</b>	<b>6789300</b>	<b>7168431</b>

*22/11/07*